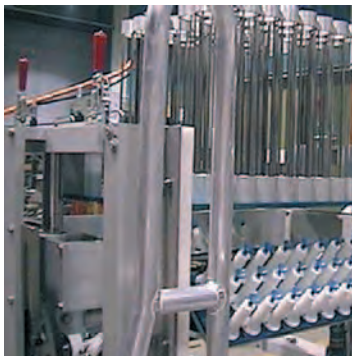
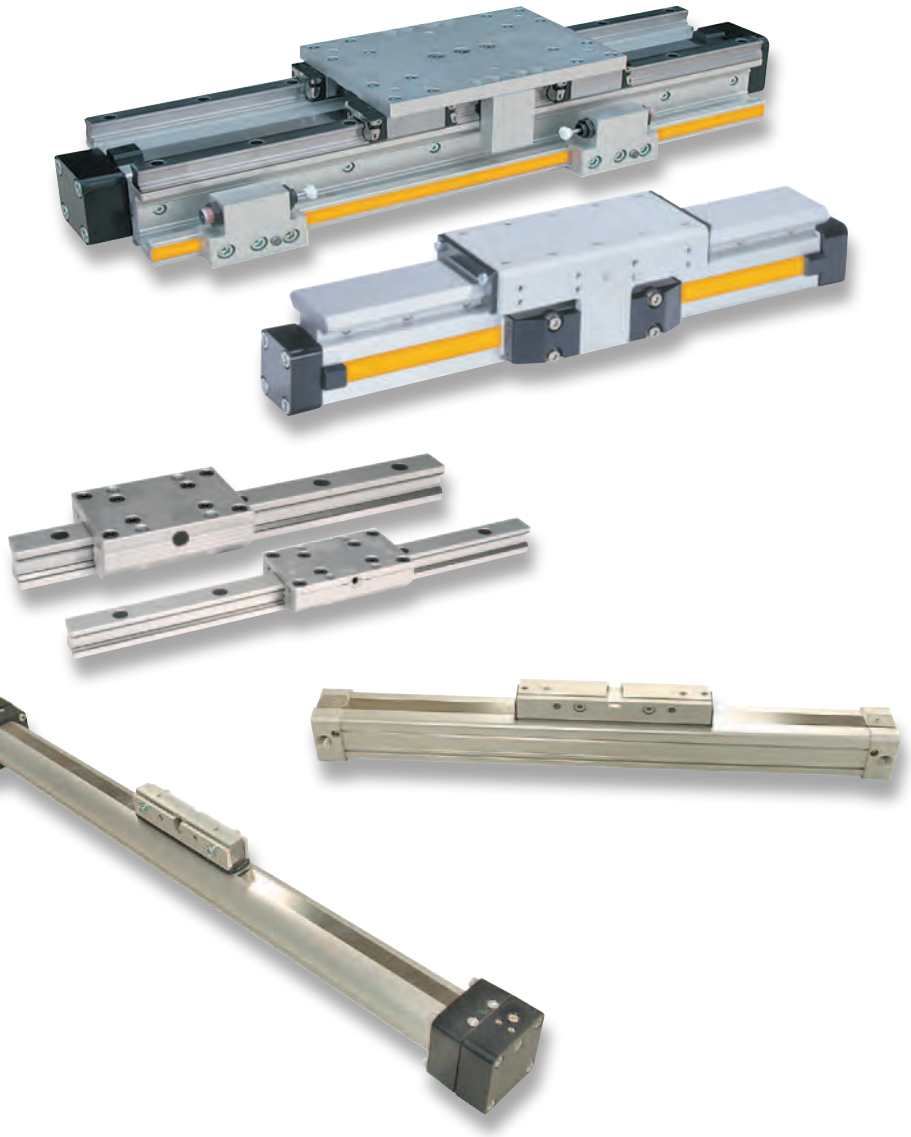
(Revised 04-30-2015)



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Parker-Origa Pneumatic Rodless Cylinders & Linear Guides

Catalog 0961

Parker

ENGINEERING YOUR SUCCESS.

Warning, Offer of Sale

⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users h aving technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled “Offer of Sale”.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Index

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

OSP
ORIGA SYSTEM PLUS

2D & 3D CAD Drawings can be downloaded from website www.parkeroriga.com

ATTENTION!

Contact PARKER-ORIGA for sizing software and/or technical assistance

269 626-5575

All dimensions are in European-Standard.

Conversion Table

Multiply	By	To Obtain
Millimeters	.03937	Inches
Newtons	.2248	Lbs.(F)
Newton-Meters	8.8512	In-Lbs
Kilograms	2.205	Lbs.
Inches	25.4	Millimeters
Lbs.(F)	4.448	Newtons
In-Lbs	.113	Newtons-Meters
Lbs.	.45359	Kilograms

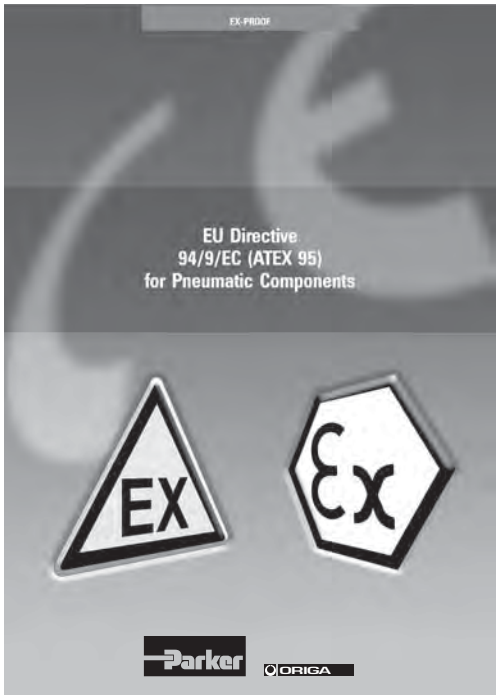
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Certifications

PARKER-ORIGA rodless pneumatic cylinders are the first rodless cylinders that have been approved for use in potentially explosive atmospheres in Equipment Group II, Category 2 GD

The Cylinders are to the ATEX Certification 94/9/EG (ATEX 95) for Pneumatic Components.

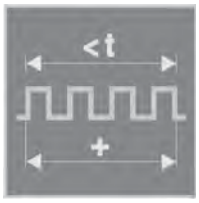
For ATEX Certification, consult factory for ordering assistance.



for use in Ex-Areas

for Clean Room Applications certified to DIN EN ISO 14644-1

Stainless steel version for special applications



with special pneumatic cushioning system for cycle time optimization, for Ø 16 to 50 mm – on request

High Temperature Version for temperatures up to +120°C

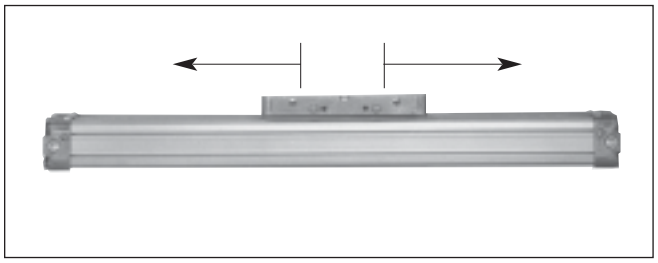
Low Temperature Version for temperatures up to -40°C

Slow Speed Version v = 0.005 – 0.2 m/s

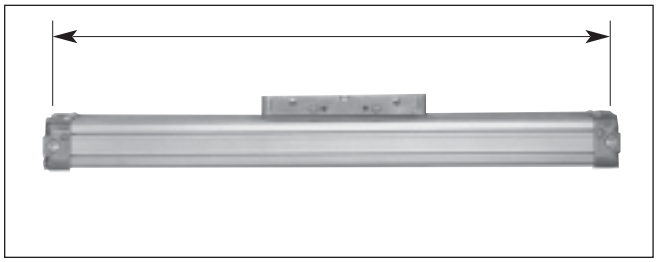
High Speed Version $v_{max.}$ = 30 m/s

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

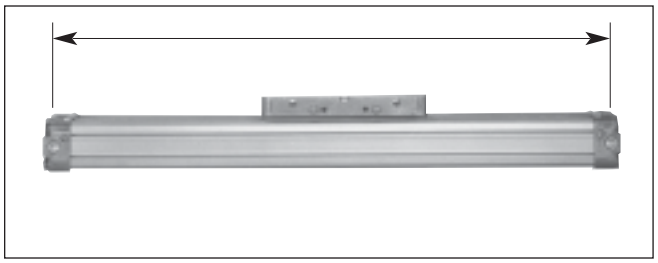
Six Unique Advantages



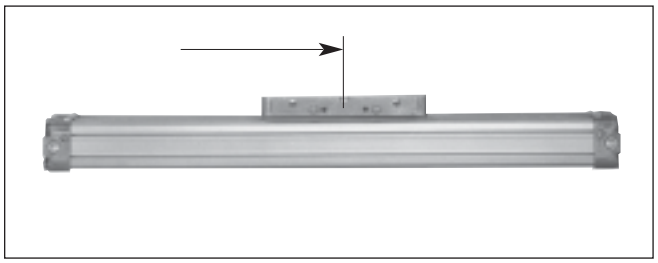
Equal Force and Speed
Equal piston area on each side of the piston allows for equal force and speed in both directions of travel. Additionally, the ability to “pneumatically lock” the piston at various points along the stroke is possible through the use of special valve configurations.



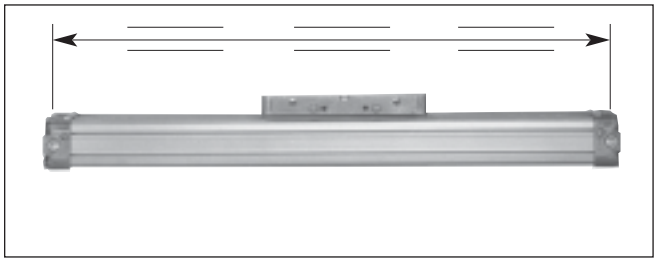
Any Length of Stroke
Infinitely variable strokes are available up to 480 inches and each cylinder is custom manufactured to customer requirements without incurring extended delivery times.



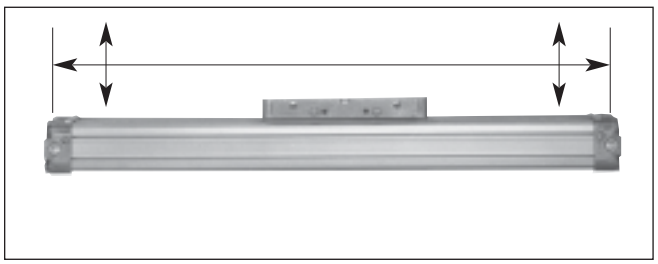
Space Saving
The lack of a piston rod allows for nearly half the space requirement of a “rod type” pneumatic cylinder. The result is a simpler, less costly installation reducing the amount of hardware and design time.



Accepts Cantilever Loads
The unique piston design and barrel rigidity allows the Origa cylinder to accept high direct and bending moment loads without the need for additional support hardware.

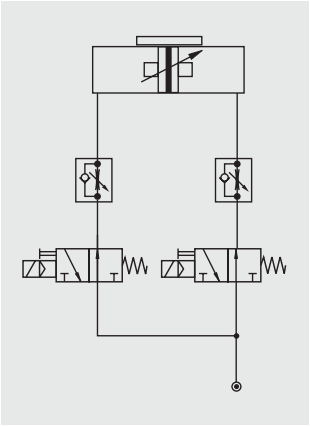


Self Guiding
The internal self-supporting characteristics of the Origa rodless cylinder provides guidance of the piston throughout the stroke. High priced guidance mechanisms (roundway bearings, precision slideways, etc.) are not required.



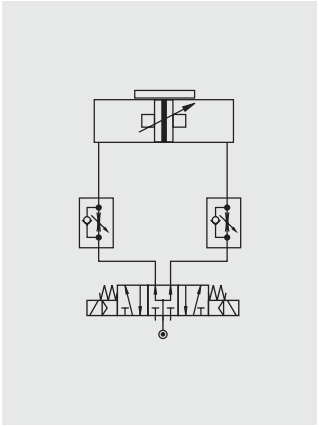
Inherent Rigidity
Integral strength and rigidity of the complete cylinder assembly will accommodate the heaviest of loads enabling the cylinder to form part of a structure or framework. This eliminates the need for expensive and bulky I-beams, channels and fabrications.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



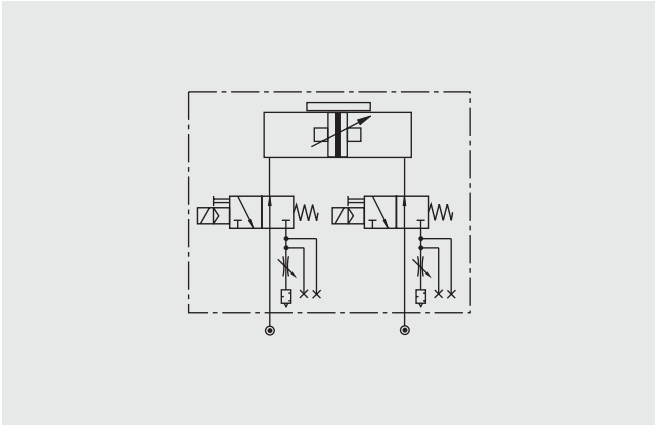
Circuit diagram for end of stroke application. Intermediate positioning is also possible.

The cylinder is controlled by two 3/2-way valves (normally open). The speed can be adjusted independently for both directions.

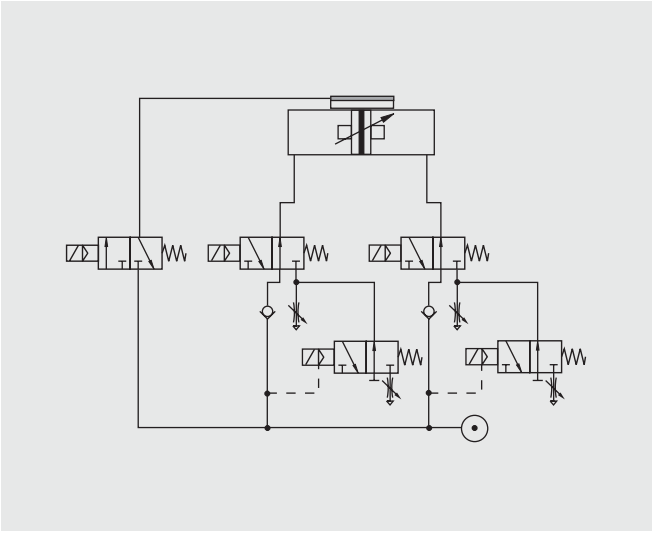


Circuit diagram for end of stroke application. Intermediate positioning is also possible.

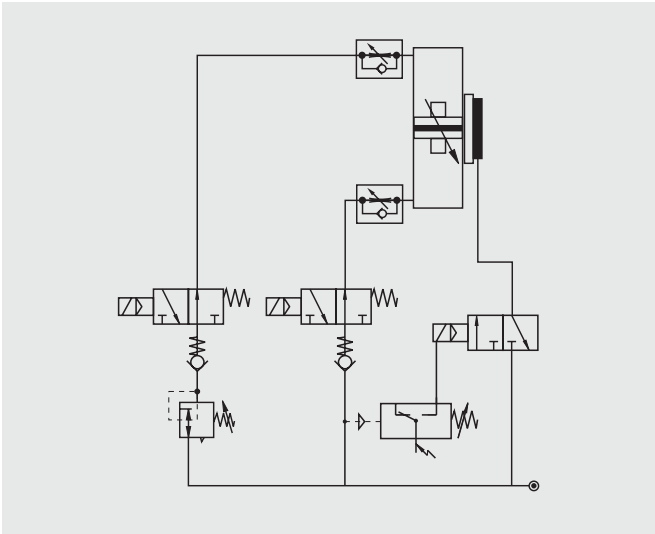
The cylinder is controlled by a 5/3-way valve (middle position pressurized). The speed can be adjusted independently for both directions.



The optional integrated VOE Valves offer optimal control, and allow accurate positioning of intermediate positions and the lowest possible speeds.



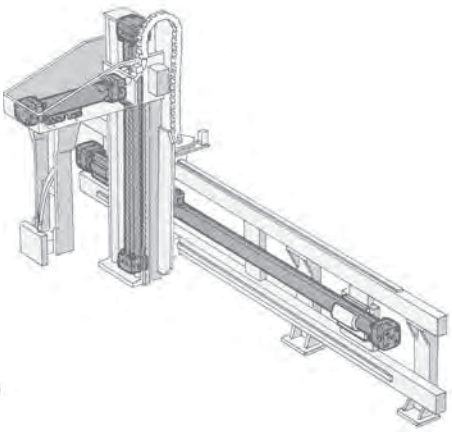
Fast / Slow speed cycle control with pneumatic brake for accurate positioning at high velocities. Additional 3/2-way valves with adjustable throttle valves at the exhaust of the standard directional control valves for two displacement speeds in each direction of the piston's travel. The valve controlling the brake is activated after the slow speed cycle is actvated

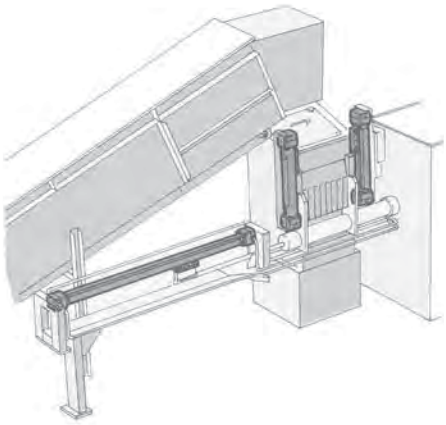


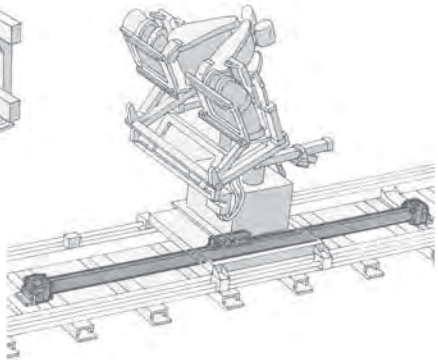
The combination of an OSP-cylinder with the passive MULTIBRAKE as shown here, allows accurate positioning and safety in case of loss of pneumatic air pressure.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Applications



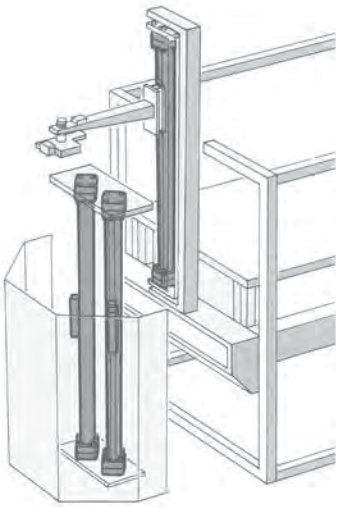


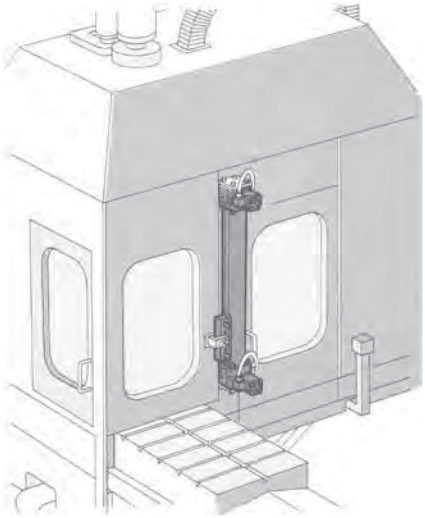


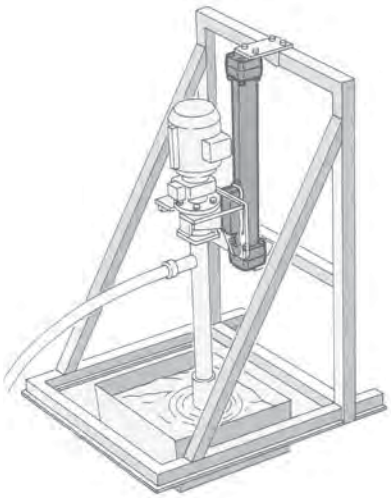
For more than 30 years Parker-Origa cylinders have provided solutions to linear motion problems in all types of industry.

Offering simple designs, easy installation, clean operation and maintenance free duty, Parker-Origa cylinders are suitable for a diversity of applications and environments.

For more information or assistance with your linear motion tasks, please call an authorized distributor or Parker-Origa direct.

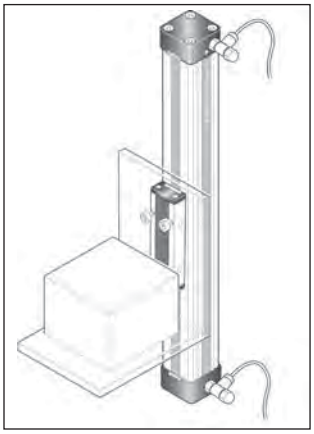




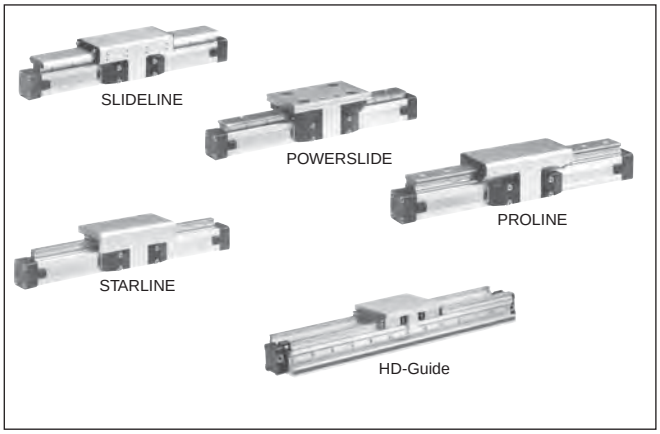


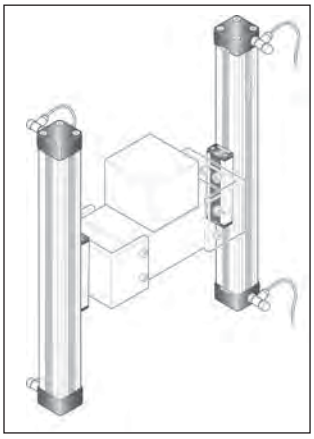
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

ORIGA SYSTEM PLUS – rodless linear drives offer maximum flexibility for any application.



The high load capacity of the piston can cope with high bending moments without additional guides.



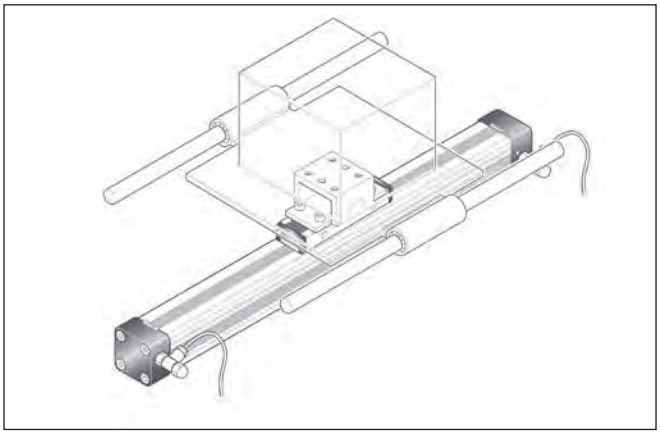


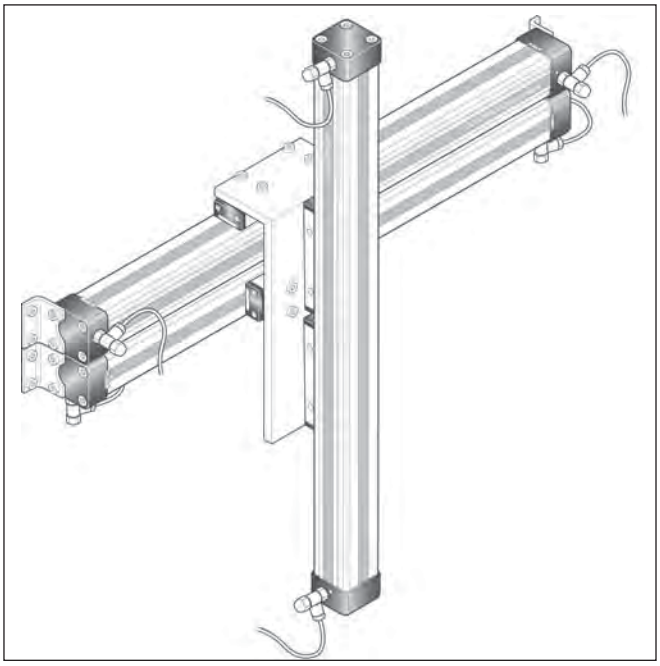
The mechanical design of the OSP-P allows synchronized movement of two cylinders.

Integrated guides offer optimal guidance for applications requiring high performance, easy assembly and maintenance free operation.

Optimal system performance by combining multi-axis cylinder combinations.

When using external guides, the clevis mounting is used to compensate for deviations in parallelism.





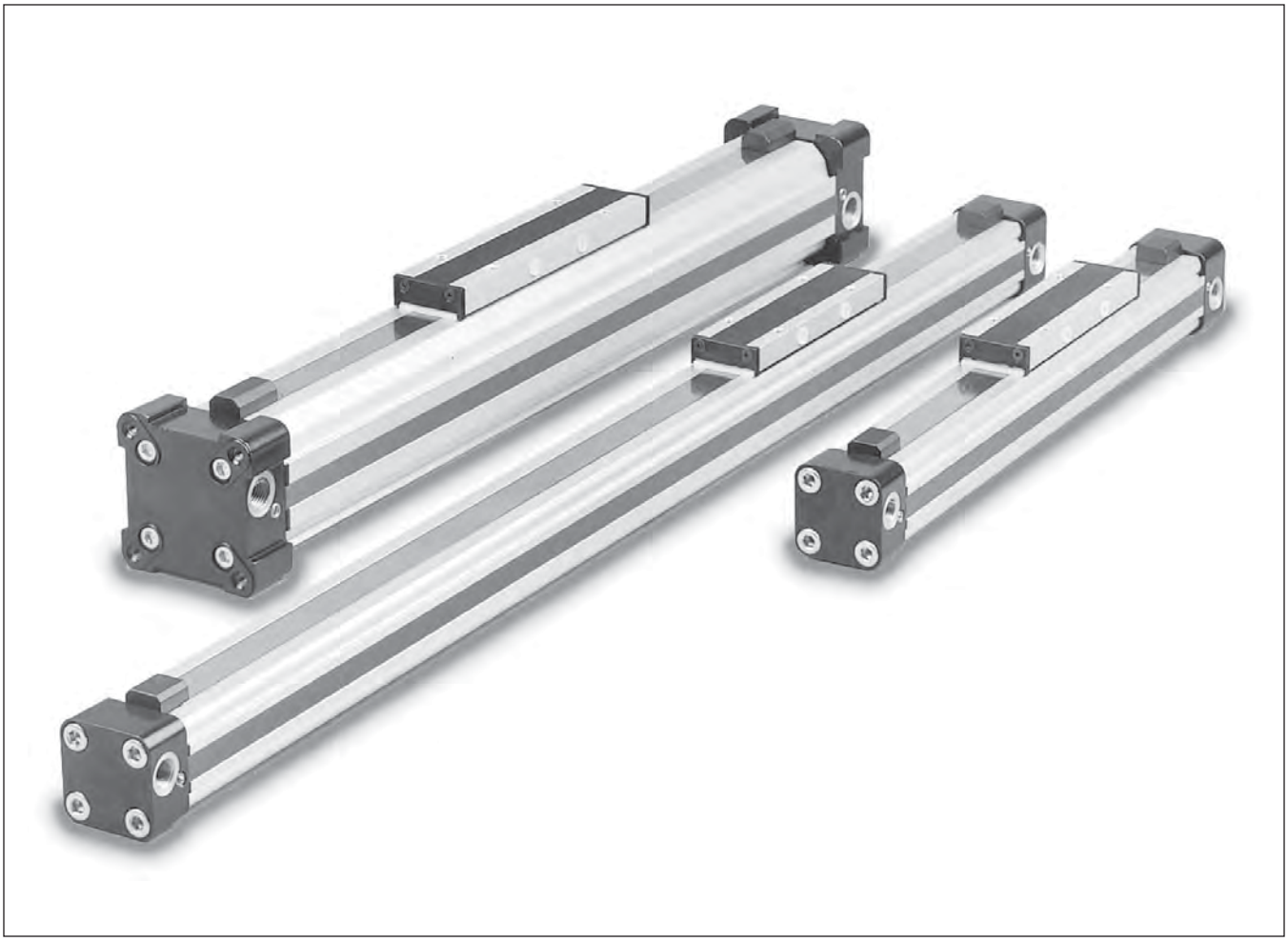
For further information and assembly instructions, please contact your local PARKER-ORIGA distributor.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Notes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Rodless Pneumatic Cylinders Series OSP-P



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

origa system plus
– innovation from A PROVEN design

A generation of linear drives which can be simply and neatly integrated into any machine layout.

A NEW MODULAR LINEAR DRIVE SYSTEM

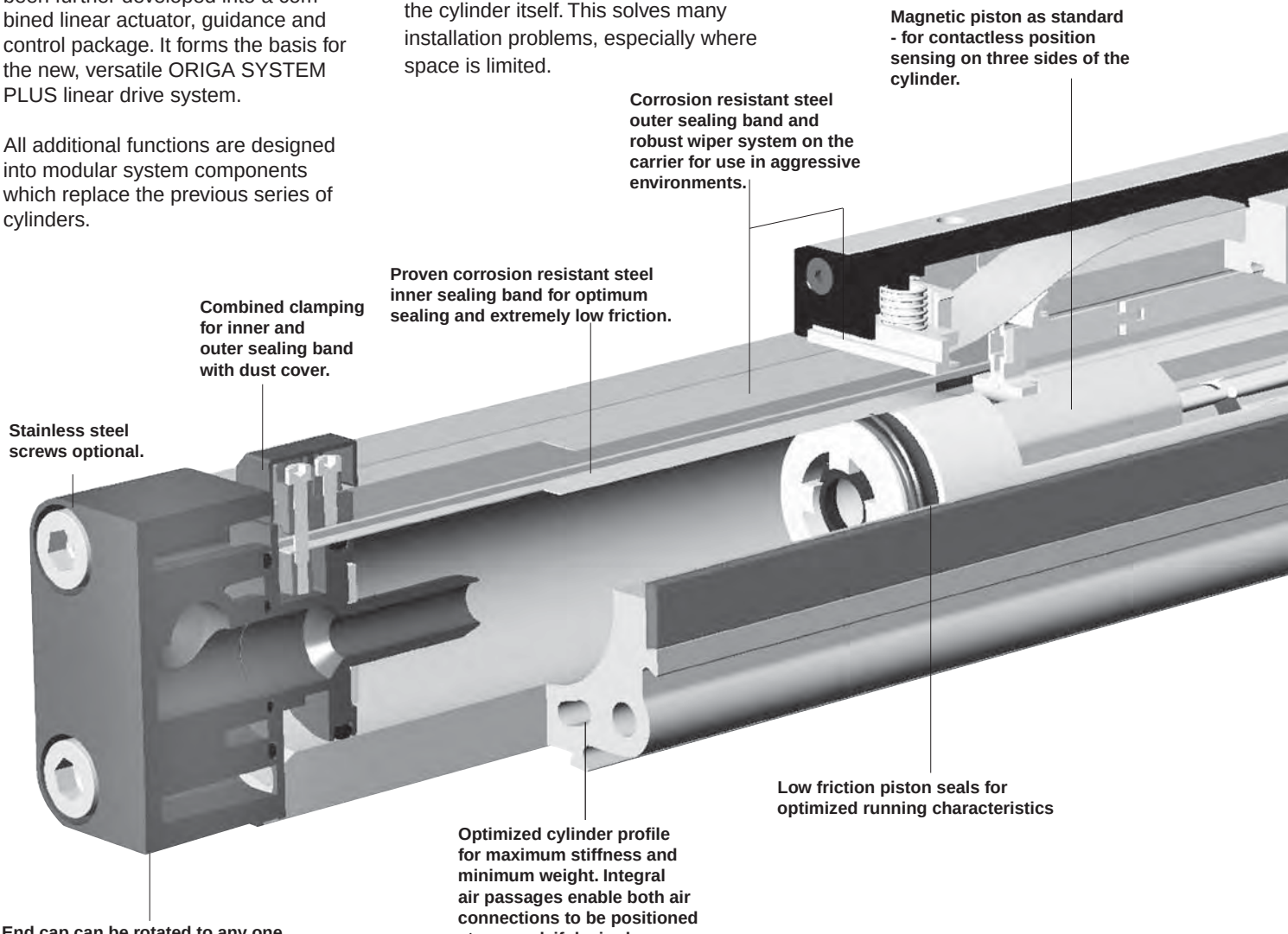
With this second generation linear drive PARKER-ORIGA offers design engineers complete flexibility. The well known ORIGA cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the new, versatile ORIGA SYSTEM PLUS linear drive system.

All additional functions are designed into modular system components which replace the previous series of cylinders.

MOUNTING RAILS ON 3 SIDES

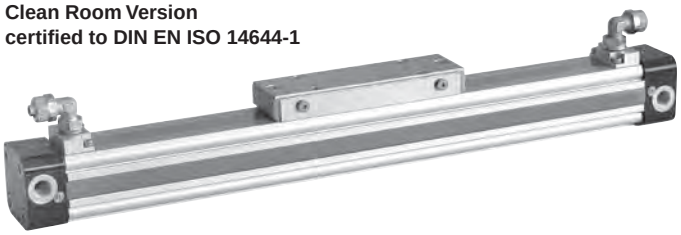
Mounting rails on 3 sides of the cylinder enable modular components such as linear guides, brakes, valves, magnetic switches etc. to be fitted to the cylinder itself. This solves many installation problems, especially where space is limited.

The modular system concept forms an ideal basis for additional customer-specific functions.

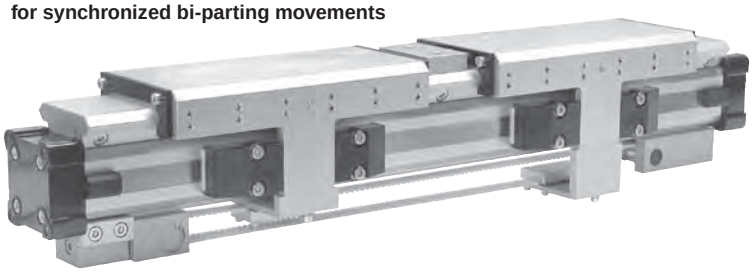


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

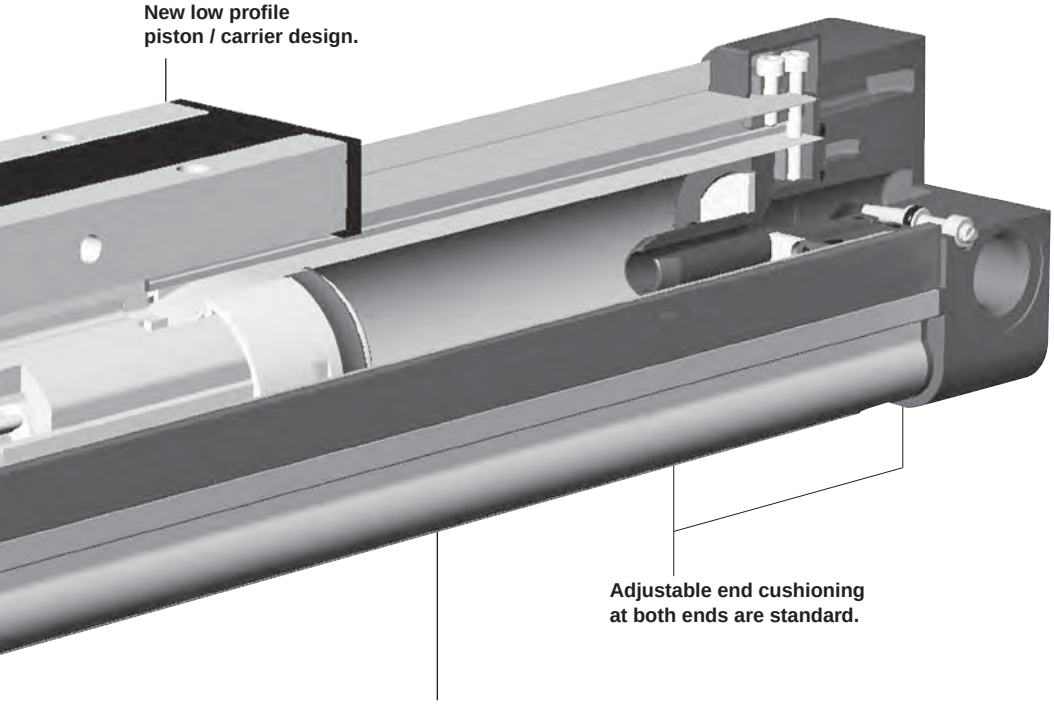
Clean Room Version
certified to DIN EN ISO 14644-1



Rodless Cylinder
for synchronized bi-parting movements



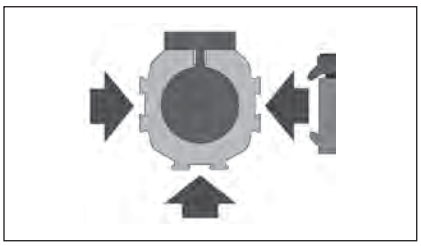
New low profile
piston / carrier design.



Adjustable end cushioning at both ends are standard.

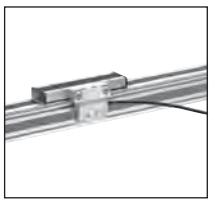
Integral dovetail rails on three sides provide many adaptation possibilities (linear guides, magnetic switches, etc.).

Modular system components are simply clamped on.

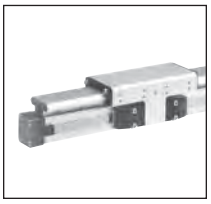


INTEGRATED VOE VALVES
The complete compact solution for optimal cylinder control.

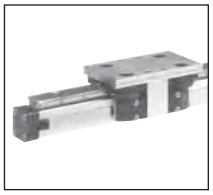
SENSOFLEX
SFI-plus incremental measuring system with 0.1 (1.0) mm resolution



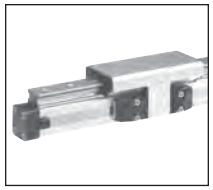
SLIDELINE
Combination with linear guides provides for heavier loads.



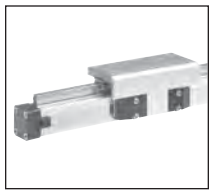
POWERSLIDE
Roller bearing precision guidance for smooth travel and high dynamic or static loads.



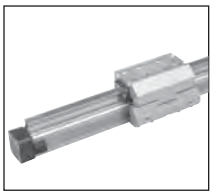
PROLINE
The compact aluminum roller guide for high loads and velocities.



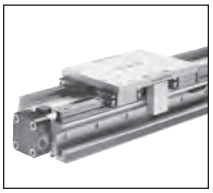
STARLINE
Recirculating ball bearing guide for very high loads and precision



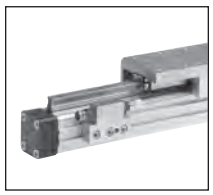
KF GUIDE
Recirculating ball bearing guide – the mounting dimensions correspond to FESTO Type: DGPL-KF



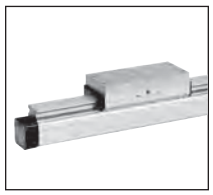
HEAVY DUTY GUIDE HD
for heavy duty applications.



VARIABLE STOP VS
The variable stop provides simple stroke limitation.



Passive pneumatic brake reacts automatically to pressure failure.



Active pneumatic brake for secure, positive stopping at any position.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

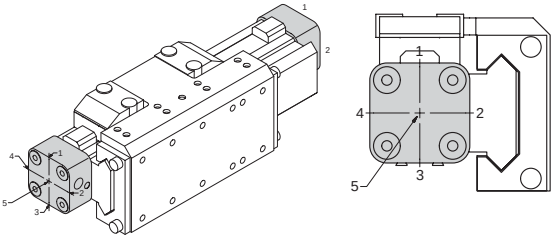
Ordering Instructions / Part Numbering System for OSP Series

OSP - P 4 1 1 0 0

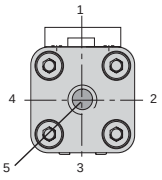
1 Series	2 Bore	3 Mount Single Piston	4 Mount Double Piston	5 Seals	6 Grease
P Pneumatic	**0** 10	**0** If Double (All)	**0** If Single (All)	**0** Buna	**0** Std
C Pneumatic Cleanroom**	**1** 16	**1** Std Mnt (NR20) (All)	**1** Std Mnt (NR20) (All)	**1** FKM	**1** Slow
	2 25	**2** Floating Mount (NR25) (All)	**2** Floating Mount (NR25) (All)	**2**	**2** Clean
	3 32	**3** Invert Mount (NR30) (All)	**3** Invert Mount (NR30) (All)	**3**	**3** Food
	4 40	**4** Invert Float Mount (NR35) (All)	**4** Invert Float Mount (NR35) (All)	**4**	**4**
	5 50	**5** Slideline (NR50) (16, 25, 32, 40, 50, 63, 80)	**5** Slideline (NR50) (Two Pistons, Two Carriages) (16, 25, 32, 40, 50, 63, 80)	**5**	**5**
	6 63	**6** Powerslide 25 (16, 25)	**6** Powerslide 25 (Two Pistons, Two Carriages) (16, 25)	**6**	**6**
	8 80	**7** Powerslide 35 (25, 32)	**7** Powerslide 35 (Two Pistons, Two Carriages) (25, 32)	**7**	**7**
		8 Powerslide 44 (25, 32, 40)	**8** Powerslide 44 (Two Pistons, Two Carriages) (25, 32, 40)	**8**	**8**
		9 Powerslide 60 (40, 50)	**9** Powerslide 60 (Two Pistons, Two Carriages) (40, 50)	**9**	**9**
		A Powerslide 76 (50)	**A** Powerslide 76 (Two Pistons, Two Carriages) (50)	**A** Special	**A** Special
		B Brake Active-Pressure (25, 32, 40, 50, 63, 80)	**B** Brake Active-Pressure (25, 32, 40, 50, 63, 80)	**B**	**B**
		C	**C**	**C**	**C**
		D Joint Clamp Std (25, 32, 40, 50)	**D** Joint Clamp Std (25, 32, 40, 50)	**D**	**D**
		E Joint Clamp Floating (25, 32, 40, 50)	**E** Joint Clamp Floating (25, 32, 40, 50)	**E**	**E**
		F Joint Clamp Invert (25, 32, 40, 50)	**F** Joint Clamp Invert (25, 32, 40, 50)	**F**	**F**
		G Joint Clamp Invert Float (25, 32, 40, 50)	**G** Joint Clamp Invert Float (25, 32, 40, 50)	**G**	**G**
		H Joint Clamp Plate (25, 32, 40, 50)	**H** Joint Clamp Plate (25, 32, 40, 50)	**H**	**H**
		J Joint Clamp Invert Plate (25, 32, 40, 50)	**J** Joint Clamp Invert Plate (25, 32, 40, 50)	**J**	**J**
		K Joint Clamp Brake Active-Pressure (25, 32, 40, 50)	**K** Joint Clamp Brake Active-Pressure (25, 32, 40, 50)	**K**	**K**
		L Starline (16, 25, 32, 40, 50)	**L**	**L**	**L**
		M	**M**	**M**	**M**
		N SL Multibrake-Passive w/Sensor (25, 32, 40, 50, 63, 80)	**N** SL-Biparting (40)	**N**	**N**
		P SL Multibrake-Passive w/o Sensor (25, 32, 40, 50, 63, 80)	**P**	**P**	**P**
		Q Proline / GDL (16, 25, 32, 40, 50)	**Q**	**Q**	**Q**
		R Proline w/Active Brake-Pressure (25, 32, 40, 50)	**R**	**R**	**R**
		S Proline w/Multibrake w/o Sensor (25, 32, 40, 50)	**S**	**S**	**S**
		T "T" Section Piston Mount (NR22) (40, 50, 63, 80)	**T** "T" Section Piston Mount (NR22) (40, 50, 63, 80)	**T**	**T**
		U Slideline w/Active Brake (25, 32, 40, 50)	**U** Slideline w/Active Brake (Two Pistons, Two Carriages) (25, 32, 40, 50)	**U**	**U**
		V	**V**	**V**	**V**
		W	**W**	**W**	**W**
		X	**X**	**X**	**X**
		Y Hd Heavy Duty Series (25, 32, 40, 50)	**Y**	**Y**	**Y**
		Z Special	**Z** Special	**Z**	**Z**

**Pneumatic Cleanroom: Only available in 16, 25 and 32 base cylinders without guide systems.

Cylinder with guide end cap positioning



Basic cylinder end cap positioning



Note: Position #2 is the standard location.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

7	8	9*	10	11	12	13 14 15 16 17 18
0	0	0	0	0	0	0

Ports	Screws & Coating	End Cap Support	Center Support Qty.	Switch	Switch Qty	Stroke (mm)
0 Std (Pos 2) (Only Available Option for 10mm Cyl)	**0** Std	**0** None	**0** none	**0** None	**0**	– 0 0 0 0 0
1 Pos 5	**1** Stainless Hardware	**1** A1 (10, 16, 25, 32)		**1** NO Reed KL3045 (All Except 10mm)		–
2 Single	**2** Xylan Coated Aluminum	**2** A2 (16, 25, 32)		**2** NC Reed KL3048 (All Except 10mm)		–
3 Pos 1	**3** Stainless / Xylan	**3** A3 (25, 32)		**3** PNP KL3054+4041 (All Except 10mm)		–
4 Pos 3	**4**	**4** C1 (40, 50, 63, 80)		**4** NPN KL3060+4041 (All Except 10mm)		–
5 Pos 4	**5**	**5** C2 (40, 50)		**5** NO Reed 3047 (Only 10mm)		–
6 VOE (25-G1/8, 32-G1/4, 40-G3/8, 50-G3/8) 24VDC	**6**	**6** C3 (40, 50, 63, 80)		**6** PNP 3049+4041 (Only 10mm)		–
7 VOE (25-G1/8, 32-G1/4, 40-G3/8, 50-G3/8) 230VAC	**7**	**7** C4 (40, 50)		**7** NPN 3753+4041 (Only 10mm)		–
8	**8**	**8** B1 (25, 32)		**8**		–
9	**9**	**9** B3 (16)		**9**		–
A Special	**A**	**A** B4 (25, 32)		**A**		–
B	**B**	**B** D1 (All)		**B**		–
C	**C**	**C** E1 (All Except 10mm)		**C**		–
D	**D**	**D** E2 (16, 25, 32, 40, 50)		**D**		–
E	**E**	**E** E3 (16, 25, 32, 40, 50, 63, 80)		**E**		–
F	**F**	**F** E4 (25, 32, 40, 50)		**F** Servotec (25,32) 24VDC		–
G	**G**	**G** A1+D1 (10, 16, 25, 32)		**G** NC Reed with Connector and 5m Cable, KL3087 and 4041 (All Except 10mm)		–
H	**H**	**H** B1+D1 (25, 32)		**H** Servotec (25, 32) 220VAC		–
J	**J**	**J** C1+D1 (40, 50, 63, 80)		**J** KL3047 + KC3102 (All Except 10mm)		–
K	**K**	**K** A1+E1 (16, 25, 32)		**K**		–
L	**L**	**L** B1+E1 (25, 32)		**L**		–
M	**M**	**M** C1+E1 (40, 50, 63, 80)		**M**		–
N	**N**	**N** A2+E2 (16, 25, 32)		**N**		–
P	**P**	**P** C2+E2 (40, 50)		**P**		–
Q	**Q**	**Q** A3+E3 (25, 32)		**Q**		–
R	**R**	**R** B3+E3 (16)		**R**		–
S	**S**	**S** C3+E3 (40, 50, 63, 80)		**S**		–
T	**T**	**T** B4+E4 (25, 32)		**T**		–
U	**U**	**U** C4+E4 (40, 50)		**U**		–
V	**V**	**V** B2 (16, 25, 32)		**V**		–
W	**W**	**W** B5 (32)		**W**		–
X	**X**	**X** B2+E2 (16, 25, 32)		**X**		–
Y	**Y**	**Y** B5+E5 (32)		**Y**		–
Z	**Z** Special	**Z** Special		**Z** Special		–
		# E5 (32)				

* Two End Supports are Supplied in the OSP-P Part Number

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drives	OSP-P10	OSP-P16	OSP-P25	OSP-P32	OSP-P40	OSP-P50	OSP-P63	OSP-P80
Theoretical Force at 6 bar (N)	47	120	295	483	754	1178	1870	3010
Effective Force at 6 bar (N)	32	78	250	420	640	1000	1550	2600
Velocity v (m/s)	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005	> 0.005
Magnetic Piston (three sides)	X	❑	❑	❑	❑	❑	❑	❑
Lubrication - Prelubricated	❑	❑	❑	❑	❑	❑	❑	❑
Multiple Air Ports (4 x 90°)	X	❑	❑	❑	❑	❑	❑	❑
Both Air Connections at End-face	X	❍	❍	❍	❍	❍	❍	❍
Air Connection on the End-face	X	❍	❍	❍	❍	❍	❍	❍
Cushioning	❑	❑	❑	❑	❑	❑	❑	❑
Cushioning Length (mm)	2,50	11	17	20	27	30	32	39
Stroke Length (mm) ▲	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000	1 - 6000
Pressure Range pmax (bar)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Temperature Range (°C) ✳	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80	-10 – + 80
FKM / Chemical Resistance	❍	❍	❍	❍	❍	❍	❍	❍
Stainless Steel Parts	❍	❍	❍	❍	❍	❍	❍	❍
Clevis Mounting	❍	❍	❍	❍	❍	❍	❍	❍
Slow Speed Lubrication	❍	❍	❍	❍	❍	❍	❍	❍
Duplex Connection / Multiplex Connection	X	on request	❍	❍	❍	❍	on request	on request
Tandem Piston	❍	❍	❍	❍	❍	❍	❍	❍
Basic Cylinder								
F (N)	20	120	300	450	750	1200	1650	2400
Mx (Nm)	0.2	0.45	1.5	3	6	10	12	24
My (Nm)	1	4	15	30	60	115	200	360
Mz (Nm)	0.3	0.5	3	5	8	15	24	48
SLIDELINE								
F (N)	X	325	675	925	1500	2000	2500	2500
Mx (Nm)	X	6	14	29	50	77	120	120
My (Nm)	X	11	34	60	110	180	260	260
Mz (Nm)	X	11	34	60	110	180	260	260
PROLINE								
F (N)	X	542	857	1171	2074	3111	X	X
Mx (Nm)	X	8	16	29	57	111	X	X
My (Nm)	X	12	39	73	158	249	X	X
Mz (Nm)	X	12	39	73	158	249	X	X
POWERSLIDE								
F (N)	X	1400	1400 - 3000	1400 - 3000	3000	3000 - 4000	X	X
Mx (Nm)	X	14	14 - 65	20 - 65	65 - 90	90 - 140	X	X
My (Nm)	X	45	63 - 175	70 - 175	175 - 250	250 - 350	X	X
Mz (Nm)	X	45	63 - 175	70 - 175	175 - 250	250 - 350	X	X
STARLINE								
F (N)	X	1000	3100	3100	4000-7500	4000-7500	X	X
Mx (Nm)	X	15	50	62	150	210	X	X
My (Nm)	X	30	110	160	400	580	X	X
Mz (Nm)	X	30	110	160	400	580	X	X
– Variable Stop	X	❍	❍	❍	❍	❍	X	X
KF Guide								
F (N)	X	1000	3100	3100	4000-7500	4000-7500	X	X
Mx (Nm)	X	12	35	44	119	170	X	X
My (Nm)	X	25	90	133	346	480	X	X
Mz (Nm)	X	25	90	133	346	480	X	X
– Variable Stop	X	❍	❍	❍	❍	❍	X	X

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drives	OSP-P10	OSP-P16	OSP-P25	OSP-P32	OSP-P40	OSP-P50	OSP-P63	OSP-P80
HD Heavy Duty Guide								
F (N)	X	X	**6000**	**6000**	**15000**	**18000**	X	X
Mx (Nm)	X	X	**260**	**285**	**800**	**1100**	X	X
My (Nm)	X	X	**320**	**475**	**1100**	**1400**	X	X
Mz (Nm)	X	X	**320**	**475**	**1100**	**1400**	X	X
– Variable Stop	X	X	❍	❍	❍	❍	X	X
– Intermediate Stop Module	X	X	❍	X	X	X	X	X
Active Brake								
Braking Force at 6 bar (brake surface dry) (N)	X	X	**350**	**590**	**900**	**1400**	**2170**	**4000**
SLIDELINE SL / PROLINE PL with Brakes								
Active Brake								
SL Braking Force at 6 bar (brake surface dry) (N)	X	X	325	545	835	1200	X	X
PL Braking Force at 6 bar (brake surface dry) (N)	X	X	on request	on request	on request	on request	X	X
Passive Brake Multibrake								
SL Braking Force at 6 bar (brake surface dry) (N)	X	X	470	790	1200	1870	2900	2900
PL Braking Force at 6 bar (brake surface dry) (N)	X	X	315	490	715	1100	–	–
Magnetic Switches								
Standard Version	❍	❍	❍	❍	❍	❍	❍	❍
T-Nut Version	❍	❍	❍	❍	❍	❍	❍	❍
Displacement Measuring Systems								
SFI-plus Incremental	X	X	❍	❍	❍	❍	❍	❍
Integrated Valves 3/2 WV NO VOE	X	X	❍	❍	❍	❍	on request	on request
Mountings								
End Cap Mounting / Mid-Section Support	❍	❍	❍	❍	❍	❍	❍	❍
Inversion Mounting	X	❍	❍	❍	❍	❍	❍	❍
Shock Absorber for Intermediate Positioning	X	X	on request	on request	on request	on request	X	X
Adaptor Profile / T-Nut Profile	X	❍	❍	❍	❍	❍	X	X
Special Cylinders								
Special Pneumatical Cushioning System	X	on request	on request	on request	on request	on request	X	X
Clean Room Cylinders to DIN EN ISO 14644-1	X	❍	❍	❍	X	X	X	X
Bi-parting Version	X	X	X	X	❍	X	X	X
High-Speed up to 30 m/s	X	on request	on request	on request	X	X	X	X

❑ = Standard Version
▲ = Longer Strokes on Request
❊ = other temperature Ranges on Request
❍ = Option
X = Not Applicable

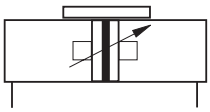
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Rodless Pneumatic Cylinder

ø 10-80 mm

OSP
ORIGA SYSTEM PLUS

Series OSP-P..



Standard Versions:

- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing
- Long-Stroke Cylinders for stroke lengths up to 41m (consult factory)

Special Versions:

- With special pneumatic cushioning system (on request)
- Clean room cylinders (see page B31-B33)
- Stainless steel screws
- Slow speed lubrication
- Fluorocarbon seals
- Both air connections on one end
- Air connection on the end-face
- Integrated Valves
- End cap can be rotated 4 x 90° to position air connection as desired
- Free choice of stroke length up to 6000 mm, Long-Stroke version (Ø50-80mm) for stroke lengths up to 41m

Characteristics

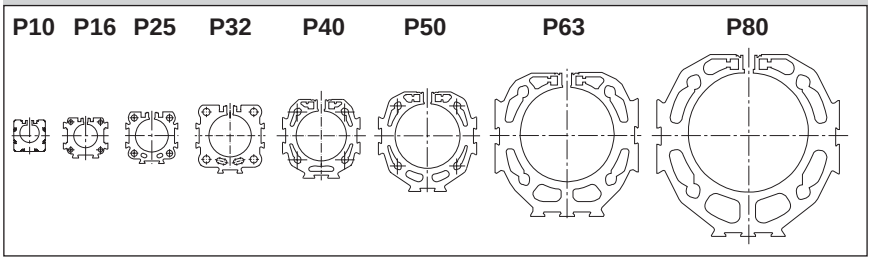
Pressures quoted as gauge pressure

Characteristics		Symbol	Unit	Description
General Features				
Type				Rodless cylinder
Series				OSP-P
System				Double-acting, with cushioning, position sensing capability
Mounting				See drawings
Air Connection				Threaded
Ambient temperature range		T_{min} T_{max}	°C °C	-10 +80 Other temperature ranges on request
Weight (mass)			kg	See table below
Installation				In any position
Medium				Filtered, unlubricated compressed air (other media on request)
Lubrication				Permanent grease lubrication (additional oil mist lubrication not required) Option: special slow speed grease
Material	Cylinder Body			Anodized aluminum
	Carrier (piston)			Anodized aluminum
	End caps			Aluminum, lacquered / Plastic (P10)
	Sealing bands			Corrosion resistant steel
	Seals			NBR (Option: Fluorocarbon)
	Screws			Galvanized steel Option: stainless steel
	Dust covers, wipers			Plastic
Max. operating pressure		p_{max}	bar	8

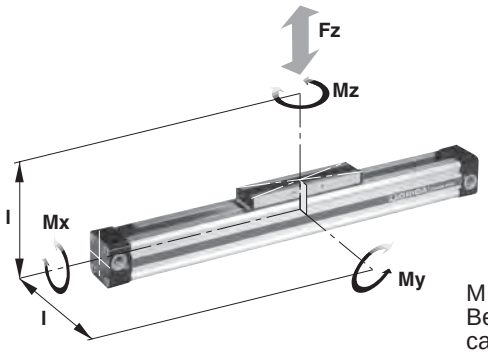
Weight (mass) kg

Cylinder series (Basic cylinder)	Weight (Mass) kg	
	At 0 mm stroke	per 100 mm stroke
OSP-P10	0.087	0.052
OSP-P16	0.22	0.1
OSP-P25	0.65	0.197
OSP-P32	1.44	0.354
OSP-P40	1.95	0.415
OSP-P50	3.53	0.566
OSP-P63	6.41	0.925
OSP-P80	12.46	1.262

Size Comparison



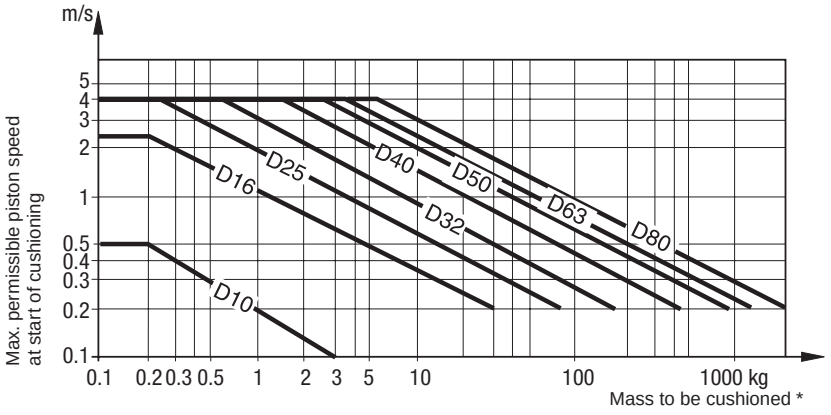
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



M = F ·l
Bending moments are calculated from the center of the linear actuator

Cylinder Series (mm Ø)	Theoretical Action Force at 6 bar (N)	Effective Action Force F_A at 6 bar (N)	max. Moments			max. Load F (N)	Cushion Length (mm)
			Mx (Nm)	My (Nm)	Mz (Nm)		
OSP-P10	47	32	0.2	1	0.3	20	2.5 *
OSP-P16	120	78	0.45	4	0.5	120	11
OSP-P25	295	250	1.5	15	3	300	17
OSP-P32	483	420	3	30	5	450	20
OSP-P40	754	640	6	60	8	750	27
OSP-P50	1178	1000	10	115	15	1200	30
OSP-P63	1870	1550	12	200	24	1650	32
OSP-P80	3016	2600	24	360	48	2400	39

* A rubber element (non-adjustable) is used for end cushioning.
To deform the rubber element enough to reach the absolute end position would require a Δp of 4 bar!



* For cylinders with linear guides or brakes, please be sure to take the mass of the carriage or the brake housing into account.

If the permitted limit values are exceeded, either additional shock absorbers should be fitted in the area of the center of gravity or you can consult us about our special cushioning system – we shall be happy to advise you on your specific application.

Loads, Forces and Moments

Choice of cylinder is decided by:

- Permissible loads, forces and moments
- Performance of the pneumatic end cushions. The main factors here are the mass to be cushioned and the piston speed at start of cushioning (unless external cushioning is used, e. g. hydraulic shock absorbers).

The adjacent table shows the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation. **Load and moment data are based on speeds v ≤ 0.5 m/s.**

When working out the action force required, it is essential to take into account the friction forces generated by the specific application or load.

Cushioning Diagram

Work out your expected moving mass and read off the maximum permissible speed at start of cushioning.

Alternatively, take your desired speed and expected mass and find the cylinder size required.

Please note that piston speed at start of cushioning is typically ca. 50% higher than the average speed, and that it is this higher speed which determines the choice of cylinder. If these maximum permissible values are exceeded, additional shock absorbers must be used.

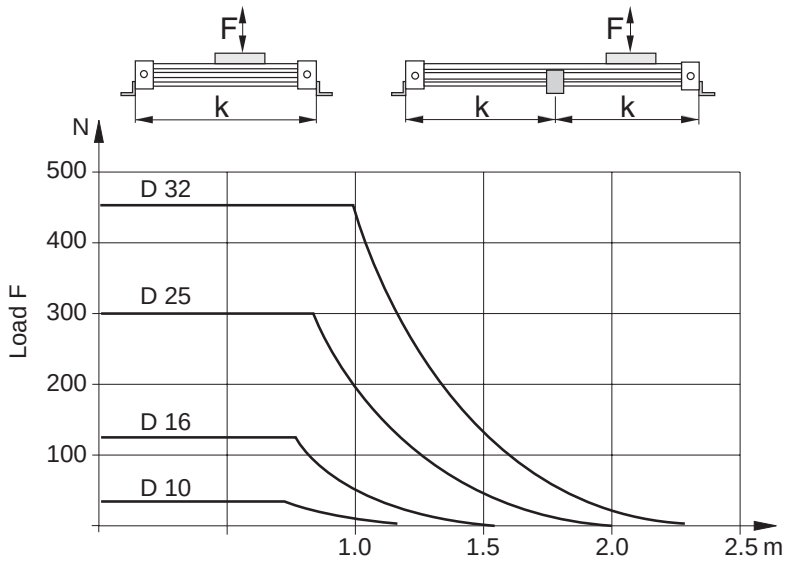
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Mid-Section Supports

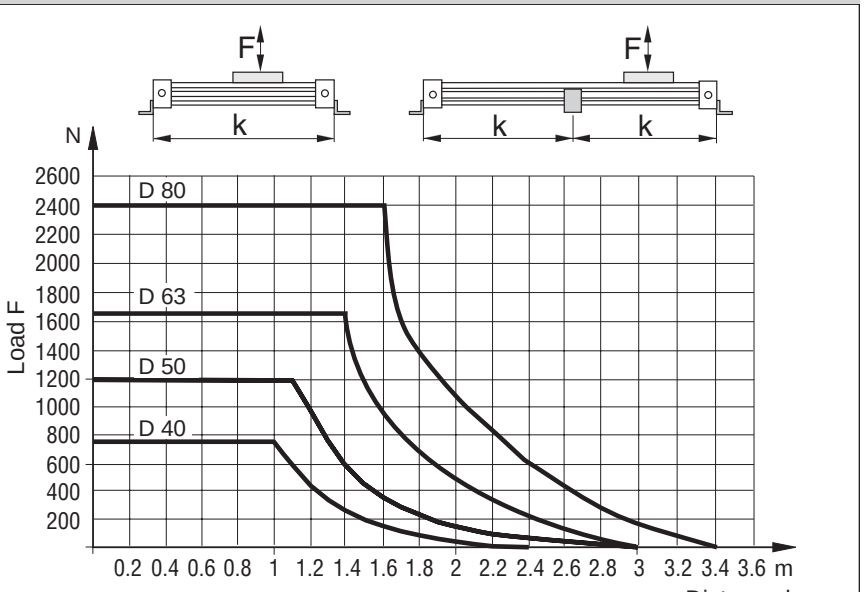
To avoid excessive bending and oscillation of the cylinder, mid-section supports are required. The diagrams show the maximum possible support spacings depending on the load.

Bending up to max. 0.5 mm is permissible between supports. The mid-section supports are clamped on to the dovetail profile of the cylinder tube.

Permissible Support Spacings: OSP - P10 - P32

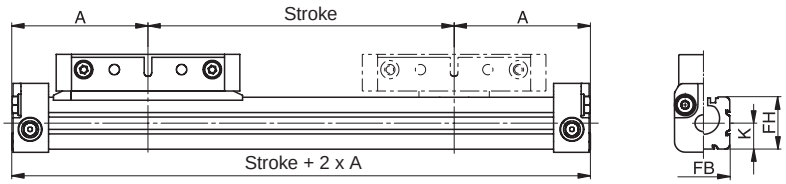


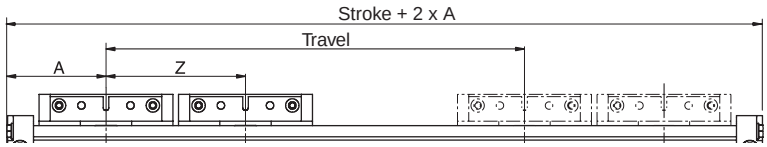
Permissible Support Spacings: OSP - P40 - P80



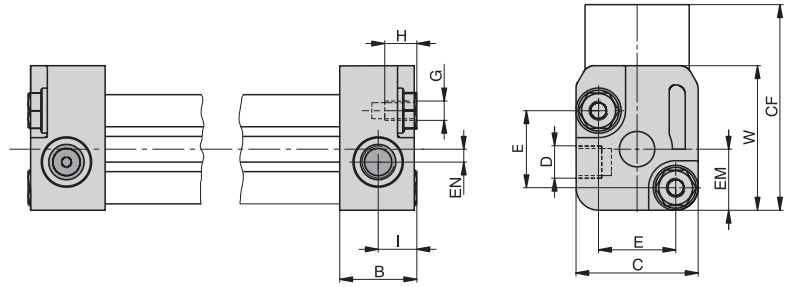
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions of Basic Cylinder OSP-P10

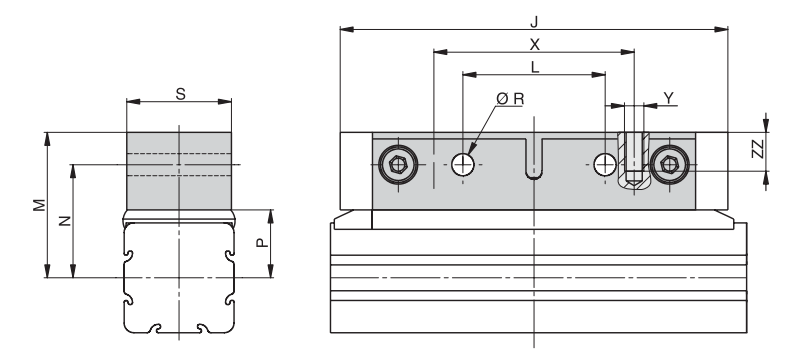




End Cap / Air Connection OSP -P10



Carrier Series OSP-P10



Cylinder Stroke and Dead Length A

- Stroke length up to 6000 mm in 1 mm increments.
- Longer strokes on request.

Tandem Cylinder

Two pistons are provided. Dimension "Z" must be specified. (Please note minimum distance "Zmin").

- Stroke length up to 6000 mm in 1 mm incrementss.
- Longer strokes on request.
- **Order stroke length as desired "Travel" + Z dimension.**

Please note:
To avoid multiple actuation of magnetic switches, the second piston is not equipped with magnets.

Dimension Table (mm)

Cylinder Series	A	B	C	D	E	G	H	I	J	K	L	M	N	P	R	S	W	X	Y	Z_{min}	CF	EM	EN	FB	FH	ZZ
OSP-P10	44.5	12	19	M5	12	M3	5	6	60	8.5	22	22.5	17.5	10.5	3.4	16	22.5	31	M3	64	32	9.5	2	17	17	6

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Cylinder Stroke and Dead Length A

- Stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.

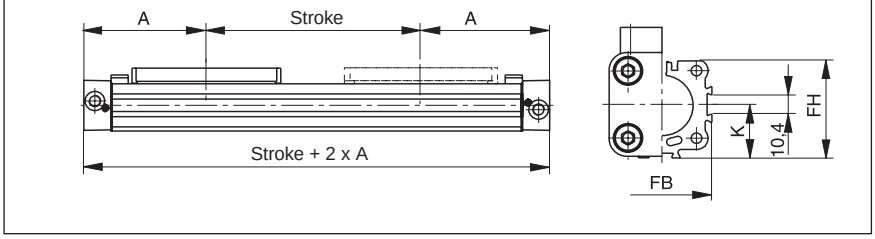
Tandem Cylinder

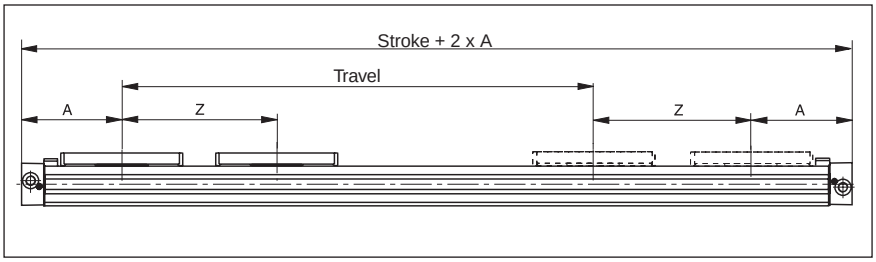
Two pistons are provided. Dimension "Z" must be specified. (Please note minimum distance "Zmin").

- Stroke length up to 6000 mm in 1 mm steps.
- Longer strokes on request.
- **Order stroke length as desired "Travel" + Z dimension.**

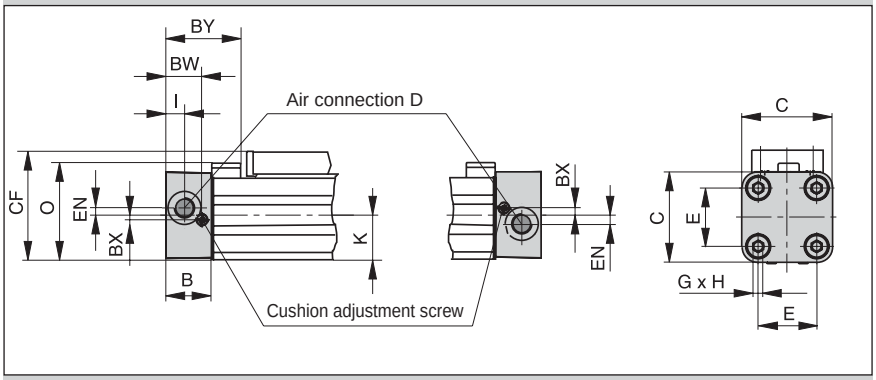
Please note:
To avoid multiple actuation of magnetic switches, the second piston is not equipped with magnets.

Dimensions of Basic Cylinder - OSP - P16-P80

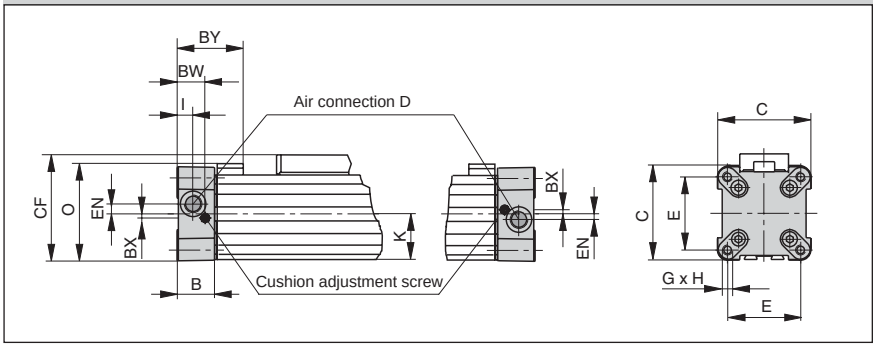




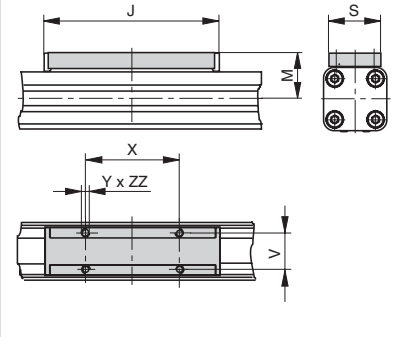
End Cap/Air Connection can be rotated 4 x 90° - OSP-P16 to P32



End Cap/Air Connection can be rotated 4 x 90° - OSP-P40 to P80



Carrier Series - OSP-P16 to P80

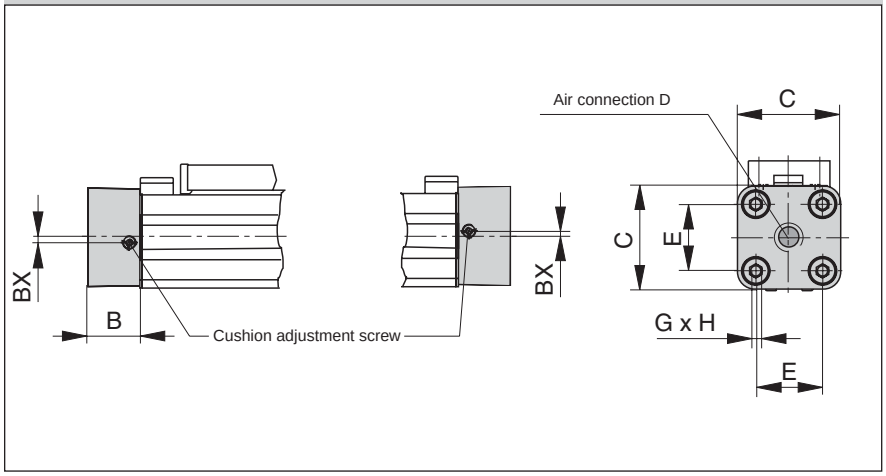


Dimension Table (mm)

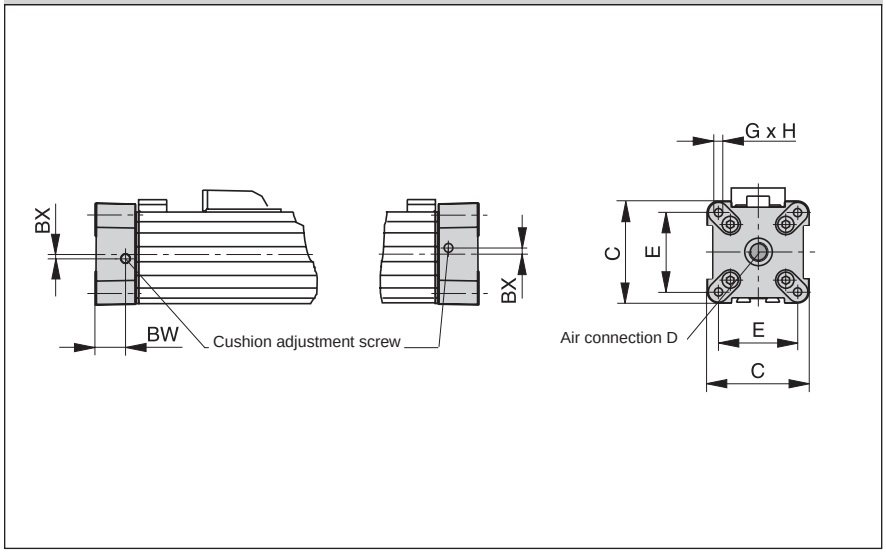
Cylinder Series	A	B	C	D	E	G	H	I	J	K	M	O	S	V	X	Y	Z	BW	BX	BY	CF	EN	FB	FH	ZZ
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	23	33.2	22	16.5	36	M4	81	10.8	1.8	28.4	38	3	30	27.2	7
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	31	47	33	25	65	M5	128	17.5	2.2	40	52.5	3.6	40	39.5	8
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	152	28.5	38	59	36	27	90	M6	170	20.5	2.5	44	66.5	5.5	52	51.7	1
OSP-P40	150	28	69	G1/4	54	M6	15	12	152	34	44	72	36	27	90	M6	212	21	3	54	78.5	7.5	62	63	10
OSP-P50	175	33	87	G1/4	70	M6	15	14.5	200	43	49	86	36	27	110	M6	251	27	–	59	92.5	11	76	77	10
OSP-P63	215	38	106	G3/8	78	M8	21	14.5	256	54	63	107	50	34	140	M8	313	30	–	64	117	12	96	96	16
OSP-P80	260	47	132	G1/2	96	M10	25	22	348	67	80	133	52	36	190	M10	384	37.5	–	73	147	16.5	122	122	20

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P16 to P32

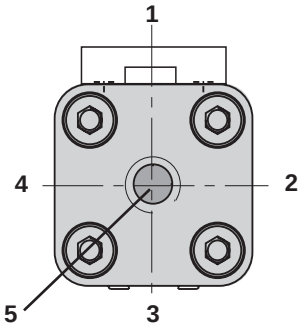


Series OSP-P40 to P80



Air Connection on the End-Face #5

In some situations it is necessary or desirable to fit a special end cap with the air connection on the end-face instead of the standard end cap with the air connection on the side. The end cap can also be rotated 4 x 90° to locate the cushion adjustment screw as desired. Supplied in pairs.



Note: Position #2 is the standard location.

Dimension Table (mm)

Cylinder Series	B	C	D	E	G	H	BX	BW
OSP-P16	14	30	M5	18	M3	9	1.8	10.8
OSP-P25	22	41	G1/8	27	M5	15	2.2	17.5
OSP-P32	25.5	52	G1/4	36	M6	15	2.5	20.5
OSP-P40	28	69	G1/4	54	M6	15	3	21
OSP-P50	33	87	G1/4	70	M6	15	–	27
OSP-P63	38	106	G3/8	78	M8	21	–	30
OSP-P80	47	132	G1/2	96	M10	25	–	37.5

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

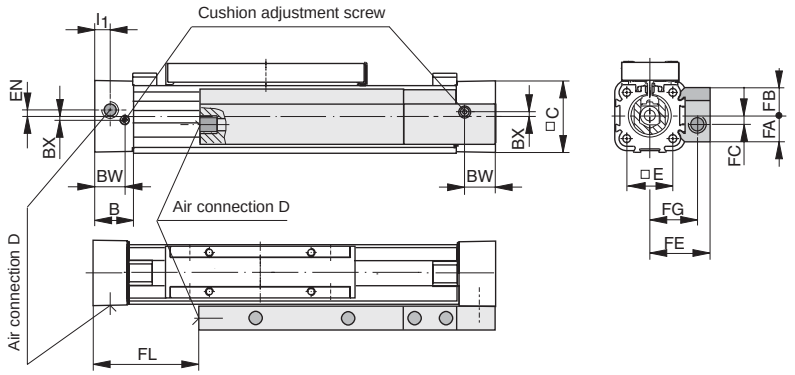
Single End Porting

A special end cap with both air connections on one side is available for situations where space, simplicity of installation or the nature of the process make it desirable.
Air supply to the other end is via internal air passages (OSP-P25 to P80) or via a hollow aluminum profile fitted externally (OSP-P16).

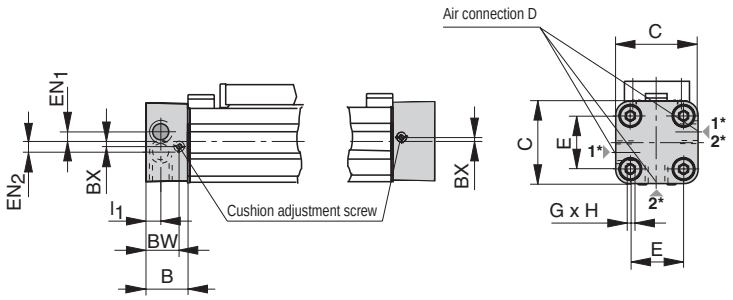
In this case the end caps cannot be rotated.

Please note:
When combining the OSP-P16 single end porting with inversion mountings, RS magnetic switches can only be mounted directly opposite to the external air-supply profile.

Series OSP-P16

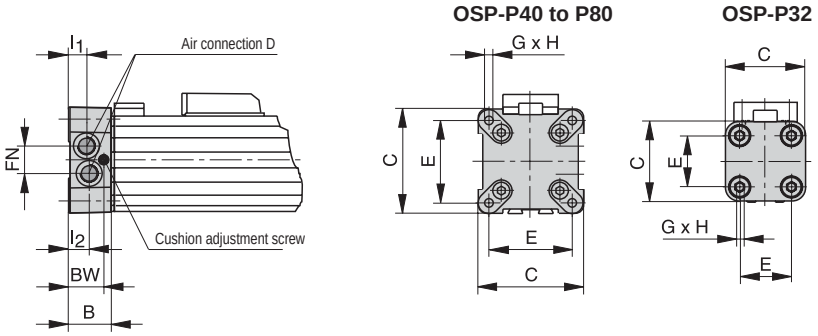


Series OSP-P25



* Versions of Air Connection Positions: 1 → 1 or 2 → 2

Series OSP-P32 to P80

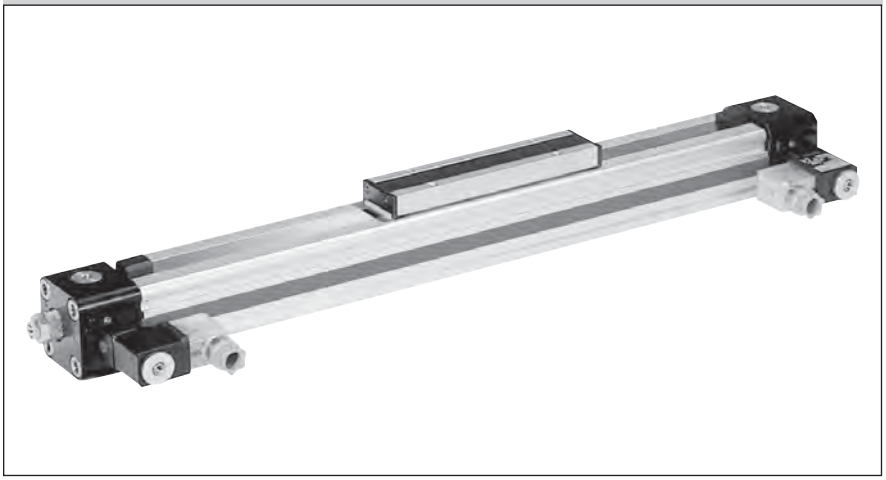


Dimension Table (mm)

Cylinder Series	B	C	D	E	G	H	l_1	l_2	BX	BW	EN	EN_1	EN_2	FA	FB	FC	FE	FG	FL	FN
OSP-P16	14	30	M5	18	M3	9	5.5	–	1.8	10.8	3	–	–	12.6	12.6	4	27	21	36	–
OSP-P25	22	41	G1/8	27	M5	15	9	–	2.2	17.5	–	3.6	3.9	–	–	–	–	–	–	–
OSP-P32	25.5	52	G1/8	36	M6	15	12.2	10.5	–	20.5	–	–	–	–	–	–	–	–	–	15.2
OSP-P40	28	69	G1/8	54	M6	15	12	12	–	21	–	–	–	–	–	–	–	–	–	17
OSP-P50	33	87	G1/4	70	M6	15	14.5	14.5	–	27	–	–	–	–	–	–	–	–	–	22
OSP-P63	38	106	G3/8	78	M8	21	16.5	13.5	–	30	–	–	–	–	–	–	–	–	–	25
OSP-P80	47	132	G1/2	96	M10	25	22	17	–	37.5	–	–	–	–	–	–	–	–	–	34.5

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Integrated 3/2 Way Valves VOE - OSP-P25, P32, P40 and P50



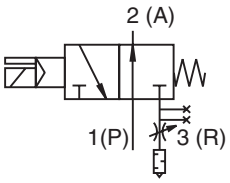
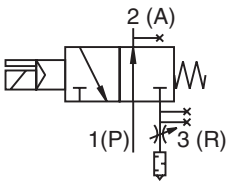
Integrated 3/2 Way Valves VOE

For optimal control of the OSP-P cylinder, 3/2 way valves integrated into the cylinder's end caps can be used as a compact and complete solution. They allow for easy positioning of the cylinder, smooth operation at the lowest speeds and fast response, making them ideally suited for the direct control of production and automation processes.

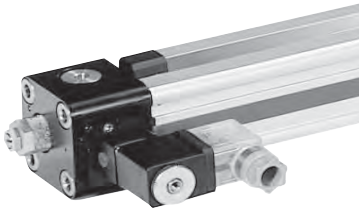
Characteristics:

- Complete compact solution
- Various connection possibilities: Free choice of air connection with rotating end caps with VOE valves, Air connection can be rotated 4 x 90°, Solenoid can be rotated 4 x 90°, Pilot Valve can be rotated 180°
- High piston velocities can be achieved with max. 3 exhaust ports
- Minimal installation requirements
- Requires just one air connection per valve
- Optimal control of the OSP-P cylinder
- Excellent positioning characteristics
- Integrated operation indicator
- Integrated exhaust throttle valve
- Manual override - indexed
- Adjustable end cushioning
- Easily retrofitted – please note the increase in the overall length of the cylinder!

Characteristics 3/2 Way Valves VOE

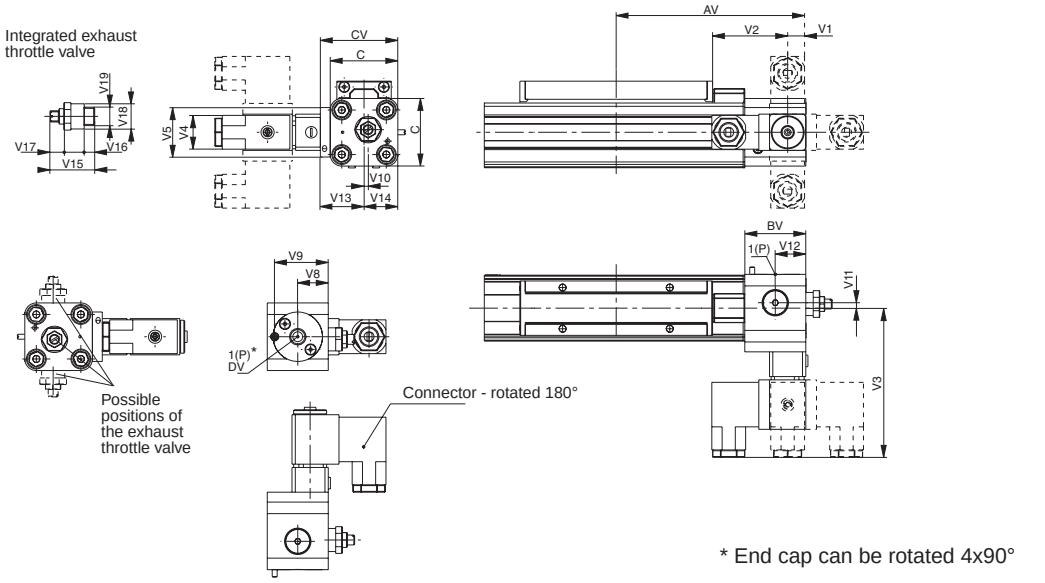
Characteristics	3/2 Way Valves with spring return			
Pneumatic diagram				
Type	VOE-25	VOE-32	VOE-40	VOE-50
Actuation	electrical			
Basic position	P → A open, R closed			
Type	Poppet valve, non overlapping			
Mounting	integrated in end cap			
Installation	in any position			
Port size	G 1/8	G 1/4	G 3/8	G 3/8
Temperature	-10°C to +50°C *			
Operating pressure	2-8 bar			
Nominal voltage	24 V DC / 230 V AC, 50 Hz			
Power consumption	2,5 W / 6 VA			
Duty cycle	100%			
Electrical Protection	IP 65 DIN 40050			

* other temperature ranges on request



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions VOE Valves - OSP-P25 and P32

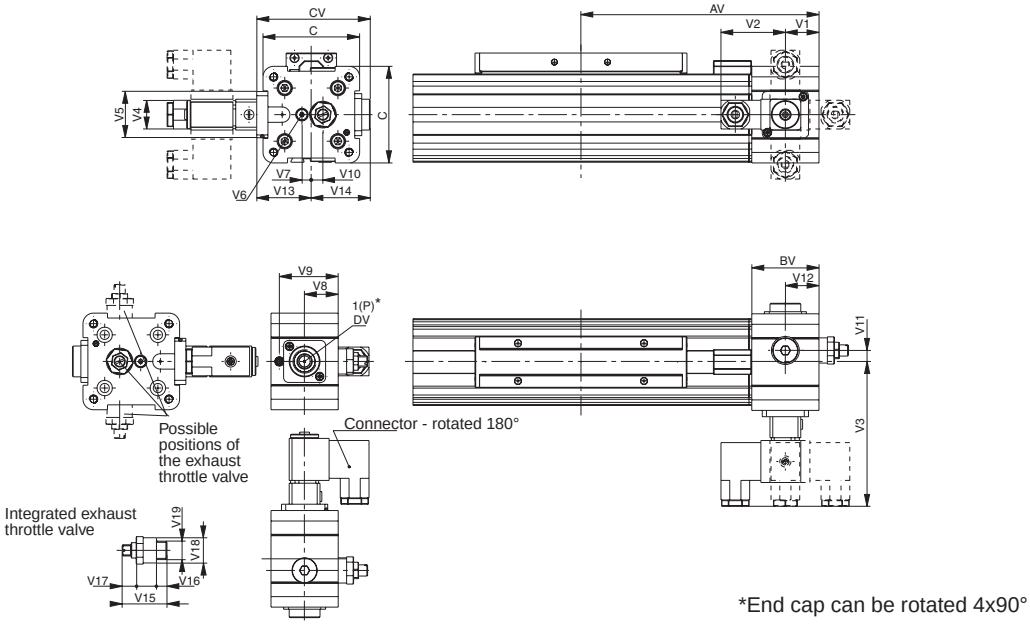


* End cap can be rotated 4x90°

Dimension Table (mm)

Cylinder Series	AV	BV	C	CV	DV	V1	V2	V3	V4	V5	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19
OSP-P25	115	37	41	47	G1/8	11	46	90.5	22	30	18.5	32.5	2.5	3.3	18.5	26.5	20.5	24	5	4	14	G1/8
OSP-P32	139	39.5	52	58	G1/4	20.5	46	96	22	32	20.5	34.7	6	5	20.5	32	26	32	7.5	6	18	G1/4

Dimensions VOE Valves OSP-P40 and P50



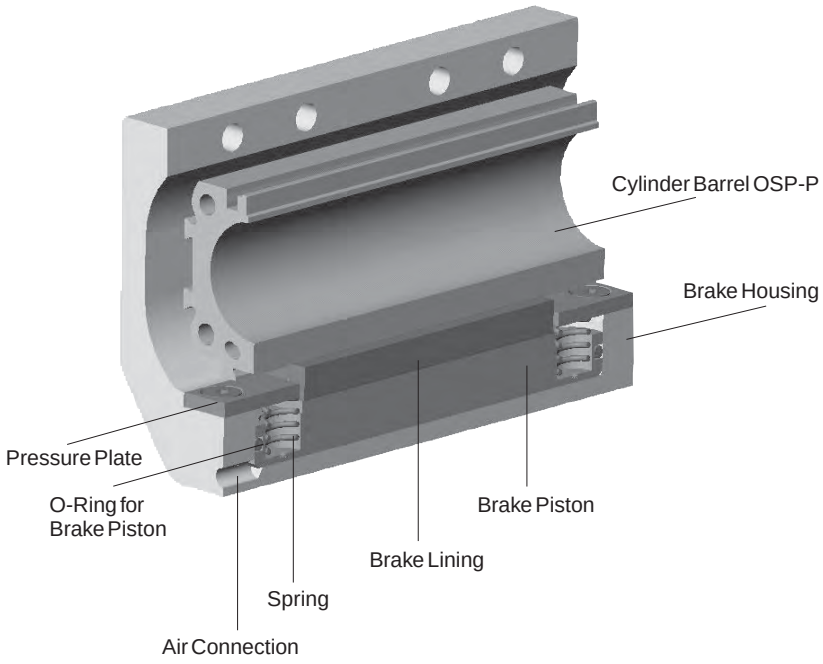
*End cap can be rotated 4x90°

Dimension Table (mm)

Cylinder Series	AV	BV	C	CV	DV	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19
OSP-P40	170	48	69	81	G3/8	24	46	103	22	33	M5	6.7	24	42	8.3	8.3	24	39	42	32	7.5	6	18	G1/4
OSP-P50	190	48	87	82	G3/8	24	46	102	22	33	M5	4.5	24	42	12.2	12.2	24	38	44	32	7.5	6	18	G1/4

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Function



Active Brake

OSP
ORIGA SYSTEM PLUS

Series AB 25 to 80
for linear drive
• Series OSP-P

Features:
- Actuated by pressurization
- Released by spring actuation
- Completely stainless version
- Holds position, even under changing load conditions

Note:
For combinations Active Brake AB + SFI-plus + Magnetic Switch contact our technical department please.

Forces and Weights

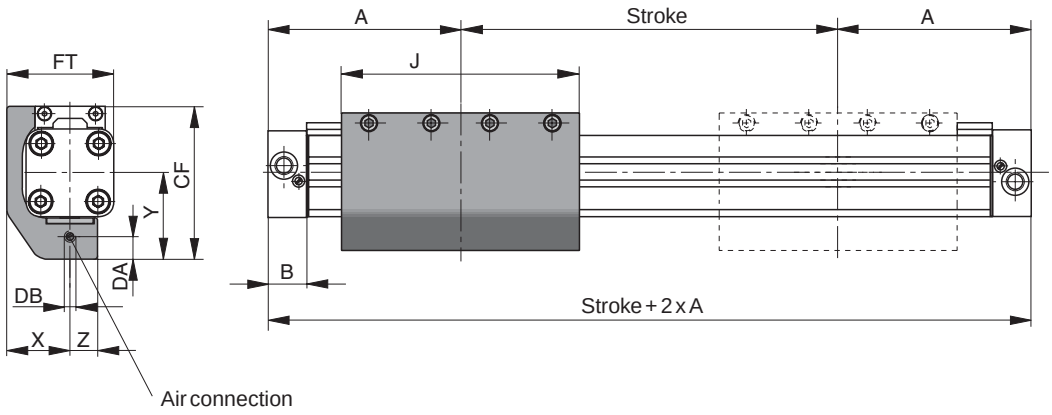
Series	For linear drive	Max. braking force (N) ([1]	Brake pad way (mm)	Mass (kg) Linear drive with brake 0 mm stroke	Mass (kg) Linear drive with brake increase per 100mm stroke	Mass (kg) brake*	**Order No. Active brake**
AB 25	OSP-P25	350	2.5	1.0	0.197	0.35	**20806FIL**
AB 32	OSP-P32	590	2.5	2.02	0.354	0.58	**20807FIL**
AB 40	OSP-P40	900	2.5	2.83	0.415	0.88	**20808FIL**
AB 50	OSP-P50	1400	2.5	5.03	0.566	1.50	**20809FIL**
AB 63	OSP-P63	2170	3.0	9.45	0.925	3.04	**20810FIL**
AB 80	OSP-P80	4000	3.0	18.28	1.262	5.82	**20811FIL**

([1 – at 6 bar
both chambers pressurized with 6 bar
Braking surface dry
– oil on the braking surface will reduce the braking force

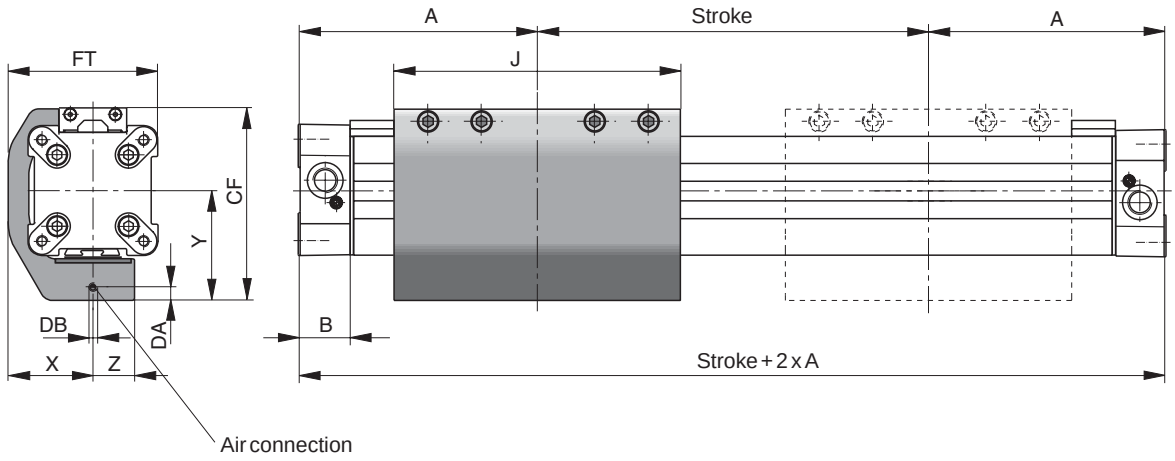
*** Please Note:**
The mass of the brake has to be added to the total moving mass when using the cushioning diagram.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P25 and P32 with Active Brake AB



Series OSP-P40, P50, P63, P80 with Active Brake AB

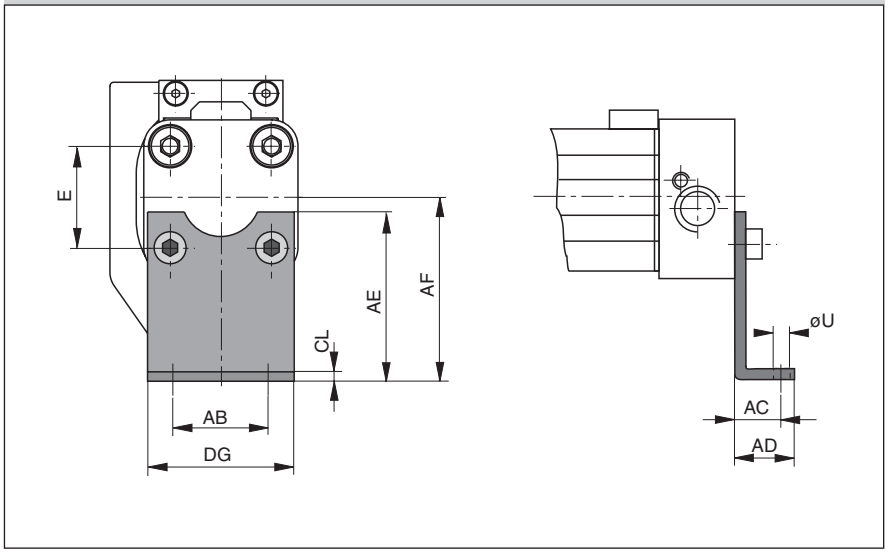


Dimension Table (mm)

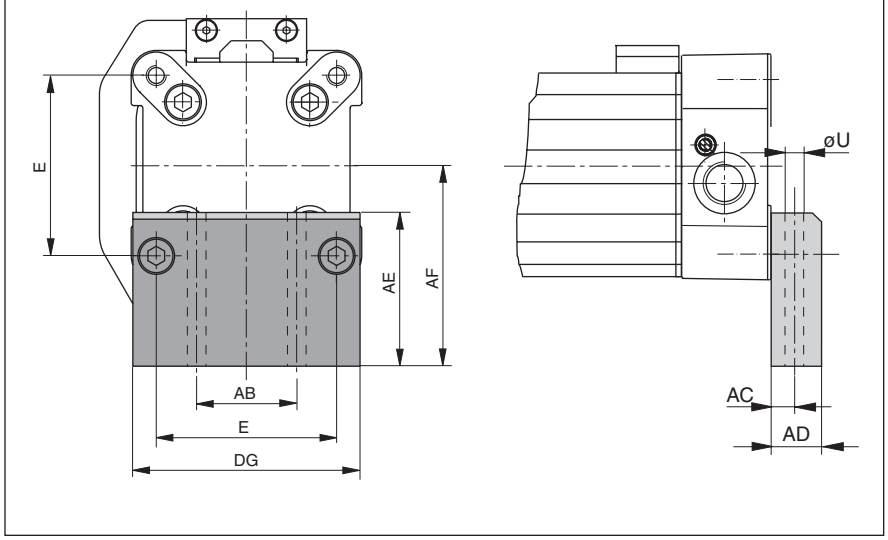
Series	A	B	J	X	Y	Z	CF	DA	DB	FT
AB 25	100	22	117	29.5	43	13	74	4	M5	50
AB 32	125	25.5	151.4	36	50	15	88	4	M5	62
AB 40	150	28	151.4	45	58	22	102	7	M5	79.5
AB 50	175	33	200	54	69.5	23	118.5	7.5	M5	97.5
AB 63	215	38	256	67	88	28	151	9	G1/8	120
AB 80	260	47	348	83	105	32	185	10	G1/8	149

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP – P25 and P32 with Active Brake AB: Type A3



Series OSP – P40 , P50, P63, P80 with Active Brake AB: Type C3



End Cap Mountings

On the end-face of each cylinder end cap there are four threaded holes for mounting the cylinder. The hole layout is square, so that the mounting can be fitted to the bottom, top or either side.

Material:
Series OSP-P25, P32:
Galvanized steel

The mountings are supplied in pairs.

Material:
Series OSP-P40,P50, P63, P80:
Anodized aluminum

The mountings are supplied in pairs.

Stainless steel version on request.

Dimension Table (mm)

Series	E	øU	AB	AC	AD	AE	AF	CL	DG	Order No. Type A3	Order No. Type C3
AB 25	27	5.8	27	16	22	45	49	2.5	39	**2060FIL**	**–**
AB 32	36	6.6	36	18	26	42	52	3	50	**3060FIL**	**–**
AB 40	54	9	30	12.5	24	46	60	–	68	**–**	**20339FIL**
AB 50	70	9	40	12.5	24	54	72	–	86	**–**	**20350FIL**
AB 63	78	11	48	15	30	76	93	–	104	**–**	**20821FIL**
AB 80	96	14	60	17.5	35	88	110	–	130	**–**	**20822FIL**

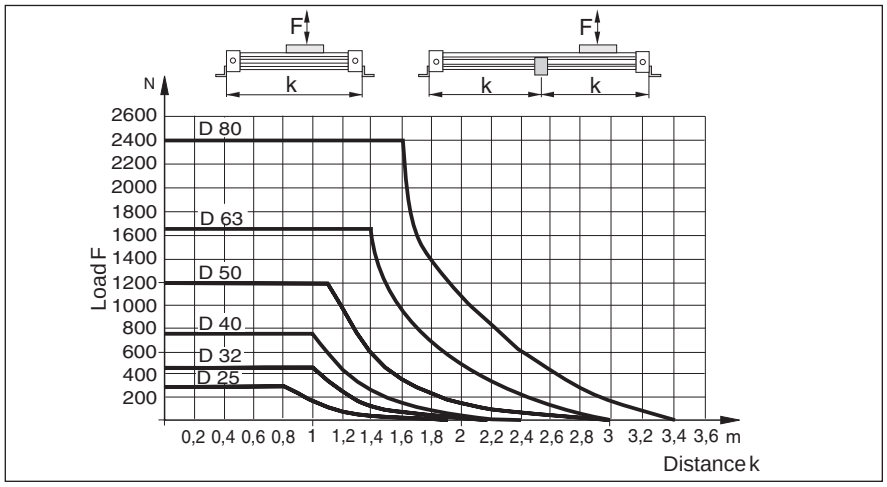
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Mid-Section Support

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive.

The diagrams show the maximum permissible unsupported length in relation to loading. Deflection of 0.5 mm max. between supports is permissible.

The Mid-Section supports are attached to the dovetail rails, and can take axial loads.



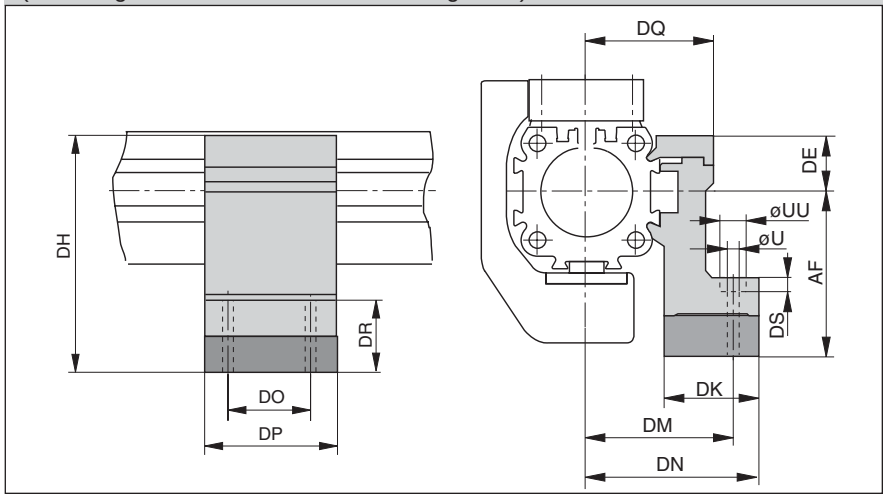
Mid-Section Supports

Note to Type E3:

Mid-Section supports can only be mounted opposite of the brake housing.

Stainless steel version available on request.

Series OSP-P25 to P80 with Active Brake AB: Type E3
(Mounting from above / below with through-bolt)



Dimension Table (mm)

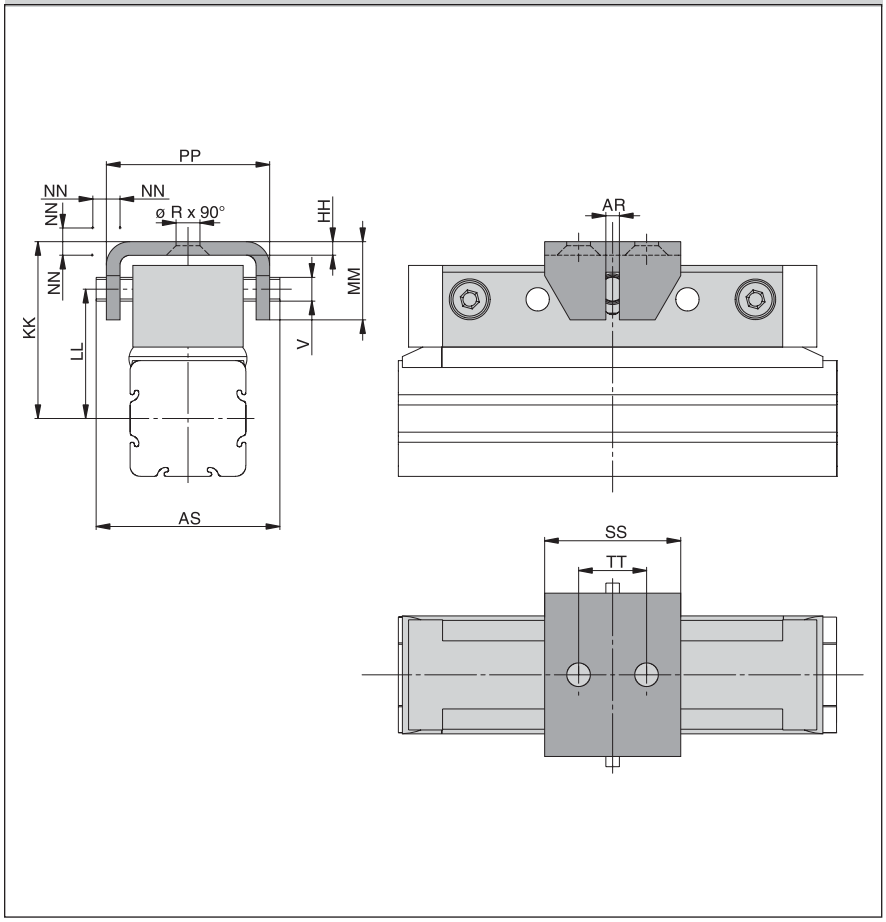
Series	U	UU	AF	DE	DH	DK	DM	DN	DO	DP	DQ	DR	DS	Order No. Type E3
AB 25	5.5	10	49	16	65	26	40	47.5	36	50	34.5	35	5.7	**20353FIL**
AB 32	5.5	10	52	16	68	27	46	54.5	36	50	40.5	32	5.7	**20356FIL**
AB 40	7	–	60	23	83	34	53	60	45	60	45	32	–	**20359FIL**
AB 50	7	–	72	23	95	34	59	67	45	60	52	31	–	**20362FIL**
AB 63	9	–	93	34	127	44	73	83	45	65	63	48	–	**20453FIL**
AB 80	11	–	110	39.5	149.5	63	97	112	55	80	81	53	–	**20819FIL**

Accessories for linear drives with Active Brakes – please order separately

Description	For detailed information, see page no.
Clevis mounting	**B21**
Adaptor profile	**B26**
T-groove profile	**B27**
Connection profile	**B28**
Magnetic switch (can **only** be mounted opposite of the brake housing)	**B93-B100**
Incremental displacement measuring system SFI-plus	**B103-B108**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P10



Linear Drive Accessories

ø 10 mm
Clevis Mounting

OSP
ORIGA SYSTEM PLUS

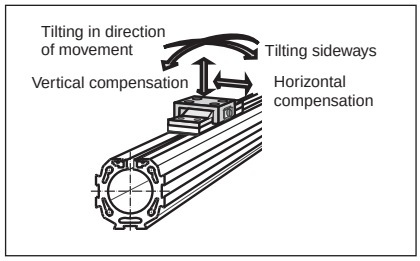
For Linear-drive
- **Series OSP-P**

When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.

In the drive direction, the mounting has very little play.

Freedom of movement is provided as follows:

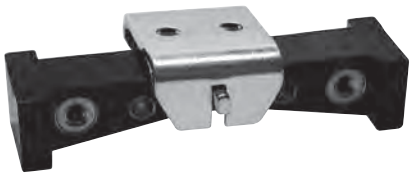
- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**



Dimension Table (mm)

Series	ø R	V	AR	AS	HH	KK	LL	MM	NN*	PP	SS	TT	Order No. Standard	Order No. Stainless
OSP-P10	3.4	3.5	2	27	2	26	19	11.5	1	24	20	10	**20971FIL**	**–**

*** Dimension NN gives the possible plus and minus play in horizontal and** vertical movement, which also makes tilting sideways possible.



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

ø 16-80 mm
Clevis Mounting

OSP
ORIGA SYSTEM PLUS

For Linear-drive
- **Series OSP-P**

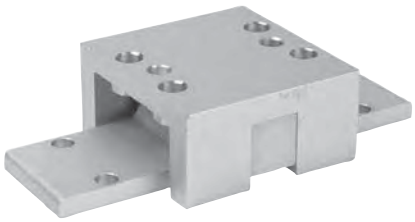
When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.

In the drive direction, the mounting has very little play.

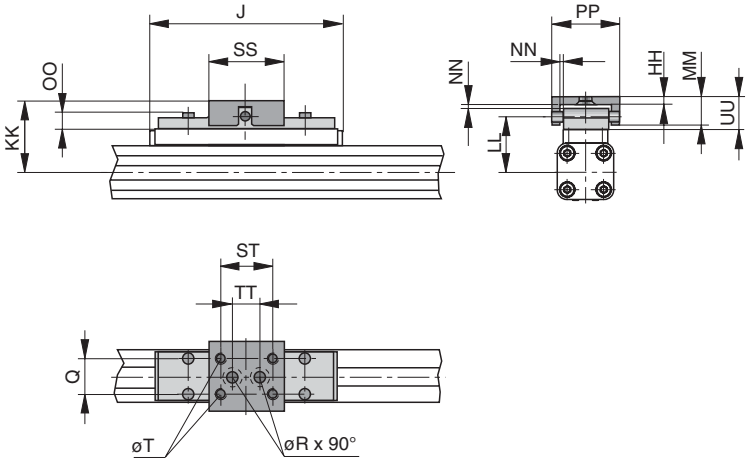
Freedom of movement is provided as follows:

- **Tilting in direction of movement**
- **Vertical compensation**
- **Tilting sideways**
- **Horizontal compensation**

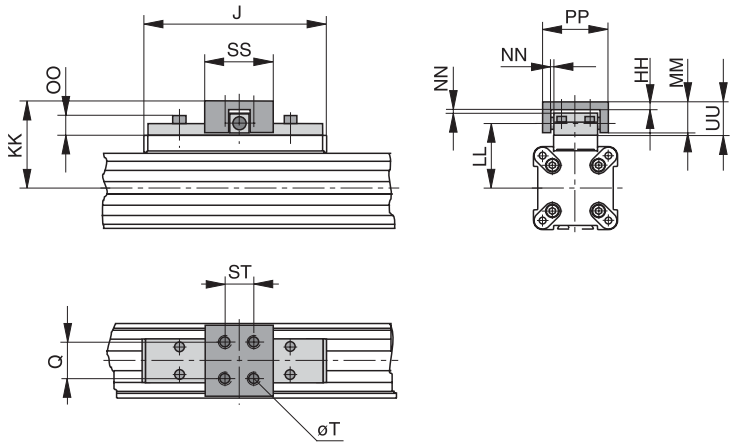
A stainless steel version is also available.



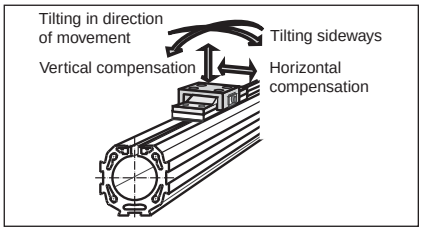
Series OSP-P16 to 32



Series OSP-P40 to 80



Please note:
When using additional inversion mountings, take into account the dimensions in page B23.



Dimension Table (mm)

Series	J	Q	T	ø R	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU	Order No. Standard	Order No. Stainless
OSP-P16	69	10	M4	4.5	3	34	26.6	10	1	8.5	26	28	20	10	11	**20462FIL**	**20463FIL**
OSP-P25	117	16	M5	5.5	3.5	52	39	19	2	9	38	40	30	16	21	**20005FIL**	**20092FIL**
OSP-P32	152	25	M6	6.6	6	68	50	28	2	13	62	60	46	40	30	**20096FIL**	**20094FIL**
OSP-P40	152	25	M6	–	6	74	56	28	2	13	62	60	46	–	30	**20024FIL**	**20093FIL**
OSP-P50	200	25	M6	–	6	79	61	28	2	13	62	60	46	–	30	**20097FIL**	**20095FIL**
OSP-P63	256	37	M8	–	8	100	76	34	3	17	80	80	65	–	37	**20466FIL**	**20467FIL**
OSP-P80	348	38	M10	–	8	122	96	42	3	16	88	90	70	–	42	**20477FIL**	**20478FIL**

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

ø 16-80 mm
Inversion Mounting

OSP
ORIGA SYSTEM PLUS

For Linear-drive
- **Series OSP-P**

In dirty environments, or where there are special space problems, inversion of the cylinder is recommended.

The inversion bracket transfers the driving force to the opposite side of the cylinder. The size and position of the mounting holes are the same as on the standard cylinder.

Stainless steel version on demand.

Please note:

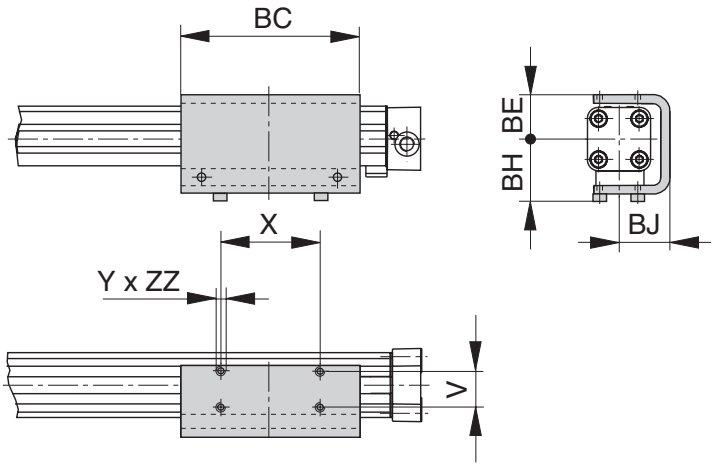
Other components of the OSP system such as **mid-section supports, magnetic switches** and **the external air passage for the P16,** can still be mounted on the free side of the cylinder.

When combining single end porting with inversion mountings, RS magnetic switches can only be mounted directly opposite to the external air-supply profile.

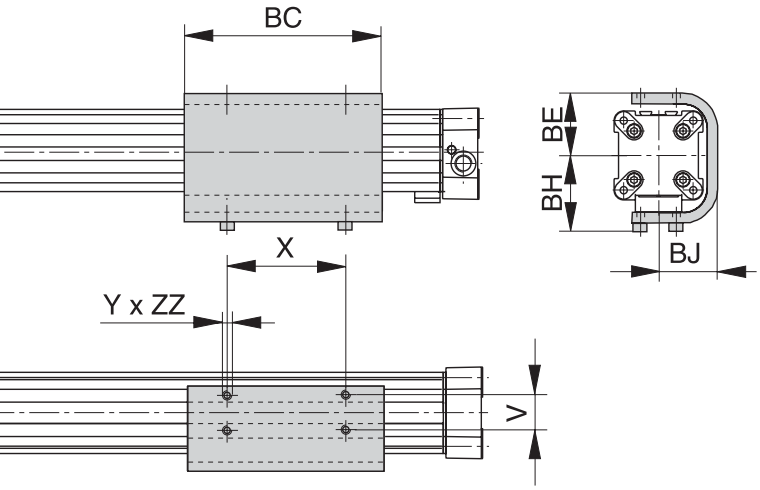
Important Note:

May be used in combination with Clevis Mounting, ref. dimensions in pages B21-B22.

Series OSP-P16 to 32



Series OSP-P40 to 80



Dimension Table (mm)

Series	V	X	Y	BC	BE	BH	BJ	ZZ	Order No.
OSP-P16	16.5	36	M4	69	23	33	25	4	**20446FIL**
OSP-P25	25	65	M5	117	31	44	33.5	6	**20037FIL**
OSP-P32	27	90	M6	150	38	52	39.5	6	**20161FIL**
OSP-P40	27	90	M6	150	46	60	45	8	**20039FIL**
OSP-P50	27	110	M6	200	55	65	52	8	**20166FIL**
OSP-P63	34	140	M8	255	68	83.5	64	10	**20459FIL**
OSP-P80	36	190	M10	347	88	107.5	82	15	**20490FIL**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

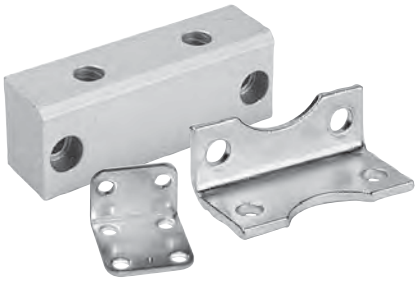
ø 10-80 mm
End Cap Mountings

For Linear-drive
- **Series OSP-P**

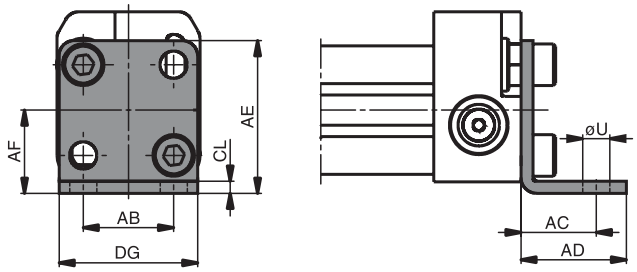
On the end-face of each end cap there are four threaded holes for mounting the actuator.
The hole layout is square, so that the mounting can be fitted to the bottom, top or either side, regardless of the position chosen for the air connection.

Material:
Series OSP-P10 – P32:
Galvanized steel.
Series OSP-P40 – P80:
Anodized aluminum.

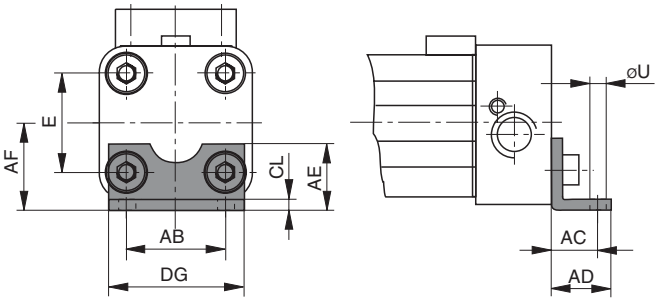
The mountings are supplied in pairs.



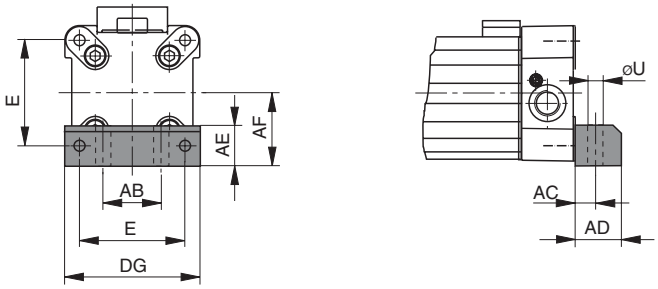
Series OSP-P10 : Type A1



Series OSP-P16 to 32: Type A1



Series OSP-P40 to 80: Type C1



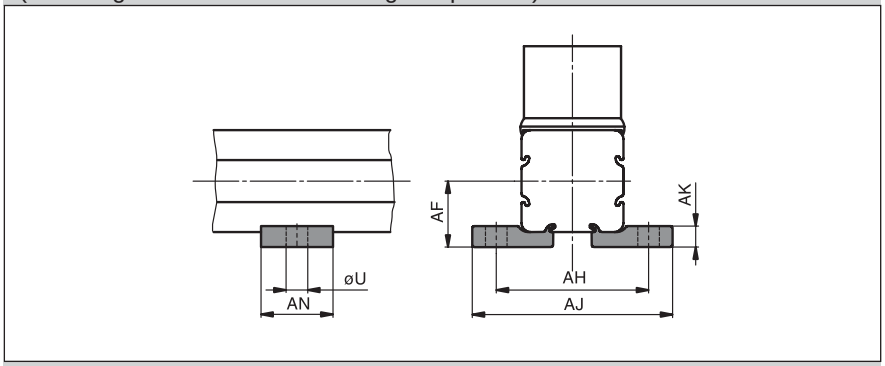
Dimension Table (mm)

Series	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (* Type A1	Order No. (* Type C1
OSP-P10	-	3.6	12	10	14	20.2	11	1.6	18.4	**0 240**	**–**
OSP-P16	18	3.6	18	10	14	12.5	15	1.6	26	**20408FIL**	**–**
OSP-P25	27	5.8	27	16	22	18	22	2.5	39	**2010**	**–**
OSP-P32	36	6.6	36	18	26	20	30	3	50	**3010**	**–**
OSP-P40	54	9	30	12.5	24	24	38	–	68	**–**	**4010FIL**
OSP-P50	70	9	40	12.5	24	30	48	–	86	**–**	**5010FIL**
OSP-P63	78	11	48	15	30	40	57	–	104	**–**	**6010FIL**
OSP-P80	96	14	60	17.5	35	50	72	–	130	**–**	**8010FIL**

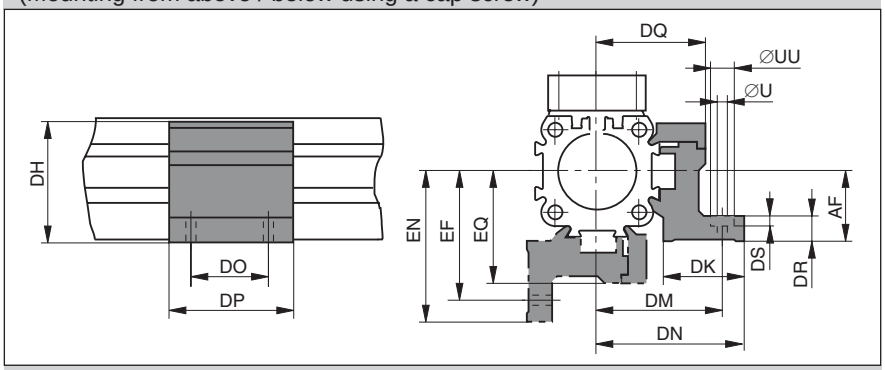
(*= Pair

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

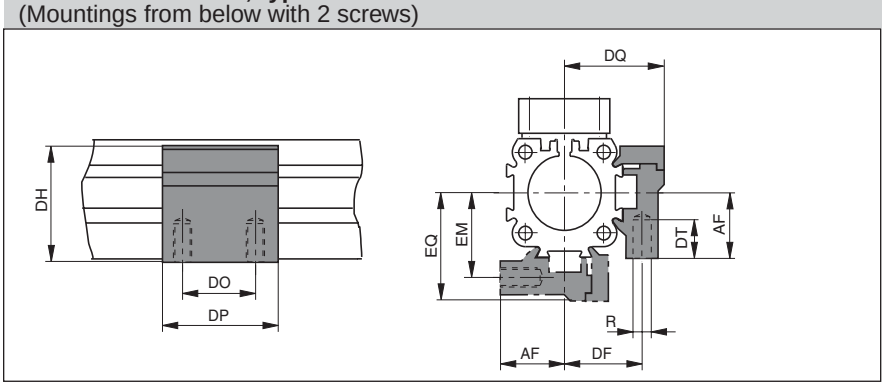
Series OSP-10, Type E1
(Mounting from above / below using a cap screw)



Series OSP-P16 to P80: Type E1
(Mounting from above / below using a cap screw)



Series OSP-16 to 80, Type D1
(Mountings from below with 2 screws)



Linear Drive Accessories

ø 10-80 mm
Mid-Section Support

OSP
ORIGA SYSTEM PLUS

For Linear-drive
- **Series OSP-P**

Note on Types E1 and D1 (P16 – P80):

The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the center of the actuator is different.

Stainless steel version on demand.

Dimension Table (mm) - OSP-P10

Series	U	AF	AH	AJ	AK	AN	Order No. Type E1	Order No. Type D1
OSP-P10	3.6	11	25.4	33.4	3.5	12	**0250**	**-**

Dimension Table (mm) - OSP-P16 to P80

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ	Order No. Type E1	Order No. Type D1
OSP-P16	M3	3.4	6	15	20	29.2	24	32	36.4	18	30	27	6	3.4	6.5	32	20	36.4	27	**20435FIL**	**20434FIL**
OSP-P25	M5	5.5	10	22	27	38	26	40	47.5	36	50	34.5	8	5.7	10	41.5	28.5	49	36	**20009FIL**	**20008FIL**
OSP-P32	M5	5.5	10	30	33	46	27	46	54.5	36	50	40.5	10	5.7	10	48.5	35.5	57	43	**20158FIL**	**20157FIL**
OSP-P40	M6	7	–	38	35	61	34	53	60	45	60	45	10	–	11	56	38	63	48	**20028FIL**	**20027FIL**
OSP-P50	M6	7	–	48	40	71	34	59	67	45	60	52	10	–	11	64	45	72	57	**20163FIL**	**20162FIL**
OSP-P63	M8	9	–	57	47.5	91	44	73	83	45	65	63	12	–	16	79	53.5	89	69	**20452FIL**	**20451FIL**
OSP-P80	M10	11	–	72	60	111.5	63	97	112	55	80	81	15	–	25	103	66	118	87	**20482FIL**	**20480FIL**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

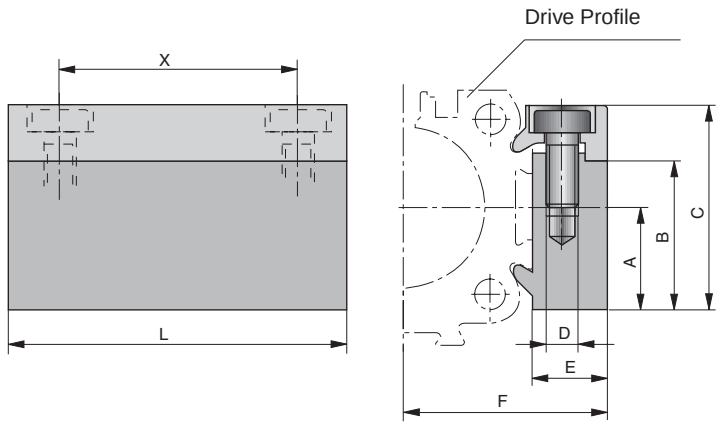
ø 16-50 mm
Adaptor Profile

OSP
ORIGA SYSTEM PLUS

For Linear-drive
- **Series OSP-P**

Adaptor Profile OSP
- A universal attachment for mounting of valves etc.
- Solid material

Dimensions

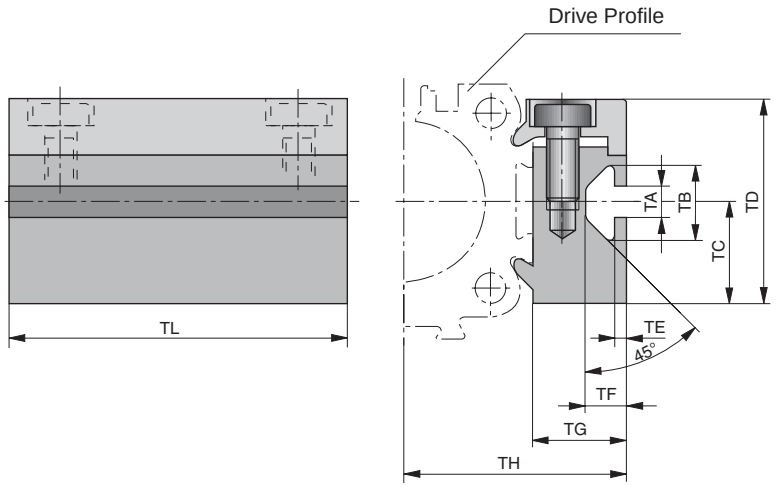


Dimension Table (mm)

Series	A	B	C	D	E	F	L	X	Order No. Standard	Order No. Stainless
OSP-P16	14	20.5	28	M3	12	27	50	38	**20432FIL**	**20438FIL**
OSP-P25	16	23	32	M5	10.5	30.5	50	36	**20006FIL**	**20186FIL**
OSP-P32	16	23	32	M5	10.5	36.5	50	36	**20006FIL**	**20186FIL**
OSP-P40	20	33	43	M6	14	45	80	65	**20025FIL**	**20267FIL**
OSP-P50	20	33	43	M6	14	52	80	65	**20025FIL**	**20267FIL**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions



Linear Drive Accessories

ø 16-50 mm
T-Slot Profile

OSP
ORIGA SYSTEM PLUS

For Linear-drive

- **Series OSP-P**

T-Slot Profile OSP

- A universal attachment for mounting with standard T-Nuts

Dimension Table (mm)

Series	TA	TB	TC	TD	TE	TF	TG	TH	TL	Order No. Standard	Order No. Stainless
OSP-P16	5	11.5	14	28	1.8	6.4	12	27	50	**20433FIL**	**20439**
OSP-P25	5	11.5	16	32	1.8	6.4	14.5	34.5	50	**20007FIL**	**20187**
OSP-P32	5	11.5	16	32	1.8	6.4	14.5	40.5	50	**20007FIL**	**20187**
OSP-P40	8.2	20	20	43	4.5	12.3	20	51	80	**20026FIL**	**20268**
OSP-P50	8.2	20	20	43	4.5	12.3	20	58	80	**20026FIL**	**20268**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

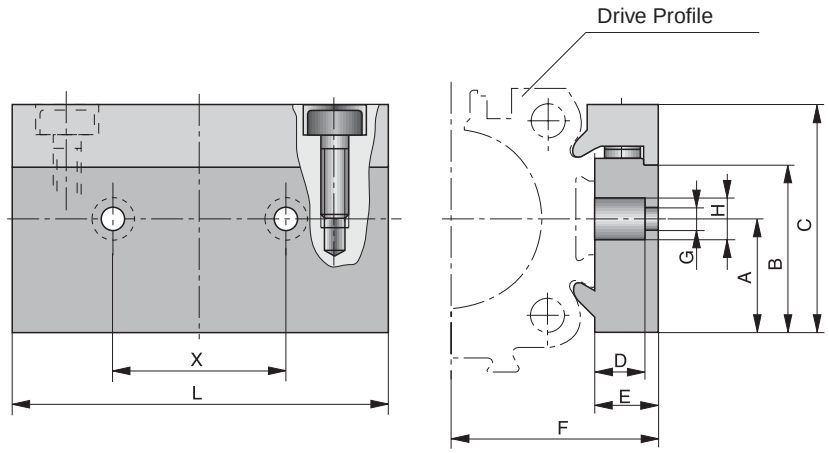
ø 16-50 mm
Connection Profile

OSP
ORIGA SYSTEM PLUS

For combining

- **Series OSP-P with system profiles**
- **Series OSP-P with Series OSP-P**

Dimensions



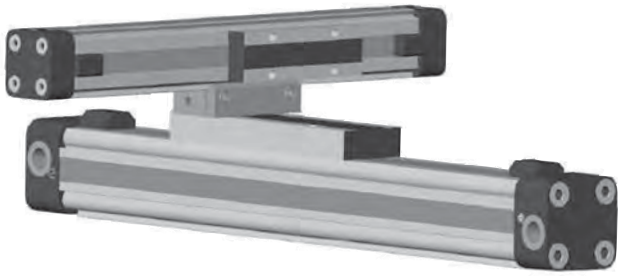
Dimension Table (mm)

Cylinder Series	for mounting on the carrier of	A	B	C	D	E	F	G	H	L	X	Order No.
OSP-P16	OSP25	14	20.5	28	8.5	12	27	5.5	10	50	25	**20849FIL**
OSP-P25	OSP32-50	16	23	32	8.5	10.5	30.5	6.6	11	60	27	**20850FIL**
OSP-P32	OSP32-50	16	23	32	8.5	10.5	36.5	6.6	11	60	27	**20850FIL**
OSP-P40	OSP32-50	20	33	43	8	14	45	6.6	11	60	27	**20851FIL**
OSP-P50	OSP32-50	20	33	43	8	14	52	6.6	11	60	27	**20851FIL**

Possible Combinations

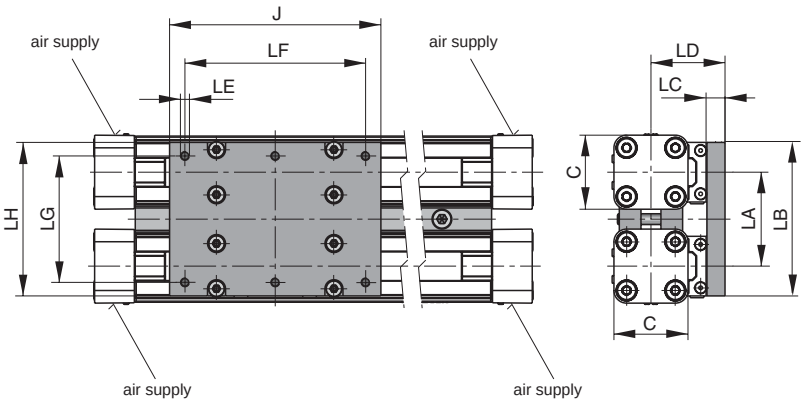
Combination of Series OSP-P with system profiles

Combination of Series OSP-P with Series OSP-P



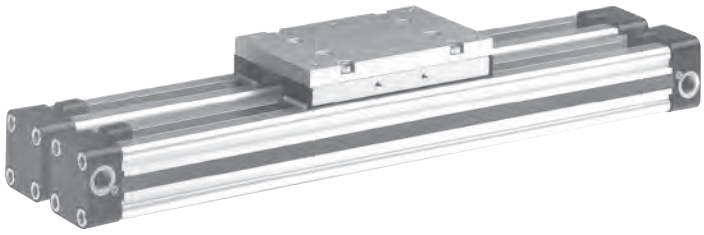
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions



Dimension Table (mm)

Cylinder Series	C	J	LA	LB	LC	LD	LE	LF	LG	LH
OSP-P25	41	117	52	86	10	41	M5	100	70	85
OSP-P32	52	152	64	101	12	50	M6	130	80	100
OSP-P40	69	152	74	111	12	56	M6	130	90	110
OSP-P50	87	200	88	125	12	61	M6	180	100	124



Linear Drive Accessories

ø 25-50 mm

Joint Clamp Connection

OSP
ORIGA SYSTEM PLUS

For connection of cylinders of the
Series OSP-P

The joint clamp connection combines two OSP-P cylinders of the same size into a compact unit with high performance.

Features
- Increased load and torque capacity
- Higher driving forces

Included in delivery:
2 clamping profiles with screws
1 mounting plate with fixings

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

ø 25-50 mm
Multiplex Connection

OSP
ORIGA SYSTEM PLUS

For connection of cylinders of the Series OSP-P

The multiplex connection combines two or more OSP-P cylinders of the same size into on unit.

Features

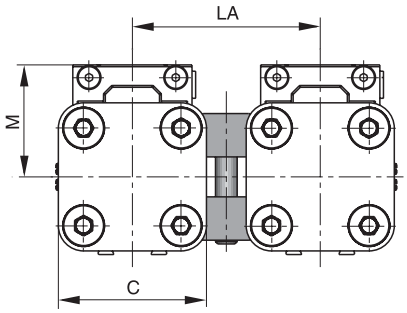
- The orientation of the carriers can be freely selected

Included in delivery:

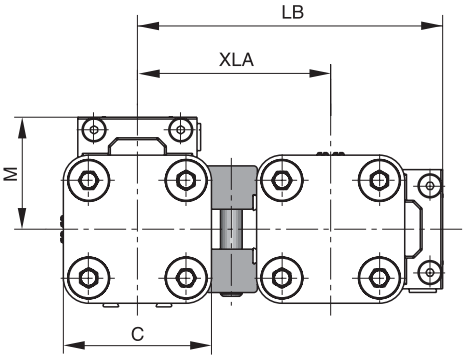
2 clamping profiles with clamping screws

Dimensions

Installation:
Top carrier/Top carrier



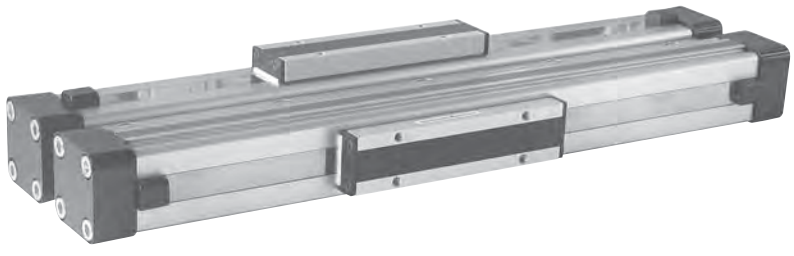
Installation:
Top carrier/Side carrier



Dimension Table (mm)

Cylinder Series	C	M	LA	LE	XLA	Order No.	
						Standard	Stainless
OSP-P25	41	31	52	84.5	53.5	**20035**	**20193**
OSP-P32	52	38	64	104.5	66.5	**20167**	**20265**
OSP-P40	69	44	74	121.5	77.5	**20036**	**20275**
OSP-P50	87	49	88	142.5	93.5	**20168**	**20283**

Note: Part number must include stroke. As example: 20035-SSSSS where S = cylinder stroke



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

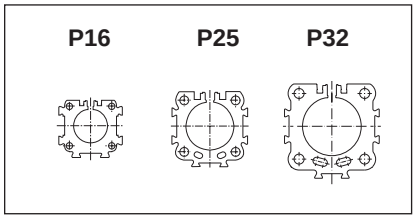
Characteristics		Pressure quoted as gauge pressure		
Characteristics		Symbol	Unit	Description
General Features				
Type				Rodless Cylinder
Series				OSP-P
System				Double-acting, with cushioning, position sensing capability
Mounting				see drawings
Air connection				Threaded
Ambient and medium temperature range		T_{min} T_{max}	°C °C	-10 – other temperature ranges +80 on request
Weight (Mass)			kg	See table below
Installation				In any position
Medium				Filtered, unlubricated compressed air (other media on request)
Lubrication				Permanent grease lubrication (additional oil mist lubrication not required) Option: special slow speed grease
Material	Cylinder profile			Anodized aluminum
	Carrier (piston)			Anodized aluminum
	End caps			Aluminum, lacquered
	Sealing bands			Corrosion resistant steel
	Seals			NBR (Option: Fluorocarbon)
	Screws			Stainless steel
	Covers			Anodized aluminum
	Guide plate			Plastic
Max. operating pressure*		p_{max}	bar	8

* Pressure quoted as gauge pressure

Weight (Mass) kg

Cylinder series (basic cylinder)	Weight (Mass) kg	
	at 0 mm stroke	per 100 mm stroke
OSP-P16	0.22	0.1
OSP-P25	0.65	0.197
OSP-P32	1.44	0.354

Size Comparison



Clean Room Cylinder

ø 16 – 32 mm Rodless Cylinder certified to DIN EN ISO 14644-1

OSP
ORIGA SYSTEM PLUS

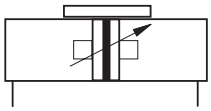
Standard Versions:

- Double-acting with adjustable end cushioning
- With magnetic piston for position sensing
- Stainless steel screws

Special Versions:

- Slow speed lubrication
- Fluorocarbon seals

Series OSP-P..



Features:

- Clean room classification
  ISO Class 4 at v_m = 0.14 m/s
  ISO Class 5 at v_m = 0.5 m/s
- Suitable for smooth slow speed operation up to v_{min} = 0.005 m/s
- Optional stroke length up to 1200 mm (longer strokes on request)
- Low maintenance
- Compact design with equal force and velocity in both directions
- Aluminum piston with bearing rings to support high direct and cantilever loads

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

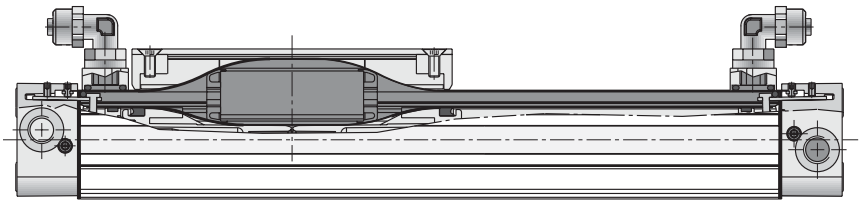
Certification

Based on the PARKER-ORIGA rodless cylinder, proven in world wide markets, PARKER-ORIGA now offers the only rodless cylinder on the market with a certification from IPA Institute for the cleanroom specification according to DIN EN ISO 14644-1.

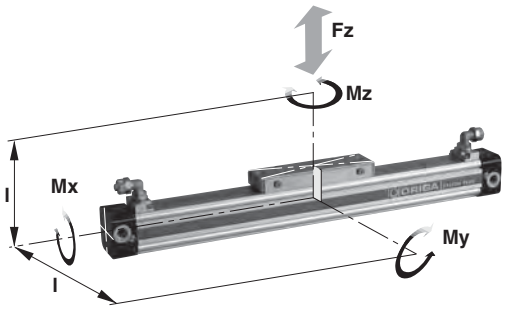
Function:

The clean room cylinders of the ORIGA SYSTEM PLUS (OSP-P) combines the efficiency of the PARKER-ORIGA slot seal system with vacuum protection against progressive wear and contamination from the sliding components. A partial vacuum drawn between inner and outer sealing bands prevents emission into the clean room. To achieve the necessary vacuum a suction flow of ca. 4 m^3/h is required.

Function Diagram



Loads, Forces and Moments



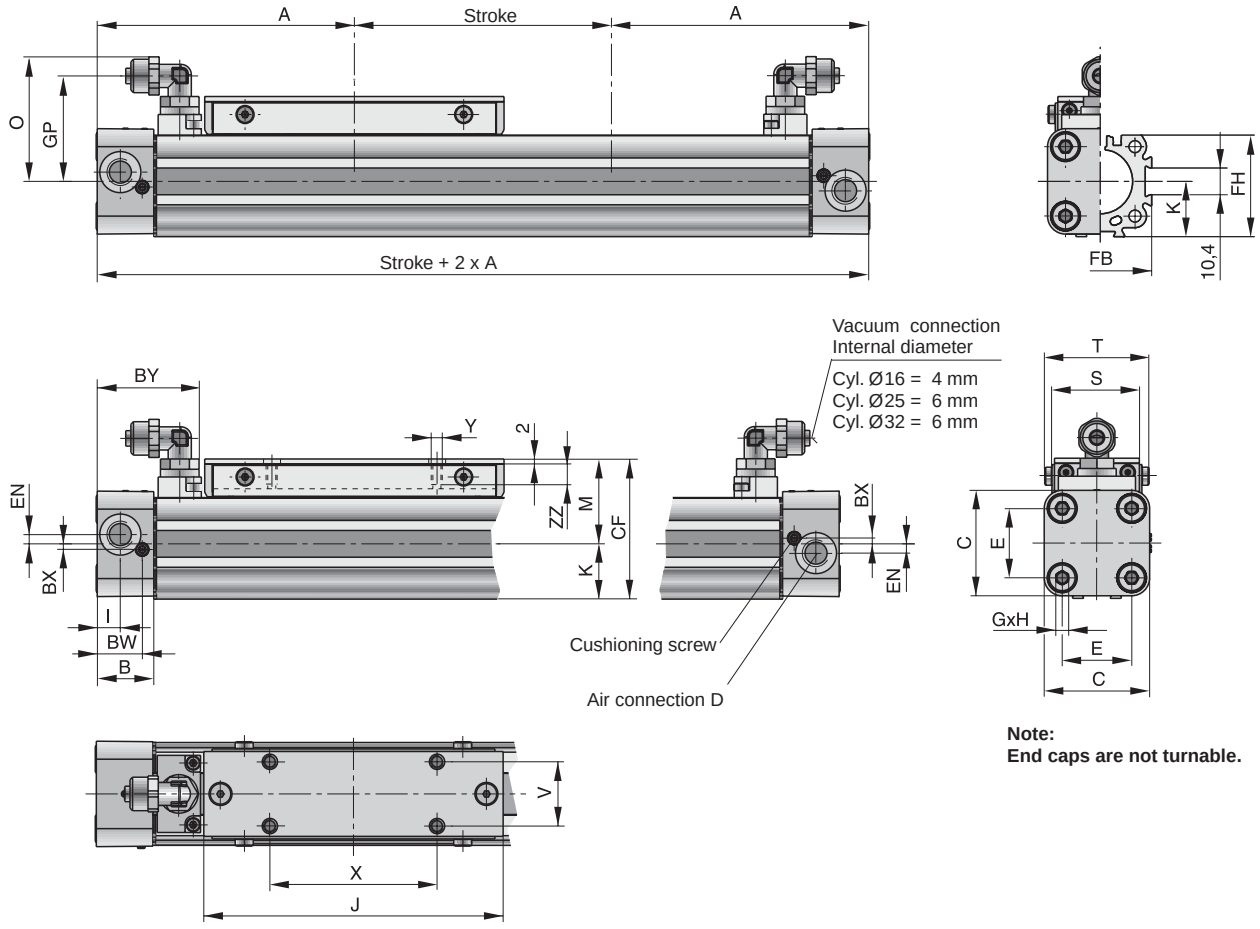
Mx = F · l
My = F · l
Mz = F · l

Cylinder Series (mm Ø)	Effective Force at 6 bar (N)	Max. Moment Mx (Nm)	My (Nm)	Mz (Nm)	Max. Load Fz (N)	Cushion length (mm)
OSP-P16	78	0.45	4	0.5	120	11
OSP-P25	250	1.5	15	3.0	300	17
OSP-P32	420	3.0	30	5.0	450	20

Load and moment data are based on speeds v ≤ 0.2 m/s.
The adjacent table shows the maximum values for light, shock-free operation which must not be exceeded even in dynamic operation.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions (mm)



Note:
End caps are not turnable.

Dimension Table (mm)

Cylinder Series	A	B	C	D	E	G	H	I	J	K	M	O	S
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	25	31	24
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	33	48.5	35
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	152	28.5	40	53.6	38

Cylinder Series	T	V	X	Y	BW	BX	BY	CF	EN	FB	FH	GP	ZZ
OSP-P16	29.6	16.5	36	M4	10.8	1.8	28.5	40	3	30	27.2	25.7	7
OSP-P25	40.6	25	65	M5	17.5	2.2	40.5	54.5	3.6	40	39.5	41	8
OSP-P32	45	27	90	M6	20.5	2.5	47.1	68.5	5.5	52	51.7	46.2	10

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Rodless Cylinder Ø 40 mm

for synchronized bi-parting movements

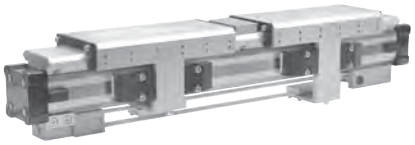
Type OSP-P40-SL-BP

Features:

- Accurate bi-parting movement through toothed belt synchronization
- Optimum slow speed performance
- Increased action force
- Anodized aluminum guide rail with prism-form slideway arrangement
- Adjustable polymer slide units
- Combined sealing system with polymer and felt elements to remove dirt and lubricate the slideway
- Integrated grease nipples for guide lubrication

Applications:

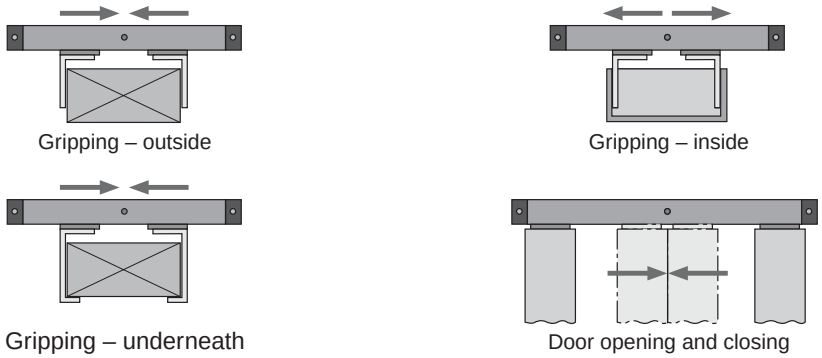
- Opening and closing operations
- Gripping of workpieces – outside
- Gripping of hollow workpieces – inside
- Gripping underneath larger objects
- Clamping force adjustable via pressure regulator



Characteristics

Characteristics	Symbol	Unit	Description
General Features			
Type			Rodless cylinder for synchronized bi-parting movements
Series			OSP-P
System			Double acting with end cushioning. For contactless position sensing
Guide			Slideline SL40
Synchronization			Toothed belt
Mounting			See drawings
Ambient temperature range	T_{min} T_{max}	°C °C	-10 +60
Weight (Mass)		kg	see table page B35
Medium			Filtered, unlubricated compressed air (other media on request)
Lubrication			Special slow speed grease – additional oil mist lubrication not required
Material			
Toothed Belt			Steel-corded polyurethane
Belt wheel			Aluminum
Operating pressure range	p_{max}	bar	6
Cushioning middle position			Elastic buffer
Max. Speed	v_{max}	m/s	0.2
Max. stroke of each stroke		mm	500
Max. mass per guide carrier		kg	25
Max. moments on guide carrier			
lateral moment	Mx_{max}	Nm	25
axial moment	My_{max}	Nm	46
rotating moment	Mz_{max}	Nm	46
For more technical information see pages B41			

Applications



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Weight (mass) kg

Cylinder series (Basic cylinder)	Weight (Mass) kg	
	At 0 mm stroke	per 100 mm stroke
OSP-P40-SL-BP	10.334	2.134

Function:

The OSP-P40-SL-BP bidirectional linear drive is based on the OSP-P40 rodless pneumatic cylinder and adapted SLIDELINE SL40 polymer plain-bearing guides.

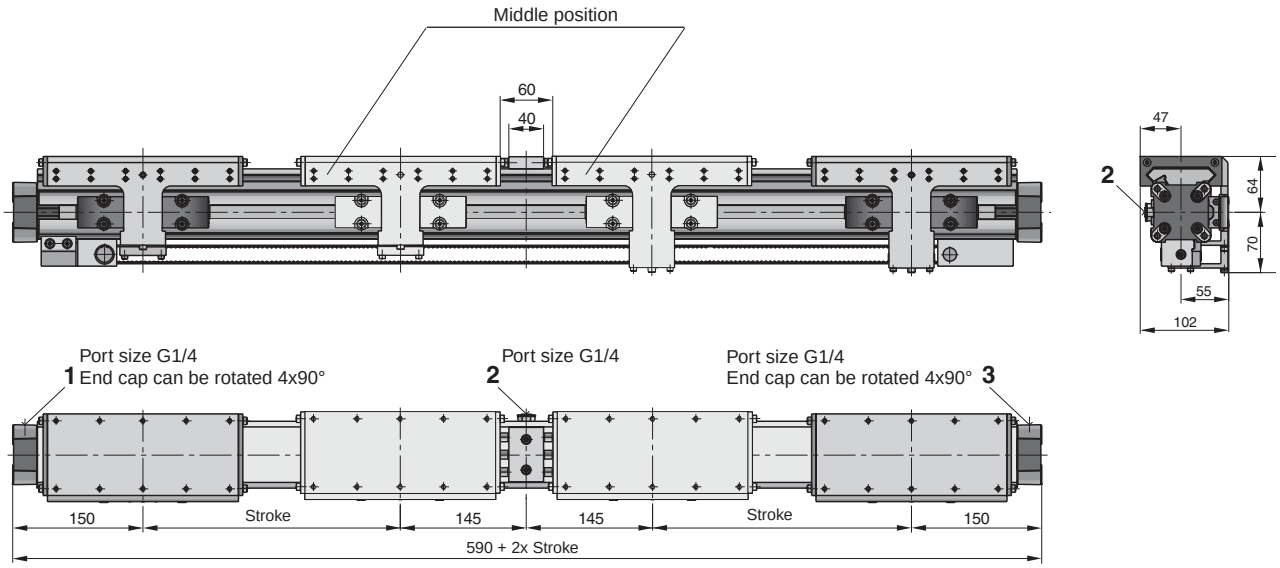
Two pistons in the cylinder bore are connected via yokes and carriers to the SLIDELINE guide carriers, which handle the forces and moments generated.

The bi-parting movements of the guide carriers are accurately synchronized by a recirculating toothed belt.

The two pistons are driven from the middle to the end positions via a common G1/4 air connection in the middle of the cylinder, and are driven from the end positions to the middle via an air connection in each end cap.

End position cushioning is provided by adjustable air cushioning in the end caps, and middle position cushioning by rubber buffers.

Dimensions (mm)



Air connections:

To drive the guide carriers to the middle position: pressurize ports 1 and 3.

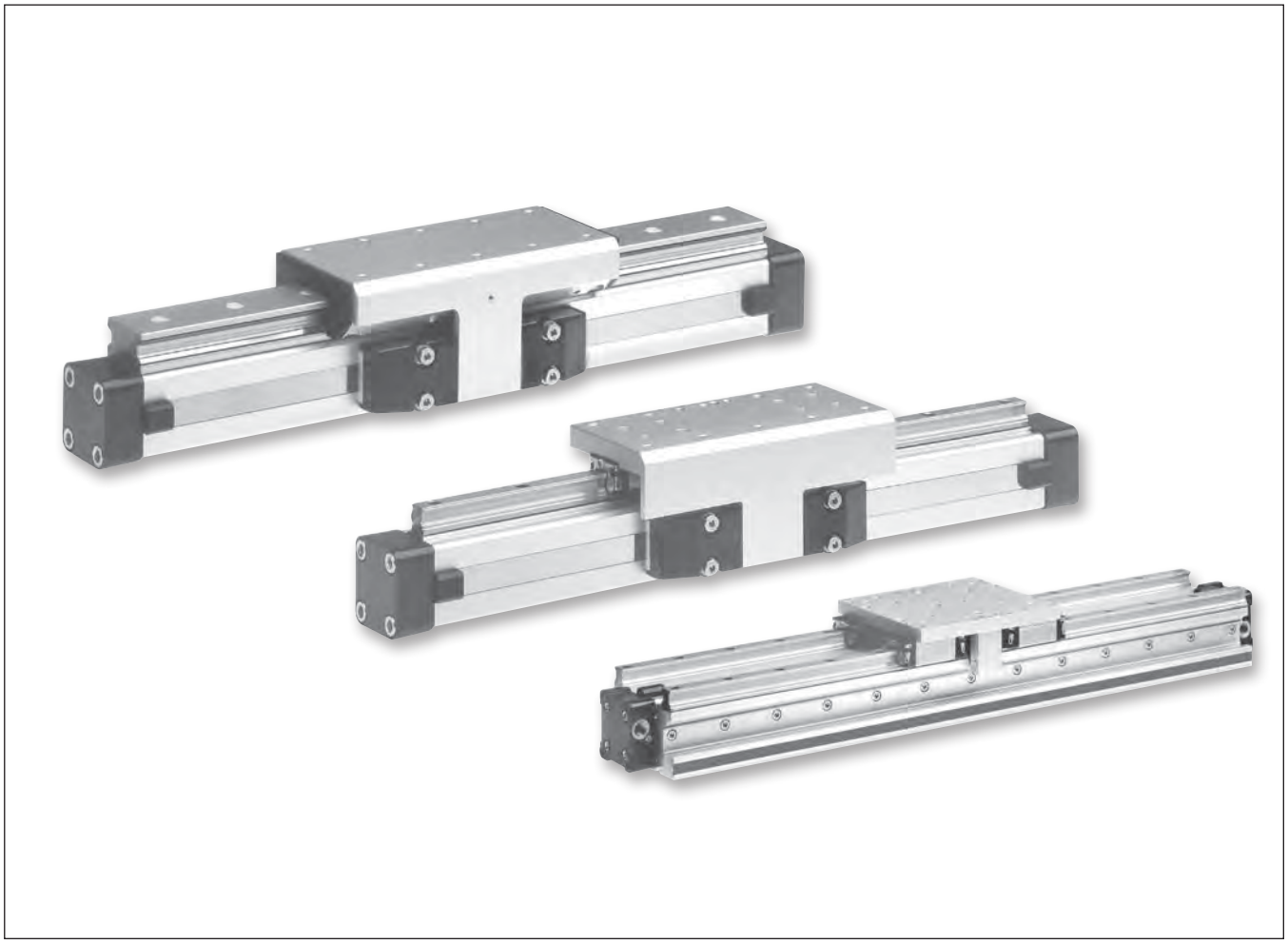
To drive the guide carriers to the end positions: pressurize port 2.

For more dimensions see pages B12 and B42

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Guides for Series OSP-P



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

OSP
ORIGA SYSTEM PLUS

Adaptive modular system

The Origa system plus – OSP – provides a comprehensive range of linear guides for the pneumatic and electric linear drives.

Advantages:

- Takes high loads and forces
- High precision
- Smooth operation
- Can be retrofitted
- Can be installed in any position

Rodless Pneumatic Cylinder
Series OSP - P

Piston diameters 10 – 80 mm

See page B8 (Standard)

Linear Guides

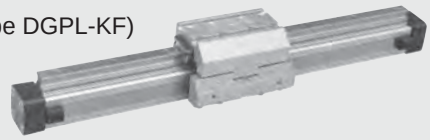
SLIDELINE
The cost-effective plain bearing guide for medium loads.
Active/ Passive Brake optional.
Piston diameters 16 – 80 mm

POWERSLIDE
The roller guide for heavy loads and hard application conditions
Piston diameters 16 – 50 mm

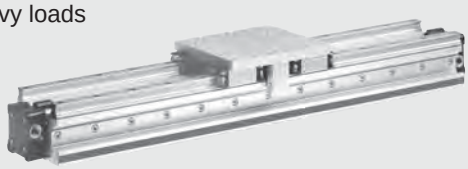
PROLINE
The compact aluminum roller guide for high loads and velocities.
Active/ Passive Brake optional.
Piston diameters 16 – 50 mm

STARLINE
Recirculating ball bearing guide for very high loads and precision
Piston diameters 16 – 50 mm

KF GUIDE
Recirculating ball bearing guide for highest loads and precision.
Correspond to FESTO dimensions (Type DGPL-KF)
Piston diameters 16 – 50 mm

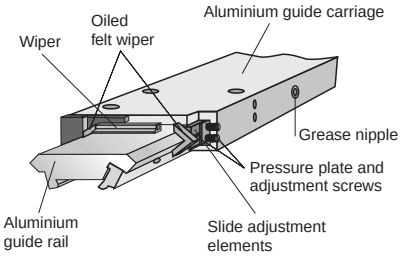


HD HEAVY DUTY GUIDE
The ball bushing guide for the heavy loads and greatest accuracy.
Piston diameters 25 – 50 mm

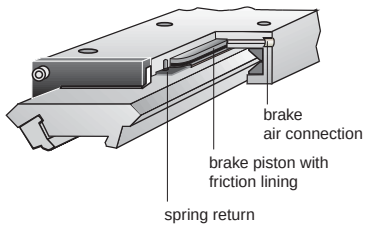


Versions

for pneumatic linear drive:
Series OSP-P



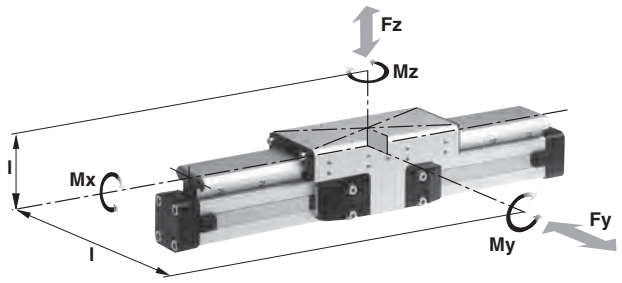
Option – Integrated Brake



Integrated Brake (optional)
for series OSP-P25 to OSP-P50:
- Actuated by pressure
- Released by exhausting and spring return

For further technical data see also linear drives OSP-P (page B8)

Loads, Forces and Moments



Technical Data

The table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

The load and moment figures apply to speeds v < 0.2 m/s.

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

Plain Bearing Guide SLIDELINE

OSP
ORIGA SYSTEM PLUS

Series SL 16 to 80
for Linear-drive
- **Series OSP-P**

Features:
- Adjustable plastic slide elements – optional with integral brake
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideways.
- Corrosion resistant version available on request.
- Any length of stroke up to 5500 mm (longer strokes on request)

[1] Only with integrated brake:
Braking force on dry oil-free surface
Values are decreased for lubricated slideways

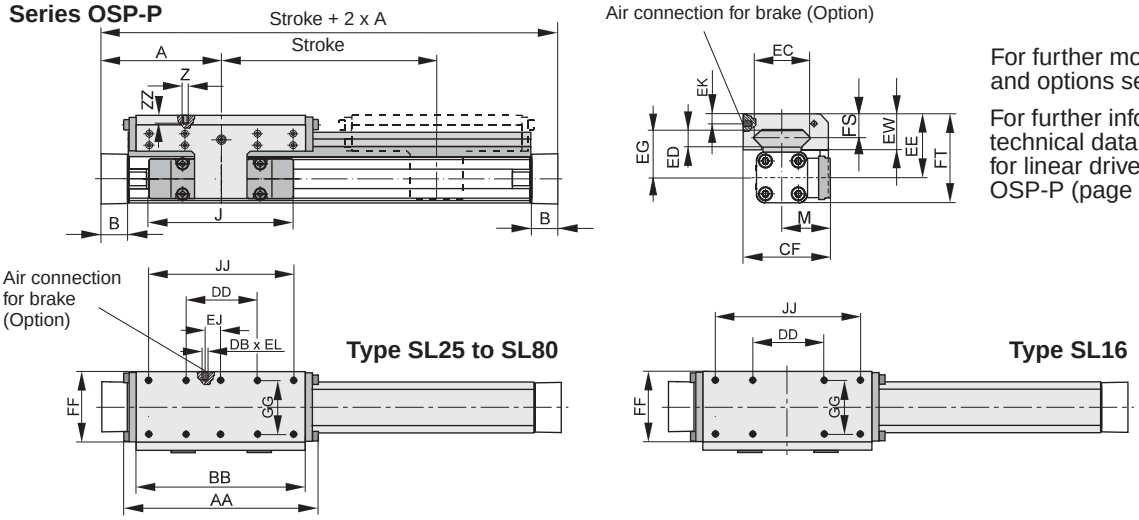
[2] Corrosion resistant fixtures available on request

Series	For linear drive	Max. moments (Nm)			Max. loads (N)	Maximum braking force at 6 bar (N) [1]	Mass of linear drive with guide (kg)		Mass * of guide carriage (kg)
		Mx	My	Mz	Fy, Fz		with 0 mm stroke	increase per 100 mm stroke	
SL16	OSP-P16	6	11	11	325	–	0.57	0.22	0.23
SL 25	OSP-P25	14	34	34	675	325	1.55	0.39	0.61
SL 32	OSP-P32	29	60	60	925	545	2.98	0.65	0.95
SL 40	OSP-P40	50	110	110	1500	835	4.05	0.78	1.22
SL50	OSP-P50	77	180	180	2000	1200	6.72	0.97	2.06
SL63	OSP-P63	120	260	260	2500	–	11.66	1.47	3.32
SL80	OSP-P80	120	260	260	2500	–	15.71	1.81	3.32

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions

Series OSP-P



For further mounting elements and options see accessories.

For further information and technical data see data sheets for linear drives OSP-P (page B8)

Dimension Table (mm)

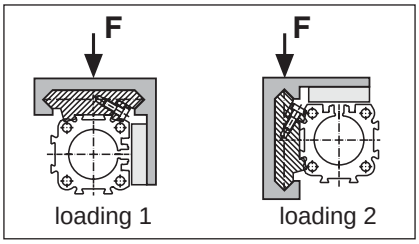
Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	ED	EE	EG	EJ	EK	EL	EW	FF	FT	FS	GG	JJ	ZZ
SL16	65	14	69	31	M4	106	88	–	30	55	36	8	40	30	–	–	–	22	48	55	14	36	70	8
SL25	100	22	117	40.5	M6	162	142	M5	60	72.5	47	12	53	39	22	6	6	30	64	73.5	20	50	120	12
SL32	125	25.5	152	49	M6	205	185	M5	80	91	67	14	62	48	32	6	6	33	84	88	21	64	160	12
SL40	150	28	152	55	M6	240	220	M5	100	102	77	14	64	50	58	6	6	34	94	98.5	21.5	78	200	12
SL50	175	33	200	62	M6	284	264	M5	120	117	94	14	75	56	81	6	6	39	110	118.5	26	90	240	16
SL63	215	38	256	79	M8	312	292	–	130	152	116	18	86	66	–	–	–	46	152	139	29	120	260	14
SL80	260	47	348	96	M8	312	292	–	130	169	116	18	99	79	–	–	–	46	152	165	29	120	260	14

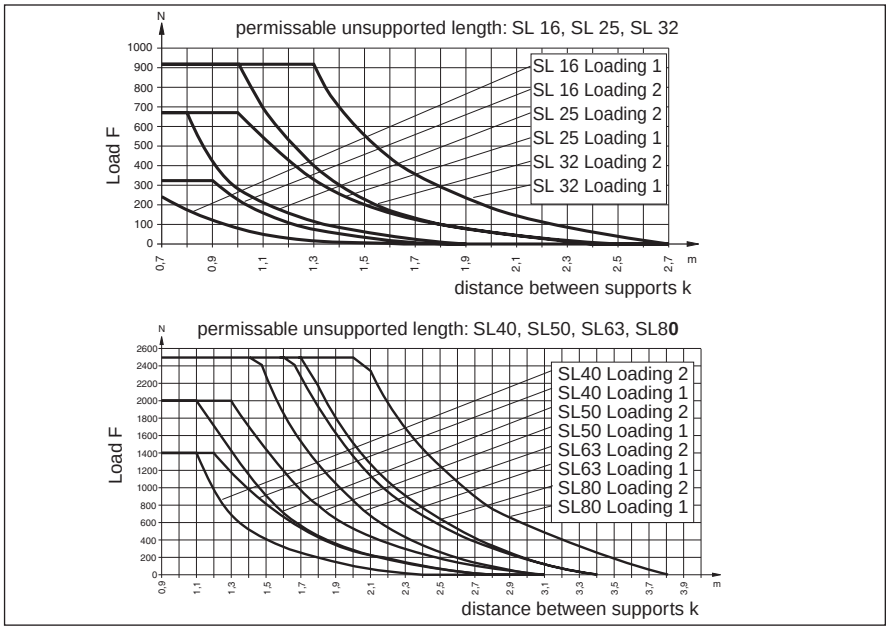
Mid-Section Support

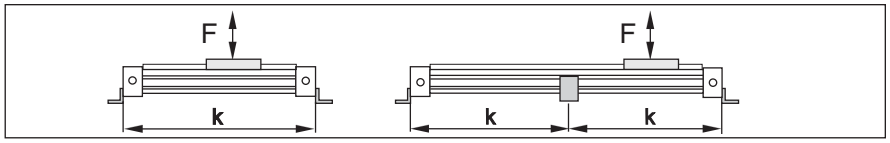
(for versions see pages B47)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2.
Deflection of 0.5 mm max. between supports is permissible.

Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

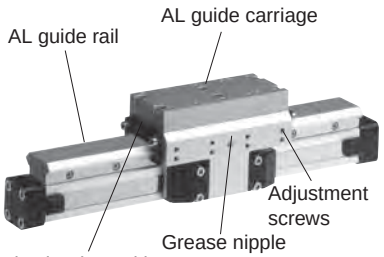




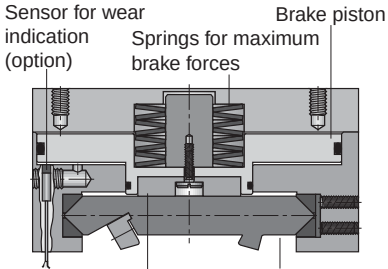


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Versions



Function



Multi-Brake Passive Brake

with plain bearing guide Slideline SL

OSP
ORIGA SYSTEM PLUS

Function:

The Multi-Brake is a passive device. When the air pressure is removed the brake is actuated and movement of the cylinder is blocked. The brake is released by pressurization.

The high friction, wear resistant brake linings allow the Multi-Brake to be used as a dynamic brake to stop cylinder movement in the shortest possible time. The powerful springs also allow the Multi-Brake to be used effectively in positioning applications.

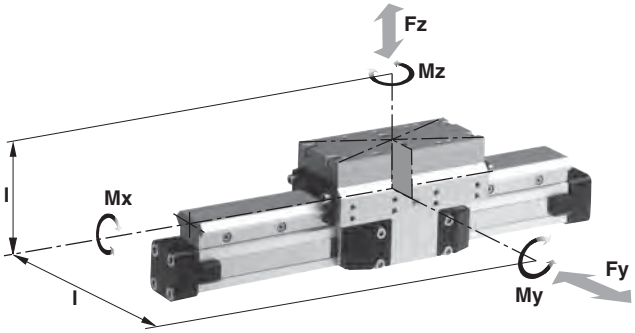
Series MB-SL 25 to 80 for Linear-drive

- **Series OSP-P**

Features:

- Brake operated by spring actuation
- Brake release by pressurization
- Optional sensor to indicate brake lining wear
- Anodized aluminum rail, with prism shaped slide elements
- Adjustable plastic slide elements
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Replenishable guide lubrication by integrated grease nipples
- Blocking function in case of pressure loss
- Intermediate stops possible

Loads, Forces and Moments



Technical Data:

The table shows the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation.

Load and moment data are based on speeds v < 0.2 m/s.

Operating pressure 4.5 - 8 bar
A pressure of 4.5 bar is required to release the brake.

For further technical information, please refer to the data sheets for linear drives OSP-P (page B8)

[1] Braking surface dry – oil on the braking surface will reduce the braking force

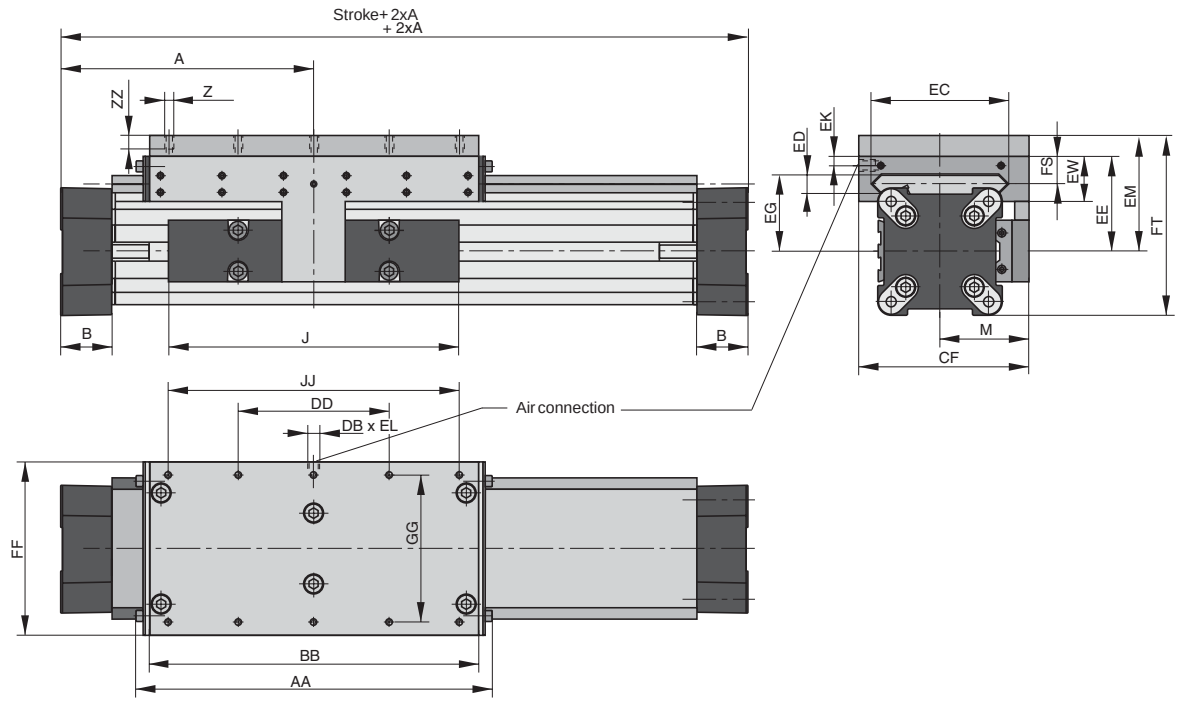
*** Please note:**

in the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

Series	For linear drive	Max. moments (Nm)			Max. loads (N)	Max. brake force (N) [1]	Mass of linear drive with guide (kg)		Mass* guide carriage (kg)
		Mx	My	Mz	Ly, Lz		with 0 mm stroke	increase per 100 mm stroke	
MB-SL 25	OSP-P25	14	34	34	675	470	2.04	0.39	1.10
MB-SL 32	OSP-P32	29	60	60	925	790	3.82	0.65	1.79
MB-SL 40	OSP-P40	50	110	110	1500	1200	5.16	0.78	2.34
MB-SL 50	OSP-P50	77	180	180	2000	1870	8.29	0.97	3.63
MB-SL 63	OSP-P63	120	260	260	2500	2900	13.31	1.47	4.97
MB-SL 80	OSP-P80	120	260	260	2500	2900	17.36	1.81	4.97

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P with Passive Brake MB-SL

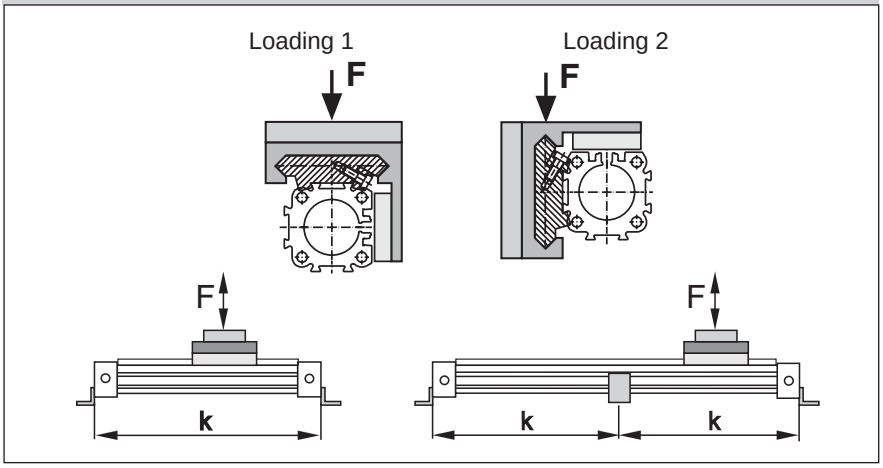


Dimension Table (mm)

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	ED	EE	EG	EK	EL	EM	EW	FF	FT	FS	GG	JJ	ZZ
MB-SL25	100	22	117	40.5	M6	162	142	M5	60	72.5	47	12	53	39	9	5	73	30	64	93.5	20	50	120	12
MB-SL32	125	25.5	152	49	M6	205	185	G1/8	80	91	67	14	62	48	7	10	82	33	84	108	21	64	160	12
MB-SL40	150	28	152	55	M6	240	220	G1/8	100	102	77	14	64	50	6.5	10	84	34	94	118.5	21.5	78	200	12
MB-SL50	175	33	200	62	M6	284	264	G1/8	120	117	94	14	75	56	10	12	95	39	110	138.5	26	90	240	12
MB-SL63	215	38	256	79	M8	312	292	G1/8	130	152	116	18	86	66	11	12	106	46	152	159	29	120	260	13
MB-SL80	260	47	348	96	M8	312	292	G1/8	130	169	116	18	99	79	11	12	19	46	152	185	29	120	260	13

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Loading



Mid Section Support

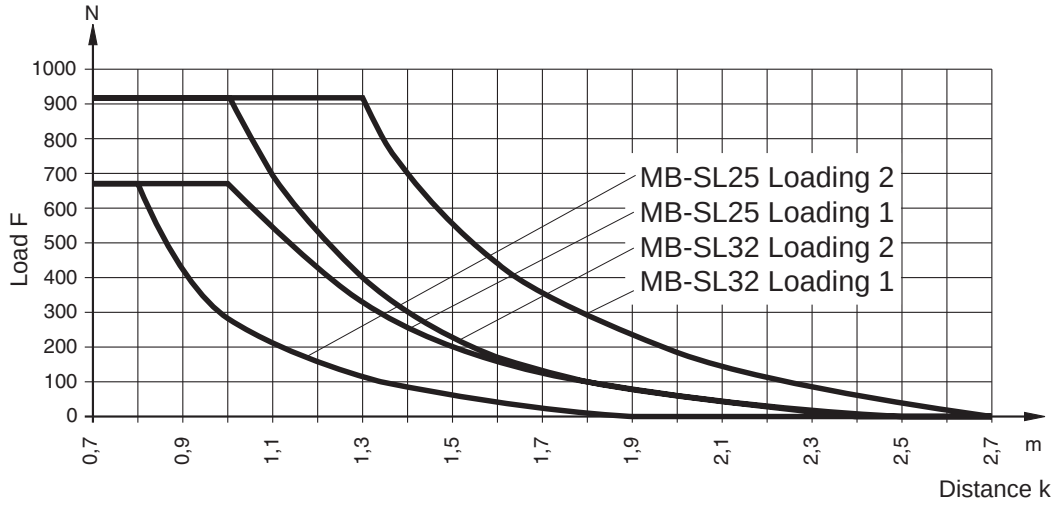
(for versions see page B47)

Mid-Section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive.

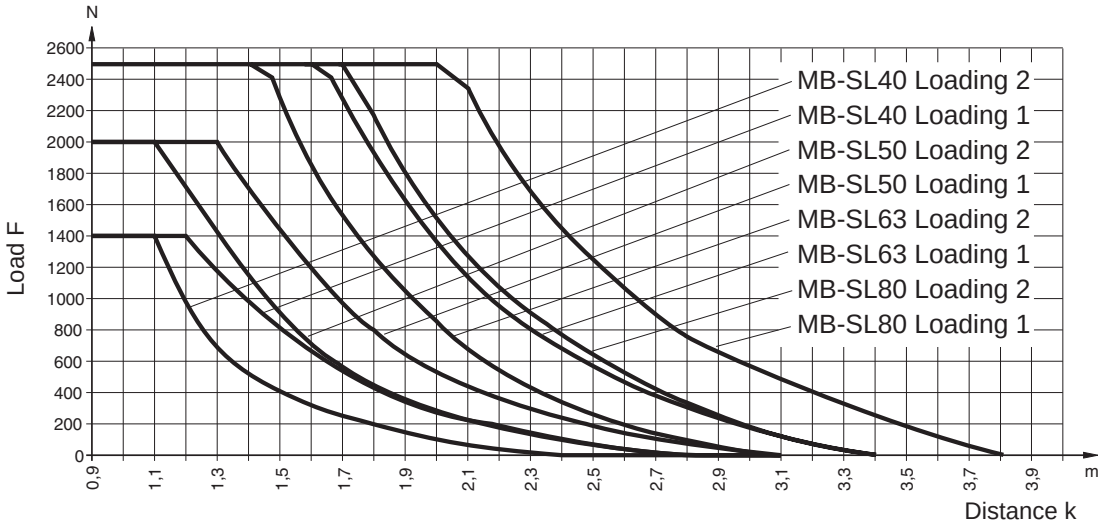
The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissable.

Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Permissible Unsupported Length MB-SL25, MB-SL32

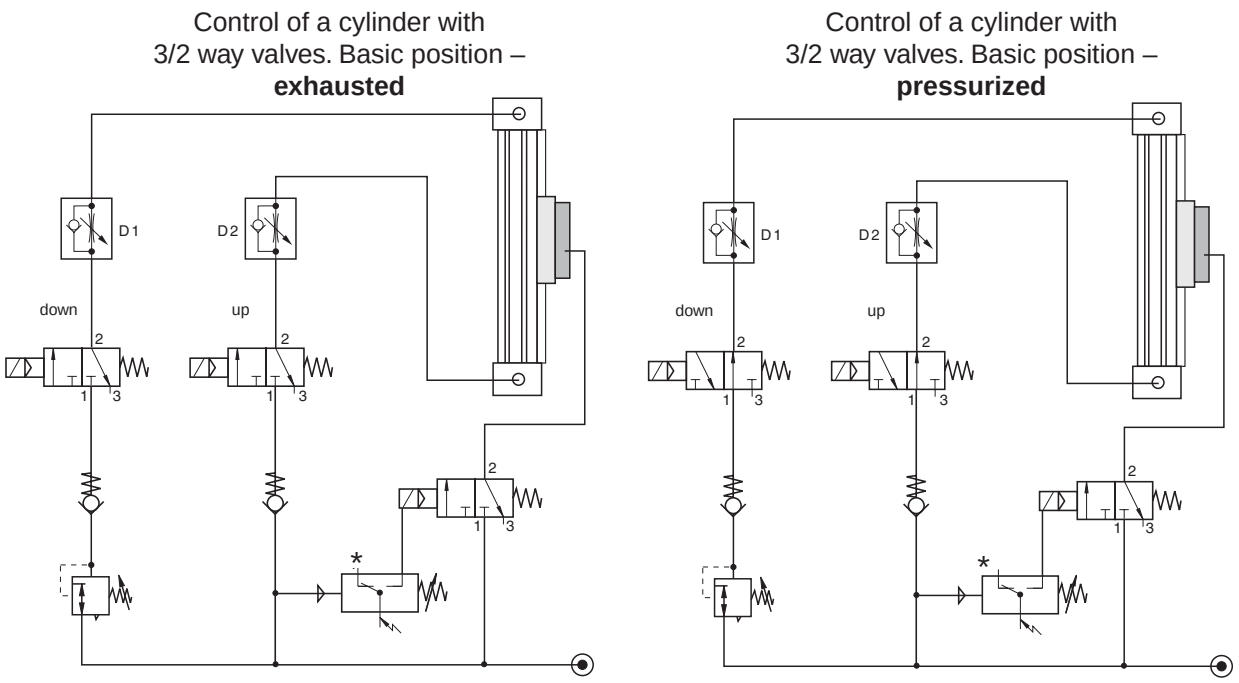


Permissible Unsupported Length MB-SL40, MB-SL50, MB-SL63 and MB-SL80



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Application Example - Vertical Application



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).

The brake is pressurized by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.

When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

The speed regulating valves D1 and D2 control the speed of the linear drive, and have no influence on the brake. The two non-return valves give the system a higher stability.

The pressure regulating valve is used to compensate for the downward force in this vertical application.

Please note:

Before the brake is lifted, make sure that both air chambers of the linear drive are pressurized.

Small diameter tubing, fittings and valves with a nominal diameter, and tubing that is too long all change the reaction time of the brake!

***Tip:**

The pressure switch actuates the brake when the pressure drops below the set value.

For accessories, such as tubing and fittings, please refer to our separate catalogue.

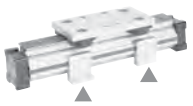
Required Components

Way Valves
Port size
M5, G1/8 G1/4, G1/2
Pressure Regulating Valves
G1/8 - G3/8
Pneumatic Accessories
P/E-Switch
Non-Return Valves G1/8 - G3/8
Screw-in Speed Regulating Valves M5 - G1/4

Contact factory for literature on the above valves/accessories

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Overview

Mounting Type	Type	Type – OSP Guides: SLIDELINE PROLINE MULTIBRAKE 16 [1]	25	32	40	50	63 [1]	80 [1]	POWERSLIDE 16/25	25/25	25/35	25/44	32/35	32/44	40/44	40/60	50/60	50/76
End cap mounting 	Type A1	X							X									
	Type A2	O	O	O														
	Type A3									O	O		O					
End cap mounting, reinforced 	Type B1		X	X						X	X	X	X	X				
	Type B3								O									
	Type B4											O		O				
	Type B5																	
End cap mounting 	Type C1				X	X	X	X							X	X	X	X
	Type C2				O	O												
	Type C3						O	O							O		O	
	Type C4															O		O
Mid-Section support, small	Type D1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mid-Section support, wide 	Type E1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O	O	O												
	Type E3						O	O	O	O	O		O		O		O	
	Type E4											O		O		O		O
	Type E5																	

X = carriage mounted in top (12 o'clock position)

O = carriage mounted in lateral (3 or 9 o'clock position)

= available components

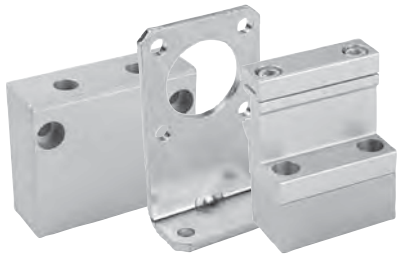
1) = not available for all sizes

Linear Drive Accessories

Mountings for Linear Drives fitted with OSP-Guides

OSP
ORIGA SYSTEM PLUS

For Linear-drives
- **Series OSP-P**



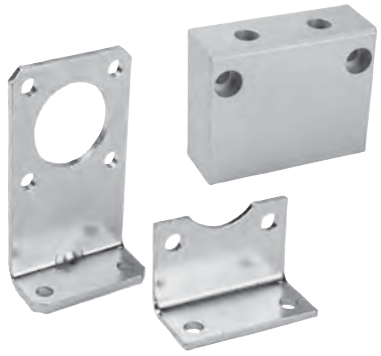
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

End Cap Mountings

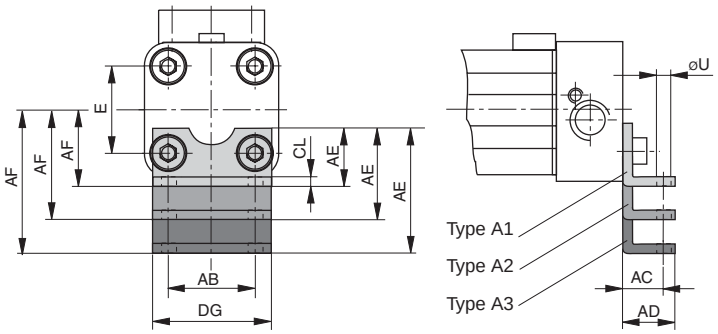
Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

Material:
Series OSP-16, 25, 32:
Galvanized steel
Series OSP-40,50, 63, 80:
Anodized aluminum

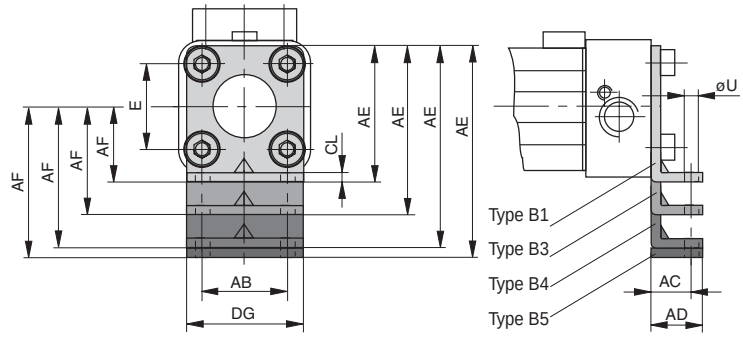
The mountings are supplied in pairs.



Series OSP-P16, 25, 32: Type A



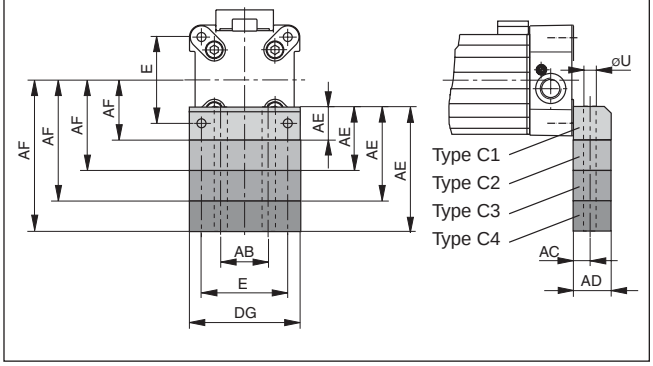
Series OSP-P16, 25, 32: Type B



Dimension Table (mm)
– Dimensions AE and AF (Dependent on the mounting type)

Mount. type	Dimensions AE for size							AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
A1	12.5	18	20	–	–	–	–	15	22	30	–	–	–	–
A2	27.5	33	34	–	–	–	–	30	37	44	–	–	–	–
A3	–	45	42	–	–	–	–	–	49	52	–	–	–	–
B1	–	42	55	–	–	–	–	–	22	30	–	–	–	–
B3	55	–	–	–	–	–	–	42	–	–	–	–	–	–
B4	–	80	85	–	–	–	–	–	60	60	–	–	–	–
B5	–	–	90	–	–	–	–	–	–	65	–	–	–	–
C1	–	–	–	24	30	40	50	–	–	–	38	48	57	72
C2	–	–	–	37	39	–	–	–	–	–	51	57	–	–
C3	–	–	–	46	54	76	88	–	–	–	60	72	93	110
C4	–	–	–	56	77	–	–	–	–	–	70	95	–	–

Series OSP-P40, 50, 63, 80: Type C

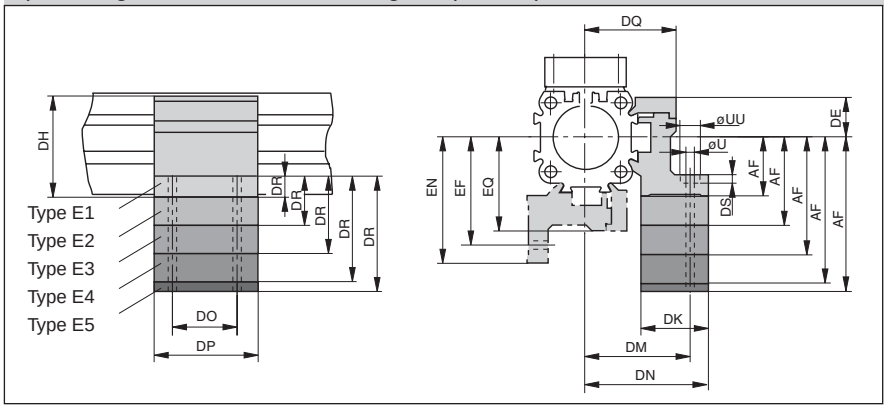


Dimension Table (mm)

Series	E	øU	AB	AC	AD	CL	DG
OSP-P16	18	3.6	18	10	14	1.6	26
OSP-P25	27	5.8	27	16	22	2.5	39
OSP-P32	36	6.6	36	18	26	3	50
OSP-P40	54	9	30	12.5	24	-	68
OSP-P50	70	9	40	12.5	24	-	86
OSP-P63	78	11	48	15	30	-	104
OSP-P80	96	14	60	17.5	35	-	130

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P16 to 80: Type E
(Mounting from above / below using a cap screw)



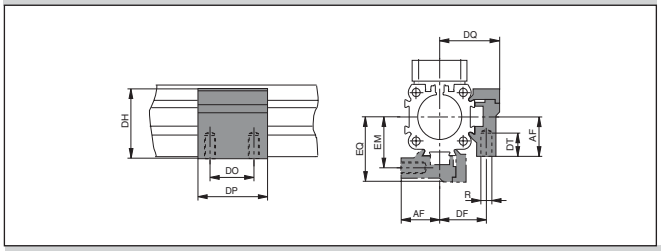
Mid-Section Support

Information regarding type E1 and D1:

Mounting of the Mid-Section supports is also possible on the lower side of the drive. In this case, please note the new center line dimensions.

Stainless steel version on request.

Series OSP-P16 to 80: Type D1
(Mounting from below with thread screw)



Dimension Table (mm)
– Dimensions AF and DR (Dependent on the mounting type)

Mount. type	Dimensions DR for size							Dimensions AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
D1	–	–	–	–	–	–	–	15	22	30	38	48	57	72
E1	6	8	10	10	10	12	15	15	22	30	38	48	57	72
E2	21	23	24	23	19	–	–	30	37	44	51	57	–	–
E3	33	35	32	32	34	48	53	42	49	52	60	72	93	110
E4	–	46	40	42	57	–	–	–	60	60	70	95	–	–
E5	–	–	45	–	–	–	–	–	–	65	–	–	–	–

Dimension Table (mm)

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-P16	M3	3.4	6	14.2	20	29.2	24	32	36.4	18	30	27	3.4	6.5	32	20	36.4	27
OSP-P25	M5	5.5	10	16	27	38	26	40	47.5	36	50	34.5	5.7	10	41.5	28.5	49	36
OSP-P32	M5	5.5	10	16	33	46	27	46	54.5	36	50	40.5	5.7	10	48.5	35.5	57	43
OSP-P40	M6	7	–	23	35	61	34	53	60	45	60	45	–	11	56	38	63	48
OSP-P50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57
OSP-P63	M8	9	–	34	47.5	91	44	73	83	45	65	63	–	16	79	53.5	89	69
OSP-P80	M10	11	–	39.5	60	111.5	63	97	112	55	80	81	–	25	103	66	118	87

Ordering information for mountings Type A – Type B – Type C – Type D – Type E

Mounting type (versions)	Order No. size						
	16	25	32	40	50	63	80
A1*)	20408FIL	2010	3010	–	–	–	–
A2*)	20464FIL	2040	3040	–	–	–	–
A3*)	–	2060FIL	3060FIL	–	–	–	–
B1*)	–	20311FIL	20313FIL	–	–	–	–
B3*)	20465FIL	–	–	–	–	–	–
B4*)	–	20312FIL	20314FIL	–	–	–	–
B5*)	–	–	20976FIL	–	–	–	–
C1*)	–	–	–	4010FIL	5010FIL	6010	8010
C2*)	–	–	–	20338FIL	20349FIL	–	–
C3*)	–	–	–	20339FIL	20350FIL	20821FIL	20822FIL
C4*)	–	–	–	20340FIL	20351FIL	–	–
D1	20434FIL	20008FIL	20157FIL	20027FIL	20162FIL	20451FIL	20480FIL
E1	20435FIL	20009FIL	20158FIL	20028FIL	20163FIL	20452FIL	20482FIL
E2	20436FIL	20352FIL	20355FIL	20358FIL	20361FIL	–	–
E3	20437FIL	20353FIL	20356FIL	20359FIL	20362FIL	20453FIL	20819FIL
E4	–	20354FIL	20357FIL	20360FIL	20363FIL	–	–
E5	–	–	20977FIL	–	–	–	–

(*Pair

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Roller Guide POWERSLIDE

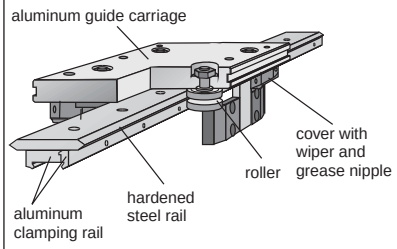
OSP
ORIGA SYSTEM PLUS

Series PS 16 to 50
for Linear-drive
- **Series OSP-P**

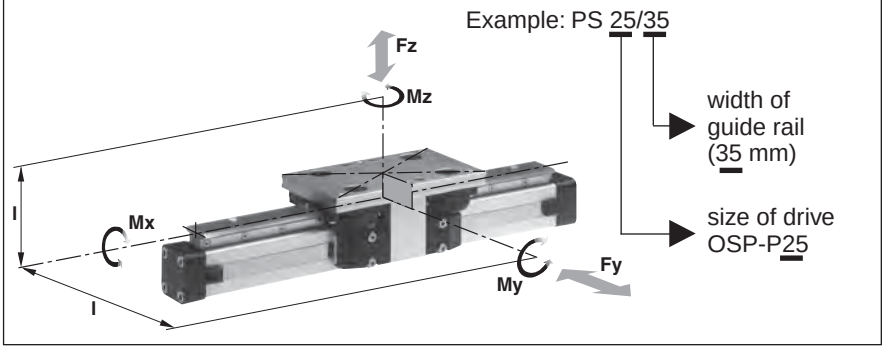
Features:
- Anodized aluminum guide carriage with vee rollers having 2 rows of ball bearings
- Hardened steel guide rail
- Several guide sizes can be used on the same drive
- Corrosion resistance version available on request
- Max. speed v = 3 m/s,
- Tough roller cover with wiper and grease nipple
- Any length of stroke up to 3500 mm, (longer strokes on request)

Versions

for pneumatic linear drive:
Series OSP-P



Loads, Forces and Moments



Technical Data

The Table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

For further information and technical data see page B8 for linear drives OSP-P

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

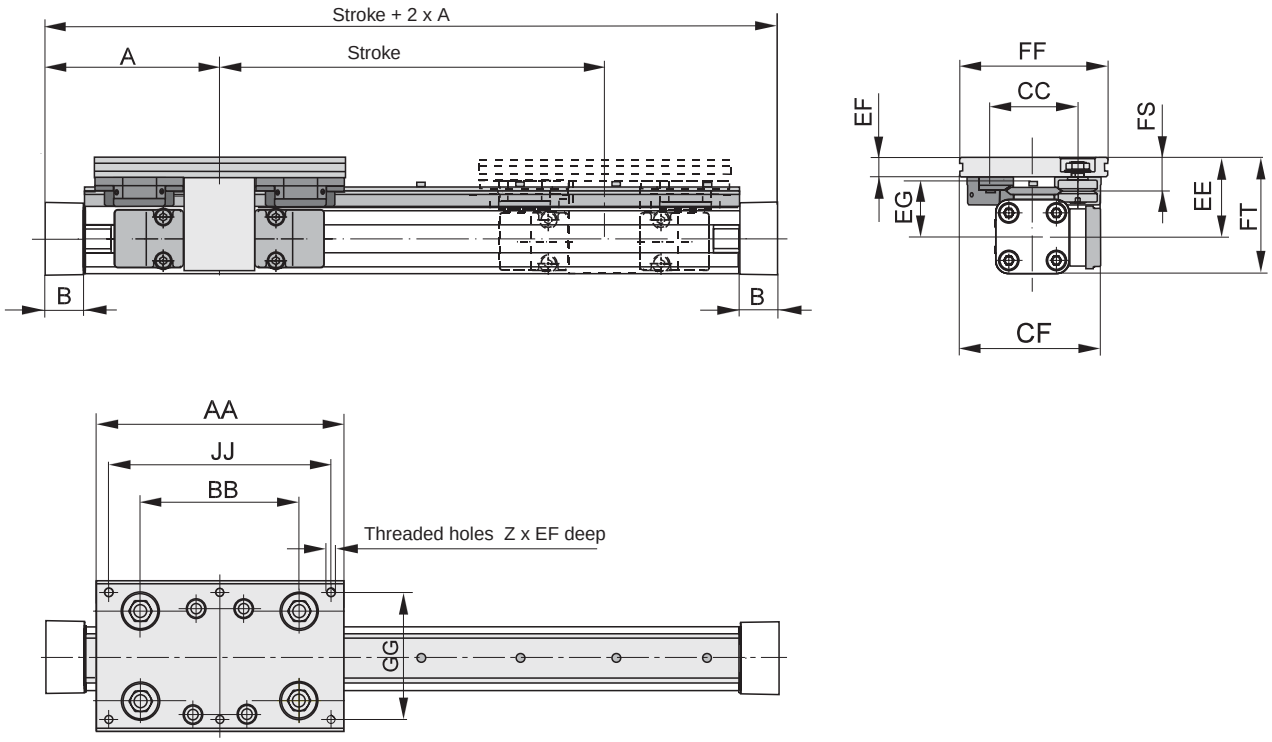
Series	For linear drive	Max. moments (Nm)			Max. load (N)	Mass of linear drive with guide (kg)		Mass * of guide carriage (kg)
		Mx	My	Mz	Fy, Fz	with 0 mm stroke	increase per 100 mm stroke	
PS 16/25	OSP-P16	14	45	45	1400	0.93	0.24	0.7
PS 25/25	OSP-P25	14	63	63	1400	1.5	0.4	0.7
PS 25/35	OSP-P25	20	70	70	1400	1.7	0.4	0.8
PS 25/44	OSP-P25	65	175	175	3000	2.6	0.5	1.5
PS 32/35	OSP-P32	20	70	70	1400	2.6	0.6	0.8
PS 32/44	OSP-P32	65	175	175	3000	3.4	0.7	1.5
PS 40/44	OSP-P40	65	175	175	3000	4.6	1.1	1.5
PS 40/60	OSP-P40	90	250	250	3000	6	1.3	2.2
PS 50/60	OSP-P50	90	250	250	3000	7.6	1.4	2.3
PS 50/76	OSP-P50	140	350	350	4000	11.5	1.8	4.9

[1] corrosion resistance version available on request (max. loads and moments are 25% lower)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions

Series OSP-P



Dimension Table (mm)

Series	A	B	Z	AA	BB	CC	CF	EE	EF	EG	FF	FS	FT	GG	JJ
PS 16/25	65	14	4xM6	120	65	47	80	49	12	35	80	21	64	64	100
PS 25/25	100	22	6xM6	145	90	47	79.5	53	11	39	80	20	73.5	64	125
PS 25/35	100	22	6xM6	156	100	57	89.5	52.5	12.5	37.5	95	21.5	73	80	140
PS 25/44	100	22	6xM8	190	118	73	100	58	15	39	116	26	78.5	96	164
PS 32/35	125	25.5	6xM6	156	100	57	95.5	58.5	12.5	43.5	95	21.5	84.5	80	140
PS 32/44	125	25.5	6xM8	190	118	73	107	64	15	45	116	26	90	96	164
PS 40/44	150	28	6xM8	190	118	73	112.5	75	15	56	116	26	109.5	96	164
PS 40/60	150	28	6xM8	240	167	89	122.5	74	17	54	135	28.5	108.5	115	216
PS 50/60	175	33	6xM8	240	167	89	130.5	81	17	61	135	28.5	123.5	115	216
PS 50/76	175	33	6xM10	280	178	119	155.5	93	20	64	185	39	135.5	160	250

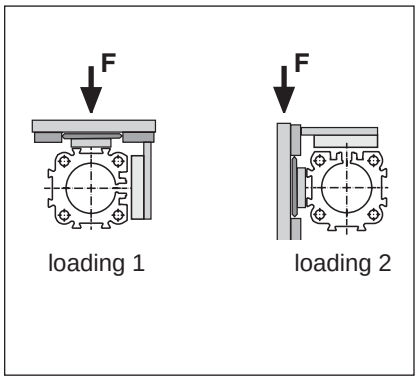
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

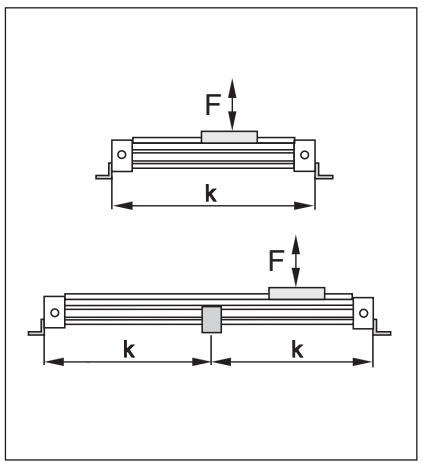
Mid-Section Support

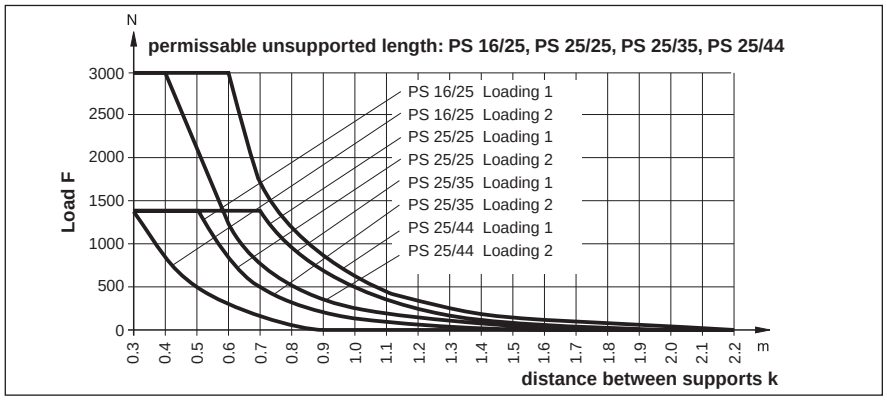
(for versions, see accessories)

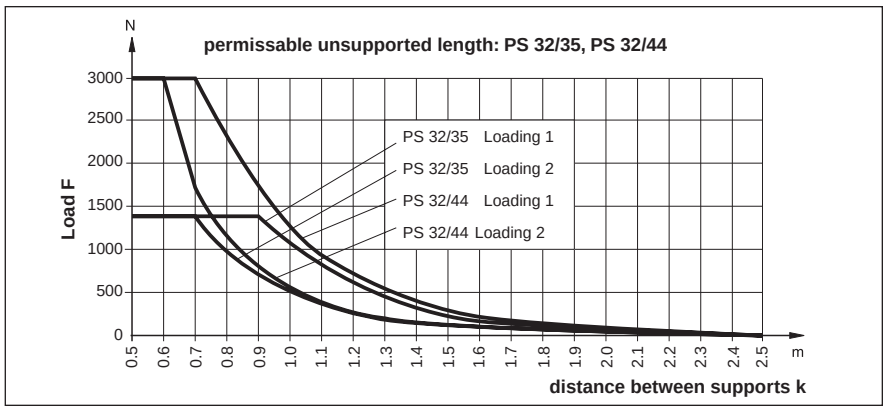
Mid-Section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.
A distinction must be drawn between loading 1 and loading 2.
Deflection of 0.5 mm max. between supports is permissible.

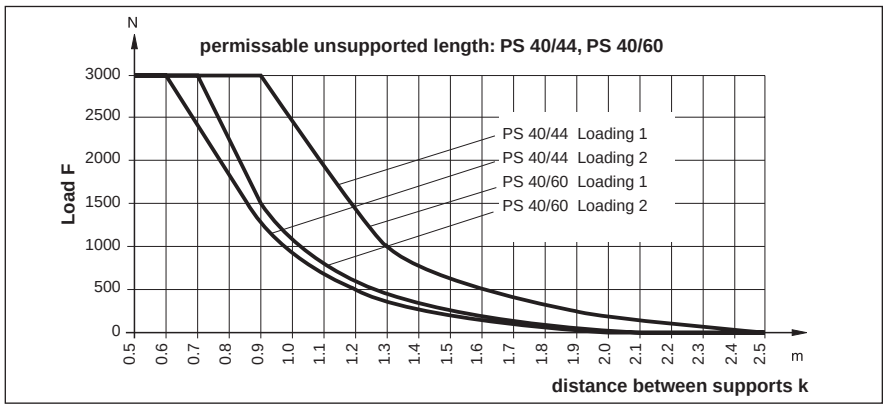
Note
For speeds v > 0.5 m/s the distance between supports should not exceed 1m.

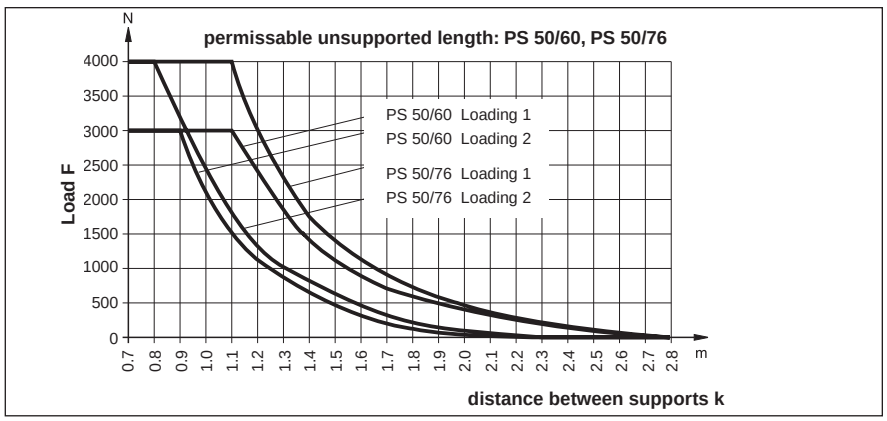












Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

1. Calculation of load factor L_F

$$L_F = \frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}}$$

with combined loads, L_F should not exceed the value 1.

2. Service life calculation

- **For PS 16/25, PS 25/25, PS 25/35, and PS 32/35** — Service life (km) = $\frac{106}{(L_F + 0{,}02)^3}$
- **For PS 25/44, PS 32/44, PS 40/44, PS 40/60 and PS 50/60:** — Service life (km) = $\frac{314}{(L_F + 0{,}015)^3}$
- **For PS 50/76:** — Service life (km) = $\frac{680}{(L_F + 0{,}015)^3}$

Service Life

Calculation of service life is achieved in two stages:

- Determination of load factor L_F from the loads to be carried
- Calculation of service life in km

Lubrication

For maximum system life, lubrication of the rollers must be maintained at all times.

Only high quality Lithium based greases should be used.

Lubrication intervals are dependent on environmental conditions

(temperature, running speed, grease quality etc.) therefore the installation should be regularly inspected.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

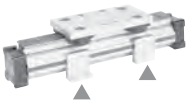
Linear Drive Accessories

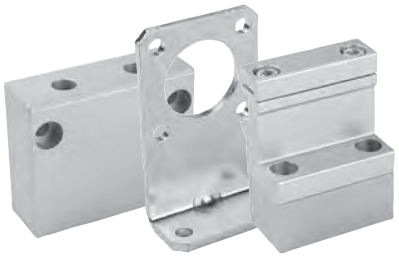
Mountings for Linear Drives fitted with OSP-Guides

OSP
ORIGA SYSTEM PLUS

For Linear-drives
- **Series OSP-P**

Overview

Mounting Type	Type	Type – OSP Guides: SLIDELINE PROLINE MULTIBRAKE 16 [1]	25	32	40	50	63 [1]	80 [1]	POWERSLIDE 16/25	25/25	25/35	25/44	32/35	32/44	40/44	40/60	50/60	50/76
End cap mounting 	Type A1	X							X									
	Type A2	O	O	O														
	Type A3									O	O		O					
End cap mounting, reinforced 	Type B1		X	X						X	X	X	X	X				
	Type B3								O									
	Type B4											O		O				
	Type B5																	
End cap mounting 	Type C1				X	X	X	X							X	X	X	X
	Type C2				O	O												
	Type C3						O	O							O		O	
	Type C4															O		O
Mid-Section support, small	Type D1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mid-Section support, wide 	Type E1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O	O	O												
	Type E3						O	O	O	O	O		O		O		O	
	Type E4											O		O		O		O
	Type E5																	



X = carriage mounted in top (12 o'clock position)

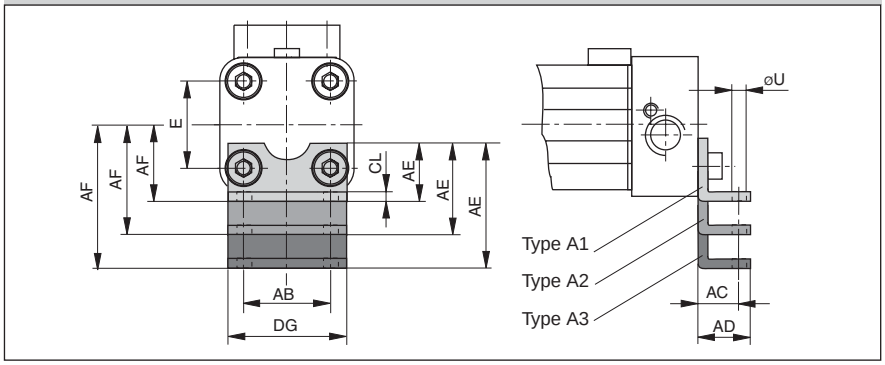
O = carriage mounted in lateral (3 or 9 o'clock position)

= available components

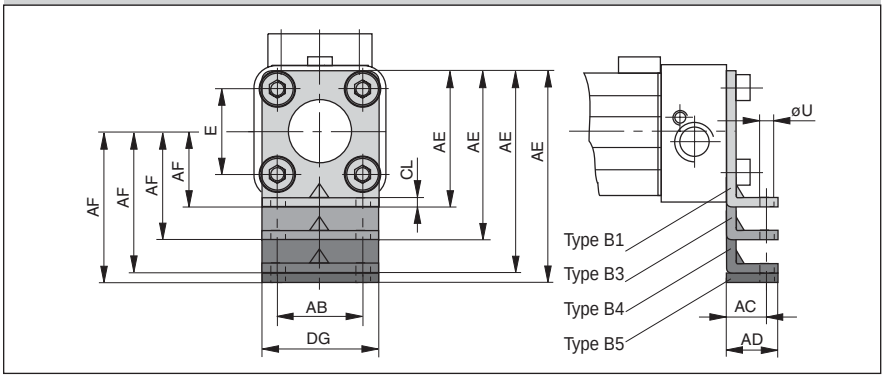
1) = not available for all sizes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P16, 25, 32: Type A



Series OSP-P16, 25, 32: Type B

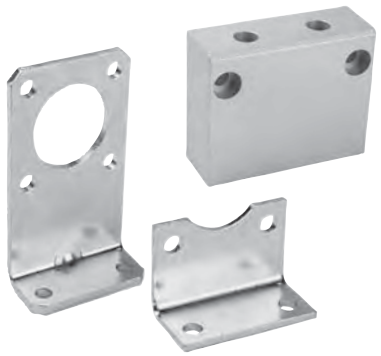


End Cap Mountings

Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

Material:
Series OSP-16, 25, 32:
Galvanized steel
Series OSP-40,50, 63, 80:
Anodized aluminum

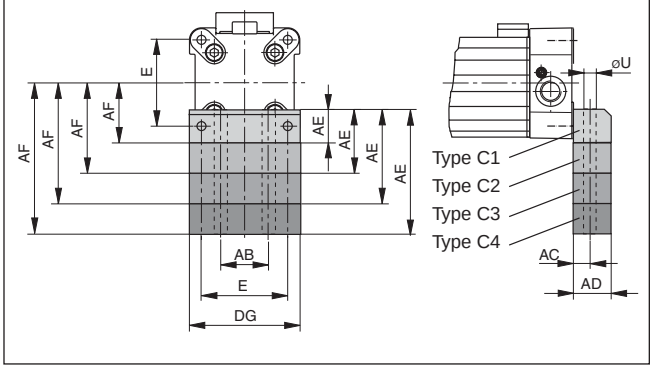
The mountings are supplied in pairs.



Dimension Table (mm)
– Dimensions AE and AF (Dependent on the mounting type)

Mount. type	Dimensions AE for size							AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
A1	12.5	18	20	–	–	–	–	15	22	30	–	–	–	–
A2	27.5	33	34	–	–	–	–	30	37	44	–	–	–	–
A3	–	45	42	–	–	–	–	–	49	52	–	–	–	–
B1	–	42	55	–	–	–	–	–	22	30	–	–	–	–
B3	55	–	–	–	–	–	–	42	–	–	–	–	–	–
B4	–	80	85	–	–	–	–	–	60	60	–	–	–	–
B5	–	–	90	–	–	–	–	–	–	65	–	–	–	–
C1	–	–	–	24	30	40	50	–	–	–	38	48	57	72
C2	–	–	–	37	39	–	–	–	–	–	51	57	–	–
C3	–	–	–	46	54	76	88	–	–	–	60	72	93	110
C4	–	–	–	56	77	–	–	–	–	–	70	95	–	–

Series OSP-P40, 50, 63, 80: Type C



Dimension Table (mm)

Series	E	øU	AB	AC	AD	CL	DG
OSP-P16	18	3.6	18	10	14	1.6	26
OSP-P25	27	5.8	27	16	22	2.5	39
OSP-P32	36	6.6	36	18	26	3	50
OSP-P40	54	9	30	12.5	24	-	68
OSP-P50	70	9	40	12.5	24	-	86
OSP-P63	78	11	48	15	30	-	104
OSP-P80	96	14	60	17.5	35	-	130

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

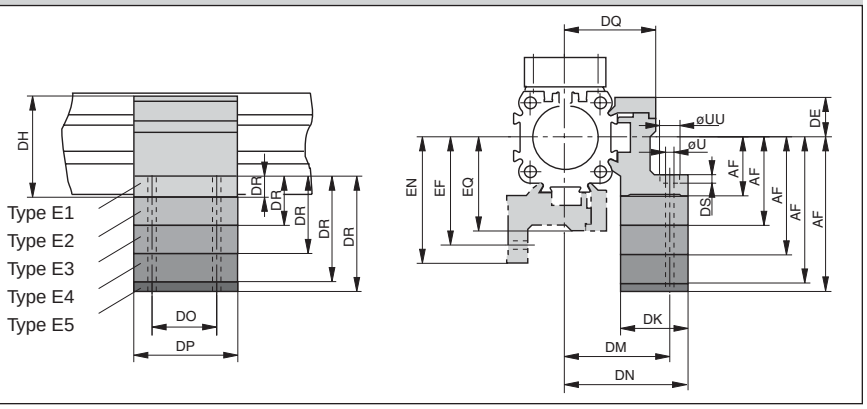
Mid-Section Support

Information regarding type E1 and D1:

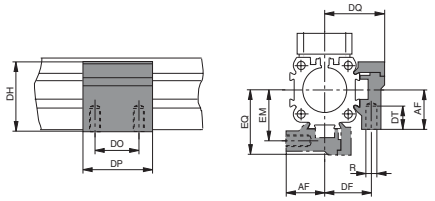
Mounting of the Mid-Section supports is also possible on the lower side of the drive. In this case, please note the new center line dimensions.

Stainless steel version on request.

Series OSP-P16 to 80: Type E
(Mounting from above / below using a cap screw)



Series OSP-P16 to 80: Type D1
(Mounting from below with thread screw)



Dimension Table (mm)
– Dimensions AF and DR (Dependent on the mounting type)

Mount. type	Dimensions DR for size							Dimensions AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
D1	–	–	–	–	–	–	–	15	22	30	38	48	57	72
E1	6	8	10	10	10	12	15	15	22	30	38	48	57	72
E2	21	23	24	23	19	–	–	30	37	44	51	57	–	–
E3	33	35	32	32	34	48	53	42	49	52	60	72	93	110
E4	–	46	40	42	57	–	–	–	60	60	70	95	–	–
E5	–	–	45	–	–	–	–	–	–	65	–	–	–	–

Dimension Table (mm)

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-P16	M3	3.4	6	14.2	20	29.2	24	32	36.4	18	30	27	3.4	6.5	32	20	36.4	27
OSP-P25	M5	5.5	10	16	27	38	26	40	47.5	36	50	34.5	5.7	10	41.5	28.5	49	36
OSP-P32	M5	5.5	10	16	33	46	27	46	54.5	36	50	40.5	5.7	10	48.5	35.5	57	43
OSP-P40	M6	7	–	23	35	61	34	53	60	45	60	45	–	11	56	38	63	48
OSP-P50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57
OSP-P63	M8	9	–	34	47.5	91	44	73	83	45	65	63	–	16	79	53.5	89	69
OSP-P80	M10	11	–	39.5	60	111.5	63	97	112	55	80	81	–	25	103	66	118	87

Ordering information for mountings Type A – Type B – Type C – Type D – Type E

Mounting type (versions)	Order No. size						
	16	25	32	40	50	63	80
A1*)	20408FIL	2010	3010	–	–	–	–
A2*)	20464FIL	2040	3040	–	–	–	–
A3*)	–	2060FIL	3060FIL	–	–	–	–
B1*)	–	20311FIL	20313FIL	–	–	–	–
B3*)	20465FIL	–	–	–	–	–	–
B4*)	–	20312FIL	20314FIL	–	–	–	–
B5*)	–	–	20976FIL	–	–	–	–
C1*)	–	–	–	4010FIL	5010FIL	6010	8010
C2*)	–	–	–	20338FIL	20349FIL	–	–
C3*)	–	–	–	20339FIL	20350FIL	20821FIL	20822FIL
C4*)	–	–	–	20340FIL	20351FIL	–	–
D1	20434FIL	20008FIL	20157FIL	20027FIL	20162FIL	20451FIL	20480FIL
E1	20435FIL	20009FIL	20158FIL	20028FIL	20163FIL	20452FIL	20482FIL
E2	20436FIL	20352FIL	20355FIL	20358FIL	20361FIL	–	–
E3	20437FIL	20353FIL	20356FIL	20359FIL	20362FIL	20453FIL	20819FIL
E4	–	20354FIL	20357FIL	20360FIL	20363FIL	–	–
E5	–	–	20977FIL	–	–	–	–

(*Pair

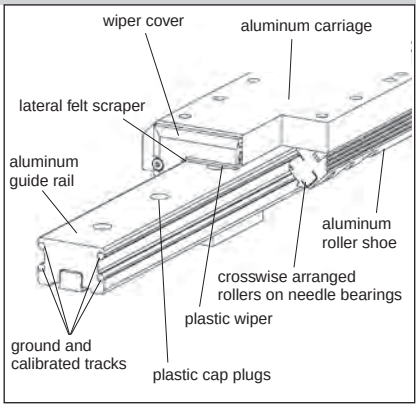
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Aluminum Roller Guide PROLINE

OSP
ORIGA SYSTEM PLUS

Versions

for pneumatic linear drive:
Series OSP-P



Technical Data

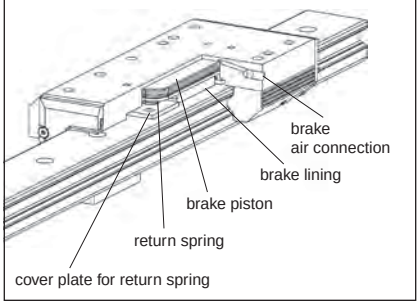
The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

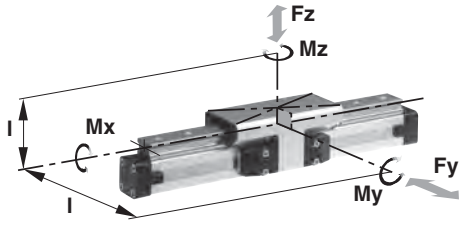
The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

Option – Integrated Brake



Loads, Forces and Moments



Series PL 16 to 50
for Linear-drive

- **Series OSP-P**

Features:

- High precision
- High velocities (10 m/s)
- Smooth operation - low noise
- Integated wiper system
- Long life lubrication
- Compact dimensions - compatible to Slideline plain bearing guide
- Any length of stroke up to 3750 mm

Integrated Brake (optional)
for Series OSP-P25 to OSP-P50:

- Actuated by pressurization
- Release by depressurization and spring actuation

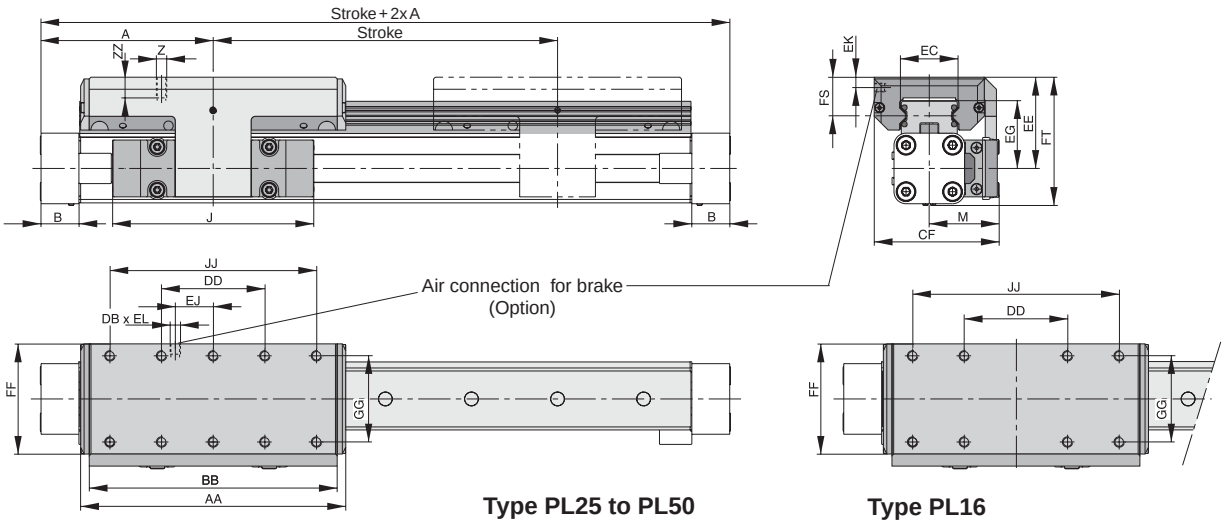
*** Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

Series	For linear drive	Max. moments (Nm)			Max. loads (N)	Maximum braking force at 6 bar (N) [1]	Mass of linear drive with guide (kg)		Mass * guide carriage (kg)
		Mx	My	Mz	Fy, Fz		with 0 mm stroke	increase per 100 mm stroke	
PL 16	OSP-P16	8	12	12	542	–	0.55	0.19	0.24
PL 25	OSP-P25	16	39	39	857	on request	1.65	0.40	0.75
PL 32	OSP-P32	29	73	73	1171	on request	3.24	0.62	1.18
PL 40	OSP-P40	57	158	158	2074	on request	4.35	0.70	1.70
PL 50	OSP-P50	111	249	249	3111	on request	7.03	0.95	2.50

[1] Only for version with brake:
Braking surface dry – oiled surface reduces the effective braking force.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimension Table (mm) Series OSP-P PL16, PL25, PL32, PL40, PL50



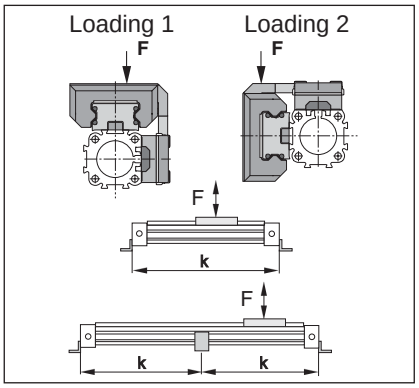
Type PL25 to PL50 **Type PL16**

Dimension Table (mm) - OSP-P PL16,PL25, PL32, PL40, PL50

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	EE	EG	EJ	EK	EL	FF	FS	FT	GG	JJ	ZZ
PL16	65	14	69	31	M4	98	88	-	30	55	23	40	30	-	-	-	48	17	55	36	70	8
PL25	100	22	117	40.5	M6	154	144	M5	60	72.5	32.5	53	39	22	6	6	64	23	73.5	50	120	12
PL32	125	25.5	152	49	M6	197	187	M5	80	91	42	62	48	32	6	6	84	25	88	64	160	12
PL40	150	28	152	55	M6	232	222	M5	100	102	47	64	50.5	58	6	6	94	23.5	98.5	78	200	12
PL50	175	33	200	62	M6	276	266	M5	120	117	63	75	57	81	6	6	110	29	118.5	90	240	16

Mid-Section Support

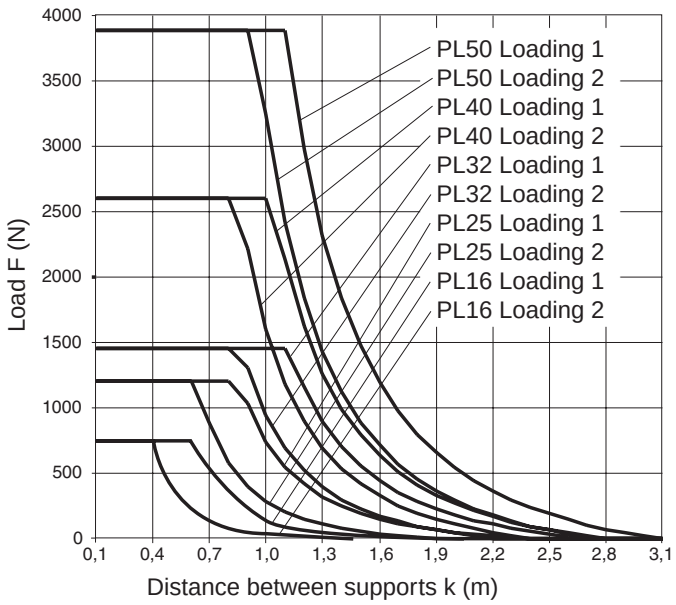
(For versions, see page B65)
Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:

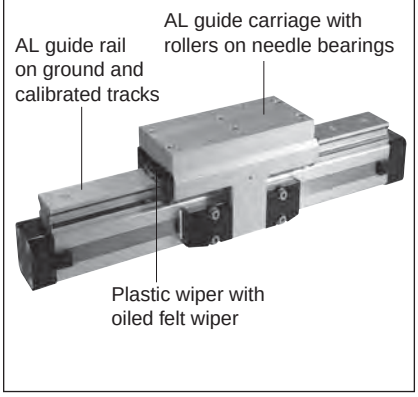
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Permissible Unsupported Length PL16, PL25, PL32, PL40 and PL50

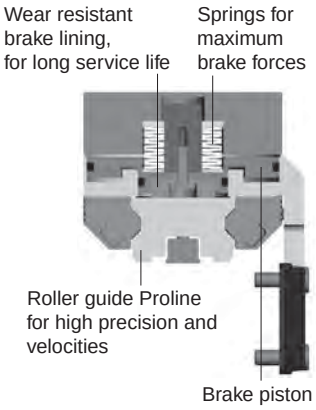


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Versions



Function



Multi-Brake Passive Brake

with Aluminum Roller Guide Proline PL

OSP
ORIGA SYSTEM PLUS

Series MB-PL 25 to 50 for Linear-drive

- **Series OSP-P**

Features:

- Brake operated by spring actuation
- Brake release by pressurization
- Optional sensor to indicate brake lining wear
- Composite sealing system with plastic and felt wiper elements to remove dirt and lubricate the slideway
- Blocking function in case of pressure loss
- Intermediate stops possible

[1] Braking surface dry – oil on the braking surface will reduce the braking force

*** Please note:**

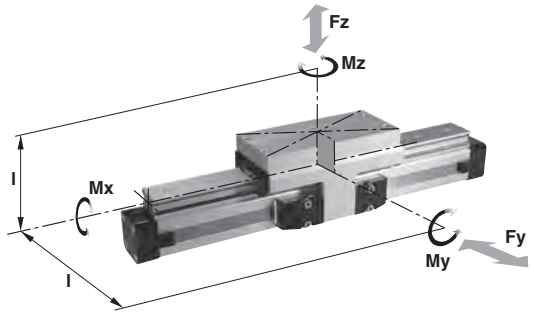
In the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

Function:

The Multi-Brake is a passive device. When the air pressure is removed the brake is actuated and movement of the cylinder is blocked. The brake is released by pressurization.

The high friction, wear resistant brake linings allow the Multi-Brake to be used as a dynamic brake to stop cylinder movement in the shortest possible time. The powerful springs also allow the Multi-Brake to be used effectively in positioning applications.

Loads, Forces and Moments



Technical Data

The table shows the maximal permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Ly}{Ly_{max}} + \frac{Lz}{Lz_{max}} \leq 1$$

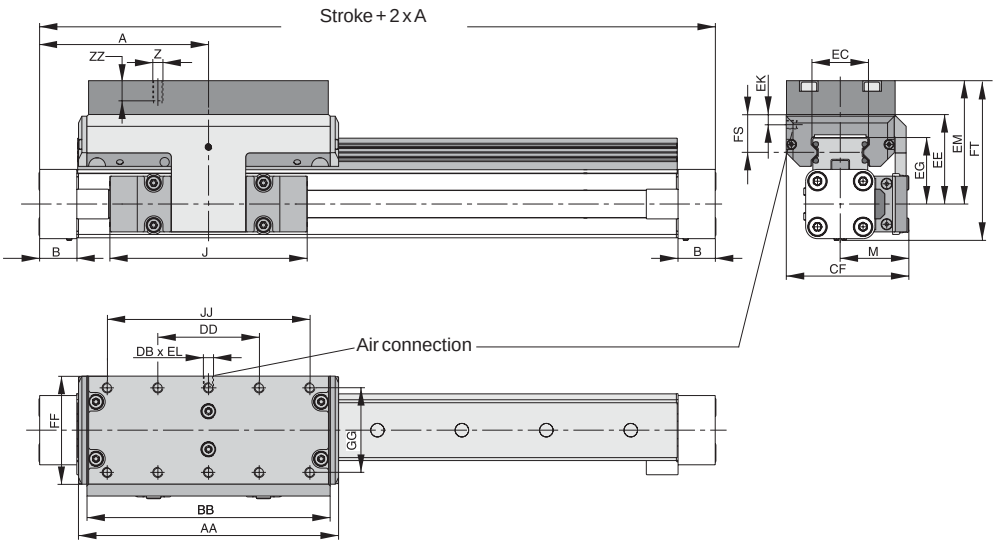
The sum of the loads should not exceed >1. With a load factor of less than 1, service life is 8000 km

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.
Operating Pressure 4.5 - 8 bar.
A pressure of min. 4.5 bar release the brake.

Series	For linear drive	Max. moments (Nm) Mx	My	Mz	Max. loads (N) Fy, Fz	Max. brake force (N) [1]	Mass of linear drive with guide (kg) with 0 mm stroke	increase per 100 mm stroke	Mass* guide carriage (kg)
MB-PL25	OSP-P25	16	39	39	857	315	2.14	0.40	1.24
MB-PL32	OSP-P32	29	73	73	1171	490	4.08	0.62	2.02
MB-PL40	OSP-P40	57	158	158	2074	715	5.46	0.70	2.82
MB-PL50	OSP-P50	111	249	249	3111	1100	8.60	0.95	4.07

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P with Passive Brake MB-PL



Dimension Table (mm) - OSP-P MB-PL25, MB-PL32, MB-PL40, MB-PL50

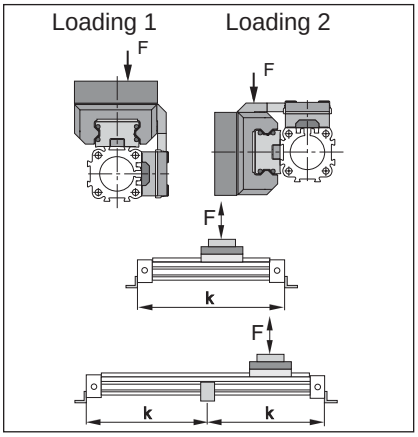
Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	EE	EG	EK	EL	EM	FF	FS	FT	GG	JJ	ZZ
MB-PL25	100	22	117	40.5	M6	154	144	M5	60	72.5	32.5	53	39	9	5	73	64	23	93.5	50	120	12
MB-PL32	125	25.5	152	49	M6	197	187	G1/8	80	91	42	62	48	7	10	82	84	25	108	64	160	12
MB-PL40	150	28	152	55	M6	232	222	G1/8	100	102	47	64	50.5	6.5	10	84	94	23.5	118.5	78	200	12
MB-PL50	175	33	200	62	M6	276	266	G1/8	120	117	63	75	57	10	12	95	110	29	138.5	90	240	16

Mid-Section Support

(for versions see page B65)

Mid-Section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading.

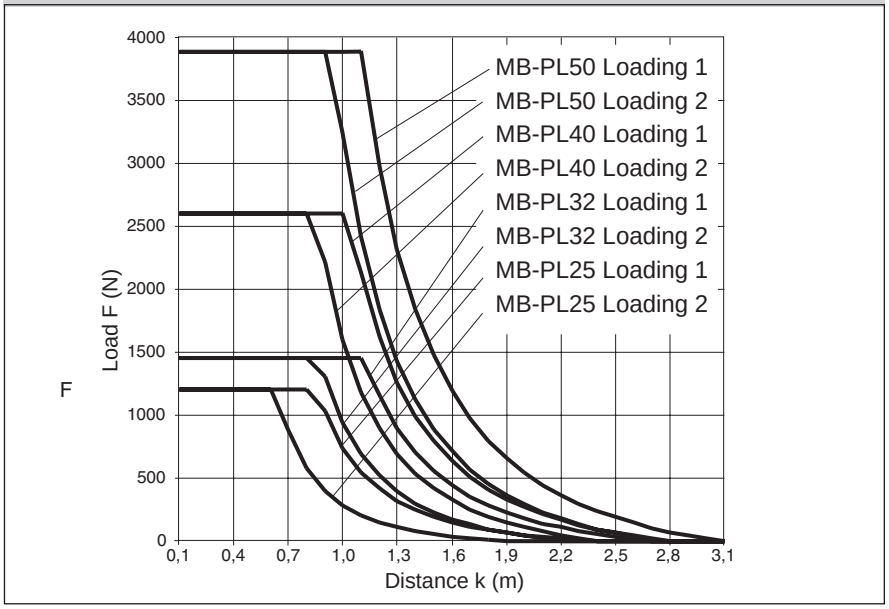
A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:

For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

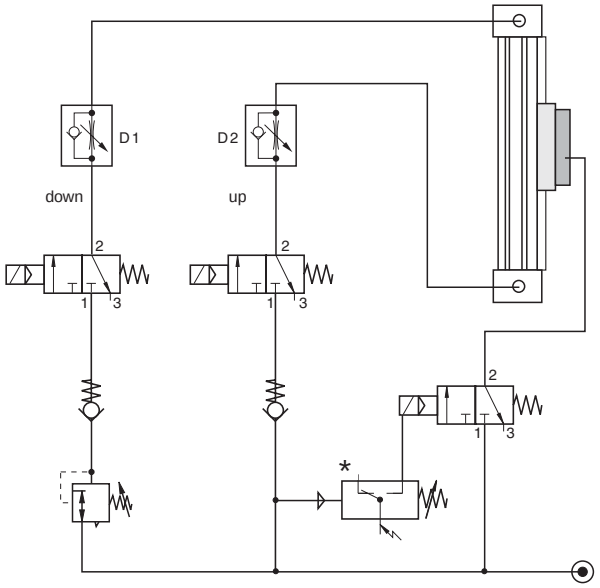
Permissible Unsupported Length OSP-P MB-PL25, MB-PL32, MB-PL40, MB-PL50



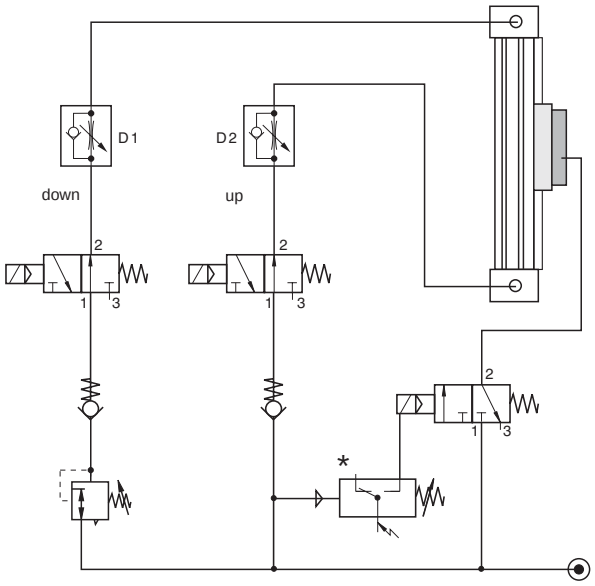
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Application Example - Vertical Application

Control of a cylinder with
3/2 way valves. Basic position –
exhausted



Control of a cylinder with
3/2 way valves. Basic position –
pressurized



Control Examples

Under normal operating circumstances the pressure switch is closed and the air flows through the 3/2 way solenoid valves from port 1 to 2, thus lifting the brake from the rail (operating condition).

The brake is pressurized by means of a 3/2 way valve in combination with a pressure switch. When there is a pressure loss, the brake is actuated by the pressure switch.

When the air pressure is restored to both cylinder chambers, the brake is lifted and the linear drive can be moved again.

The speed regulating valves D1 and D2 control the speed of the linear drive, and have no influence on the brake. The two non-return valves give the system a higher stability.

The pressure regulating valve is used to compensate for the downward force in this vertical application.

Please note:

Before the brake is lifted, make sure that both air chambers of the linear drive are pressurized.

Small diameter tubing, fittings and valves with a nominal diameter, and tubing that is too long all change the reaction time of the brake!

***Tip:**

The pressure switch actuates the brake when the pressure drops below the set value.

Required Components

Way Valves
Port size
M5, G1/8 G1/4, G1/2
Pressure Regulating Valves
G1/8 - G3/8
Pneumatic Accessories
P/E-Switch
Non-Return Valves G1/8 - G3/8
Screw-in Speed Regulating Valves M5 - G1/4

Contact factory for literature on the above valves/accessories

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

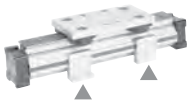
Linear Drive Accessories

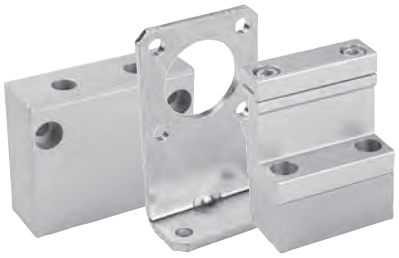
Mountings for Linear Drives fitted with OSP-Guides

OSP
ORIGA SYSTEM PLUS

For Linear-drives
- **Series OSP-P**

Overview

Mounting Type	Type	Type – OSP Guides: SLIDELINE PROLINE MULTIBRAKE 16 [1]	25	32	40	50	63 [1]	80 [1]	POWERSLIDE 16/25	25/25	25/35	25/44	32/35	32/44	40/44	40/60	50/60	50/76
End cap mounting 	Type A1	X							X									
	Type A2	O	O	O														
	Type A3									O	O		O					
End cap mounting, reinforced 	Type B1		X	X						X	X	X	X	X				
	Type B3								O									
	Type B4											O		O				
	Type B5																	
End cap mounting 	Type C1				X	X	X	X							X	X	X	X
	Type C2				O	O												
	Type C3						O	O							O		O	
	Type C4															O		O
Mid-Section support, small Mid-Section support, wide 	Type D1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Type E1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Type E2	O	O	O	O	O												
	Type E3						O	O	O	O	O		O		O		O	
	Type E4											O		O		O		O
	Type E5																	



X = carriage mounted in top (12 o'clock position)

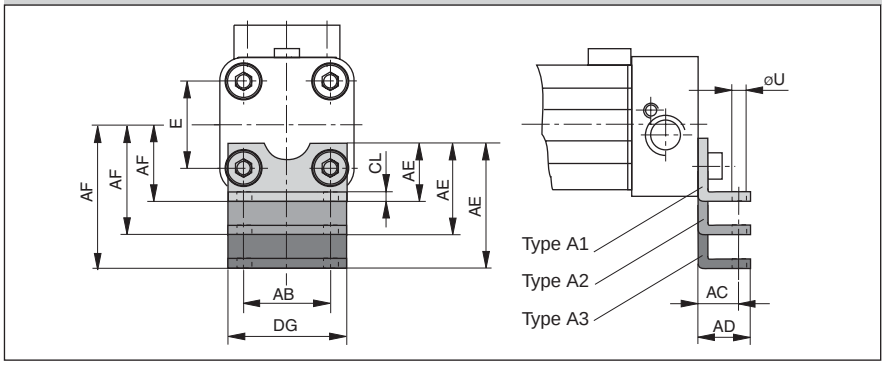
O = carriage mounted in lateral (3 or 9 o'clock position)

= available components

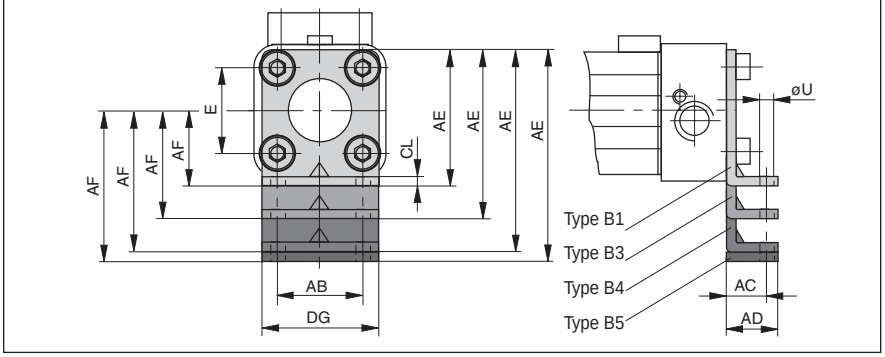
1) = not available for all sizes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

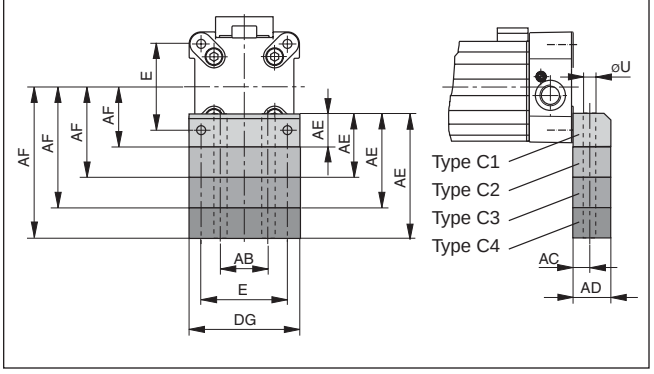
Series OSP-P16, 25, 32: Type A



Series OSP-P16, 25, 32: Type B



Series OSP-P40, 50, 63, 80: Type C

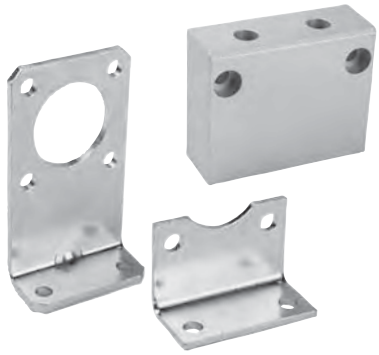


End Cap Mountings

Four internal screw threads are located in the end faces of all OSP actuators for mounting the drive unit. End cap mountings may be secured across any two adjacent screws.

Material:
Series OSP-16, 25, 32:
Galvanized steel
Series OSP-40,50, 63, 80:
Anodized aluminum

The mountings are supplied in pairs.



Dimension Table (mm)
– Dimensions AE and AF (Dependent on the mounting type)

Mount. type	Dimensions AE for size							AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
A1	12.5	18	20	–	–	–	–	15	22	30	–	–	–	–
A2	27.5	33	34	–	–	–	–	30	37	44	–	–	–	–
A3	–	45	42	–	–	–	–	–	49	52	–	–	–	–
B1	–	42	55	–	–	–	–	–	22	30	–	–	–	–
B3	55	–	–	–	–	–	–	42	–	–	–	–	–	–
B4	–	80	85	–	–	–	–	–	60	60	–	–	–	–
B5	–	–	90	–	–	–	–	–	–	65	–	–	–	–
C1	–	–	–	24	30	40	50	–	–	–	38	48	57	72
C2	–	–	–	37	39	–	–	–	–	–	51	57	–	–
C3	–	–	–	46	54	76	88	–	–	–	60	72	93	110
C4	–	–	–	56	77	–	–	–	–	–	70	95	–	–

Dimension Table (mm)

Series	E	øU	AB	AC	AD	CL	DG
OSP-P16	18	3.6	18	10	14	1.6	26
OSP-P25	27	5.8	27	16	22	2.5	39
OSP-P32	36	6.6	36	18	26	3	50
OSP-P40	54	9	30	12.5	24	-	68
OSP-P50	70	9	40	12.5	24	-	86
OSP-P63	78	11	48	15	30	-	104
OSP-P80	96	14	60	17.5	35	-	130

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

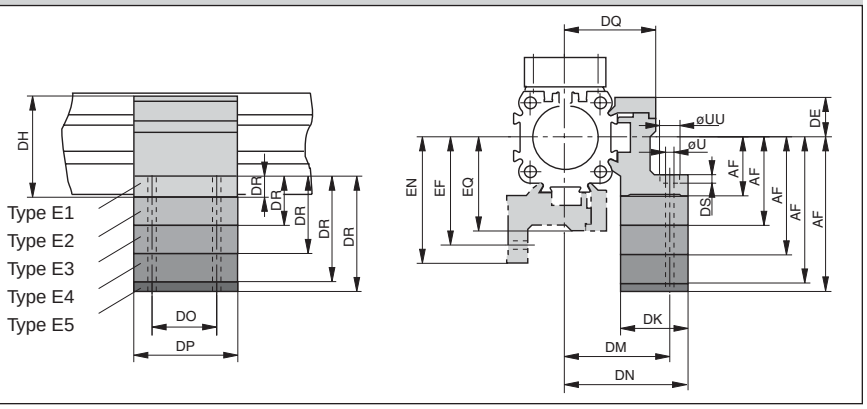
Mid-Section Support

Information regarding type E1 and D1:

Mounting of the Mid-Section supports is also possible on the lower side of the drive. In this case, please note the new center line dimensions.

Stainless steel version on request.

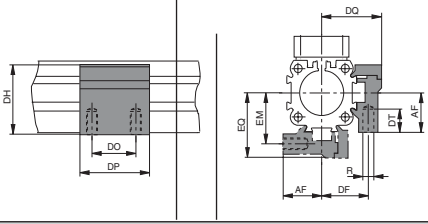
Series OSP-P16 to 80: Type E
(Mounting from above / below using a cap screw)



Dimension Table (mm)
– Dimensions AF and DR (Dependent on the mounting type)

Mount. type	Dimensions DR for size							Dimensions AF for size						
	16	25	32	40	50	63	80	16	25	32	40	50	63	80
D1	–	–	–	–	–	–	–	15	22	30	38	48	57	72
E1	6	8	10	10	10	12	15	15	22	30	38	48	57	72
E2	21	23	24	23	19	–	–	30	37	44	51	57	–	–
E3	33	35	32	32	34	48	53	42	49	52	60	72	93	110
E4	–	46	40	42	57	–	–	–	60	60	70	95	–	–
E5	–	–	45	–	–	–	–	–	–	65	–	–	–	–

Series OSP-P16 to 80: Type D1
(Mounting from below with thread screw)



Dimension Table (mm)

Series	R	U	UU	DE	DF	DH	DK	DM	DN	DO	DP	DQ	DS	DT	EF	EM	EN	EQ
OSP-P16	M3	3.4	6	14.2	20	29.2	24	32	36.4	18	30	27	3.4	6.5	32	20	36.4	27
OSP-P25	M5	5.5	10	16	27	38	26	40	47.5	36	50	34.5	5.7	10	41.5	28.5	49	36
OSP-P32	M5	5.5	10	16	33	46	27	46	54.5	36	50	40.5	5.7	10	48.5	35.5	57	43
OSP-P40	M6	7	–	23	35	61	34	53	60	45	60	45	–	11	56	38	63	48
OSP-P50	M6	7	–	23	40	71	34	59	67	45	60	52	–	11	64	45	72	57
OSP-P63	M8	9	–	34	47.5	91	44	73	83	45	65	63	–	16	79	53.5	89	69
OSP-P80	M10	11	–	39.5	60	111.5	63	97	112	55	80	81	–	25	103	66	118	87

Ordering information for mountings Type A – Type B – Type C – Type D – Type E

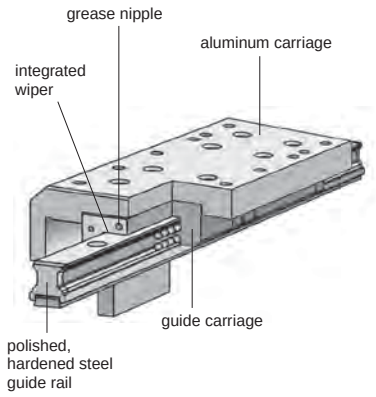
Mounting type (versions)	Order No. size						
	16	25	32	40	50	63	80
A1*)	20408FIL	2010	3010	–	–	–	–
A2*)	20464FIL	2040	3040	–	–	–	–
A3*)	–	2060FIL	3060FIL	–	–	–	–
B1*)	–	20311FIL	20313FIL	–	–	–	–
B3*)	20465FIL	–	–	–	–	–	–
B4*)	–	20312FIL	20314FIL	–	–	–	–
B5*)	–	–	20976FIL	–	–	–	–
C1*)	–	–	–	4010FIL	5010FIL	6010	8010
C2*)	–	–	–	20338FIL	20349FIL	–	–
C3*)	–	–	–	20339FIL	20350FIL	20821FIL	20822FIL
C4*)	–	–	–	20340FIL	20351FIL	–	–
D1	20434FIL	20008FIL	20157FIL	20027FIL	20162FIL	20451FIL	20480FIL
E1	20435FIL	20009FIL	20158FIL	20028FIL	20163FIL	20452FIL	20482FIL
E2	20436FIL	20352FIL	20355FIL	20358FIL	20361FIL	–	–
E3	20437FIL	20353FIL	20356FIL	20359FIL	20362FIL	20453FIL	20819FIL
E4	–	20354FIL	20357FIL	20360FIL	20363FIL	–	–
E5	–	–	20977FIL	–	–	–	–

(*Pair

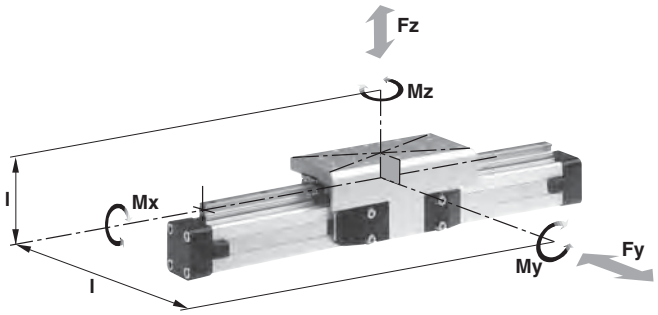
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Versions

for pneumatic linear drive:
Series OSP-P



Loads, Forces and Moments



Technical Data
The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{1max}} + \frac{Fz}{Fz_{max}} \leq 1$$

The sum of the loads should not exceed >1

The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

Recirculating Ball Bearing Guide STARLINE

OSP
ORIGA SYSTEM PLUS

Series STL 16 to 50
for Linear Drive Series OSP-P

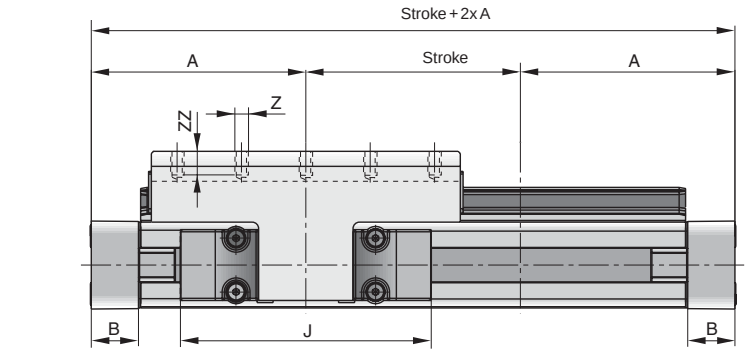
Features:
- Polished and hardened steel guide rail
- For very high loads in all directions
- High precision
- Integrated wiper system
- Integrated grease nipples
- Any length of stroke up to 3700 mm
- Anodized aluminum guide carriage – dimensions compatible with OSP guides SLIDELINE and PROLINE
- Installation height (STL16 - 32) compatible with OSP guides SLIDELINE and PROLINE
- Maximum speed
  STL16: v = 3 m/s
  STL25 to 50: v = 5 m/s

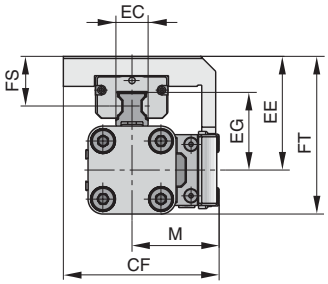
**** Please note:**
The mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

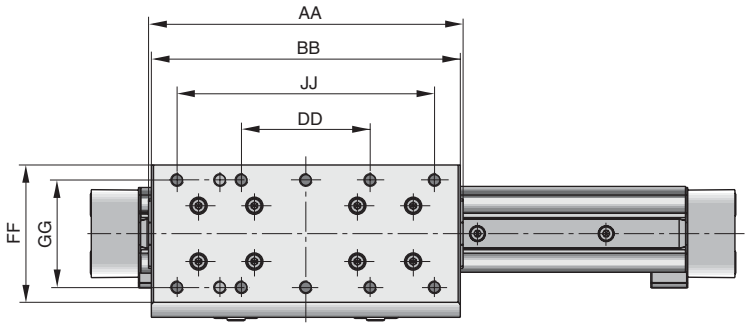
Series	For linear drive	Max. moments (Nm)			Max. loads (N)		Mass of linear drive with guide (kg)		Mass ** guide carriage (kg)
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke	
STL16	OSP-P16	15	30	30	1000	1000	0.598	0.210	0.268
STL25	OSP-P25	50	110	110	3100	3100	1.733	0.369	0.835
STL32	OSP-P32	62	160	160	3100	3100	2.934	0.526	1.181
STL40	OSP-P40	150	400	400	4000	7500	4.452	0.701	1.901
STL50	OSP-P50	210	580	580	4000	7500	7.361	0.936	2.880

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

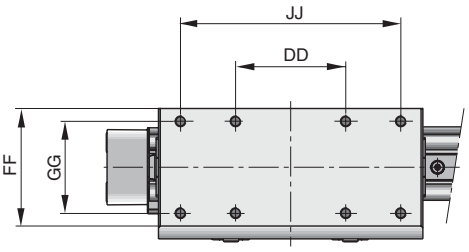
Dimensions Series OSP-P STL16 to STL 50







Type STL25 to PL50



Type STL16

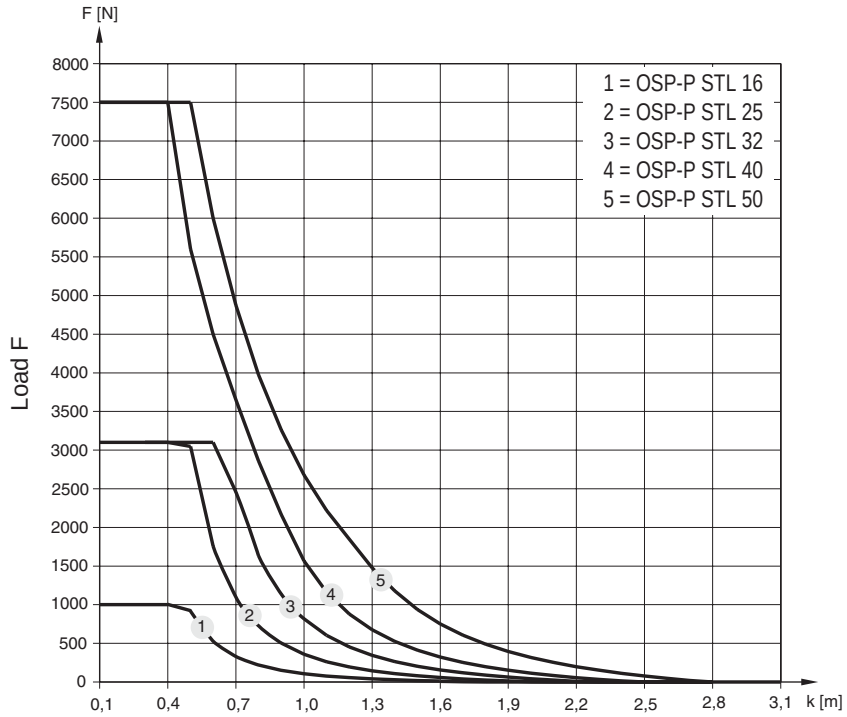
Dimension Table (mm) - OSP-P STL16 to STL50

Series	A	B	J	M	Z	AA	BB	CF	DD	EC	EE	EG	FF	FS	FT	GG	JJ	ZZ
STL16	65	14	69	31	M4	93	90	55	30	15	40	24.6	48	18	55	36	70	8
STL25	100	22	117	40.5	M6	146.6	144	72.5	60	15	53	36.2	64	23.2	73.5	50	120	12
STL32	125	25.5	152	49	M6	186.6	184	91	80	15	62	42.2	84	26.2	88	64	160	12
STL40	150	28	152	55	M6	231	226	102	100	20	72	51.6	94	28.5	106.5	78	200	12
STL50	175	33	200	62	M6	270.9	266	117	120	23	85	62.3	110	32.5	128.5	90	240	16

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

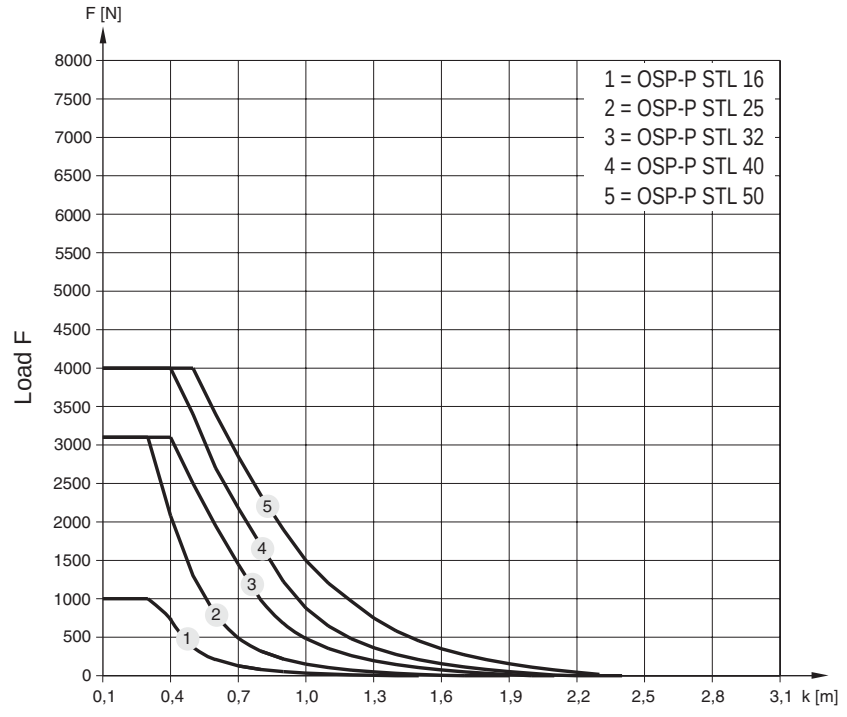
Permissible Unsupported Length STL16 to STL50

Loading 1 – Top carrier



Permissible Unsupported Length STL16 to STL50

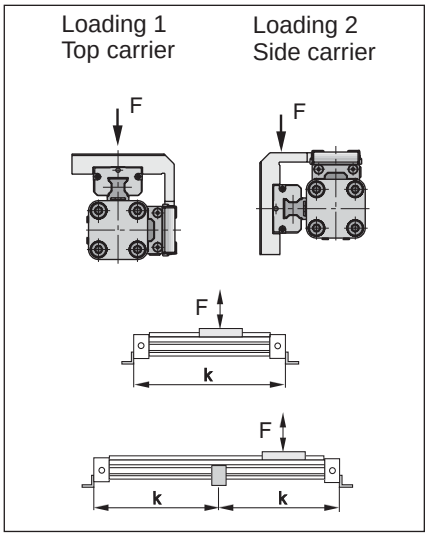
Loading 2 – Side carrier



Mid-Section Support

(For versions, see page B81)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2. Deflection of 0.5 mm max. between supports is permissible.



Note:

For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Variable Stop

The variable stop Type VS provides simple stroke limitation.

It can be retrofitted and positioned anywhere along the stroke length.

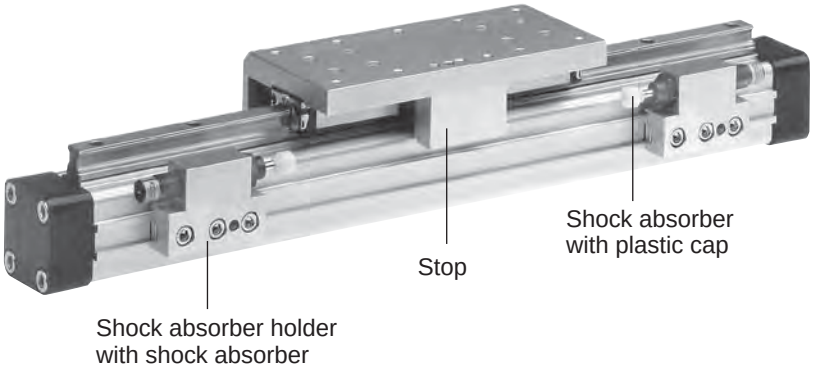
For every cylinder diameter two types of shock absorber are available – see "Shock Absorber Selection" below.

Mid-section supports and magnetic switches can still be fitted on the same side as the variable stop.

Depending on the application, two variable stops can be fitted if required.

Variable Stop Type VS16 to VS50

Arrangement with two variable stops

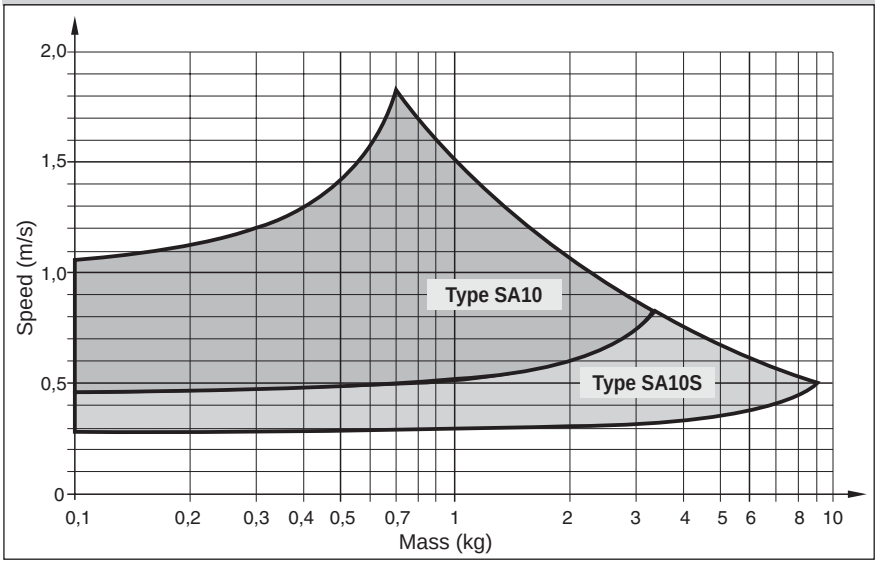


Shock Absorber Selection

The shock absorber is selected in dependence on the mass and speed.

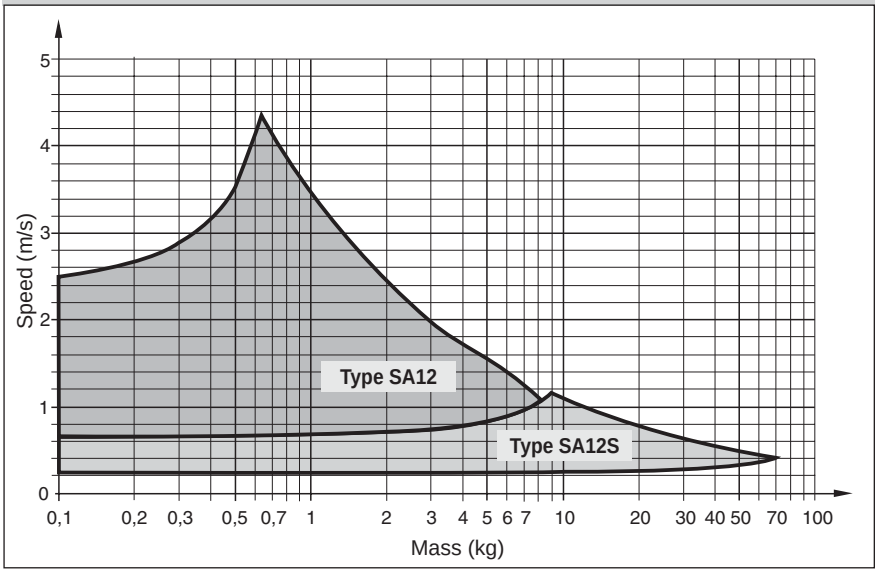
The mass of the carrier itself must be taken into account.

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL16



The values relate to an effective driving force of 78 N (6 bar)

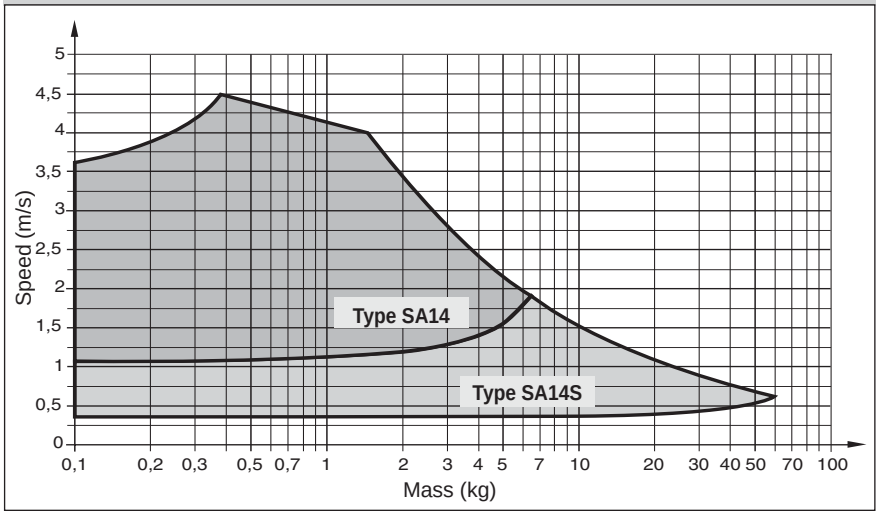
Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL25



The values relate to an effective driving force of 250 N (6 bar)

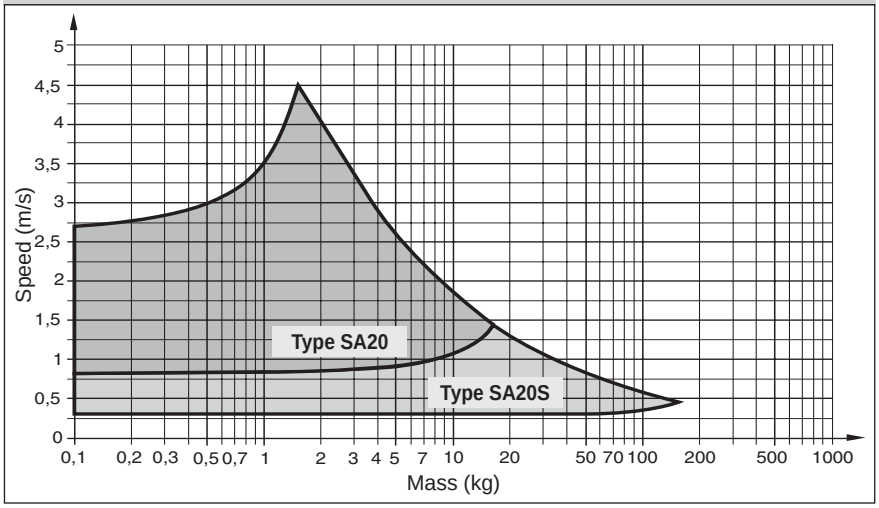
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL32



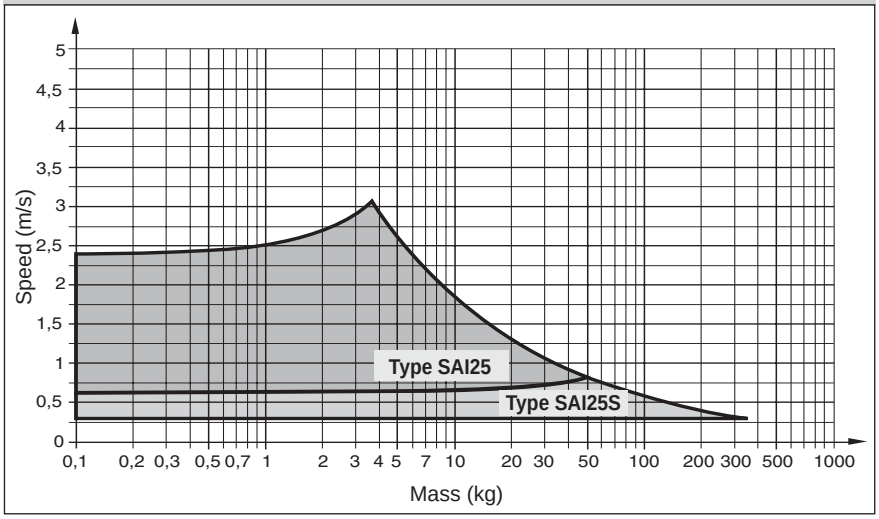
The values relate to an effective driving force of 420 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL40



The values relate to an effective driving force of 640 N (6 bar)

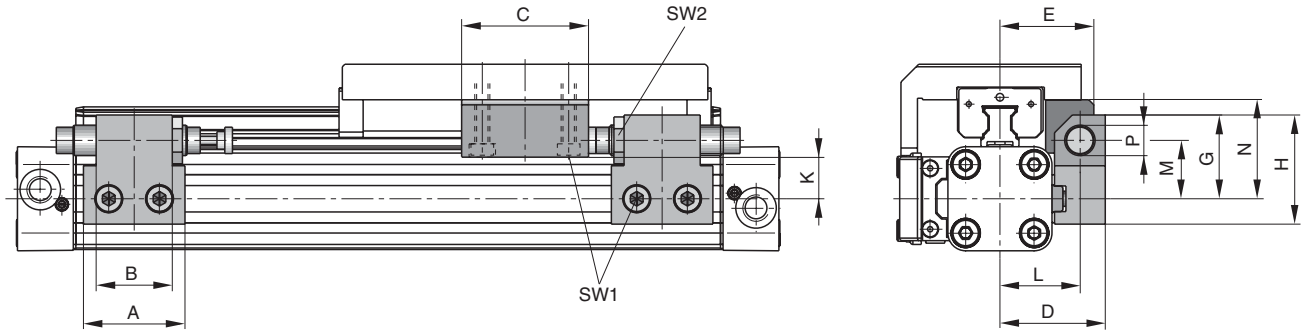
Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-STL50



The values relate to an effective driving force of 1000 N (6 bar)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

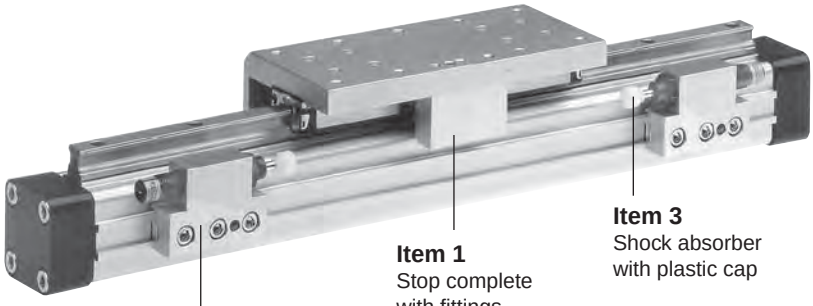
Dimensions – Variable Stop Type VS16 to VS50



Dimension Table (mm) – Variable Stop Type VS16 to VS50

Series	Type	A	B	C	D	E	G	H	K	L	M	N	P	SW1	SW2
OSP-STL16	**VS16**	30	14	25	33	30	28	38	16.2	25.5	20.5	30	M10x1	4	12.5
OSP-STL25	**VS25**	40	30	50	41.5	37	33	43	18	31.5	23	39	M12x1	5	16
OSP-STL32	**VS32**	60	40	50	45.5	42	35	45	19	35.5	25	48	M14x1.5	5	17
OSP-STL40	**VS40**	84	52	60	64	59	48	63	25.6	50	34	58.6	M20x1.5	5	24
OSP-STL50	**VS50**	84	-	60	75	69	55	70	26.9	57	38	66.9	M25x1.5	5	30

Order Information – Variable Stop Type VS16 to VS50



Item 1
Stop complete
with fittings

Item 2
Shock absorber holder
complete with fittings
– without shock absorber

Item 3
Shock absorber
with plastic cap

Order Instructions – Variable Stop Type VS16 to VS50

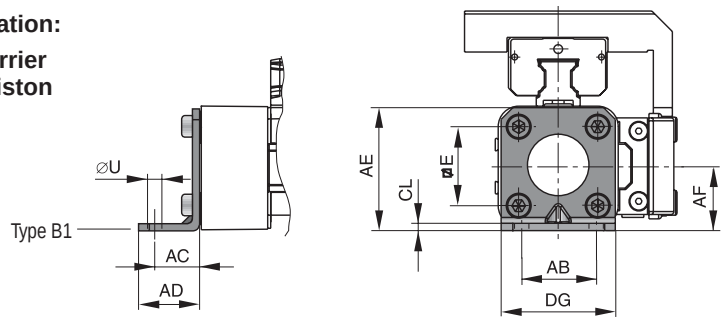
Item	Description	Size VS16		VS25		VS32		VS40		VS50	
		Type	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**
1	Stop, complete	**–**	**21196FIL**	**–**	**21197FIL**	**–**	**21198FIL**	**–**	**21199FIL**	**–**	**21200FIL**
2	Shock absorber holder, complete	**–**	**21201FIL**	**–**	**21202FIL**	**–**	**21203FIL**	**–**	**21204FIL**	**–**	**21205FIL**
3 *	Shock absorber, standard	**SA10**	**7718FIL**	**SA12**	**7706FIL**	**SA14**	**7708FIL**	**SA20**	**7710FIL**	**SAI25**	**7712FIL**
	Shock absorber, version S	**SA10S**	**7721FIL**	**SA12S**	**7707FIL**	**SA14S**	**7709FIL**	**SA20S**	**7711FIL**	**SAI25S**	**7835FIL**
	* Shock absorber with plastic cap										

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P STL40, STL50: Type C1
Series OSP-P KF40, KF50: Type C1

Installation:

Top carrier
Side piston

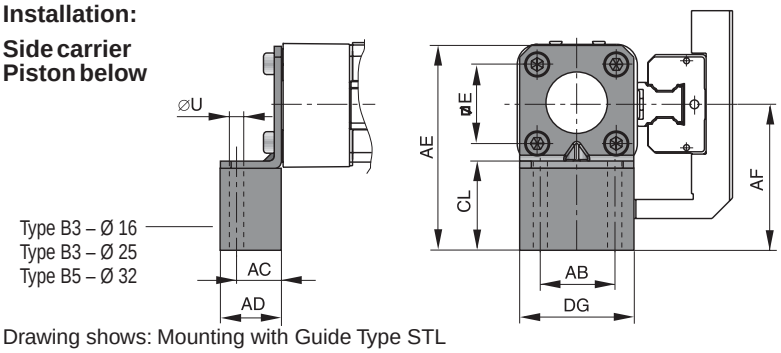


Drawing shows: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B3 (Ø 32: B5)
Series OSP-P KF16, KF25, KF32: Type B3 (Ø 32: B5)

Installation:

Side carrier
Piston below

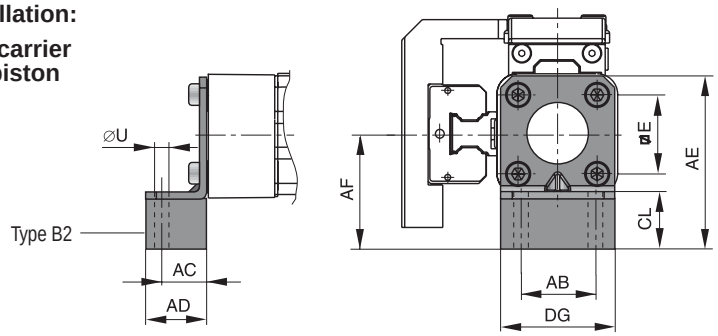


Drawing shows: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B2
Series OSP-P KF16, KF25, KF32: Type B2

Installation:

Side carrier
Top piston



Drawing shows: Mounting with Guide Type STL

Dimension Table (mm) for End Cap Mounting Type: B1 to B5

Series Type	Mounting	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (pair)
OSP-P STL16	B1	18	3.6	18	10	14	28	15	2	26	21135FIL
OSP-P KF16	B2	18	3.6	18	10	14	43	30	17	26	21136FIL
	B3	18	3.6	18	10	14	55	42	29	26	21137FIL
OSP-P STL25	B1	27	5.8	27	16	22	42	22	2.5	39	20311FIL
OSP-P KF25	B2	27	5.8	27	16	22	57	37	17.5	39	21138FIL
	B3	27	5.8	27	16	22	69	49	29.5	39	21139FIL
OSP-P STL32	B1	36	6.6	36	18	26	55	30	3	50	20313FIL
OSP-P KF32	B2	36	6.6	36	18	26	69	44	17	50	21140FIL
	B5	36	6.6	36	18	26	90	65	9	50	21141FIL

Linear Drive Accessories

Ø 16 to 32 mm
End Cap Mounting
Type: B

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Material:
Galvanized steel
Anodized aluminum

The mountings are supplied in pairs.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Ø 40 to 50 mm
End Cap Mounting
Type: C

for Linear Drives with Recirculating Ball Bearing Guide

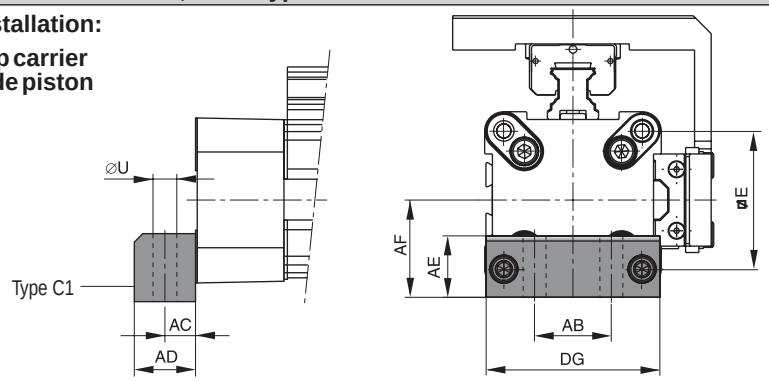
- **Series OSP-P STL**
- **Series OSP-P KF**

Material:
Anodized aluminum

The mountings are supplied in pairs.

Series OSP-P STL40, STL50: Type C1
Series OSP-P KF40, KF50: Type C1

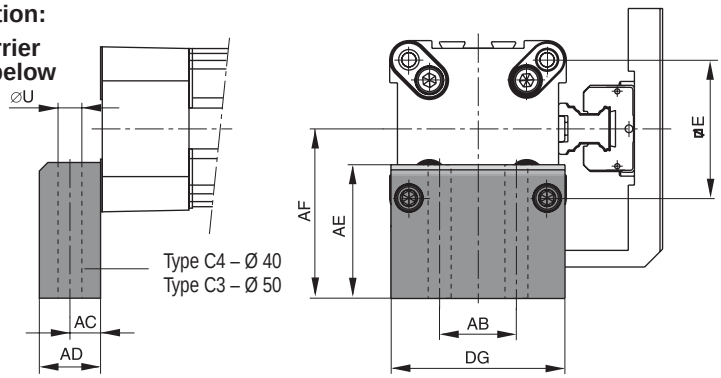
Installation:
Top carrier
Side piston



Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C4 (Ø 50: C3)
Series OSP-P KF40, KF50: Type C4 (Ø 50: C3)

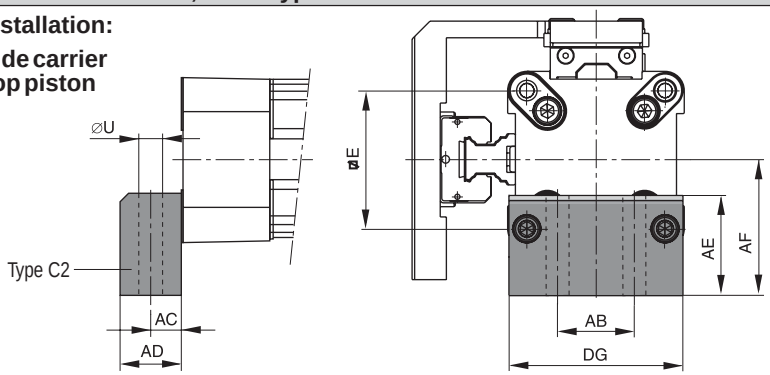
Installation:
Side carrier
Piston below



Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C2
Series OSP-P KF40, KF50: Type C2

Installation:
Side carrier
Top piston



Drawing shows: Mounting with Guide Type STL

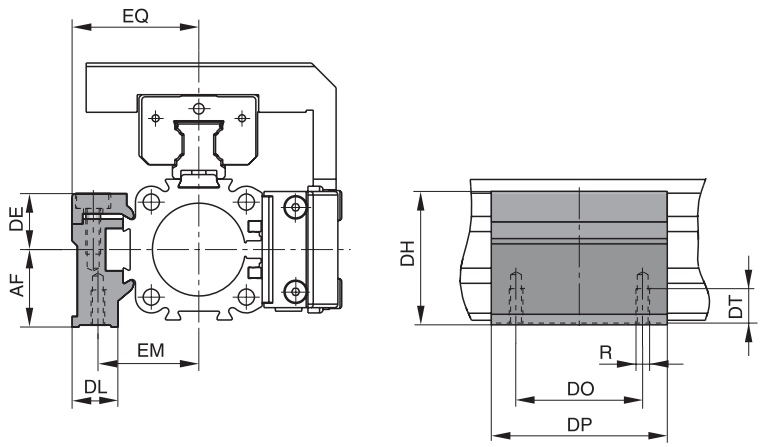
Dimension Table (mm) for End Cap Mounting Type: C1 to C4

Series Type	Mounting	E	ØU	AB	AC	AD	AE	AF	DG	Order No. (pair)
OSP-P STL40	**C1**	54	9	30	12.5	24	24	38	68	**4010FIL**
OSP-P KF40	**C2**	54	9	30	12.5	24	37	51	68	**20338FIL**
	C4	54	9	30	12.5	24	56	70	68	**20340FIL**
OSP-P STL50	**C1**	70	9	40	12.5	24	30	48	86	**5010FIL**
OSP-P KF50	**C2**	70	9	40	12.5	24	39	57	86	**20349FIL**
	C3	70	9	40	12.5	24	54	72	86	**20350FIL**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P STL16 to STL50: Type D1ST
Series OSP-P KF16 to KF50: Type D1ST

Mountings from below with 2 screws



Drawing shows: Mounting with Guide Type STL

Dimension Table (mm) Mid-Section Support D1ST

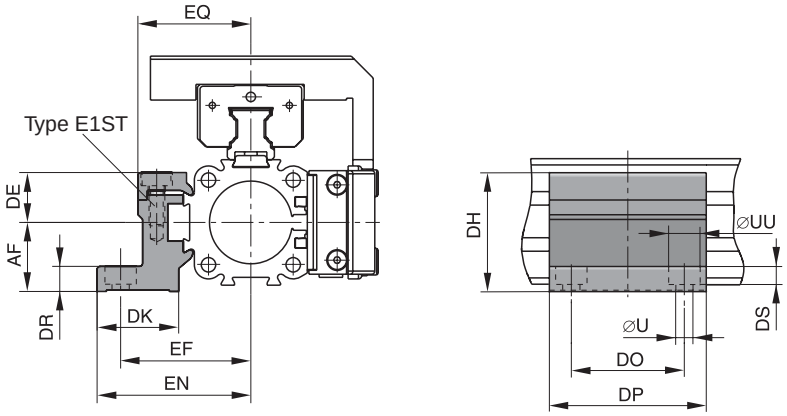
Series OSP-P	Mounting Type	R	AF	DE	DH	DL	DO	DP	DT	EM	EQ	Order No.
STL/KF16	**D1ST**	M3	15	14.2	29.2	14.6	18	30	6.5	20	27	**21125FIL**
STL/KF25	**D1ST**	M5	22	16	38	13	36	50	10	28.5	36	**21126FIL**
STL/KF32	**D1ST**	M5	30	16	46	13	36	60	10	35.5	43	**21127FIL**
STL/KF40	**D1ST**	M6	38	23	61	19	45	60	11	38	48	**21128FIL**
STL/KF50	**D1ST**	M6	48	23	71	19	45	60	11	45	57	**21129FIL**

Order example: Type D1ST16 Order No. 21125

Series OSP-P STL16 to STL50: Type E1ST
Series OSP-P KF16 to KF50: Type E1ST

Installation:
Top carrier
Side position

Mounting from above / below using a cap screw



Drawing shows: Mounting with Guide Type STL

Linear Drive Accessories

Ø 16 to 50

Mid-Section Support Type: D1ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Note on Types D1ST

The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the center of the actuator is different.

Mid-Section Support Type: E1ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Mid-Section Support Type: E2ST to E5ST

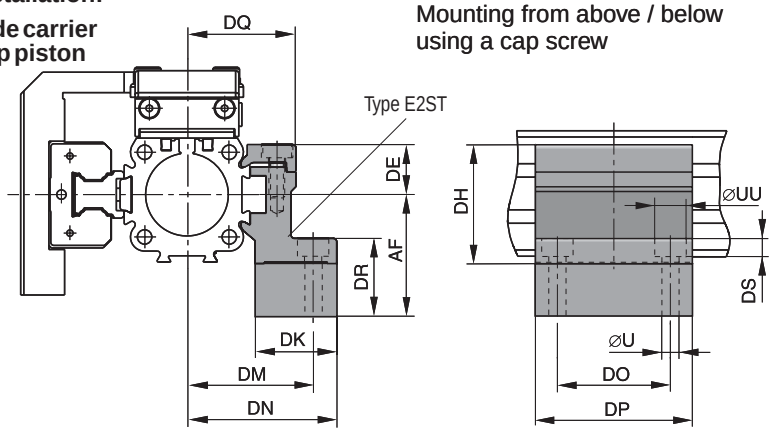
for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Series OSP-P STL16 to STL50: Type E2ST
Series OSP-P KF16 to KFL50: Type E2ST

Installation:
Side carrier
Top piston

Mounting from above / below using a cap screw

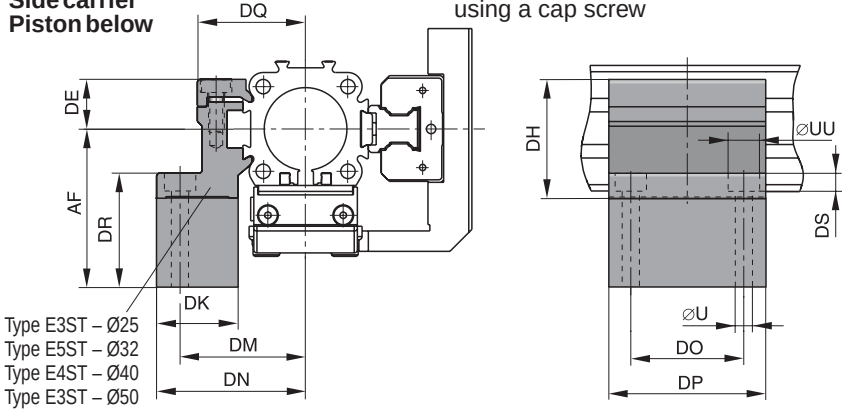


Drawing shows: Mounting with Guide Type STL

Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST
Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST

Installation:
Side carrier
Piston below

Mounting from above / below using a cap screw



Drawing shows: Mounting with Guide Type STL

Dimension Table (mm) for Mid-Section Support E1ST to E5ST

Series OSP-P	Mounting Type	ØU	ØUU	AF	DE	DH	DK	DM	DN	DO	DP	DR	DQ	DS	EF	EN	EQ	Order No.
STL/KF16	**E1ST**	3.4	6	15	14.2	29.2	24	32	36.4	18	30	6	27	3.4	32	36.4	27	**21130FIL**
STL/KF16	**E2ST**	3.4	6	30	14.2	29.2	24	32	36.4	18	30	21	27	3.4	32	36.4	27	**21142FIL**
STL/KF25	**E1ST**	5.5	10	22	16	38	26	40	47.5	36	50	8	34.5	5.7	41.5	49	36	**21131FIL**
STL/KF25	**E2ST**	5.5	10	37	16	38	26	40	47.5	36	50	23	34.5	5.7	41.5	49	36	**21143FIL**
STL/KF25	**E3ST**	5.5	10	49	16	38	26	40	47.5	36	50	35	34.5	5.7	41.5	49	36	**21148FIL**
STL/KF32	**E1ST**	5.5	10	30	16	46	27	46	54.5	36	60	10	40.5	5.7	48.5	57	43	**21132FIL**
STL/KF32	**E2ST**	5.5	10	44	16	46	27	46	54.5	36	60	24	40.5	5.7	48.5	57	43	**21144FIL**
STL/KF32	**E5ST**	5.5	10	65	16	46	27	46	54.5	36	60	45	40.5	5.7	48.5	57	43	**21151FIL**
STL/KF40	**E1ST**	7	-	38	23	61	34	53	60	45	60	10	45	-	56	63	48	**21133FIL**
STL/KF40	**E2ST**	7	-	51	23	61	34	53	60	45	60	23	45	-	56	63	48	**21145FIL**
STL/KF40	**E4ST**	7	-	70	23	61	34	53	60	45	60	42	45	-	56	63	48	**21150FIL**
STL/KF50	**E1ST**	7	-	48	23	71	34	59	67	45	60	10	52	-	64	72	57	**21134FIL**
STL/KF50	**E2ST**	7	-	57	23	71	34	59	67	45	60	19	52	-	64	72	57	**21146FIL**
STL/KF50	**E3ST**	7	-	72	23	71	34	59	67	45	60	34	52	-	64	72	57	**21149FIL**

Order example: Type E1ST16 Order No. 21130

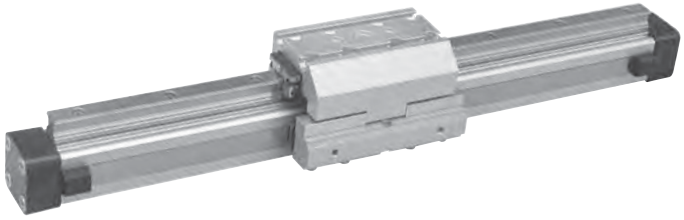
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Recirculating Ball Bearing Guide KF

OSP
ORIGA SYSTEM PLUS

Versions

for Pneumatic Linear Drive:
Series OSP-P KF

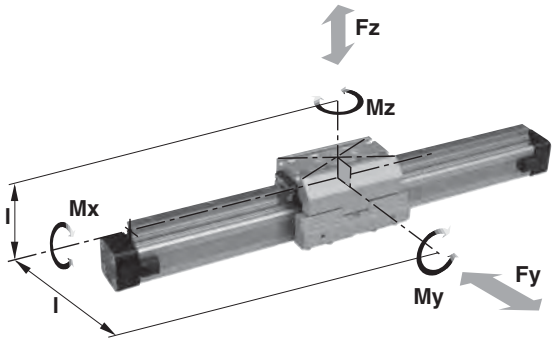


Series KF16 to KF50
For Linear Drives
Series OSP-P CLASSIC

Features:

- Anodized aluminum guide carriage, the mounting dimensions correspond to FESTO Type: DGPL-KF
- Polished and hardened steel guide rail
- For high loads in all directions
- High precision
- Integrated wiper system
- Integrated grease nipples
- Any length of stroke up to 3700 mm
- Maximum speed
  KF16, KF40: v = 3 m/s
  KF25, KF32, KF50: v = 5 m/s

Loads, Forces and Moments



Technical Data

The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

The sum of the loads should not exceed >1

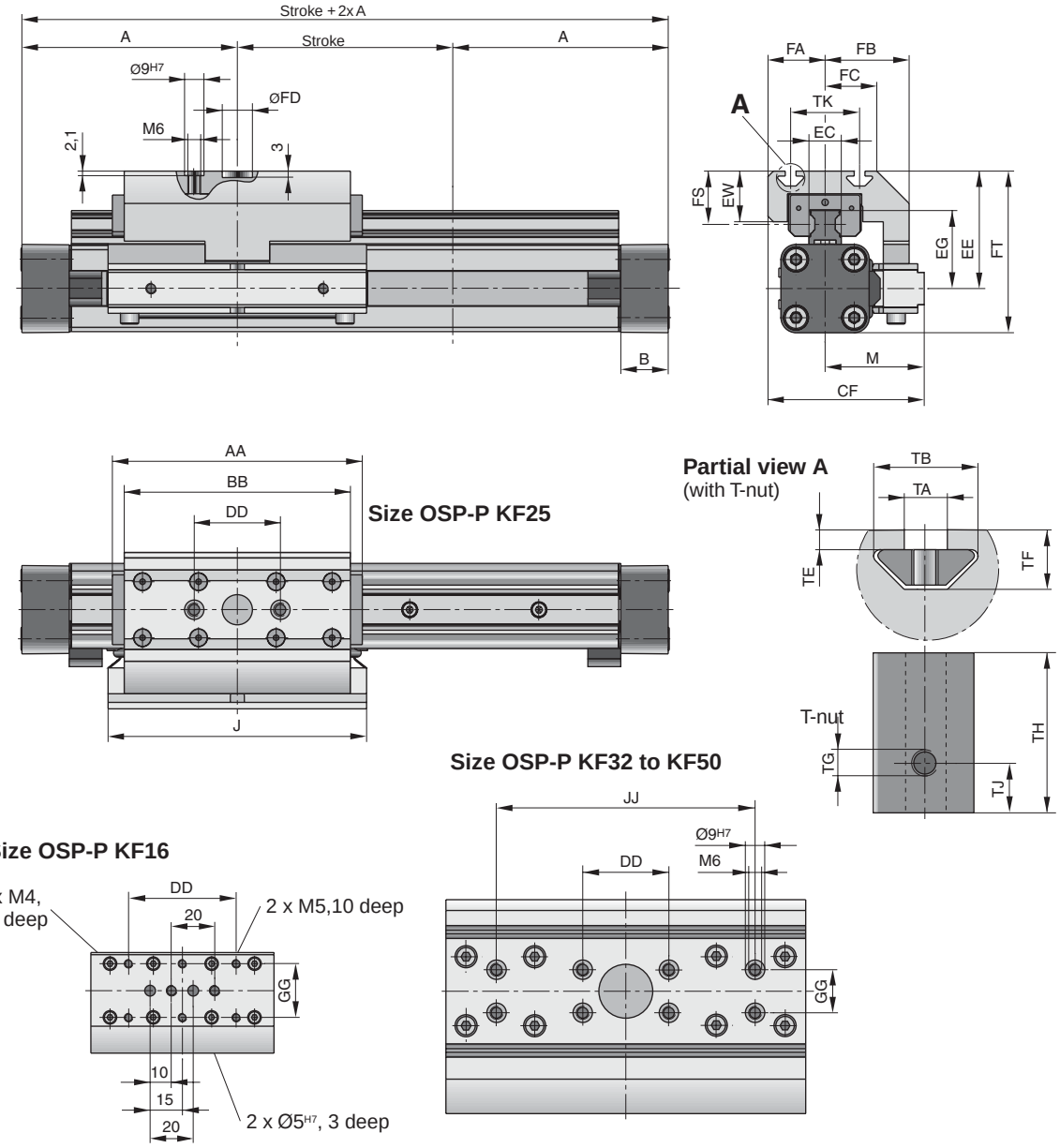
The table shows the maximum permissible values for light, shock-free operation, which must not be exceeded even under dynamic conditions.

*** Please note:**
the mass of the carriage has to be added to the total moving mass when using the cushioning diagram.

Series	for Linear Drive	Max. Moments (Nm)			Max. Load (N)		Mass of drive with guide (kg)		Mass * guide carriage	Groove stone
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke	(kg)	Thread Size
KF16	OSP-P16	12	25	25	1000	1000	0.558	0.21	0.228	–
KF25	OSP-P25	35	90	90	3100	3100	1.522	0.369	0.607	M5
KF32	OSP-P32	44	133	133	3100	3100	2.673	0.526	0.896	M5
KF40	OSP-P40	119	346	346	4000	7100	4.167	0.701	1.531	M6
KF50	OSP-P50	170	480	480	4000	7500	7.328	0.936	2.760	M8

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions - OSP-P KF16 to KF50



Dimension Table (mm) - OSP-P KF16, KF25, KF32, KF40, KF50

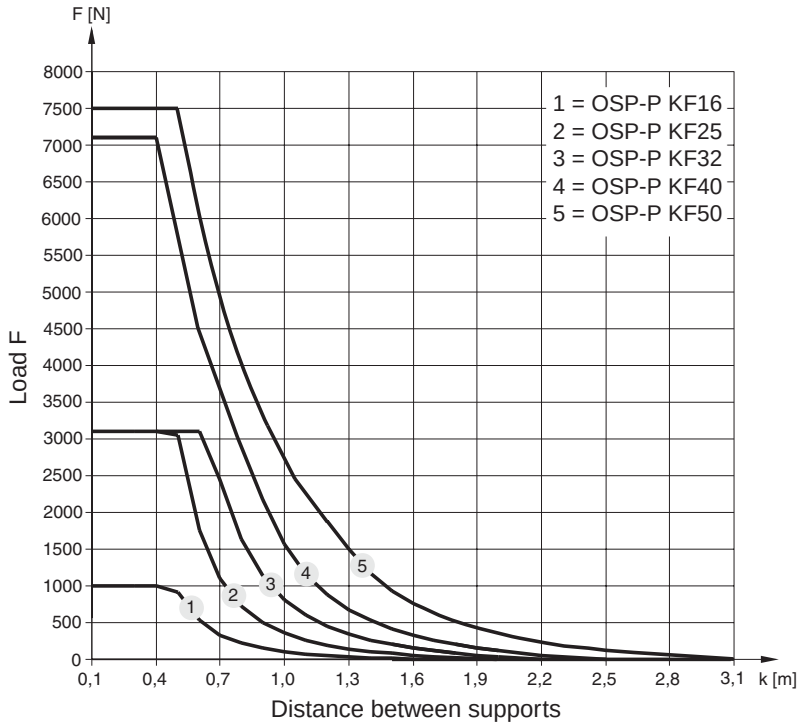
Series	A	B	J	AA	BB	CF	DD	EC	EE	EG	EW	JJ	GG	M
KF16	65	14	76	93	85	48	50	15	41	24.6	10	–	25	30
KF25	100	22	120	120.2	105	72.5	40	15	54.5	36.2	23.5	–	–	46
KF32	125	25.5	160	146.2	131	93.8	40	15	60.5	42.2	23.5	–	20	59.8
KF40	150	28	150	188.5	167	103.3	40	20	69.5	51.6	26.5	120	20	60.8
KF50	175	33	180	220.2	202	121	40	23	90.5	62.3	32.5	120	40	69

Series	FA	FB	FC	FD	FT	FS	TA	TB	TE	TF	TG	TH	TJ	TK
KF16	17.7	29	16.5	–	56	19	–	–	–	–	–	–	–	–
KF25	26.5	39	24	14 G7	75	24.7	5	12.1	2.3	6.9	M5	11.5	4	32
KF32	34	53.8	34	25 G7	86.5	24.7	5	12.1	1.8	6.4	M5	11.5	4	47
KF40	42.5	56.8	41	25 G7	104	26	6	12.8	1.8	8.4	M6	17	5.5	55
KF50	52	65	50	25 G7	134	38	8	21.1	4.5	12.5	M8	23	7.5	72

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

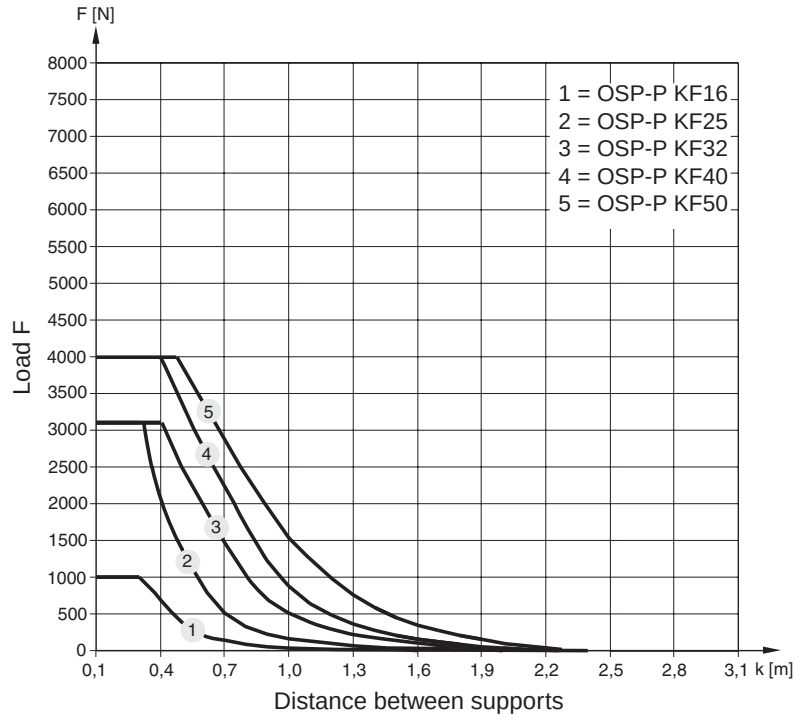
Permissible Unsupported Length - OSP-P KF16 to KF50

Loading 1 – Top carrier



Permissible Unsupported Length - OSP-P KF16 to KF50

Loading 2 – Side carrier

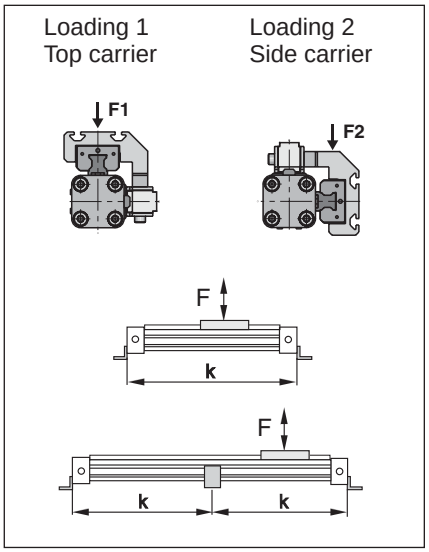


Mid-Section Support

(For versions, see page B81)

Mid-section supports are required from a certain stroke length to prevent excessive deflection and vibration of the linear drive. The diagrams show the maximum permissible unsupported length in relation to loading. A distinction must be drawn between loading 1 and loading 2.

Deflection of 0.5 mm max. between supports is permissible.



Note:
For speeds v > 0.5 m/s the distance between supports should not exceed 1 m.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Variable Stop

The variable stop Type VS provides simple stroke limitation.

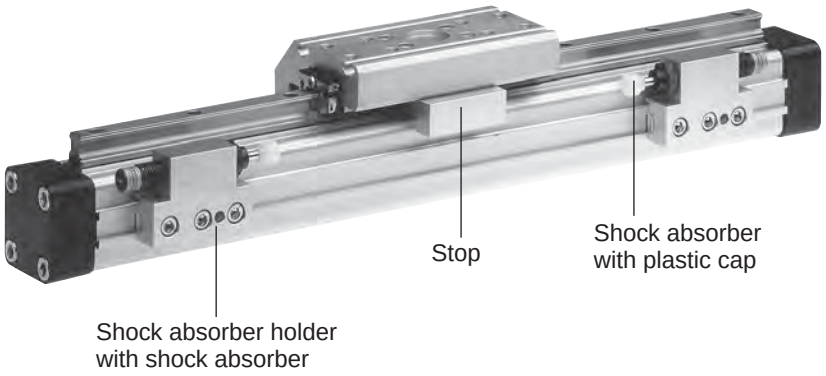
It can be retrofitted and positioned anywhere along the stroke length. For every cylinder diameter two types of shock absorber are available – see "Shock Absorber Selection" below.

Mid-section supports and magnetic switches can still be fitted on the same side as the variable stop.

Depending on the application, two variable stops can be fitted if required.

Variable Stop Type VS16 to VS50

Arrangement with two variable stops

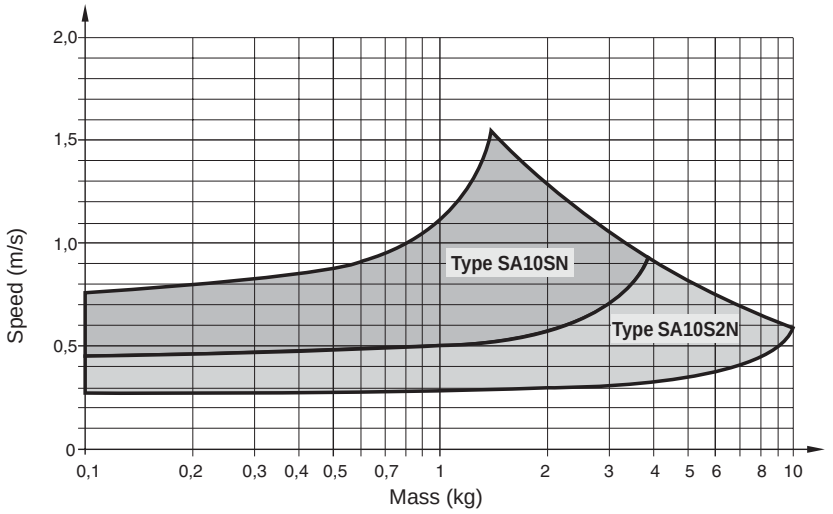


Shock Absorber Selection

The shock absorber is selected in dependence on the mass and speed.

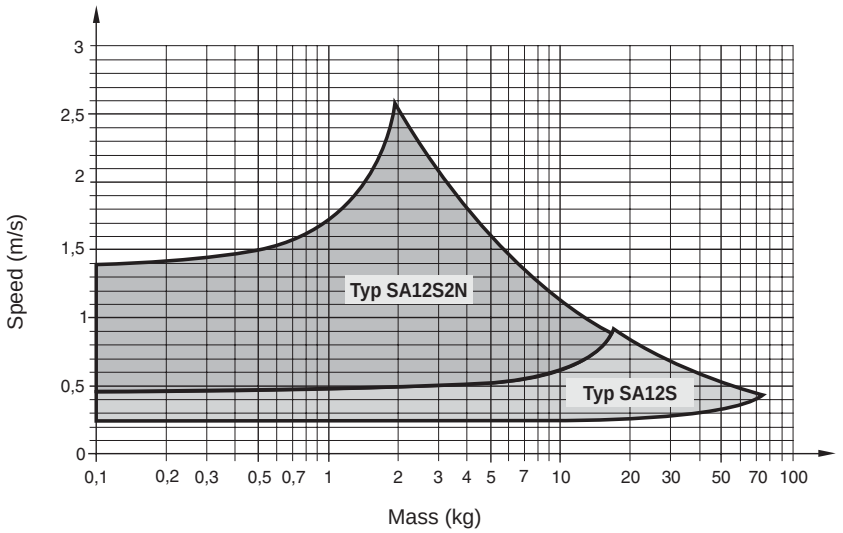
The mass of the carrier itself must be taken into account.

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF16



The values relate to an effective driving force of 78 N (6 bar)

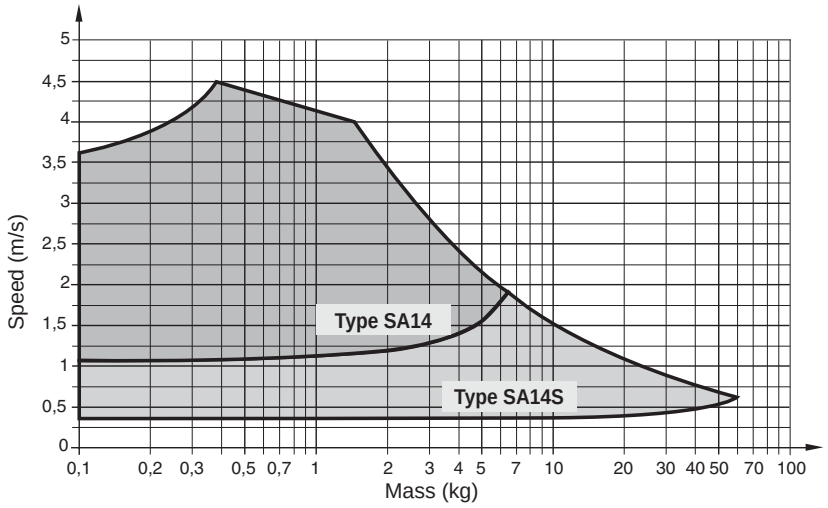
Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF25



The values relate to an effective driving force of 250 N (6 bar)

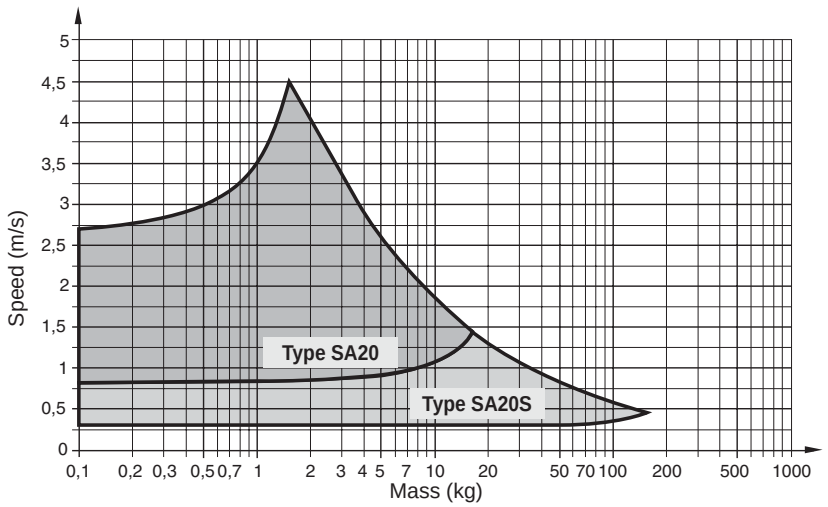
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF32



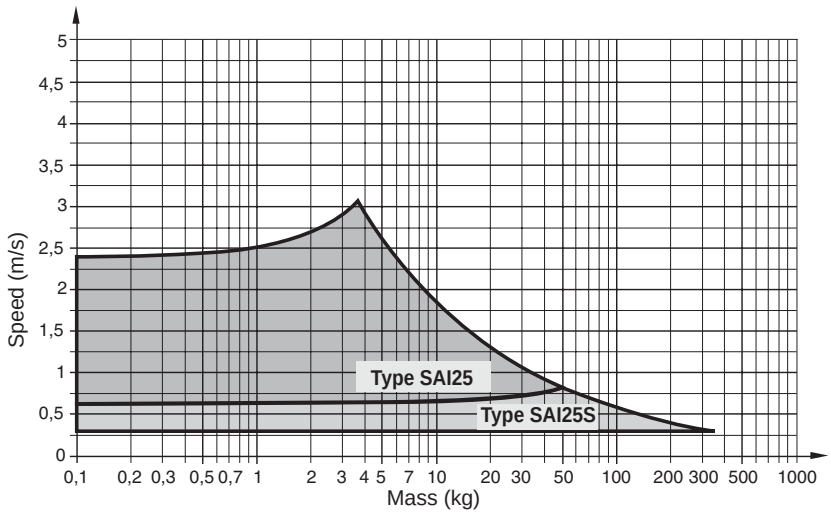
The values relate to an effective driving force of 420 N (6 bar)

Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF40



The values relate to an effective driving force of 640 N (6 bar)

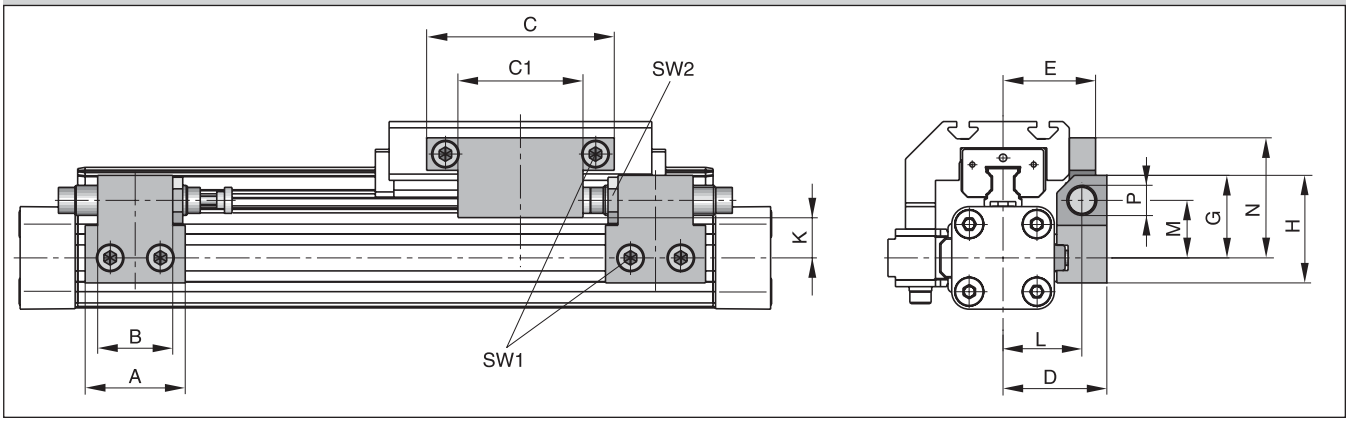
Shock Absorber Selection in Dependence on Mass and Speed for Series OSP-KF50



The values relate to an effective driving force of 1000 N (6 bar)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

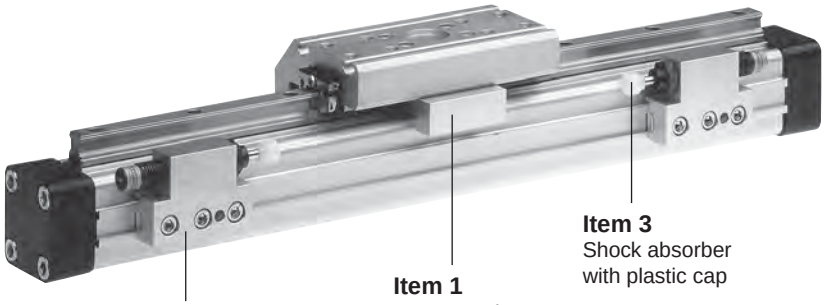
Dimensions – Variable Stop Type VS16 to VS50



Dimension Table (mm) – Variable Stop Type VS16 to VS50

Series	Type	A	B	C	C1	D	E	G	H	K	L	M	N	P	SW1	SW2
OSP-KF16	**VS16**	30	14	50	25	33	29.7	28	38	16.2	25.5	20.5	40.5	M10 x 1	4	12.5
OSP-KF25	**VS25**	40	30	75	50	41.5	37	33	43	18	31.5	23	48	M12 x 1	5	16
OSP-KF32	**VS32**	60	40	50	-	45.5	41.5	35	45	19	35.5	25	37	M14 x 1.5	5	17
OSP-KF40	**VS40**	84	52	60	-	64	59	48	63	25.5	50	34	43	M20 x 1.5	5	24
OSP-KF50	**VS50**	84	-	60	-	75	69	55	70	26.9	57	38	58	M25 x 1.5	5	30

Order Information – Variable Stop Type VS16 to VS50



Item 2
Shock absorber holder complete with fittings – without shock absorber

Item 1
Stop complete with fittings

Item 3
Shock absorber with plastic cap

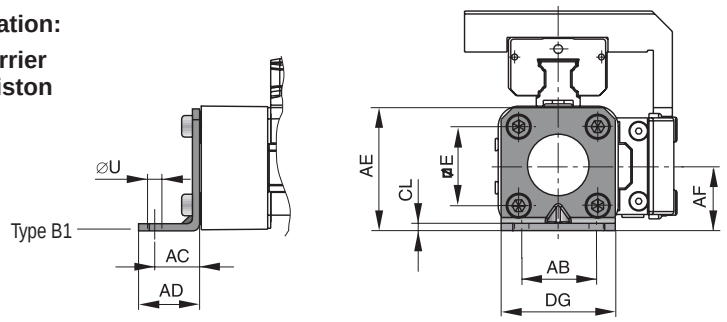
Order Instructions – Variable Stop Type VS16 to VS50

Item	Description	Size VS16		VS25		VS32		VS40		VS50	
		Type	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**	**Type**	**Order No.**
1	Stop, complete	**–**	**21186FIL**	**–**	**21187FIL**	**–**	**21188FIL**	**–**	**21189FIL**	**–**	**21190FIL**
2	Shock absorber holder, complete	**–**	**21201FIL**	**–**	**21202FIL**	**–**	**21203FIL**	**–**	**21204FIL**	**–**	**21205FIL**
3 *	Shock absorber, standard	**SA10SN**	**7718FIL**	**SA12S2N**	**7723FIL**	**SA14**	**7708FIL**	**SA20**	**7710FIL**	**SAI25**	**7712FIL**
	Shock absorber, version S	**SA10S2N**	**7721FIL**	**SA12S**	**7707FIL**	**SA14S**	**7709FIL**	**SA20S**	**7711FIL**	**SAI25S**	**7713FIL**
	* Shock absorber with plastic cap										

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P STL40, STL50: Type C1
Series OSP-P KF40, KF50: Type C1

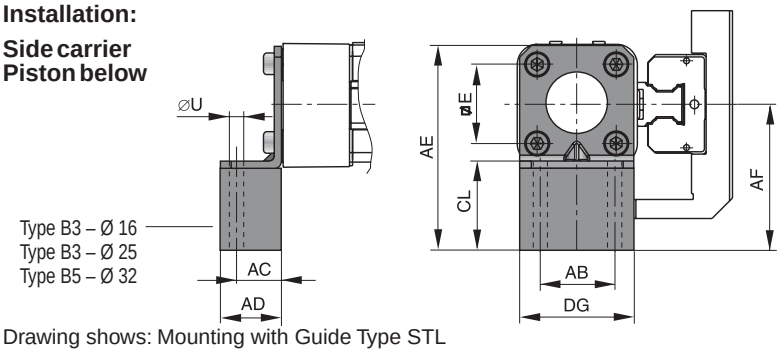
Installation:
Top carrier
Side piston



Drawing shows: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B3 (Ø 32: B5)
Series OSP-P KF16, KF25, KF32: Type B3 (Ø 32: B5)

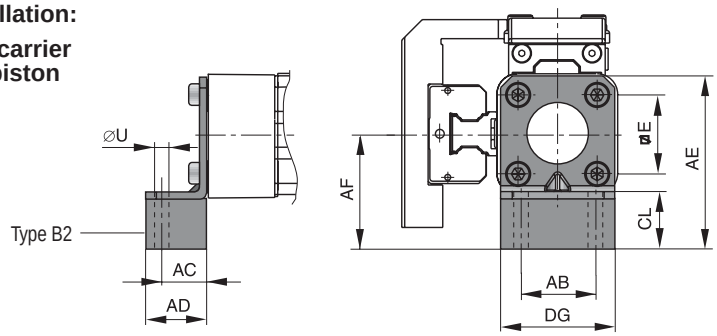
Installation:
Side carrier
Piston below



Drawing shows: Mounting with Guide Type STL

Series OSP-P STL16, STL25, STL32: Type B2
Series OSP-P KF16, KF25, KF32: Type B2

Installation:
Side carrier
Top piston



Drawing shows: Mounting with Guide Type STL

Dimension Table (mm) for End Cap Mounting Type: B1 to B5

Series Type	Mounting	E	ØU	AB	AC	AD	AE	AF	CL	DG	Order No. (pair)
OSP-P STL16	B1	18	3.6	18	10	14	28	15	2	26	21135FIL
OSP-P KF16	B2	18	3.6	18	10	14	43	30	17	26	21136FIL
	B3	18	3.6	18	10	14	55	42	29	26	21137FIL
OSP-P STL25	B1	27	5.8	27	16	22	42	22	2.5	39	20311FIL
OSP-P KF25	B2	27	5.8	27	16	22	57	37	17.5	39	21138FIL
	B3	27	5.8	27	16	22	69	49	29.5	39	21139FIL
OSP-P STL32	B1	36	6.6	36	18	26	55	30	3	50	20313FIL
OSP-P KF32	B2	36	6.6	36	18	26	69	44	17	50	21140FIL
	B5	36	6.6	36	18	26	90	65	9	50	21141FIL

Linear Drive Accessories

Ø 16 to 32 mm
End Cap Mounting
Type: B

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Material:
Galvanized steel
Anodized aluminum

The mountings are supplied in pairs.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Ø 40 to 50 mm
End Cap Mounting
Type: C

for Linear Drives with Recirculating Ball Bearing Guide

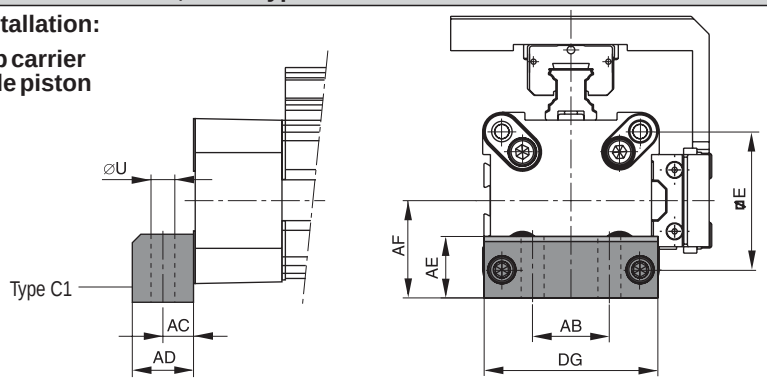
- **Series OSP-P STL**
- **Series OSP-P KF**

Material:
Anodized aluminum

The mountings are supplied in pairs.

Series OSP-P STL40, STL50: Type C1
Series OSP-P KF40, KF50: Type C1

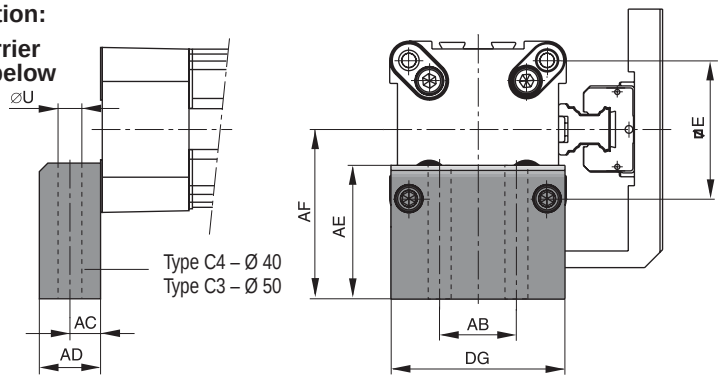
Installation:
Top carrier
Side piston



Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C4 (Ø 50: C3)
Series OSP-P KF40, KF50: Type C4 (Ø 50: C3)

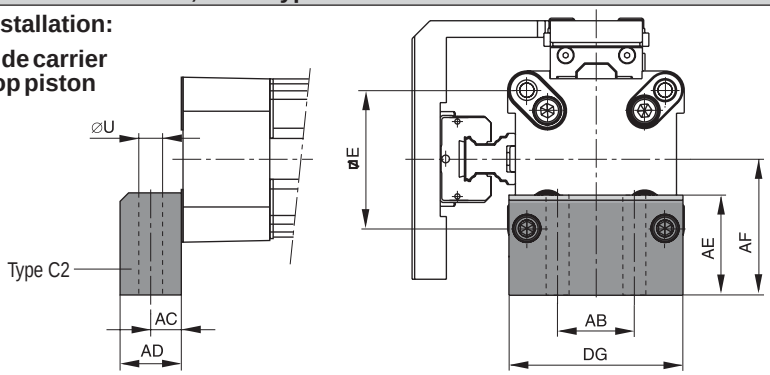
Installation:
Side carrier
Piston below



Drawing showes: Mounting with Guide Type STL

Series OSP-P STL40, STL50: Type C2
Series OSP-P KF40, KF50: Type C2

Installation:
Side carrier
Top piston



Drawing shows: Mounting with Guide Type STL

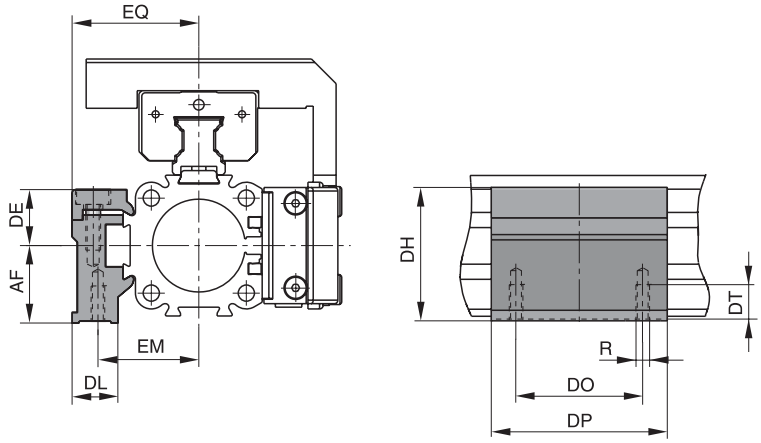
Dimension Table (mm) for End Cap Mounting Type: C1 to C4

Series Type	Mounting	E	ØU	AB	AC	AD	AE	AF	DG	Order No. (pair)
OSP-P STL40	C1	54	9	30	12.5	24	24	38	68	4010FIL
OSP-P KF40	C2	54	9	30	12.5	24	37	51	68	20338FIL
	C4	54	9	30	12.5	24	56	70	68	20340FIL
OSP-P STL50	C1	70	9	40	12.5	24	30	48	86	5010FIL
OSP-P KF50	C2	70	9	40	12.5	24	39	57	86	20349FIL
	C3	70	9	40	12.5	24	54	72	86	20350FIL

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P STL16 to STL50: Type D1ST
Series OSP-P KF16 to KF50: Type D1ST

Mountings from below with 2 screws



Drawing shows: Mounting with Guide Type STL

Dimension Table (mm) Mid-Section Support D1ST

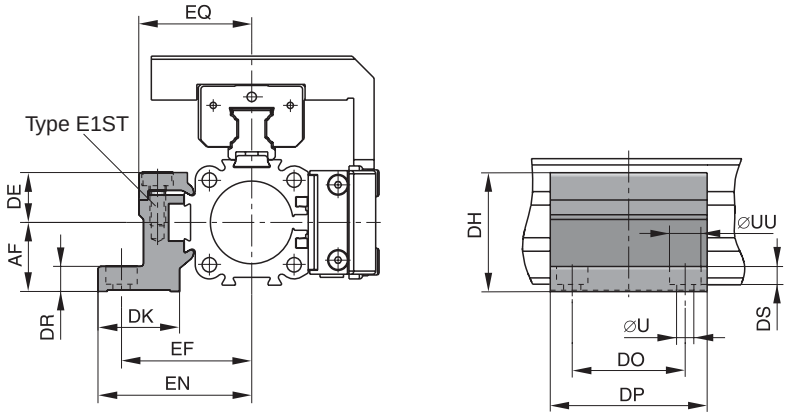
Series OSP-P	Mounting Type	R	AF	DE	DH	DL	DO	DP	DT	EM	EQ	Order No.
STL/KF16	**D1ST**	M3	15	14.2	29.2	14.6	18	30	6.5	20	27	**21125FIL**
STL/KF25	**D1ST**	M5	22	16	38	13	36	50	10	28.5	36	**21126FIL**
STL/KF32	**D1ST**	M5	30	16	46	13	36	60	10	35.5	43	**21127FIL**
STL/KF40	**D1ST**	M6	38	23	61	19	45	60	11	38	48	**21128FIL**
STL/KF50	**D1ST**	M6	48	23	71	19	45	60	11	45	57	**21129FIL**

Order example: Type D1ST16 Order No. 21125

Series OSP-P STL16 to STL50: Type E1ST
Series OSP-P KF16 to KF50: Type E1ST

Installation:
Top carrier
Side position

Mounting from above / below using a cap screw



Drawing shows: Mounting with Guide Type STL

Linear Drive Accessories

Ø 16 to 50

Mid-Section Support Type: D1ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Note on Types D1ST

The mid-section support can also be mounted on the underside of the actuator, in which case its distance from the center of the actuator is different.

Mid-Section Support Type: E1ST to E5ST

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Mid-Section Support Type: E1ST to E5ST

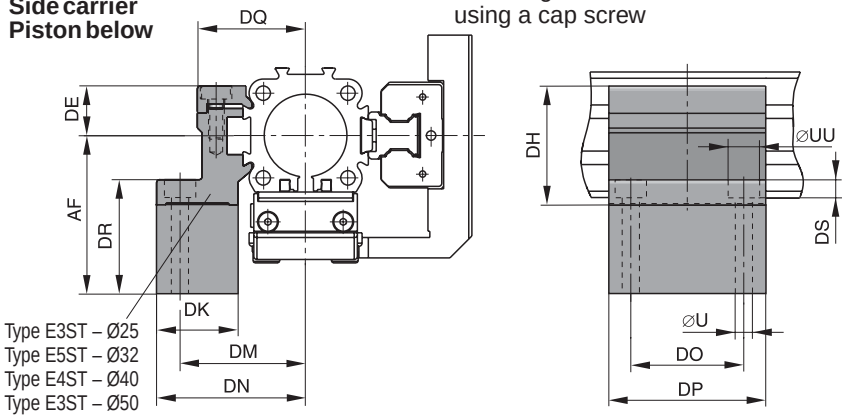
for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P STL**
- **Series OSP-P KF**

Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST
Series OSP-P STL25 to STL50: Type E3ST, E4ST, E5ST

Installation:
Side carrier
Piston below

Mounting from above / below using a cap screw

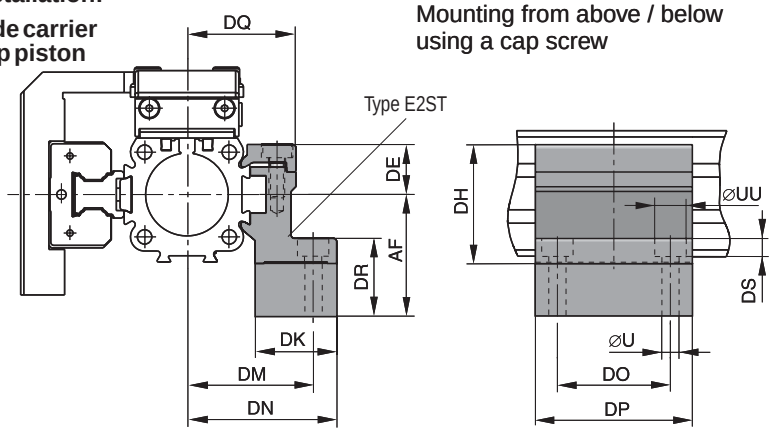


Drawing shows: Mounting with Guide Type STL

Series OSP-P STL16 to STL50: Type E2ST
Series OSP-P KF16 to KFL50: Type E2ST

Installation:
Side carrier
Top piston

Mounting from above / below using a cap screw



Drawing shows: Mounting with Guide Type STL

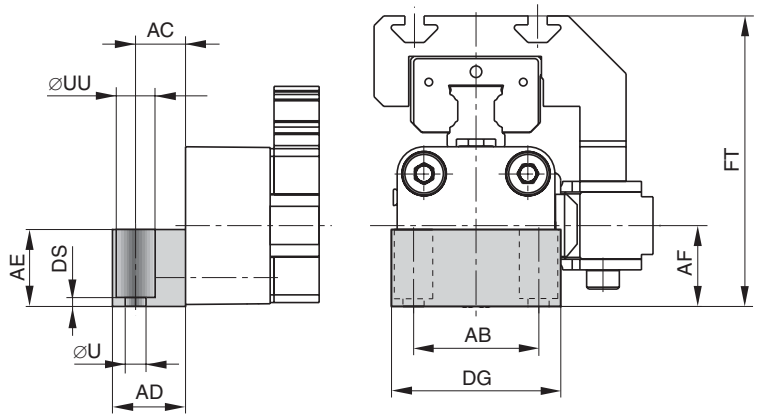
Dimension Table (mm) for Mid-Section Support E1ST to E5ST

Series OSP-P	Mounting Type	ØU	ØUU	AF	DE	DH	DK	DM	DN	DO	DP	DR	DQ	DS	EF	EN	EQ	Order No.
STL/KF16	**E1ST**	3.4	6	15	14.2	29.2	24	32	36.4	18	30	6	27	3.4	32	36.4	27	**21130FIL**
STL/KF16	**E2ST**	3.4	6	30	14.2	29.2	24	32	36.4	18	30	21	27	3.4	32	36.4	27	**21142FIL**
STL/KF25	**E1ST**	5.5	10	22	16	38	26	40	47.5	36	50	8	34.5	5.7	41.5	49	36	**21131FIL**
STL/KF25	**E2ST**	5.5	10	37	16	38	26	40	47.5	36	50	23	34.5	5.7	41.5	49	36	**21143FIL**
STL/KF25	**E3ST**	5.5	10	49	16	38	26	40	47.5	36	50	35	34.5	5.7	41.5	49	36	**21148FIL**
STL/KF32	**E1ST**	5.5	10	30	16	46	27	46	54.5	36	60	10	40.5	5.7	48.5	57	43	**21132FIL**
STL/KF32	**E2ST**	5.5	10	44	16	46	27	46	54.5	36	60	24	40.5	5.7	48.5	57	43	**21144FIL**
STL/KF32	**E5ST**	5.5	10	65	16	46	27	46	54.5	36	60	45	40.5	5.7	48.5	57	43	**21151FIL**
STL/KF40	**E1ST**	7	-	38	23	61	34	53	60	45	60	10	45	-	56	63	48	**21133FIL**
STL/KF40	**E2ST**	7	-	51	23	61	34	53	60	45	60	23	45	-	56	63	48	**21145FIL**
STL/KF40	**E4ST**	7	-	70	23	61	34	53	60	45	60	42	45	-	56	63	48	**21150FIL**
STL/KF50	**E1ST**	7	-	48	23	71	34	59	67	45	60	10	52	-	64	72	57	**21134FIL**
STL/KF50	**E2ST**	7	-	57	23	71	34	59	67	45	60	19	52	-	64	72	57	**21146FIL**
STL/KF50	**E3ST**	7	-	72	23	71	34	59	67	45	60	34	52	-	64	72	57	**21149FIL**

Order example: Type E1ST16 Order No. 21130

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series OSP-P KF25 to KF50: Type HP (Correspond to FESTO dimensions)



Note:
Correspond to FESTO DGPL-KF,
when the End Cap Mountings HP are mounted on the opposite side to the carriage (see drawing)

Dimension Table (mm)

Series	ØU	AB	AC	AD	AE	AF	DG	DS	FT	ØUU	Order No.
HP25	5.5	32.5	13	19	20	21	44	2	75.5	10	**21107FIL**
HP32	6.6	38	17	24	24	27	52	3	87.5	11	**21108FIL**
HP40	6.6	45	17.5	24	24	35	68	2	104.5	11	**21109FIL**
HP50	9	65	25	35	35	48	86	6	138.5	15	**21110FIL**

Linear Drive Accessories

Ø 25-50 mm
End Cap Mounting
correspond to
FESTO dimensions
HP25 – 50

for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P KF**

On the end-face of each end cap there are four threaded holes for mounting the actuator.

Material:
Series OSP-P KF25 – 50:
Anodized aluminum.

The mountings are supplied in pairs.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

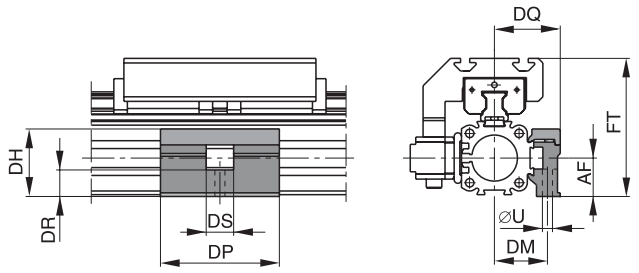
Linear Drive Accessories

Ø 25-50 mm
Mid-Section Support
correspond to FESTO dimensions MUP25 – 50

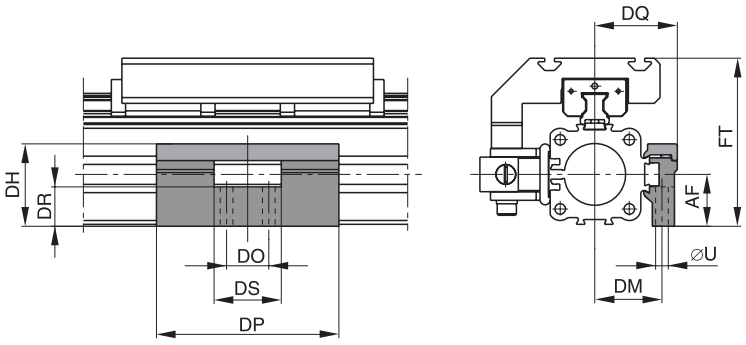
for Linear Drives with Recirculating Ball Bearing Guide

- **Series OSP-P KF**

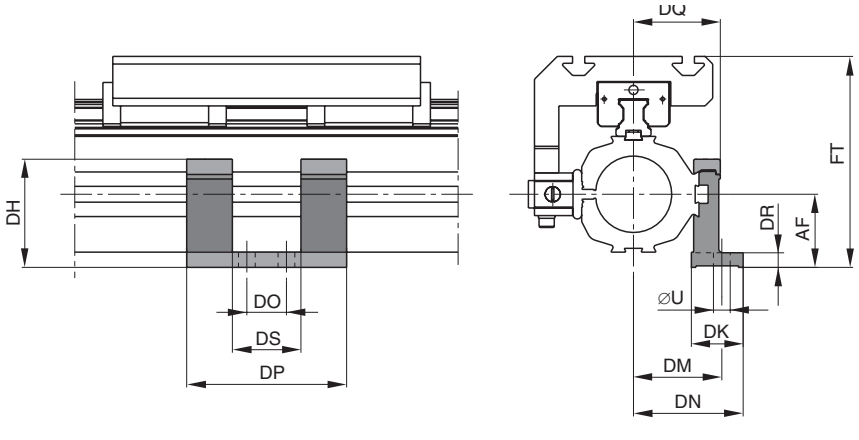
Series OSP-P KF25: Type MUP (Mounting over through holes)



Series OSP-P KF32 to KF40: Type MUP (Mounting over through holes)



Series OSP-P KF50: Type MUP (Mounting over through holes)



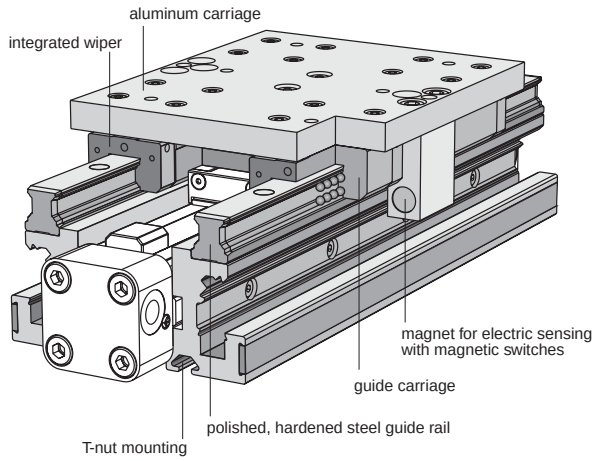
Note:
Correspond to FESTO DGPL-KF, when the Mid-Section Support MUP are mounted on the 90° side to the carriage (see drawings).

Dimension Table (mm)

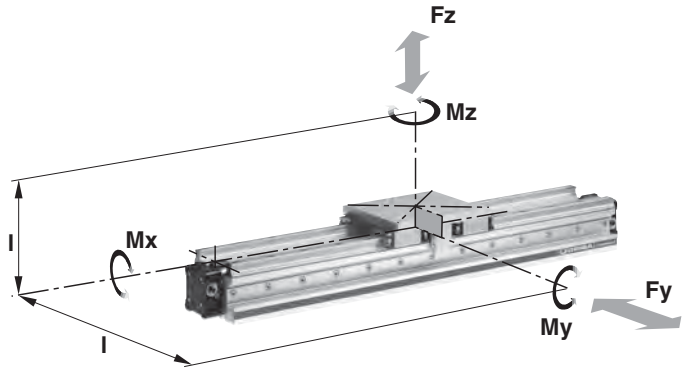
Series	ØU	AF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	FT	Order No.
MUP25	5.5	21	36.9	–	29	–	–	65	36	14.5	15	75.5	**21119FIL**
MUP32	6.6	27	42.9	–	35	–	22	95	43	20.5	35	87.5	**21120FIL**
MUP40	6.6	35	58	–	40	–	22	95	48	28.5	35	104.5	**21121FIL**
MUP50	11	48	71	34	58	72	26	105	57	10	45	138.5	**21122FIL**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Version with Pneumatic Linear Drive Series OSP-P



Loads. Forces and Moments



Technical Data

The table shows the maximum permissible loads. If multiple moments and forces act upon the cylinder simultaneously, the following equation applies:

$$\frac{Mx}{Mx_{max}} + \frac{My}{My_{max}} + \frac{Mz}{Mz_{max}} + \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}} \leq 1$$

The sum of the loads should not >1

The table shows the maximum permissible values for light, shock-free operation which must not be exeeded even under dynamic conditions.

*** Please note:**
The mass of the carriage does not have to be added to the total moving mass when using the cushioning diagram.

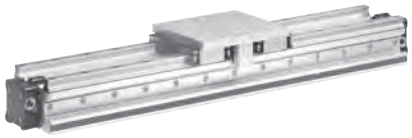
Heavy Duty-Guide HD

OSP
ORIGA SYSTEM PLUS

Series HD 25 to 50
for Linear Drive Series OSP-P

Features:

- Guide system:
  4-row recirculating ball bearing guide
- Polished and hardened steel guide rail
- For highest loads in all directions
- Highest precision
- Integrated wiper system
- Integrated grease nipples
- Any lengths of stroke up to 3700 mm (longer strokes on request)
- Anodized aluminum guide carriage - dimensions compatible with OSP guide GUIDELINE
- Maximum speed v = 5 m/s

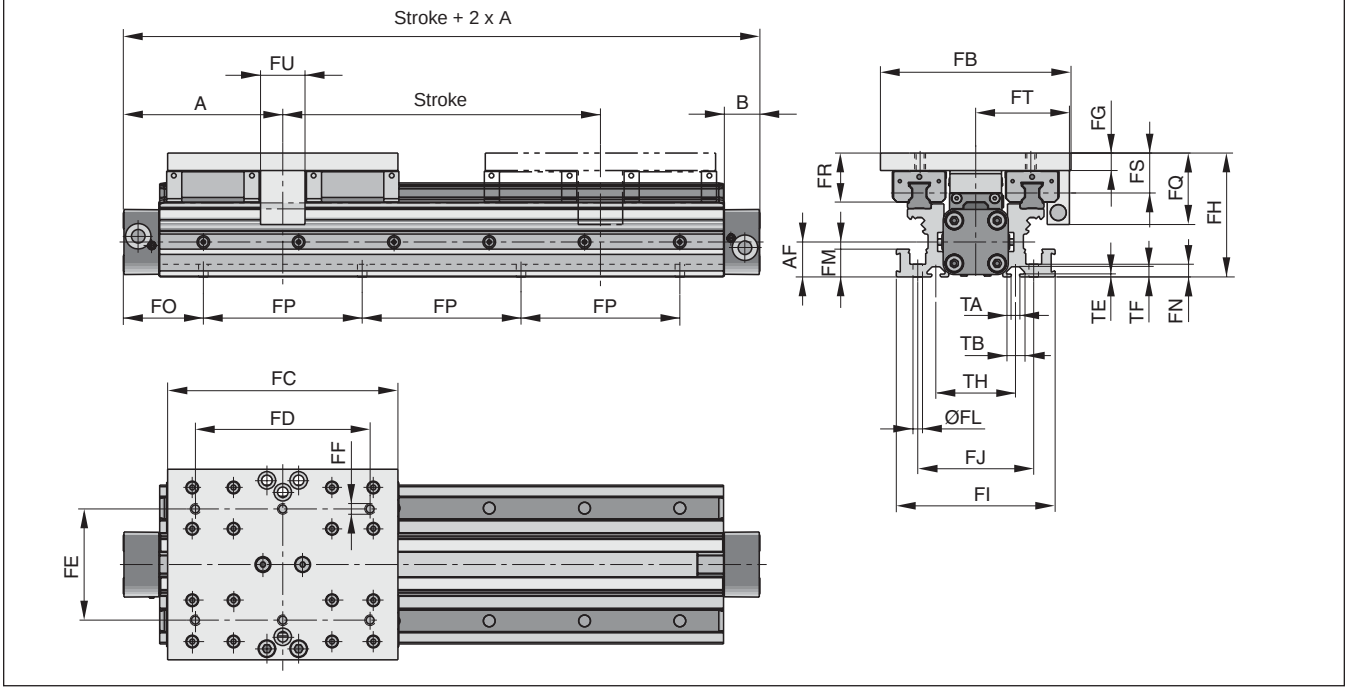


Series	for linear drive	Max. moments (Nm)			Max. loads (N)		Mass of the linear drive with guide (kg)		Mass * guide carriage (kg)
		Mx	My	Mz	Fy	Fz	with 0 mm stroke	increase per 100 mm stroke	
HD 25	OSP-P25	260	320	320	6000	6000	3.065	0.924	1.289
HD 32	OSP-P32	285	475	475	6000	6000	4.308	1.112	1.367
HD 40	OSP-P40	800	1100	1100	15000	15000	7.901	1.748	2.712
HD 50	OSP-P50	1100	1400	1400	18000	18000	11.648	2.180	3.551

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions

Series OSP-P



Note:

The HD heavy duty guide must be mounted on a flat surface for its entire length.

If T-grooves or T-bolts are used, the distance between them should not exceed 100 mm.

Variable Stop

Type VS25 to VS50

The variable stop provides simple stroke limitation and can be supplied mounted on the right or left, as required.

For further information see following data sheets:

For dimensions see pages B86-B87, for order instructions see pages B4-B5

For shock absorber selection see page B88.

Incremental displacement measuring system ORIGA-Sensoflex

Series SFI-plus can be supplied mounted on the right or left, as required.

For further information see page B105

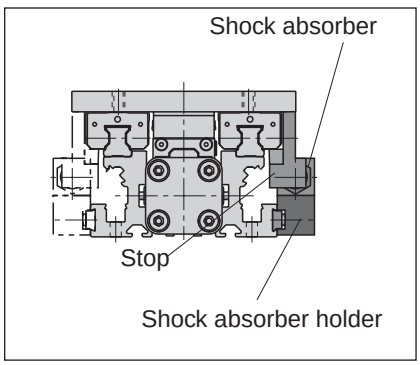
Arrangement of magnetic switches:

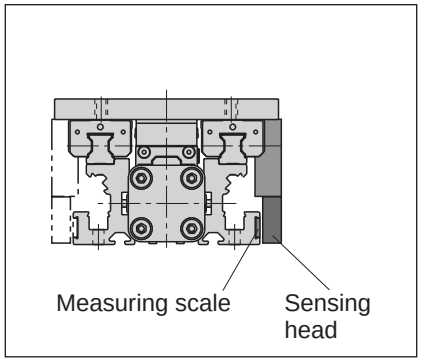
Magnetic switches can be fitted anywhere on either side.

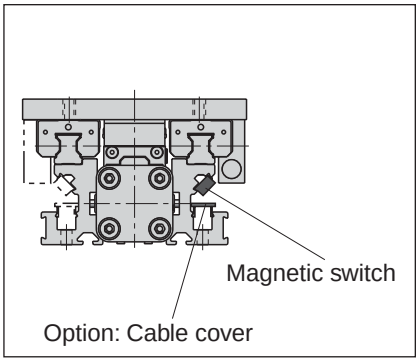
For further information see following data sheets:

Magnetic Switches see pages B93-B100

Dovetail Cover see page B101







Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimension Table (mm)

Series	A	B	AF	FB	FC	FD	FE	FF	FG	FH	FI	FJ	ØFL
HD25	100	22	22	120	145	110	70	M6	11	78	100	73	6
HD32	125	25.5	30	120	170	140	80	M6	11	86	112	85	6
HD40	150	28	38	160	180	140	110	M8	14	108	132	104	7.5
HD50	175	33	48	180	200	160	120	M8	14	118	150	118	7.5

Series	FM	FN	FP	FQ	FR	FS	FT	FU	TA	TB	TE	TF	TH
HD25	17.5	8	100	45	31	25	59	28	5.2	11.5	1.8	6.4	50
HD32	17.5	8	100	45	31	25	63	30	5.2	11.5	1.8	6.4	60
HD40	22	10	100	58	40	31.5	76	30	8.2	20	4.5	12.3	66
HD50	22	10	100	58	44	35.5	89	30	8.2	20	4.5	12.3	76

Note:

the dimension FO is derived from the last two digits of the stroke:

Example:

Stroke 15**25 mm**

X

For a cylinder OSP-P25 the adjacent table indicates that for x = 25 mm:

FO = 62.5 mm

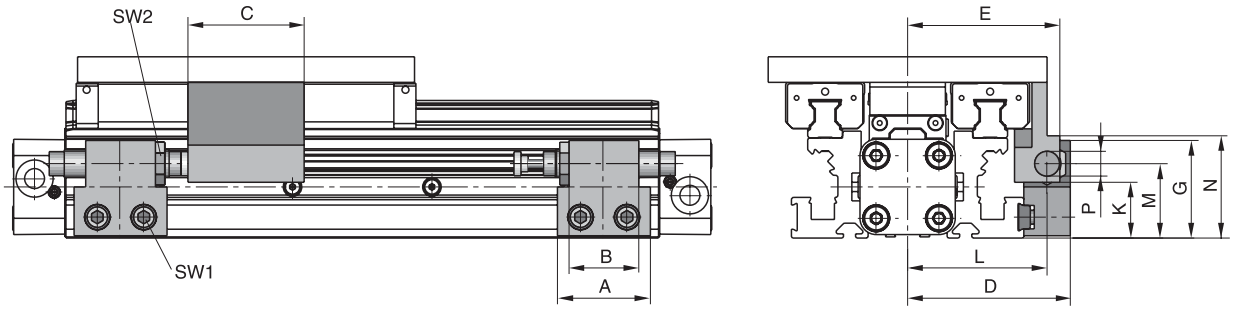
FO				
OSP-P				
x	HD25	HD32	HD40	HD50
00	50.0	75.0	50.0	75.0
01	50.5	75.5	50.5	75.5
02	51.0	76.0	51.0	76.0
03	51.5	76.5	51.5	76.5
04	52.0	77.0	52.0	77.0
05	52.5	77.5	52.5	77.5
06	53.0	78.0	53.0	78.0
07	53.5	78.5	53.5	78.5
08	54.0	79.0	54.0	79.0
09	54.5	79.5	54.5	79.5
10	55.0	80.0	55.0	80.0
11	55.5	80.5	55.5	80.5
12	56.0	81.0	56.0	81.0
13	56.5	81.5	56.5	81.5
14	57.0	82.0	57.0	82.0
15	57.5	82.5	57.5	82.5
16	58.0	83.0	58.0	83.0
17	58.5	83.5	58.5	83.5
18	59.0	84.0	59.0	84.0
19	59.5	84.5	59.5	84.5
20	60.0	85.0	60.0	85.0
21	60.5	85.5	60.5	85.5
22	61.0	36.0	61.0	86.0
23	61.5	36.5	61.5	86.5
24	62.0	37.0	62.0	87.0
25	62.5	37.5	62.5	87.5
26	63.0	38.0	63.0	88.0
27	63.5	38.5	63.5	88.5
28	64.0	39.0	64.0	89.0
29	64.5	39.5	64.5	89.5
30	65.0	40.0	65.0	90.0
31	65.5	40.5	65.5	90.5
32	66.0	41.0	66.0	91.0
33	66.5	41.5	66.5	91.5

FO				
OSP-P				
x	HD25	HD32	HD40	HD50
34	67.0	42.0	67.0	92.0
35	67.5	42.5	67.5	92.5
36	68.0	43.0	68.0	93.0
37	68.5	43.5	68.5	43.5
38	69.0	44.0	69.0	44.0
39	69.5	44.5	69.5	44.5
40	70.0	45.0	70.0	45.0
41	70.5	45.5	70.5	45.5
42	71.0	46.0	71.0	46.0
43	71.5	46.5	71.5	46.5
44	72.0	47.0	72.0	47.0
45	72.5	47.5	72.5	47.5
46	73.0	48.0	73.0	48.0
47	73.5	48.5	73.5	48.5
48	74.0	49.0	74.0	49.0
49	74.5	49.5	74.5	49.5
50	75.0	50.0	75.0	50.0
51	75.5	50.5	75.5	50.5
52	76.0	51.0	76.0	51.0
53	76.5	51.5	76.5	51.5
54	77.0	52.0	77.0	52.0
55	77.5	52.5	77.5	52.5
56	78.0	53.0	78.0	53.0
57	78.5	53.5	78.5	53.5
58	79.0	54.0	79.0	54.0
59	79.5	54.5	79.5	54.5
60	80.0	55.0	80.5	55.0
61	80.5	55.5	80.5	55.5
62	81.0	56.0	81.0	56.0
63	81.5	56.5	81.5	56.5
64	82.0	57.0	82.0	57.0
65	32.5	57.5	82.5	57.5
66	33.0	58.0	83.0	58.0
67	33.5	58.5	83.5	58.5

FO				
OSP-P				
x	HD25	HD32	HD40	HD50
68	34.0	59.0	84.0	59.0
69	34.5	59.5	84.5	59.5
70	35.0	60.0	85.0	60.0
71	35.5	60.5	85.5	60.5
72	36.0	61.0	86.0	61.0
73	36.5	61.5	86.5	61.5
74	37.0	62.0	87.0	62.0
75	37.5	62.5	87.5	62.5
76	38.0	63.0	88.0	63.0
77	38.5	63.5	38.5	63.5
78	39.0	64.0	39.0	64.0
79	39.5	64.5	39.5	64.5
80	40.0	65.0	40.0	65.0
81	40.5	65.5	40.5	65.5
82	41.0	66.0	41.0	66.0
83	41.5	66.5	41.5	66.5
84	42.0	67.0	42.0	67.0
85	42.5	67.5	42.5	67.5
86	43.0	68.0	43.0	68.0
87	43.5	68.5	43.5	68.5
88	44.0	69.0	44.0	69.0
89	44.5	69.5	44.5	69.5
90	45.0	70.0	45.0	70.0
91	45.5	70.5	45.5	70.5
92	46.0	71.0	46.0	71.0
93	46.5	71.5	46.5	71.5
94	47.0	72.0	47.0	72.0
95	47.5	72.5	47.5	72.5
96	48.0	73.0	48.0	73.0
97	48.5	73.5	48.5	73.5
98	49.0	74.0	49.0	74.0
99	49.5	74.5	49.5	74.5

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

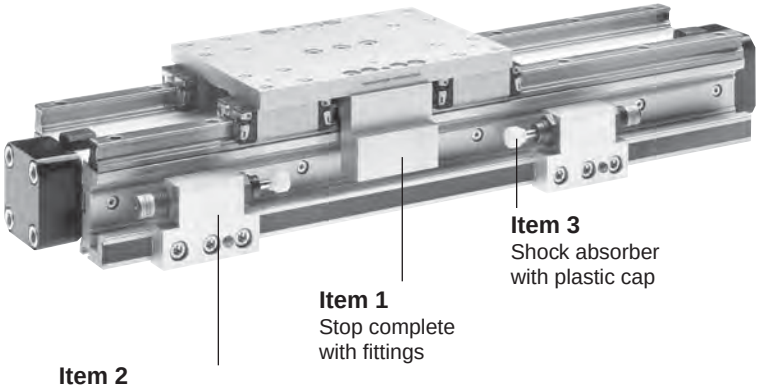
Dimensions – Variable Stop Type VS25 to VS50



Dimension Table (mm) – Variable Stop Type VS25 to VS50

Series	Type	A	B	C	D	E	G	K	L	M	N	P	SW1	SW2
OSP-HD25	VS25	40	30	50	70	65.5	42	26	60	32	42	M12 x 1	5	16
OSP-HD32	VS32	60	40	54	73	71	44	28	63	34	53	M14 x 1.5	5	17
OSP-HD40	VS40	84	52	55	96	92	59	35	82	45	61	M20 x 1.5	5	24
OSP-HD50	VS50	84	-	60	107	105	66	37	89	49	66	M25 x 1.5	5	30

Order Information – Variable Stop Type VS25 to VS50



Shock Absorber Selection

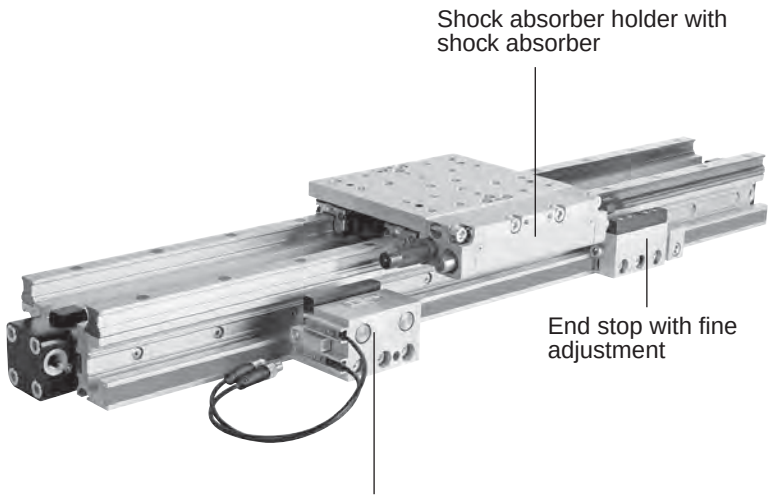
For shock absorber selection in dependence on mass and speed see pages B76-B77

Order Instructions – Variable Stop Type VS25 to VS50

Item	Description	Size VS25		VS32		VS40		VS50	
		Type	Order No.	Type	Order No.	Type	Order No.	Type	Order No.
1	Stop, complete	–	21257FIL	–	21258FIL	–	21259FIL	–	21260FIL
2	Shock absorber holder, complete	–	21202FIL	–	21203FIL	–	21204FIL	–	21205FIL
3 *	Shock absorber, standard	SA12	7706FIL	SA14	7708FIL	SA20	7710FIL	SAI25	7712FIL
	Shock absorber, version S	SA12S	7707FIL	SA14S	7709FIL	SA20S	7711FIL	SAI25S	7835FIL
	* Shock absorber with plastic cap (see page B78)								

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

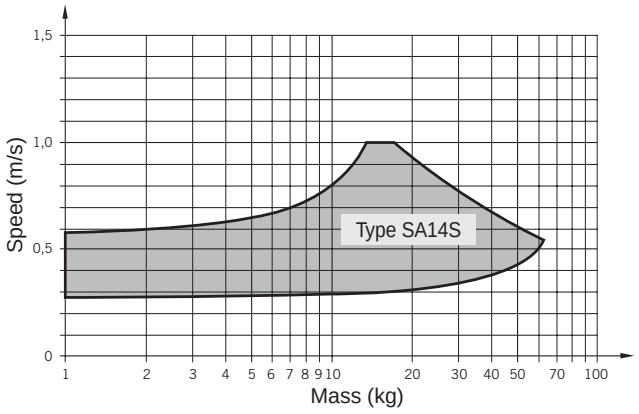
Intermediate Stop Module Type ZSM..HD



Technical Data

Temperature range	-10°C to +70°C
Operating pressure range	4 – 8 bar
Intermediate position grid	85 mm

Shock Absorber Type SA14S



The values relate to an effective driving force of 250 N (6 bar)

Intermediate Stop Module

The intermediate stop module ZSM allows the guide carriage to stop at any desired intermediate positions with high accuracy. It can be retrofitted. Depending on the application, i.e. the number of intermediate stops, one or more intermediate position stops can be used. The intermediate position stops can be retracted and extended without the need for the guide carriage to be moved back out of position.

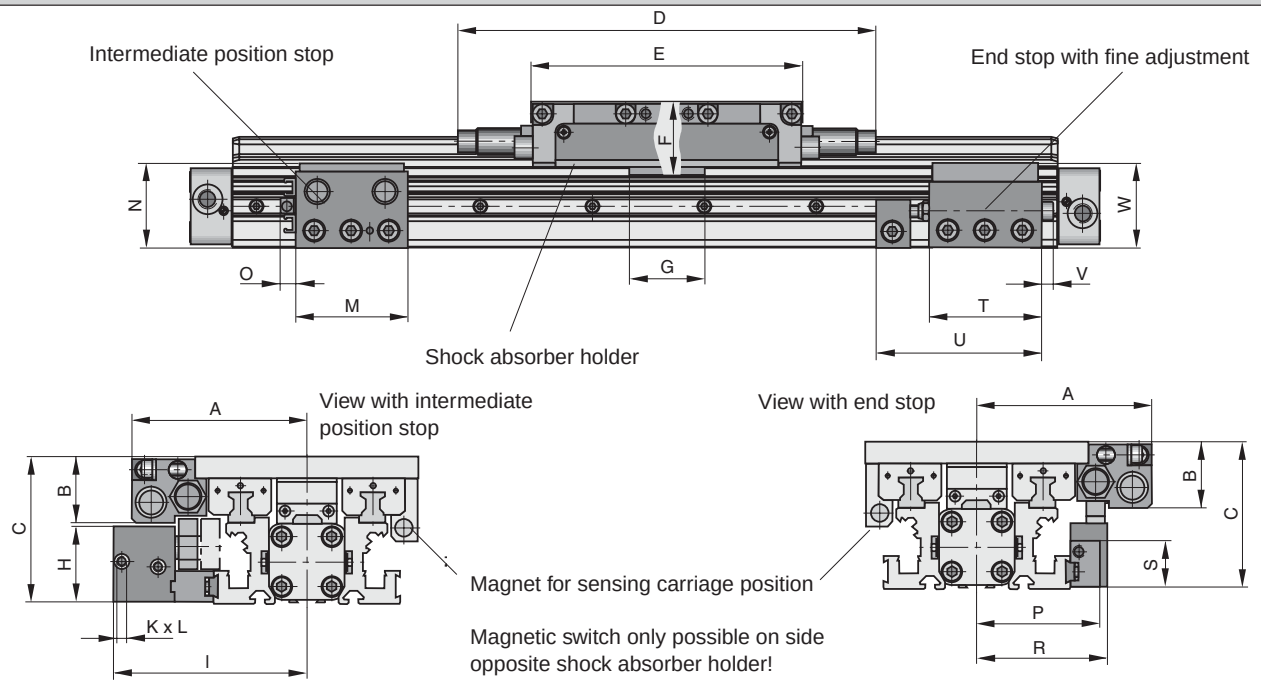
Therefore the guide carriage can be made to stop at the defined intermediate positions in any order.

ORIGA intermediate stop module ZSM:

- Allows stopping at any intermediate positions
- Intermediate position stops can be located steplessly anywhere along the whole stroke length
- Movement to the next position without reverse stroke
- Compact unit
- Cost-effective positioning module without electrical or electronic components
- Option: end stop with fine adjustment

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions – intermediate stop module Type ZSM..HD

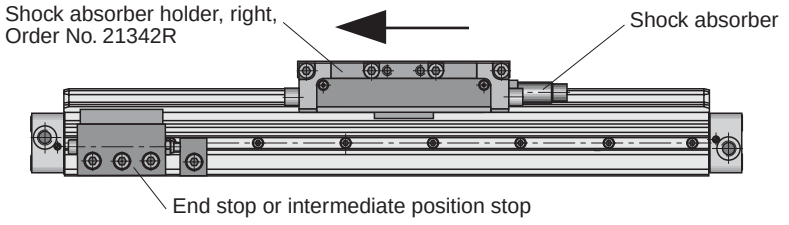


Dimension Table (mm) – intermediate Stop Module Type ZSM..HD

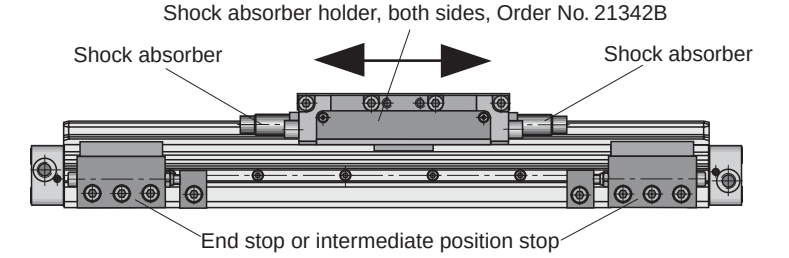
Series	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	R	S	T	U	V	W
ZSM25	94	35	78	224	145	39	40	41	104	M5	5	60	45	8	66	70	26	60	93	6	45

Shock Absorber Arrangement in Dependence on Direction of Movement

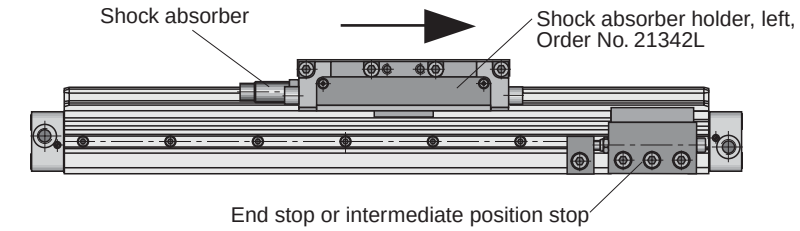
From right to left



In both directions



From left to right



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Order Instructions – intermediate Stop Module Type ZSM..HD

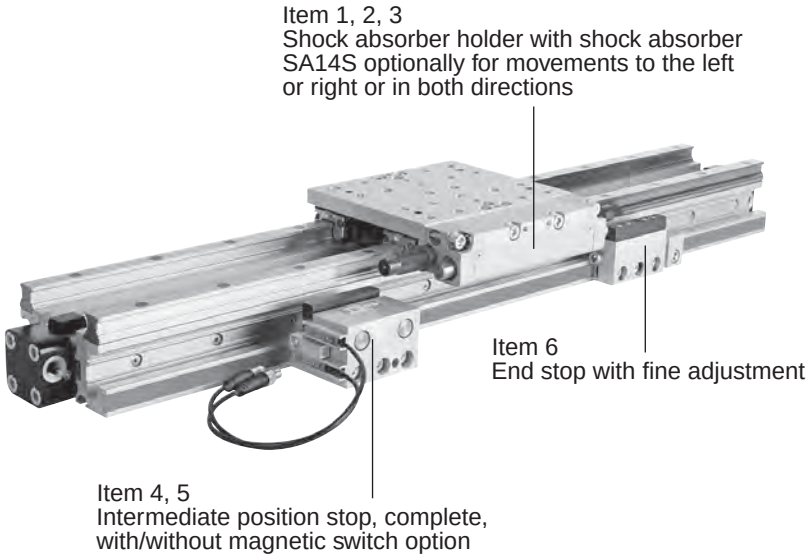


Illustration shows version with shock absorber holder for movement in both directions and magnetic switch option with T-slot switches.

Order instructions – intermediate stop module Type ZSM..HD

Item	Description	For intermediate stop module	Order-No.
1*	Shock absorber holder with shock absorber SA14S, both sides	ZSM25HD	**21342BFIL**
2*	Shock absorber holder with shock absorber SA14S, left	ZSM25HD	**21342LFIL**
3*	Shock absorber holder with shock absorber SA14S, right	ZSM25HD	**21342RFIL**
4	Intermediate position stop complete, without magnetic switch option	ZSM25HD	**21343FIL**
5	Intermediate position stop complete, with magnetic switch option	ZSM25HD	**21344FIL**
6	End stop with fine adjustment	ZSM25HD	**21346FIL**

* The shock absorbers are installed in the shock absorber holder and adjusted in our workshop.

Note:

For movement onwards from the intermediate position, the intermediate position stop must advance.

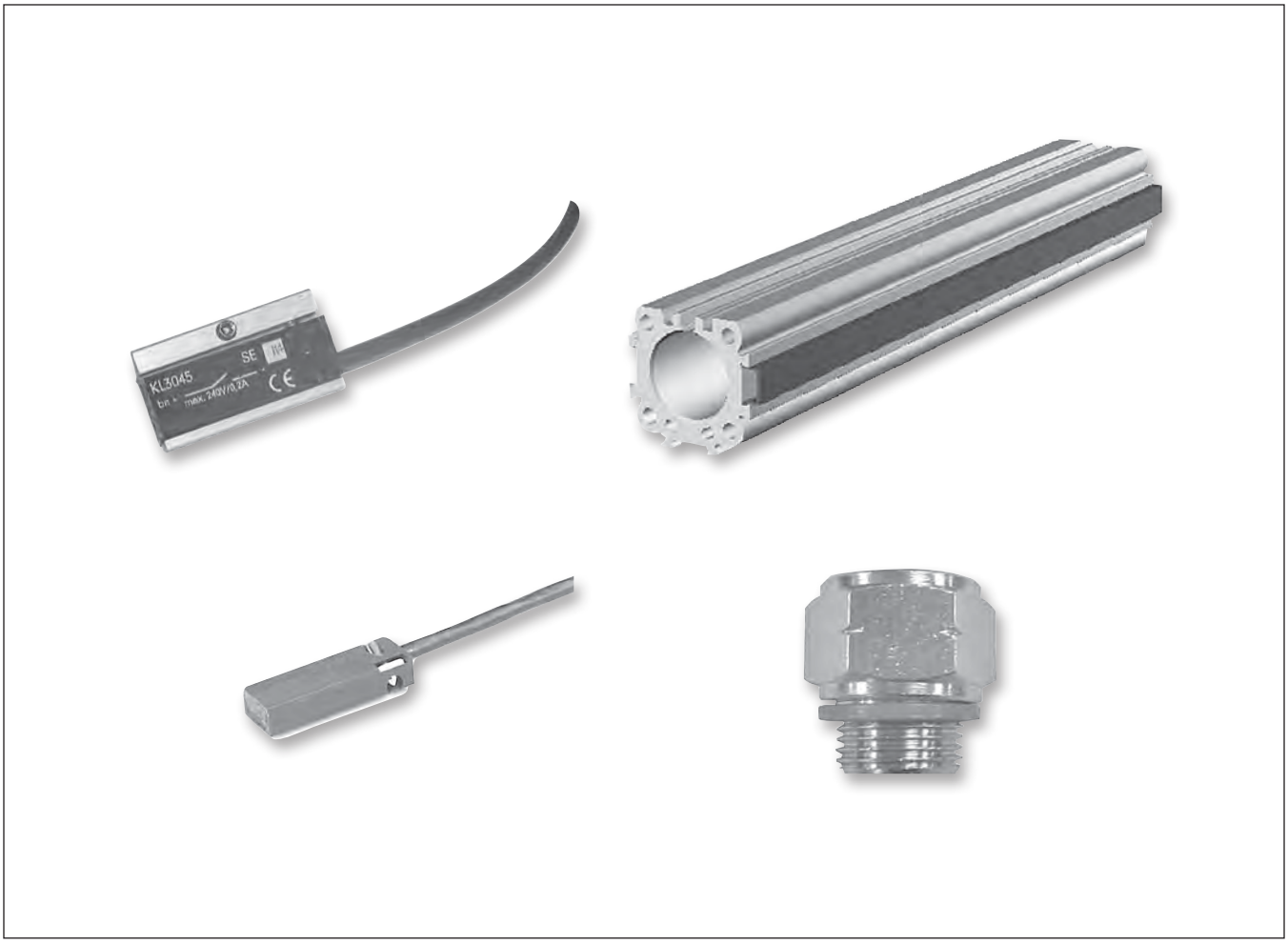
The intermediate position stop can only advance if both cylinder chambers of the OSP-P cylinder are pressurized.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Notes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

OSP-P Sensors & Service Parts



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Linear Drive Accessories

ø 10-80 mm

Magnetic Switches

For electrical sensing of the carrier position, e.g. at the end positions, magnetic switches may be fitted. Position sensing is contactless and is based on magnets fitted as standard to the carrier. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all PARKER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.

Piston, speed and switching distance affect signal duration and should be considered in conjunction with the minimum reaction time of ancillary control equipment.

$$\text{Min. reaction time} = \frac{\text{Switching distance}}{\text{Piston speed}}$$

Characteristics

Characteristics	Unit	Description	
Electrical Characteristics		**Type RS**	**Type ES**
Switching output		Reed	PNP, NPN
Operating voltage	V	10-240 AC/DC (NO) 10-150 AC/DC (NC)	10-30 DC
Residual voltage	V	< 3	< 3
Connection		Two wire	Three wire
Output function		normally open normally closed	normally open
Permanent current	mA	200	200
Max. switching capacity	VA (W)	10 VA	—
Power consumption without load	mA	—	< 20
Function indicator		LED, yellow	
Typical switching time	ms	On: < 2	On: < 2
Switch-off delay	ms	—	ca. 25
Pole reversal does not work		LED	—
Pole reversal protection		—	Built in
Short-circuit protection		—	Built in
Switchable capacity load		µF	0.1 at 100 ≤, 24
VDC			
Switching point accuracy	mm	± 0,2	
Switching distance	mm	ca. 15	ca. 15
Hysteresis for OSP	mm	ca. 8	ca. 3
Lifetime		3×10^6, up to 6×10^6 cycles	Theoretically unlimited
Mechanical Characteristics			
Housing		Makrolon, smoke color	
Cable cross section	mm^2	2 x 0.14	3 x 0.14
Cable type *)		PVC	PUR, black
Bending radius fixed	mm	≥ 20	
moving	mm	≥ 70	
Weight (Mass)	kg	0.012	
Degree of protection	IP	67 to DIN EN 60529	
Ambient temperature range *)[1)]	°C °C	-25 other temperature ranges +80 on request	
Shock resistance	m/s^2	100 (contact switches)	500

*) other versions on request
1) for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Type RS

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.
Direct connection with 2-pole cable, 5 m long, open ended **(Type RS-K).**

Type ES

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

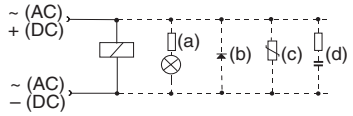
Magnetic Switches RS and ES

Electrical Service Life
Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

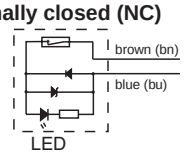
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductively
(c) Varistor on inductively
(d) RC element on inductively



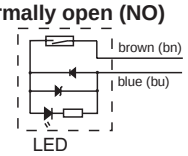
For the type ES, external protective circuits are not normally needed.

Electrical Connection, Type RS

Normally closed (NC)

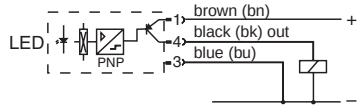


Normally open (NO)

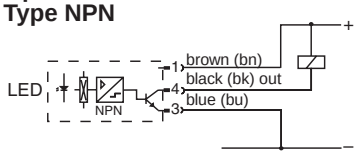


Electrical Connection, Type ES

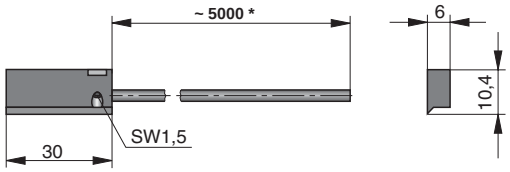
Standard Version:
Type PNP



Optional Version
Type NPN

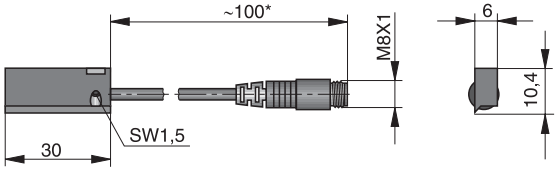


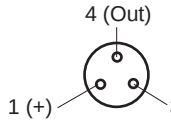
Dimensions (mm) – Type RS-K



* Length with possible minus tolerance, see chart below

Dimensions (mm) – Type ES-S





PIN assignment (view of pins) according to DIN EN 50044

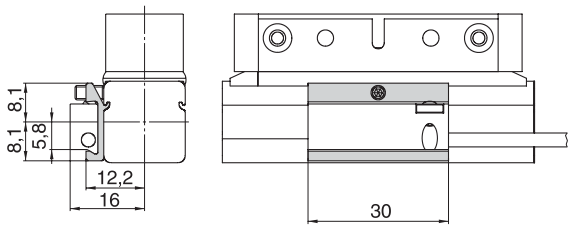
* Length with possible minus tolerance, see chart below

Length of connection cable with length tolerance

Magnetic Switch Order No.	Nominal cable length	Length tolerance
KL3045	5000 mm	– 50 mm
KL3048	5000 mm	– 50 mm
KL3054	100 mm	– 20 mm
KL3060	145 mm	± 5 mm

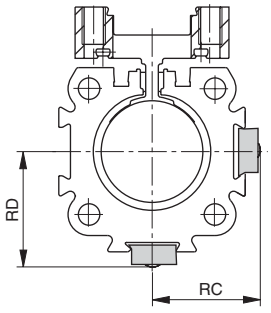
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions Series OSP-P10



Note:
Sensors can not be mounted directly opposite of the carrier

Dimensions - OSP-P16 to 80



Dimension Table (mm) and Order Instructions

Series	Dimensions		Order No.						
			RS closer Normally open	**RS** opener Normally closed	**ES** PNP	**NPN**	**ES** compl. with 5 m cable PNP	**NPN**	**Adapter** only for OSP-P10)
	RC	**RD**							
OSP-P10	–	–	**Type:**	**Type:**	**Type:**	**Type:**	**Type:**	**Type:**	**20968**
OSP-P16	20	20.5	**RS-K**	**RS-K**	**ES-S**	**ES-S**	**ES-S**	**ES-S**	**please order separately**
OSP-P25	25	27	**KL3045**	**KL 3048**	**KL 3054**	**KL 3060**	**KL 3054 + 4041**	**KL 3060 + 4041**	
OSP-P32	31	34							
OSP-P40	36	39							
OSP-P50	43	48							
OSP-P63	53	59							
OSP-P80	66	72							
Cable 5 m with connector and with open end for magnetic switches Type ES-S						**4041**			

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Characteristics

Characteristics	Unit	Description	
Electrical Characteristics		**Type RST**	**Type EST**
Switching output		Reed	PNP
Operating voltage	V	10-30 AC/DC	10-30 DC
Ripple		-	≤ 10%
Voltage drop	V	≤ 3	≤ 2
Electrical configuration		2 wire	3 wire
Output function		normally open normally closed	normally open
Permanent current	mA	≤ 100	≤ 100
Breaking capacity	W	≤ 6 peak	-
Power consumption, at U_B = 24V, switched on, without load	mA	-	≤ 10
Function indicator		LED, yellow (not for normally closed)	
Response time	ms	≤ 2	≤ 0.5
Sensitivity	mT	2 – 4	2 – 4
Time delay before availability	ms	-	≤ 2
Reverse polarity prot.		yes	yes
Short-circuit protection		no	yes (pulsed)
Switchable capacity load	µF	0.1 at 100 Ω, 24 VDC	
Switching frequency	Hz	≤ 400	≤ 5 k
Repeatability	mm	≤ 0.2	≤ 0.2
Hysteresis	mm	≤ 1.5	≤ 1.5
EMC	EN	60947-5-2	
Lifetime		≤ 35 Mio. cycles with PLC load	unlimited
Power-up pulse suppression		-	yes
Protection for inductive load		-	yes
Mechanical Characteristics			
Housing		Plastic / PA66 + PA6I red	
Cable cross section	mm^2	2 x 0.14	3 x 0.14
Cable type		PUR, black	PUR, black
Bending radius	mm	≤ 36	≤ 30
Weight	kg	ca. 0.030 RST-K ca. 0.010 RST-S	ca. 0.030 EST-K ca. 0.010 EST-S
Degree of protection	IP	67 to EN 60529	
Ambient temperature range [1]	°C	-25 to +80	-25 to +75 at U_B=10 – 30 V -25 to +80 at U_B=10 – 28 V
– with adapter	°C	-25 to +60	
Adapter tightening torque	Nm	0.15 (tightening torque of screwing adapter on to magnetic switch)	
Shock resistance			
Vibration to EN 60068-2-6	G	15, 11 ms, 10 to 55 Hz, 1 mm	
Shock to EN 60068-2-27	G	50, 11 ms	
Bump to EN 60068-2-29	G	30, 11 ms, 1000 bumps each axis	

Linear Drive Accessories

ø 10-80 mm

Magnetic Switches for T-Slot

OSP
ORIGA SYSTEM PLUS

Series RST
EST

Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as

standard. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all PARKER-ORIGA OSP-Actuators and aluminum profile rod type cylinders.

[1] for the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Type RST

In the type RST contact is made by a mechanical **reed switch** encapsulated in glass.

Type EST

In the type EST contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

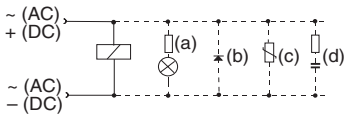
Magnetic Switches RST and EST

Electrical Service Life
Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

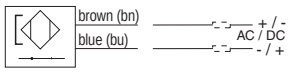
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductively
(c) Varistor on inductively
(d) RC element on inductively



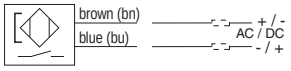
For the type EST, external protective circuits are not normally needed.

Electrical Connection Type RST-K

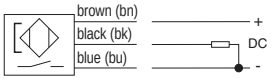
Normally closed



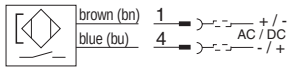
Normally open



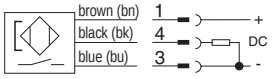
Electrical Connection Type EST-K



Electrical Connection Type RST-S

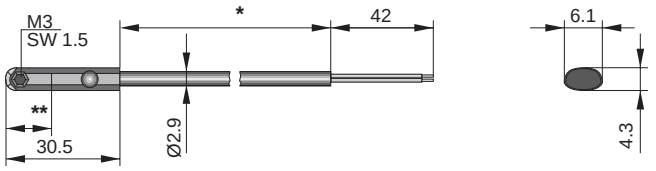


Electrical Connection Type EST-S



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

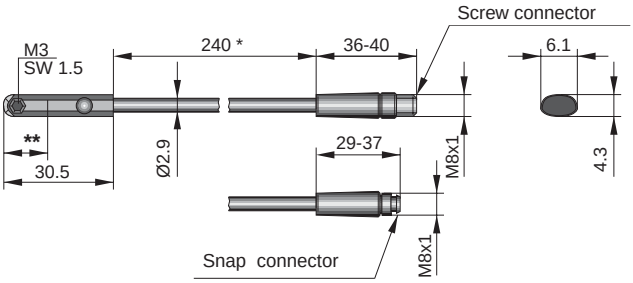
Dimensions (mm) – Type RST-K, EST-K



* Cable lengths available: 5000 mm ± 75 mm
2000 mm ± 40 mm

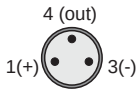
** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

Dimensions (mm) – Type RST-S, EST-S



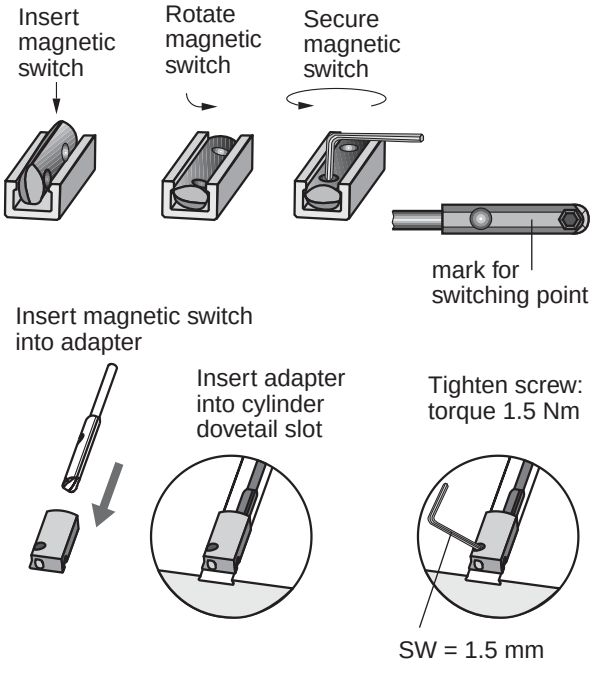
* ± 6 mm

** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

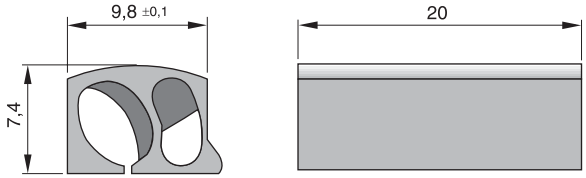


PIN assignment
(view of pins)
to DIN EN 50044

Installation



Dimensions of Adapter for Magnetic Switch



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Order Instructions

Version	Voltage	Type	Order No.
Magnetic switch, reed contact, normally open, LED indicator, cable 2 m	10-30 V AC / DC	**RST-K**	**KL 3301**
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3300**
Magnetic switch, reed contact, normally open, snap connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3302**
Magnetic switch, reed contact, normally open, screw connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL 3303**
Magnetic switch, reed contact, normally closed, cable 5 m	10-30 V AC / DC	**RST-K**	**KL 3305**
Magnetic switch, electronic, PNP LED indicator, cable 2 m	10-30 V DC	**EST-K**	**KL 3308**
Magnetic switch, electronic, PNP LED indicator, cable 5 m	10-30 V DC	**EST-K**	**KL 3309**
Magnetic switch, electronic, PNP snap connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3312**
Magnetic switch, electronic, PNP screw connector M8, LED indicator	10-30 V DC	**EST-S**	**KL 3306**

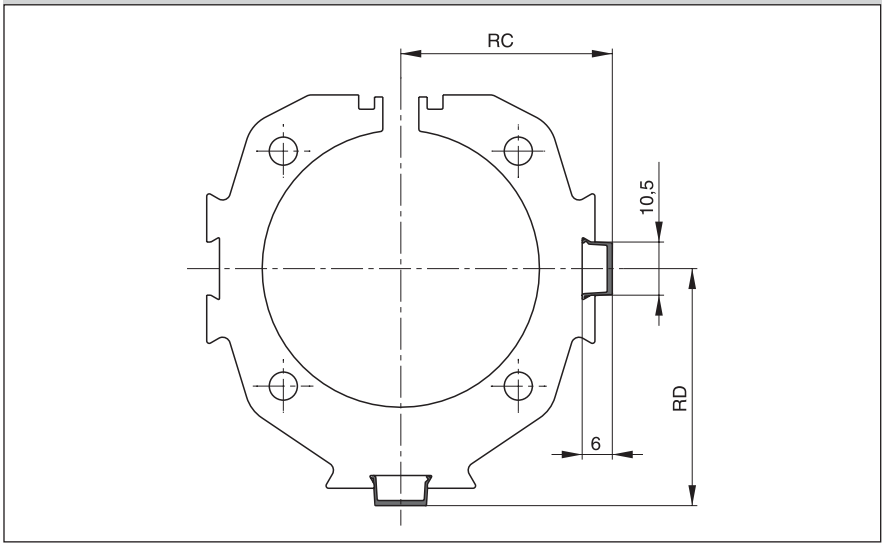
Included in delivery: 1 magnetic switch
1 adapter for dovetail groove mounting

Accessories

Description	Type	Order No.
Cable M8, 2.5 m without lock nut	**KS 25**	**KY 3240**
Cable M8, 5.0 m without lock nut	**KS 50**	**KY 3241**
Cable M8, 10.0 m without lock nut	**KS 100**	**KY 3140**
Cable M8, 2.5 m with lock nut	**KSG 25**	**KC 3102**
Cable M8, 5.0 m with lock nut	**KSG 50**	**KC 3104**
Adapter for dovetail groove (pack of 10)		**KL 3333**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions (mm)



Dimension Table (mm) and Order Instructions

Series	Dimensions (mm) RC	RD	Order No.
OSP-P16	18.5	19	**13039**
OSP-P25	23.5	25.5	
OSP-P32	29.5	32	Minimal length: 1m Max. profile length: 2m Multiple profiles can be used.
OSP-P40	34.5	37.5	
OSP-P50	41.5	46.5	
OSP-P63	51.5	57.5	
OSP-P80	64.5	70.5	

Metric Conversion Fittings

Order Number	Port Size	Bore Size
2521-1/8-02	G1/8 to 1/8" NPT	P25
2521-1/4-04	G1/4 to 1/4" NPT	P32, P40, P50
2521-3/8-06	G3/8 to 3/8" NPT	P63
2521-1/2-08	G1/2 to 1/2" NPT	P80

Linear Drive Accessories

ø 16-80 mm

Dovetail Cover

For clean guidance of magnetic switch cables along the cylinder body.

Contains a maximum of 3 cables with diameter 3 mm.

Material: Plastic

Color: Red

Temperature Range: –10 to +80°C

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Service Packs

		Bore Sizes						
		16mm	25mm	32mm	40mm	50mm	63mm	80mm
BUNA Service Pack Single Piston	Part Number	11111	11112	11113	11114	11115	11116	11118
FKM Service Pack Single Piston	Part Number	11121	11122	11123	11124	11125	11126	11128
BUNA Service Pack Single Piston - Slow Speed Grease	Part Number	11131	11132	11133	11134	11135	11136	11138
FKM Service Pack Single Piston - Slow Speed Grease	Part Number	11141	11142	11143	11144	11145	11146	11148

*Behind part number, please add stroke length in mm

Service Pack Information

Service Packs, containing all the components necessary to completely rebuild a Parker-Origa rodless cylinder, are available. Each pack contains a complete seal kit, inner and outer bands, Parker-Origa grease tube, cleaning tool and repair instructions. It's all packaged in an easy-to-ship, easy-to-store box clearly labeled to indicate the cylinder type, bore and stroke for which it is intended. Contact your local Parker-Origa distributor for more information.

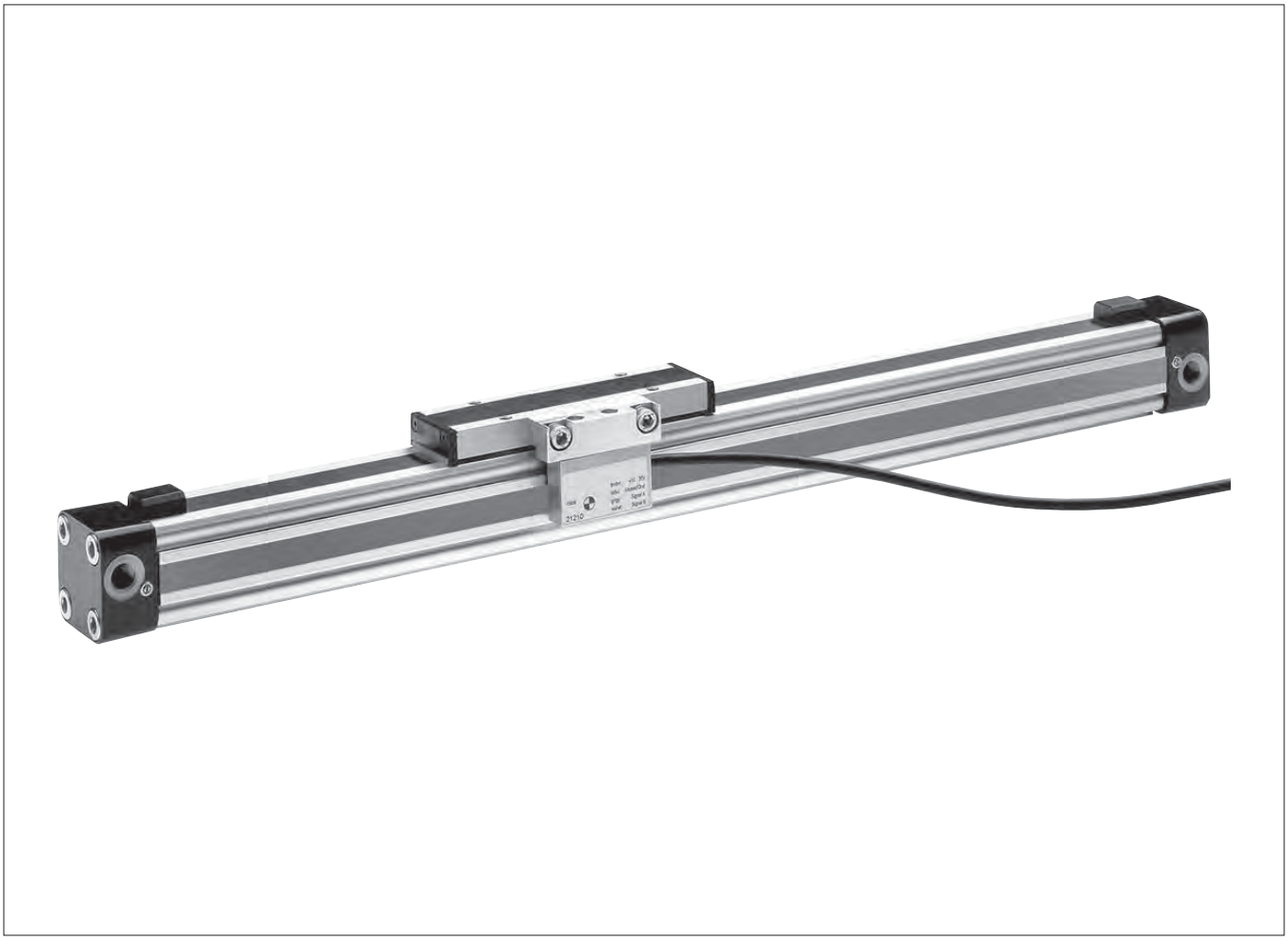
Seal Kits

		Bore Sizes						
		16mm	25mm	32mm	40mm	50mm	63mm	80mm
BUNA Seal Kit - Standard Cylinder	Part Number	11052	11053	11054	11055	11056	11057	11058
FKM Seal Kit - Standard Cylinder	Part Number	11059	11060	11061	11062	11063	11064	11065
Seal Kit - Sideline Carriage	Part Number	11066	11067	11068	11069	11070	–	–
Seal Kit Active Brake - Standard Cylinder	Part Number	–	11822	11823	11824	11825	11826	11827
Seal Kit - Multibrake	Part Number	–	11089	11090	11091	11092	11093	–

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

ORIGA-SENSOFLEX

Displacement Measuring System for Cylinder Series OSP-P



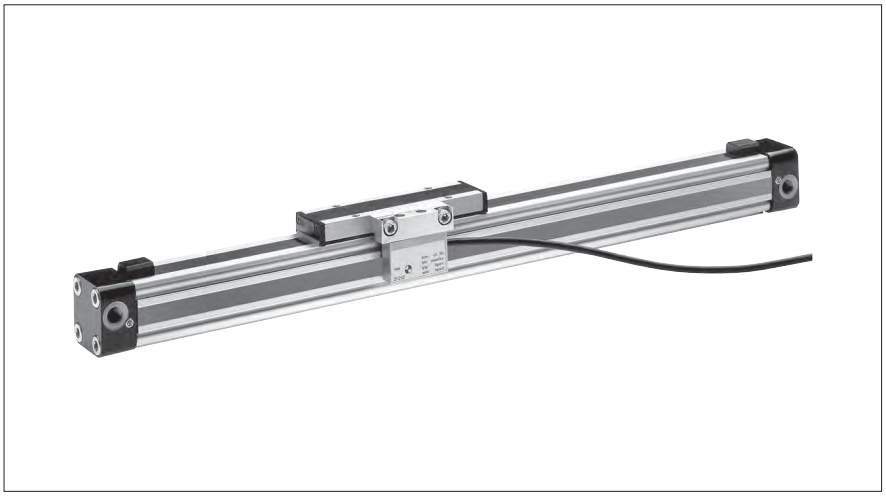
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

ORIGA-Sensoflex

Displacement measuring system for automated movement

Series SFI-plus (incremental measuring system)

for cylinder series
- **OSP-P...**



Characteristics

- Contactless magnetic displacement measurement system
- Displacement length up to 32 m
- Resolution 0.1 mm (option: 1 mm)
- Displacement speed up to 10 m/s
- For linear and non-linear rotary motion
- Suitable for almost any control or display unit with a counter input

The SFI-plus magnetic displacement measuring system consists of 2 main components.

- **Measuring Scale**

  Self-adhesive magnetic measuring scale

- **Sensing Head**

  Converts the magnetic poles into electrical signals which are then processed by counter inputs downstream

  (e.g. PLC, PC, digital counter)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Characteristics			
Characteristics	**Unit**	**Description**	
Type		**21210**	**21211**
Output Function			
Resolution	mm	0.1	1
Pole lengths magnetic scale	mm	5	
Maximum speed	m/s	10	
Repeat accuracy		± 1 Increment	
Distance between sensor and scale	mm	≤ 4	
Tangential deviation		≤ 5°	
Lateral deviation	mm	≤ ± 1.5	
Switching output		PNP	
Electrical Characteristics			
Operating voltage U_b	V DC	18 – 30	
Voltage drop	V	≤ 2	
Continuous current for each output	mA	≤ 20	
Power consumption at U_b = 24V, switched on, without load	mA	≤ 50	
Short-circuit protection		yes	
Reverse polarity protection			yes
Protection from inductive load		yes	
Power-up pulse suppression		yes	
EMC			
Electrostatic discharge immunity	kV	6, B, to EN 61000-4-2	
Electromagnetic field immunity	V/m	10, A, to EN61000-4-3	
Electrical fast transient/burst immunity (for signal connections)	kV	1, B, to EN 61000-4-4	
Electrical fast transient/burst immunity (for DC connections)	kV	2, B, to EN 61000-4-4	
Surge immunity (for signal connections)	kV	1, B, to EN 61000-4-5	
Surge immunity (for DC connections)	kV	0,5, B, to EN 61000-4-5	
Immunity to conducted disturbances	V	10, A, to EN 61000-4-6	
Power frequency magnetic field immunity at 50 Hz	A/m	30, A, to EN 61000-4-8	
Emission standard for residential		to EN 61000-6-4	
Radio disturbance characteristics		to EN 55011, Group 1, A	
Mechanical Characteristics			
Housing		Aluminum	
Cable length	m	5.0 – fixed, open end	
Cable cross section	mm^2	4 x 0.14	
Cable type		PUR, black	
Bending radius	mm	≥ 36	
Weigth (mass)	kg	ca. 0.165	
Environmental Conditions / Shock Resistance			
Degree of protection	IP	67 to EN60529	
Ambient temperature range	°C	-25 to +80	
Broad-band random vibration to EN 60068-2-64	g	5, 5 Hz to 2 kHz, 0.5 h each axis	
Vibration stress to EN 60068-2-6	g	12, 10 Hz to 2 kHz, 2 mm, 5 h each axis	
Shock to EN 60068-2-27	g	100, 6 ms, 50 bumps each axis	
Bump to EN 60068-2-29	g	5, 2 ms, 8000 bumps each axis	

Displacement Measuring System

for automated movement

ORIGA-Sensoflex

(incremental displacement measuring system)

Series SFI-plus for cylinder series

- **OSP-P...**

Note:

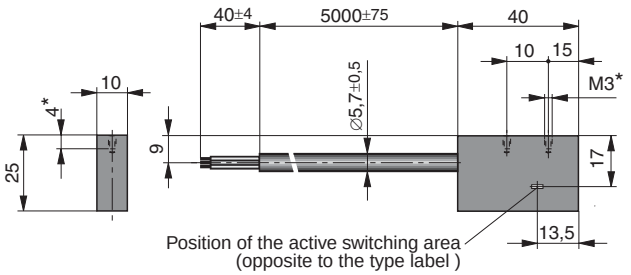
For combinations Active Brake AB + SFI-plus + Magnetic Switch contact our technical department please.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Sensing Head

The sensing head provides two pulsating, 90° out of phase counter signals (phase A/B) with a 0.4 mm resolution (option 4 mm).
External processing can improve the resolution to 0.1 mm (option 1 mm).
The counting direction can be determined automatically from the phase variance of the counter signals.

Dimensions (mm) – Sensing Head

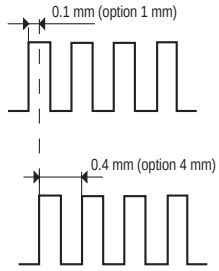


* Maximum thread depth 4mm

Electrical Connection

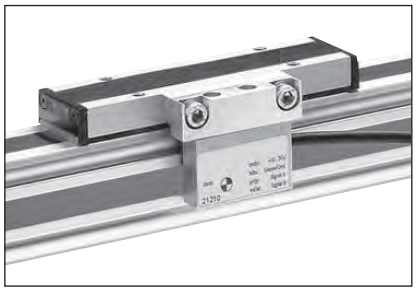
Color	Description
bn = brown	+ DC
bu = blue	– DC
bl = black	Phase A
wt = white	Phase B

Output signal – Sensing Head

$U_a = U_e$	Phase B	U_{a1}	0°	
	Phase A	U_{a2}	90°	

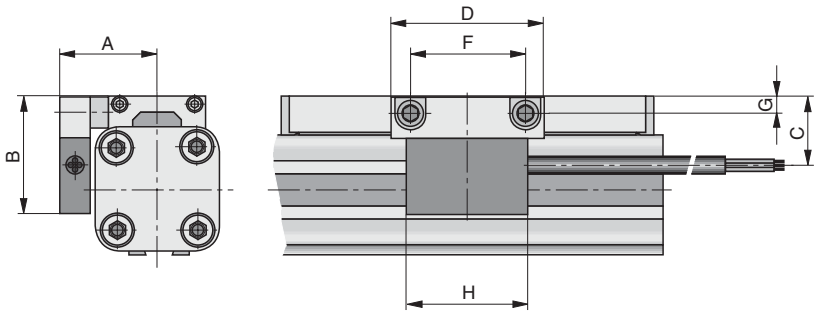
SFI-plus mounted on a rodless cylinder series OSP-P

The SFI-plus system can be mounted directly on a rodless OSP-P cylinder with the special mounting kit.
The position of the sensing head is generally 90° to the carrier.



Combinations consisting of SFI-plus and OSP-P Cylinders with guides are available on request.

Dimensions – in combination with OSP-P cylinders



Dimension Table (mm)

Series	A	B	C	D	F	G	H
OSP-P25	32	39	23	50	38	5.5	40
OSP-P32	37.5	46	30	50	38	6.5	40
OSP-P40	42.5	50	34	50	38	6.5	40
OSP-P50	49.5	55	39	50	38	6.5	40
OSP-P63	59.5	65	49	50	38	10	40
OSP-P80	72.5	80	64	50	38	12	40

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Order instructions

Description	Order No.
Sensing head with measuring scale – Resolution 0.1 mm (scale length = required measuring distance + a minimum of – see table below)	**21240**
Option: Sensing head with measuring scale – Resolution 1 mm (scale length = required measuring distance + a minimum of – see table below)	**21241**
Sensing head – Resolution 0.1 mm (spare part)	**21210**
Option: Sensing head – Resolution 1 mm (spare part)	**21211**
Measuring scale per meter (spare part)	**21235**
Mounting kit for OSP-P25	**21213**
Mounting kit for OSP-P32	**21214**
Mounting kit for OSP-P40	**21215**
Mounting kit for OSP-P50	**21216**
Mounting kit for OSP-P63	**21217**
Mounting kit for OSP-P80	**21218**

* Overall length of the measuring scale results from stroke length of the cylinder + dead length
Dead length for linear drives series OSP-P see table.

Series	Dead length (mm)
OSP-P 25	154
OSP-P 32	196
OSP-P 40	240
OSP-P 50	280
OSP-P 63	350
OSP-P 80	422

Example:
Cylinder OSP-P, Ø25 mm, stroke length 1000 mm

dead length + stroke length = overall length of the measuring scale
154 mm **+ 1000 mm** **= 1154 mm**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

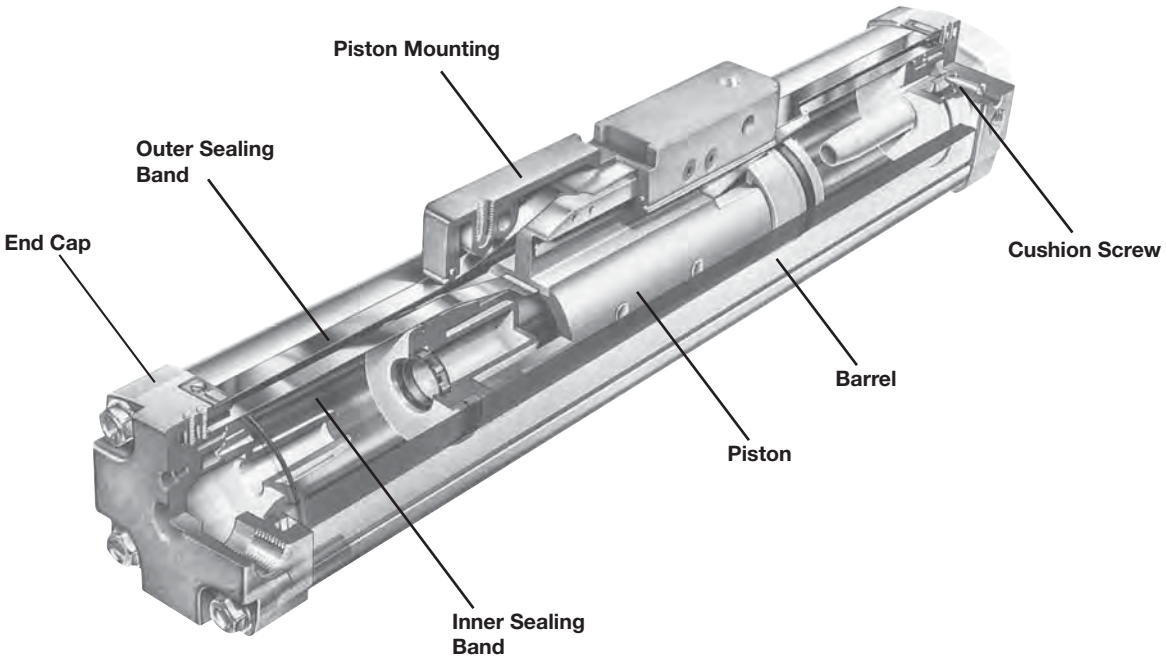
Notes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series 2002 & P120 Origa Rodless Pneumatic Cylinders

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

The Origa Principle



Features

1. The cylinder barrel of extruded anodized aluminum has a slot along its entire length. To provide rigidity the bore is eccentric to the outside diameter.
2. A flexible hardened stainless steel inner band running the entire length of the bore and passing through the piston provides a near-zero-leakage metal to metal seal. An outer band of the same material acts as a cover over the slot preventing foreign particles from entering into the cylinders interior.
3. The aluminum piston is fitted with synthetic bearing rings. The power transmission outward takes place through a positive, physical connection through the slot to the external piston mounting. This solid guide permits the acceptance of external forces and moments and minimizes frictional losses.
4. The extensive experience in the development and production of Origa Rodless Cylinders, as well as the use of high quality components and materials, ensure a very serviceable design lending itself to high operating safety and optimum performance.
5. This unique design, using only 4 main components, makes Origa cylinders reliable in operation and simple to maintain, providing long trouble free service.
6. Origa is the specialist in the rodless cylinder field. Origa has the largest range of bore diameters and can offer the longest stroke lengths with application oriented accessories for cost effective designs. Origa has experience in all conceivable areas of industry, attributable to the thousands of applications in which Origa rodless cylinders are used.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Technical Benefits

Design Options
Parker Origa cylinders can be supplied as a basic model, or as a basic model with external guides depending on the application requirements.

Cylinder Mountings
Various types of piston mounting are available including one which allows the cylinder to be inverted under adverse operating conditions thus protecting the sealing bands. End mounting brackets and midsection supports are also available.

Operating Pressure
Max. 120 P.S.I.

End Of Stroke Cushioning
Adjustable cushioning is provided as standard and ensures the piston stops smoothly, even at high speeds.

Oil Free Operation
The Parker Origa permanent lubricating grease eliminates the need for regular oil mist lubrication and provides long service life. Cylinders can be used in applications where maximum cleanliness is required. (e.g. electronics pharmaceutical and food processing industries).

Slow Speed Applications
The construction of the Parker Origa rodless cylinder allows for a low friction characteristic permitting extremely slow traversing speeds. For speeds below 4 inches / second we recommend that Parker Origa “slow speed” lubrication is specified.

Temperature Range / Piston Speed
Standard Buna-N seals are suitable for temperatures from15°F to +175°F. Fluorocarbon seals are required for higher temperatures as well as for use when piston speeds exceed 5 ft./sec. Please contact the Parker Origa Technical Department if the required operating temperature is above 175°F.

Magnetic Pistons
All Series 2002 cylinders are supplied as standard with magnetic pistons for proximity switch actuation.

Proximity Switches
Magnetically operated Hall Effect switches (IS) or Reed switches (RS) are available to sense piston position at any point over the entire stroke length.

Corrosive Environments
All screws are plated. In extreme applications stainless steel can be supplied. Special aluminum coatings are available for added protection against chemical or caustic wash down of equipment or in environments where corrosive gases are present.

Cylinder Loading
Values are based on shock-free duty and should not be exceeded during piston acceleration.

Note:
Seal life can be significantly influenced by extremes of speed, load and temperature which exceed the approved limits. Contact the Parker Origa Technical Department for assistance with special applications.

All specifications are subject to change without notice.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Ordering Procedure

Series 2002

32 - 20 20/20 X 50 - B - M

Bore Size
16
25
32
40
50

Piston Quantity	
20	Single Piston
22	Double Piston

Seal Type	
B	Buna
V	FKM

Prelube Specification (optional)	
M	Standard
C	Cleanroom
F	Food Grade
S	Slow Speed

Configuration	
-	Single Cylinder
J	Joint Clamp Unit
C	Clean Room Cylinder

End Cap Cushion Placement	
20	Standard Cushion Location (21 for 50mm)
30	Cushion at Rear of Cap (31 for 50mm)

Note: Rear cushions are available on Ø25mm - Ø50mm only.

***Stroke Length**
Enter metric strokes followed by "mm" (i.e. 200mm)

Piston Mounting Type	
20	Standard Mount
25	Floating Mount
30	Inverted Mount OBSOLETE
35	Inverted Floating Mount
For Joint Clamp Cylinders:	
24	Platform Mount
34	Inverted Platform Mount OBSOLETE

*Note: When entering total stroke length for 2220/2230 (double piston) cylinders be sure to first add the "CL" distance to the actual, effective stroke length. Enter this total in the cylinder part number. Follow the same procedure for pricing.

Series P120

P120 4 - S/20 X 50 - B - M

Cylinder Series P120

Bore Size	
4	40mm
6	63mm
8	80mm

***Stroke Length**
Enter metric strokes followed by "mm" (i.e. 200mm)

Seal Type	
B	Buna
V	FKM

Prelube Specification (optional)	
M	Standard
C	Cleanroom
F	Food Grade
S	Slow Speed

Piston Mounting Type			
Short Piston		Long Piston	
S/20	Standard Mount	L26	Standard Mount
S/22	Platform Mount	L28	Platform Mount
S/25	Floating Mount	L36	Inverted Mount
S/30	Inverted Mount	L38	Inverted Platform Mount
S/32	Inverted Platform Mount		
S/35	Inverted Floating Mount		

Service Packs

Series 2002

SP 32R - B - 1 X S

Service Pack

Bore Size
25
32
40
50

Seal Type	
B	Buna
V	FKM

Piston	
1	Single Piston
2	Double Piston

Stroke Length
Enter stroke length

Series P120

SP 124 - B - S X S

Service Pack

Bore Size	
124	40mm
126	63mm
128	80mm

Seal Type	
B	Buna
V	FKM

Piston	
S	Short Piston
L	Long Piston

Stroke Length
Enter stroke length

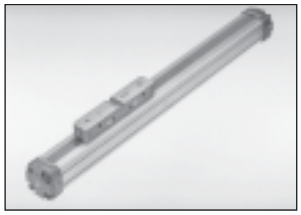
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

The Product Range

Series 2002 - Basic Cylinder

Bore sizes (mm): 16, 25, 32, 40, 50

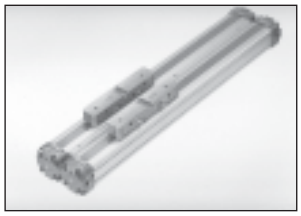
The basic cylinder series satisfies the support and guidance requirements of a great diversity of applications. Various mounting and control options are available for specific application needs.



Series 2002 - Joint Clamp

Bore sizes (mm): 25, 32, 40, 50

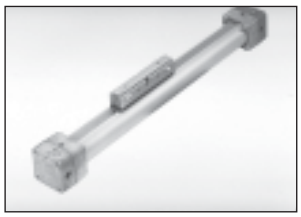
Two cylinders mounted in a tandem configuration for increased load and force requirements. The arrangement enhances lateral support and bending moment capabilities.



Series P120 - Basic Cylinder

Bore sizes (mm): 40, 63, 80

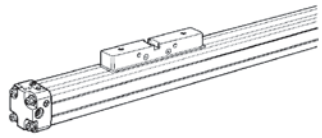
For high force and load requirements, the P120 series provides optimal strength and a unique package of options.



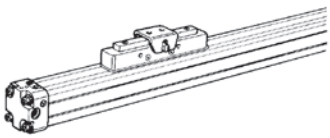
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Technical Summary

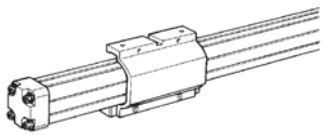
2020/20



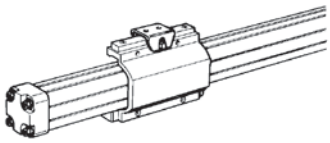
2020/25



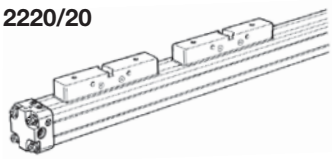
2020/30



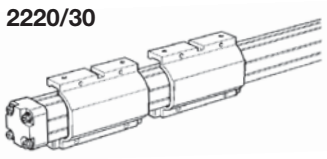
2020/35



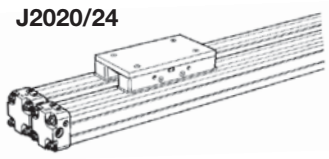
2220/20



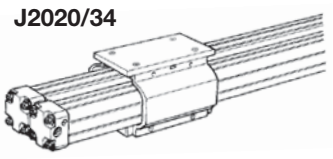
2220/30



J2020/24



J2020/34

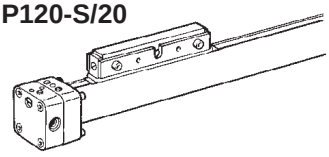


Series	Cyl. Ø (mm)	Theoretical Force at 87 PSI (lbs. force)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
Series 2002 Single Piston	16	27	0.59	35	3	5	30
	25	66	0.55	132	9	27	65
	32	108	1.10	318	36	120	115
	40	169	1.42	575	53	156	195
	50	265	1.50	1017	98	312	270
Series 2002 Double Piston	16	27	0.59	81	6	9	60
	25	66	0.55	336	18	45	130
	32	108	1.10	720	72	600	230
	40	169	1.42	1320	106	792	390
	50	265	1.50	2304	196	1464	540
Joint Clamp Single Piston	25	132	0.55	264	115	54	130
	32	216	1.10	636	248	240	230
	40	338	1.42	1150	444	312	390
	50	530	1.50	2034	859	624	540
Joint Clamp Double Piston	25	132	0.55	672	230	90	260
	32	216	1.10	1440	496	1200	460
	40	338	1.42	2640	888	1584	780
	50	530	1.50	4608	1718	2928	1080
Series P120 Short Piston	40	169	1.26	528	36	72	170
	63	420	1.57	1776	72	216	370
	80	677	1.73	3192	144	420	590
Series P120 Long Piston	40	169	1.26	1200	72	216	170
	63	420	1.57	3984	144	660	370
	80	677	1.73	6372	288	1236	590

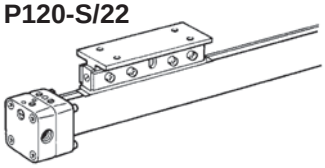
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Technical Summary

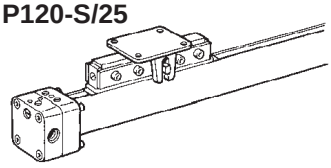
P120-S/20



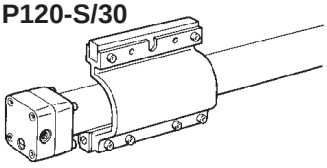
P120-S/22



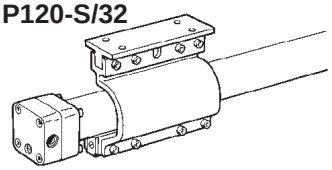
P120-S/25



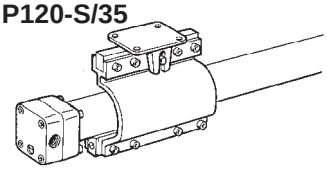
P120-S/30



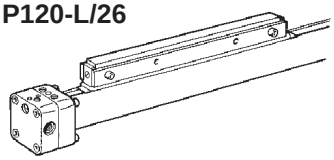
P120-S/32



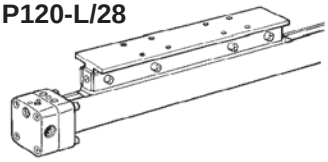
P120-S/35



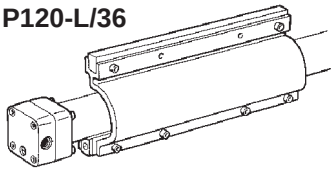
P120-L/26



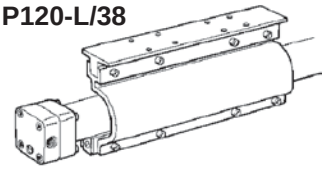
P120-L/28



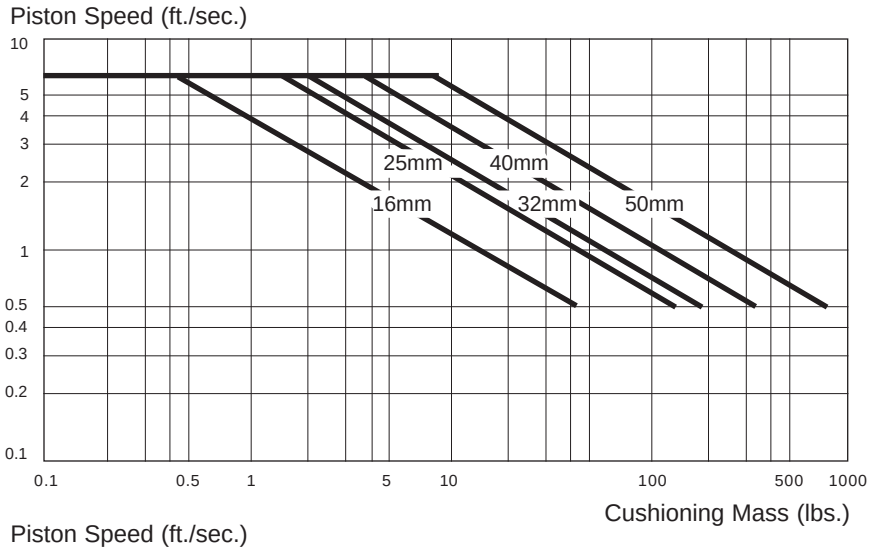
P120-L/36



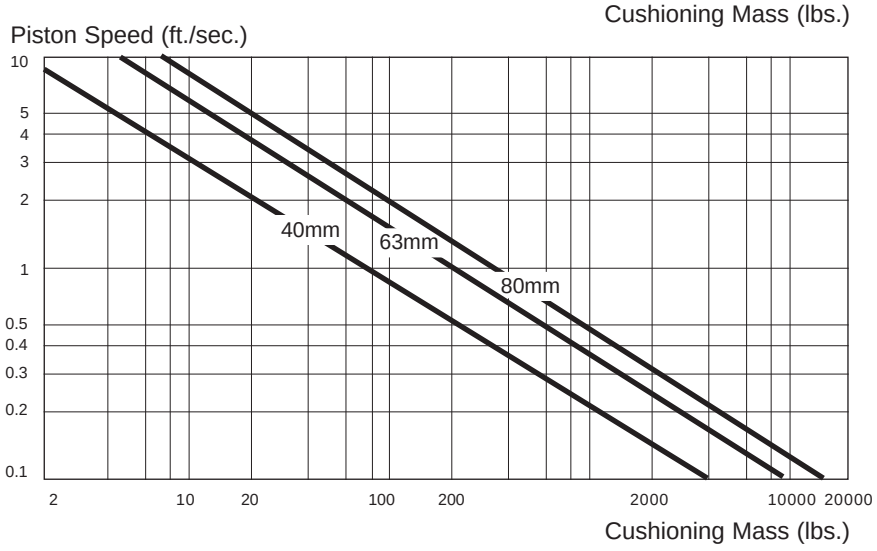
P120-L/38



Cushion Diagram
Series 2002



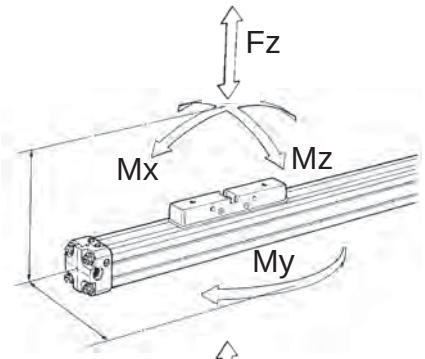
Cushion Diagram
Series P120



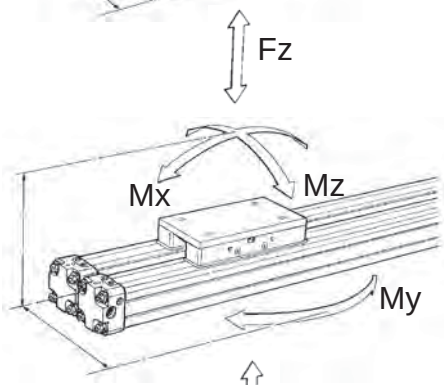
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Loading Diagrams

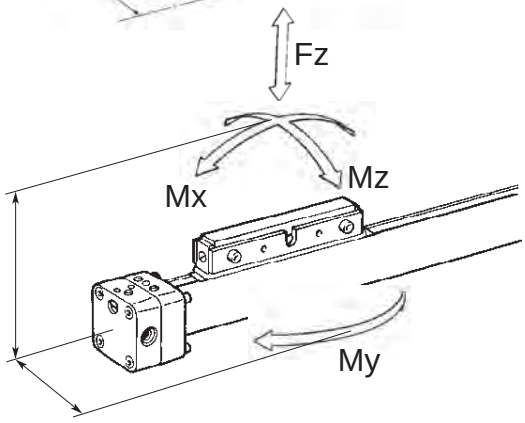
Series 2002



Series 2002
Joint Clamp



Series P120

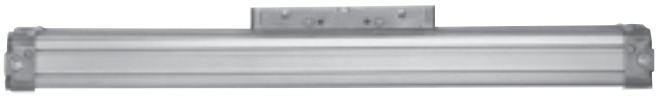


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series 2002

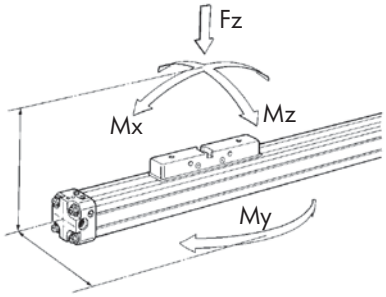
Basic Cylinder

Bore sizes: 16mm, 25mm, 32mm, 40mm and 50mm. Stroke lengths available up to 480".



Technical Data

Loads, forces, moments



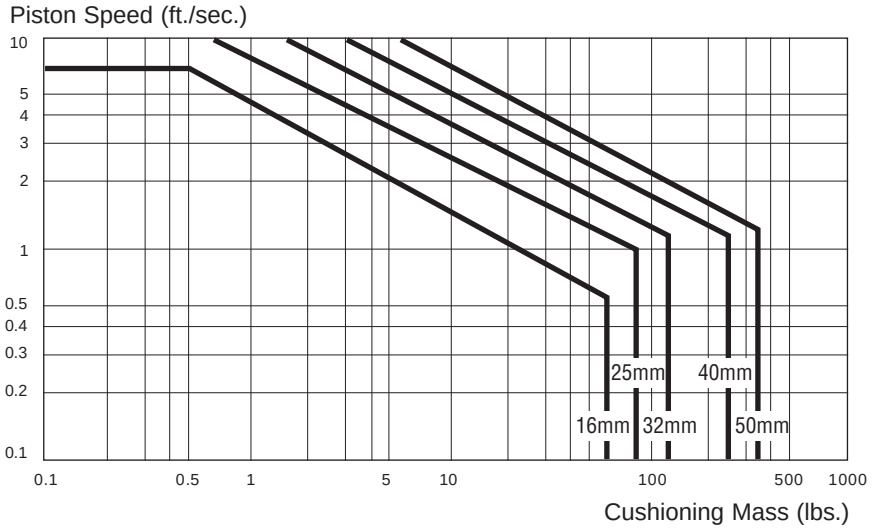
Single Piston Values

Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs. force)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
16	27	0.59	35	3	5	30
25	66	0.55	132	9	27	65
32	108	1.10	318	36	120	115
40	169	1.42	575	53	156	195
50	265	1.50	1017	98	312	270

Double Piston Values

Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs. force)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
16	27	0.59	81	6	9	60
25	66	0.55	336	18	45	130
32	108	1.10	720	72	600	230
40	169	1.42	1320	106	792	390
50	265	1.50	2304	196	1464	540

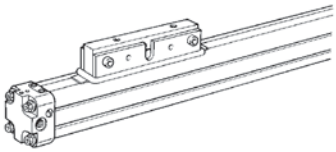
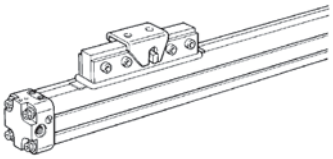
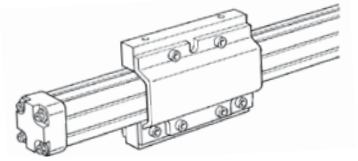
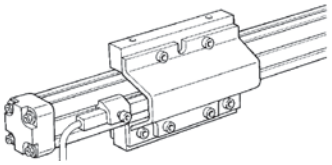
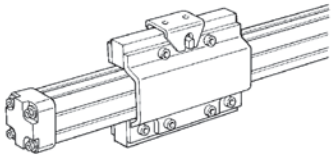
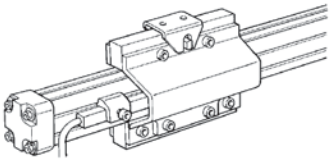
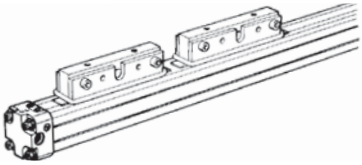
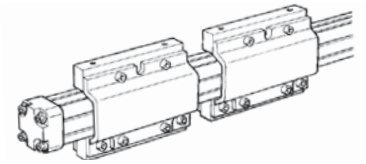
Cushioning Diagram



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Piston Mountings

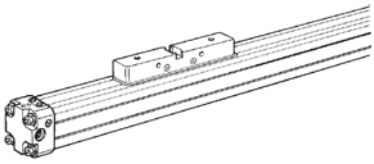
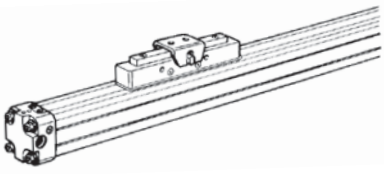
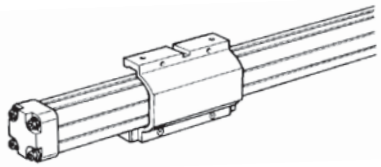
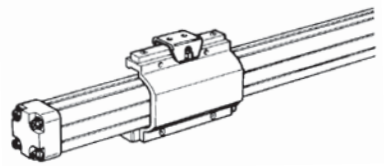
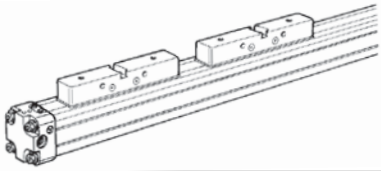
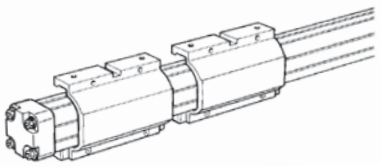
Ø 16mm

Designation	Pictorial Representation	Description	Cyl. Ø	Weight 0" Stroke (lbs.)	Weight per inch (lbs.)
Type 2020/20		Piston Mounting NR20 Standard mounting. Mounted during cylinder assembly.	16	0.51	0.05
Type 2020/25		Piston Mounting NR25 Allows for a floating connection between the cylinder and an externally guided device.	16	0.55	0.05
Type 2020/30		Piston Mounting NR30 Transfers power to the back of the cylinder. Protects the band surface from foreign particles.	16	0.73	0.05
Type 2020/34		Piston Mounting NR34 Same features as the NR30. For use with cylinders which have sensors on both sides of the barrel.	16	0.77	0.05
Type 2020/35		Piston Mounting NR35 Combines the features of the NR25 mounting and the NR30 mounting.	16	0.77	0.05
Type 2020/37		Piston Mounting NR37 Same features as the NR35. For use with cylinders which have sensors on both sides of the barrel.	16	0.80	0.05
Type 2220/20		Double Piston Mounting NR20 Two pistons in a single barrel using the standard NR20 mounting.	16	0.67	0.05
Type 2220/30		Double Piston Mounting NR30 Two pistons in a single barrel using the NR30 mounting.	16	1.11	0.05

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Piston Mountings

Ø 25mm, 32mm, 40mm and 50mm

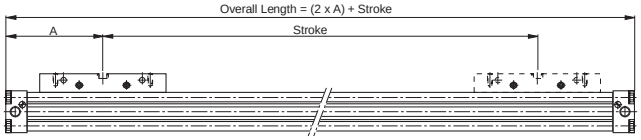
Designation	Pictorial Representation	Description	Cyl. Ø	Weight 0" Stroke (lbs.)	Weight per inch (lbs.)
Type 2020/20		Piston Mounting NR20 Standard mounting. Mounted during cylinder assembly.	25	1.32	0.11
			32	3.19	0.20
			40	5.17	0.29
			50	7.70	0.43
Type 2020/25		Piston Mounting NR25 Allows for a floating connection between the cylinder and an externally guided device.	25	1.54	0.11
			32	3.85	0.20
			40	5.83	0.29
			50	9.46	0.43
Type 2020/30		Piston Mounting NR30 Transfers power to the back of the cylinder. Protects the band surface from foreign particles.	25	1.87	0.11
			32	4.40	0.20
			40	6.60	0.29
			50	10.45	0.43
Type 2020/35		Piston Mounting NR35 Combines the features of the NR25 mounting and the NR30 mounting.	25	2.09	0.11
			32	5.06	0.20
			40	7.26	0.29
			50	12.22	0.43
Type 2220/20		Double Piston Mounting NR20 Two pistons in a single barrel using the standard NR20 mounting.	25	2.05	0.11
			32	5.15	0.20
			40	9.10	0.29
			50	13.20	0.43
Type 2220/30		Double Piston Mounting NR30 Two pistons in a single barrel using the NR30 mounting.	25	2.60	0.11
			32	6.37	0.20
			40	10.31	0.29
			50	15.95	0.43

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

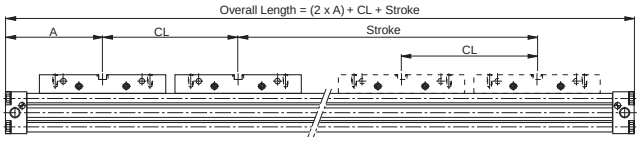
Overall Dimensions

Ø 16mm

Basic Dimensions (Single Piston)

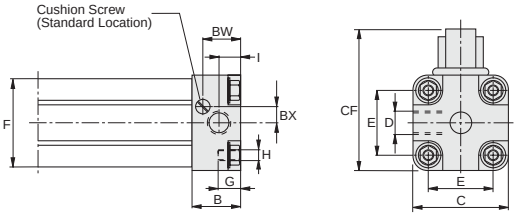


Basic Dimensions (Double Piston)

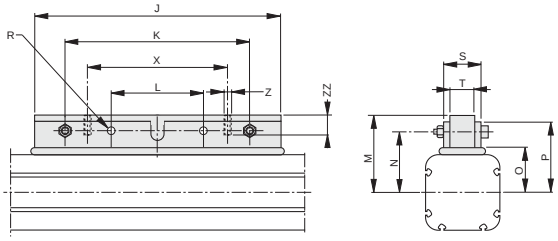


Min. CL Distances: Ø16mm = 3.60

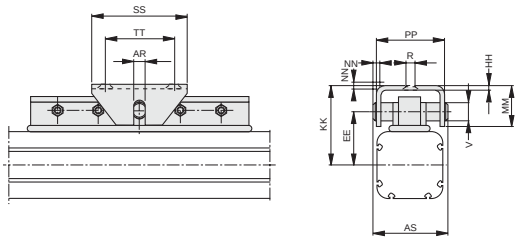
End Cap Dimensions Ø 16mm



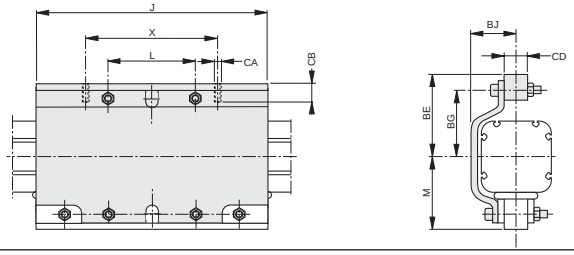
Piston Mounting NR20



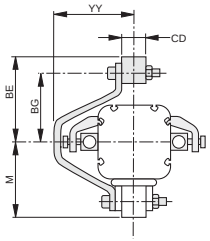
Piston Mounting NR25



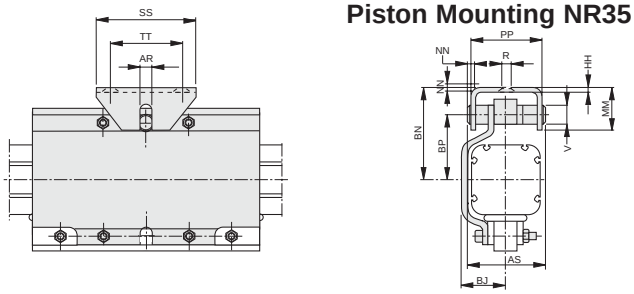
Piston Mounting NR30



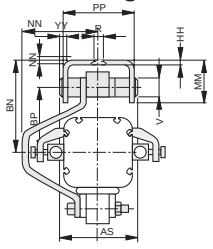
Piston Mounting NR34



Piston Mounting NR35



Piston Mounting NR37



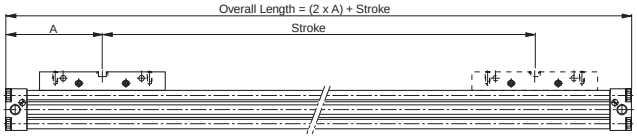
Cyl. Ø	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	V	W	X	Z	AR
16	2.56	.59	1.06	M5	.71	.94	.20	M3	.22	2.99	2.52	1.26	1.18	.94	.63	1.14	.18	.71.	39	.20	—	1.89	M4	.12
Cyl. Ø	**AS**	**BE**	**BG**	**BJ**	**BN**	**BP**	**BW**	**BX**	**CA**	**CB**	**CD**	**CF**	**EM**	**EN**	**HH**	**KK**	**LL**	**MM**	**NN**	**PP**	**SS**	**TT**	**YY**	**ZZ**
16	1.10	1.14	.91	.71	1.30	.91	.47	.16	M4	.47	.63	1.71	—	—	.08	1.34	.96	.51	.06	.98	.79	.39	1.34	.31

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

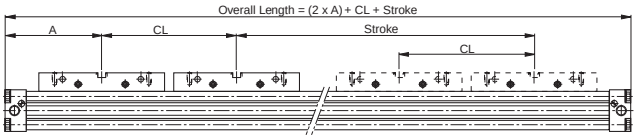
Overall Dimensions

Ø 25mm, 32mm, 40mm and 50mm

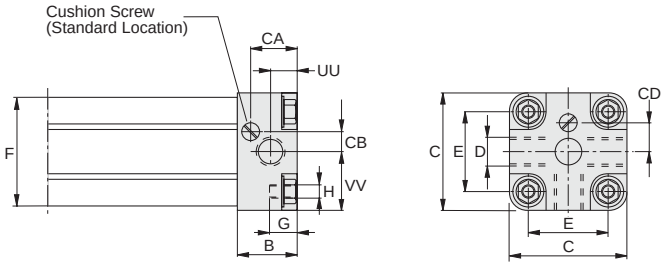
Basic Dimensions (Single Piston)



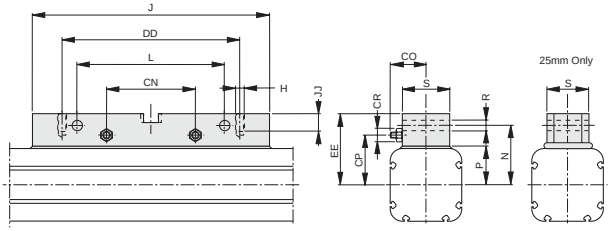
Basic Dimensions (Double Piston)



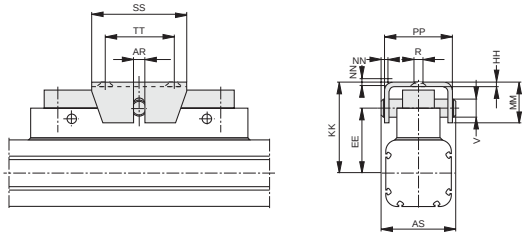
End Cap Dimensions



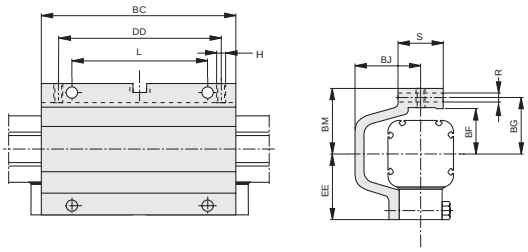
Piston Mounting NR20



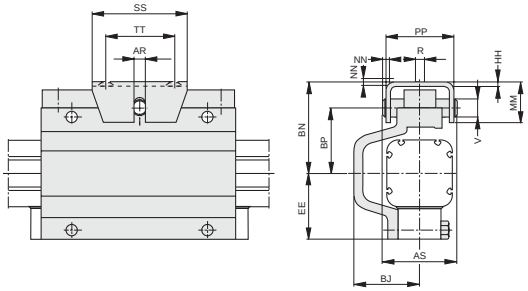
Piston Mounting NR25



Piston Mounting NR30



Piston Mounting NR35

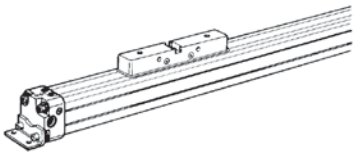
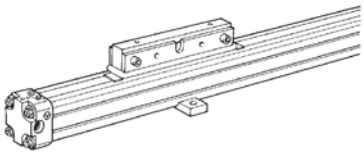
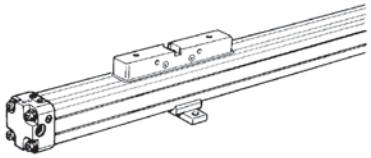
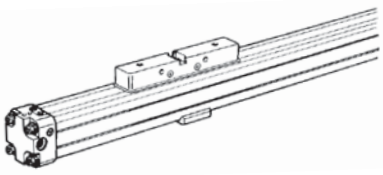


Cyl. Ø	A	B	C	D	E	F	G	H	J	L	N	P	R	S	U	V	DD	EE	HH	JJ	KK
25	3.94	.91	1.57	1/8 NPT	1.06	1.42	.35	10-32	4.72	1.97	1.30	.75	.22	.91	.22	.31	3.15	1.50	.12	.35	2.05
32	4.92	1.06	2.09	1/4 NPT	1.42	1.93	.47	1/4-20	6.30	3.94	1.57	1.10	.26	1.26	.26	.47	4.72	1.89	.16	.47	2.60
40	5.91	1.06	2.48	1/4 NPT	1.81	2.32	.47	1/4-20	6.30	3.94	1.81	1.34	.26	1.26	.26	.47	4.72	2.13	.16	.47	2.83
50	6.70	1.26	3.07	3/8 NPT	2.13	2.83	.47	5/16-18	7.87	5.51	2.17	1.57	.35	1.34	.35	.63	6.30	2.56	.20	.63	3.54

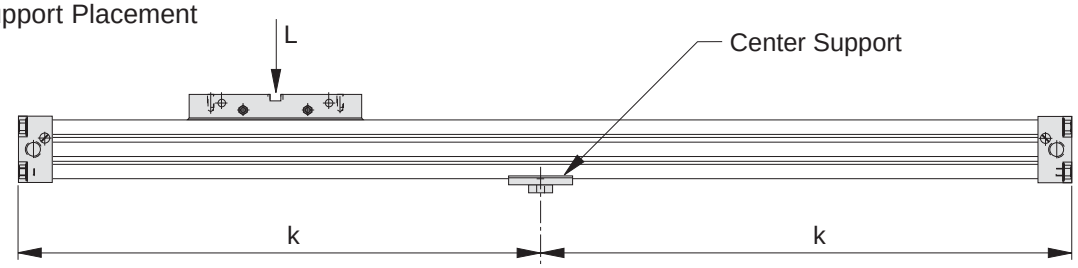
Cyl. Ø	LL	MM	NN	PP	SS	TT	UU	VV	AR	AS	BC	BF	BG	BJ	BM	BN	BP	CA	CB	CD	CL (min.)
25	1.50	.79	±.10	1.46	1.26	.63	.33	.81	.20	1.65	4.25	1.10	1.30	1.50	1.50	2.05	1.50	.71	.26	.35	5.12
32	1.89	1.18	±.16	1.97	2.76	1.97	.41	1.04	.31	2.28	5.67	1.26	1.57	1.89	1.89	2.60	1.89	.83	.35	.51	6.90
40	2.13	1.18	±.16	1.97	2.76	1.97	.41	1.24	.31	2.28	5.67	1.50	1.81	2.13	2.13	2.83	2.13	.71	.51	.65	8.75
50	2.56	1.77	±.24	2.28	3.94	3.15	.49	1.54	.39	2.83	7.24	1.77	2.17	2.56	2.56	3.54	2.56	.83	.59	.73	10.00

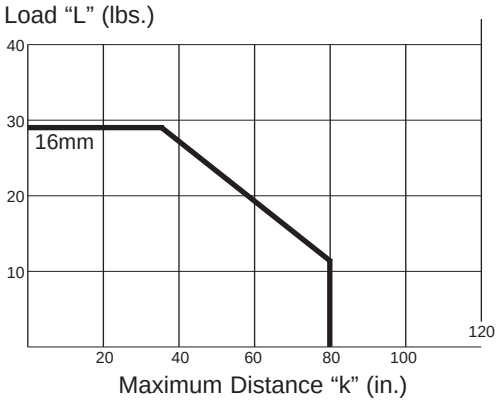
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

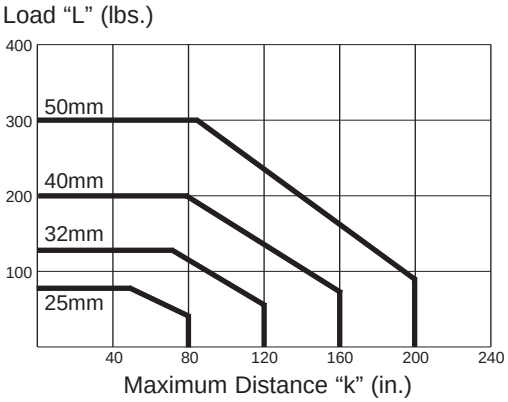
Cylinder Mountings

Designation	Pictoral Representation	Description	Cyl. Ø	Part Number	Weight (lbs.)
Type NR4		End Cap Mounting	16	2172-0101	0.02
			25	2172-0201	0.07
			32	2172-0351	0.11
			40	2172-0451	0.13
			50	2172-0551	0.26
Type NR7 (Ø 16mm only)		Center Support	16	2176-0101	0.01
Type NR7 (Ø 25mm - 50mm only)		Center Support	25	2176-0202	0.07
			32	2176-0351	0.13
			40	2176-0451	0.15
			50	2176-0551	0.44
Type NR8 (Ø 25mm - 50mm only)		Center Support	25	2175-0201	0.04
			32	2175-0351	0.07
			40	2175-0451	0.07
			50	2175-0551	0.26

Center Support Placement



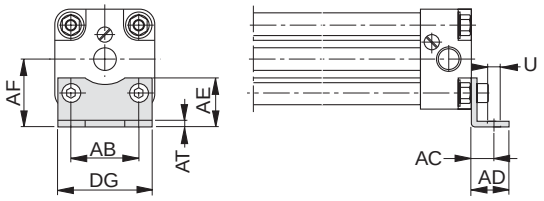




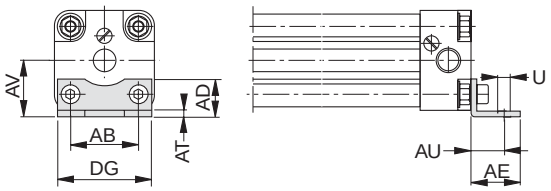
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions – Cylinder Mountings

End Cap Mounting NR4

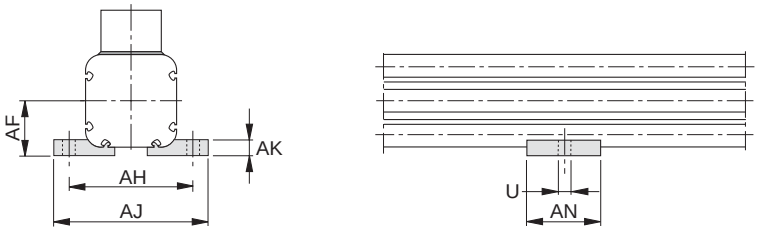


NR4 Mounting Bracket - Mtg. Style “A”

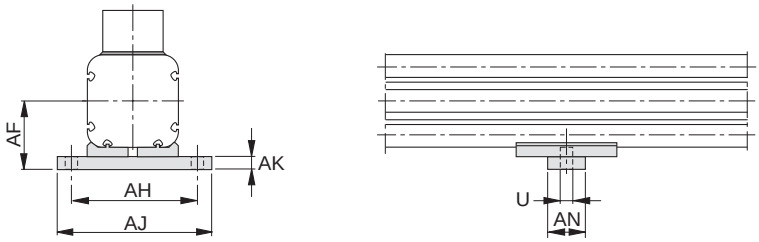


NR4 Mounting Bracket - Mtg. Style “B”

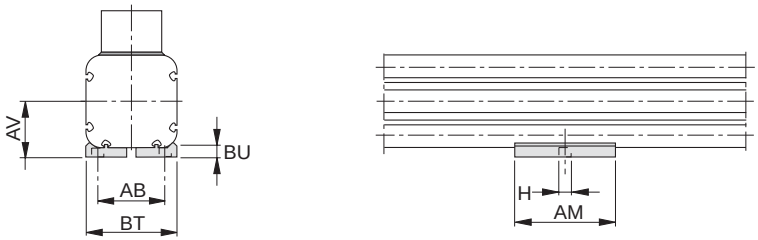
Center Support Mounting NR7 (Ø16mm)



Center Support Mounting NR7 (Ø25mm - 50mm)



Center Support Mounting NR8



Cyl. Ø	U	AB	AC	AD	AE	AF	AH	AJ	AK	AM	AN	AT	AU	AV	BT	BU	DG	H
16	.14	.71	.39	.55	.49	.59	1.26	1.57	.18	—	.47	.06	—	—	—	—	1.02	—
25	.22	1.06	.41	.71	.87	1.10	1.89	2.36	.16	1.26	.79	.08	.57	.94	1.42	.21	1.54	10-32
32	.26	1.42	.47	.79	1.02	1.42	2.60	3.23	.24	1.57	.79	.12	.71	1.18	1.89	.22	1.97	1/4-20
40	.26	1.81	.47	.79	1.02	1.61	2.99	3.62	.24	1.57	.79	.12	.71	1.38	2.28	.22	2.36	1/4-20
50	.35	2.13	.71	1.10	1.34	2.01	3.70	4.49	.24	2.48	1.57	.16	.94	1.77	2.83	.33	2.91	5/16-18

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

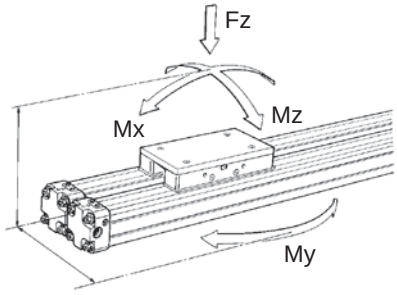
Series 2002

Joint Clamps

Bore sizes: 25mm, 32mm, 40mm and 50mm. Stroke lengths available up to 480".

Technical Data

Loads, forces, moments



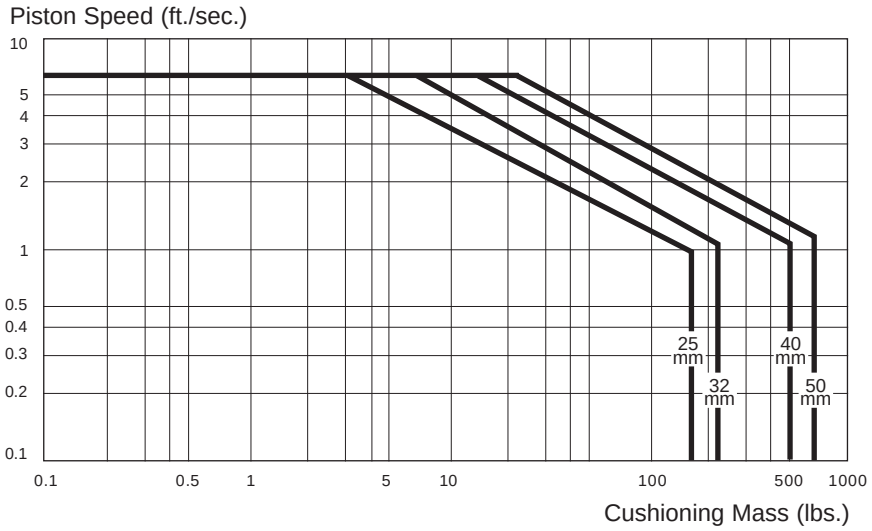
Single Piston Values

Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs.)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
25	132	0.55	264	115	54	130
32	216	1.10	636	248	240	230
40	338	1.42	1150	444	312	390
50	530	1.50	2034	859	624	540

Double Piston Values

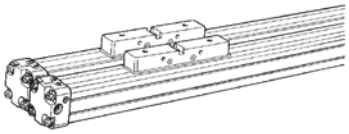
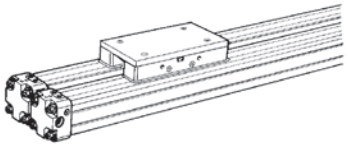
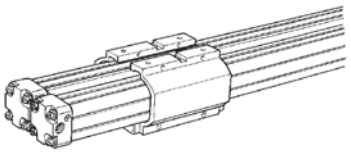
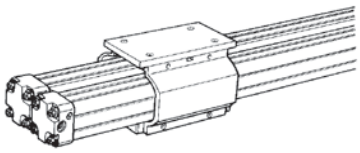
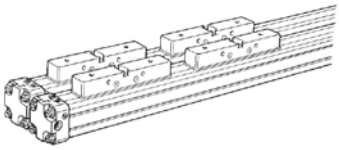
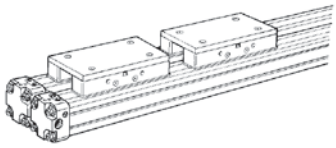
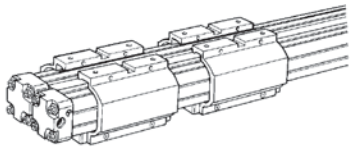
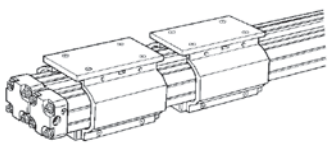
Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs. force)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
25	132	0.55	672	230	90	260
32	216	1.10	1440	496	1200	460
40	338	1.42	2640	888	1584	780
50	530	1.50	4608	1718	2928	1080

Cushioning Diagram



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

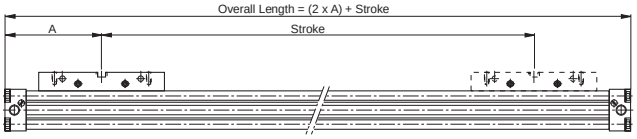
Piston Mountings

Designation	Pictorial Representation	Description	Cyl. Ø	Weight 0" Stroke (lbs.)	Weight per inch (lbs.)
Type J2020/20		Piston Mounting NR20 Standard mounting. Mounted during cylinder assembly.	25 32 40 50	2.82 6.84 10.92 16.50	0.24 0.46 0.63 0.97
Type J2020/24		Piston Mounting NR24 Flat, platform mounting. Provides a common connection across both pistons.	25 32 40 50	3.24 7.72 11.91 18.70	0.24 0.46 0.63 0.97
Type J2020/30		Piston Mounting NR30 Transfers power to the back of the cylinder. Protects the band surface from foreign particles.	25 32 40 50	3.92 9.26 13.77 22.00	0.24 0.46 0.63 0.97
Type J2020/34		Piston Mounting NR34 Combines the features of the NR24 mounting and the NR30 mounting.	25 32 40 50	4.34 10.14 14.76 24.20	0.24 0.46 0.63 0.97
Type J2220/20		Piston Mounting NR20 Two pistons in each barrel using the standard NR20 mounting.	25 32 40 50	4.44 11.11 19.37 28.60	0.24 0.46 0.63 0.97
Type J2220/24		Piston Mounting NR24 Two pistons in each barrel. Provides a common connection across each set of pistons.	25 32 40 50	5.28 12.87 21.35 33.00	0.24 0.46 0.63 0.97
Type J2220/30		Piston Mounting NR30 Two pistons in each barrel using the NR30 mounting. Transfers power to the back of the cylinder.	25 32 40 50	5.54 13.55 21.76 34.10	0.24 0.46 0.63 0.97
Type J2220/34		Piston Mounting NR34 Two pistons in each barrel Combines the features of the NR24 mounting and the NR30 mounting.	25 32 40 50	6.38 15.31 23.74 38.50	0.24 0.46 0.63 0.97

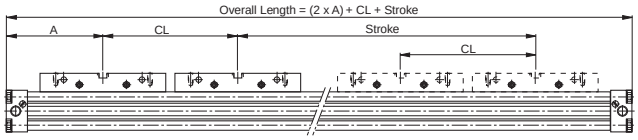
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Overall Dimensions

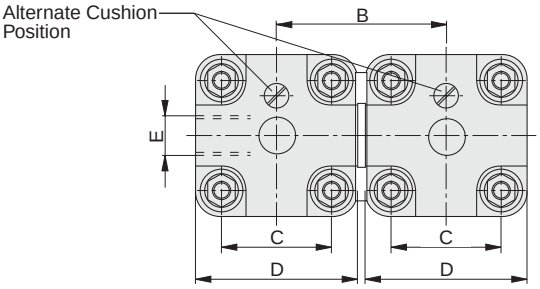
Basic Dimensions (Single Piston)



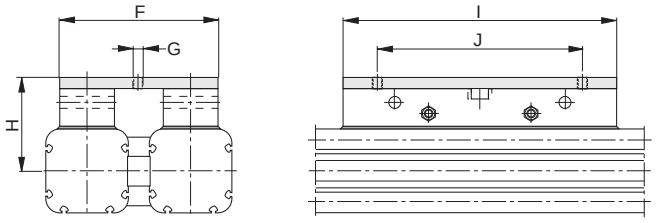
Basic Dimensions (Double Piston)



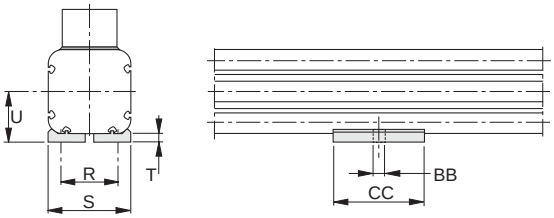
End Cap Cross Section



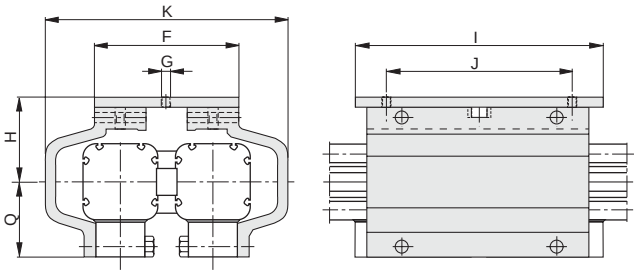
Piston Mounting NR24



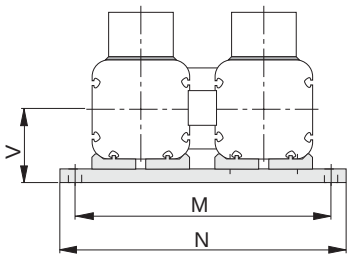
Cylinder Mounting NR8



Piston Mounting NR34



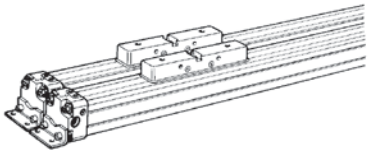
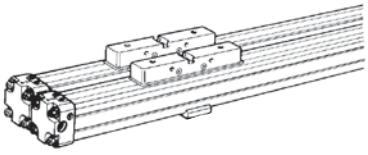
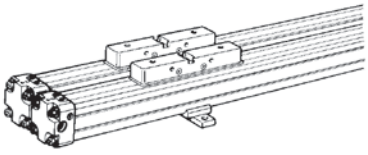
Cylinder Mounting NR17



Cyl. Ø	A	B	C	D	E	F	G	H	I	J	K
25	3.94	1.73	1.06	1.57	1/8 NPT	2.76	1/4-20	1.81	4.72	3.15	4.72
32	4.92	2.20	1.42	2.09	1/4 NPT	3.54	5/16-18	2.28	6.30	4.73	5.98
40	5.91	2.60	1.81	2.48	1/4 NPT	3.94	5/16-18	2.52	6.30	4.73	6.86
50	6.70	3.19	2.13	3.07	3/8 NPT	4.73	3/8-16	3.15	7.88	6.30	8.31
Cyl. Ø	**M**	**N**	**Q**	**R**	**S**	**T**	**U**	**V**	**BB**	**CC**	**CL (min.)**
25	3.62	4.09	1.50	1.06	1.42	.21	.94	1.10	10-32	.79	5.12
32	4.81	5.44	1.89	1.42	1.89	.22	1.18	1.42	1/4-20	1.57	6.90
40	5.59	6.22	2.13	1.81	2.28	.22	1.38	1.61	1/4-20	1.57	8.75
50	6.89	7.68	2.56	2.13	2.83	.33	1.77	2.01	5/16-18	2.48	10.00

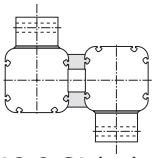
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Cylinder Mountings

Designation	Pictorial Representation	Description	Cyl. Ø	Part Number	Weight (lbs.)
Type NR4		End Cap Mounting Provides rigid end mounting of the cylinder.	25 32 40 50	2172-0201 2172-0351 2172-0451 2172-0551	0.07 0.11 0.13 0.26
Type NR8 (Ø 25mm - 50mm only)		Center Support Provides stability at cylinder center when heavy loads are traversed over long distances.	25 32 40 50	2175-0201 2175-0351 2175-0451 2175-0551	0.04 0.07 0.07 0.26
Type NR17 (Ø 25mm - 50mm only)		Center Support Provides stability at cylinder center when heavy loads are traversed over long distances.	25 32 40 50	2736-0201 2736-0351 2736-0451 2736-0551	0.13 0.25 0.28 0.84

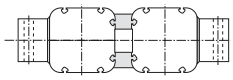
Orientation Examples

Orientation #1



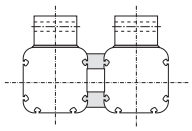
12-6 O'clock

Orientation #2



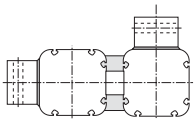
9-3 O'clock

Orientation #3



12-12 O'clock

Orientation #4



9-12 O'clock

Note: Joint Clamp cylinder loadings will vary depending on the above orientation used. Consult the factory for design assistance.

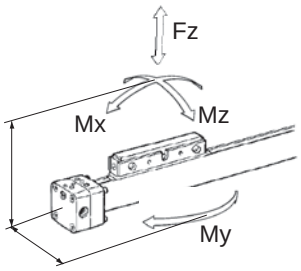
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series P120

Bore sizes: 40mm, 63mm and 80mm. Stroke lengths available up to 480".

Technical Data

Loads, forces, moments



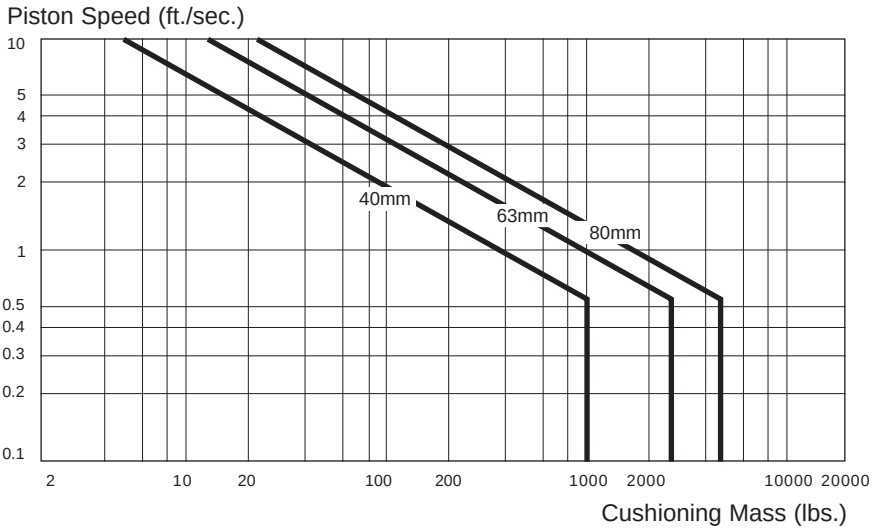
Single Piston Values

Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs.)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
40	169	1.26	528	36	72	170
63	420	1.57	1776	72	216	370
80	677	1.73	3192	144	420	590

Double Piston Values

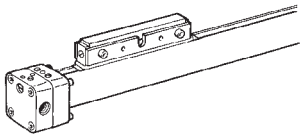
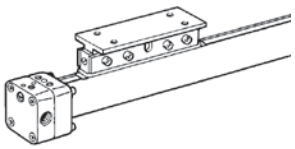
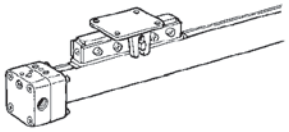
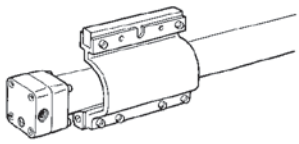
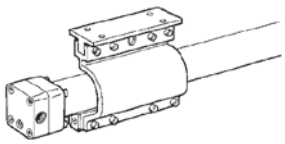
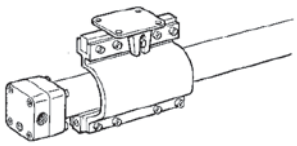
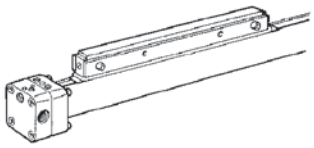
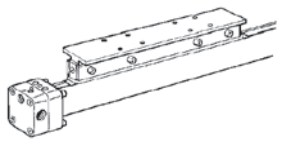
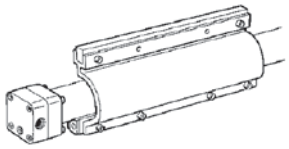
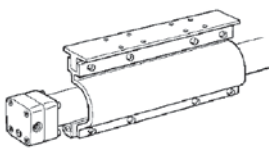
Cyl. Ø (mm)	Theorectical Force at 87 PSI (lbs. force)	Cushion Length (in.)	Max. Allowed Bending Moment Mx (in./lbs.)	Max. Allowed Bending Moment Mz (in./lbs.)	Max. Allowed Bending Moment My (in./lbs.)	Max. Allowed Load L (lbs.)
40	169	1.26	1200	72	216	170
63	420	1.57	3984	144	660	370
80	677	1.73	6372	288	1236	590

Cushioning Diagram



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

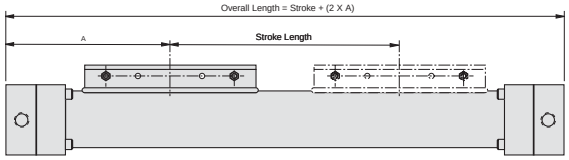
Series P120

Designation	Pictorial Representation	Description	Cyl. Ø	Weight 0" Stroke (lbs.)	Weight per inch (lbs.)
Type P120-S/20		Piston Mounting S/20 Standard mounting. Mounted during cylinder assembly.	40 63 80	7.26 20.46 35.42	0.20 0.45 0.71
Type P120-S/22		Piston Mounting S/22 Flat, platform mounting	40 63 80	7.48 20.90 36.74	0.20 0.45 0.71
Type P120-S/25		Piston Mounting S/25 Allows for a floating connection between the cylinder and an externally guided device.	40 63 80	7.92 22.66 38.06	0.20 0.45 0.71
Type P120-S/30		Piston Mounting S/30 Transfers power to the back of the cylinder. Protects the band surface from foreign particles.	40 63 80	9.24 25.74 44.88	0.20 0.45 0.71
Type P120-S/32		Piston Mounting S/32 Combines the features of the S/22 mounting and the S/30 mounting.	40 63 80	9.46 26.18 46.20	0.20 0.45 0.71
Type P120-S/35		Piston Mounting S/35 Combines the features of the S/25 mounting and the S/30 mounting.	40 63 80	9.90 27.94 47.52	0.20 0.45 0.71
Type P120-L/26		Piston Mounting L/26 Standard mounting. Mounted during cylinder assembly.	40 63 80	11.00 30.58 51.04	0.20 0.45 0.71
Type P120-L/28		Piston Mounting L/28 Flat, platform mounting.	40 63 80	11.44 32.12 53.68	0.20 0.45 0.71
Type P120-L/36		Piston Mounting L/36 Transfers power to the back of the cylinder. Protects the band surface from foreign particles.	40 63 80	14.74 42.02 70.40	0.20 0.45 0.71
Type P120-L/38		Piston Mounting L/38 Combines the features of the L/28 mounting and the L/36 mounting.	40 63 80	15.18 43.56 73.04	0.20 0.45 0.71

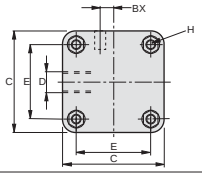
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Overall Dimensions

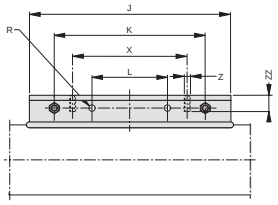
Basic Dimensions

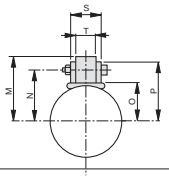


End Cap Dimensions

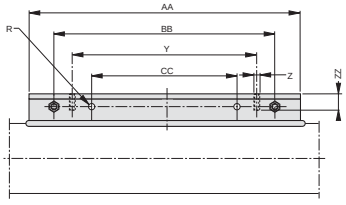


Piston Mounting S/20

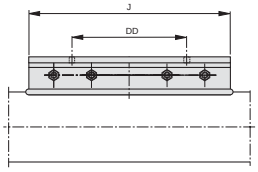


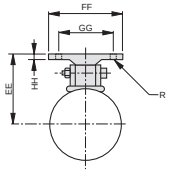


Piston Mounting L/26

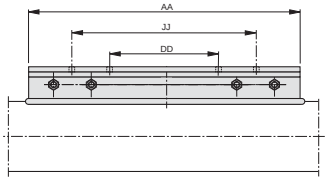


Piston Mounting S/22

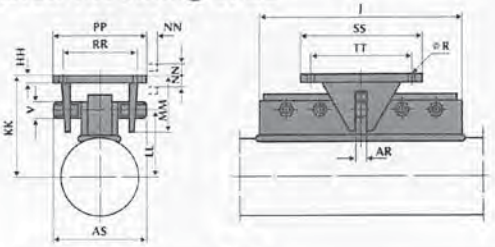




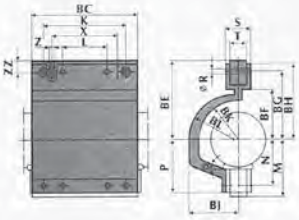
Piston Mounting L/28



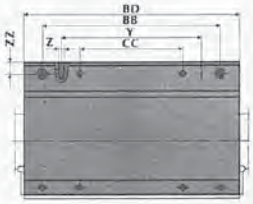
Piston Mounting S/25



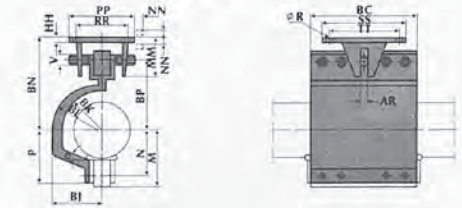
S/30



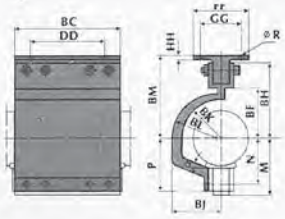
L/36



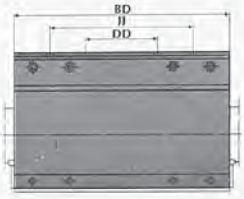
Piston Mounting S/35



S/32



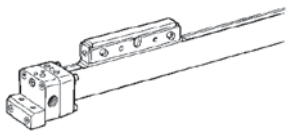
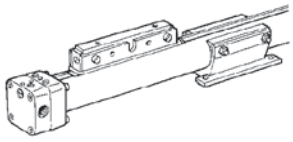
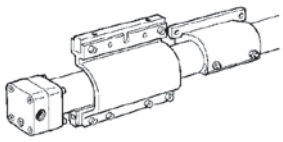
L/38



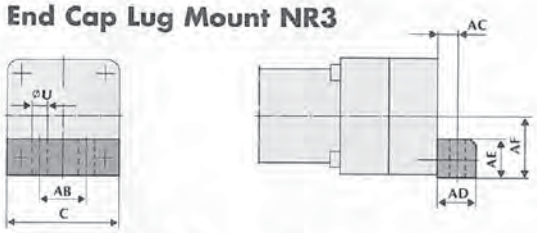
Cyl. Ø	A (S/)	A (L/)	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S
40	5.91	9.91	2.36	2.83	1/4 NPT	2.13	2.28	.59	1/4-20	.59	5.91	4.33	2.17	2.40	1.93	1.28	2.24	.28	1.10
63	8.46	14.46	3.15	4.17	3/8 NPT	3.07	3.46	.79	5/16-18	.79	8.66	7.09	3.54	3.27	2.68	1.89	3.07	.35	1.18
80	10.24	16.24	3.94	5.20	1/2 NPT	3.78	4.41	.98	3/8-16	.98	11.02	9.45	4.72	3.98	3.27	2.36	3.74	.43	1.26
Cyl. Ø	**T**	**V**	**Y**	**AA**	**AR**	**AS**	**BB**	**BC**	**BD**	**BE**	**BF**	**BG**	**BH**	**BJ**	**BK**	**BL**	**BM**	**BN**	**BP**
40	.71	.47	7.09	11.81	.31	3.31	9.45	5.43	11.34	3.35	2.30	2.87	3.19	2.09	1.65	1.89	3.54	3.90	2.95
63	.75	.63	11.81	18.90	.39	3.54	15.75	8.19	18.43	4.61	3.23	4.02	4.41	3.03	2.44	2.80	4.84	5.28	4.11
80	.79	.79	14.17	22.05	.51	4.33	18.90	10.55	21.57	5.63	4.02	4.92	5.39	3.78	3.07	3.46	5.91	6.42	5.04
Cyl. Ø	**BW**	**BX**	**CC**	**DD**	**EE**	**FF**	**GG**	**HH**	**JJ**	**KK**	**LL**	**MM**	**NN**	**PP**	**RR**	**SS**	**TT**	**ZZ**	**α**
40	.59	.43	4.72	3.15	2.60	2.36	1.77	.24	6.30	2.95	2.00	1.26	±.32	2.76	2.17	3.54	2.95	.47	22°
63	.79	.59	7.87	5.12	3.50	3.15	2.36	.28	10.24	3.94	2.76	1.54	±.39	3.54	2.76	4.72	3.94	.63	15°
80	.98	.63	9.45	7.09	4.25	3.94	2.95	.31	14.17	4.80	3.39	1.89	±.47	4.33	3.35	5.91	4.92	.79	15°

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Cylinder Mountings

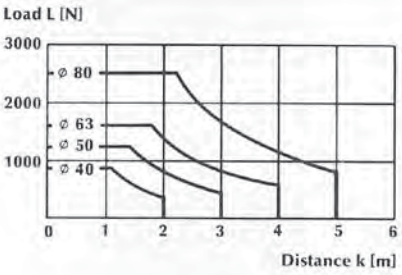
Designation	Pictorial Representation	Description	Cyl. Ø	Part Number	Weight (lbs.)
Type NR3		End Cap Lug Mount	40 63 80	2170-0451 2170-0651 2170-0851	0.22 0.66 1.32
Type NR8		Center Support	40 63 80	4040 6040 8040	1.32 3.74 6.38
Type NR9		Center Support	40 63 80	4030 6030 8030	1.32 3.74 7.26

End Cap Lug Mount NR3

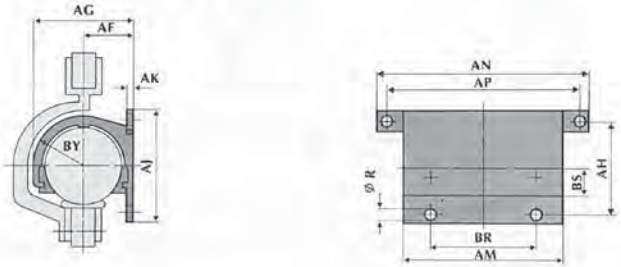


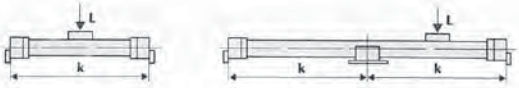
Mid-section Support No. 8

Position of Cylinder Mountings



Center Support NR9





Cyl. Ø	C	R	U	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	AP	BR	BS	BY	DO	DP
40	2.83	.28	.35	1.18	.49	.94	.94	1.50	2.99	2.76	3.35	.31	2.32	4.72	6.30	5.71	3.15	.83	1.50	1.77	2.36
63	4.17	.35	.43	1.89	.59	1.18	1.57	2.24	4.49	3.74	4.49	.39	3.50	6.30	8.27	7.48	3.94	1.26	2.24	1.77	2.36
80	5.20	.43	.55	2.36	.69	1.38	1.97	2.83	5.67	4.72	5.67	.47	4.41	7.87	10.23	9.25	4.72	1.57	2.83	2.77	3.15

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Type RS

In the type RS contact is made by a mechanical **reed switch** encapsulated in glass.
Direct connection with 2-pole cable, 5 m long, open ended **(Type RS-K).**

Type ES

In the type ES contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection. Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separatly, or use the Order No. for the complete Type ES with 5 m cable.

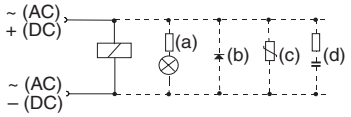
Magnetic Switches RS and ES

Electrical Service Life
Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

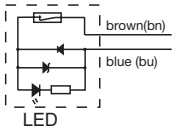
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



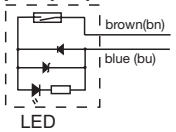
For the type ES, external protective circuits are not normally needed.

Electrical Connection, Type RS

Normally closed (NC)

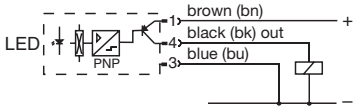


Normally open (NO)

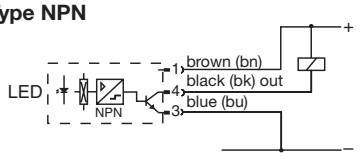


Electrical Connection, Type ES

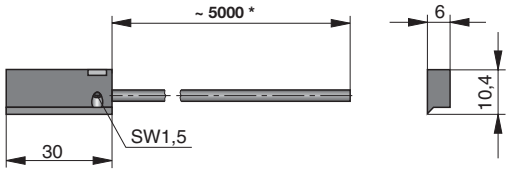
Standard Version:
Type PNP



Optional Version
Type NPN

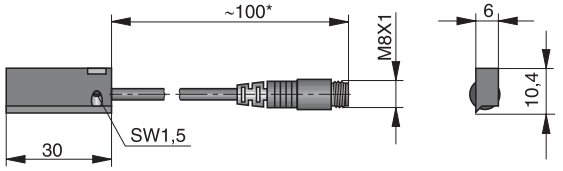


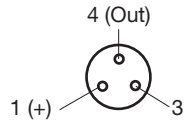
Dimensions (mm) – Type RS-K



* Length with possible minus tolerance, see chart below

Dimensions (mm) – Type ES-S





PIN assignment (view of pins) according to DIN EN 50044

* Length with possible minus tolerance, see chart below

Length of connection cable with length tolerance

Magnetic Switch Order No.	Type	Nominal cable length	Length tolerance
KL3045	RS-K Normally Open	5000 mm	–50 mm
KL3048	RS-K Normally Closed	100 mm	–20 mm
10750	ES-S PNP	5000 mm	–50 mm
10751	ES-S NPN	145 mm	±5 mm

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Type RST

In the type RST contact is made by a mechanical **reed switch** encapsulated in glass.

Type EST

In the type EST contact is made by an **electronic switch** – without bounce or wear and protected from pole reversal. The output is short circuit proof and insensitive to shocks and vibrations. Connection is by 3-pole connector for easy disconnection.
Fitted with connection cable 100 mm long with connector.
A 5 m cable with connector and open end can be ordered separately, or use the Order No. for the complete Type ES with 5 m cable.

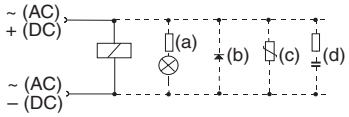
Magnetic Switches RST and EST

Electrical Service Life
Protective Measures
Magnetic switches are sensitive to excessive currents and inductions. With high switching frequencies and inductive loads such as relays, solenoid valves or lifting magnets, service life will be greatly reduced.

With **resistive and capacitative loads** with high switch-on current, such as light bulbs, a protective resistor should be fitted. This also applies to long cable lengths and voltages over 100 V.

In the switching of inductive loads such as relays, solenoid valves and lifting magnets, voltage peaks (transients) are generated which must be suppressed by protective diodes, RC loops or varistors.

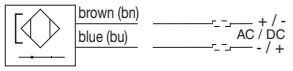
Connection Examples
Load with protective circuits
(a) Protective resistor for light bulb
(b) Freewheel diode on inductivity
(c) Varistor on inductivity
(d) RC element on inductivity



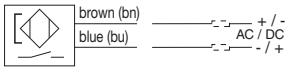
For the type EST, external protective circuits are not normally needed.

Electrical Connection Type RST-K

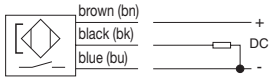
Normally closed



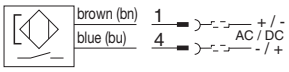
Normally open



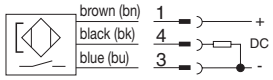
Electrical Connection Type EST-K



Electrical Connection Type RST-S

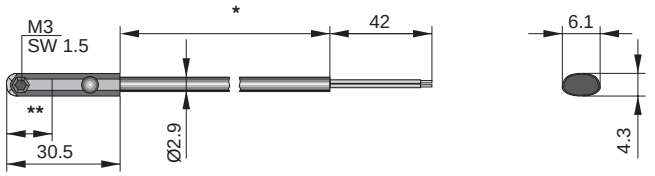


Electrical Connection Type EST-S



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

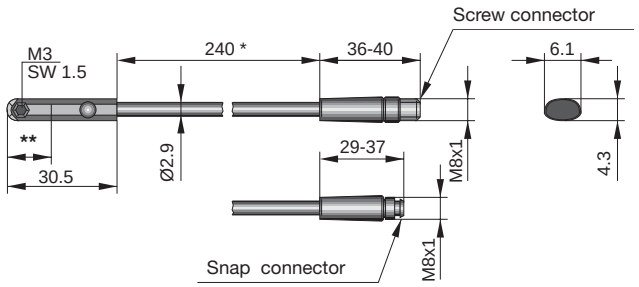
Dimensions (mm) – Type RST-K, EST-K

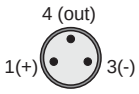


* Cable lengths available: 5000 mm ± 75 mm
2000 mm ± 40 mm

** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

Dimensions (mm) – Type RST-S, EST-S



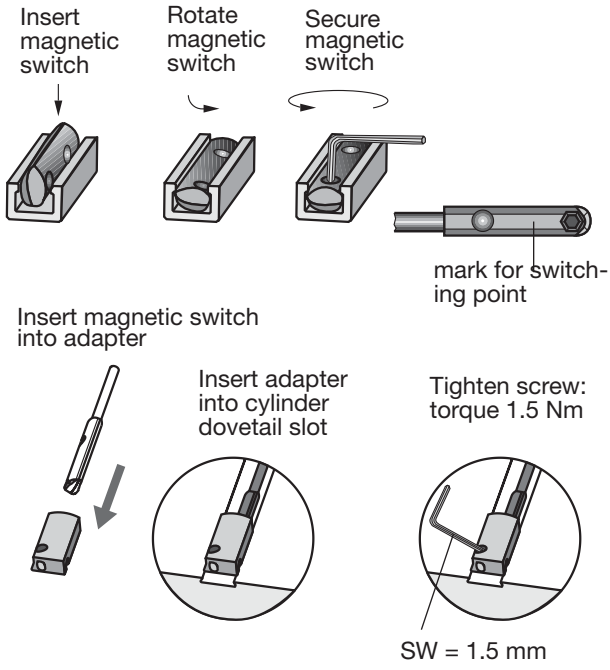


PIN assignment
(view of pins)
to DIN EN 50044

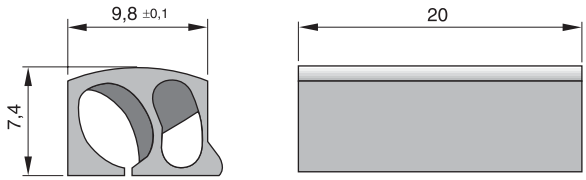
* ± 6 mm

** Switching point: Type RST-K Normally closed 14 mm
Type RST-K Normally open 12.3 mm
Type EST-K Normally open 8.1 mm

Installation



Dimensions of Adapter for Magnetic Switch



Ordering Information		
Type	Voltage	Order No.
RST-K	10-30V AC/DC	**KL3300**
EST-S	10-30V DC	**KL3312**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Spare Parts

Series 2002 - Basic Cylinder - Ø16mm

Item	Description	16mm
1	Cylinder Barrel	2152-0101+S
2***	Outer Band	2080-0101+S
3***	Inner Band	2192+0101+S
4	End Cap - Right (B)	2164-0154
4.1	End Cap - Right (V)	2714-0154
5	O-Ring - Cushion Screw (B)	0766
5.1	O-Ring - Cushion Screw (V)	0767
6	Cushion Screw	0734
7	N/A	
8	O-Ring - Cushion Pipe (B)	0732
8.1	O-Ring - Cushion Pipe (V)	0733
9	End Cap - Left (B)	2164-0153
9.1	End Cap - Left (V)	2714-0153
10	O-ring Gasket End Cap (B)	N/A
10.1	O-ring Gasket End Cap (V)	N/A
11	Screw - Outer Band Lock	0847
12	Outer Band Lock	0738
13	Screw - Inner Band Lock	0846
14	Inner Band Lock	0736
15	End Cap Screw	0735
19	Cushion Pipe	N/A
**	Service Pack-1 Piston (B)	SP16-B-1 xS
**	Service Pack-1 (V)	SP16-V-1 xS
**	Service Pack-2 (B)	SP16-B-2 xS
**	Service Pack-2 (V)	SP16-V-2 xS
	Seal Kit-1 (B)	2790-0101
	Seal Kit-1 (V)	2791-0101
	Seal Kit-2 (B)	2790-0101-2
	Seal Kit-2 (V)	2791-0101-2

(B) = Buna-N

(V) = Fluorocarbon

**Note: Please identify stroke “S” required when ordering.

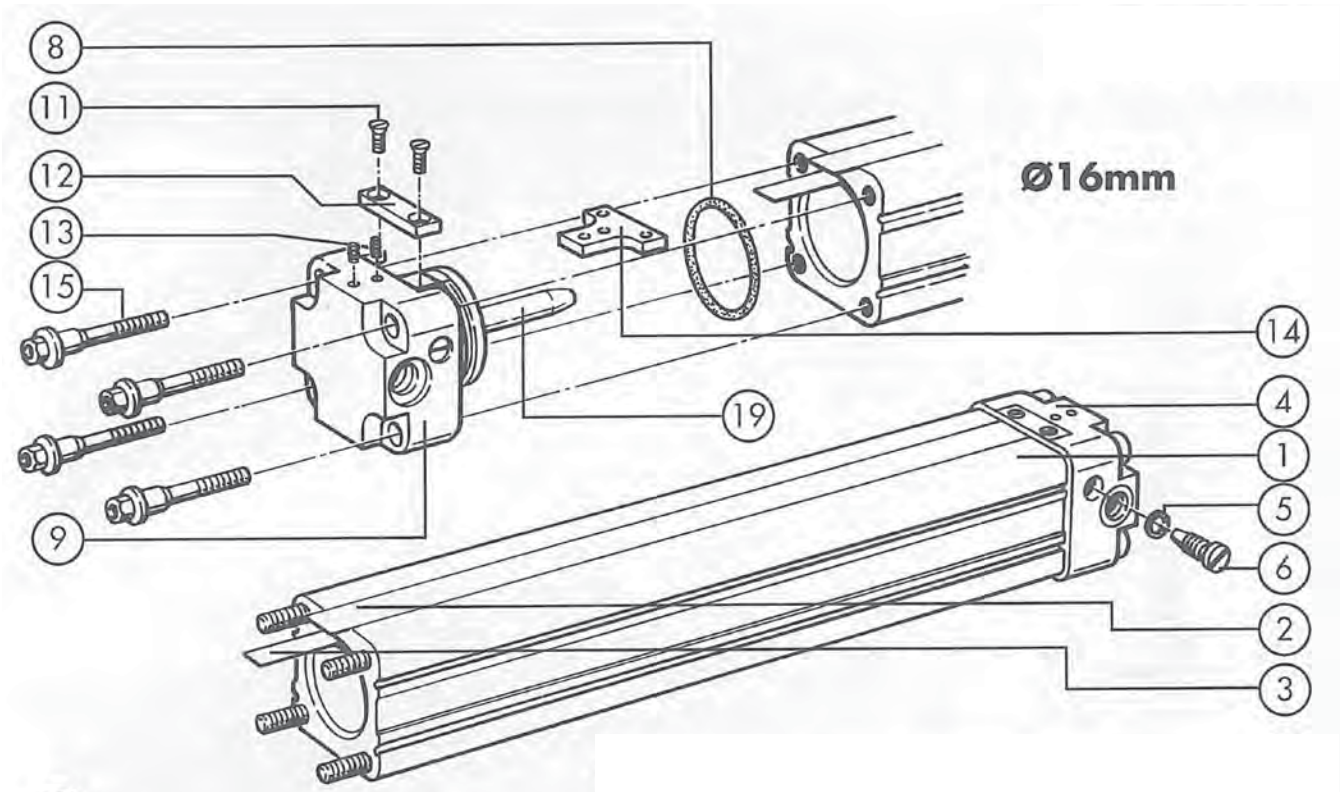
*** Note: These items can only be purchased in a service pack.

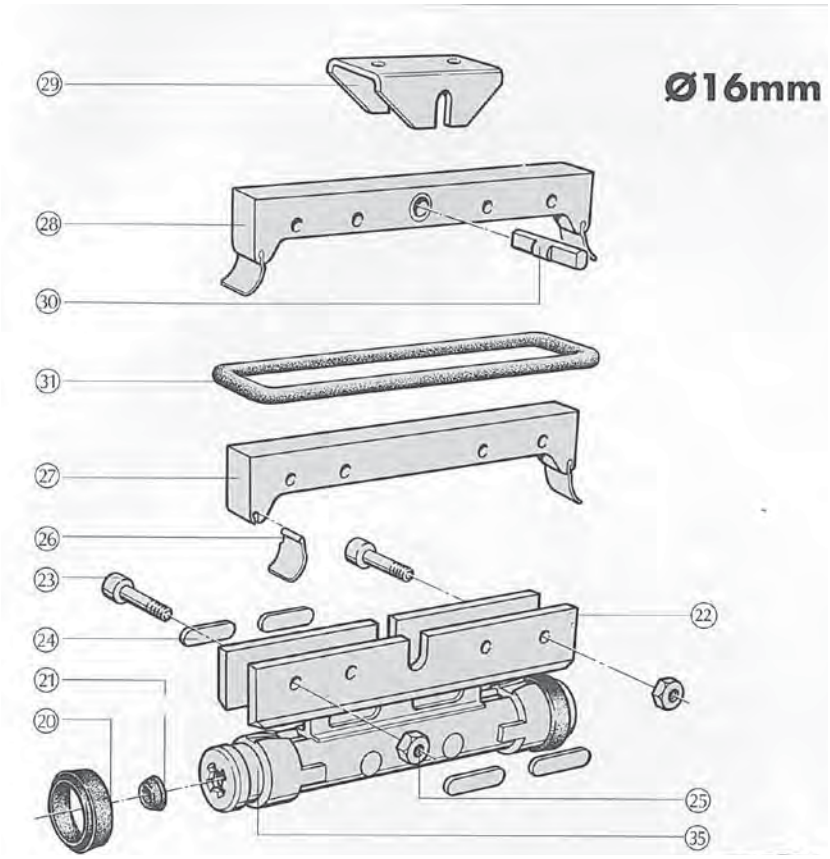
Item	Description	16mm
20	Piston Seal (B)	0745
20.1	Piston Seal (V)	0746
21	Cushion Seal (B)	0751
21.1*	Cushion Seal (V)	0752
22	Complete Piston	1853
23	Screw - Piston Mount	0754
24	Bearing Strip	2798-0101
25	Nut - Piston Mount	0796
26	Scraper	2238-0101
27	Piston Mount - NR20	1815
28	Bracket - NR25 Mount	N/A
29	Fork Bracket	0758
31	O-ring - Yoke (B)	0747
31.1	O-ring - Yoke (V)	0748

(B) = Buna-N

(V) = Fluorocarbon

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





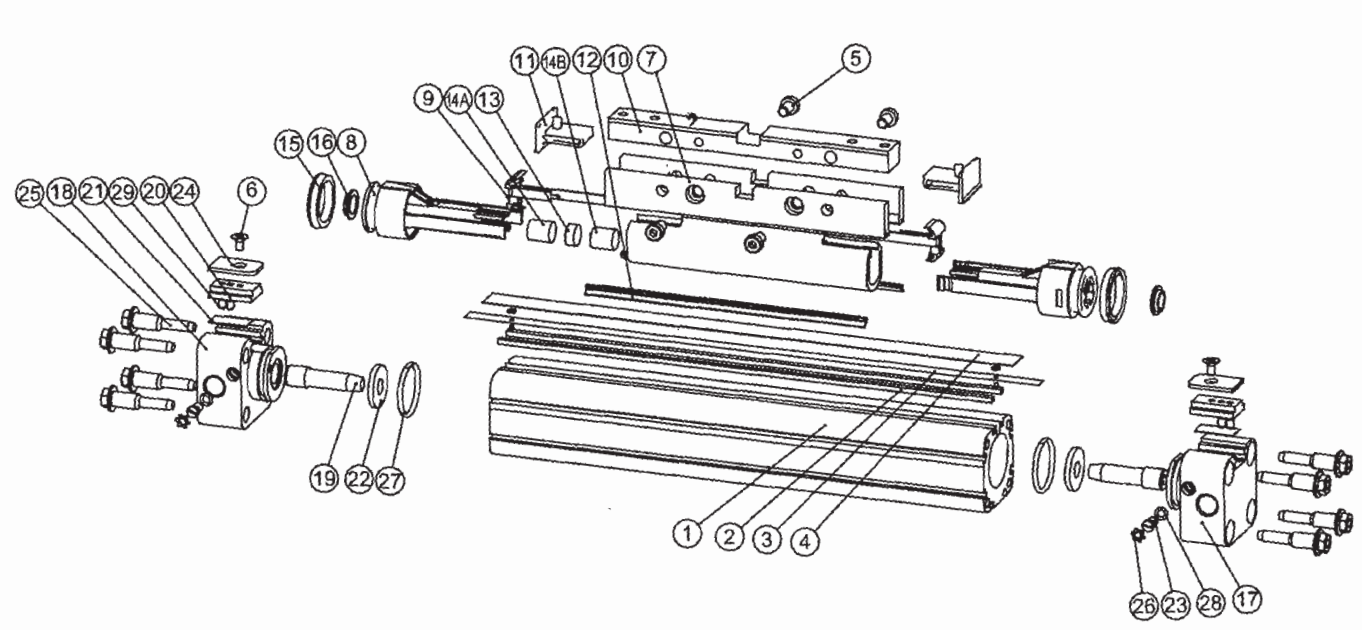
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series 2002 - Basic Cylinder - Ø25mm - Ø50mm

Item	Description	Kit to Purchase
1	Barrel	Purchase Separate
2	Magnet Strip	Purchase Separate
3	Inner Band	Service Pack
4	Outer Band	Service Pack
5	Piston Mount Screw	Piston Mount Kit
6	Outer Bandlock Screw	End Cap Assembly
7	Piston	Piston Assembly Kit
8	Support Ring (White, Red, Green)	Piston Assembly Kit
9	Slide Shoe (Yellow, Tan, Black)	Seal Kit
10	Piston Mounting	Piston Mount Kit
11	Scraper	Seal Kit
12	Slide Wiper	Seal Kit
13	Magnet	Piston Assembly Kit
14A	Magnet Holder (Aluminum)	Piston Assembly Kit
14B	Magnet Holder (Steel)	Piston Assembly Kit
15	Piston Seal	Seal Kit
16	Cushion Seal	Seal Kit
17	End Cap - Left Hand	End Cap Assembly
18	End Cap - Right Hand	End Cap Assembly
19	Cushion Pipe	End Cap Assembly

Item	Description	Kit to Purchase
20	Inner Band Lock	End Cap Assembly
21	Shim Piece	End Cap Assembly
22	Cushion Disc	Seal Kit
23	Cushion Adjustment Screw	End Cap Assembly
24	Outer Band Lock	End Cap Assembly
25	End Cap Screw	End Cap Assembly
26	Locking Ring	Purchase Separate
27	O-ring End Cap	Seal Kit
28	O-Ring - Cushion Screw	Seal Kit
29	Screw - Inner Band Lock	End Cap Assembly

* See page C30 for ordering instructions on kit part numbers.



NOTE: FOR 25mm ONLY, ITEMS 23, 26 & 28 ARE AN INTEGRAL PART OF THE CAP (ITEMS 17 & 18)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Kits

Description		25mm	32mm	40mm	50mm
Barrel	Part Number	2152-0201 +S	2152-0301 +S	2152-0404 +S	2152-0502 +S
Magnetic Strip	Part Number	2244-0201 +S	2244-0301 +S	2244-0451 +S	2244-0501 +S

Piston Assembly Kits – includes seals, bearings, support rings, magnets and holders

Description		25mm	32mm	40mm	50mm
(Buna)	Part Number	2002-25-PISTON-B	2002-32-PISTON-B	2002-40-PISTON-B	2002-50-PISTON-B
(Fluorocarbon)	Part Number	2002-25-PISTON-V	2002-32-PISTON-V	2002-40-PISTON-V	2002-50-PISTON-V

End Cap Assembly Kits – includes end cap set with cushion pipes, o-rings, cap screws, cushion discs, and hand locks

Description		25mm	32mm	40mm	50mm
US Threads (Buna)	Part Number	2002-25-END-CAP-B	2002-32-END-CAP-B	2002-40-END-CAP-B	2002-50-END-CAP-B
US Threads (Fluorocarbon)	Part Number	2002-25-END-CAP-V	2002-32-END-CAP-V	2002-40-END-CAP-V	2002-50-END-CAP-V
Metric Threads (Buna)	Part Number	2002-25-END-CAP-MO	2002-32-END-CAP-MO	2002-40-END-CAP-MO	2002-50-END-CAP-MO
Metric Threads (Fluorocarbon)	Part Number	2002-25-END-CAP-V-MO	2002-32-END-CAP-V-MO	2002-40-END-CAP-V-MO	2002-50-END-CAP-V-MO

Piston Assembly Kits – includes piston mount, scrapers and screws

Description		25mm	32mm	40mm	50mm
US Threads	Part Number	2002-25-PISTON-MT	2002-32-PISTON-MT	2002-40-PISTON-MT	2002-50-PISTON-MT

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Spare Parts

Series P120 - Basic Cylinder - Ø40mm - Ø80mm

Item	Description	40mm	63mm	80mm
1	Cylinder Barrel S/	2152-0403+S	2152-0602+S	2152-0801+S
1.1	Cylinder Barrel L/	2153-0452+S	2153-0651+S	2153-0851+S
1.2	Magnet Strip	2244+0401+S	2244-0601+S	2074-0801
2***	Outer Band S/	2080-0403+S	2080-0603+S	2080-0801+S
2.1***	Outer Band L/	2081-0451+S	2081-0651+S	2081-0851+S
3***	Inner Band S/	2192-0402+S	2192-0602+S	2192-0802+S
3.1***	Inner Band L/	2193-0451+S	2193-0652+S	2193-0851+S
4	End Cap - Right (B)	2164-0454-R	2164-0654-R	2164-0852-R
4.1	End Cap - Right (V)	2714-0452-R	2714-0652-R	2714-0851-R
5	O-Ring - Cushion Screw (B)	1252-0101	1252-0101	1252-0101
5.1	O-Ring - Cushion Screw (V)	1262-0101	1262-0101	1262-0101
6	Cushion Screw	1213	1257	1257
7	Lock Ring - Upper/Lower	1207	1254	1263
8	Screw - End Cap	1004-0718	1004-0920	1004-1124
9	Cap Ring	2887	2889	1262
10	O-Ring - End Cap (B)	1250-0307	1250-0503	1250-0506
10.1	O-Ring - End Cap (V)	1261-0307	1261-0503	1261-0506
11	End Cap - Left (B)	2164-0454-L	2164-0654-L	2164-0852-L
11.1	End Cap - Left (V)	2714-0452-L	2714-0652-L	2714-0851-L
12	Inner Band Lock Set	4833	6833	8833
13	Screw - Inner Band Lock	1024-0605	1024-0605	1024-0807
14	Plug - Cap Ring	2847	2847	2847
15	Screw - Outer Band Lock	1033-0505	1033-0506	1033-0506
16	Outer Band Lock	1204	1204	1204
**	Service Pack-Short Piston (B)	SP124-B-S xS	SP126-B-S xS	SP128-B-S xS
**	Service Pack-Short Piston (V)	SP124-V-S xS	SP126-V-S xS	SP128-V-S xS
**	Service Pack-Long Piston (B)	SP124-B-L xS	SP126-B-L xS	SP128-B-L xS
**	Service Pack-Long Piston (V)	SP124-V-L xS	SP126-V-L xS	SP128-V-L xS
	Seal Kit-Short Piston (B)	2790-0401	2790-0601	2790-0801
	Seal Kit-Short Piston (V)	2791-0401	2791-0601	2791-0801
	Seal Kit-Long Piston (B)	2792-0401	2792-0601	2792-0801
	Seal Kit-Long Piston (V)	2793-0401	2793-0601	2793-0801

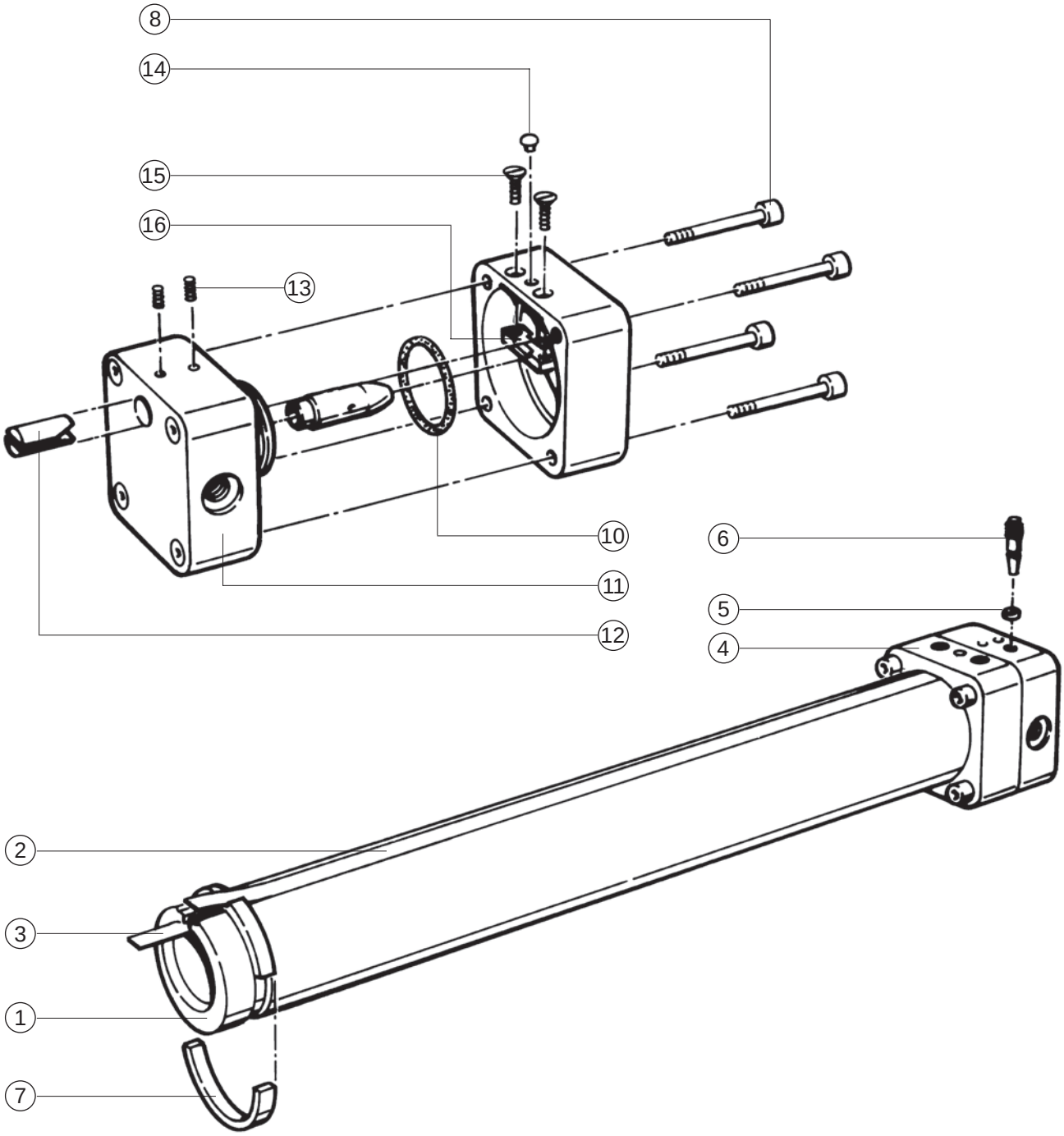
(B) = Buna-N

(V) = Fluorocarbon

**Note: Please identify stroke “S” required when ordering.
***Note: These items can only be purchased in a service pack.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series P120 - Cylinder



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Spare Parts

Series P120 - Short Piston - Ø40mm - Ø80mm

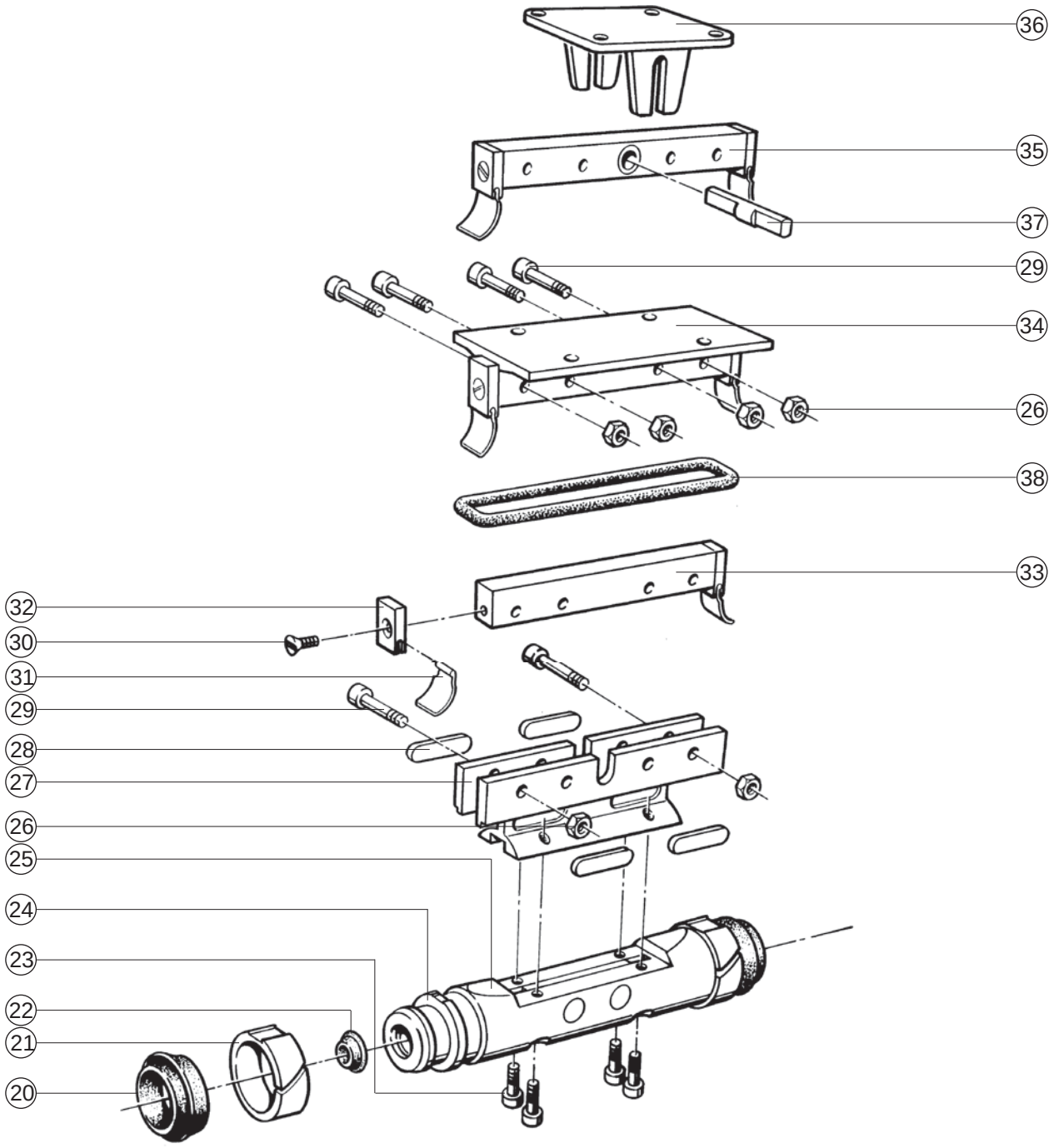
Item	Description	40mm	63mm	80mm
20	Piston Seal (B)	1275	1345	1375
20.1	Piston Seal (V)	1276	1346	1376
21	Bearing Ring	1274	1344	1374
22	Cushion Seal (B)	1277	1347	1377
22.1	Cushion Seal (V)	1278	1348	1378
23	Screw - Yoke	1000-0612	1000-0816	1000-0818
24	Piston Axle (non-magnetic) S/	4843	6843	8843
24.1	Piston Axle (magnet 1 side) S/	N/A	6843	8843
25	Piston Axle (magnet 2 side) S/	4843	6843	8843
26	Nut - Piston Mount	1040-0600	1040-0800	1040-1000
27	Piston Yoke	1287	1356	1406
28	Bearing Strip	2798-0401	2798-0601	2798-0801
29	Screw - Piston Mount	1283	1000-0816	1000-1018
30	Screw - Piston Mount End	1038-0507	1038-0507	1038-0507
31	Scraper	1279	1349	1379
32	Piston Mount End Plate	1286	2040-0604	2040-0801
33	Piston Mount - S/20	1817	2503	2504
34	Piston Mount - S/22	2505	2507	2508
35	Piston Mount - S/25	2186-0404	2186-0604	2186-0802
36	Fork Bracket	1947	1955	1963
37	Carrier Pin	1948	1956	1964
38	O-Ring - Yoke (B)	1281	1351	1401
38.1	O-Ring - Yoke (V)	1282	1352	1402

(B) = Buna-N

(V) = Fluorocarbon

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series P120 - Short Piston



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Spare Parts

Series P120 - Long Piston - Ø40mm - Ø80mm

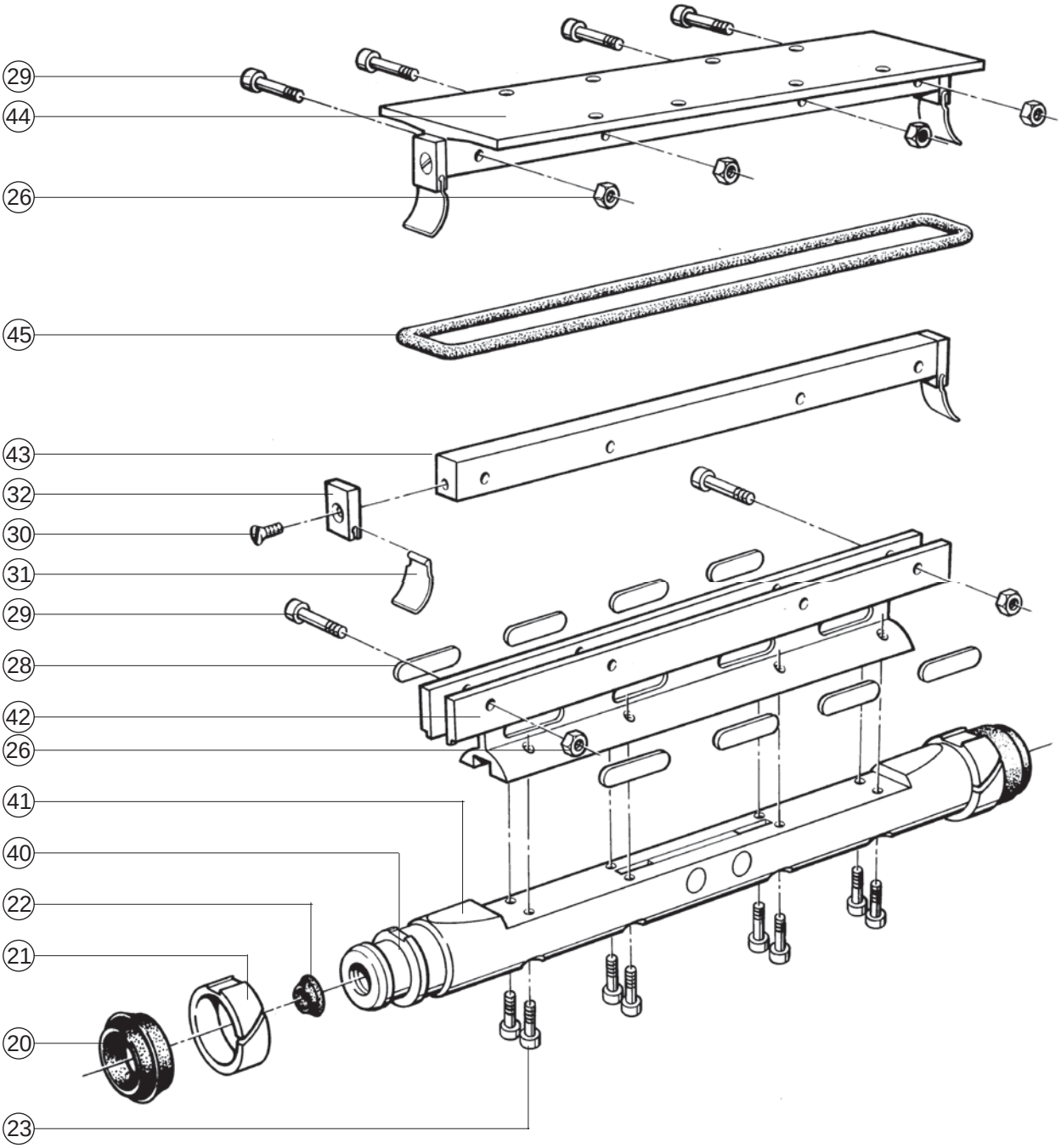
Item	Description	40mm	63mm	80mm
20	Piston Seal (B)	1275	1345	1375
20.1	Piston Seal (V)	1276	1346	1376
21	Bearing Ring	1274	1344	1374
22	Cushion Seal (B)	1277	1347	1377
22.1	Cushion Seal (V)	1278	1349	1378
23	Screw - Yoke	1000-0612	1000-0816	1000-0818
26	Nut - Piston Mount	1040-0600	1040-0800	1040-1000
28	Bearing Strip	2798-0401	2798-0601	2798-0801
29	Screw - Piston Mount	1283	1000-0816	1000-1018
30	Screw - Piston Mount End	1038-0507	1038-0507	1038-0507
31	Scraper	1279	1349	1379
32	Piston Mount End	1286	2040-0604	2040-0801
40	Piston Axle (non-magnetic) L/	4844	6844	8844
40.1	Piston Axle (magnet 1 side) L/	N/A	6844	8844
41	Piston Axle (magnet 2 side) L/	4844	6844	8844
42	Piston Yoke	1298	1367	1417
43	Piston Mount - L/26	2492	2494	2495
44	Piston Mount - L/28	2496	2498	2499
45	O-Ring - Yoke (B)	1272-0526	1365	1272-0542
45.1	O-Ring - Yoke (V)	1297	1262-0538	1416

(B) = Buna-N

(V) = Fluorocarbon

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Series P120 - Long Piston



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Spare Parts

Spare Parts Service Packs - Series 2002 / Series P120 - All bore sizes.

Designation Series 2002		Bore Sizes				
		16mm	25mm	32mm	40mm	50mm
Buna-N Service Pack Single Piston	Part Number	SP16-B-1	SP25R-B-1	SP32R-B-1	SP40R-B-1	SP50R-B-1
FMK Service Pack Single Piston	Part Number	SP16-V-1	SP25R-V-1	SP32R-V-1	SP40R-V-1	SP50R-V-1
Buna-N Service Pack Double Piston	Part Number	SP16-B-2	SP25R-B-2	SP32R-B-2	SP40R-B-2	SP50R-B-2
FMK Service Pack Double Piston	Part Number	SP16-V-2	SP25R-V-2	SP32R-V-2	SP40R-V-2	SP50R-V-2

Designation Series p120		Bore Sizes		
		40mm	60mm	80mm
Buna-N Service Pack Short Piston	Part Number	SP124-B-S	SP126-B-S	SP128-B-S
FMK Service Pack Short Piston	Part Number	SP124-V-S	SP126-V-S	SP128-V-S
Buna-N Service Pack Long Piston	Part Number	SP124-B-L	SP126-B-L	SP128-B-L
FMK Service Pack Long Piston	Part Number	SP124-V-L	SP126-V-L	SP128-V-L

Note: All Service Packs contain complete seal kits, inner and outer bands, cleaning tool, grease and repair instructions.

Upgrade Kit - required for cylinders manufactured prior to January 1, 2002

Designation Series 2002		Bore Sizes			
		25mm	32mm	40mm	50mm
Buna-N Upgrade Kit Single Piston	Part Number	25-UPGRADE-S-B	32-UPGRADE-S-B	40-UPGRADE-S-B	50-UPGRADE-S-B
FMK Upgrade Kit Single Piston	Part Number	25-UPGRADE-S-V	32-UPGRADE-S-V	40-UPGRADE-S-V	50-UPGRADE-S-V
Buna-N Upgrade Kit Double Piston	Part Number	25-UPGRADE-S-B-2	32-UPGRADE-S-B-2	40-UPGRADE-S-B-2	50-UPGRADE-S-B-2
FMK Upgrade Kit Double Piston	Part Number	25-UPGRADE-S-V-2	32-UPGRADE-S-V-2	40-UPGRADE-S-V-2	50-UPGRADE-S-V-2

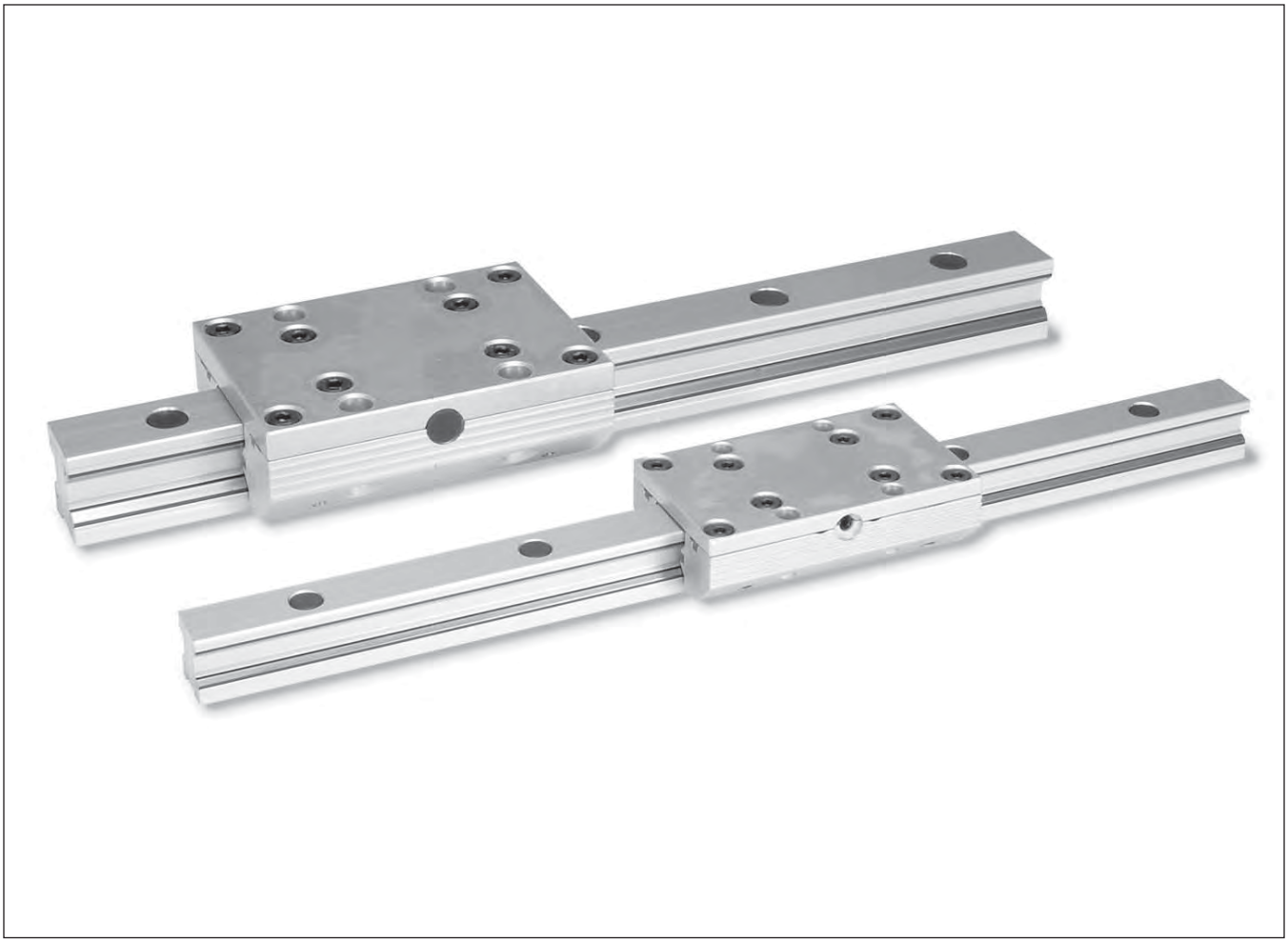
Note: Upgrade kits include piston assembly, end cap assembly, piston mount assembly and complete service pack.
*S = Stroke

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Notes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

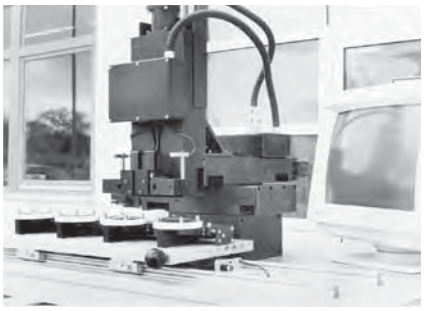
GDL Aluminum Roller Guides



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Light, Smooth and FAST

Aluminum roller guides in a cutting machine for spectacle lenses. Both the work piece carriers and the motorized X - Y table axis are equipped with roller guides. The smooth operation and precision of the equipment ensures a fine cutting action.



Aluminum roller guides in an automatic vibrator for flattening printed sheets of paper. To guarantee even pressure on the sheets of paper, the roller bridge is supported by precision roller guides.

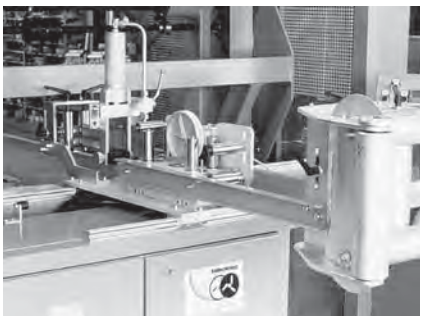
(Baumann company photo)

Handling units for medical equipment. Smooth, easy movement with guideline roller guides.

(Dräger company photo)

Aluminum roller guides in the sliding carriage of a machine for producing cables. The projecting arm of the carriage is guided by two double rails each with two roller cassettes and can be moved manually with minimal force because of the low friction properties.

(Kabelmat company photo)



Single rail and roller shoe versions of the aluminum roller guide in a handling arrangement for stacks of paper. Various fittings and limit stops for stacking are moved on two axes horizontally and vertically. The robustness and reliability of the roller guides allows for continuous operation under high load conditions.

(Solms company photo)

- Light weight (anodized aluminum)
- Smooth and quiet operation
- Speeds up to 10 m/s
- Acceleration/deceleration up to 40 m/s^2
- Loading from any direction
- Permanently lubricated guidance system
- Broad product range in various series high performance, standard and stainless steel versions
- High load and moment capacities
- Very cost effective
- Flexible mounting dimensions

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

GDL Linear Guides Offer a Variety of Series and Options — High Performance... "Smooth Guidance"

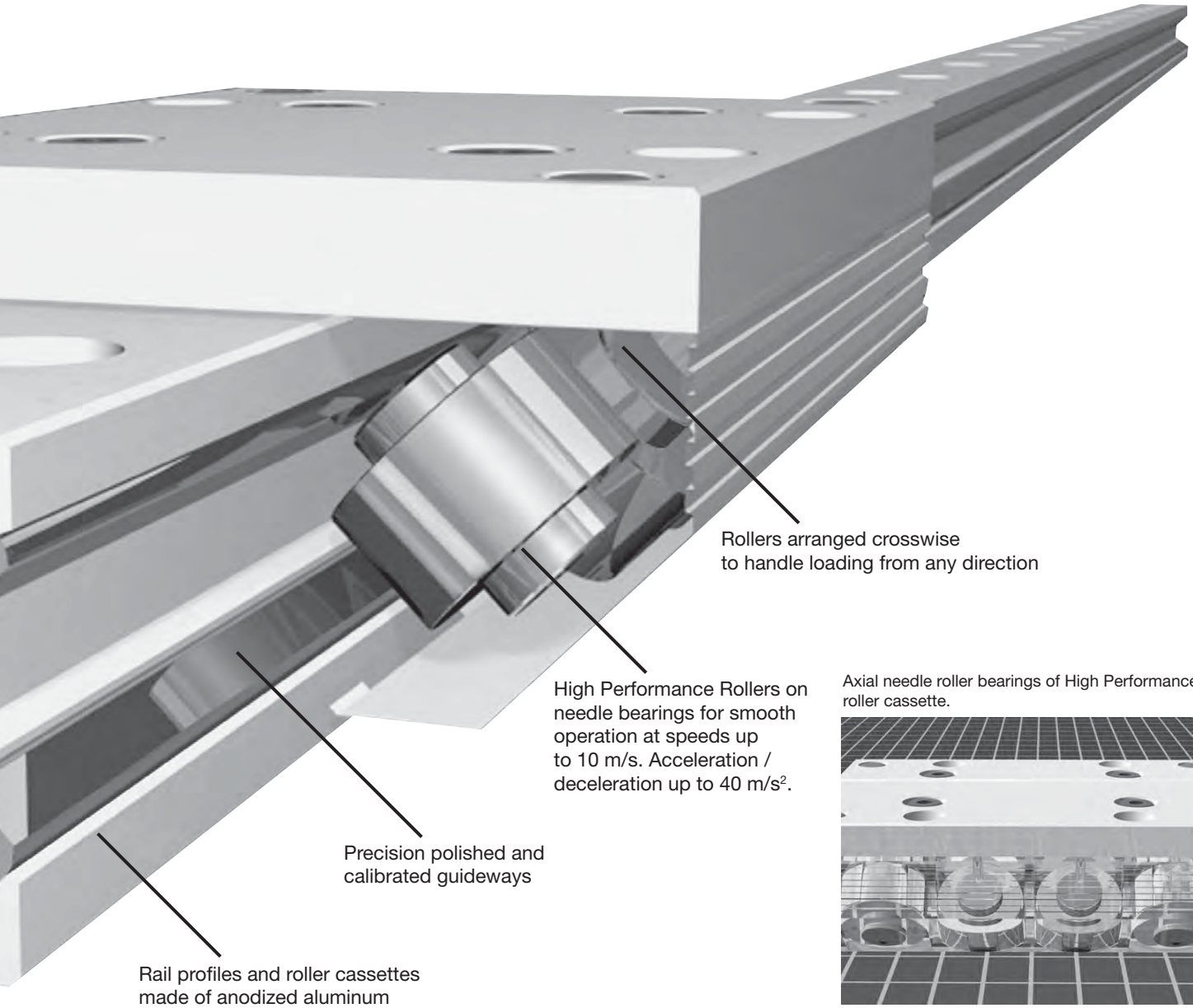
Aluminum roller guides provide smooth operation and high load carrying capacity for industrial automation.

By the use of lightweight aluminum components the moving masses are minimized, travel speeds are increased and actuation energy is saved.

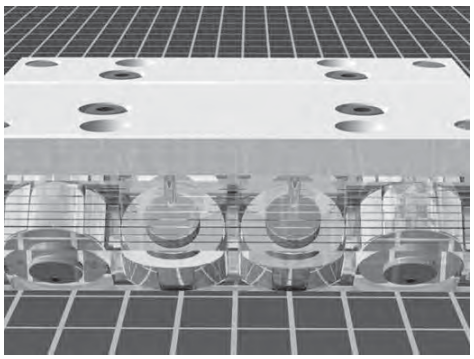
Aluminum roller guides are designed to carry medium weight loads economically. Their smooth action and speeds up to 10 m/s make them ideal for widespread use in many areas of application.

Aside from a main featured High Performance guide, others such as the Standard, Corrosion Resistant, High Dynamics and Grease-free versions are also available.

Aluminum roller guides are available in sizes 12, 15, 20, 25, 35 and 45mm. Rail lengths are from 200 mm to 4000 mm. For longer travel lengths, guide rails can be butt-jointed together.



Axial needle roller bearings of High Performance roller cassette.



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

GDL Product Line Overview

Characteristic	Unit	Description
Full profile wipers		Rollershoes and cassette are provided with snap-on full profile wipers. The snap-on full profile wipers are easily replaceable with available wipers kits. See page D7 for respective wiper kit order numbers.
Mounting		Rollershoes and cassettes use ISO screw quality 8.8 and DIN 433 washers. ISO screw quality 8.8 is recommended for mounting the rails also.
Loads		See load and moment rating tables on page D8 for respective load, moment and weight data per size and series.
Acceleration and Deceleration	m/s^2 (ft/sec^2)	40 m/s^2 maximum (131 ft/s^2 maximum)
Guide installation		Possible in any position. See technical information on page D10 for specific instructions on installing various guide configurations.
Drag adjustment set screw		Cassettes can be adjusted at the factory or by the customer.
		Rollershoes can be set-up by the customer to incorporate the drag adjustment set screw feature. The drag adjustment set screw components are supplied with each pair of rollershoes.
Coefficient of friction		Variable, but .001 set at standard slide resistance adjustment.
Standard Lubrication		Lifetime lubrication with standard grease-packed roller bearings.
Speed	m/s (ft/s)	Up to 10 m/s (or up to 33 ft/s)
Materials for High Performance or Standard versions		Rail: Aluminum alloy
		Guideways: Hardened high alloy spring steel
		Cassettes/rollershoes/top plates: Aluminum alloy
		Rollers: Bearing steel
Materials for Corrosion Resistant High Performance & Standard versions		Rail: Aluminum alloy
		Guideways: Stainless steel spring steel
		Cassettes/rollershoes/top plates: Aluminum alloy
		Rollers: Stainless steel bearing steel
Bearing types		Steel axial needle, Specials on request (ex: anti-magnetic, grease free, high dynamics) - consult factory
Operating temperature	C (F)	-10° to 80°C (+14 to 176°F) temperature range
Specials available		Custom length cassettes and rollershoes for 100 piece lots minimum.
		Keyed butt-jointed rail sections for continuous rail lengths over 4000mm.
		Solid continuous length rails between 4000.
		Offset or non-standard “L11” dimensions on opposite ends of cut rails.
		Integrated metal scraper with standard full profile wiper currently available.
		Rail underside blind mounting holes.

Descriptions of the Various GDL Series Available:

High Performance Series:

(Sizes FDC12HP-... thru FDC45HP-...)

The High Performance series is the basis for GDL’s development, which is used in the majority of applications. High Performance guides consist of 8 axial needle roller bearings, running on precision polished and hardened alloy spring steel guideways. These guide bearings are grease packed and shielded, while offering the highest load and moment rating capacities within the GDL product line.

Standard Performance Series:

(Sizes FDC12SP-... thru FDC45SP-...)

The Standard Performance series is intended for minor loads and moments for particularly economical guidance solutions. Standard Performance guides consist of 8 radial ball roller bearings, running on precision polished and hardened alloy spring steel guideways. These guide bearings are grease packed and sealed, while offering the lowest load and moment ratings available within the GDL product line, with the exception of the Grease-Free and the Anti-Friction / Corrosion Resistant series. Standard Performance series is the second most commonly used GDL guides for various applications and also provides excellent running behavior.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

General Facts Pertaining to all Series:

Snap-on full profile wipers: Rollershoes and cassettes can be provided with snap-on full profile wipers. The snap-on full profile wipers are easily replaceable with available wiper kits. See page D7 for respective wiper kit order numbers.

Cassette adjustment: Cassettes can be adjusted at the factory or by the customer.

Fasteners: Rollershoes and cassettes use ISO screw quality 8.8 and DIN 433 washers. ISO screw quality 8.8 is recommended for mounting the rails also. Special stainless steel fasteners can be requested as necessary.

Carrying Capacity: See load and moment rating tables on page D8 for your guide series of interest.

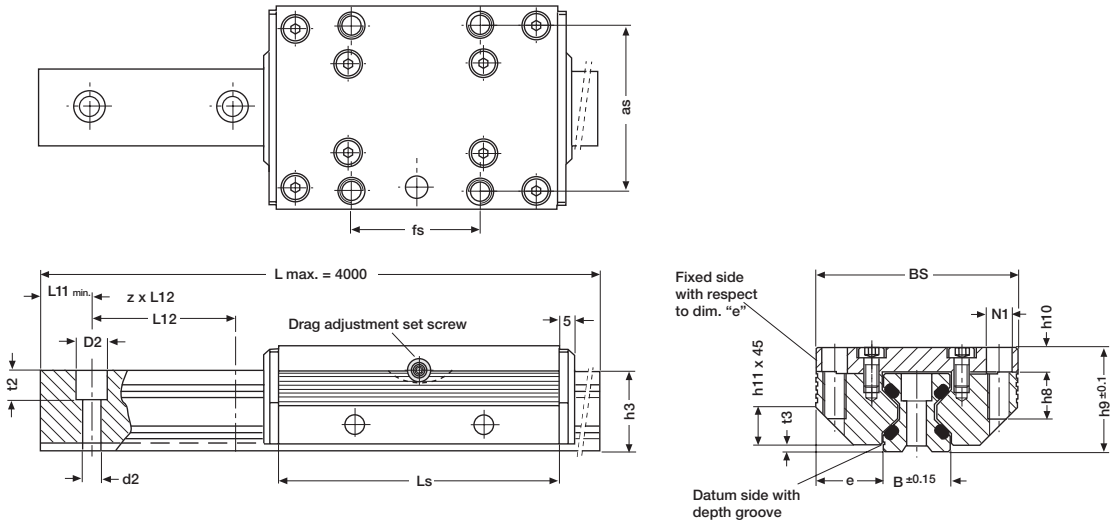
Guide mounting position: Optional.

Lengths: For longer than standard rail lengths, see keyed butt-jointed rail option on page D7.

Lubrication: GDL Aluminum Roller Guides are permanently lubricated with contained roller bearings grease.

See part numbering schemes on page D14 to define your desired GDL guide features for ordering.

Drawing for Cassette with Double Sided Rail



Dimensions for both Standard FDC Version Guides

Size	Length Ls	Width BE	B	BS	B1	Height B2	h1	h3	h9	as	d2	D2	e	fs	h7	h8	h10	h11	L8	L9	L11 min.	L12	t2	t3	N1	N2	N3	PF1	PF2	S1	S2	S3
12	64	12.00	12.0	37	24.4	11.9	15.0	14.7	19	30	3.4	6	12.50	25	6.0	8	4.0	6	29	57	10	40	5.5	1.4	M4	M3	M4	5.5	3.4	3.4	4.9	9.7
15	78	15.25	15.5	47	30.9	15.2	19.0	18.7	24	38	4.5	8	15.75	30	7.5	10	5.0	8	34	68	10	60	6.0	2.0	M5	M4	M6	7.0	4.4	4.9	5.9	12.4
20	92	20.00	21.0	63	40.9	20.4	23.0	22.6	30	53	5.5	10	21.00	40	8.0	12	7.0	11	42	80	10	60	7.0	2.0	M6	M5	M6	9.5	4.9	5.9	5.9	16.9
25	98	25.00	23.0	70	48.4	22.9	27.5	27.0	36	57	6.6	11	23.50	45	5.0	16	8.5	13	48	84	10	60	10.0	2.5	M8	M5	M8	12.0	6.4	7.4	8.9	19.4
35	135	35.00	32.0	100	68.9	32.9	37.5	37.0	48	82	9.0	15	34.00	62	7.5	20	10.5	20	67	117	12	80	11.5	3.5	M10	M6	M8	17.0	8.9	8.9	8.9	28.4
45	165	45.00	45.0	120	82.4	36.4	46.5	46.0	60	100	11.0	18	37.50	80	9.5	24	13.5	22	83	146	16	105	14.5	4.0	M12	M8	M8	22.0	9.9	9.9	8.9	30.9

Dimensions (mm)

Dimensions for both Underside Mounting Hole FDC Version Guides

(Ref. ordering instructions)

Size	Length Ls	Width BE	B	BS	B1	Height B2	h1	h3	h9	as	d2	D2	e	fs	h7	h8	h10	h11	L8	L9	L11 min.	L12	t2	t3	N1	N2	N3	PF1	PF2	S1	S2	S3
12	64	12.00	12.0	37	24.4	11.9	15.0	14.7	19	30	3.4	6	12.50	29	6.0	8	4.0	6	29	57	10	40	5.5	1.4	M4	M3	M4	5.5	3.4	3.4	4.9	9.7
15	78	15.25	15.5	47	30.9	15.2	19.0	18.7	24	38	4.5	8	15.75	34	7.5	10	5.0	8	34	68	10	60	6.0	2.0	M5	M4	M6	7.0	4.4	4.9	5.9	12.4
20	92	20.00	21.0	63	40.9	20.4	23.0	22.6	30	53	5.5	10	21.00	40	8.0	12	7.0	11	42	80	10	60	7.0	2.0	M6	M5	M6	9.5	4.9	5.9	5.9	16.9
25	98	25.00	23.0	70	48.4	22.9	27.5	27.0	36	57	6.6	11	23.50	45	5.0	16	8.5	13	48	84	10	60	10.0	2.5	M8	M5	M8	12.0	6.4	7.4	8.9	19.4
35	135	35.00	32.0	100	68.9	32.9	37.5	37.0	48	82	9.0	15	34.00	62	7.5	20	10.5	20	67	117	12	80	11.5	3.5	M10	M6	M8	17.0	8.9	8.9	8.9	28.4
45	165	45.00	45.0	120	82.4	36.4	46.5	46.0	60	100	11.0	18	37.50	90	9.5	24	13.5	22	83	146	16	105	14.5	4.0	M12	M8	M8	22.0	9.9	9.9	8.9	30.9

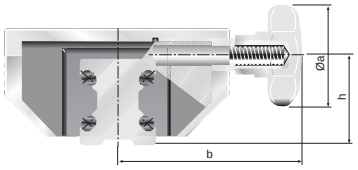
Dimensions (mm)

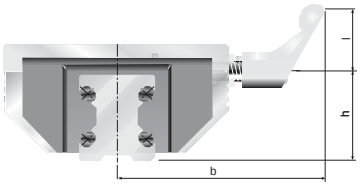
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

GDL Aluminum Roller Guides

High Performance cassettes with lock device

Special cassette types





The locking cassette with star grip handle can be stopped at any desired location on the rail. The clamping device does not exert forces on the rail guideways.

The clamping device is used in fixtures which are movable manually, clamping and stop ledgers, feeding of tools and work pieces. Also available with L-ratchet handle.

Star Grip Handle Dimensions

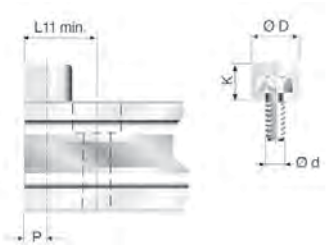
Size	Ø a	b	h	Clamp Force	Part Numbers Star Grip Knob
12	**N/A**				
15	25	41	19.0	200	**FDC15HP-00020000**
20	25	49	23.0	250	**FDC20HP-00020000**
25	32	56	28.0	250	**FDC25HP-00020000**
35	50	83	38.5	350	**FDC35HP-00020000**
45	63	101	48.0	750	**FDC45HP-00020000**

Dimensions (mm), Force (N) with normal manual tightening.

L-Ratchet Handle Dimensions

Size	l	b	h	Clamp Force	Part Numbers L-ratchet Handle
12	**N/A**				
15	45	59.5	19.0	200	**FDC15HP-00010000**
20	45	67.5	23.0	250	**FDC20HP-00010000**
25	45	71	28.0	250	**FDC25HP-00010000**
35	63	96	38.5	350	**FDC35HP-00010000**
45	78	116	48.0	750	**FDC45HP-00010000**

End of Stroke Stop screws



The stop screws are screwed into threads (option) on the guide rails. The end of stroke stopping energy is reduced by a rubber cap. With guide rails where the L11 is less than the standard minimum, we offset the mounting hole by half of its diameter.

Note: Customer must drill and tap the holes for the stop screws.

Size	d	D	K	L11 min.	P	Order Number
12	M5	12	8	15.0	6.0	**63504A**
15	M5	12	8	16.0	6.0	**63504A**
20	M5	12	8	17.0	6.0	**63504A**
25	M6	15	10	20.5	7.5	**63505A**
35	M8	19	13	26.5	9.5	**63506A**
45	M10	24	16	33.0	12.0	**63507A**

Dimensions (mm)

GDL Accessories

Rail Mounting Screw Covers

Material: Wear resistant plastic, resistant to oil and aging.

Mounting: Put a plastic plate on top and pound in uniformly. Remove residual burrs with a soft brush or fingernail.

Note: Use respective order numbers for ordering separately or include in rail part number.

Size	Cylindrical Screw DIN912	D	Order Number
12	M3	6	**87752A**
15	M4	8	**87753A**
20	M5	10	**87754A**
25	M6	11	**87755A**
35	M8	15	**87756A**
45	M10	18	**87757A**

Dimensions (mm)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

GDL Aluminum Roller Guides

Version with wipers

Integrated into an additional cover, a felt wiper is saturated with oil. Although dependent on the degree of contaminants, these wipers last for some 6000km, after which the felt wipers can either be washed or replaced.

For optimal cassette rolling performance, all holes in the guide rails should be filled with the plastic rail mounting screw covers (see page D6).

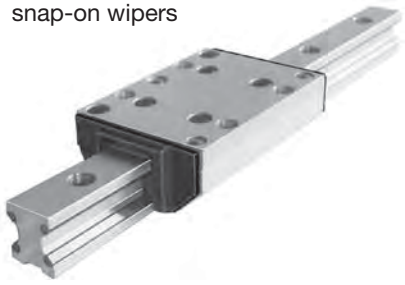
Order numbers for replacement wiper kits

FDC Series and Size	Respective Order Number
12	**84457B**
15	**84480B**
20	**84481B**
25	**84482B**
35	**84483B**
45	**84484B**

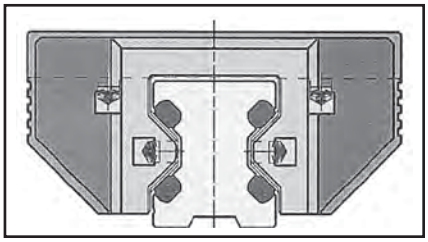
*wiper kits are sold in pairs

NOTE: Use respective order numbers for ordering separately as replacements, or specify in cassette part number. See cassette part numbering on pages D14.

Cassette with full profile snap-on wipers



Full profile snap-on wiper



GDL Coupled with structural aluminum extrusion material and OSP-E actuator

GDL's Keyed Butt-Jointed Rail Option

GUIDELINE rails can be precisely fastened together using a factory offered keyed butt-joint option for continuous rail lengths, as shown in Figures 1 & 2.

Two rail sections are clamped together with mating round bar stock pieces that seat tangent to both rail section guideways on each side of the rail. While the rail sections are clamped together, a keyway slot is machined in the top and bottom sides of the rail, across the butt- joint. Screw holes are then drilled through the rail inside the keyway slot, so the opposing keyways can be drawn together tightly with screws. The round bar stock clamp is then removed, providing a rigid and well aligned keyed butt-joint.

The keyed butt-joint option provides optimum alignment of all guideways from one rail section to the next. This allows for optimum "smooth" guidance of the cassette bearings, while crossing rail butt-joints.

The keyed butt-jointed rail option is currently available in the FDR version 25, 35, & 45 mm rail sizes. For a keyed butt-joint on rail sizes 25, 35 or 45 mm, specify P/N:# GDL-BJK

Consult factory for other size possibilities.

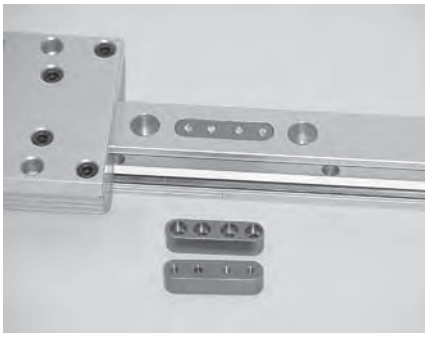


Figure 1

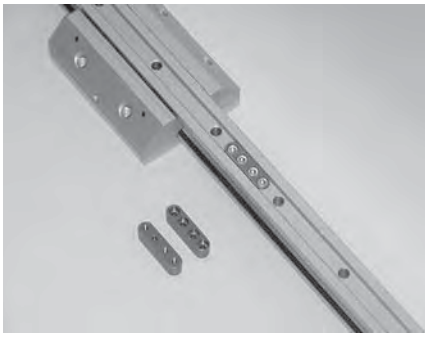


Figure 2

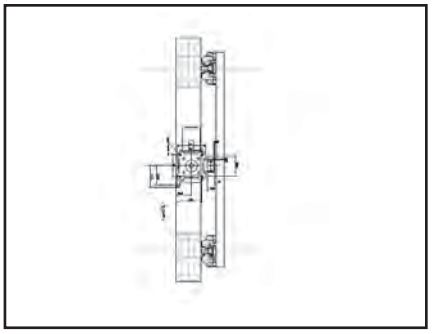
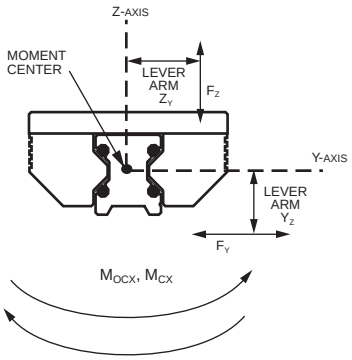


Figure 3

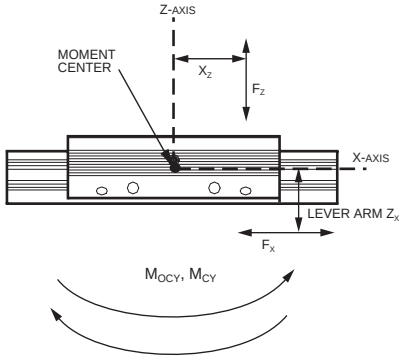
GDL linear guides couple well with various structural aluminum extrusions and Parker-Origa OSP-P and OSP-E actuators. Mounting can be easily accomplished using standard fasteners and mounting brackets. See Figure 3 above.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

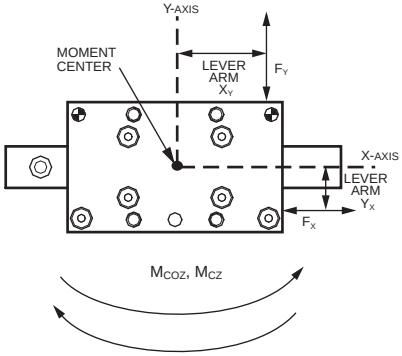
Roll



Pitch



Yaw



Load & Moment Rating Capacities

(for cassettes on double sided rail)

Cassette Series	Dynamic Load Rating C (N)	Static Load Rating Co (N)	Static Moment Rating Capacities:			Dynamic Moment Rating Capacities:			Cassette Weight (kg)	Rail Weight (kg)
			Roll Mocx (Nm)	Pitch Mocy (Nm)	Yaw Mocz (Nm)	Roll Mcx (Nm)	Pitch Mcy (Nm)	Yaw Mcz (Nm)		
High Performance Series										
FDC12HP-...	2800	3000	27	43	43	25	40	40	0.1	0.4
FDC15HP-...	4200	3400	37	58	58	45	72	72	0.3	0.8
FDC20HP-...	5400	5400	76	111	111	76	111	111	0.4	0.9
FDC25HP-...	9000	10100	158	222	222	142	198	198	0.6	1.8
FDC35HP-...	12500	18000	423	559	559	294	388	388	1.5	3.2
FDC45HP-...	21200	25900	827	983	983	678	806	806	2.9	5.5

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Units Conversion Tables

Force Conversions:

Multiply	By Conversion Factor	Result
pound-force	4.448	Newton
Newton	0.225	pound-force
kilogram-force	9.807	Newton
Newton	0.102	kilogram-force

Acceleration Conversions:

Multiply	By Conversion Factor	Result
feet/section^2	0.305	meter/second^2
meter/second^2	3.281	feet/second^2
inch/second^2	0.025	meter/second^2
meter/second^2	39.370	inch/second^2

Mass Conversions:

Multiply	By Conversion Factor	Result
ounce	28.349	gram
gram	0.035	ounce
kilogram	35.279	ounce
gram	0.001	kilgram
pound	0.453	kilogram
kilogram	2.205	pound

Bending Moment or Torque Conversions:

Multiply	By Conversion Factor	Result
pound-foot	1.356	Newton-meter
Newton-meter	0.737	pound-foot
Newton-meter	0.102	kilogram-meter
Kilogram-meter	9.807	Newton-meter

Velocity Conversions:

Multiply	By Conversion Factor	Result
mile/hour	1.609	kilometer/hour
kilometer/hour	0.621	mile/hour
feet/second	0.305	meter/second
meter/second	3.281	feet/second
inch/minute	0.025	meter/minute
meter/minute	39.370	inch/minute

Length Conversions:

Multiply	By Conversion Factor	Result
inch	25.4	millimeter
millimeter	0.039	inch
inch	0.025	meter
meter	39.370	inch
foot	0.305	meter
meter	3.281	foot

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

1. Features of the Guide System

Aluminum roller guides consist of a double sided rail and a roller cassette or two single sided rails and two roller shoes. Aluminum roller guide rails and cassettes are made of aluminum alloy. The rollers are very smooth running on precision polished guideways made of high alloy spring steel. The special cross pattern orientation of the running rollers provides high load and moment capacity in all directions.

Their special features are: light weight, small dimensions, and high speed of displacement. Aluminum roller guides are economical and universal handling components, which are mostly or all corrosion-resistant and available at a favorable price.

2. Size of the Guide System

To select the right guide size, first the moments and forces acting on the bearing have to be determined.

Recommended safety factors (with ISO screws quality 8.8):

Thrust load S > 1.3

Tensile load S > 4.0

Moment load S > 6.0

3. Material

The basic body of GDL aluminum roller guides is made of aluminum alloy. The guideways consist of hardened, high alloy spring steel or of stainless steel. By using basic bodies of
aluminum, the moved masses are reduced which allows light-weight construction requiring lower moving forces and reduced energy consumption. Still the integrated GDL system sustains high load and moment ratings.

4. Operating Temperature

GDL linear guides can be operated within a temperature range from -10° C up to + 80° C. For other temperatures, please consult factory.

5. Screwed Connections

GDL linear guides are fixed to the mating structure by the mounting holes in the rails and the cassettes. ISO screw quality 8.8 should be used with DIN 433 washers.

To secure the screwed connections, we recommend that suitable locking means be utilized as necessary.

Mounting screw torque specifications:

	Quality 8.8 (Nm)
M3	1.1
M4	2.5
M5	5.0
M6	8.5
M8	21.0
M10	41.0
M12	71.0

6. Wipers

The guideways of aluminum roller guides are equipped with wipers to protect against coarse environmental contamination.

7. Slide Resistance / Adjustment

Follow the steps on how to adjust GDL cassettes to the rail.

The new GDL catalog has many changes due to an expanded product line. The change to feature descriptive part numbering was done to accommodate all current and future offerings of the GDL product. The goal is to have standard features and options available, for a perfect fit into your application.

Included in the chart below are hex sizes, drag resistance and torque ratings for adjusting the cassette.

GDL CHART						
	FDC 12	**FDC 15**	**FDC 20**	**FDC 25**	**FDC 35**	**FDC 45**
Top plate hex (mm)	2	3	4	4	5	6
Top plate torque (in lbs)	n/a	22.1	44.3	44.3	75.2	186
Adjustment hex (mm)	1	3	3	4	4	4
Drag resistance (oz) HP, HC, GF, VA	1.8-7.9	3.6-10.8	5.4-16.2	7.2-21.6	10.8-32.4	12.6-37.7
Drag resistance (oz) SP & SC	.7-1.8	1.8-3.6	3.6-7.2	5.4-10.8	7.2-14.4	9-18
Drag resistance (oz) HD	n/a	n/a	n/a	9-18	14.4 25	18-28.7

7.1 GDL Adjustment Procedure

Do not measure sliding resistance with wipers on.

1) Lay the rail out on the flat surface with the ***datum*** line facing away from you. Anchor the rail to keep it from shifting when sliding resistance is applied to the cassette.

The datum line is a reference groove on one side of the rail.

2) Set the roller cassette on the rail with the adjustment screw facing towards you, while the datum line on the rail is away from you. Do not install the wipers on the cassette yet.

Do not install the wipers yet.

3) Make sure the four bolts on the adjustable side of the cassette are slightly loose and the bolts on the fixed side are tight before adjusting the drag screw.

One side of the cassette is fixed and the other side is floating.

4) The drag hex screw is located on one side of the cassette.
Adjust the screw in for more drag and out for less. Do not try to adjust cassette with top plates bolts tight.

See the chart for drag adjustment hex screw size.

5) Adjust the drag on the cassette by sliding as it slides down the rail. Feel for an even amount of resistance as you turn the hex screw in and out.

6) Tighten down the top plate bolts to the proper torque specification. The tightening of the top plate bolts will add some resistance. If necessary, the adjustment procedure can be repeated for better sliding resistance for your application.

See the chart for top plate hex size and torque rating.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

7) If the adjustment is done without a scale, it should move evenly. Some examples of improper adjustment are: If the cassette “hops”, it is too tight. If it is too loose, the top plate of the cassette will have play. Try to be in the middle.

8) To check your settings use a pull or push style scale. Slide
the cassette down the entire rail at an even speed, measuring the drag resistance. Your highest drag rating should be referenced when looking at the chart.

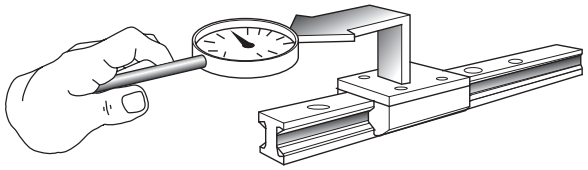
See the chart for drag resistance ratings for the size and type of cassette.

9) Install the clip on wipers. The wipers will add between 1-3 ounces of resistance. The wipers do not add any additional roller preload to the rail.

The clip on wipers can be installed at this time.

7.2 Double Sided Rail and Cassette

Aluminum roller guides are adjusted in such a way that the required stiffness under load is obtained. If self adjustment is preferred, we recommend that you measure the slide resistance as shown below. Before doing so, the mating structure should be checked for dimensional accuracy and flatness.



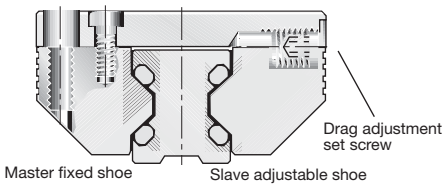
The cassettes which are mounted on the rails are adjusted clearance-free, without play. This adjusting method is required at the point on the rail where the cassette travels with the least slide resistance. Adjustment is completed in the non-loaded condition. The tolerances below refer to this condition.

Slide resistance adjusment tolerance (N)															
Series	FDC__HP, FDC__HC, FDC__AM, FDC__GF, FDC__VA						FDC__SP, FDC__SC						FDC__HD		
Size	12	15	20	25	35	45	12	15	20	25	35	45	25	35	45
Adjust. value	0.5	1.0	1.5	2.0	3.0	3.5	0.2	0.5	1.0	1.5	2.0	2.5	2.5	4.0	5.0
Max. value	2.0	3.0	4.5	6.0	9.0	10.5	0.5	1.0	2.0	3.0	4.0	5.0	5.0	7.0	8.0

All values are without wipers

Tolerances in the guide system may cause slight variations in the slide resistance, when the adjusted cassette is moved along the guide rail.

7.3 Double Sided Rail and Roller Cassette



To change the clearance setting, first the slave adjustable shoe screws on the cassette top plate are slightly loosened. Afterwards, the drag adjustment set screw is turned to increase or decrease slide resistance of the cassette. Turning the drag adjustment set screw effects a displacement of the roller shoe in relation to the cassette top plate.

After re-tightening of the cassette top plate, the slide resistance can be checked. This procedure can be repeated until the desired slide resistance is achieved.

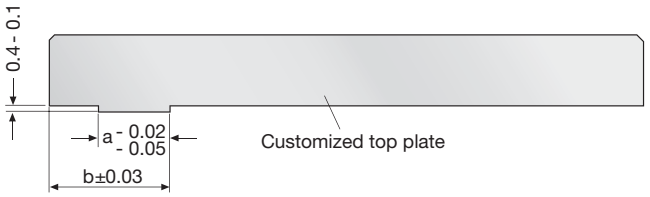
7.4 Rails and Rollershoes

When installing, it is important to distinguish between the master fixed side and the slave adjustable side rollershoe and rail. The rail on the master fixed side is aligned to the mating structure and fastened securely by all screws.

The rail on the slave adjustable side should be lightly tightened and movable with light force during initial alignment of parallel rails. Gauge blocks should be used between the parallel rails, by locating off the aligned and mounted master rail, in order to align the slave rail parallel to the master rail. Slave rail mounting bolts should be tightened as the slave rail is aligned at each bolt position. See paragraph 11.3 for further instructions on mounting parallel single sided rails.

7.5 Centering Groove on the Master Fixed Shoe and Custom Top Plate

Each pair of rollershoes are provided with centering grooves for optimum alignment to their mating top plate during mounting.
One rollershoe should be designated as the master fixed rollershoe, even though both are designed with a centering groove on their top surface. The other shoe will serve as the slave adjustable side rollershoe. The mating customized top plate should be machined with a centering shoulder



Size	a	b
12	4,5	9,6
15	5,0	12,6
20	7,5	16,1
25	10,5	17,6
35	12,5	26,1

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

according to the following data.

7.6 Adjusting Cassette Built with Rollershoes and Custom Top Plate

The centering shoulder on the top plate should be assembled with its respective fixed rollershoe centering groove and securely torqued to recommended specification. See cassette screw torque specifications under step 5, on page D10.

Assemble the adjustable rollershoe to the top plate also, parallel to the fixed rollershoe on the same side of the top plate. Its fasteners should be lightly tightened so that the adjustable rollershoe can be moved with light finger pressure.

As assembled cassette can then be slid onto parallel rails, while keeping the fixed rollershoe on the master fixed rail side. The incorporated drag adjustment set screw can then be turned clockwise to remove cassette play, or counter clockwise to reduce slide resistance while maintaining zero play.

Once the desired slide resistance is achieved with no cassette play, the adjustable rollershoe fasteners can also be torqued to specification.

8. Running accuracy

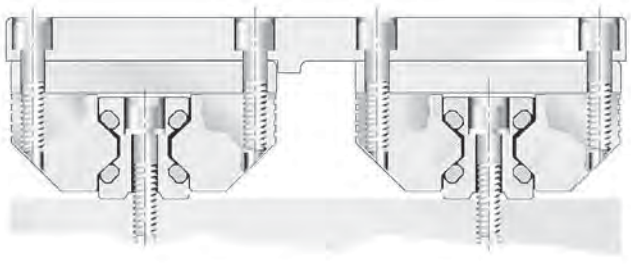
The running accuracy is measured from the top plate surface of the cassette, to the ideal straight line of travel. Running accuracy of the cassette to the rail is +/- .03mm (.0012") per meter, granted no greater than (.0024") straightness deviation per meter is maintained when mounting the rail.

9. Contact and support surfaces

The contact and support surfaces have a substantial influence on functioning and precision of linear guides. Depending on the functional requirements of the system, the mating structure has to be machined with the corresponding degree of precision.
Machining errors on the mating structure will otherwise add to the running error of the guide system. In order to assure troublefree functioning, we recommend that a max. straightness deviation of $\leq$ 0.1 mm (.0039") per running meter be maintained when mounting the rail.

10. Design hints

10.1 Parallel double sided rails and cassettes



The master fixed rail should always be established straight and true first, within the maximum straightness deviation specified in paragraph 9. With parallel rail arrangements, both rails should be mounted on the same mounting surface elevation and treated with equal surface preparation and tolerancing practices. Precise alignment in terms of spacing, parallelism and height is very important.

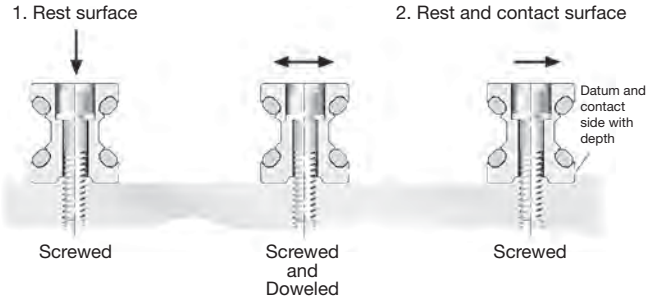
When coupled parallel to a driving actuator system, the adjustable side of the cassette should be placed on the side closest to the driving actuator. This will minimize driving actuator torque transferred to the adjustable side of the cassette.

11. Guide mounting instructions

The useable load capacity is influenced by the connection between the guide elements and the mating structure. For this reason, a flat, straight and solid secure mounting surface should be provided. Adequate support of qualified loads and moments can then be achieved, along with desired running accuracy.

11.1 Mounting Double Sided Rails and Cassette

Depending on the load situation, certain double sided rails should either be screwed or screwed and dowelled, and respectively put into grooves or against a shoulder.



The rails can be secured best against shoulders and are screwed or screwed and dowelled to the mating structure. After final adjustment of rail straightness and parallelism, the rail mounting screws are tightened starting in the middle of the rail length. Rail mounting bolts should be torqued to specification by alternating between each bolt. The installer should start with the bolt in the center of the rail length and proceed by alternating between each bolt left of center and each bolt right of center, while working towards both ends of the rail.

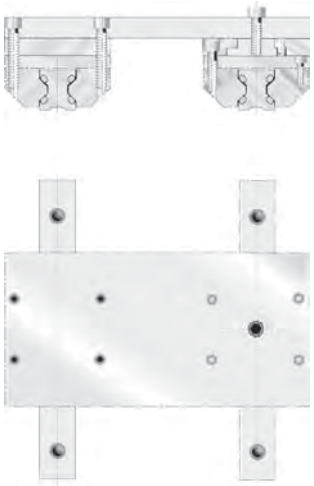
Afterwards, the cassette should be moved back and forth along the total stroke distance of the rail. If the cassette travels smoothly, the mounting process can proceed or be completed.

11.2 Mounting Parallel Double Sided Rails and Cassettes

With parallel double sided rail arrangements, we recommend that the master fixed rail side and slave adjustment rail sides of the guide system be identified. This allows optimum tolerances in parallelism to be achieved best by adjusting the slave adjustable rail, parallel to the master rail. The master fixed rail side should be mounted first to achieve the initial line of straight travel.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

The example below displays a convenient method for adjusting the slave adjustable rail parallel to the fixed master rail. Once the cassette travel is smooth, without play, one can proceed with rail mounting.



Note that the top plate spanning across the cassettes on opposite rails is completely bolted down to the cassette on the master fixed side only. The top plate end over the slave adjustable side is only bolted in one location, in the center of the slave adjustment side cassette. With one bolt holding the top plate to the slave adjustment side cassette, this cassette can pivot while the slave adjustable rail self-aligns parallel to the fixed master rail side. The floating top plate setup is stroked along the entire rail length, to establish the parallelism between the two rails.

Calibrated gauge blocks can also be used to establish equal integrity in rail parallelism. The installer should seat and temporarily clamp short pieces of precision ground round stock, tangent to the two guideways on the inside of each rail.

Rail Size	Precision Round Stock Sizes Ø mm
12	11
15	11
20	14
25	16
35	27
45	35

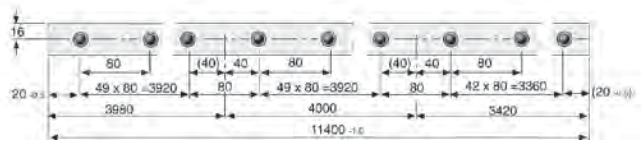
The calibrated gauge blocks can then be used, to locate off the precision round stock on the master fixed rail, in order to set the slave adjustable rail parallel. The gauge blocks are then locating the same way that the floating top plate is, by referencing both the master and slave rail guideway surfaces to establish parallelism.

Once the slave adjustable rail has been self-aligned, its bolts should also be torqued to specification in the order mentioned in paragraph 11.1. The top spanning across both cassettes on opposite rails, can then be securely fastened using all cassette mounting bolt holes.

12. Keyed Butt-jointing of Rail Sections

12.1 Rail Hole Spacing

Butt-jointed rails over L = 4000 mm are sectioned together according to the GDL standard. See “GDL’s Keyed Butt-Jointed Rail Option” on page D7. Butt-jointed rails sections are cut so that the standard rail mounting hole spacing is maintained across all butt-joints.

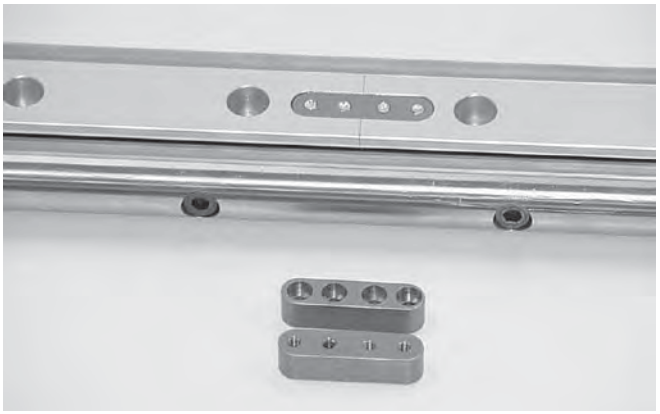


Keyed butt-jointed rails are usually shipped completely assembled, but sometimes must be shipped partially assembled, due to shipping length limitations and shipping care. Partially assembled butt-jointed rails are supplied with a butt-jointing clamping fixture and the keyways and screws for fastening rail section together.

12.2 Mounting of butt-jointed rails

Clean mounting surfaces, then place rail sections loose on the guide path, one behind the other. Lay the rails in their correct sequence of the system design (i.e.: 1, 2, 3, 4…etc.). The orientation of the depth groove on the lower surface of the rail should always be on the same side for all rail sections being butt-jointed.

Any non-assembled rail sections should be aligned with the factory supplied butt-joint clamping fixture as displayed below.



See explanation of “GDL’s Keyed Butt-Jointed Rail Option” on page D7.

Once all rail sections are assembled, the complete guide path can be aligned and fastened. Alignment and fastening should be conducted according to the applicable guide arrangement and steps previously described in this technical information section.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Ordering Instructions / Part Numbering System for GDL Rails

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
F	D	R	1	2	H	0	0	0	0	0	0	–	0	0	0	0	0

Series
FD Double Sided Rail Guide* (Standard

Rail
R Standard

Rail Size
1 2*
1 5*
2 0*
2 5*
3 5*
4 5*

Guideway Material
H High Performance Alloy Steel* (Standard)
S Stainless Steel

Coatings
0 Anodized Aluminum* (Standard)
Z Custom (Consult Factory)

Mounting Holes
0 Topside Thru Hole* (Standard)
1 Underside Blind Thread
Z Custom (Consult Factory)

"L11" Dimension
00 Equal on Both Sides* (Standard)
?? Actual Dimension (mm)**
** As measured from left side while viewing the depth groove line.

Long Rail Joining Option
0 None* (Standard)
1 Keyed Butt Joint (Size 25-45 Only)
2 Unkeyed Butt Joint

Screw Covers
0 None* (Standard)
1 Yes*
Note: Quantity supplied to cover all rail holes.

Length (mm)

–	0	0	0	0	0

Note: Maximum length is 4 meters on Size 12.

*Stocked Item

Ordering Instructions / Part Numbering System for GDL Cassettes

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
F	D	C	1	2	H	P	–	0	0	0	0	0	0	0	0

Series
FD Double Sided Rail Cassette* (Standard

Cassette
C Standard

Rail Size
1 2*
1 5*
2 0*
2 5*
3 5*
4 5*

Bearing Options
HP Axial Needle - High Performance Alloy Steel* (Standard)
SP Single Row Radial Ball - Standard Performance - Alloy Steel* (Standard)
ZZ Factory** (Consult Factory

Grease
0 High Performance* (Standard)
Z Custom (Consult Factory)

Lubrication Options
0 None* (Standard)
Z Custom (Consult Factory)**

Coatings
0 Anodized and Standard Hardware* (Standard)
1 Anodized and Stainless Steel Hardware*
Z Custom (Consult Factory)

Locking Mechanism
0 None* (Standard)
1 "L" Ratchet Handle*
2 Star Grip Handle*
* Locking mechanism only available on FD Series size 15 thru 45 with Axial Needle Bearing - High Performance - Alloy Steel.

Mounting Holes
0 Topside Threaded Thru* (Standard)
1 Underside Hole Thru (Unthreaded)
2 Underside Hole Thru (Threaded)

Wiper Options
0 With Felt Wipers* (Standard)
1 Without*
2 With Felt Wipers and Scrapers*

Cassette Length
0 Normal Length* (Standard)
Z Custom (Consult Factory)**

Adjustment
0 None* (Standard)
1 Adjusted to Specific Rail*

*Stocked Item
**Minimum Order Quantity Required

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

GDL Application Sheet

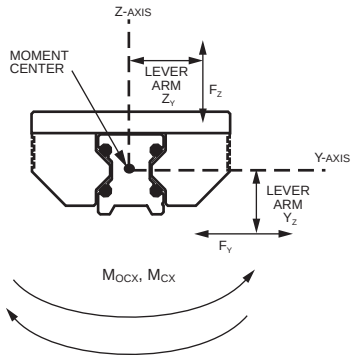
Distributor:_____ End-User:_____

Salesperson: _____

Phone: _____ Fax:_____ e-mail:_____

Other Information: _____

Roll



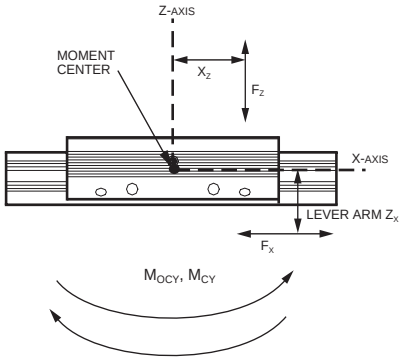
Roll load_____

X - Distance_____

Y - Distance_____

Z - Distance_____

Pitch



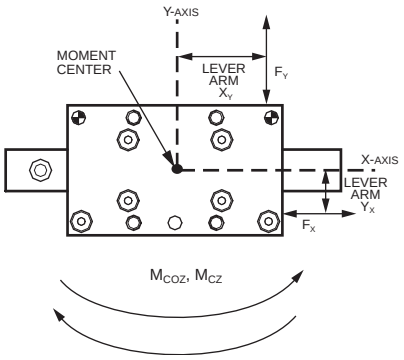
Pitch load_____

X - Distance_____

Y - Distance_____

Z - Distance_____

Yaw

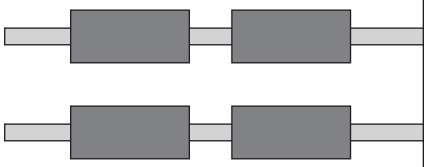


Yaw load _____

X - Distance_____

Y - Distance_____

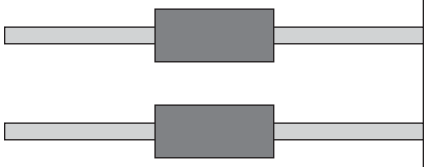
Z - Distance_____



Length of rails _____

Distance between rails _____

Distance between cassettes on each rail _____



Technical Data:

Stroke_____

Horizontal _____

Vertical _____

Velocity / Speed _____

Acceleration _____

Load / Mass _____

Load Distances_____

Lifetime Desired _____

Environment:
(Dirt, Humidity...)

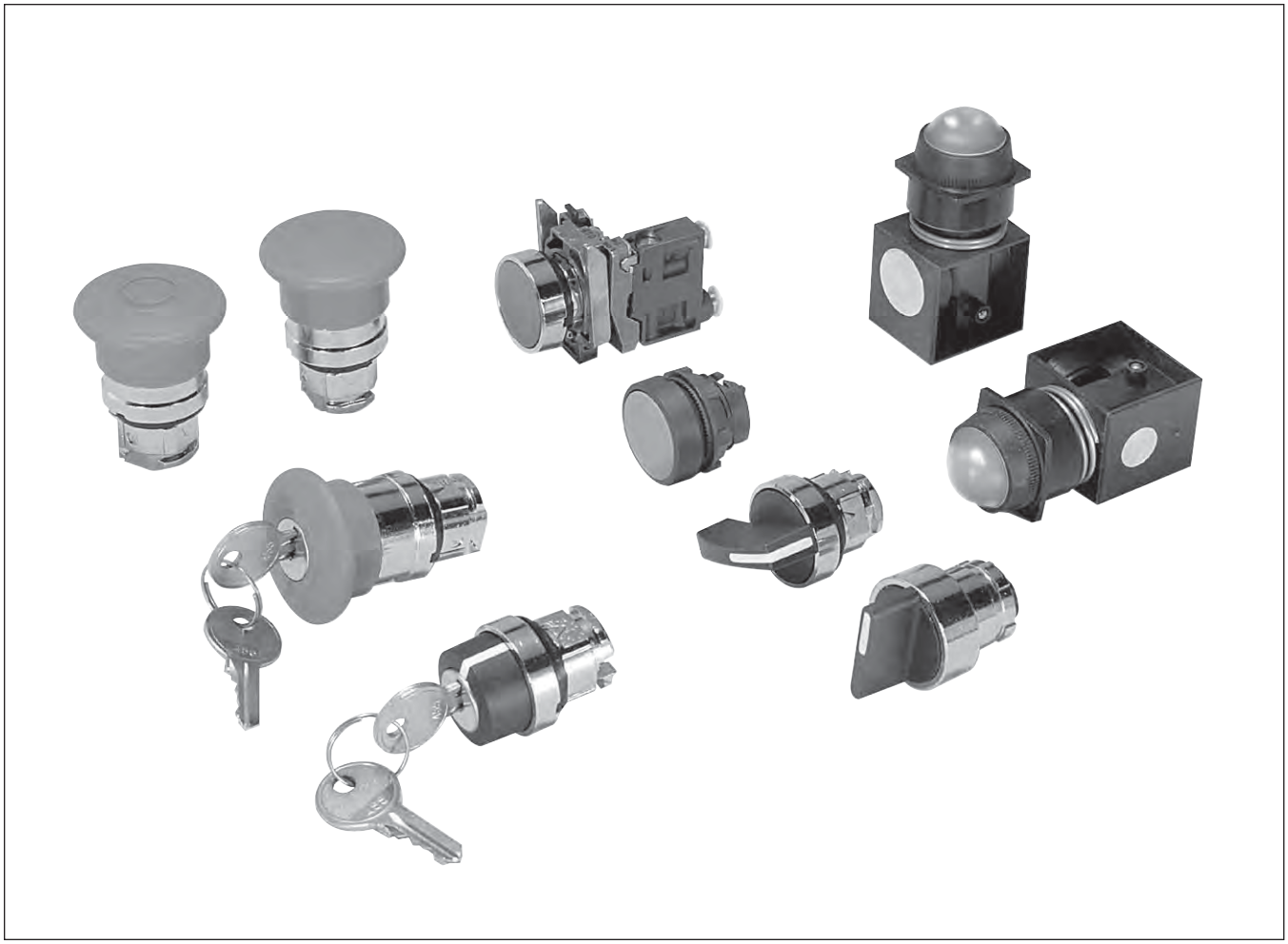
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Notes

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

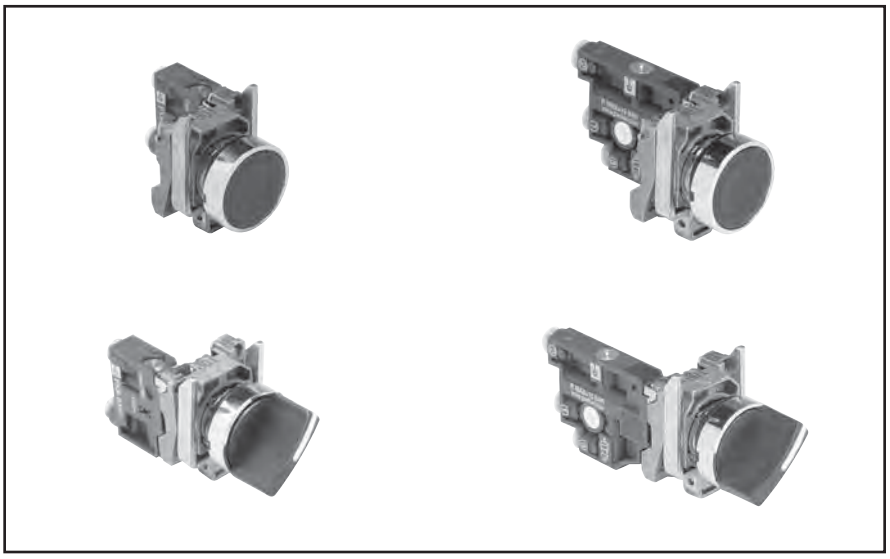
Control Panel Products

Human / Machine Dialog



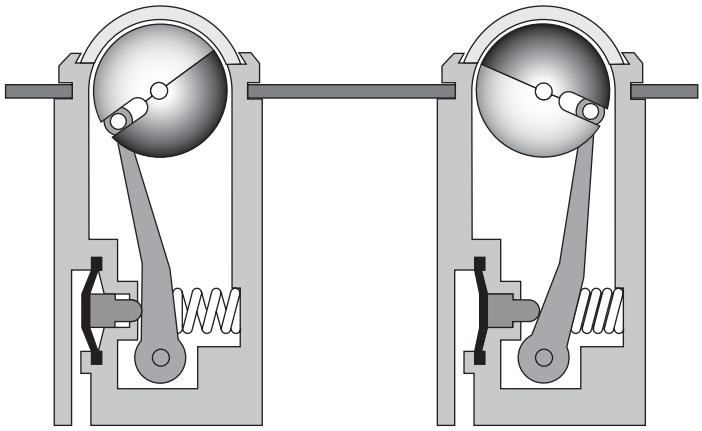
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

HUMAN-MACHINE DIALOG requires devices such as push buttons and selector switches to provide command inputs. A wide variety of these devices is available to meet most application needs. Both pneumatic and electrical switch bodies are available to match system technology. All of these devices use the 22 mm (7/8") mounting standard.



PNEUMATIC VISUAL INDICATORS

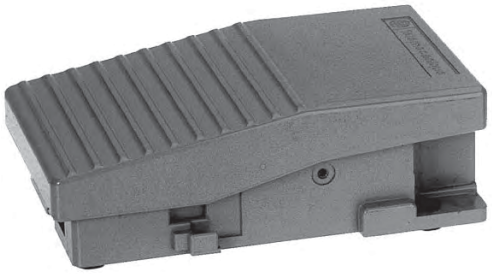
An indicator ball is rotated by a pneumatic input, changing the visible color. The ball sits behind a clear plastic window, providing a wide field of view. The visual indicators are available in five brightly colored Day-Glow paints for increased visibility. Like push buttons and selector switches, visual indicators use the 22mm (7/8") mounting standard.



Unactuated State **Actuated State**

FOOT PEDAL SWITCHES

When the application requires the use of foot pedals, these devices can be used to initiate a cycle or a step within a cycle. A metal foot pedal is available with protective guard.



Metal Model

Plastic Model

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

MODULAR PNEUMATIC / ELECTRIC PUSH BUTTONS

As with electrical contact switches, pneumatic valve modules can be mounted on a number of different operating heads.

- Pneumatic normally non passing (NNP) is equivalent to electrical normally open (N.O.).
- Pneumatic normally passing (NP) is equivalent to electrical normally closed (N.C.).

Note: Electrical switches can be stacked, but the rear connection on pneumatic switches prevents stacking. Therefore, when mixing electrical and pneumatic switch bodies on the same operator, the pneumatic switch must be mounted last.

PXBB3911

PXBB4932

PXBB4931

Push Buttons

Spring Return or Latching
Mushroom Headed Push Buttons

Standard
Push Button

Visual indicators

Selector Switches

2 or 3 Positions,
Fixed or
ReturnTo Center

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

With 3/2 Valve Bodies 5/32" Instant Straight Connections

Flush Push Buttons

PXBB3111BA2

PXBB4131BA2

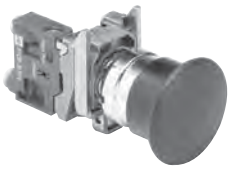
Part Number	Color	Function	Type of Switching*
PXBB3111BA2	Black	Spring Return	NNP
PXBB3111BA3	Green		
PXBB3111BA4	Red		
PXBB3251BA2	Black	Spring Return	NNP+NP
PXBB4131BA2	Black	Spring Return	Single Universal 3-Way
PXBB4131BA3	Green		
PXBB4131BA4	Red		
PXBB4231BA2	Black	Spring Return	Dual Universal 3-Way

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

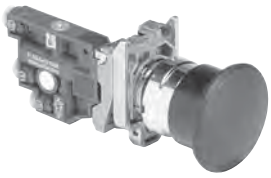
Note: Mount up to three valves on mounting ring.

Mushroom Head Push Buttons

(40mm Diameter)



PXBB3111BC2



PXBB4131BC2

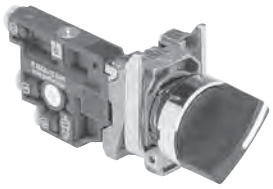
Part Number	Color	Function	Type of Switching*
PXBB3111BC2	Black	Spring Return	NNP
PXBB3111BT4	Red	Push-Pul	
PXBB3121BT4	Red	Push-Pull	NP
PXBB4131BC2	Black	Spring Return	Single Universal 3-Way
PXBB4131BT4	Red	Push-Pull	

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Selector Switches

PXBB3111BD2



PXBB4131BD2

Part Number	Color	Function	Type of Switching*
PXBB3111BD2	Black	2 Maintained	NNP
PXBB3211BD2	Black	Positions with	NNP+NNP
PXBB3251BD2	Black	Std. Handle	NNP+NP
PXBB3211BD3	Black	3 Maintained Positions with Std. Handle	NNP+NNP
PXBB3251BD3	Black		NNP+NP
PXBB3211BJ5	Black	3 Positions, Spring Return to Center with Long Handle	NNP+NNP
PXBB4131BD2	Black	2 Maintained Positions with Std. Handle	Single Universal 3-Way
PXBB4231BD2	Black	2 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BD3	Black	3 Maintained Positions with Std. Handle	Dual Universal 3-Way
PXBB4231BJ5	Black	3 Maintained Positions with Long Handle	Dual Universal 3-Way

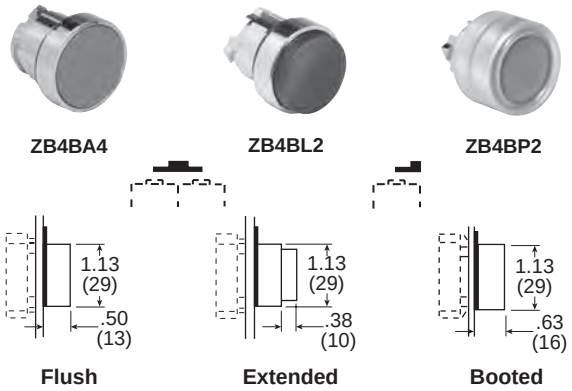
* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

BOLD ITEMS ARE MOST POPULAR.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

For Use With PXBB Valve Bodies and ZBE Electrical Switch Bodies

Push Buttons



Plastic Head ZB5**	Metal Head ZB4*			
Part Number	**Part Number**	**Color**	**Function**	**Description**
ZB5AA2	**ZB4BA2**	Black	Spring Return	Flush
ZB5AA3	**ZB4BA3**	Green		
ZB5AA4	**ZB4BA4**	Red		
—	ZB4BA5	Yellow		
—	ZB4BA6	Blue		
ZB5AL2	**ZB4BL2**	Black	Spring Return	Extended
ZB5AL3	**ZB4BL3**	Green		
ZB5AL4	**ZB4BL4**	Red		
—	ZB4BL5	Yellow		
—	ZB4BP2	Black	Spring Return	Booted
—	ZB4BP3	Green		
—	ZB4BP4	Red		

* ZB4*** Model Numbers are Metal Head Operators

** ZB5*** Model Numbers are Plasticl Head Operators

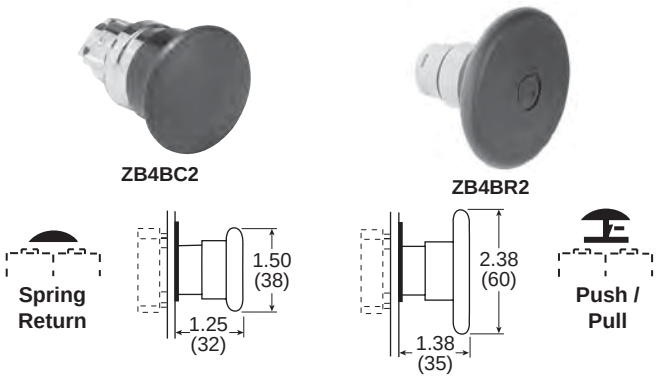
Push / Push Buttons

ZB4BH02

Part Number*	Color	Function	Description
ZB4BH02	Black	Detent 2-Position	Flush
ZB4BH03	Green		
ZB4BH04	Red		

* ZB4**** Model Numbers are Metal Head Operators

Mushroom Head Push Buttons



Part Number*	Color	Function	Description
ZB4BC2	Black	Spring Return	Ø 40mm Head
ZB4BC3	Green		
ZB4BC4	Red		
ZB4BT2	Black	Latching Push-Pull	
ZB4BT3	Green		
ZB4BT84	Red		
ZB4BR2	Black	Spring Return	Ø 60mm Head
ZB4BR3	Green		
ZB4BR4	Red		

* ZB4*** Model Numbers are Metal Head Operators

Mounting Accessories

ZB5AZ905

Part Number	Color	Description
ZB5AZ905	—	Plastic Head (ZB5) Mounting Nut Tightening Tool
ZBZ1602	Black Plastic	Guard for 40mm

BOLD ITEMS ARE MOST POPULAR.

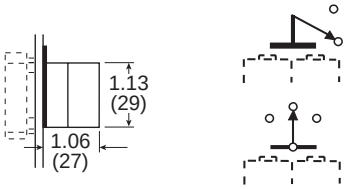
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

For Use With PXBB Variable Composition Switch Bodies

Selector Switches

ZB4BD3

ZB4BJ3

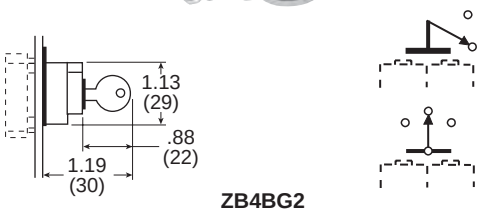


Standard Selector — Knob Lever

Standard Black Handle		
Part Number*	**Description**	**Function**
ZB4BD2	Maintained	2-Positions
ZB4BD4	Spring Return from Right to Left	
ZB4BD3	Maintained	3-Positions
ZB4BD5	Spring Return to Center from Left and Right	
ZB4BD7	Maintained Right Spring Return from Left to Center	3-Positions
ZB4BD8	Maintained Left Spring Return from Right to Center	3-Positions
Long Black Handle		
ZB4BJ2	Maintained	2-Positions
ZB4BJ4	Spring Return from Right to Left	
ZB4BJ3	Maintained	3-Positions
ZB4BJ5	Spring Return to Center from Left and Right	

* ZB4*** Model Numbers are Metal Head Operators

Key Operated Selectors



ZB4BG2

Key Operated		
Part Number*	**Key Withdrawal**	**Function**
ZB4BG2	Left	2 Maintained Positions
ZB4BG4	Left and Right	
ZB4BG3	Center	3 Maintained Positions
ZB4BG5	Left and Right	
ZB4BG7	Center	3-Positions 2 Spring Return to Center

* ZB4*** Model Numbers are Metal Head Operators

Mushroom Head Push Buttons with Key Select

ZB4BS24

Part Number*	Color	Function	Description
ZB4BS54	Red	Latching Turn to Release	Ø 40mm Head
ZB4BS14	Red	Key Latching	
ZB4BS64	Red	Latching Turn to Release	Ø 60mm Head
ZB4BS24	Red	Key Latching	

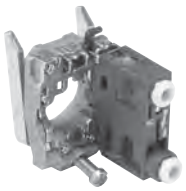
* ZB4**** Model Numbers are Metal Head Operators

BOLD ITEMS ARE MOST POPULAR.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

For Use With 22mm (7/8") Metal Operating Heads 5/32" Instant Connections

3/2 Valve Bodies with Mounting Ring



PXBB3111B

PXBB4131B

Part Number	Connections	Function	Type of Switching*
PXBB3111B	5/32" Instant	3/2	NNP
PXBB3121B	5/32" Instant	3/2	NP
PXBB4131B	5/32" Instant	3/2	Universal 3-Way

Note: • Mount up to 3 valves on mounting ring for push buttons.
• Mount up to 2 valves on mounting ring for selector switches, Valves **cannot** be mounted in center position.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry ..... 40 µm Filtration

Flow –
PXBB3• ..... Cv=.08
PXBB4• ..... Cv=.18

Materials –
Body ..... Polyamide
Operating Head ..... Zinc Alloy & Plastic

Operating Positions ..... All Positions

Operating Pressure –
PXBB3• ..... 15 to 115 PSIG (1 to 9 bar)
PXBB4• ..... 15 to 145 PSIG (1 to 10 bar)

Ports –
Standard .....5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube

Operating Temperature .....5°F to 140°F (-15°C to + 60°C)

Additional Valve Bodies

PXBB3911

PXBB4932

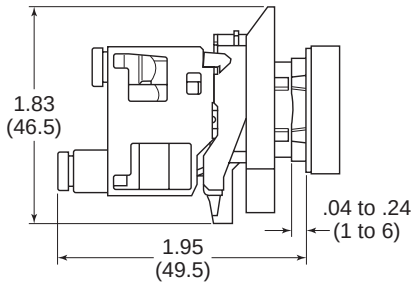
PXBB4931

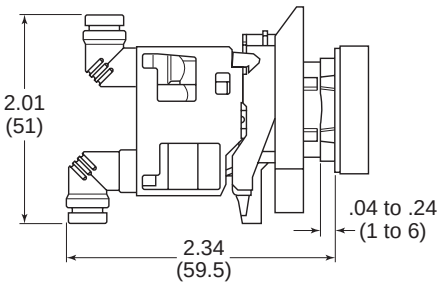
Part Number	Connections	Function	Type of Switching*
PXBB3911	5/32" Instant Straight	3/2	NNP
PXBB3912	5/32" Instant Swivel		
PXBB3921	5/32" Instant Straigh	3/2	NP
PXBB3922	5/32" Instant Swivel		
PXBB4931	5/32" Instant Straight	3/2	Universal 3-Way
PXBB4932	5/32" Instant Swivel		

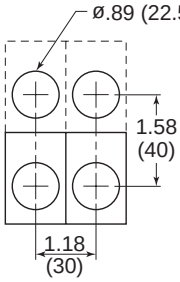
BOLD ITEMS ARE MOST POPULAR.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

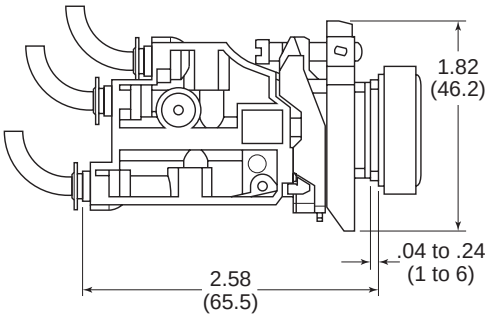
PXB-B3 Dimensions





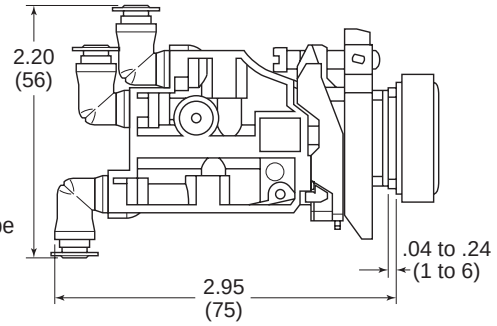


PXB-B4 Dimensions



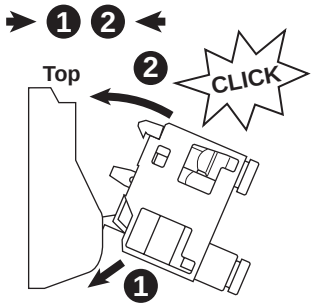
Tube Bending Radius For PXBB3 and PXBB4

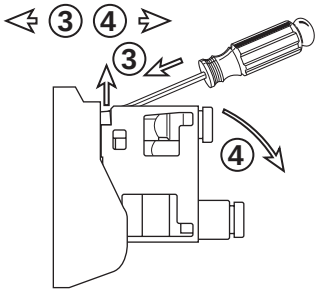
- 4 mm O.D. x 2 mm I.D. Tube = Minimum 0.39 (10) Radius
- 4 mm O.D. x 2.7 mm I.D. Tube = Minimum 0.59 (15) Radius



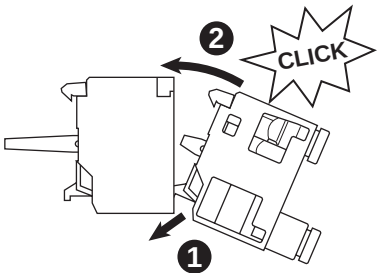
Assembly

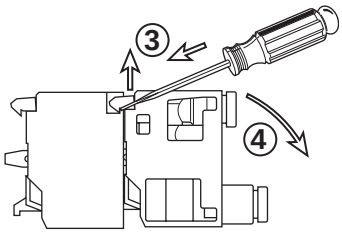
Assembling PXB Valves On Mounting Block





Assembling PXB Valves On the Back of the Electrical Contact





Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

For Push Buttons and Visual Indicators

Legend Plates for PXBB Devices (22mm)

ZBY••••

Part Number	Description		
Without Text For Customer Engraving			
ZBY2101	Black / Red Background (White Letters)		
ZBY4101	Yellow / White Background (Black Letters)		
With Text For Push Buttons			
ZBY2303	Start		
ZBY2304	Stop		
ZBY2305	Forward		
ZBY2306	Reverse		
ZBY2307	Up		
ZBY2308	Down		
ZBY2309	Right		
ZBY2310	Left		
ZBY2311	On		
ZBY2312	Off		
ZBY2313	Open		
ZBY2314	Close		
ZBY2321	Inch		
ZBY2323	Reset		
ZBY2326	Power On		
ZBY2327	Slow		
ZBY2328	Fast		
ZBY2330	Emergency Stop		
ZBY2334	Run		
With Text For 2-Position Selectors			
ZBY2367	Off		On
With Text For 3-Position Selectors			
ZBY2387	Hand	Off	Auto

Blank Legend Plates for Inscription

For PXBB Devices *(2 lines of 11 characters maximum)*
Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Part Number	Description
ZBY2002	Black Background / White Letters

For 22mm Visual Indicators Only

2 lines of 11 characters maximum
Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Part Number	Description
ZB2BY2002	Black Background / White Letters

Accessories

ZBE101

Electrical Switch Bodies
When combined with pneumatic valves ,these contact blocks allow different forms of power to be provided from a single push button. Can be mounted with both types of valves PXBB3 / PXBB4.

Electrical Specification: 240V, 10Amp

Part Number	Type of Contact
ZBE101	Normally Open (NO)
ZBE102	Normally Closed (NC)

Note: Plastic Mounting Ring ZB5AZ009 to be used with ZB5 Plastic Operating Heads.

Metal Mounting Ring ZB4BZ009 to be used with ZB4 Metal Operating Heads.

Metal: ZB4BZ009

Plastic: ZB5AZ009

Mounting Ring for Valve Bodies, Switch Bodies and Operating Heads
To make up a complete push button with one to three switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

To make up a complete selector switch with one or two switching elements with 5/32" instant connections, use this mounting block and select the operating heads and bodies in this Section.

Part Number	Description
ZB4BZ009	Metal Mounting Ring
ZB5AZ009	Plastic Mounting Ring

Note: To release push button from mounting ring, pull lever on top of mounting ring up and remove push button operator. To assemble push button operator to mounting ring, align arrows and snap into place.

BOLD ITEMS ARE MOST POPULAR.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Functionality Explanation

Fluid Power			Universal Description	Electrical	
Function	Symbol			Function	Symbol
Normally Closed (N.C.)	2-Way	3-Way	Normally Non-Passing (NNP)	Normally Open (N.O.)	
Normally Open (N.O.)	2-Way	3-Way	Normally Passing (NP)	Normally Closed (N.C.)	

Type of Switching: Universal 3-Way: Valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

NP 3 2 NNP 1 2

NNP: Normally Non-Passing.

NP: Normally Passing.

NNP + NNP: Double Switch Body, Both Normally Non-Passing.

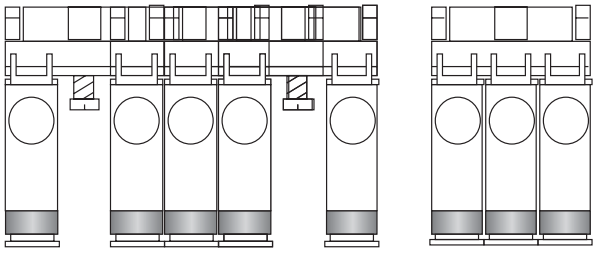
NNP + NP: Normally Non passing and Normally-Passing.

NP + NP: Both Normally Passing.

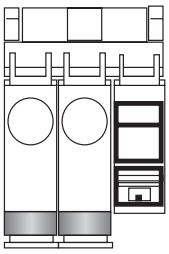
Combination of Output Devices On a Single Mounting Block

Up to 3 output devices (valves or electrical contacts) can be mounted side by side on 1 mounting block.

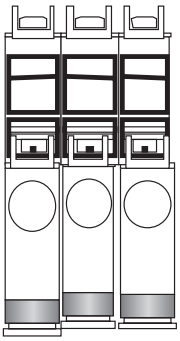
Note: The central position can only be activated by push button heads.



Electrical Contacts and Valves can be Combined Either Side by Side, or by Mounting the Valve on the Back of the Electrical Contact.

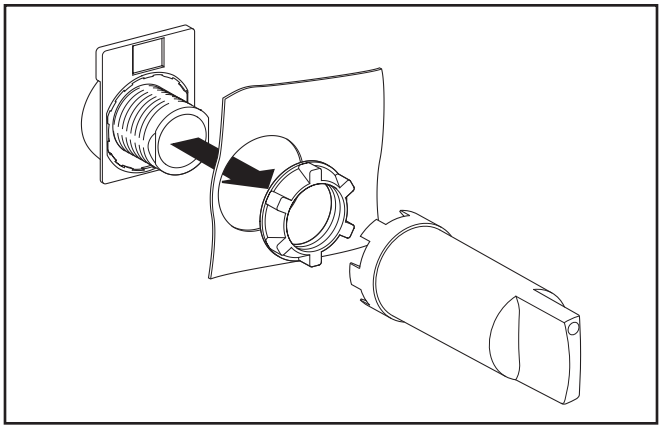


Side by Side Combination

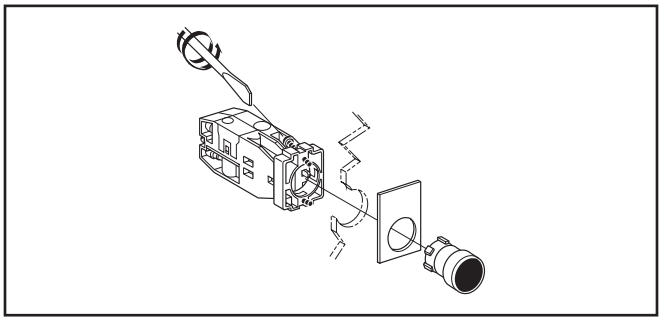


Combination by Mounting Valves On the Back of the Electrical Contact

Assembling Output Devices and Heads On ZB5 Series Mounting Block



Replacement Old Style Mounting

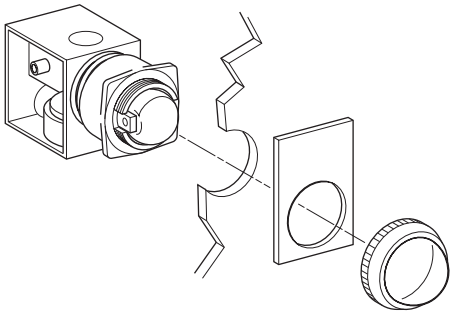


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

With 5/32" Instant Connections

22mm Visual Indicators

PXVF131



Mounting

Black Plastic Bezel		
Part Number "ON" Indicator	**Part Number "OFF" Indicator**	**Color**
PXVF131	**PXVF1213**	Green
PXVF141	**PXVF1214**	Red
PXVF151	**PXVF1215**	Yellow
PXVF161	**PXVF1216**	Blue
PXVF111	**PXVF1211**	White

Notes:

- The Pneumatic Indicators are black in one position and colored in the other. The colored position corresponds either to the presence of a pressure ("ON" Indicator) or the absence of pressure ("OFF" Indicator).
- For Legend Plates, see page G9.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations
Mushroom Head ..... 300,000 Operations

Operating Positions..... All Positions

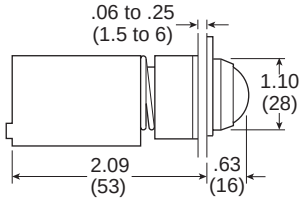
Operating Pressure ..... 15 to 115 PSIG (1 to 8 bar)

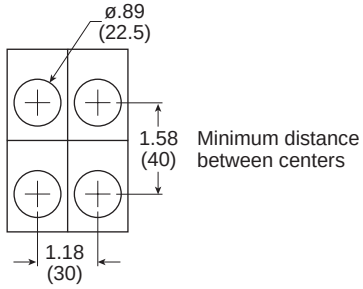
Ports –
Standard .....5/32" Instant for Semi- Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Temperature –
Operating .....32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to +60°C)

Dimensions

PXVF1• •





Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Standard Duty 1/6" I.D. Valves with 5/32" Instant Connections

Protective Guard

PXPEM510

Part Number	Function	Material	Type of Switching*
PXPEM510	High resistance protective guard, with interlock mechanism to prevent accidental operation by a falling object.	Metal	NNP

Foot Switches Without Protective Guard

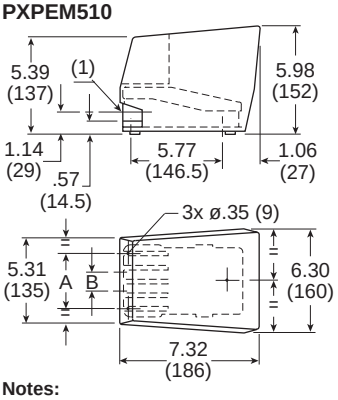
PXPEA110

Part Number	Function	Material	Type of Switching*
PXPEA110	Spring Return	Plastic	NNP
PXPEM110	Spring Return	Metal	NNP

⚠ **CAUTION:**
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Dimensions

PXPEM510



(1) 2 mounting ports for adaptors for conduit fittings

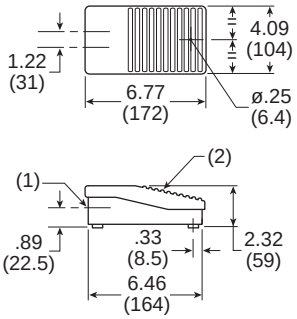
(2) 7° operating angle

	inch	mm
a	3.53	940
b	1.22	31

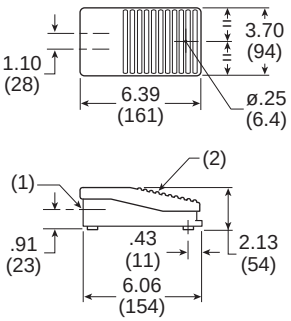
Notes:
These Foot Pedal Operators come assembled with switch PXBB1921 (Normally Passing). With the pedal in the unoperated position, the switch is in the actuated non-passing position. With the pedal actuated, the switch is in the unactuated Normally Passing position.
Units will accept all switch bodies shown earlier in this Section, but care must be taken in selecting switch type.

Dimensions

PXPEM110



PXPEA110



(1) .825" diameter thru hole

(2) 6° operating angle

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 1.8 (50)

Materials –
Body.....Polyamide
Operating Head.....Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)..... 1/16" (1.5)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz..... 1 million Operations

Operating Positions.....All Positions

Operating Pressure .....15 to 115 PSIG (1 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage .....-22°F to 140°F (-30°C to + 60°C)

* NNP: Normally Non-Passing.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

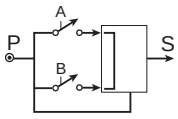
Features

- The pre-assembled two-hand control enclosure occupies both hands of an operator by requiring nearly simultaneous operation of two pushbuttons
- Poppet – snap-acting (no spools)
- Same air as in cylinders – Filtration: 40 micron
- No lubrication required

PXPC111

Part Number	Connections
PXPC111	5/32" Instant

Operation



- Output “S” will appear only if “A” and “B” are simultaneously operated (within .5 seconds or less of each other).
- If the operator actuates only one pushbutton, either “A” or “B”, or if both “A” and “B” are actuated but at an interval greater than .5 seconds, output “S” will not appear.
- Output “S” is regenerated by supply “P”. Output “S” will therefore disappear if supply “P” is cut off.
- Output “S” will disappear if either “A” or “B” is released.
- If output “S” disappears for any reason, “A” and “B” must be nearly simultaneously actuated to again provide output “S”.
- Since output “S” is regenerated it appears sharply, at full force (snap-acting), and is quickly exhausted upon deactivation. In addition the module is not affected by the length or diameter of tubing used for output “S”.

General Characteristics

Operating Pressure .....40 to 120 PSI (3 to 8 bar)

Permissible Fluids –
Air or neutral gas 40 micron filtration, lubricated or dry

Flow at 90 PSI (6 bar) ..... 7 SCFM (200 l/mn ANR)

Operating Temperature .....-5°F to 140°F (-15°C to 60°C)
Below 40°F (5°C), an air dryer is required

Storage Temperature.....-40°F to 160°F (-40°C to 70°C)

Number of operations with dry air at 90 PSI (6 bar), 68°F (20°C), frequency 1 Hz..... 1 Million Operations

Vibration resistance –
Conforms to section 19-2 of bureau Véritas regulations (November 1987)

Materials –
Body.....Glass Filled Nylon
Operating Head ..... Zinc Alloy and Plastic

Connections:..... 5/32" instant

Mounting

Approvals:

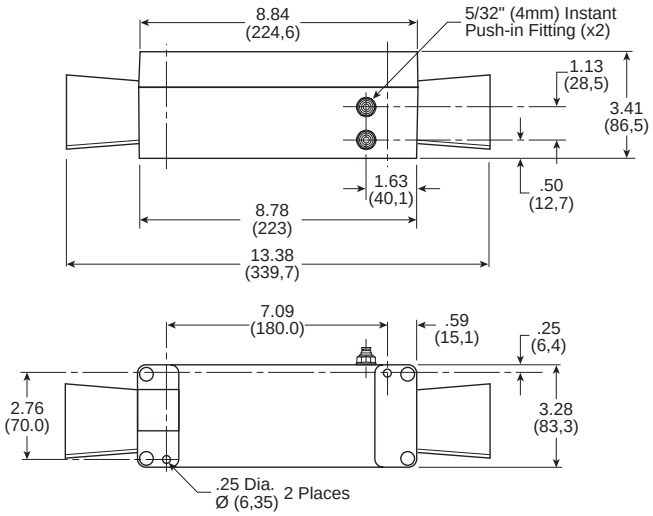
- In accordance with European Standard EN 574 - September 1996
- Conforms to the model that has obtained CE Type Test Certificate No. 02526 520 4631 0397

⚠ WARNING

These devices should NOT be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

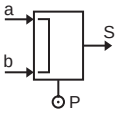
Dimensions

Inches (mm)



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

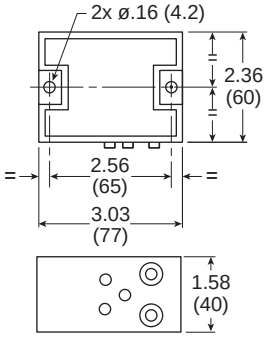
Two-Hand Control Module



PXPA11

Part Number	Connections
PXPA11	5/32" Instant

Dimensions



PXPA11

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow at 90 PSI (6 bar) in SCFM (l/mn ANR) 7 (200)

Materials –
Body..... Polyamide
Operating Head..... Zinc Alloy & Plastic

Nominal Bore Ø in Inches (mm)..... 7/64" (2.5)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) - Frequency 1 Hz.....1 million Operations

Operating Positions..... All Positions

Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating .....32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)

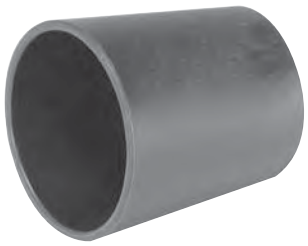
Vibration resistance:
Conforms to section 19-2 of bureau Véritas regulations (November 1987)

⚠ WARNING

These devices should NOT be used in any application involving rotary clutch presses. Two hand control modules do not of themselves insure the safety of any machine. Users and original equipment manufacturers are responsible for making sure that installations meet all relevant safety regulations.

Notes: These two-hand control modules provide an output signal upon nearly concurrent operation of two pushbuttons.

Two-Hand Control Module Guard



PPRL15

Part Number	Base Component
PPRL15	PXPC111

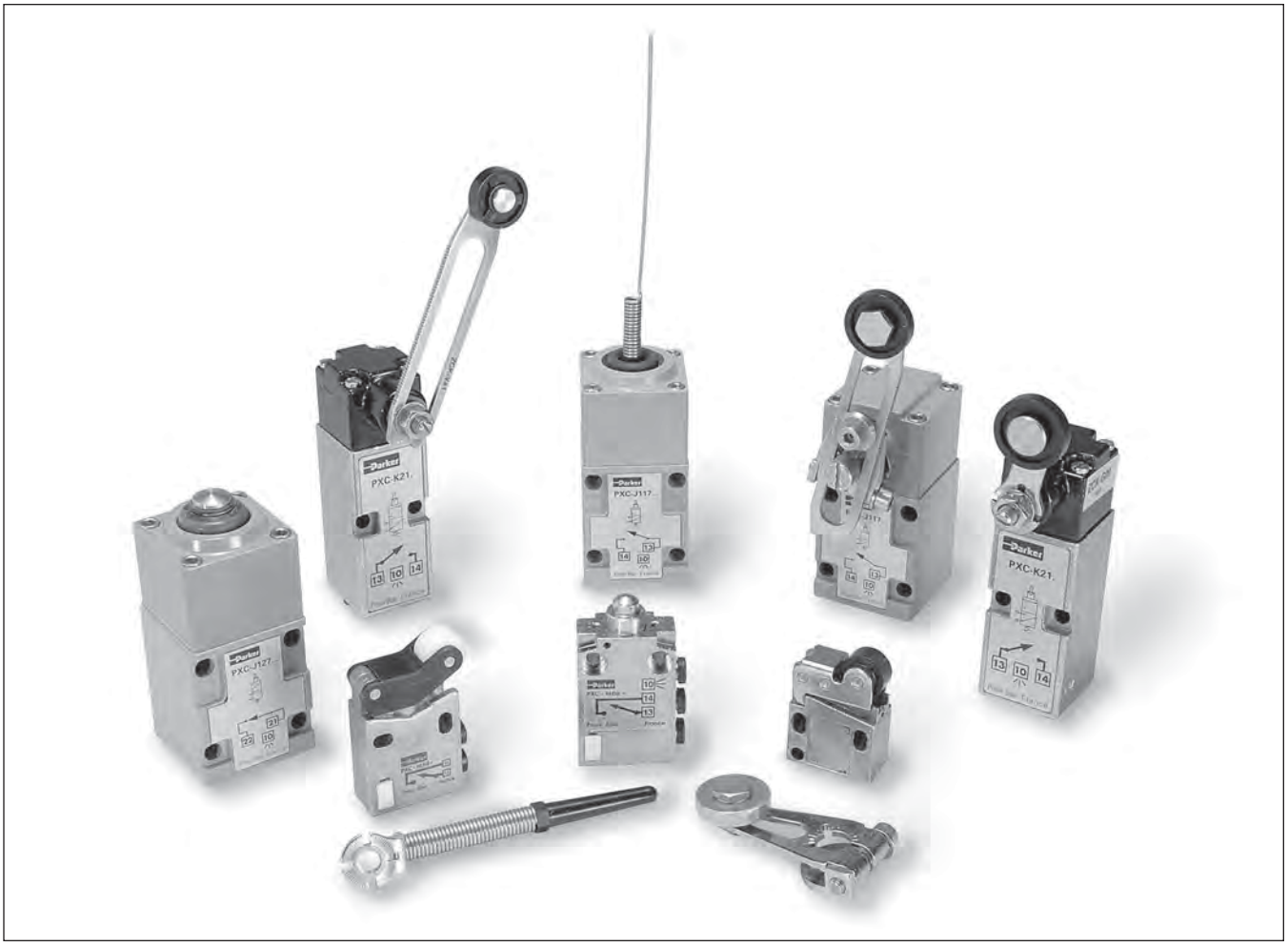
Two Hand Repair Parts

Part Number	Quantity Required	Description
PXPA11	1	Control Module
PXBB3111B	2	Valve Body & Mounting Ring
ZB4BR*	2	Push Button
PPRL15	2	Control Module Guard

* 2 = Black, 3 = Green, 4 = Red

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Sensing
Pneumatic Control Components

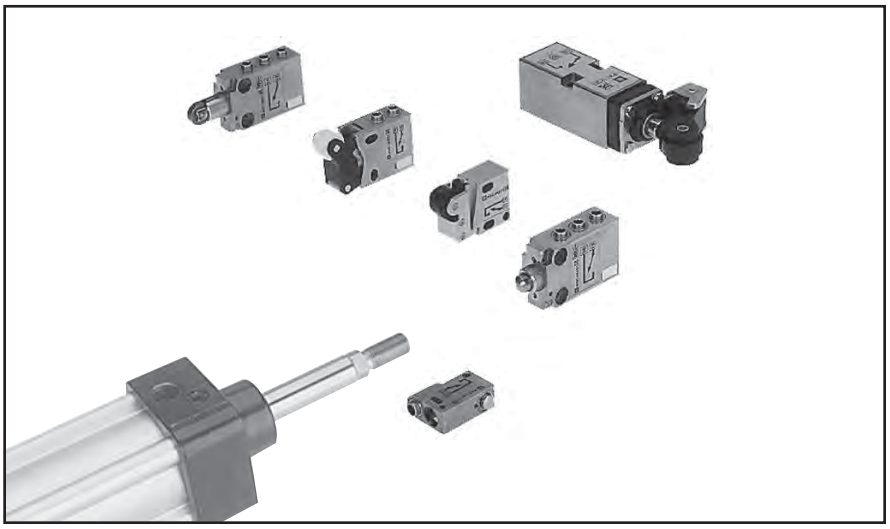


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

To achieve the sensing or feedback function, pneumatic sensors can be:

- Limit Switches in a Variety of Sizes and Configurations
- Pressure Switches with Many Adjustable Ranges
- Components Designed Specifically for Pneumatic Technology using Pressure Variation, Air Bleed or Blocking for Detection.

A wide variety of pneumatic sensors are available to suit any application requirement.

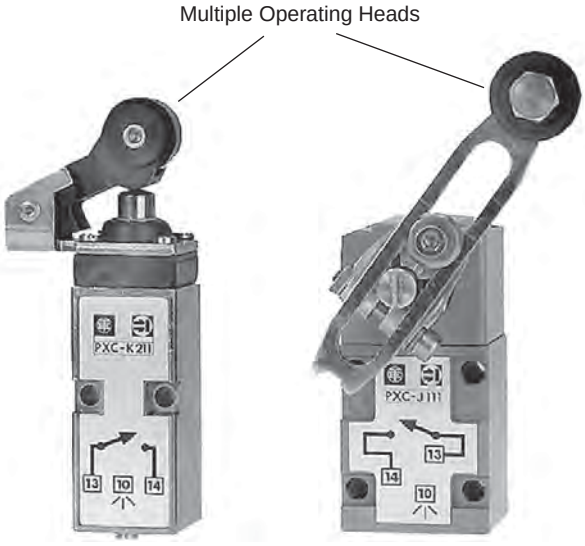


PNEUMATIC LIMIT SWITCHES

Pneumatic limit switches are non-passing (NNP) or passing (NP) when actuated by a moving part. The various operating levers, bore dimensions and functions are given below.

1/16" Bore | 1/16" Bore | 7/64" Bore

Normally Non-Passing (NNP) Models



1/8" Bore Connectable Exhaust | 1/8" Bore Connectable Exhaust

or

NNP or NP, as Required

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Direct Acting Limit Switches

1/16" I.D. Internal Orifice

PXCM111

PXCM121

Part Number	Connection	Actuator	Type of Switching*
PXCM111	5/32" Instant	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM115	10-32 UNF		
PXCM121	5/32" Instant	Plastic Roller	NNP
PXCM125	10-32 UNF		

7/64" I.D. Internal Orifice

PXCM521

Part Number	Connection	Actuator	Type of Switching*
PXCM521	5/32" Instant	Plastic Roller	NNP

Actuators For Steel Plunger

PXCZ11

Use with PXCM11*

Part Number	Actuator
PXCZ11	Plastic Roller Lever
PXCZ12	Plastic Roller Lever, One Way Trip

*NNP: Normally Non-Passing.

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) –
PXCM111 .....2.2 (60)
PXCM121 .....3.0 (85)
PXCM521 ..... 8.8 (250)

Materials –
Body.....Zinc Alloy
Poppets.....Polyurethane
Seals..... Nitrile (Buna N)

Maximum Operating Frequency.....5 Hz

Nominal Bore Ø –
PXCM111, PXCM121 ..... 1/16" (1.5 mm)
PXCM521 ..... 7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz.....10 Million

Operating Positions.....All Positions

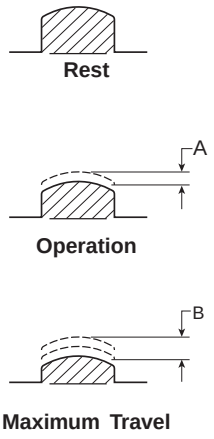
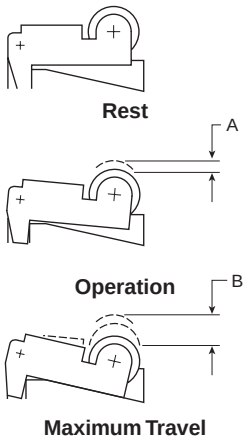
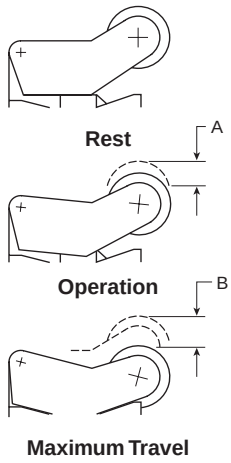
Operating Pressure.....40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube
10-32 UNF Available

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage .....-22°F to 140°F (-30°C to + 60°C)

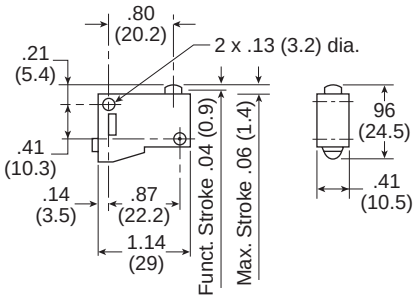
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Operator Specifications

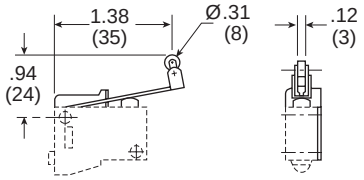
	PXCM111	PXCM121	PXCM521
Differential Travel at 90 PSI (6 bar)	.006" (0.15 mm)	.012" (0.3 mm)	.020" (0.5 mm)
Maximum Travel (B) at 90 PSIG (6 bar)	.055" (1.4 mm)	.126" (3.2 mm)	.228" (5.8 mm)
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.035" (0.9 mm)	.079" (2 mm)	.087" (2.2 mm)
Minimum Operating Force at 90 PSI (6 bar)	2.5 lb (11 N)	1.0 lb (4.5 N)	1.6 lb (7 N)
Operating Diagram			

Dimensions

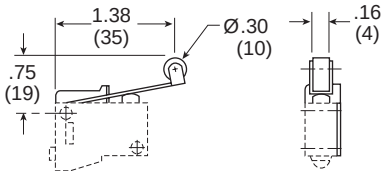
PXCM111



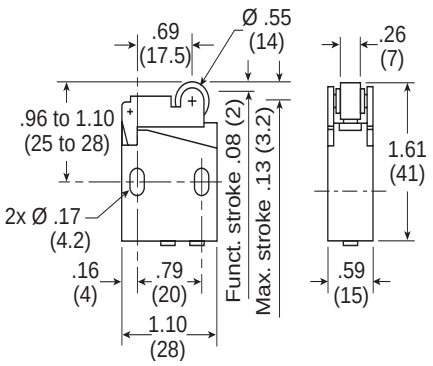
PXCZ12



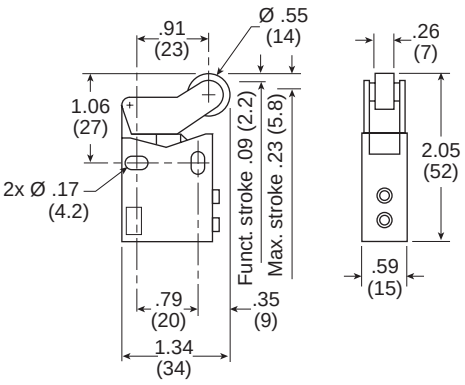
PXCZ11



PXCM121, PXCM131



PXCM521



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Pilot Operated Compact Limit Switches

5/32" Instant Connections
Pipeable Exhaust Port
7/64" I.D. Internal Orifice

PXCM601A110

PXCM601A102

PXCM601A103

Part Number	Actuator	Type of Switching*
PXCM601A110	Steel Plunger Operating Levers Available (See Below)	NNP
PXCM601A102	Steel Roller Plunger	
PXCM601A103	90° Steel Roller Plunger	

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min) 8.8 (250)

Materials –
Body ..... Zinc Alloy
Poppets ..... Polyurethane
Seals ..... Nitrile (Buna N)

Maximal Operating Frequency ..... 5 Hz

Nominal Bore Ø ..... 7/64" (2.5 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz ..... 10 Million

Operating Positions ..... All Positions

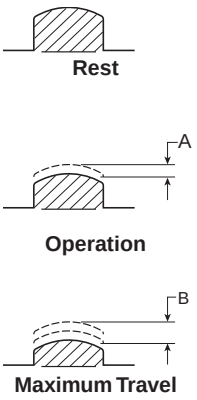
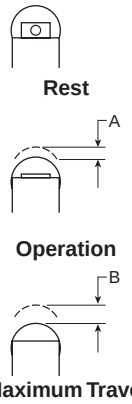
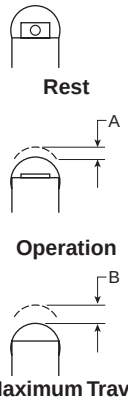
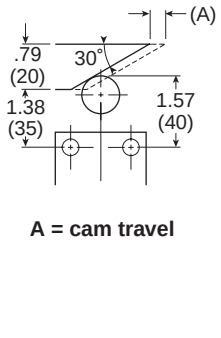
Operating Pressure ..... 40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating ..... 32°F to 122°F (0°C to + 50°C)
Storage ..... -22°F to 140°F (-30°C to + 60°C)

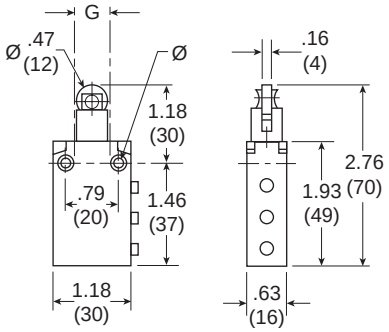
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Operator Specifications

	PXCM601A110	PXCM601A102	PXCM601A103	PXCM601A110 + XCMZ24
Differential Travel at 90 PSI (6 bar)	.012" (0.3 mm)	.008" (0.2 mm)	.020" (0.5 mm)	.047" (1.2 mm) (A)
Maximum Travel (B) at 90 PSIG (6 bar)	.197" (5 mm)	.197" (5 mm)	.197" (5 mm)	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.066" (1.7 mm)	.066" (1.7 mm)	.066" (1.7 mm)	.370" (9.4 mm) (A)
Minimum Operating Force at 90 PSI (6 bar)	5.4 lbf (24 N)	5.2 lbf (23 N)	5.2 lbf (23)	4.3 lbf (19)
Operating Diagram				

Dimensions

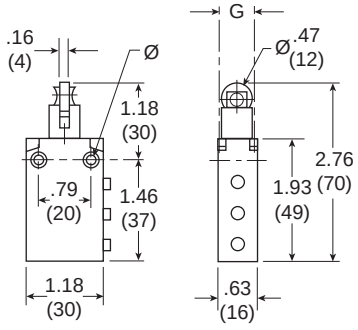
PXCM601A102



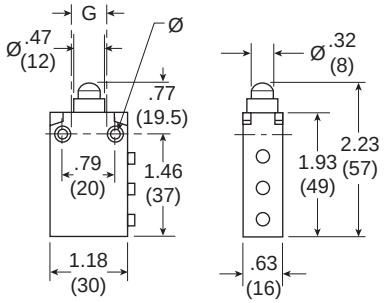
Ø:
2 mounting holes Ø .17" (4.3)
2 countersunk Ø .32" (8.2)
depth 4 mm

G:
top mounting holes, 2 x M5
.71" (18 mm) centers

PXCM601A103



PXCM601A110



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Limit Switches

Plunger Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice

PXCK21101 **PXCK21102** **PXCK21121** **PXCK21106**

Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK21101	Steel Plunger	NNP
PXCK22101		NP
PXCK21102	Steel Roller Plunger	NNP
PXCK22102		NP
PXCK21121	Plastic Roller Plunger	NNP
PXCK22121		NP
PXCK21106	Cats Whisker	NNP
PXCK22106		NP

NNP: Normally Non-Passing
NP: Normally Passing

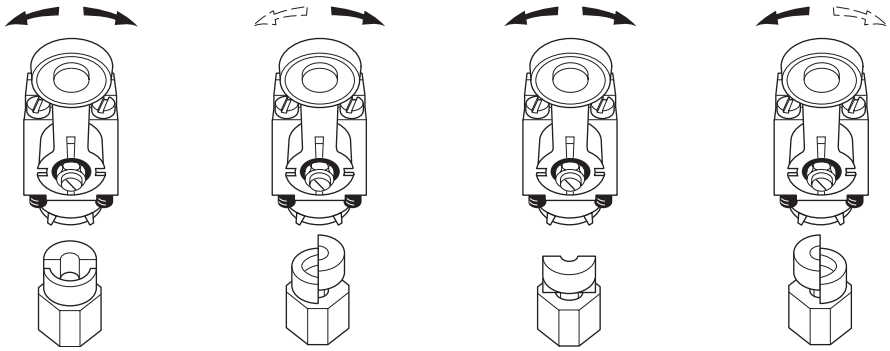
Roller Operated

5/32" Instant Connections
Pipeable Exhaust Port
1/8" I.D. Internal Orifice

PXCK2110031 **PXCK2110041**

With Die Cast Rotary Operating Head and Operating Lever - Complete Assemblies		
Part Number	**Actuator**	**Type of Switching***
PXCK2110031	Fixed Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK2210031		NP
PXCK2110041	Adjustable Delrin Roller Lever Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK2210041		NP

Field Conversion of Rotary Operating Head



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Separate Pneumatic Switch Bodies

PXCK211

Part Number	Actuator	Type of Switching*
PXCK211	For Use with ZCK Series Operating Heads	NNP
PXCK221		NP

Pneumatic Switch Bodies with Rotary Heads

PXCK21100

Part Number	Actuator	Type of Switching*
PXCK21100	Multi-Function Head Actuates: - From Right and Left - From Right - From Left	NNP
PXCK22100		NP

Operating Heads
For Use With PXCK Switch Bodies

ZCKG00

Part Number	Actuator	Description
Rotary Operated		
ZCKG00	—	Die Cast Zinc
Plunger Operated		
ZCKD02	Roller Plunger	Plunger Operated
ZCKD06	Whisker	
ZCKD10	Rod Plunger	
ZCKD21	Delrin Roller Lever On Plunger	
ZCKD23	Steel Roller Lever On Plunger	

Operating Levers for Rotary Heads

ZCKY81

ZCKY91

For Use With Rotary Head ZCKG00		
Part Number	Actuator	Description
ZCKY51	Steel 1/8" Square	Rod Levers
ZCKY52	Fiberglas 1/8" Dia. Round	
ZCKY81	Plastic Spring Rod Lever	
ZCKY91	Metal Spring Rod Lever	
ZCKY11	Delrin Roller Lever	Roller Levers
ZCKY13	Steel Roller Lever	
ZCKY41	Adjust. Delrin Roller Lever	
ZCKY43	Adjust. Steel Roller Lever	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min).....7.4 (210)

Materials –
Body.....Zinc Alloy
Poppets.....Polyurethane
Seals..... Nitrile (Buna N)

Maximal Operating Frequency.....5 Hz

Nominal Bore Ø..... 1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz.....10 Million

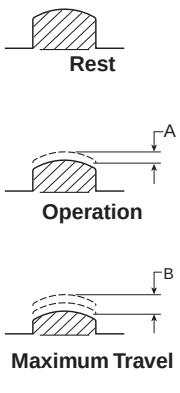
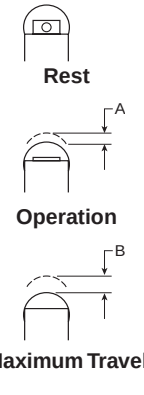
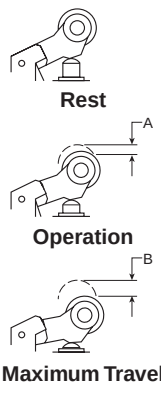
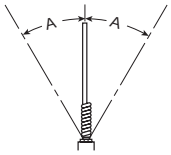
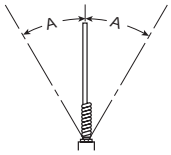
Operating Positions.....All Positions

Operating Pressure.....40 to 115 PSIG (3 to 8 bar)

Ports –
5/32" Instant for Semi-Rigid Nylon or Polyurethane Tube

Temperature –
Operating..... 32°F to 122°F (0°C to + 50°C)
Storage .....-22°F to 140°F (-30°C to +60°C)

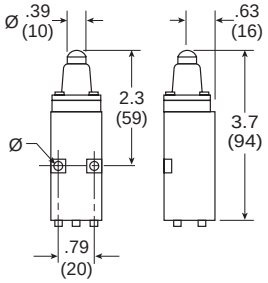
Operator Specifications

	PXCK2••01	PXCK2••02	PXCK2••03	PXCK2••06	PXCK2••00 + Actuator
Differential Angle	–	–	–	12°	3°
Differential Travel	.008" (0.2 mm)	.008" (0.2 mm)	.008" (0.2 mm)		
Maximum Angle of Travel	–	–	–	–	80°
Maximum Travel (B) at 90 PSIG (6 bar)	.228" (5.8 mm)	.228" (5.8 mm)	.228" (5.8 mm)	–	–
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.087" (2.2 mm)	.087" (2.2 mm)	.102" (2.6 mm)	–	–
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	4.5 lbf (20N)	3.4 lbf (15N)	–	–
Minimum Operating Torque at 90 PSI (6 bar)	–	–	–	17.0 oz in (120mNm	29.8 oz in (210mNm)
Operating Angle	–	–	–	35°	31° (Minimum Lever Travel Including Pre-Travel Required For Operation)
Operating Diagram					

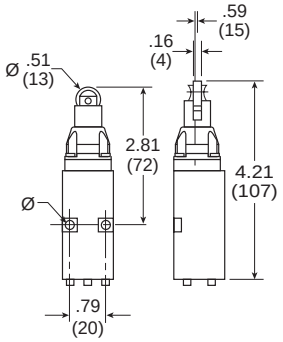
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Dimensions

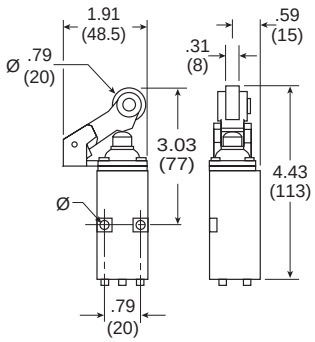
PXCK21101, PXCK22101



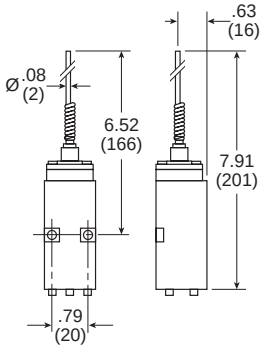
PXCK21102, PXCK22102



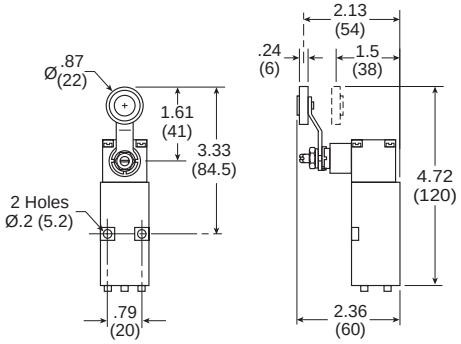
PXCK21121, PXCK22121



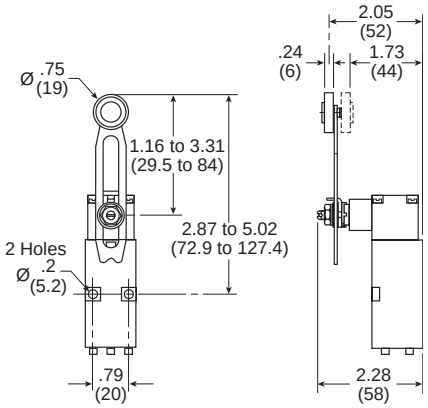
PXCK21106, PXCK22106



PXCK2110031, PXCK2210031

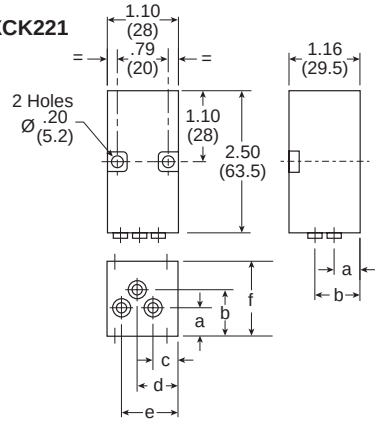


PXCK2110041, PXCK2210041



Pneumatic Switch Bodies

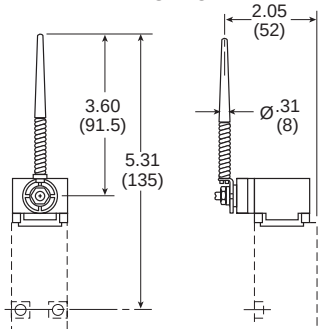
PXCK211, PXCK221



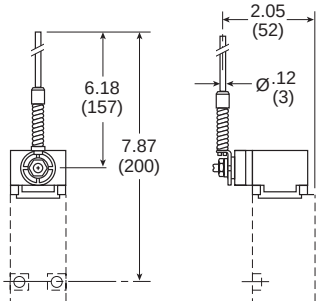
	inch	mm
a	.39	10
b	.77	19.5
c	.35	9
d	.61	15.5
e	.87	22
r	1.66	29.5

Rotary Heads with Operating Levers

ZCKY81



ZCKY91



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Switch Bodies Only

PXCJ117

Part Number	Type of Switching*
PXCJ117	NNP
PXCJ127	NP

Switch Bodies with Rotary Head

PXCJ11701

Part Number	Direction of Actuation	Type of Switching*
PXCJ11701	Right & Left, Spring Return	NNP
PXCJ11705	Right or Left, Spring Return	
PXCJ12701	Right & Left, Spring Return	NP
PXCJ12705	Right or Left, Spring Return	

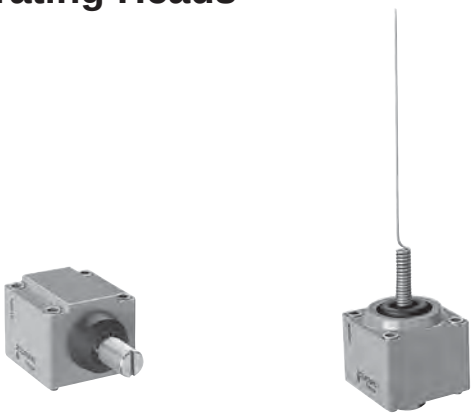
Operating Levers for Rotary Heads

ZC2JY11 **ZC2JY31** **ZC2JY81** **ZC2JY91**

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Part Number	**Operator**	**Description**
ZC2JY11	Delrin Roller	Spring Return
ZC2JY13	Steel Roller	
ZC2JY21	Offset Delrin Roller	
ZC2JY81	Plastic Spring Rod	
ZC2JY91	Metal Spring Rod	
ZC2JY31	Delrin Roller	Adjustable Roller
ZC2JY41	Offset Delrin Roller	
ZC2JY51		Rod Lever
ZC2JY71	Single Track, Delrin Roller	Fork Lever
ZC2JY61	Double Track, Delrin Rollers	

NNP: Normally Non-Passing
NP: Normally Passing

Top Plunger & Rotary Operating Heads



ZC2JE70 **ZC2JE01**

Die Cast Zinc. For Use With PXCJ Switch Bodies		
Top Plunger Type		
Part Number	Operation	Description
ZC2JE61	Top Push	Spring Return
ZC2JE62	Top Roller Push	
ZC2JE63	Side Push	
ZC2JE70	Cat's Whisker	
Rotary Type		
ZC2JE01	From Left & Right	Spring Return
ZC2JE02	Counterclockwise From Right	
ZC2JE03	Clockwise From Left	
ZC2JE05	From Left or Right	
ZC2JE09	Maintained Positions	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Specifications

Air Quality –
Standard Shop Air, Lubricated or Dry, 40µm Filtration

Flow SCFM (Nl/min).....7.4 (210)

Materials –
Body.....Zinc Alloy
Poppets.....Polyurethane

Seals..... Nitrile (Buna N)

Maximal Operating Frequency.....5 Hz

Nominal Bore Ø..... 1/8" (3 mm)

Number of Operations with Dry Air at 90 PSI (6 bar) and 68°F (20°C) – Frequency 1 Hz.....10 Million

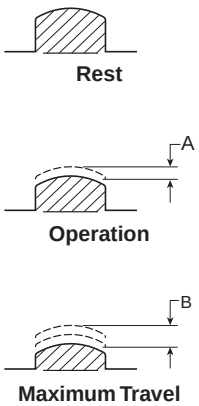
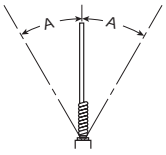
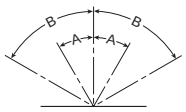
Operating Positions.....All Positions

Operating Pressure.....40 to 115 PSIG (3 to 8 bar)

Ports.....1/8" NPT

Temperature –
Operating..... 32°F to 122°F (0°C to + 50°C)
Storage .....-22°F to 140°F (-30°C to +60°C)

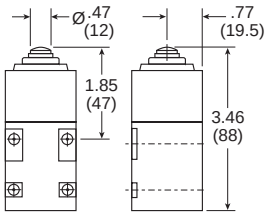
Operator Specifications

	ZC2JE61	ZC2JE62	ZC2JE70	ZC2JE01	ZC2JE05
Differential Angle	—	5°	5°	2°	2°
Differential Travel at 90 PSI (6 bar)	.008" (0.2 mm)	—	—	—	—
Maximum Angle of Travel	—	—	—	75°	75°
Maximum Travel (B) at 90 PSIG (6 bar)	228" (5.8 mm)	—	—	—	—
Minimum Pre-Travel (A) at 90 PSIG (6 bar)	.059" (1.5 mm)	—	—	—	—
Minimum Operating Force at 90 PSI (6 bar)	3.6 lbf (16N)	—	—	—	—
Minimum Operating Torque at 90 PSI (6 bar)	7.1 oz in (50Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	35.4 oz in (250Nm)	—
Operating Angle (Minimum Lever Travel Including Pre-Travel Required For Operation)	—	23°	23°	12°	12°
Operating Diagram					

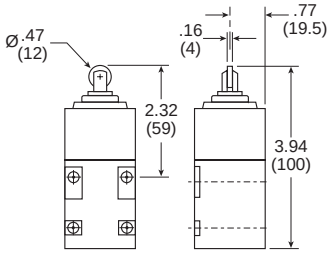
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Switch Body With Plunger Heads

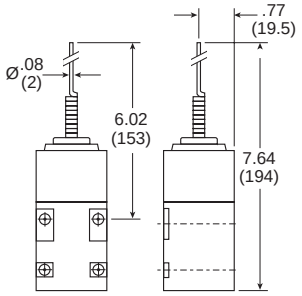
With ZC2JE61



With ZC2JE62

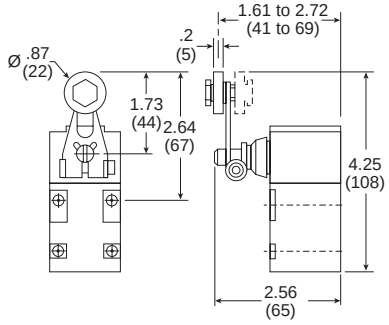


With ZC2JE70

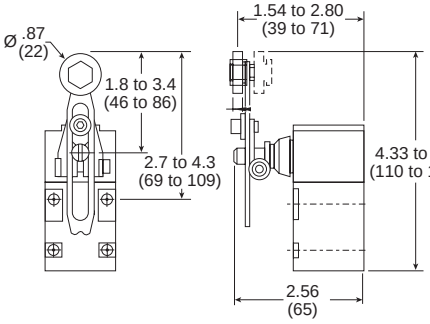


Switch Body With Rotary Heads and Operating Levers

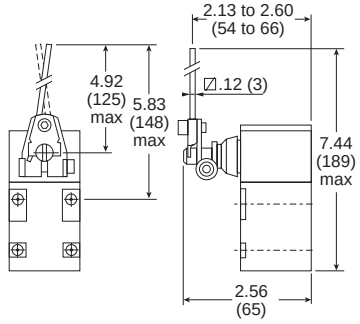
With ZC2JY11



With ZC2JY31

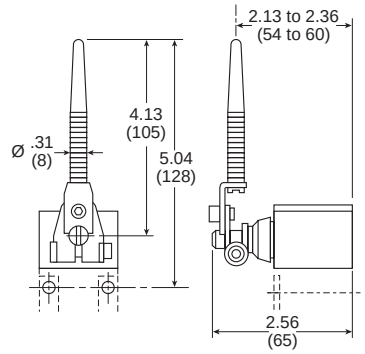


With ZC2JY51

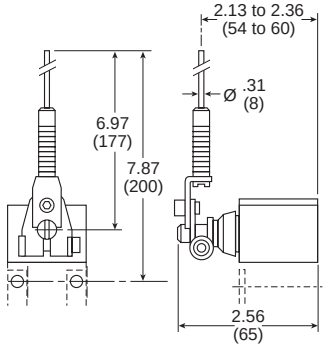


Rotary Heads With Operating Levers

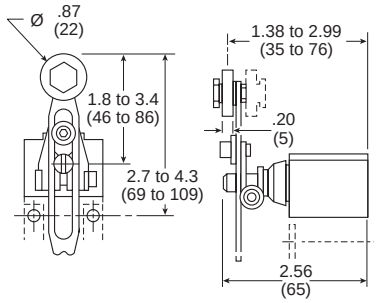
ZC2JY81



ZC2JY91

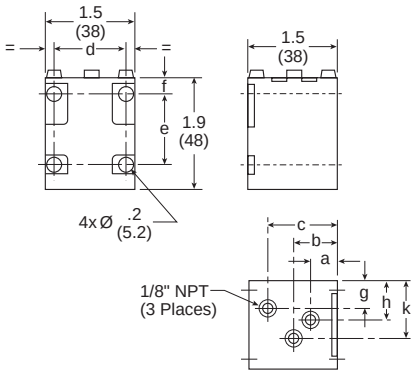


ZC2JY41



Pneumatic Switch Bodies

PXCJ117, PXCJ127



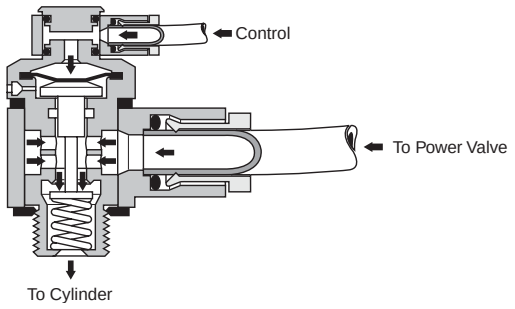
	inch	mm
a	.47	12
b	.75	19
c	1.16	29.5
d	1.14 to 1.18	29 to 30
e	1.18	30
f	.28	7
g	.43	11
h	.51	13
k	.94	24

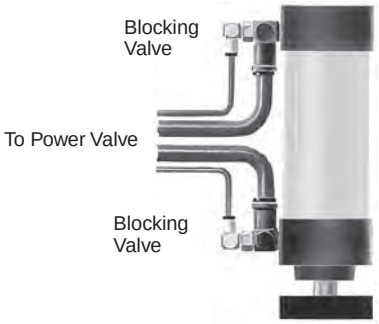
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

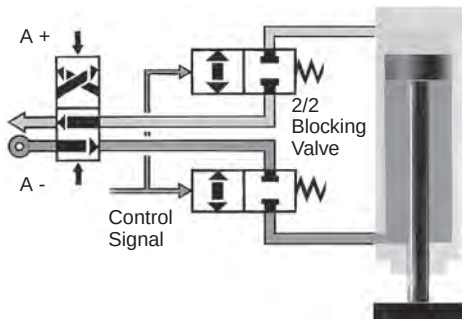
Blocking Valves

The blocking valve is a single acting spring return 2/2 valve in a fitting format. The device requires a pneumatic pilot signal to open, which allows free flow of air, gas or liquid to pass. As long as a pilot signal is present, the device will remain open. When the pilot signal is removed, the internal spring will close the blocking valve, bubble tight. The blocking valve is oil serviceable and rated to 150 PSI.

These devices have two primary design uses: (1) to prevent unwanted gravity induced motion in cylinders during shut down procedures or during periods of lost supply pressure and (2) freezing the cylinder position by using a blocking valve at each end of the cylinder. Application needs such as tool or work piece protection, horizontal indexing or inspection stops are often satisfied by these devices.







PWBA General Characteristics

Operating Pressure	0 to 150 PSI
Permissible Fluids	Air or neutral gas, 50 µm filtration, lubricated or not
Operating Temperature	5° to 140°F (-15° to 60°C)
Storage Temperature	-40° to 160°F (-40° to 70°C)
Flow	See page w15
Mechanical Life	10 Million
Maximum Operating Frequency	10Hz
Material: Body	Zinc alloy
Mounting Screw	Brass
Maximum Mounting Torque: 10-32 UNF and M5	88 inch pounds
1/8"	70 inch pounds
1/4"	105 inch pounds
3/8"	265 inch pounds
1/2"	310 inch pounds
Adjustment	N/A
Adjustment Locking	N/A

Piloting and De-Piloting Pressure

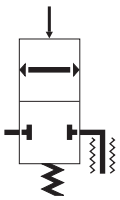
Blocking Valve Sizes	**Pilot with Operating Pressure of:**			
	30 PSI	**60 PSI**	**90 PSI**	**120 PSI**
1/8" BSP or NPT	33 PSI	40 PSI	45 PSI	50 PSI
1/4" BSP or NPT	33 PSI	40 PSI	45 PSI	50 PSI
3/8" BSP or NPT	35 PSI	40 PSI	45 PSI	50 PSI
1/2" BSP or NPT	45 PSI	50 PSI	55 PSI	60 PSI
Blocking Valve Sizes	**Depilot with Operating Pressure of:**			
	30 PSI	**60 PSI**	**90 PSI**	**120 PSI**
1/8" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
1/4" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
3/8" BSP or NPT	20 PSI	25 PSI	30 PSI	34 PSI
1/2" BSP or NPT	25 PSI	30 PSI	34 PSI	40 PSI

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

For Cylinder Mounting
(Can also be mounted in Threshold Sensor Banjo)

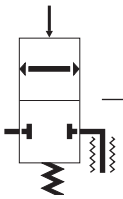
With Instant Tube Fittings

PWBA3469

BSP					NPT			
Symbol	Connection for Pilot	Cylinder Port Thread (Male)	Connection for Tube	Catalog Number	Connection for Pilot	Cylinder Port Thread (Male)	Connection for Tube	Catalog Number
	4mm Tube	1/8"	6mm	PWBA1468	5/32" Tube	1/8"	1/4"	PWBA3468
		1/4"	6mm	PWBA1469		1/4"	1/4"	PWBA3469
		1/4"	8mm	PWBA1489				
		3/8"	8mm	PWBA1483		3/8"	3/8"	PWBA3493
		3/8"	10mm	PWBA1493				
		1/2"	12mm	PWBA1412		1/2"	1/2"	PWBA3412

With Threaded Connections and Tube Pilot Port

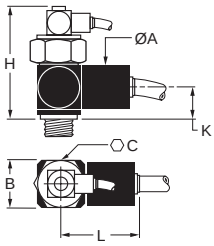
PWBA3833

BSP					NPT			
Symbol	Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve (Female)	Catalog Number	Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve (Female)	Catalog Number
	4mm Tube	1/8"	1/4"	PWBA1898	5/32" * Tube	1/8"	1/8"	PWBA3888
		1/4"	1/4"	PWBA1899		1/4"	1/4"	PWBA3899
	M5 Female	3/8"	3/8"	PWBA1833	5/32" * Tube	3/8"	3/8"	PWBA3833
		1/2"	1/2"	PWBA1822		1/2"	1/2"	PWBA3822

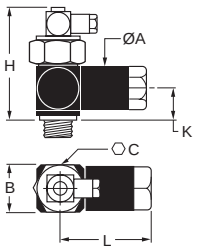
* Instant fitting

With Threaded Connections and Threaded Pilot Port

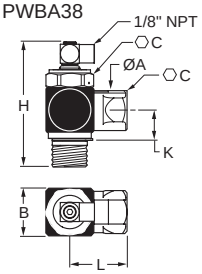
PWBA14/34



PWBA18/38



PWBA38



NPT			
Connection for Pilot	Cylinder Port Thread (Male)	Connection from Valve	Catalog Number
1/8" pipe	1/8"	1/8"	PWBA38887
	1/4"	1/4"	PWBA38997
	3/8"	3/8"	PWBA38337
	1/2"	1/2"	PWBA38227

Dimensions: Inches (mm)

	Flow*	ØA	B	C	K	H	L
PWBA1468/3468	14.8	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.54" (39)
PWBA1469/3469 PWBA1489	19.4	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.54" (39)
PWBA1483 PWBA1493/3493	45.9	1.06""(27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	1.98" (50)
PWBA1412/3412	81.2	1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.59" (66)
PWBA1898/3888	14.8	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.71" (43.5)
PWBA1899/3899	19.4	0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.71" (43.5)
PWBA1833/3833	45.9	1.06" (27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	2.18" (55)
PWBA1822/3822	81.2	1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.47" (63)
PWBA38887	14.8	0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)
PWBA38997	19.4	0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)
PWBA38337	45.9	1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)
PWBA38227	81.2	1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)

*SCFM at 90 PSI

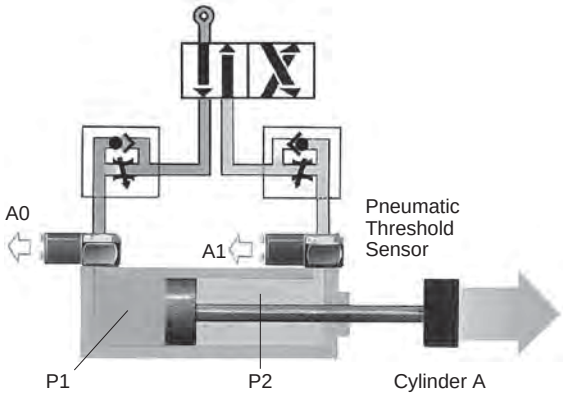
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

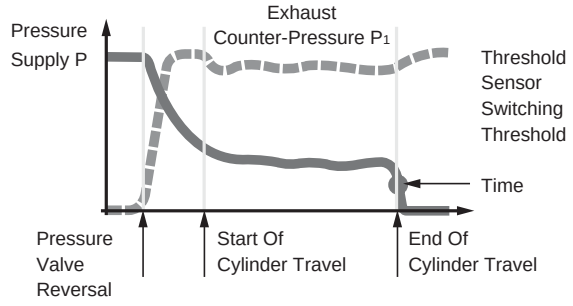
General Description

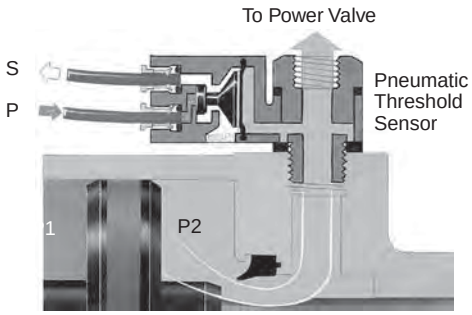
Threshold Sensors – PWS

The plug-in threshold sensors provide feedback information on pneumatic cylinder status in one of three possible outputs . . . pneumatic, electric, or electronic. Mounted into the cylinder port, these devices monitor the back pressure of the cylinder's exhaust. When the cylinder's piston stops, the back pressure rapidly drops and the threshold sensor provides the desired output. Ideal for variable stroke applications such as robotics where other sensor type devices such as limit switches are impractical, these devices provide a signal whenever the cylinder stops motion.

The threshold sensor consists of two complementary sub assemblies (1) the banjo fitting and (2) the plug-in sensor element. In all cases, the sensor is easily plugged into the banjo fitting and locked in place with a spring clip. The banjo fitting is designed to accept (piggy backed) other functional fittings such as flow controls or blocking valves. Simply select the sensor based on the type feedback signal that best fits the application.







PWS General Characteristics

Operating Pressure	0 to 150 PSI
Permissible Fluids	Air or neutral gas, 50 µm filtration, lubricated or not
Operating Temperature	5° to 140°F (-15° to 60°C)
Storage Temperature	-40° to 160°F (-40° to 70°C)
Flow	N/A
Mechanical Life	10 Million
Maximum Operating Frequency	10Hz
Material: Body	Thermoplastic
Mounting Screw	Brass
Maximum Mounting Torque: 10-32 UNF and M5	88 inch pounds
1/8"	70 inch pounds
1/4"	105 inch pounds
3/8"	265 inch pounds
1/2"	310 inch pounds
Adjustment	N/A
Adjustment Locking	N/A

Piloting and De-Piloting Pressure

Threshold Sensors	Pilot with Operating Pressure of 90 PSI	Depilot with Operating Pressure of 90 PSI
PWSP111	64 PSI	6 PSI
PWSM1012	15 PSI	9 PSI
PWSE101 and PWSE111	10 PSI	7 PSI

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

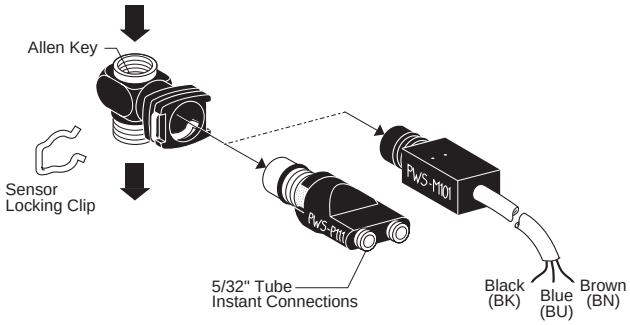
Model Selection

Banjo Sockets (with Sensor Clip)		
Port Size	**Model Number**	**Wrench**
10-32	**PWSB1557**	5/16" Hex
1/8"	**PWSB1887**	3/16" Allen
1/4"	**PWSB1997**	5/16" Allen
3/8"	**PWSB1337**	3/8" Allen
1/2"	**PWSB1227**	1/2" Allen

Plug-in Sensors		
Output	**Model Number**	**Connection**
Pneumatic	**PWSP111**	5/32" push-in
Electrical	**PWSM1012**	3-wire cable (6 ft)

Application

The threshold sensor provides electrical or pneumatic feedback information on pneumatic (air) cylinder status. These devices monitor the back pressure of the cylinder's exhausting chamber. When the cylinder stops, the back pressure drops and the threshold sensor provides the desired output. Ideal for variable stroke applications. The banjo fitting and the feedback element are two separate subassemblies, giving the user flexibility between electrical and pneumatic outputs as feedback.

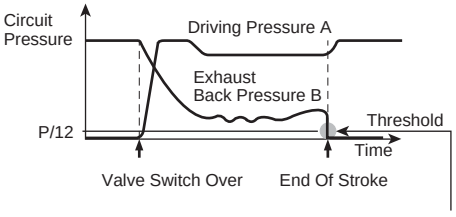


Mounting

Banjo fittings in 10-32 to 1/2" pipe sizes are designed to be installed directly into actuator ports (up to 5" bore cylinders). The banjo fitting can accommodate other functional fittings and components such as right angle flow control valves or blocking valves. Banjo fittings screw into actuators using an Allen wrench or 5/16" hex head wrench for 10-32 size. Electrical or pneumatic feedback element snaps into place using a locking clip.

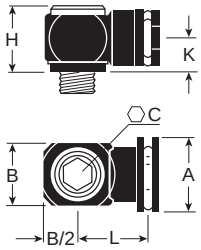
Operation

Pneumatic sensors have a continuous pressure signal applied to the sensor device. Electrical sensors have a continuous electrical signal applied to the sensor device. The threshold sensor assembly mounted directly into the cylinder Port provides an output signal S, which can be pneumatic or electrical, when the falling back pressure in the exhausting chamber of the cylinder reaches the operating threshold (approximately 6-9 PSIG). (The device is a normally passing device. The output is only on when there is nearly zero pressure at the cylinder.)

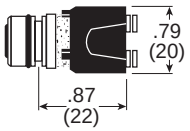


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

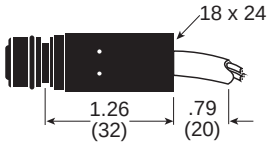
Dimensions



Banjo Socket



PWSP111



PWSM1012

Model	A	B	C	H	K	L
PWSB1557	.98 (25)	.43 (11)	5/16" Hex	.79 (20)	.40 (10)	.67 (17)
PWSB1887	.98" (25)	.63 (16)	3/16" Allen	.71 (18)	.40 (10)	.79 (20)
PWSB1997	.98 (25)	.83 (21)	5/16" Allen	.71 (18)	.40 (10)	.87 (22)
PWSB1337	.98 (25)	1.10 (28)	3/8" Allen	.79 (20)	.47 (12)	.98 (25)
PWSB1227	.98 (25)	1.30 (33)	1/2" Allen	.93 (24)	.55 (14)	1.02 (26)

inches
(mm)

Specifications

Operating Pressure ..... 0 to 150 PSIG (0 to 10 bar)
Temperature Range .....5°F to 140°F (-15°C to 60°C)

⚠ ***CAUTION:*** If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Maximum Operating Frequency ..... 10 Hz
Pilot Pressure (PWSP111) ..... >64 PSIG (4.4 bar)
Threshold Pressure ..... 6 to 9 PSIG (.4 to .6 bar)
Output Flow Rate (PWSP111) .....3 SCFM at 90 PSIG
Current Rating (PWSM1012) –
5 VA, 250 VAC
5W, 48 VAC
Materials –
Body.....Thermoplastic
Mounting Screw & Threads.....Brass
Life Expectancy –
10 million cycles with dry air at 90 PSIG, 68°F, and 1 Hz ... operating frequency
Voltage Range (PWSM1012) –
1 2 - 240 VAC
12 - 48 VDC

Fluid Power			Universal Description	Electrical	
Function	Symbol			Function	Symbol
Normally Closed (N.C.)	2-Way	3-Way	Normally Non-Passing (NNP)	Normally Open (N.O.)	
Normally Open (N.O.)	2-Way	3-Way	Normally Passing (NP)	Normally Closed (N.C.)	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

LV & EZ Series

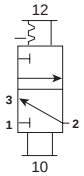
Lockout Valves, 3-Way, 3-Port, 2-Position

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

LV Series

Features

- Used In Systems for Compliance with OSHA Standard 29 CFR Part 1910
- 3/8 Inch to 1-1/4 Inch Pipe Sizes
- Cv's from 6.0 to 14
- 3/4 and 1-1/4 Inch Exhaust Ports Available
- Rugged Cast Aluminum Alloy Body
- Inline or Surface Mountable
- Safety Yellow and Red for High Visibility
- Detented Spool
- Exhaust Port Threaded for Installation of Silencer or Line for Remote Exhausting



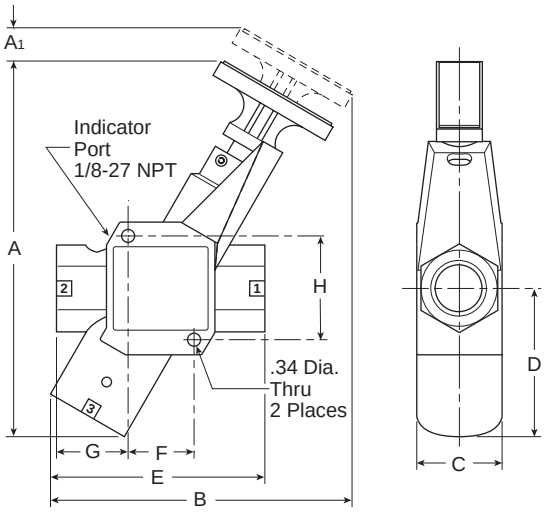
Applications

Lockout valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, lockout valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the red handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, Preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the red handle is pulled outward, returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

Valves can be inline mounted or surface mounted using the two 11/32" mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.

Dimensions



LV Series, 3/4" Exhaust Port **Inches (mm)**

A	A1	B	C	D
8.32 (211)	0.64 (16)	6.60 (168)	2.00 (51)	3.06 (78)
E	**F**	**G**	**H**	
4.24 (108)	1.32 (111)	1.56 (40)	2.21 (56)	

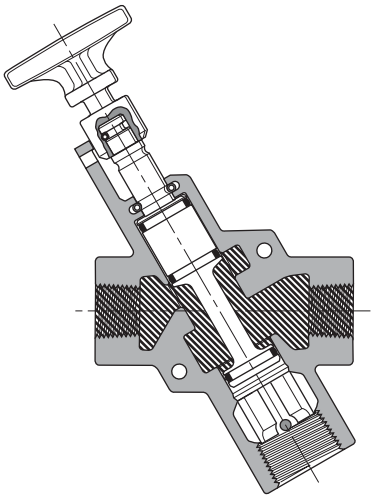
LV Series, 1-1/4" Exhaust Port **Inches (mm)**

A	A1	B	C	D
9.91 (252)	0.85 (22)	7.95 (202)	2.25 (57)	3.91 (99)
E	**F**	**G**	**H**	
5.65 (144)	1.74 (44)	1.89 (48)	2.74 (70)	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

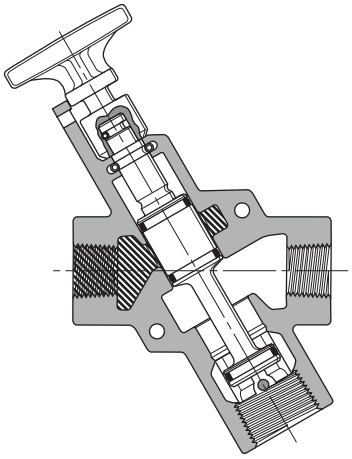
Operation

Normal Machine Operation – Valve Open
With the handle pulled outward. Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.



Open

Lockout Operation – Valve Closed
With the handle pushed inward. Inlet Port 1 is blocked. Outlet Port 2 is open to Exhaust Port 3.



Closed

Specifications

Operating Pressure Range	0 to 250 PSIG (0 to 1725 kPa)
Operating Temperature Range – Ambient	32°F to 160°F (0°C to 71°C)
Lubrication – For best results and service life, use clean, moisture free, lubricated air.	
Recommended Lubricant	F442 Oil

Materials of Construction

Body	Cast Aluminum Alloy
Handle – 3/4" Exhaust Port	Cast Aluminum Alloy
1-1/4" Exhaust Port	Plastic
Spool	Aluminum
Seals	Carboxylated Nitrile
Detent Spring	Stainless Steel
Grease	Magnalube G†

LV Series Model Number Index

Basic Series	Port Size	Thread Type	Port Size	Design Level
LV	6	N	A	B

Port Size (Inlet & Outlet Ports 1 & 2)
- 3 3/8" *
- 4 1/2" *
- 6 3/4" *‡
- 8 1" ‡
- A 1-1/4" ‡

Thread Type (Ports 1, 2 & 3)
- N NPT
- B BSPP (G)

Port Size (Exhaust Port 3)
- 6 3/4"
- A 1-1/4"

Design Level
- B Current

* Available with 3/4" Exhaust Port.

‡ Available with 1-1/4" Exhaust Port.

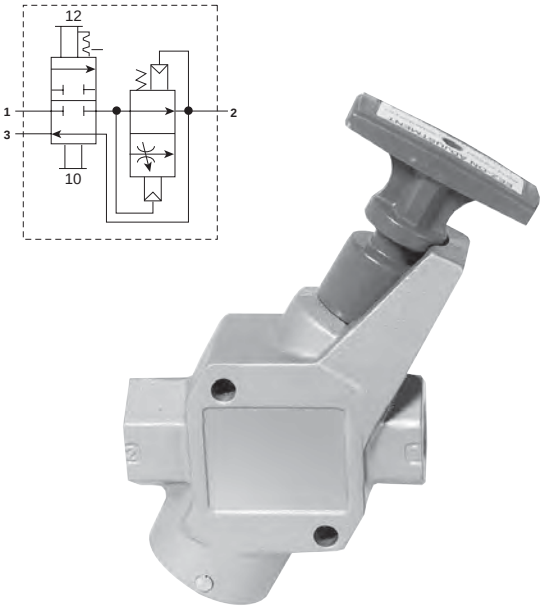
† Trademark Magnalube

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

EZ Series

Features

- Combines Lockout and Soft-Start Functions in a Single Unit
- Used in systems for compliance with OSHA Standard 29 CFR Part 1910
- 3/8 inch to 1-1/4 inch Pipe Sizes
- Cv's from 3.7 to 13.7
- 3/4 and 1-1/4 inch: Exhaust Ports available
- Rugged Cast Aluminum Alloy Body
- Exhaust Port Threaded for Installation of Silencer or Line for Remote Exhausting
- Inline or Surface Mountable



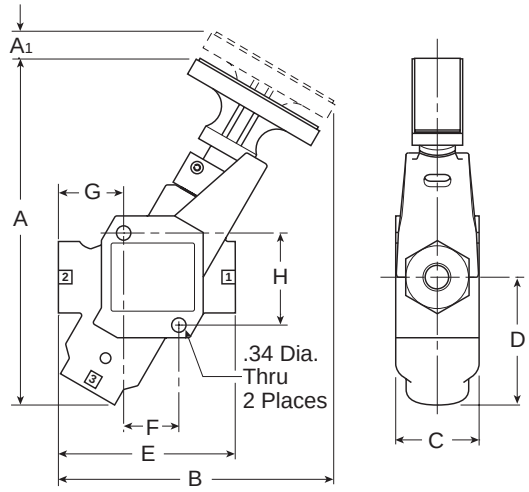
Applications

EZ valves are installed in pneumatic drop legs, or individual pneumatic control lines (see Figure 1). In accordance with OSHA procedures, EZ valves are used during maintenance and service procedures of pneumatically (air) operated equipment. Prior to servicing, the blue handle is pressed inward, blocking pressure and relieving all downstream air pressure. A padlock is installed through the locking hasp, preventing accidental actuation during the maintenance procedure. Following maintenance, the padlock is removed and the blue handle is pulled outward, gradually returning air pressure to the system. (For complete Lockout / Tagout procedures, consult OSHA Standard 29 CFR Part 1910 in U.S. Federal Register/Vol. 54 No. 169, Friday, September 1, 1989 / Page 36644.)

Mounting

Valves can be inline mounted or surface mounted using the two 11/32" mounting holes provided in the valve body. Mount valves in plain view with the handle oriented for accessibility.

Dimensions



EZ Series, 3/4" Exhaust Port **Inches (mm)**

A	A1	B	C	D
8.32 (211)	0.64 (16)	6.60 (168)	2.00 (51)	3.06 (78)
E	**F**	**G**	**H**	
4.24 (108)	1.32 (111)	1.56 (40)	2.21 (56)	

EZ Series, 1-1/4" Exhaust Port **Inches (mm)**

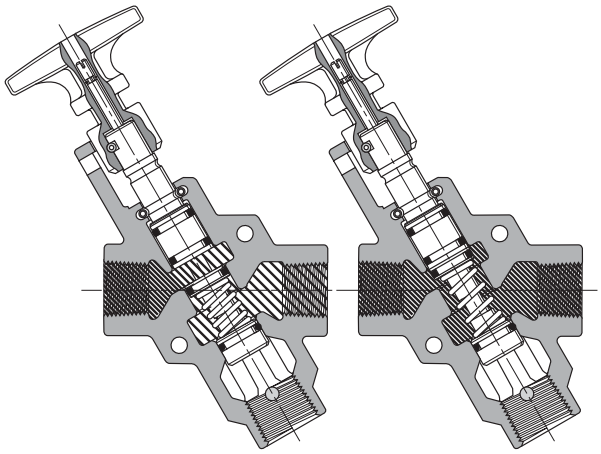
A	A1	B	C	D
9.91 (252)	0.85 (22)	7.95 (202)	2.25 (57)	3.91 (99)
E	**F**	**G**	**H**	
5.65 (144)	1.74 (44)	1.89 (48)	2.74 (70)	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Operation

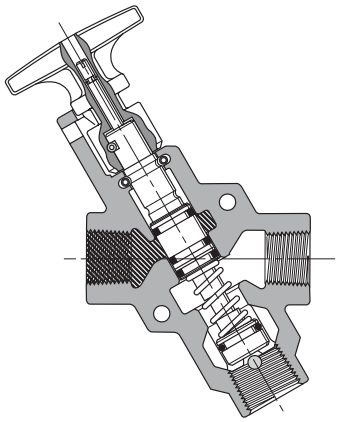
Normal Machine Operation – Valve Open
When the blue handle is pulled outward, the adjustable needle valve (accessed through the top of the handle) setting determines the rate of pressure buildup. When downstream pressure reaches the full flow described in the specifications below, Inlet Port 1 is open to outlet Port 2. Exhaust Port 3 is blocked.

Lockout Operation – Valve Closed
When the blue handle is pushed inward, the Inlet Port 1 is blocked. Downstream air is exhausted through Exhaust Port 3.



Open
Pressure Building Up

Open
Full Flow



Closed

Specifications

Operating Pressure Range – 30 to 150 PSIG (2 to 10 bar)	
Open to Full Flow: Inlet Pressure	25 PSIG (1.7 bar)
Operating Temperature Range (Ambient) – 40°F to 175°F (4°C to 80°C)	
Lubrication – For best results and service life, use clean, moisture free, lubricated air.	
Recommended Lubricant	F442 Oil

Materials of Construction

Body	Cast Aluminum Alloy
Handle	Plastic
Spool	Aluminum
Seals	Carboxylated Nitrile
Detent Spring	Stainless Steel
Grease	Magnalube G†

EZ Combination EEZ-On Series Model Number Index

Basic Series	Port Size	Thread Type	Design Level	Port Size
EZ	03	N	B	A

Port Size (Inlet & Outlet Ports 1 & 2)
03 3/8" *
04 1/2" *
06 3/4" *‡
08 1" ‡
0A 1-1/4" ‡

Thread Type (Ports 1, 2 & 3)
N NPT
B BSPP (G)
R BSPT (R)

Design Level
B Current

Port Size (Exhaust Port 3)
6 3/4"
A 1-1/4"

Notes:

* Available with 3/4" Exhaust Port.

‡ Available with 1-1/4" Exhaust Port.

† Trademark Magnalube

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Flow

Model	1 to 2 Cv	2 to 3 Cv
LV3N6B	6.00	8.00
LV4N6B	7.10	8.30
LV6N6B	8.60	9.50
LV6NAB	13.00	12.00
LV8NAB	13.00	14.00
LVANAB	20.00	14.00

Model	1 to 2 Cv	2 to 3 Cv
EZ03NB6	3.79	3.78
EZ04NB6	5.31	3.77
EZ06NBA	6.01	9.25
EZ08NBA	11.18	8.13
EZ0ANBA	13.74	8.03

Schematic

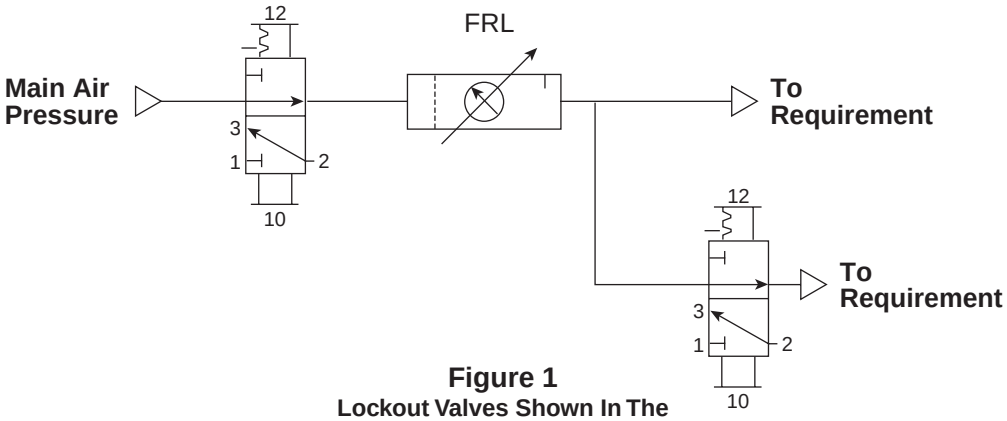


Figure 1
Lockout Valves Shown In The Passing Condition

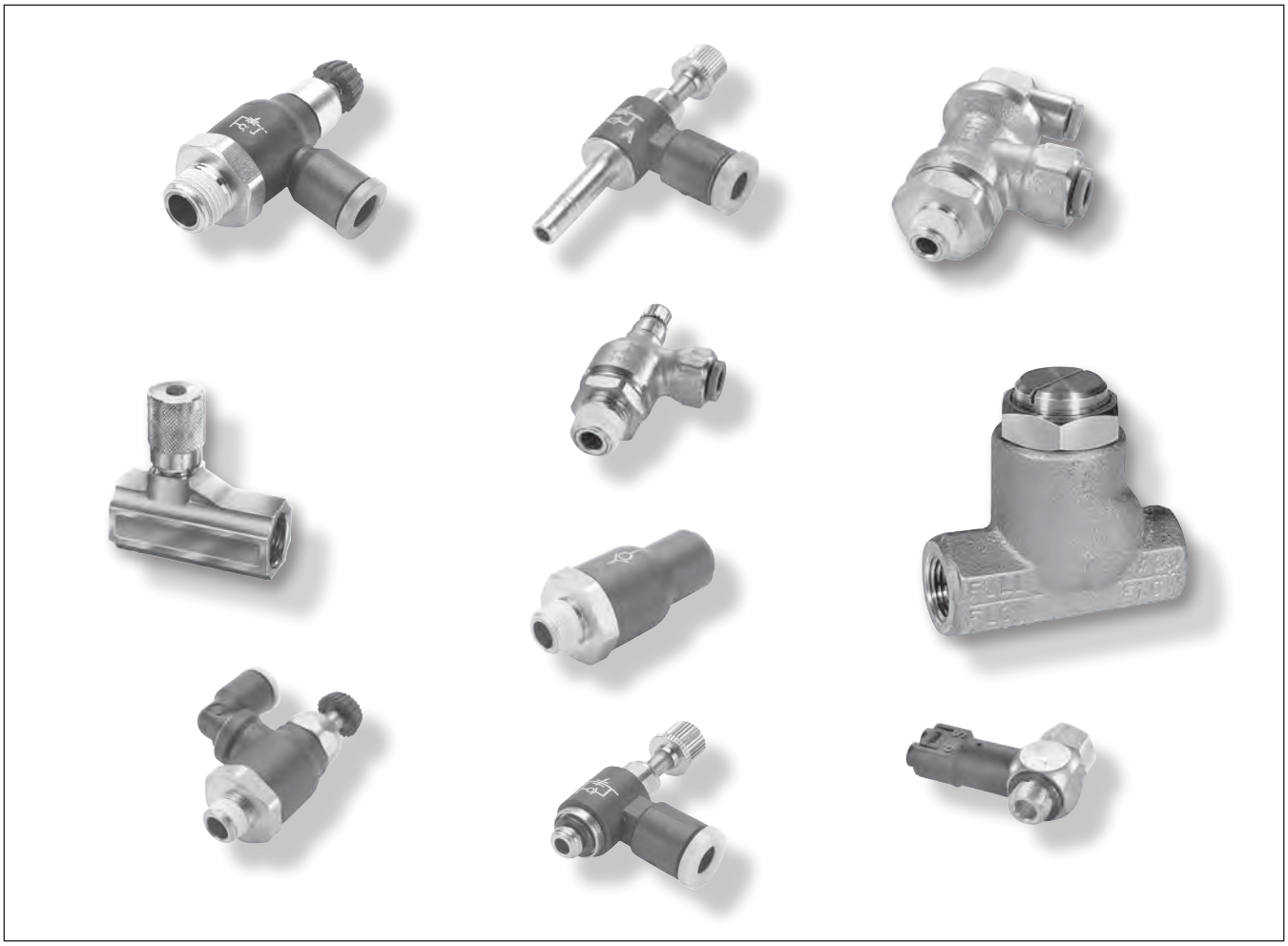
Friday, September 1, 1989 the Occupational Safety and Health Administration (OSHA) passed a standard, 29CFR Part 1910, requiring certain lockout and / or tagout procedures for the control of a hazardous energy source. This standard addresses practices and procedures that are necessary to disable the release of potentially hazardous energy while maintenance and servicing activities are being performed. Tagout refers to the use of tags to warn workers when equipment using potentially hazardous energy is being serviced. Lockout is the procedure which ensures that all power to a piece of equipment is isolated, locked or blocked and dissipated using a method that cannot be readily removed to bypassed. Dissipation means stored energy at the equipment is brought to a neutral state. This standard is expected to save 120 lives and prevent 60,000 accidents a year. This OSHA Standard became effective October 31, 1989.

A typical application (Figure 1) shows a main lockout valve mounted in the main drop leg, before the split to machine functions. Additional lockout valves can be used to isolate individual control lines. Before servicing, the valve can be actuated and locked to isolate downstream from pressure, and exhaust downstream to atmosphere thus making equipment safe for maintenance.

To reference this standard see the U.S. Federal Register / Vol. 54, No. 169 / Friday, September 1, 1989 / Page 36644. For copies of this standard, contact U.S. Department of Labor, Occupational Safety and Health Administration, Office of Publication, Room N3101, Washington, DC 20210, (202) 523-9667.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Integrated Fittings



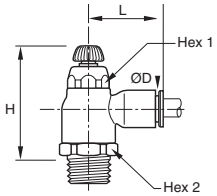
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Compact Flow Control Valves	**FCC731** Meter Out  Page E41	**FCCB731** Bi-Directional Flow Control  Page E41	**FCKC731** Knobless Meter Out Flow Control  Page E41	**Miniature Flow Control Valves**	**FCM731** Meter Out Flow Control  Page E42
In-Line Flow Control Valves	**FC832** Flow Control  Page E43	**FCB832** Bi-directional Flow Control  Page E43	**337 Series** Micrometer Flow Control Valves  Page E43	**337 Series** Micrometer Flow Control Valves - BSPP  Page E43	**338 Series** Bi-directional Flow Control Valves  Pa ge E44
338 Series Bi-directional Flow Control Valves - BSPP  Page E44	**3250 Series** Flow Control Valves  Page E44	**3250 Series** Flow Control Valves - BSPP  Page E44	**3250 Series** Flow Control Valves  Page E44	**3250 Series** Flow Control Valves - BSPP  Page E44	
Compact Metal Flow Control Valves	**3251 Series** Right Angle Flow Control Valves  Page E45	**Check Valves**	**339 Series** Check Valve  Page E46	**339 Series** Check Valve - BSPP  Page E46	**3047 Series** Check Valve  Page E46

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

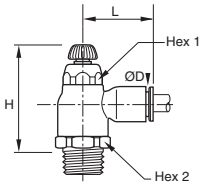
Compact Flow Control Valves

Compact flow control regulators ensure excellent performance of flow and are perfectly suited for reduced spaces due to their small size. The sensitivity of the adjustment screw provides very precise air flow control and regulation. A locking nut guarantees stability of adjustment against vibration tampering of the flow setting.



FCC731 Compact Meter Out

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCC731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-5/32-4	5/32	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCC731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85
FCC731-6-4	3/8	1/4	0.91	0.67	2.03	1.71	1.22
FCC731-6-6	3/8	3/8	0.91	0.67	2.03	1.71	1.22



FCCB731 Compact Bi-Directional Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 (In)	Hex 2 (In)	H Open	H Closed	L
FCCB731-5/32-2	5/32	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-2	1/4	1/8	0.63	0.39	1.67	1.44	0.85
FCCB731-4-4	1/4	1/4	0.63	0.39	1.67	1.44	0.85

Materials Of Construction

Body (Depending upon the Model):	• Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature

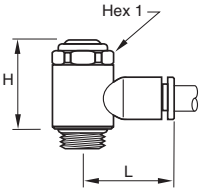
Example: FCC731-4-2	Attribute:
FC	Flow control
C	Compact
7	Right angle
3	Nylon body
1	Tube x Pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube

Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12

Specifications

Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



FCKC731 Knobless Meter Out Flow Control

Part No.	Tube Size (In)	NPT / UNF	Hex 1 (mm)	H	L
FCKC731-2-0	1/8	10-32		0.69	0.65
FCKC731-2-2	1/8	1/8	13	0.79	0.75
FCKC731-5/32-0	5/32	10-32		0.69	0.65
FCKC731-5/32-2	5/32	1/8	13	0.79	0.75
FCKC731-4-0	1/4	10-32		0.69	0.77
FCKC731-4-2	1/4	1/8	13	0.79	0.85
FCKC731-4-4	1/4	1/4	17	1.04	0.89
FCKC731-5-2	5/16	1/8	13	0.79	1.02
FCKC731-5-4	5/16	1/4	17	1.04	1.06
FCKC731-6-4	3/8	1/4	17	1.04	1.14
FCKC731-6-6	3/8	3/8	20	1.14	1.36

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Miniature Flow Control Valves

The miniature flow control regulator is especially adapted for all very small sized pneumatic applications (micro-pneumatic in particular). They are specifically designed for use with small bore cylinders (pancake / flat cylinders). Miniature flow control regulators are available in meter out, meter in and bi-directional versions.

Materials of Construction

Body (Depending upon the Model):	• Glass reinforced nylon 6.6 • Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Base:	Nickel-plated brass

Nomenclature

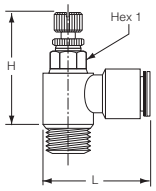
Example: FCM731-4-2	Attribute:
FC	Flow control
M	Miniature
7	Right angle
3	Nylon body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube

Tube O.D.	1/8, 5/32, 1/4
Tube O.D. (mm)	3, 4, 6, 8

Specifications

Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



FCM731 Miniature Meter Out Flow Control

Part No.	Tube Size (In)	NPT	Hex 1 mm	H Open	H Closed	L
FCM731-2-0	1/8	10-32	6	1.14	0.91	0.67
FCM731-2-2	1/8	1/8	7	1.41	1.26	0.69
FCM731-5/32-0	5/32	10-32	6	1.02	0.93	0.67
FCM731-5/32-2	5/32	1/8	7	1.16	1.06	0.71
FCM731-4-0	1/4	10-32	6	1.02	0.93	0.73
FCM731-4-2	1/4	1/8	7	1.16	1.06	0.75
FCM731-4-4	1/4	1/4	8	1.28	1.18	0.77

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

In-Line Flow Control Valves

In-line flow controls are unidirectional flow control valves. Intake air flows freely through the flow control; exhaust air is metered out through a specially designed adjustment screw. An arrow on the body of the valve indicates the direction of controlled flow. They can be easily added to existing circuitry. Simply splice it into the cylinder port line.

They can be used individually or they may be stacked together using two joining clips.

Materials of Construction

Body:	Glass reinforced nylon 6.6
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature

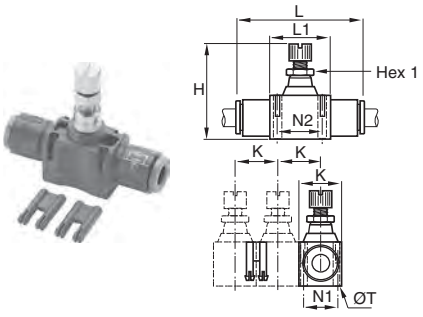
Example: FCMS731-5/32-2	Attribute:
FC	Flow control
M	Miniature
8	In-line
3	Nylon body
2	Tube x pipe
4	1/4 Tube O.D.

Applicable Tube

Tube O.D.	5/32, 1/4, 5/16, 3/8, 1/2
Tube O.D. (mm)	4, 6, 8, 10, 12

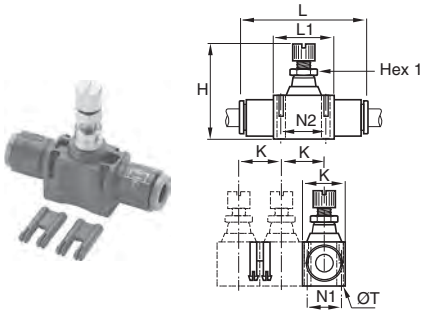
Specifications

Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



FC832 In-Line Flow Control

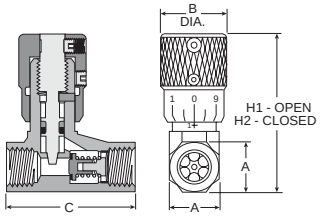
Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FC832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FC832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FC832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13
FC832-6	3/8	14	2.03	2.38	0.94	2.87	1.29	0.62	1.01	1.60
FC832-8	1/2	14	2.24	2.63	1.09	3.35	1.37	0.78	1.07	0.16



FCB832 In-Line Bi-directional Flow Control

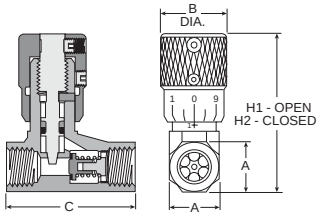
Part No.	Tube Size (In)	Hex 1 mm	H Closed	H Open	K	L	L1	N1	N2	T
FCB832-5/32	5/32	5	1.15	1.31	0.47	1.52	0.59	0.31	0.43	0.09
FCB832-4	1/4	8	1.54	1.74	0.66	2.00	0.90	0.43	0.66	0.12
FCB832-5	5/16	11	1.73	1.97	0.73	2.38	1.02	0.49	0.79	0.13

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



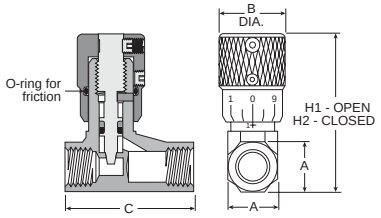
337 Micrometer Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00337 1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337 1001	1/4"	11/16"	0.75	1.47	2.28	2.03
00337 1002	3/8"	7/8"	0.88	2.31	2.84	2.53
00337 1003	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00337 1004	3/4"	1-3/8"	1.06	3.25	3.72	3.31



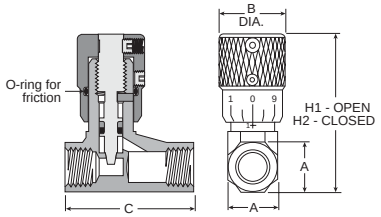
337 Micrometer Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	H1	H2
00337G1000	1/8"	9/16"	0.75	1.47	2.03	1.81
00337G1001	1/4"	11/16"	0.75	1.47	2.28	2.03



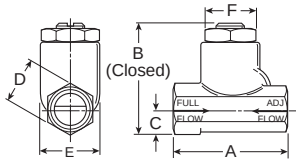
338 Bi-directional Flow Control Valves

Part No.	Port Size	A	B	C	H1	H2
00338 1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338 1101	1/4"	11/16"	0.75	1.47	2.28	2.03
00338 1102	3/8"	7/8"	0.88	2.31	2.84	2.53
00338 1103	1/2"	1-3/16"	1.06	3.25	3.62	3.22
00338 1104	3/4"	1-3/8"	1.06	3.25	3.72	3.31



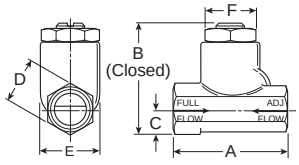
338 Bi-directional Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	H1	H2
00338G1100	1/8"	9/16"	0.75	1.47	2.03	1.81
00338G1101	1/4"	11/16"	0.75	1.47	2.28	2.03



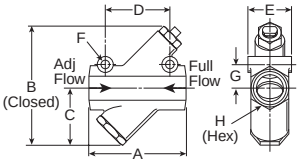
3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F
03250 0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
03250 0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
03250 0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
03250 0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
03250 0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75



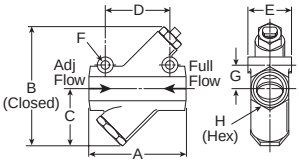
3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F
3250G0119	1/8"	1.75	1.56	0.37	0.62	0.81	0.68
3250G0219	1/4"	2.33	1.97	0.44	0.75	1.09	0.94
3250G0319	3/8"	2.66	2.44	0.56	1.00	1.38	1.19
3250G0419	1/2"	3.11	3.06	0.75	1.25	1.63	1.38
3250G0519	3/4"	3.56	3.69	0.88	1.50	2.00	1.75



3250 Flow Control Valves

Part No.	Port Size	A	B	C	D	E	F	G	H
3250G1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
3250G1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38



3250 Flow Control Valves - BSPP

Part No.	Port Size	A	B	C	D	E	F	G	H
03250 1000	1"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1250	1-1/4"	5.00	6.50	3.00	3.25	2.25	.39	1.31	2.13
03250 1500	1-1/2"	5.88	8.00	3.75	3.50	2.50	.39	1.50	2.38

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Compact Metal Flow Control Valves

Metal flow control regulators are suited for use in severe conditions (temperatures, sparks, abrasion, etc). The screw and locking nut have been designed for easy manipulation, by hand. Adjustment can be made with a screwdriver and locking by use of a wrench.

Materials of Construction

Body:	Treated Brass
Gripping Ring:	Stainless Steel
Adjustment Screws	Nickel-plated brass
Locking Nut:	Nickel-plated brass
Tailpiece:	Nickel-plated brass

Nomenclature

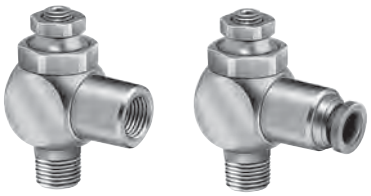
Example: FCMS731-5/32-2	Attribute:
FC	Flow control
7	Right angle
0	Brass body
1	Tube x pipe
4	1/4 Tube O.D.
2	1/8 Pipe thread

Applicable Tube

Tube O.D.	1/8, 5/32, 1/4, 3/8
Tube O.D. (mm)	4, 6, 8, 10, 12, 14

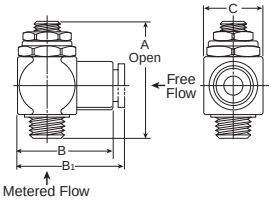
Specifications

Pressure Range:	15 to 145 PSI
Temperature Ranges:	30° to 160°F
Working Fluid:	Compressed air



Shown with Threaded Inlet

Shown with Prestolok

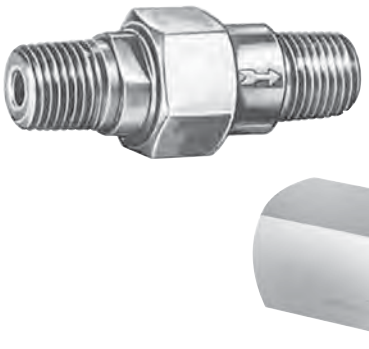


Model Number	Thread (NPT) Male	Thread (NPT) Female	A mm	B mm	C mm	Weight kg.	Cv Adjusted Flow	Cv Free Flow
03251 0125	1/8	1/8	44	30	17	0.9	0.26	0.20
03251 0250	1/4	1/4	51	36	23	2.0	0.75	0.68
03251 0375	3/8	3/8	58	43	27	3.2	0.84	0.72
03251 0500	1/2	1/2	68	53	32	5.0	1.64	1.41
With Prestolok Fittings								
03251 1215	1/8	5/32	44	30	17	0.9	0.19	0.16
03251 1225	1/8	1/4	44	30	17	0.9	0.28	0.22
03251 2525	1/4	1/4	51	36	23	2.0	0.51	0.44
03251 2538	1/4	3/8	51	36	23	2.0	0.62	0.53
03251 3838	3/8	3/8	58	43	27	3.2	0.78	0.65

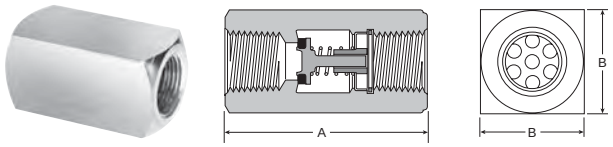
CAUTION: If it is possible that the ambient temperature may fall below freezing, the medium must be moisture-free to prevent internal damage or unpredictable behavior.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Check Valves

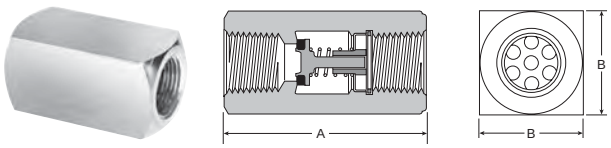


These in-line check valves allows air to pass in one direction while blocking flow in the other direction. Their extreme compactness and light weight make them suitable as a safety item in compressed air circuits. The body of the fitting contains an arrow to indicate the direction of flow.



339 Check Valve

Part No.	Port Size	A	B
00339 3000	1/8"	1.22	0.56
00339 3001	1/4"	1.34	0.69
00339 3002	3/8"	2.00	0.88
00339 3003	1/2"	2.56	1.19
00339 3004	3/4"	2.66	1.38



339 Check Valve - BSPP

Part No.	Port Size	A	B
00339G3000	1/8"	1.22	0.56
00339G3001	1/4"	1.34	0.69
00339G3002	3/8"	2.00	0.88
00339G3003	1/2"	2.56	1.19
00339G3004	3/4"	2.66	1.38

Materials of Construction

Body:	• 32PLCK: Nylon/nickel plated brass • 68PLCK: Nylon body with nickel-plated brass base • VC: Acetal
Gripping Ring:	Stainless Steel
O-Ring:	• Nitrile (32PLCK & 68PLCK) • EPDM (VC)

Nomenclature

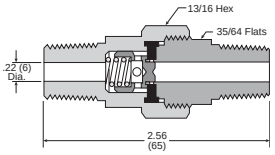
Example: W68PLCK-4-2	Attribute:	Example: A4VC4-MG	Attribute:
W	White thread sealant	**A**	Acetal
68	Tube x Pipe	**4**	1/4 Tube O.D.
PL	Prestolok	**VC**	Valve, Check
CK	Check Valve	**4**	1/4 Tube O.D.
4	1/4 Tube O.D.	**MG**	Metal gripping ring
2	1/8 Pipe thread		

Applicable Tube

Tube O.D.	• PLCK: 5/32, 1/4, 5/16, 3/8 • VC: 1/4, 5/16, 3/8
Tube O.D. (mm)	PLCK: 4, 6, 8, 10, 12

Specifications

Pressure Range:	15 to 145 PSI
Temperature Ranges:	34°F to 150°F
Cracking Pressure:	• PLCK: 7 PSI • VC: 1/3 PSI
Working Fluid:	Compressed air



3047 Check Valve

Model Number	Pipe Thread
03047 0099	1/4"

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Accessories

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

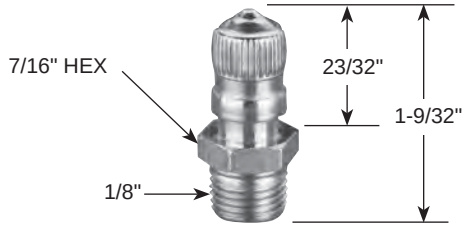
Tank Valves

For tanks, steel barrels, compressors and other pneumatic containers where a dependable automatic air valve is needed. Equipped with standard valve core and sealing cap. Maximum operating pressure is 185 PSIG. Temperature range is -40°F to 220°F.

Model No. 09166 0060

Has a 1/8" pipe thread at bottom for minimum protrusion. N/P finish, dome shaped cap.

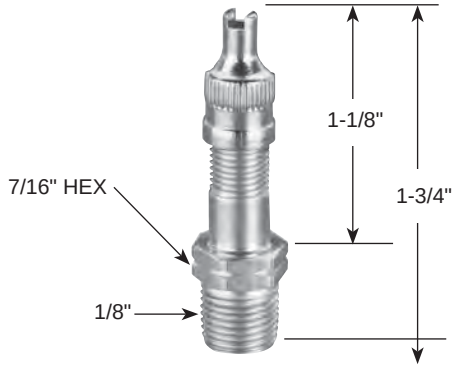
Packed 25 to a box.



Model No. 00645 0060

A 1/8" pipe thread at bottom permits maximum protrusion. N/P finish, screwdriver type cap.

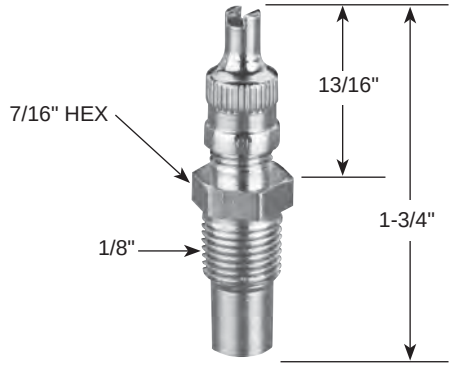
Packed 25 to a box.



Model No. 01468 0006

Has a 1/8" pipe thread part way up the stem which allows for minimum protrusion. N/P finish, has screwdriver type cap.

Packed 25 to a box.



Air Chucks

For regular airlines.

Model No. 05499 0000

Ball-foot air chuck, 1/4" female port.

Packed 10 to a box.

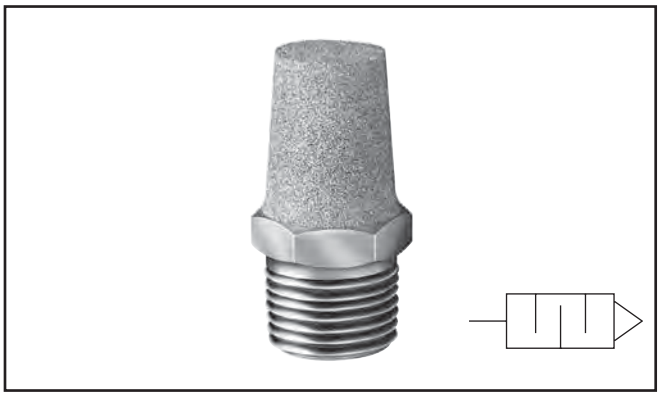
Model No. 06739 0000

Ball-foot air chuck with clip. Fits standard valve mouth. Saves holding on by hand. Has 1/4" port for connecting to hose.

Packed 10 to a box.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

EM Series – Sintered Bronze Muffler / Filters



General Description

Muffler / filters effectively reduce air exhaust noises to an industry accepted level with minimum flow restriction. They protect valves, impact wrenches, screw drivers and other air tools by preventing dirt and other foreign matter from entering the system. Non-corrosive. Can be cleaned with many common solvents.

Specifications

Maximum Operating Pressure..... 250 PSIG (Air)

Operating Temperature .....0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
EM12	1/8"	1.00	7/16"
EM25	1/4"	1.32	9/16"
EM37	3/8"	1.54	11/16"
EM50	1/2"	1.85	7/8"
EM75	3/4"	2.29	1-1/6"
EM100	1"	2.91	1-5/16"
EM125	1-1/4"	3.25	1-11/16"
EM150	1-1/2"	3.69	2"

Muffler / Flow Controls

General Description

Muffler / flow controls provide an acceptable exhaust noise level and effectively meter exhaust. Installed in valve exhaust ports, they control cylinder piston speeds throughout a wide range. The adjusting screw cannot be accidently blown out, can be locked to maintain setting. Brass and bronze construction. Clean with commonly used solvents.

Specifications

Maximum Operating Pressure.....250 PSIG (Air)

Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04502 0002	1/8"	1.15	9/16"
04504 0004	1/4"	1.42	1/2"
04506 0060	3/8"	1.49	11/16"
04508 0080	1/2"	1.77	7/8"
04512 0012	3/4"	1.98	1-1/16"
04516 0016	1"	2.15	1-5/16"

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Breather Vents

NOTE: Breather vents should not be used as exhaust mufflers.

General Description

These low silhouette versions of the muffler / filter are useful where space is a problem and / or to prevent contamination. Use for vacuum relief or pressure equalization in gear boxes, oil tanks, reservoirs, etc. Non-corrosive.

Specifications

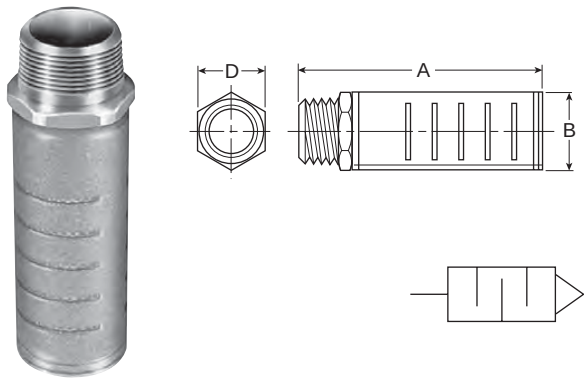
Maximum Operating Pressure.....150 PSIG (Air)

Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Number	Pipe Thread	Overall Length	Hex Size
04702 0002	1/8"	0.44	7/16"
04704 0004	1/4"	0.63	9/16"
04706 0006	3/8"	0.75	11/16"
04708 0008	1/2"	0.88	7/8"
04712 0012	3/4"	1.00	1-1/6"
04716 0016	1"	1.31	1-5/16"
04720 0020	1-1/4"	1.41	1-11/16"
04724 0024	1-1/2"	1.50	2"

ES Series – Silencer



General Description

These low silhouette versions of the muffler / filter are useful where space is a problem and / or to prevent contamination. Use for vacuum relief or pressure equalization in gear boxes, oil tanks, reservoirs, etc. Non-corrosive.

The silencer is designed to give superior performance in noise control with a minimum effect on air efficiency. “Trimline” design allows location in the tightest places without extra plumbing and fittings. Fits directly into the exhaust port of more than 90% of present commercial valves. Slotted body permits rapid discharge of air without undesirable back pressure. Unique nylon screen element resists dirt buildup or clogging.

Specifications

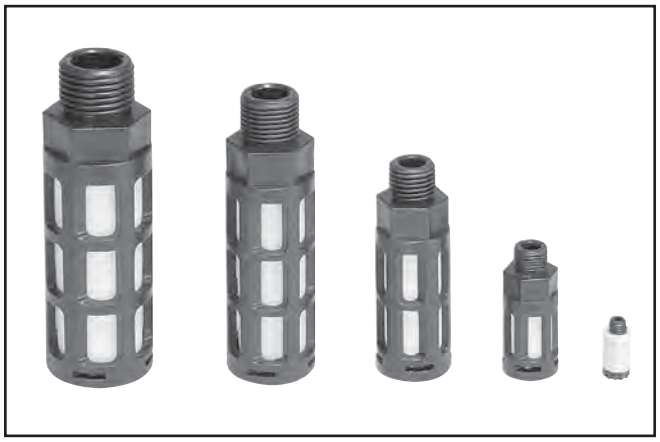
Maximum Operating Pressure.....250 PSIG (Air)

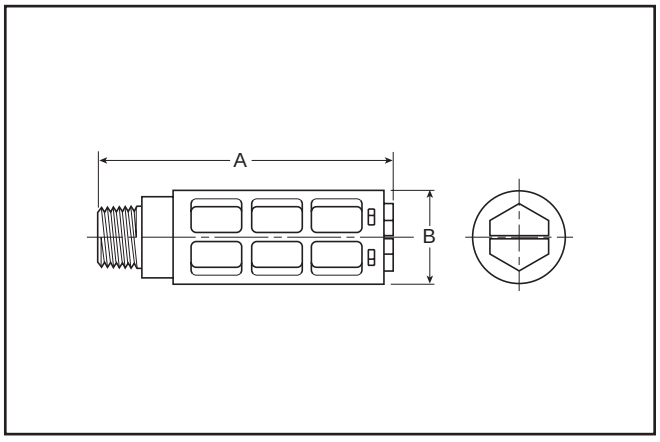
Operating Temperature ..... 0° to 300°F*

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Model Numbers		Pipe Thread	Flow SCFM @ 100 PSIG Inlet	Dimensions		
NPTF	BSPT (R)			A	B	D
ES12MC	**ESB12MC**	1/8"	115	1.85	0.81	0.63
ES25MC	**ESB25MC**	1/4"	129	1.85	0.81	0.63
ES37MC	**ESB37MC**	3/8"	219	3.31	1.26	1.00
ES50MC	**ESB50MC**	1/2"	549	3.31	1.26	1.00
ES75MC	**ESB75MC**	3/4"	893	4.56	2.01	1.62
ES100MC	**ESB100MC**	1"	1,013	4.56	2.01	1.62
ES125MC	**ESB125MC**	1-1/4"	1,486	5.69	2.88	—
ES150MC	**ESB150MC**	1-1/2"	1,580	5.69	2.88	—

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Features

- Compact
- Lightweight
- Easy to Install
- Excellent Noise Reduction
- Protects Components from Contamination
- NPT and BSPT Threads Available

Part Number		Thread Size	A (mm)	B (mm)	Maximum Flow (SCFM) 100 PSIG Inlet	Sound Pressure Level (dBA)	
NPT	BSPT					20 PSIG Inlet	100 PSIG Inlet
AS-5		M5	0.43 (11)	0.32 (8)	15	69	79
ASN-6	**AS-6**	1/8"	1.57 (40)	0.63 (16)	51	69	81
ASN-8	**AS-8**	1/4"	2.56 (65)	0.83 (21)	124	67	84
ASN-10	**AS-10**	3/8"	3.35 (85)	0.98 (25)	247	83	98
ASN-15	**AS-15**	1/2"	3.74 (95)	1.18 (30)	370	69	96

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The "Trimline" design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Specifications

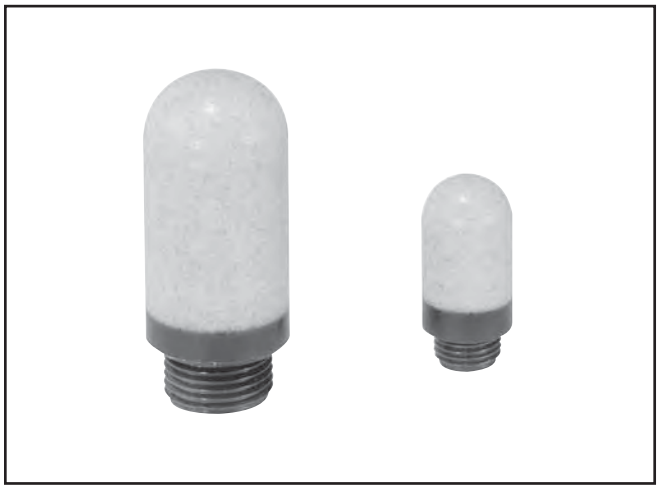
Pressure Rating..... 0 to 150 PSIG (0 to 10 bar, 0 to 1034 kPa)

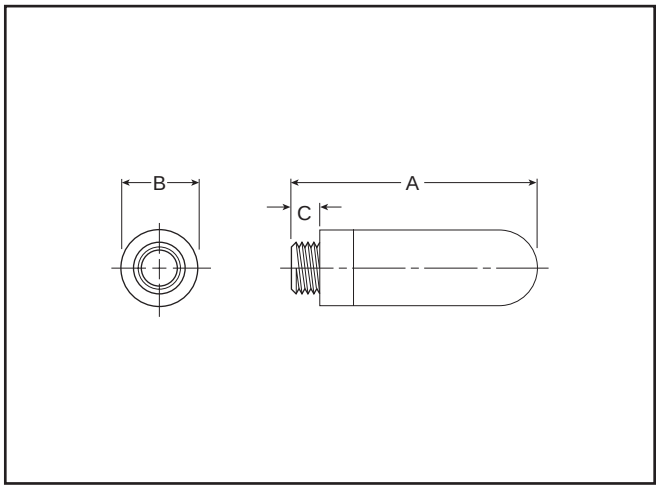
Temperature Rating ..... 14°F to 140°F (-10°C to 60°C)

Body ..... Acetal (Plastic)

Element ..... Polyethylene

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Features

- All Plastic Ultra Light Weight Versions
- High Noise Level Reduction
- Low Back Pressure Generation

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The "Trimline" design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Part Number	Port Thread	A	Diameter B	C	Weight (grams)
P6M-PAC5	M5	0.91 (23)	0.26 (6,5)	0.16 (4)	0.01
P6M-PAB1	G1/8	1.14 (29)	0.55 (14)	0.24 (6)	0.02
P6M-PAB2	G1/4	1.34 (34)	0.67 (17)	0.24 (6)	0.04
P6M-PAB3	G3/8	2.36 (60)	0.98 (25)	0.35 (9)	0.06
P6M-PAB4	G1/2	2.52 (64)	0.98 (25)	0.43 (11)	0.10
P6M-PAB6	G3/4	5.51 (140)	1.50 (38)	0.55 (14)	0.50
P6M-PAB8	G1	6.30 (160)	1.89 (48)	0.79 (20)	0.62

Specifications

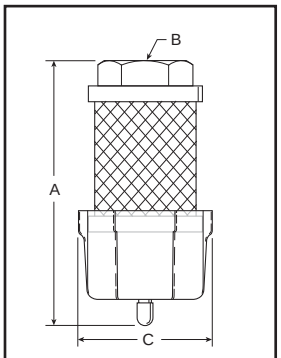
Pressure Rating.....0 to 246 PSIG
(0 to 17 bar, 0 to 1700 kPa)

Temperature Rating

Plastic .....14°F to 176 °F (-10°C to 80°C)
Metal.....14°F to 165 °F (-10°C to 74°C)

Efficiency 92%

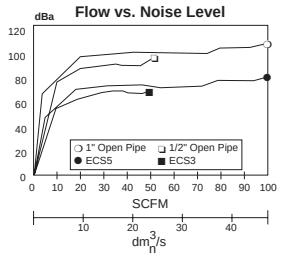
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

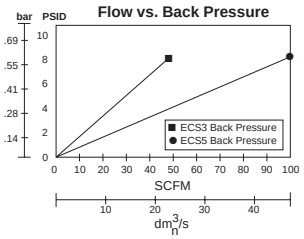


Dimensions:

Model	A	B	C
ECS3	5.30 (135 mm)	1/2" NPT	2.57 (65 mm)
ECS5	7.30 (185mm)	1" NPT	2.57 (65mm)

Performance Characteristics





Features

The ECS (Muffler-Reclassifier) eliminates unwanted oil mist and reduces exhaust noise from pneumatic valves, cylinders and air motors.

- 99.97% Oil Removal Efficiencies
- 25 dBA Noise Attenuation
- 1/2" NPT and 1" NPT
- Disposable Units
- Continuous or Plugged Drain Option
- Metal Retained Construction
- Fast Exhaust Time

Improve Overall Plant Environment

Exhaust oil mist and noise pollution have a direct impact on worker productivity.

Oil aerosol mist from lubricators and compressors is pervasive and enters the industrial plant environment through the exhaust ports of valves, cylinders and air motors. This rapidly expanding exhaust also produces sudden and excessive noise.

The ECS (Muffler-Reclassifier) is 99.97% efficient at removing the oil aerosols. The ECS also acts as a silencer to lower the dBA levels below O.S.H.A. requirements.

The result is a cleaner, quieter environment which equates to greater work productivity and safety.

Operation

Compressor oils and lubricating oils are exhausted from valves, cylinders and air motors into the ECS. Oil aerosols are “coalesced” into larger droplets and gravity pulls them into the attached drain sump. The sump can then be drained manually or by using a 1/4" ID plastic tube drain. The air flowing into the ECS is also muffled or silenced as it enters the inside of the ECS and passes through the filter media into the atmosphere.

Proven Technology

The ECS units are constructed from the same materials that go into our oil removal coalescing filter elements.

The seamless design insures media uniformity and strength. This proven technology provides high coalescing efficiency with low pressure drop.

The filter media is supported by cylindrical perforated steel retainers both inside and out. These retainers, fully plated for excellent corrosion resistance, give the ECS units high rupture strength in either flow direction. These filters can also be used as high efficiency inlet or bypass filters for vacuum pumps, or breather elements to protect the air above critical process liquids.

ECS3 / ECS5

The ECS solves two problems inherent in compressed air exhaust from valves, cylinders and air motors - oil mist removal and noise abatement.

The ECS will improve your industrial plant environment, thereby improving worker productivity.

Specifications

Maximum Operating Temperature .....125°F (52°C)

Maximum Line Pressure.....100 PSIG (6.8 bar)

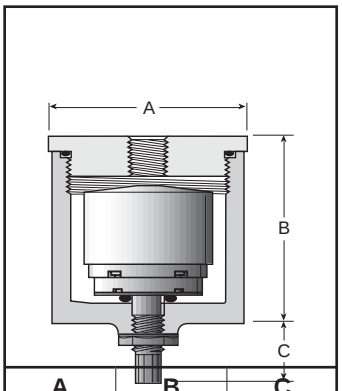
Ordering Information

ECS	3	*

Size	Engineering Level
3 1/2 inch 5 1 Inch	* Will be entered at factory.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Automatic Drip Leg Drain



A	B	C
2.50	2.37	0.87
64 mm	60 mm	22 mm

Features

- Auto Drain Ported 1/8" to Pipe Away Liquid.
- Drain has Manual Override
- Easily Serviced without Tool
- 20-250 PSIG Range
- Compact Size

Specifications

Housing & Cap.....Aluminum

Port Threads..... 1/4" - 1/2" Top
1/8" Drain

Pressure and Temperature Ratings:

Metal Bowl..... 20 to 250 PSIG (0 to 17.2 bar)
32°F to 175°F (0°C to 80°C)

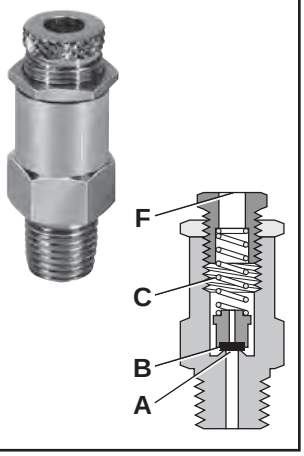
Seals.....Buna N

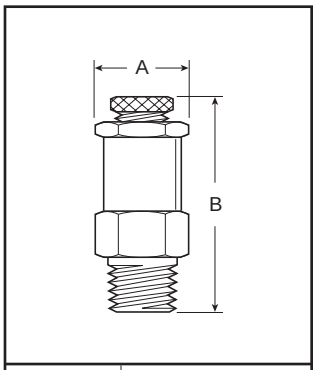
Ordering Information

Consists of Drip Leg Drain Housing WITH Auto Drain.

Model No.	Size
06D1NA	1/4"
06D3NA	1/2"

Relief Valve





A	B
0.75 Hex	1.88 - 2.25
19 mm	47.8 - 57.2 mm

Features

- Large Relief Capacity (70.39 SCFM @ 150 PSI when fully opened) in a Compact Size
- Lightweight Aluminum Construction with Resilient Seat

Application

The RV01A1N Pop Off Relief Valve is designed to protect against excessive pressure buildup in a pneumatic circuit or system.

Operation*

With the relief valve mounted in a reservoir or system, the force of system pressure at **(A)** is offset by the force of spring **(C)** acting on poppet seat **(B)**. At pressures lower than the setting, the poppet seat **(B)** is held against the body at **(A)** effecting a seal. As pressure approaches set point, the poppet begins to vent until set point is reached, at which time the poppet seat **(B)** lifts off the body at **(A)** allowing the excess pressure to vent to atmosphere at **(F)**. When the excess pressure has been vented, the spring **(C)** acts on the poppet seat **(B)** forcing it to seat on the body at **(A)**, sealing off the flow of air.

Specification

Body & Adjusting Screw.....Aluminum

Locking Nut.....Steel

Seat.....Nitrile

Spring.....Steel

Poppet..... Plastic

Operating Temperature.....32°F to 200°F (0°C to 93°C)

Port Threads..... 1/4 Inch Male

Relief Range..... 10 to 200 PSIG (.7 to 14 bar)
with standard spring.

* Ref: 1RV100B Installation & Service Instructions

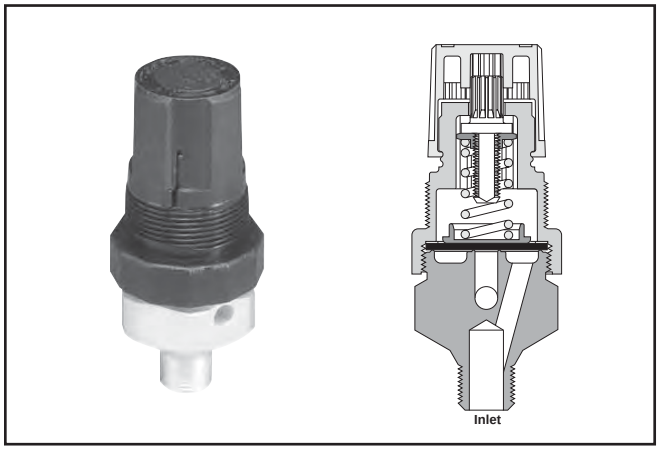
Ordering Information

Seals

RV01A1N	**XXX**	
	10 -200 PSI	**Blank** **BUNA** V Flurocarbon

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

130 Relief Valve



Features

- Compact, Sensitive Diaphragm-type Relief Valve
- Push-pull, Locking Knob
- Knob and Top Work the Same as a Miniature Regulator
- 130 has Lightweight Aluminum Construction
- 134 has a brass body, captured exhaust and is an Inline Type with 3 Inlet Ports and 1 Outlet Port

Applications

- Designed to Protect Against Excessive Pressure Buildup in a Pneumatic Circuit or System
- For Use where Gradual Proportional Relief is Required

Operation

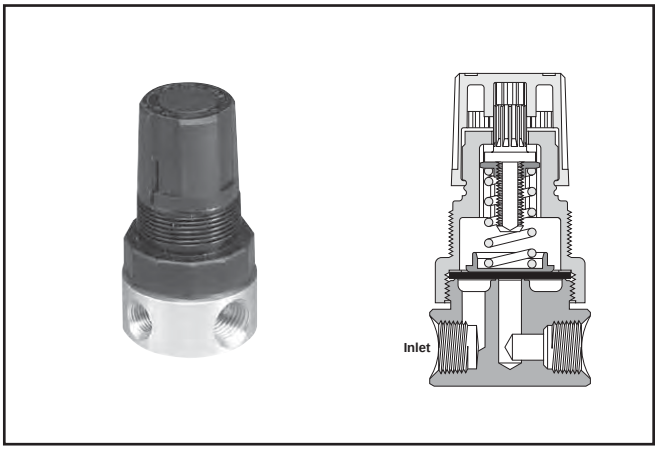
- Turn relief valve knob clockwise for maximum pressure.
- Set pressure going into relief valve at desired pressure.
- Turn relief valve knob counter-clockwise until exhaust starts to bleed.
- Turn relief valve knob clockwise until exhaust stops bleeding. Push to lock knob.

Ordering Information

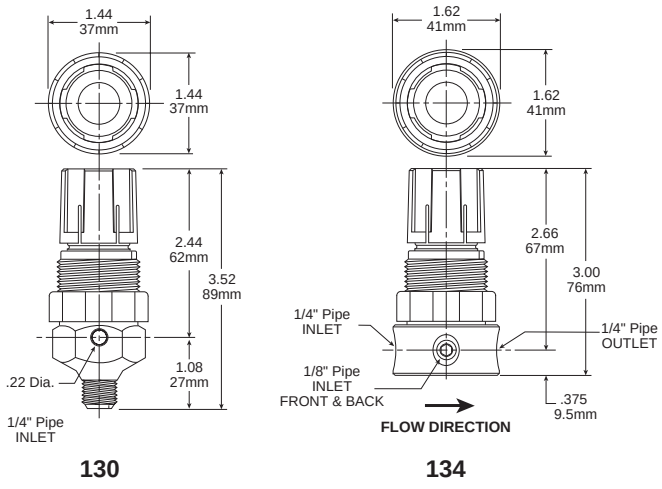
Relief Valve	Spring Range			
	0-15 PSIG	0-25 PSIG	0-50 PSIG	0-100 PSIG
130	130-02AA 130-02AAP*	130-02A 130-02AP*	130-02B 130-02BP*	130-02C 130-02CP*
134	134-02AA 134-02AAP*	134-02A 134-02AP*	134-02B 134-02BP*	134-02C 134-02CP*

* Panel mount nut included.

134 Relief Valve



Dimensions



Relief Valve Kits

Bonnet Assembly Kit PCKR364Y
Panel Mount Nut PR05X51

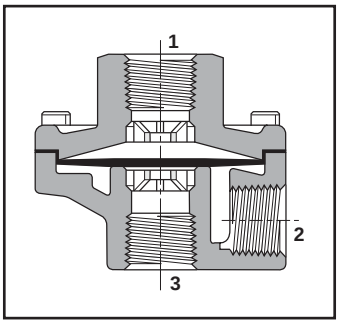
Specifications

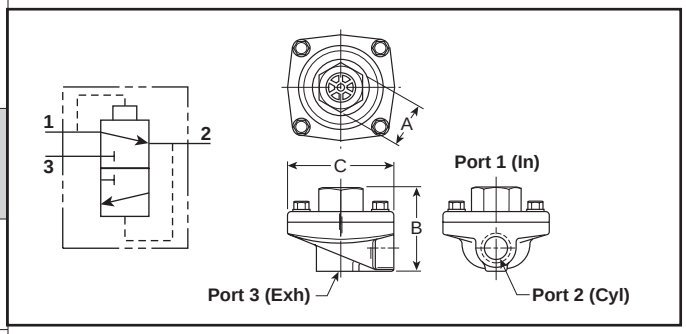
Relief Range .....0 to 100 PSIG (0 to 6.9 bar)
Maximum Inlet Pressure .....300 PSIG (20.7 bar)
Operating Temperature ..... 40°F to 120°F (4°C to 49°C)
Port Threads:
130 ..... 1/4" Pipe Male Only
134 .....Inlet Port – Two 1/8" & One 1/4" Pipe
Outlet Port – 1/4" Pipe

Materials of Construction

Adjusting Knob .....Polypropylene
Adjusting Screw .....Zinc-plated Steel
Body .....Aluminum (130); Brass (134)
Diaphragm / Disc .....Buna-N
Nut .....Chromated Steel
Spring Cage .....Acetal
Spring .....Zinc-plated Steel

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





General Information

Quick exhaust valves provide rapid exhaust of control air when placed between control valve and actuator. They can also be used as shuttle valves. Diaphragm materials are available in urethane, Nitrile, Fluorocarbon, and PTFE to meet a wide variety of operating conditions.

Valve Specifications

Operating Pressure (Air)

Maximum:
150 PSIG
200 PSIG for Model No. 0R37TB (PTFE diaphragm)

Minimum:
3 PSIG
50 PSIG for Model No. 0R37TB (PTFE diaphragm)

Operating Temperature:
Urethane: 0°F to 180°F* (-18°C to 80°C)
Nitrile: 0°F to 180°F* (-18°C to 80°C)
Fluorocarbon: 0°F to 400°F* (-18°C to 205°C)
PTFE: 0°F to 500°F* (-18°C to 260°C)

* Ambient temperatures below freezing require moisture-free air. Ambient temperatures below freezing and above 180° require lubricants especially selected for suitability at these temperatures. Pneumatic valves should be used with filtered and lubricated air.

Component Materials

Body Material..... Die cast aluminum

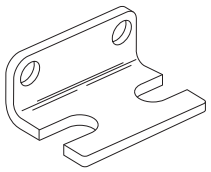
Static Seals.....Nitrile standard with urethane (Others see below)

Diaphragm ..... Standard – Urethane
Optional – Fluorocarbon, PTFE, or Nitrile (Depending on size)

Mounting Bracket Kit – No. 03640 8100

(Including body screws)

For "0R12" and "0R25" sizes with 7/8" "A" Dimension.

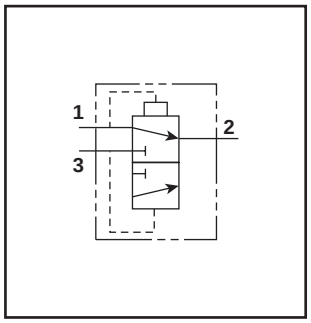


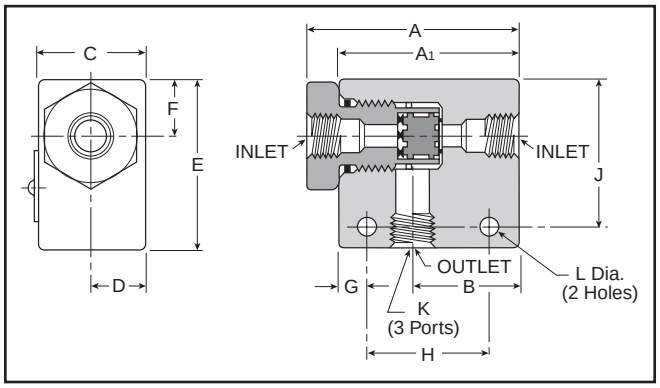
Model Selection, Performance Data and Dimensions

Port			Flow	Model Number		A	B	C	Service
1	2	3	(SCFM†)	NPTF	BSPP "G"				Kit No.
STANDARD URETHANE DIAPHRAGMS (Nitrile static seals)									
1/4"	1/4"	3/8"	150	**0R25NB**	0RB25NB	1" Hex	2.06	2.44	03340 0105
	3/8"	3/8"	240	**0R25PB**	—	1" Hex	2.06	2.44	03340 0105
3/8"	3/8"	3/8"	240	**0R37B**	0RB37B	1" Hex	2.06	2.44	03340 0105
1/2"	1/2"	1/2"	450	**0R50B**	0RB50B	1-1/2" Hex	2.88	3.38	03475 0109
3/4"	3/4"	3/4"	550	**0R75B**	0RB75B	1-1/2" Hex	2.88	3.38	03475 0109
NITRILE DIAPHRAGMS (Nitrile static seals)									
1/8"	1/8"	1/8"	70	**0R12B**	0RB12B	7/8" Sq.	1.75	1.88	03640 8000
	1/8"	1/4"	70	**0R12NB**	0RB12NB	7/8" Sq.	1.75	1.88	03640 8000
1/4"	1/4"	1/4"	90	**0R25B**	0RB25B	7/8" Sq.	1.75	1.88	03640 8000
	1/4"	3/8"	90	0R25NFB	0RB25NFB	7/8" Sq.	1.75	1.88	03340 8000
3/8"	3/8"	3/8"	240	0R37FB	0RB37FB	1" Hex	2.06	2.44	03340 8000
3/4"	3/4"	3/4"	550	0R75FB	0RB75FB	1-1/2" Hex	2.88	3.38	03475 9000
FLUOROCARBON DIAPHRAGMS for extended temperature operation (Fluorocarbon static seals)									
1/8"	1/8"	1/8"	70	0R12VB	0RB12VB	7/8" Sq.	1.75	1.88	03650 8000
	1/8"	1/4"	70	0R12NVB	0RB12NVB	7/8" Sq.	1.75	1.88	03650 8000
1/4"	1/4"	1/4"	90	0R25VB	0RB25VB	7/8" Sq.	1.75	1.88	03650 8000
3/8"	3/8"	3/8"	240	0R37VB	0RB37VB	1" Hex	2.06	2.44	03340 0319
1/2"	1/2"	1/2"	450	0R50VB	0RB50VB	1-1/2" Hex	2.88	3.38	03475 0120
3/4"	3/4"	3/4"	550	0R75VB	0RB75VB	1-1/2" Hex	2.88	3.38	03475 0120
PTFE DIAPHRAGMS for higher pressure and temperature (Fibre static seals)									
3/8"	3/8"	3/8"	240	0R37TB	0RB37TB	1" Hex	2.06	2.44	03340 0504

† At 100 PSIG inlet pressure with full pressure drop. **BOLD ITEMS ARE MOST POPULAR.**

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Component Materials

Body Material..... Aluminum
Internal Components..... Aluminum
Seals..... Nitrile

Model Selection and Dimensions

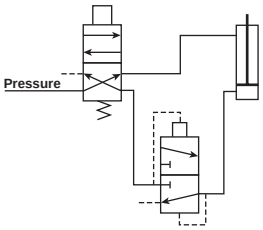
Model Number	Port Size	Dimensions											
		A	A1	B	C	D	E	F	G	H	J	K	L
N164 1001	1/8"	N/A	1.62	0.81	0.62	0.31	1.00	0.281	0.312	1.00	0.75	1/8 - 27	0.219
N164 2003	1/4"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	1/4 - 18	0.219
N164 3003	3/8"	2.50	2.12	1.25	1.25	0.62	2.00	0.67	0.265	1.25	1.35	3/8 - 16	0.219

Performance Data – Flow

Model Number	Port Size	Flow (Cv)
N164 1001	1/8"	0.32
N164 2003	1/4"	1.65
N164 3003	3/8"	2.02

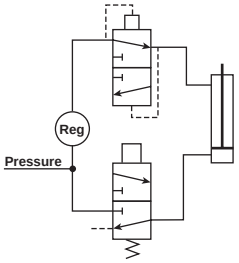
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Typical "Quick Exhaust Valve" Applications



Rapid Retraction – Double Acting Cylinder

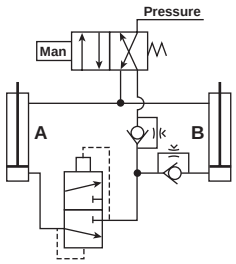
In this circuit, air is exhausted through a Quick Exhaust Valve that is **close coupled** to the cap end of the cylinder. Because the Quick Exhaust Valve has a greater exhaust capacity than the four-way Control Valve, increased cylinder speed can be accomplished with a smaller and less expensive control valve.



Dual Pressure Actuation of Double Acting Cylinder

This circuit utilizes a Quick Exhaust Valve and a three-way Control Valve to permit rapid extension of the cylinder at a high pressure. nder life.

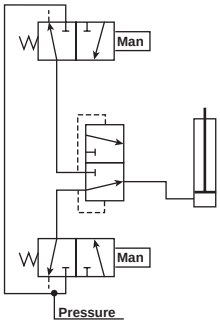
NOTE: Line pressure must be 3 or 4 times greater than rod end pressure. Effective working pressure is the differential between the cap and rod end.



Bi-Directional Control of Two Double Acting Cylinders

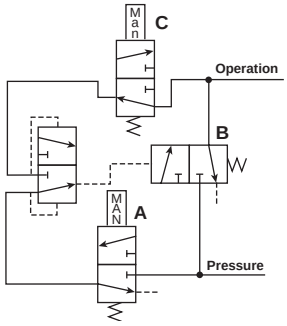
This circuit provides maximum control with a minimum of valving. A large four-way Control Valve is not needed to permit the rapid retraction of Cylinder A, as the Quick Exhaust Valve performs this function. The extension of Cylinders A and B and retraction of Cylinder B are controlled by Speed Control Valves.

Typical "Shuttle Valve" Applications



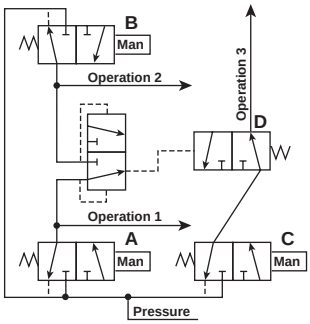
"OR" Circuit

The most common application of the Shuttle Valve is the "OR" Circuit. Here a cylinder or other work device can be actuated by either control valve. The valves can be manually or electrically actuated and located in any position.



Memory Circuit

This circuit enables continuous operation once initiated. Pressure is delivered to the circuit when Valve A is actuated. This allows pressure to pass through the shuttle valve actuating Valve B. Pressure then flows through Valve B and also the other side of the shuttle valve which holds Valve B open for continuous operation. To unlock the circuit, Valve C must be opened to exhaust the circuit and allow Valve B to return to its normally closed position.



Interlock

This circuit prevents the occurrence of a specific operation while one or another operation takes place. When either Valve A or B is actuated to perform operation 1 or 2, Valve D is shifted to the closed position and prevents operation 3 from occurring.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

AirGuard Protection System

Airfuse - protection of personnel, machinery and equipment

PROTECT YOUR MOST IMPORTANT ASSETS: YOUR EMPLOYEES AND THEIR EQUIPMENT!

The AirGuard offers simple but efficient protection of a broken compressed-air hose. The air supply is immediately shut off by the AirGuard, should the volume of air exceed a set value. This “value” is factory preset and is set to allow normal air consumption when using air tools.

Should the air consumption exceeds the set value, e.g. the air line is severed, then the internal piston instantly shuts off the main flow. An integral bleed hole allows some air to flow though. This enables the line pressure to automatically reset the AirGuard once the main line break is repaired.

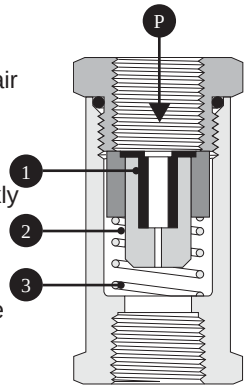
Product Features:

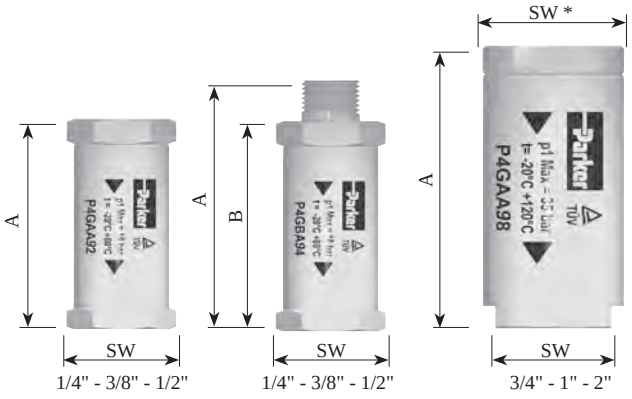
- Maintenance Friendly: Repair Possible While Plant Is Still Operating
- Economic: Competitive Pricing
- Complies With Eu Standard: En 983 - § 5.3.4.3.2.
- Reliable And Tamperproof: No Adjustment Necessary
- Complies With Iso Standard: 4414 - § 5.4.5.11.1
- Complies With Msha Regulation: 30Cfr 56.13021, 57.13021 And 57.1730
- Lightweight: Compact Size.
- Compatible With All Pneumatic Systems
- Can Be Used As A Flow Blocker
- Tuv Approval: No. 01-02-0145
- Eu Registered Utility: Model No. 0025 73 525
- Complies With Osha Regulation Standard: 29Cfr 1926.302 (Partial)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

AirGuard Protection System

(P) is the inlet. Air passes the piston (1) and continues through the seat (3). The air flow, passing the piston, is slowed down by means of length wise grooves on the outer side of the piston. If the flow is too high, the air cannot pass the piston quickly enough, and the piston is forced against the spring (2) and towards the seat. The maximum flow is shown in the graph. If the value indicated is exceeded e.g. if the hose suddenly breaks - the air supply is automatically shut of. An integral bleed hole allows some air to flow though. This enables the line pressure to automatically reset the AirGuard once the main line break is repaired.





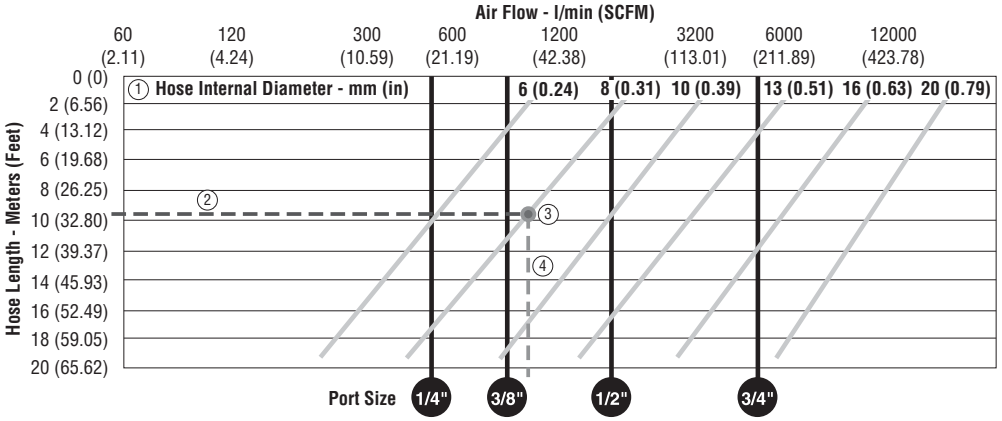
Weight and Dimensions metric (imperial)

Thread Connection	Dimensions mm (inch)			Weight g (oz.)	Max. Inlet Pressure	Temp. Range	Material	P1 Inlet Thread	P2 Outlet Thread	Part Number NPT	Part Number BSP
	A	B	SW								
1/4"	48 (1.89)	-	22 (.87)	30 (1.06)	(18 bar) 255 PSIG	-20°C to 80°C (-4°F to 176°F)	Housing: Aluminum Piston: Polyacetal	Female	Female	**P4GAA92**	**P4GAA12***
1/4"	58 (2.28)	49 (1.93)	22 (.87)	36 (1.27)				Male	Female	**P4GBA92**	**P4GBA12***
3/8"	59 (2.32)	-	28 (1.10)	58 (2.05)				Female	Female	**P4GAA93**	**P4GAA13***
3/8"	71 (2.80)	59 (2.32)	28 (1.10)	62 (2.19)				Male	Female	**P4GBA93**	**P4GBA13***
1/2"	65 (2.56)	-	31 (1.22)	78 (2.75)				Female	Female	**P4GAA94**	**P4GAA14***
1/2"	80 (3.15)	65 (2.56)	31 (1.22)	85 (3.00)				Male	Female	**P4GBA94**	**P4GBA14***
3/4"	76 (2.99)	-	30/36* (1.18/1.42*)	107 (3.77)		-20°C to 120°C (-4°F to 248°F)	Housing: Aluminum Piston: Aluminum	Female	Female	**P4GAA96**	**P4GAA16***
1"	100 (3.94)	-	41/50* (1.61/1.97*)	300 (10.58)	(35 bar) 500 PSIG			Female	Female	**P4GAA98**	**P4GAA18***
2"	130 (5.12)	-	70/80* (2.76/3.15*)	775 (27.34)				Female	Female	**P4GAA9C**	**P4GAA1C***

* Note: BSP Threads Available Upon Request.

How to Select the Optimal Size of an AirGuard

Information based on an inlet pressure of 7 bar (100 PSIG)



a. Determine the internal diameter of the hose, tube or pipe being used 1 (see specification Hose-internal Diameter in yellow box, yellow diagonal line).
b. Determine the length of the hose, tube or pipe 2 (Hose length in meters).
c. Define the intersection of point a and b, and mark a vertical line downwards, 3 - 4 (In the example the red/green dot and the green dashed line).
d. The next vertical black line, left of the intersection line 4 (example: green dashed) tells the correct AirGuard size (in inches).
e. Important: Every flow value to the right of the respective vertical line (black) would activate the AirGuard in case of a bursting hose, pipe or tube. All AirGuard sizes right of the intersection line (green) are too big and will not close up.
f. Example: Which air fuse should be used for a hose, pipe or tube bearing 8 mm inner diameter and 10 meters of length - follow the 10 meter line (red 2) to the intersection point (red/green dot 3). Now the next left black line marks the correct size.
g. Result: The correct size in our example is the AirGuard 3/8"

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

WDV3-G

The WDV3 Electrical Drain is designed to remove condensate from compressors, compressed air dryers and receivers up to any size, type or manufacturer.

The WDV3 offers true installation simplicity and it is recognized as the most reliable and best performing condensate drain worldwide. The large orifice in the direct acting valve, combined with its sophisticated timer module ensure many years of trouble-free draining of condensate.

Benefits

- Does Not Air-Lock During Operation
- Compressed Air Systems Up to Any Size
- Also Available In Stainless Steel
- The Direct Acting Valve Is Serviceable
- Suitable for All Types of Compressors
- TEST (Micro-Switch) Feature
- High Time Cycle Accuracy
- Large (4.5mm) Valve Orifice

Ordering Information

	Family	Voltage	Pipe Size	Valve Material	Pressure
WDV3 –	G	1	2	B	L

Family
G General

Voltage
1 120V AC
2 230V AC
3* 24VDC

*Available in 1/2" Only

Pipe Size
2 1/4" General
3 3/8" General
4 1/2" General

Valve Material
B Brass

Pressure
L 230 PSIG (16 bar)

Specifications

Operating Pressure..... 230 PSIG (15,9 bar)

Ambient Operating Range Temperature:
34° to 130°F (1.1° to 54°C)

Coil Insulation
Class H .....340°F (171.1°C)

Voltages
AC 115, 230/50-60

Timer:
Open Time..... .5 to 10 sec., Adjustable
Cycle Time..... .5 sec. to 45 min., Adjustable

Maximum Current Rating .....4mA Max.

Port Size..... 1/4, 3/8, 1/2 NPT

Weight ..... 1.8 lb. (0.8 kg)

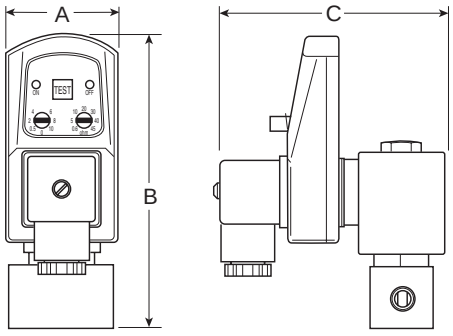
Materials of Construction

Valve Body .....Brass / Stainless Steel

Enclosure (NEMA 4).....ABS Plastic

Internal Parts .....Brass / Stainless Steel

Sealing Material..... FPM (Fluorocarbon)



Model Selection and Dimensions

Model Number	A	B	C
WDV3-G**BL	1.73 (44)	4.53 (115)	3.46 (88)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Zero air loss condensate drains are designed for economical removal of unwanted water, oil emulsions, and other liquids. These drains will only open when liquid is present and will not allow any compressed air to escape from the system.

Specifications

Operating Pressure..... 232 PSIG (16 bar)

Ambient Operating Range Temperature:
35° to 140°F (1.6° to 60°C)

Voltages
NPT..... 115/50-60Hz Standard
BSPP ..... 230/50-60Hz & 24VDC Optional

Zero Air Loss Condensate Drains

Port Size (NPT)	Compressor Aftercooler (SCFM)*	Capacity Refrigeration Dryer (SCFM)**	Filter (SCFM)	Drain Capacity Per Day (Gal/Liter)	Model Number	Service Kit †
3/8	—	—	424	6 (22.7)	**ED3002N115-K**	**SKED3000N115**
1 x 1/2, 1/8	141	282	1,413	13 (49.2)	**ED3004N115-K**	**SKED3000N115**
2 x 1/2, 1/8	247	494	2,472	23 (87.1)	**ED3007N115-K**	**SKED3000N115**
2 x 1/2, 1/8	1,059	2,119	10,594	100 (378.5)	**ED3030N115-K**	**SKED3000N115**
2 x 1/2, 1/8	3,532	7,063	35,315	330 (1,249.2)	**ED3100N115-K**	**SKED3000N115**

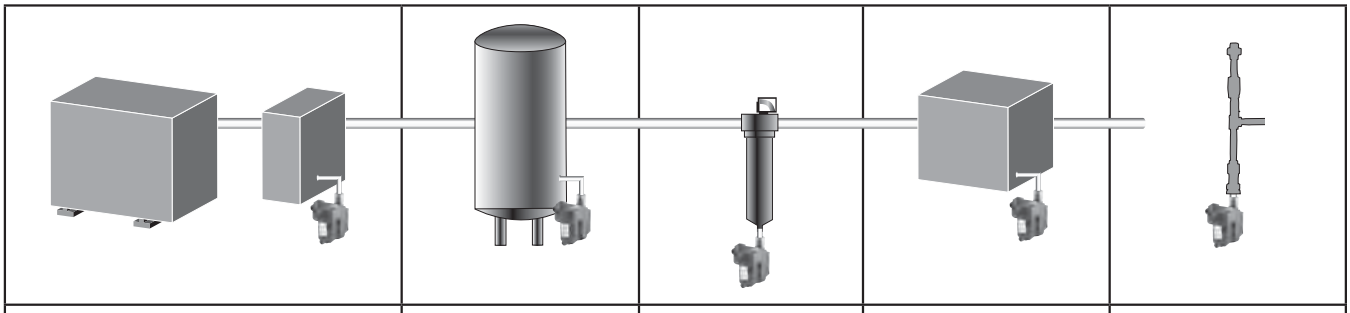
* Based on 100 PSI working pressure, air compressor inlet at 77°F (25°C) at 60% RH, air discharge temperature od 95°F (35°C) following the aftercooler, pressure dewpoint of 37°F (2.8°C) after the refrigerated dryer.

** Condensate from aftercooler or refrigerated dryer to be drained upstream – only for residual oil content or small quantities of condensate.

† ____

Note: A 6 ft. line cord will be included with each drain.

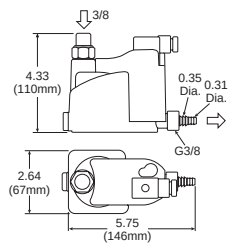
Where are condensate drains used?



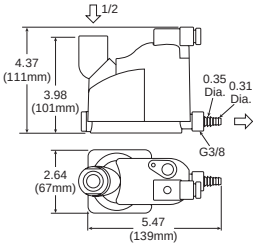
Compressor with Aftercooler	Receiver Tank	Filter	Air Dryer	Drip Leg
Removes the condensate that is collected after the air cools in the aftercooler	Removes the condensate that is collected when the air cools inside of the receiver tank	Removes the condensate that is collected in the filter bowl	Removes the condensate that is collected in the air dryer	Point-of-use applications: removes the condensate from compressed air pipes in a plant

Dimensions

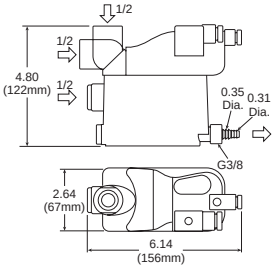
ED3002N115-K



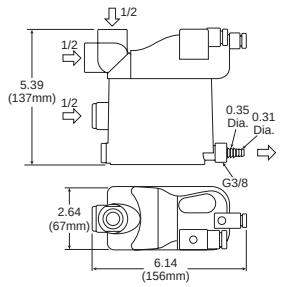
ED3004N115-K



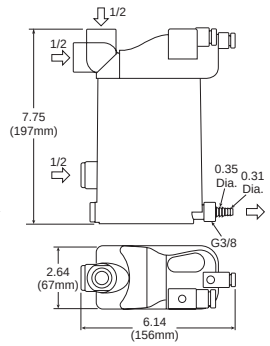
ED3007N115-K



ED3030N115-K



ED3100N115-K

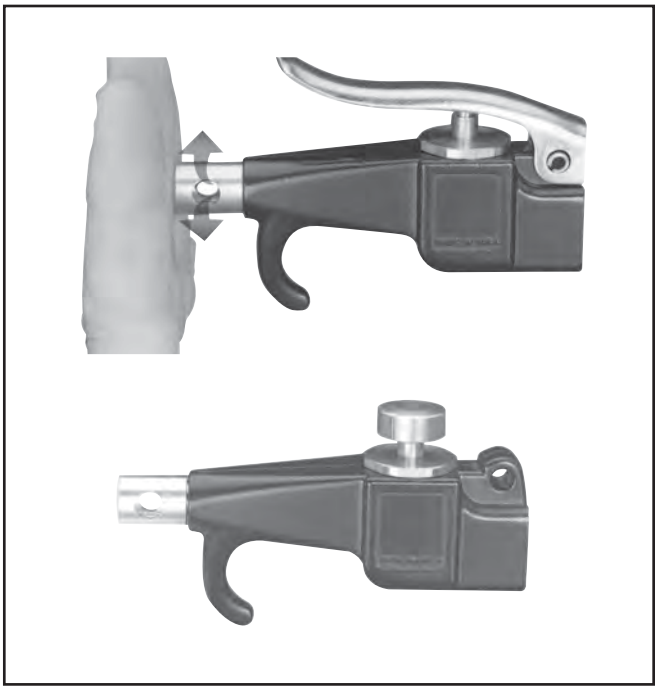


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

O.S.H.A. Certification — All safety blow guns conform to the requirements of Compressed Air Standards as currently described in the U.S. Bureau of Labor Standards, paragraph 1910.242, when pressurized at the inlet to a maximum of 100 PSIG. Conform to current O.S.H.A. Directive No. 100-1.

Brass Nozzle Blow Guns

Contoured lever or button control both provide a natural, comfortable grip even when used with gloves. Finger guard and hang-up hook for finger protection and quick safe storage. Die cast zinc body, painted finish.



Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 0010	1/4"	20

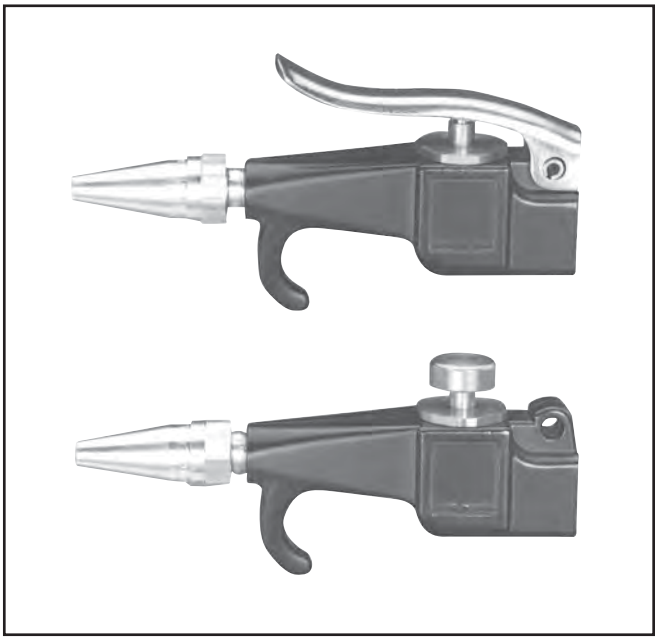
Button Operated

Part Number	Inlet Port	SCFM Rating*
00470 0010	1/4"	20

*Based on 100 PSIG inlet pressure.

Vortec FLO-GAIN Blow Guns

A quiet Vortec FLO-GAIN nozzle is combined with a high performance blow gun. Compressed air attains sonic velocity through an adjustable slot and attaches to the exterior surface of the cone shaped nozzle. Settings are shown on a micrometer dial. Sound level of 80 dBA with 80 PSIG inlet. Finger guard and hang-up hook offers desirable finger protection and quick secure storage.
Die cast zinc body, painted finish.



Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 0900	1/4"	70+

Button Operated

Part Number	Inlet Port	SCFM Rating*
00470 0900	1/4"	70+

*Based on 100 PSIG inlet pressure.

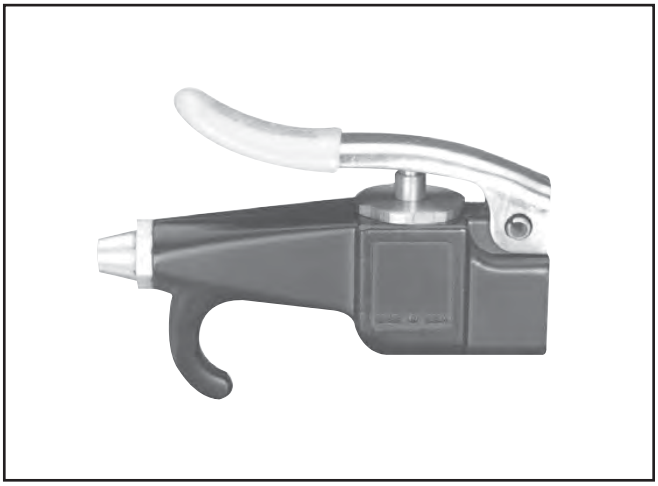
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Self-Regulating Blow Gun

Designed with integral self-regulating pressure reducing valve for automatic shut-off when nozzle is blocked. Prevents air pressure buildup over 30 PSIG in compliance with U.S. Dept. of Labor standards.

Air shield aids in protecting the operator against blow back of flying chips of dirt. Designed to operate at less than 90 dBA to comply with government regulations. Die cast zinc body, painted finish.

May be used with nozzle extensions on page G69.



Lever Operated

Part Number	Inlet Port	SCFM Rating*
00475 2900	1/4"	10

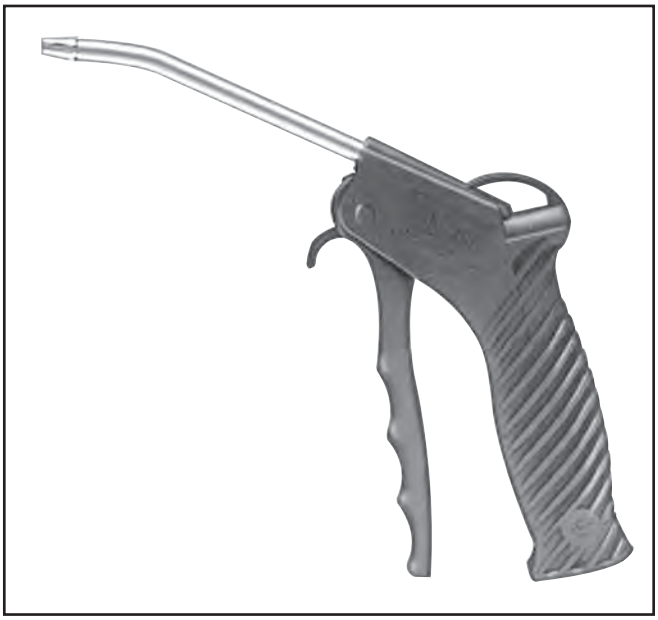
Performance Data

Inlet Pressure	Blocked Pressure	Sound Level
70 PSIG	17.0 PSIG	79 dBA
100 PSIG	21.0 PSIG	83 dBA
175 PSIG	28.0 PSIG	87 dBA

*Based on 100 PSIG inlet pressure.

Pistol Grip Blow Gun

Pistol grip is easy to aim for quick and efficient cleaning. Ideal for all shop housekeeping purposes. Lightweight and easy to handle. Easy trigger action features instant spring adjustment for controlled air. Get the amount of air where you want it with no restrictions, no cut-offs! Makes for a convenient connection for overhead or under bench floor air use.

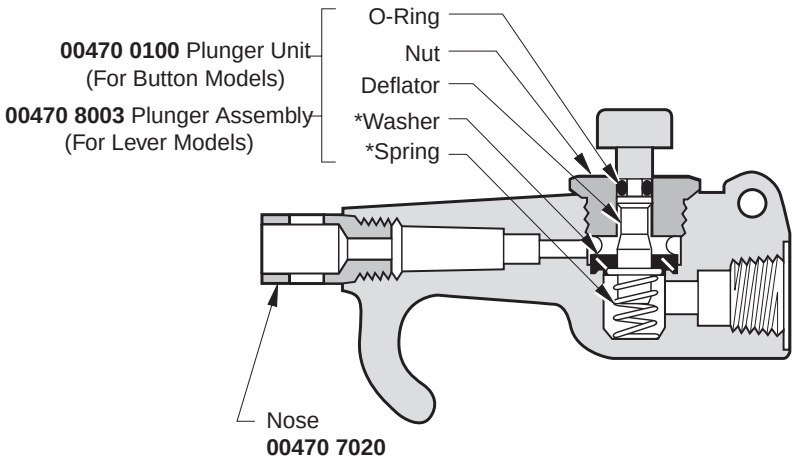


Part Number	Inlet Port	Rated Pressure	Temperature Range	OSHA Rated
BG441-NBL	1/4"	175 PSI	120° F	No

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Brass Nozzle
Model No. 00470 7020

General purpose nozzles are supplied as standard on 00470 0010, 00475 0010 and 07184 1000 blow guns. Conform to the requirements of the Williams Steiger Occupational Safety and Health Act of 1970, paragraph 1910.242 when fitted with blow guns pressurized at the inlet to a maximum of 100 PSIG. Conform to O.S.H.A. Directive 100-1.



* Contained in Service Kit No. **00470 0090**

470 and 475 Series Blow Guns

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Notes

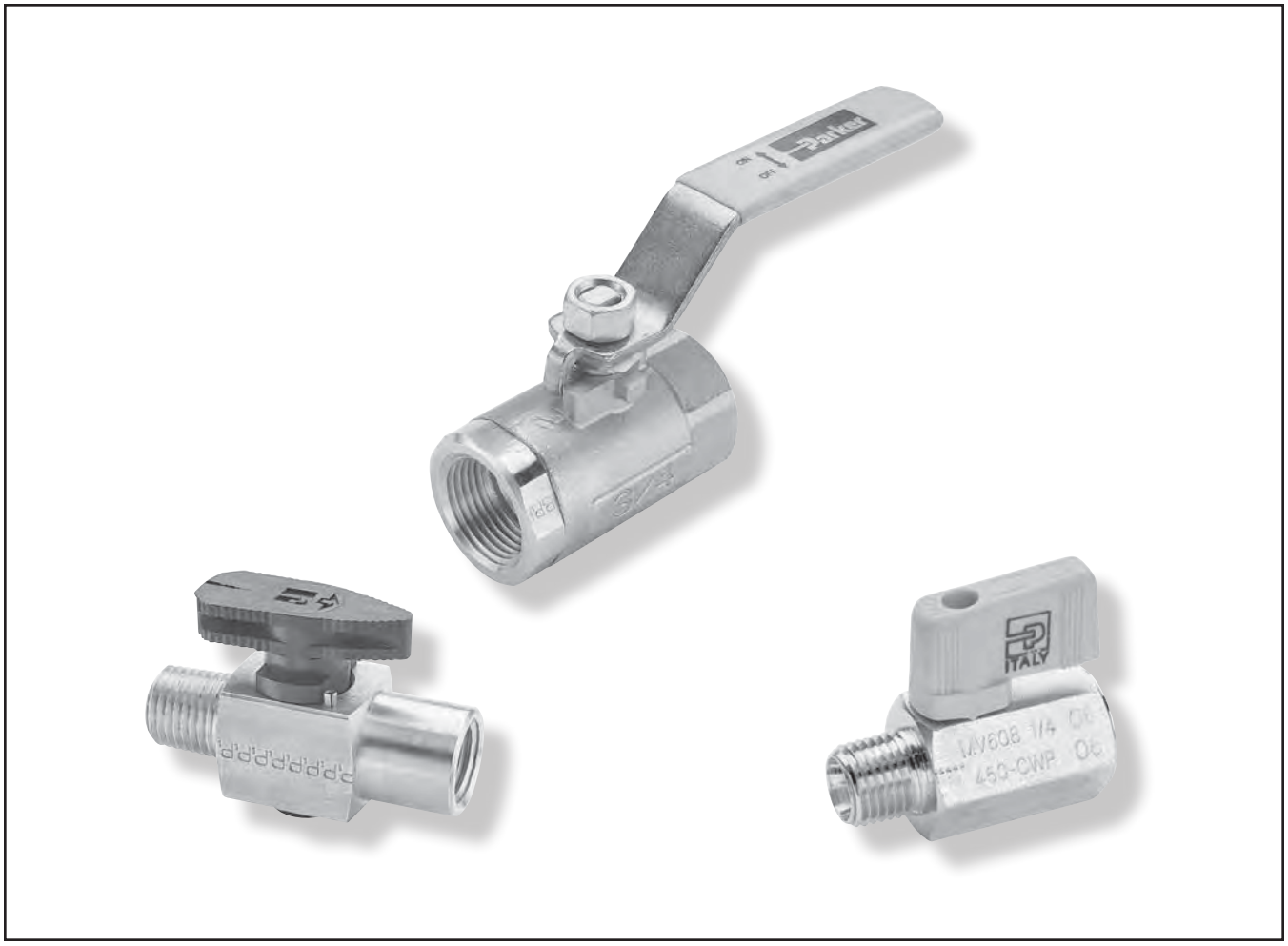
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Ball Valves

1/4" to 2", 2-Way
1/4" to 1", 2-Way Vented

Plug Valves

1/8" to 1/4" Pipe Size



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Brass Ball Valves	**XV500P** Female-Female  Page G70	**MV200** Mini Valve  Page G70	**MV608** Mini Valve  Page G70	**MV609** Mini Valve  Page G70	
Stainless Steel Valves	**XV502SS** Female-Female  Page G71				
Plug Valves & Drain Cocks	**PV607** Male-Male Plug Valve  Page G73	**PV608** Male-Female Plug Valve  Page G73	**PV609** Female-Female Plug Valve  Page G73	**DC602** Internal Seal Drain Cock  Page G74	**DC604** External Seal Drain Cock  Page G74

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Materials of Construction	
Valve Body:	Forged brass
Ball:	Chrome plated brass
Seats / Seals:	PTFE
Handle:	Steel

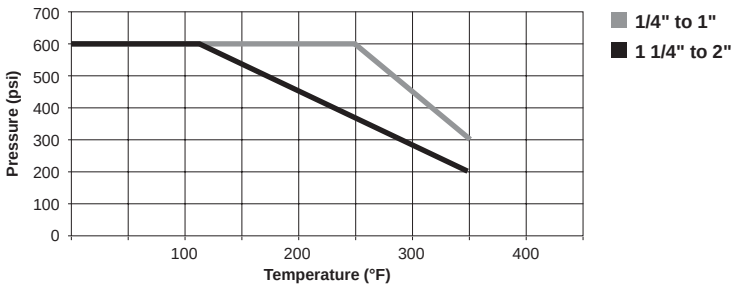
Style	Type	Material	Size	Options
V	**500**	**P**	**-4**	**-00**
Style	•V-Valve •VP-Valve, Padlocking handle •VV-Valve, Vented •VVP-Valve, Vented, Padlocking handle			
Type	500-Female / Female PTF ports			
Material	P- Brass PN-Nickel plated			
Size	4 = 1/4", 6 = 3/8", 8 - 1/2", 12 = 3/4", 16 = 1", 20 = 1-1/4", 24 = 1-1/2", 32 = 2"			
Options	•01-Stainless steel ball & stem •02-Stainless steel handle & nut •03-Stainless steel ball, stem, handle & nut •04-Tee handle •08-Unmarked yellow vinyl handle cover •21-Oval handle			

Specifications	
Operating Instructions:	Quarter turn is “ON” or “OFF”. (Provides positive stop action for full shutoff.)
Pressure Range:	•600 WOG, cold non-shock •Saturated steam up to 150 PSI and 400°F •Vacuum service to 29 inches Hg. •Vented up to 250 PSI
Temperature Ranges:	0° to +350°F
Note:	Periodically check the adjustable packing nut and tighten as required.

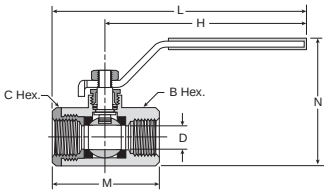
Flow Data	
Valve Size	**Cv**
1/4	4.0
3/8	5.8
1/2	12.0
3/4	25.0
1	35.0
1-1/4	57.0
1-1/2	92.0
2	224.0

Parker’s industrial ball valve product line is intended for general purpose use. Please be aware that ball valves are intended for use in the fully open or closed positions. Depending on application conditions, throttling of the valve may result in premature seal failure and/or inability to turn the valve handle.

For use as fuel line shutoffs for gasoline and diesel powered over the highway, off highway, and construction equipment vehicles. Water and air service lines on capital equipment and plant design plumbing that require total shutoff capability.

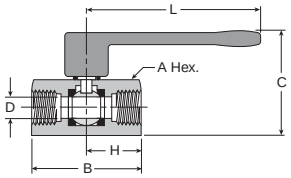


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



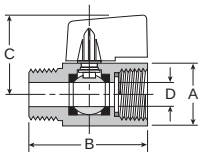
Female-Female Pipe Ends XV500P

Part No.	Pipe Thread	B Hex	C Hex	H	I	M	N	Flow Dia. D
XV500P-4	1/4	15/16	15/16	3.96	4.90	2.03	2.47	.375
XV500P-6	3/8	15/16	15/16	3.96	4.90	2.03	2.47	.375
XV500P-8	1/2*	1-1/16	1-1/16	3.96	5.00	2.20	2.58	.500
XV500P-12	3/4**	1-1/4	1-5/16	3.96	5.25	2.42	2.81	.685
XV500P-16	1**	1-1/2	1-9/16	3.96	5.34	2.75	3.08	.875



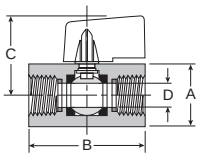
Female Pipe Ends, Lever Handle, Mini Ball Valve MV200

Part No.	Pipe Thread	A Hex	B	C	H	I	Flow Dia. D
MV200-2	1/8	.83	1.71	1.20	.91	2.83	.31
MV200-4	1/4	.83	1.71	1.20	.91	2.83	.31
MV200-6	3/8	.83	1.71	1.20	.91	2.83	.31
MV200-8	1/2	.98	2.11	1.28	1.10	2.83	.39



Male-Female Pipe Ends, Compact Handle, Mini Ball Valve MV608

Part No.	Pipe Thread	A Hex	B	c	Flow Dia. D
MV608-2	1/8	.83	1.72	1.22	.20
MV608-4	1/4	.83	1.72	1.22	.31
MV608-6	3/8	.83	1.72	1.22	.31
MV608-8	1/2	.98	2.11	1.30	.39



Female Pipe Ends, Compact Handle, Mini Ball Valve MV609

Part No.	Pipe Thread	A Hex	B	C	Flow Dia. D
MV609-2	1/8	.83	1.71	1.22	.24
MV609-4	1/4	.83	1.71	1.22	.31
MV609-6	3/8	.83	1.71	1.22	.31
MV609-8	1/2	.98	2.11	1.30	.39
MV609-6-4	3/8x1/4	.83	1.71	1.22	.31

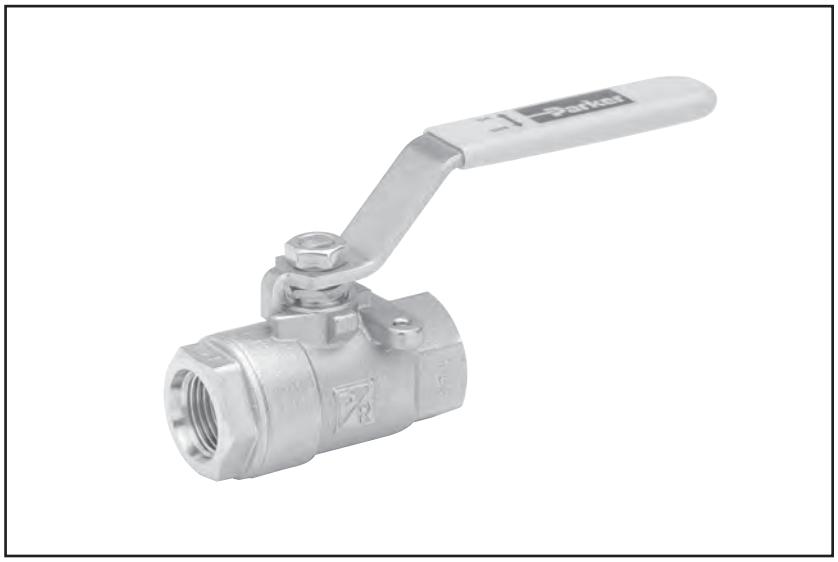
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Materials of Construction	
Valve Body:	CF-8M Stainless Steel
Ball:	Stainless Steel
Seats / Seals:	PTFE
Handle:	Stainless Steel

Pressure and Temperature Range	
Pressure Range	2,000 PSI Sizes: 1/4" - 1" 1,500 PSI Sizes: 1-1/4" - 2"
Temperature Range	0° to +400°F

Style	Type	Material	Size	Options
V	**502**	**SS**	**-4**	**-00**
Style	V - Valve VP - Valve, Padlocking handle			
Type	502-Panel mount female/Female PTF ports			
Material	SS-stainless steel			
Size	4 = 1/4", 6 = 3/8", 8 = 1/2", 12 = 3/4", 16 = 1", 20 = 1-1/4", 24 = 1-1/2", 32 = 2"			
Options	20 - Short handle 21 - Oval handle 35 - Welded retainer nut			

Approvals
Meets material quirements of NACE MR-01-75

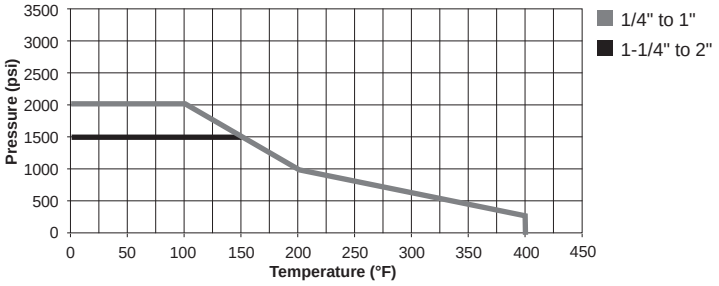


Parker's industrial ball valve product line is intended for general purpose use. Please be aware that ball valves are intended for use in the fully open or closed positions. Depending on application conditions, throttling of the valve may result in premature seal failure and / or inability to turn the valve handle.

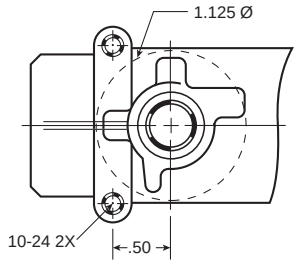
Applications include chemical plants, refineries, steel mills, industrial fuel lines and agricultural equipment. Meets material requirements of NACE MR-01-75.

Flow Data	
Valve Size	Cv
1/4	4.0
3/8	6.0
1/2	14.0
3/4	35.0
1	54.0
1-1/4	74.0
1-1/2	120.0
2	226.0

Note: Periodically check the adjustable packing nut and tighten as required.

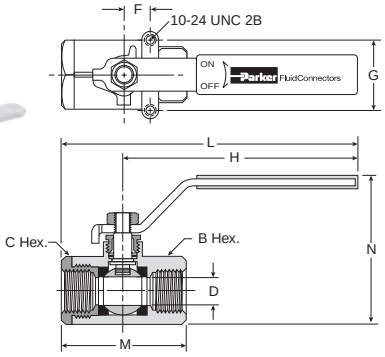


Mounting Detail



Female Pipe Ends, Panel Mount XV502SS

Part No.	Pipe Thd (NPT)	B/C Hex	F	G	H	I THD	L	M	N	Panel Flow Dia.D	Hole Dia.
XV502SS-4	1/4	15/16	.500	1.125	4.00	10-24 UNC	5.03	2.07	2.52	.380	1.125
XV502SS-6	3/8	15/16	.500	1.125	4.00	10-24 UNC	5.03	2.07	2.52	.380	1.125
XV502SS-8	1/2	1-1/16	.500	1.125	4.00	10-24 UNC	5.13	2.27	2.65	.500	1.125
XV502SS-12	3/4	1-3/8	.875	1.375	5.00	10-24 UNC	6.67	3.35	3.46	.790	1.500
XV502SS-16	1	1-5/8	.875	1.375	5.00	10-24 UNC	6.77	3.54	3.74	1.000	1.500
XV502SS-20	1-1/4	2	1.000	1.500	7.00	1/4-20 UNC	9.00	4.00	4.55	1.250	2.000
XV502SS-24	1-1/2	2-3/8	1.000	1.500	7.00	1/4-20 UNC	7.19	4.38	5.42	1.500	2.000
XV502SS-32	2	3	1.000	1.500	7.00	1/4-20 UNC	9.75	5.50	5.68	2.000	2.000

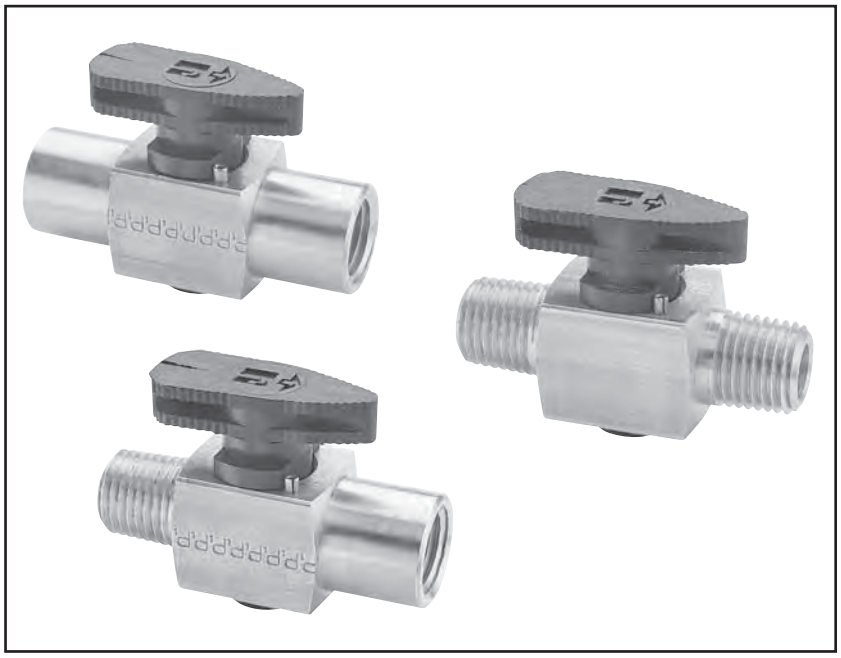


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Materials of Construction	
Fitting:	Brass
Nut:	Brass
Ferrule:	Brass

Nomenclature	
Example: PV607-2-options	**Attribute:**
PV	Plug valve
607	Male to male
2	1/8" Male
N (not shown)	Neoprene (brown)
V (not shown)	Florocarbon (red)

Specifications	
Pressure Range	Up to 250 PSI
Temperature Range	-40° to +175°F

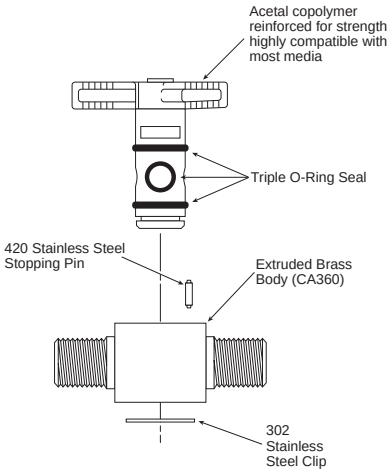


Compact design features internal nitrile seals and a one-piece extruded brass body, offering compatibility with a wide range of media. The one-piece stem / handle combination is constructed of glass reinforced acetal copolymer. Parker plug valves feature 1/4 turn shutoff allowing for ease of operation. All plug valves are 100% leak tested and are certified to be leak free to one SCCM.

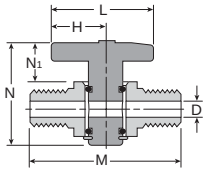
Installation Instructions

To assure sealability and reliable performance, the valve must be installed so that the flow media travels in the direction of the arrow on the valve handle.

Valve Components

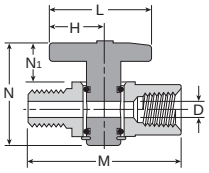


Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



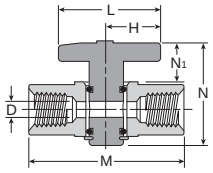
Male Pipe to Male Pipe Plug Valve PV607

Part No.	Pipe Thread	H	L	M	N	N1	Flow Dia. D
PV607-2	1/8	.67	1.34	1.66	1.38	.51	.200
PV607-4	1/4	.67	1.34	2.02	1.38	.51	.200



Female Pipe to Male Pipe Plug Valve PV608

Part No.	Pipe Thread	H	L	M	N	N1	Flow Dia. D
PV608-2	1/8	.67	1.34	1.67	1.38	.51	.200
PV608-4	1/4	.67	1.34	2.06	1.38	.51	.200



Female Pipe to Female Pipe Plug Valve PV609

Part No.	Pipe Thread	H	L	M	N	N1	Flow Dia. D
PV609-2	1/8	.67	1.34	1.68	1.38	.51	.200
PV609-4	1/4	.67	1.34	2.10	1.38	.51	.200

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

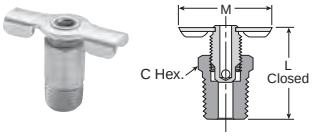
Drain Cock Nomenclature	
Example: DC604-2	**Attribute:**
DC	Drain Cock
604	External Seat
2	1/8 Pipe Thread

Ground Plug Shutoff Nomenclature	
Example: V204F-4-2	**Attribute:**
V	Valve
204	Flared to Male Pipe
F	Flared
4	1/4 Tube O.D.
2	1/8 Pipe Thread

Specifications	
Ground plug shutoff:	30 PSI
Drain Cocks	150 PSI
Temperature Ranges:	See specific part number for temperature range
Operating Fluid:	Air, water, gas and certain other fluids.
Note:	Lubricant may not be compatible with some fluids, contact factory for special fluid requirements

Drain cocks are manufactured in both external and internal seats. Ground plug shutoffs are manufactured from castings or forged bodies for extra strength. Hand tightening provides a metal - to - metal seal.

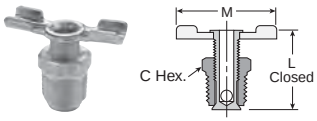
Internal Seal Drain Cock DC602



Temperature Range: -65° to +250°F

Part No.	Pipe Thread	C Hex	L	M
DC602-2	1/8	13/32	.92	1.25
DC602-4	1/4	9/16	.94	1.25

External Seal Drain Cock DC604



Temperature Range: -25° to +250°F

Part No.	Pipe Thread	C Hex	L	M
DC604-2*	1/8	7/16	.85	1.25
DC604-4	1/4	9/16	1.00	1.38
DC604-6*	3/8	11/16	1.22	1.68

*When assembled handle wings are down facing

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Quick Couplings

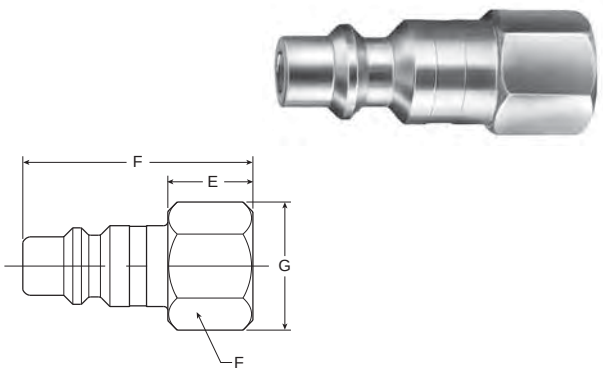
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Description

Industrial interchange nipples conform to MIL-C4109 and are for use with either Sleevmatic or Saflomatic couplers. The industrial interchange nipples are completely interchangeable with similar nipples manufactured by other quick coupling manufacturers conforming to A-A-59439 (formerly known as MIL-C-4109F), ANSI/(NFPA) T3.20.14-1990, or ISO6150-B requirements.

Hardened wear points and solid barstock construction provide long service life. Precision machined surfaces and hardened load-bearing areas resist the effects of mechanical shock in the most rugged applications.

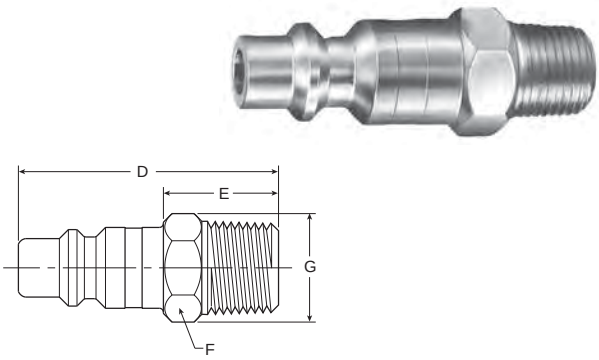
Female Pipe Thread



Body Size (Inches)	Part No. Steel	Thread Size	Overall Length D	Exposed Length* E	Hex Size F	Largest Diameter G
1/4	H1C	1/8-27	1.48	0.71	0.50	0.58
1/4	H3C	1/4-18	1.56	0.80	0.62	0.72
1/4	H3C-E	3/8-18	1.60	0.83	0.81	0.94
3/8	H1E	1/4-18	1.60	0.69	0.62	0.72
3/8	H3E	3/8-18	1.69	0.74	0.81	0.94
3/8	H3E-F	1/2-14	1.84	0.90	1.00	1.16
1/2	H1F	3/8-18	2.03	0.79	0.81	0.94
1/2	H3F	1/2-14	2.20	0.96	1.00	1.16
1/2	H3F-G	3/4-14	2.30	1.05	1.25	1.44
3/4	H3G-F	1/2-14	2.22	1.06	1.00	1.16
3/4	H3G	3/4-14	2.18	1.02	1.25	1.44
3/4	H3G-J	1-11½	2.41	1.25	1.63	1.80

* This dimension represents portion of nipple that is exposed when nipple is inserted in the coupler.

Male Pipe Thread

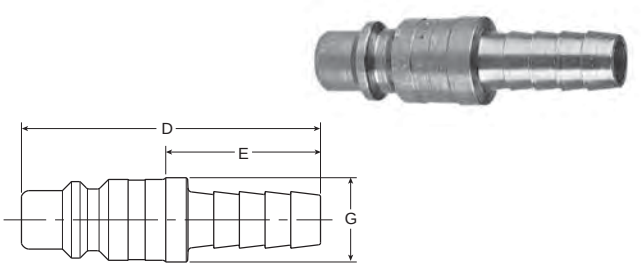


Body Size (Inches)	Part No. Steel	Thread Size	Overall Length D	Exposed Length E	Hex Size F	Largest Diameter G
1/4	H0C	1/8-27	1.68	0.92	0.50	0.58
1/4	H2C	1/4-18	1.66	0.89	0.56	0.65
1/4	H2C-E	3/8-18	1.90	1.14	0.69	0.80
3/8	H00E	1/8-27	1.68	0.73	0.62	0.72
3/8	H0E	1/4-18	1.90	0.95	0.62	0.72
3/8	H2E	3/8-18	1.90	0.95	0.69	0.80
3/8	H2E-F	1/2-14	2.03	1.09	0.88	1.02
1/2	H0F	3/8-18	2.20	0.96	0.69	0.79
1/2	H2F	1/2-14	2.35	1.09	0.88	1.01
1/2	H2F-G	3/4-14	2.40	1.16	1.06	1.22
3/4	H2G-F	1/2-14	2.32	1.16	1.00	1.16
3/4	H2G	3/4-14	2.28	1.12	1.06	1.22
3/4	H2G-J	1-11½	2.56	1.40	1.31	1.52

* This dimension represents portion of nipple that is exposed when nipple is inserted in the coupler.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

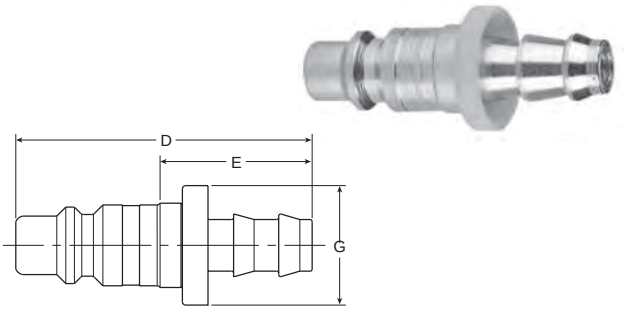
Standard Hose Barb



Body Size (Inches)	Part No. Steel	Hose I.D.	Overall Length D	Exposed Length* E	Largest Diameter G
1/4	H8C	1/4	1.72	0.95	0.46
1/4	H8C-D	5/16	1.96	1.20	0.50
1/4	H9C	3/8	1.96	1.20	0.50
3/8	H5E	3/8	1.85	0.90	0.59
3/8	H6E	1/2	2.09	1.14	0.68
1/2	H4F	3/8	2.36	1.12	0.66
1/2	H5F	1/2	2.36	1.12	0.66
1/2	H5F-G	3/4	2.95	1.71	0.87
3/4	H5G-F	1/2	2.47	1.31	0.93
3/4	H5G	3/4	3.00	1.84	0.93
3/4	H5G-J	1	3.24	2.08	1.24

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

Push-Lok Hose Barb**

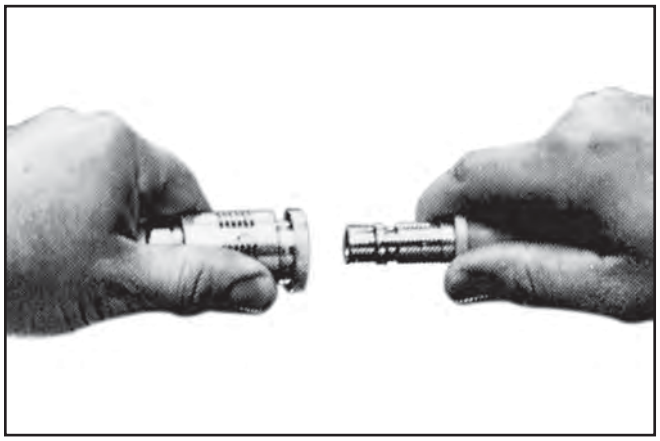


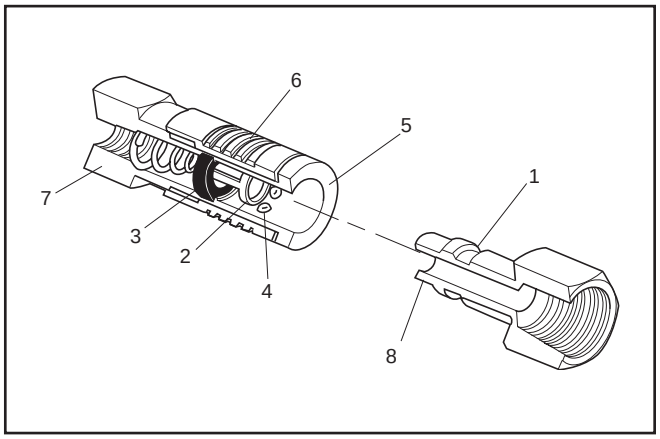
Body Size (Inches)	Part No. Steel	Hose I.D.	Overall Length D	Exposed Length* E	Largest Diameter G
1/4	H8CP	1/4	1.93	1.16	0.69
1/4	H9CP	3/8	2.08	1.31	0.86
3/8	H4EP	1/4	2.02	1.08	0.69
3/8	H5EP	3/8	2.17	1.23	0.88
3/8	H6EP	1/2	2.31	1.37	0.97
1/2	H4FP	3/8	2.52	1.27	0.88
1/2	H5FP	1/2	2.66	1.42	0.97
1/2	H6FP	1/2	2.95	1.71	1.14

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

** Push-Lok hose barbs are designed for use with a push-lok hose and do not require clamps.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Operation

Sleeve type couplings are widely used to connect air and low-pressure fluid hose lines.

Their compact and economical design uses a ball locking mechanism consisting of captive steel balls that engage the locking groove on the mating nipple. As pictured, the sliding spring loaded sleeve on the coupler must be manually retracted in order to connect or disconnect the nipple. It is easy to do, but two hands are normally required.

Common applications include compressed air, water, grease, paint, limited vacuum and limited gases.

Features

1. Hardened wear points and solid barstock construction provide long life for these quality couplings. Precision machined surfaces resist the effects of mechanical shocks, even in rugged use.
2. Tubular valve with large flow passages delivers high air flows with minimal pressure drop for efficient performance.
3. Molded seals with high quality valve seats form a bubble tight seal for reliable sealing within rated working pressures. The tubular valve minimizes wear on the seal and prolongs seal life.
4. Ball locking mechanism with large numbers of steel or stainless steel locking balls improves resistance to wear, insures positive connections and provides accurate alignment. The ball locking also allows swiveling action that reduces hose torque.
5. Sleeve guard resists accidental disconnection by allowing the coupling to ride over obstructions without the sleeve being accidentally retracted. It also contributes to greater strength.
6. Knurling and grooves on sleeve provide gripping surfaces for ease of operation.
7. Wide range of sizes, materials and end terminations are available. Sleeve type quick couplings are offered with male pipe, female pipe, push-lok hose barb and standard hose barb ends. Materials offered are Nitrile, Ethylene, Propylene and Fluorocarbon for seals and brass or steel for metals.
8. Interchangeability. Sleevmatic couplers are used with industrial interchange nipples conforming to MIL-C4109.

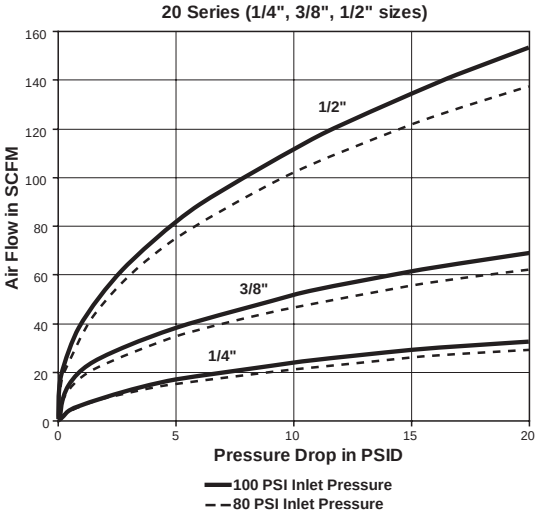
Specifications

Body Size	**1/4**	**3/8**	**1/2**
Rated Pressure (psi)	300	300	300
Temperature Range			
Nitrile	-40°F to 250°F		
Ethylene Propylene	-65°F to 400°F		
Fluorocarbon	-30°F to 400°F		
Locking Device	4 Balls	8 Balls	8 Balls
Vacuum Data (inches Hg)*			
Disconnected (coupler only)	Not recommended		
Connected	27.4	27.4	27.4

* Couplings for vacuum service should be 100% tested – an extra cost service. Consult factory.

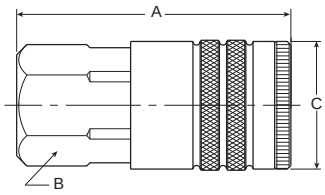
Performance

Sleevmatic 1/4", 3/8", 1/2"



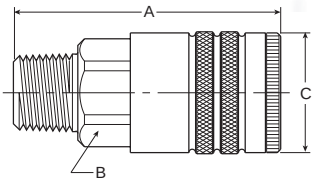
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Female Pipe Thread



Body Size (Inches)	Part No.		Thread Size	Overall Length A	Hex Size B	Largest Diameter C
	Brass	Steel				
1/4	B23A	—	1/8-27	1.83	0.75	0.90
1/4	B23	—	1/4-18	1.83	0.75	0.90
1/4	B23E	—	3/8-18	1.95	0.81	0.94
3/8	—	25C	1/4-18	2.22	0.88	1.06
3/8	—	25	3/8-18	2.28	0.88	1.06
3/8	—	25F	1/2-14	2.55	1.00	1.16
1/2	—	17E	3/8-18	2.74	1.00	1.19
1/2	—	17	1/2-14	2.96	1.00	1.19
1/2	—	17G	3/4-14	3.19	1.25	1.44

Male Pipe Thread

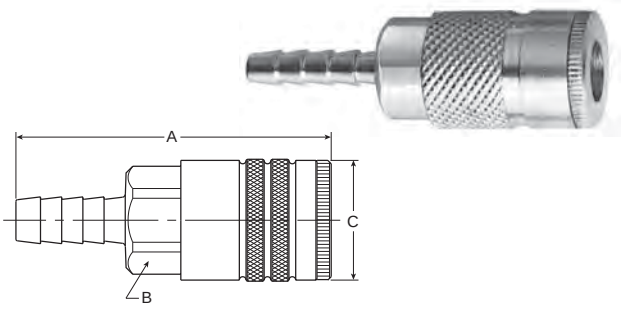


Body Size (Inches)	Part No.		Thread Size	Overall Length A	Hex Size B	Largest Diameter C
	Brass	Steel				
1/4	B22A	—	1/8-27	1.89	0.75	0.90
1/4	B22	—	1/4-18	2.05	0.75	0.90
1/4	B22E	—	3/8-18	2.08	0.75	0.90
3/8	—	24C	1/4-18	2.36	0.88	1.06
3/8	—	24	3/8-18	2.39	0.88	1.06
3/8	—	24F	1/2-14	2.55	0.88	1.06
1/2	—	16E	3/8-18	2.93	1.00	1.19
1/2	—	16	1/2-14	3.08	1.00	1.19
1/2	—	16G	3/4-14	3.21	1.13	1.30

NOTE: To indicate Fluorocarbon seals, add the letter Y as a suffix to the catalog number of the coupler. To indicate Ethylene Propylene seals, add the letter W as a suffix to the catalog number of the coupler.
Example: B23AY or B23AW

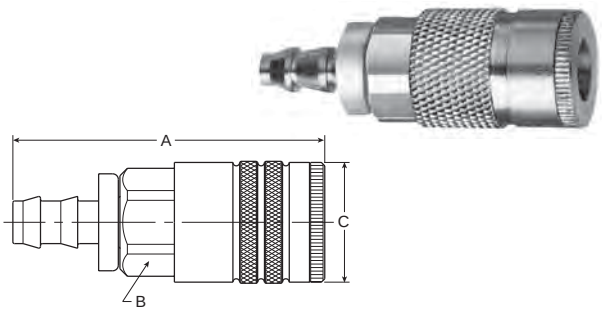
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Standard Hose Barb



Body Size (Inches)	Part No.		Hose	Overall Length A	Hex Size B	Largest Diameter C
	Brass	Steel	I.D.			
1/4	B20-3B	—	1/4	2.49	0.75	0.90
1/4	B20-4B	—	5/16	2.49	0.75	0.90
1/4	B20-5B	—	3/8	2.49	0.75	0.90
3/8	—	24-5B	3/8	2.86	0.88	1.06
3/8	—	24-6B	1/2	3.08	0.88	1.06
1/2	—	16-5B	3/8	3.37	1.00	1.19
1/2	—	16-6B	1/2	3.62	1.00	1.19
1/2	—	16-7B	3/4	3.96	1.00	1.19

Push-Lok Hose Barb*



Body Size (Inches)	Part No.		Hose I.D.	Overall Length A	Hex Size B	Largest Diameter C
	Brass	Steel				
1/4	B20-3BP	—	1/4	2.32	0.75	0.90
1/4	B20-5BP	—	3/8	2.47	0.75	0.90
3/8	—	24-5BP	3/8	2.88	0.88	1.06
1/2	—	16-5BP	3/8	3.35	1.00	1.19
1/2	—	16-6BP	1/2	3.46	1.00	1.19

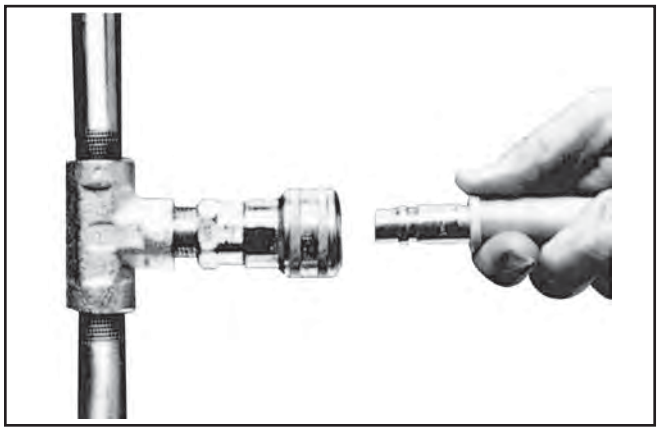
* Push-Lok hose barbsd are designed for use with push-lok hose and do not require clamps.

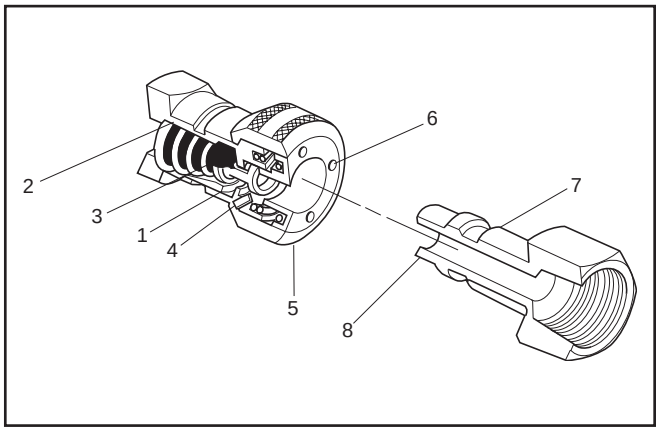
NOTE: To indicate Fluorocarbon seals, add the letter Y as a suffix to the catalog number of the coupler. To indicate Ethylene Propylene seals, add the letter W as a suffix to the catalog number of the coupler.
Example: B20-3BY or B20-3BW

Repair Kits

Body Size	Nitrile	Fluorocarbon	Ethylene Propylene
1/4	21K	21KY	21KW
3/8	14K	—	14KW
1/2	16K	16KY	16KW

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Operation

Push type couplings feature one-handed “automatic” connection by pushing the nipple into the coupler – provided the coupler half is firmly mounted.

The locking mechanism of Saflomatic push type couplers consists of pawls or pins which act directly on the sleeve, thereby causing the sleeve to automatically retract when the mating nipple is inserted. The sleeve must be manually retracted in order to remove the nipple.

Saflomatic couplings are push type “single shut off” couplings.

Common applications include compressed air, water, grease, paint, limited vacuum and limited gas.

Features

1. Saflomatic tubular valves with their large flow windows deliver high air flow with minimum pressure drop – for efficient performance of air tools and other actuators. The tubular valve also provides 360 degree seal support to prevent cold flow and bore constriction, thereby extending seal life.
2. Tapered flow recesses in the valve body provide maximum flow capability.
3. Precision molded seals with high quality valve seats for a bubble tight seal that assures reliable sealing within rated working pressures. The Saflomatic design with its 360° seal support gives maximum seal retention.
4. Locking pawls are of hardened stainless steel for a durable locking mechanism that provides good alignment and sideload resistance.
5. Push-to-connect design permits one-handed connection when the coupler half is rigidly mounted.
6. Back pressure vent holes allow easier connections especially with liquids.
7. Hardened wear points and solid barstock construction provide long life for these quality couplings. Precision machined surfaces resist the effects of mechanical shocks, even in rugged use.
8. Interchangeability. Saflomatic couplers are used with industrial interchange nipples conforming to MIL-C4109.

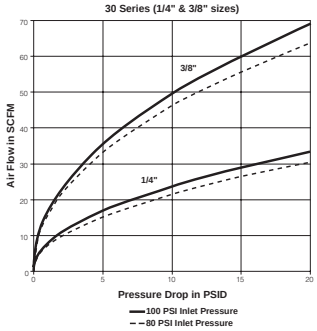
Specifications

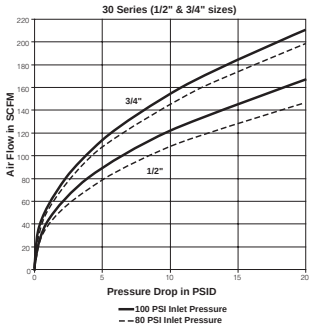
Body Size	**1/4**	**3/8**	**1/2**	**3/4**
Rated Pressure (psi)	300	300	300	300
Temperature Range				
Nitrile	-40°F to 250°F			
Ethylene Propylene	-65°F to 400°F			
Fluorocarbon	-30°F to 400°F			
Locking Device	3 pawls	4 pawls	5 pawls	6 pawls
Vacuum Data (inches Hg)*				
Disconnected (coupler only)	Not recommended			
Connected	27.4	27.4	27.4	27.4

* Couplings for vacuum service should be 100% tested – an extra cost service. Consult factory.

Performance

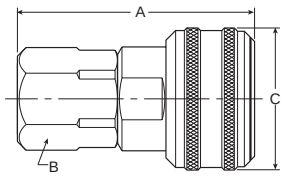
Saflomatic 1/4" to 3/4"





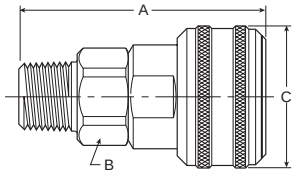
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Female Pipe Thread



Body Size (Inches)	Part No. Brass	Thread Size	Overall Length A	Hex Size B	Largest Diameter C
1/4	B33A	1/8-27	1.96	0.75	1.20
1/4	B33	1/4-18	1.96	0.75	1.20
1/4	B33E	3/8-18	2.03	0.81	1.20
3/8	B35C	1/4-18	2.26	0.88	1.39
3/8	B35	3/8-18	2.33	0.88	1.39
3/8	B35F	1/2-14	2.57	1.00	1.39
1/2	B37E	3/8-18	2.76	1.00	1.52
1/2	B37	1/2-14	3.00	1.00	1.52
1/2	B37G	3/4-14	3.12	1.25	1.52
3/4	B39F	1/2-14	2.85	1.31	1.90
3/4	B39	3/4-14	2.99	1.31	1.90
3/4	B39J	1-11½	3.18	1.56	1.90

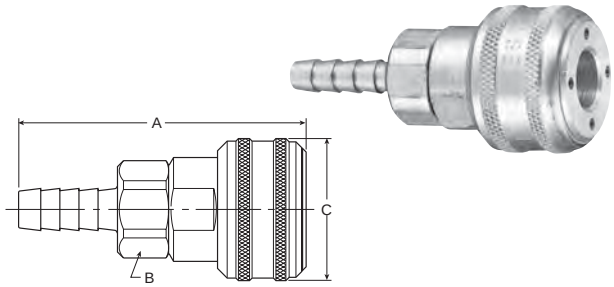
Male Pipe Thread



Body Size (Inches)	Part No. Brass	Thread Size	Overall Length A	Hex Size B	Largest Diameter C
1/4	B32A	1/8-27	2.03	0.75	1.20
1/4	B32	1/4-18	2.18	0.75	1.20
1/4	B32E	3/8-18	2.18	0.75	1.20
3/8	B34C	1/4-18	2.38	0.88	1.39
3/8	B34	3/8-18	2.44	0.88	1.39
3/8	B34F	1/2-14	2.57	0.88	1.39
1/2	B36E	3/8-18	2.92	1.00	1.52
1/2	B36	1/2-14	3.09	1.00	1.52
1/2	B36G	3/4-14	3.12	1.13	1.52
3/4	B38	3/4-14	2.95	1.31	1.90
3/4	B38J	1-11½	3.12	1.31	1.90

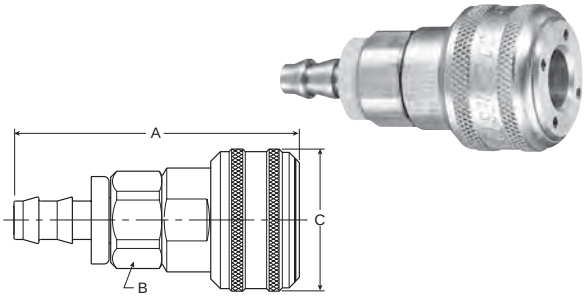
NOTE: To indicate Fluorocarbon seals, add the letter Y as a suffix to the catalog number of the coupler. To indicate Ethylene Propylene seals, add the letter W as a suffix to the catalog number of the coupler. Example: B33AY or B33AW

Standard Hose Barb



Body Size (Inches)	Part No. Brass	Hose I.D.	Overall Length A	Hex Size B	Largest Diameter C
1/4	B30-3B	1/4	2.62	0.75	1.20
1/4	B30-4B	5/16	2.62	0.75	1.20
1/4	B30-5B	3/8	2.62	0.75	1.20
3/8	B34-5B	3/8	2.85	0.88	1.39
3/8	B34-6B	1/2	2.85	0.88	1.39
1/2	B36-6B	1/2	3.33	1.00	1.52
1/2	B36-7B	3/4	3.86	1.00	1.52
3/4	B38-7B	3/4	3.69	1.31	1.90
3/4	B38-8B	1	3.93	1.31	1.90

Push-Lok Hose Barb*



Body Size (Inches)	Part No. Brass	Hose I.D.	Overall Length A	Hex Size B	Largest Diameter C
1/4	B30-3BP	1/4	2.45	0.75	1.20
1/4	B30-5BP	3/8	2.60	0.75	1.20
3/8	B34-5BP	3/8	2.82	0.88	1.39
1/2	B36-6BP	1/2	3.46	1.00	1.52

* Push-Lok hose barbs are designed for use with push-lok hose and do not require clamps.

NOTE: To indicate Fluorocarbon seals, add the letter Y as a suffix to the catalog number of the coupler. Example: B30-3BY

Repair Kits

Body Size	Nitrile	Fluorocarbon	Ethylene Propylene
1/4	21K	21KY	21KW
3/8	14K	14KY	14KW
1/2	16K	16KY	16KW
3/4	38K	38KY	38KW

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

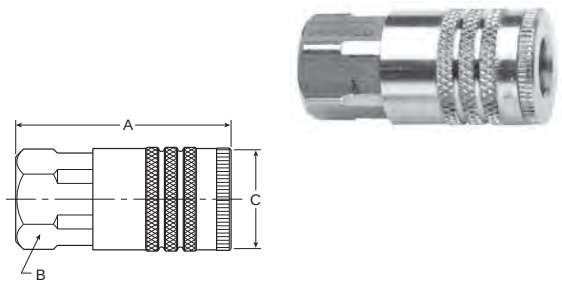
Description

Economatic couplings feature the tubular valve in a coupler body that interchanges with ARO 210 and similar design couplers and nipples. Economatic couplings are available only in 1/4" body size, but include 3/8" thread size. Economatic couplings have brass bodies with steel sleeves and valves for durability. Standard seal material is Nitrile.

Specifications

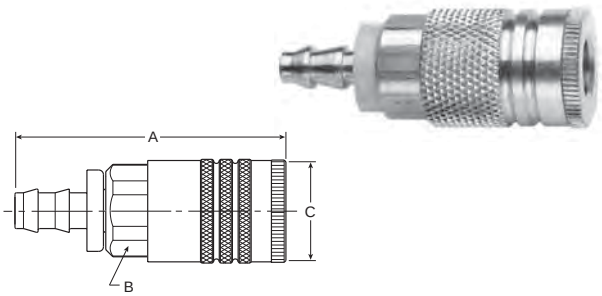
Body Size: ..... 1/4"
Rated Pressure: ..... 300 PSI
Temperature Range (Standard Seals): ..... -40°F to 250°F
Locking Device: ..... 4 balls

Couplers
Female Pipe Thread



Body Size (Inches)	Part No. Brass	Thread Size	Overall Length A	Hex Size B	Largest Diameter C
1/4	B53	1/4-18 NPTF	1.83	0.75	0.90
1/4	B53E	3/8-18 NPTF	1.95	0.81	0.94

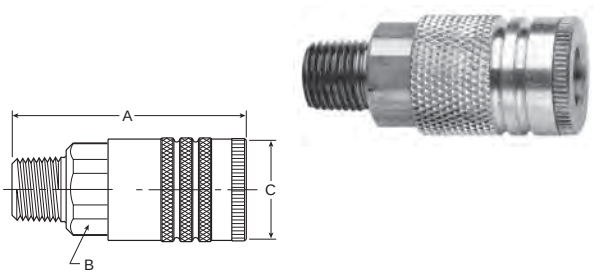
Couplers
Push-Lok Hose Barb*



Body Size (Inches)	Part No. Brass	Hose I.D.	Overall Length A	Hex Size B	Largest Diameter C
1/4	B50-03BP	1/4	2.32	0.75	0.90
1/4	B50-05BP	3/8	2.47	0.75	0.90

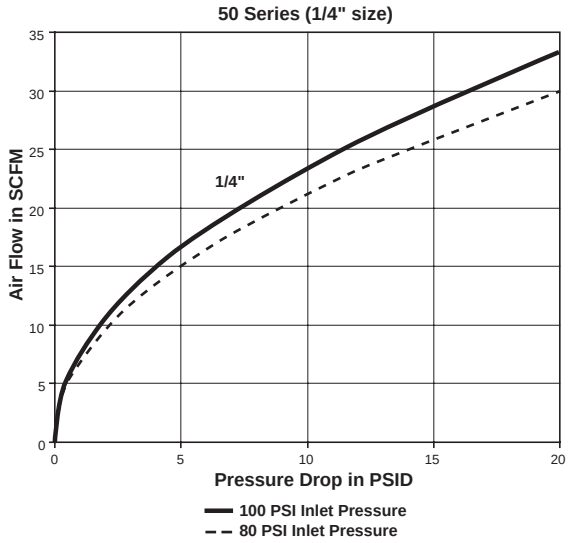
* Push-Lok hose barbs are designed for use with push-lok hose and do not require clamps.

Couplers
Male Pipe Thread



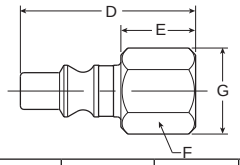
Body Size (Inches)	Part No. Brass	Thread Size	Overall Length A	Hex Size B	Largest Diameter C
1/4	B52	1/4-18	2.05	0.75	0.90
1/4	B52E	3/8-18	2.08	0.75	0.90

Flow Chart



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

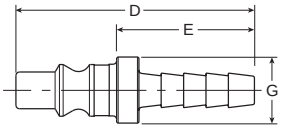
Nipples
Female Pipe Thread



Body Size (Inches)	Part No. Steel	Thread Size	Overall Length D	Exposed Length* E	Hex Size F	Largest Diameter G
1/4	A3C	1/4-18	1.47	0.66	0.62	0.72

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

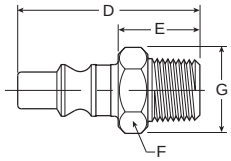
Nipples
Standard Hose Barb



Body Size (Inches)	Part No. Steel	Hose I.D.	Overall Length D	Exposed Length* E	Largest Diameter G
1/4	A8C	1/4	1.63	0.85	0.43

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

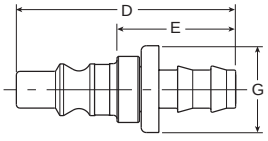
Nipples
Male Pipe Thread



Body Size (Inches)	Part No. Steel	Thread Size	Overall Length D	Exposed Length* E	Hex Size F	Largest Diameter G
1/4	A2C	1/4-18	1.62	0.82	0.56	0.65

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

Nipples
Push-Lok Hose Barb**



Body Size (Inches)	Part No. Steel	Hose I.D.	Overall Length D	Exposed Length* E	Largest Diameter G
1/4	A8CP	1/4	1.65	0.87	0.43

* This dimension represents portion of nipple that is exposed when nipple is inserted in coupler.

** Push-Lok barbs are designed for use with push-lok hose and do not require clamps.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Hose & Fittings

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Push-on Hose 801 Push-Lok Plus

The Push-Lok Plus line is the most versatile general purpose hose available. It can be used in numerous applications where low-pressure media is used.

Features and Benefits

- Widest fluid compatability and application range
- Broadest size range (-4 through -16)
- Highest working pressure in all sizes in the industry

Construction

- Inner tube: Synthetic Rubber
- Reinforcement: One Fiber Braid
- Cover: Synthetic Rubber, MSHA Accepted

Temperature

- Petroleum base hydraulic fluids, lubricating oils, and antifreeze solutions -40°F to +257°F (-40°C to +125°C)
- Water, water / oil emulsion, and water / glycol fluids up to +185°F (+85°C)
- Air up to +158°F (+70°C)

Water Service

Water, water/oil emulsion, and water/glycol hydraulic fluids up to +185°F (+85°C). Air up to +158°F (+70°C).

Fitting Recommendations

Use only with Push-on Hose Fittings and Quick Couplers with Push-lock Hose Barb.

Note: Push-Lok hose is recommended for vacuum applications but not for cooling lines in air conditioners and heat pumps, nor for hydraulic applications where extreme pulsations are encountered. Push-Lok is not recommended for any fuel.

Nomenclature

Part numbers are constructed from symbols that identify the style and size of the hose. Numbers identify the hose I.D. in 1/16's of an inch.

Example:

801 – 4 – GRA – RL

- 801 Series
- Size 1/4" I.D. (4/16)
- Color
- Length

Note: 801-10-GRN-RL Not Available

Available Cover Colors

- GRA = gray
- BLU = blue
- RED = red
- GRN = green
- YEL = yellow
- BLK = black

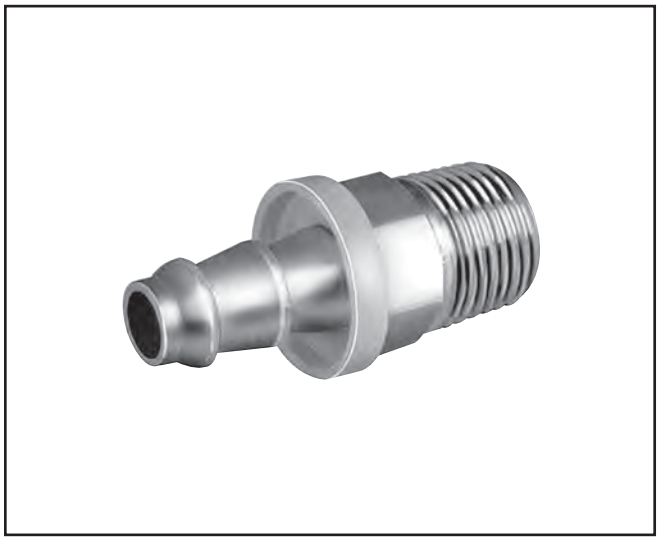
Hose Length

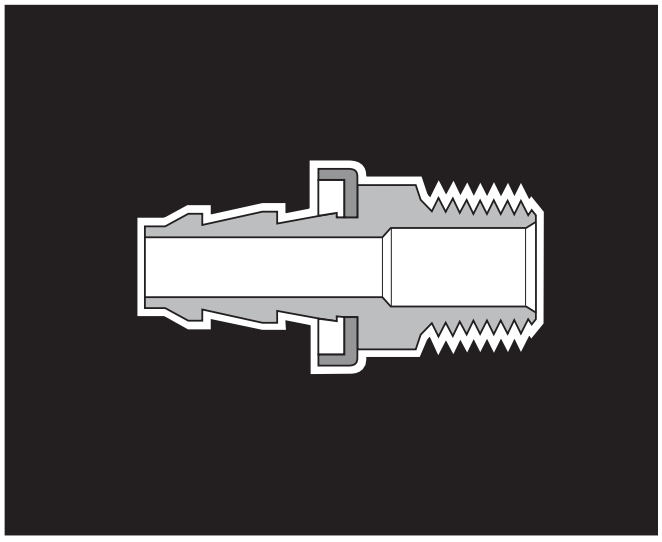
Hose Type	I.D.	Reel Length
801-4	1/4"	600 feet
801-6	3/8"	450 feet
801-8	1/2"	300 feet
801-10	5/8"	250 feet
801-12	3/4"	200 feet
801-16	1"	200 feet

Push-on Hose 801

#	Hose I.D.		Hose O.D.		Working Pressure		Burst Pressure		Minimum Bend Radius		Weight		Vacuum Rating	
Part No.	Inch	mm	Inch	mm	PSI	MPa	PSI	MPa	Inch	mm	lbs/ft	kg/m	Inches of Hg	kPa
801-4	1/4	6.3	0.50	12.7	350	2.4	1000	6.8	2-1/2	65	0.09	0.13	2	95
801-6	3/8	10	0.63	15.9	350	2.4	1000	6.8	3	75	0.11	0.16	28	95
801-8	1/2	12.5	0.78	19.8	300	2.1	1000	6.8	5	125	0.18	0.27	28	95
801-10	5/8	16	0.91	23.0	300	2.1	1000	6.8	6	150	0.19	0.28	15	51
801-12	3/4	19	1.03	26.2	300	2.1	1000	6.8	7	180	0.24	0.36	15	51
801-16	1	25	1.28	32.6	200	1.4	700	4.8	10	250	0.37	0.55	15	51

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com





Advantages
Push-on Hose Fittings are machined from the highest quality brass or stainless steel. The barbs are specifically engineered to work in conjunction with the I.D. and braid angle of Push-on Hose, ensuring a tight connection **without clamps.**

Assembly
Push-on Hose Fittings are designed only for use with Push-on Hose. Do not use with any other style or manufacturer of hose.

Assembly Instructions:
1. Cut hose cleanly and squarely to length.
2. Lubricate hose I.D. and barbs with light oil or soapy water.
3. Push the hose onto the fitting until it bottoms against the yellow stop ring. This ensures that all of the barbs are engaged with the hose and will also help keep the end of the hose from fraying.
4. ⚠ **CAUTION: Use of clamps may damage sealing integrity of Hose and Fitting Assembly.**

Temperature Range
-40°F to 180°F (-40°C to 82°C)

Limited by media through hose assembly.

Pressure Range
Limited by hose I.D.

Nomenclature
Part numbers are constructed from symbols that identify the style, size and material of the fitting.

Example:

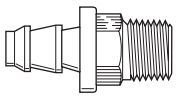
301 82 – 4 – 4 B

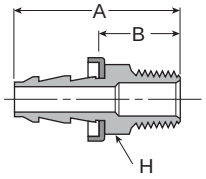
- 301 — Male Connector
- 82 — Push-on Series
- 4 — Pipe Thread Size (4/16) 1/4" Pipe
- 4 — Hose I.D. Size (4/16) 1/4" I.D.
- B — Brass Material (Blank Steel)

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

30182 Push-on Hose Barb to Male Pipe

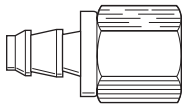
#	Thread Inch		Hose Size Inch		A		H	B	
Part No.					Inch	mm	Inch	Inch	mm
30182-2-4B	1/8 x 27	-2	1/4	-4	1.39	35	7/16	.64	16
30182-4-4B	1/4 x 18	-4	1/4	-4	1.57	40	9/16	.82	21
30182-4-6B	1/4 x 18	-4	3/8	-4	1.78	45	9/16	.88	22
30182-6-6B	3/8 x 18	-6	3/8	-6	1.78	45	11/16	.88	22
30182-8-6B	1/2 x 14	-8	3/8	-6	2.03	52	7/8	1.13	29
30182-6-8B	3/8 x 18	-6	1/2	-8	1.93	49	11/16	.88	22
30182-8-8B	1/2 x 14	-8	1/2	-8	2.18	55	7/8	1.13	29
30182-8-10B	1/2 x 14	-8	5/8	-10	2.58	66	7/8	1.13	29
30182-12-8B	3/4 x 14	-12	1/2	-8	2.21	56	1-1/16	1.16	29
30182-12-12B	3/4 x 14	-12	3/4	-12	2.61	66	1-1/16	1.16	29

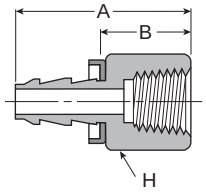




30282 Push-on Hose Barb to Female Pipe

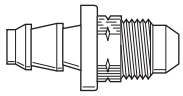
#	Thread Inch		Hose Size Inch		A		H	B	
Part No.					Inch	mm	Inch	Inch	mm
30282-4-4B	1/4 x 18	-4	1/4	-4	1.56	40	3/4	.81	21
30282-6-6B	3/8 x 18	-6	3/8	-6	1.82	46	7/8	.92	23
30282-8-8B	1/2 x 14	-8	1/2	-8	2.16	55	1-1/16	1.11	28

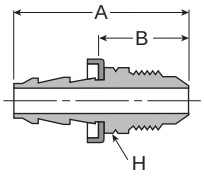




30482 Push-on Hose Barb to Male SAE 45°

#	Thread Inch			Hose Size Inch		A		H	B	
Part No.						Inch	mm	Inch	Inch	mm
30482-4-4B	1/4	7/16 x 20	-4	1/4	-4	1.51	38	7/16	0.76	19
30482-5-4B	5/16	1/2 x 20	-5	1/4	-4	1.61	41	9/16	0.86	22
30482-6-6B	3/8	5/8 x 18	-6	3/8	-6	1.84	47	5/8	0.94	24
30482-8-8B	1/2	3/4 x 16	-8	1/2	-8	2.15	55	3/4	1.1	28

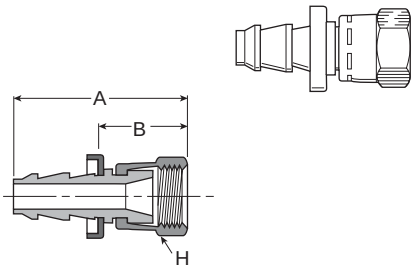




Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

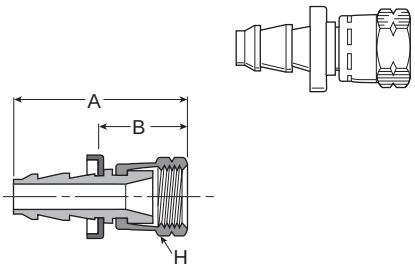
30682 Push-on Hose Barb to Female SAE JIC 37° Swivel

#	Thread Inch			Hose Size Inch		A		H	B	
Part No.										
30682-4-4B	1/4	7/16 x 20	-4	1/4	-4	1.52	39	9/16	0.77	20
30682-5-4B	5/16	1/2 x 12	-5	1/4	-4	1.58	40	5/8	0.83	21
30682-6-6B	3/8	9/16 x 18	-6	1/4	-4	1.61	41	11-16	0.86	22
30682-8-6B	1/2	3/4 x 16	-8	3/8	-6	1.87	47	7/8	0.97	25
30682-8-8B	1/2	3/4 x 16	-8	1/2	-8	2.02	51	7/8	0.97	25
30682-10-8B	5/8	7/8 x 14	-10	1/2	-8	2.14	54	1	1.09	28
30682-10-10B	5/8	7/8 x 14	-10	5/8	-10	2.54	65	1	1.09	28
30682-12-12B	3/4	1-1/16 x 12	-12	3/4	-12	2.65	67	1-1/4	1.2	30



30882 Push-on Hose Barb to Female SAE 45° Swivel

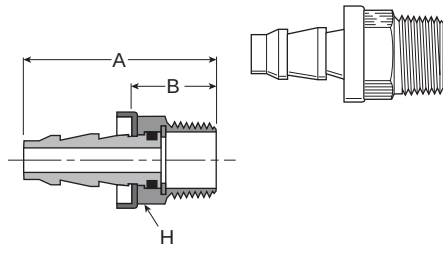
#	Thread Inch			Hose Size Inch		A		H	B	
Part No.						Inch	mm	Inch	Inch	mm
30882-4-4B	1/4	7/16 x 20	-4	1/4	-4	1.52	39	9/16	0.76	19
30882-5-4B	5/16	1/2 x 20	-5	1/4	-4	1.58	40	5/8	0.83	21
30882-6-6B	3/8	5/8 x 18	-6	3/8	-6	1.81	46	3/4	0.91	23
30882-8-6B	1/2	3/4 x 16	-8	3/8	-6	1.87	47	7/8	0.97	25
30882-8-8B	1/2	3/4 x 16	-8	1/2	-8	2.02	51	7/8	0.97	25
30882-10-8B	5/8	7/8 x 14	-10	1/2	-8	2.14	54	1	1.09	28
30882-10-10B	5/8	7/8 x 14	-10	5/8	-10	2.54	65	1	1.09	28
30882-12-12B	3/4	1-1/16 x 14	-12	3/4	-12	2.65	67	1-1/4	1.19	30



31382 Push-on Hose Barb to Male Pipe Swivel

#	Thread Inch		Hose Size Inch		A		H	B	
Part No.					Inch	mm	Inch	Inch	mm
31382-4-4	1/4 x 18	-4	1/4	-4	1.6	41	9/16	.85	22
31382-6-6	3/8 x 18	-6	3/8	-6	1.79	45	11/16	.89	23
31382-8-8*	1/2 x 14	-8	1/2	-8	2.2	56	7/8	1.15	29

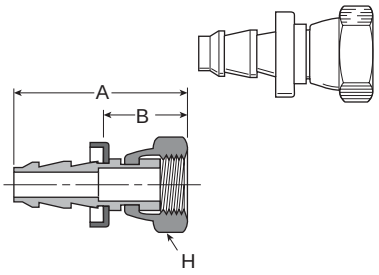
* Steel



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

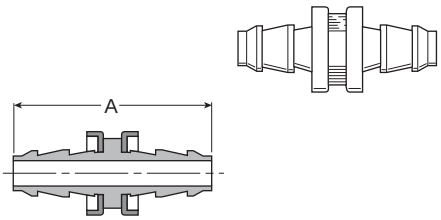
37G82 Push-on Hose Barb to Female Pipe (NPSM) Swivel with Gasket

#										
Part No.	Gasket	Thread Inch		Hose Size Inch		A		H	B	
						Inch	mm	Inch	Inch	mm
37G82-4-4	07G-4	1/4- 18	-4	1/4	-4	1.55	39	11/16	0.80	20
37G82-4-6	07G-4	1/4- 18	-4	3/8	-6	1.7	43	11/16	0.80	20
37G82-6-6	07G-6	3/8- 18	-6	3/8	-6	1.75	44	7/8	0.85	22
37G82-8-8	07G-8	1/2- 14	-8	1/2	-8	2.07	53	1	1.02	26
37G82-8-10	07G-8	1/2- 14	-8	5/8	-10	2.47	63	1	1.02	26
37G82-12-12	07G-12	3/4- 14	-12	3/4	-12	2.54	65	1-1/4	1.09	28



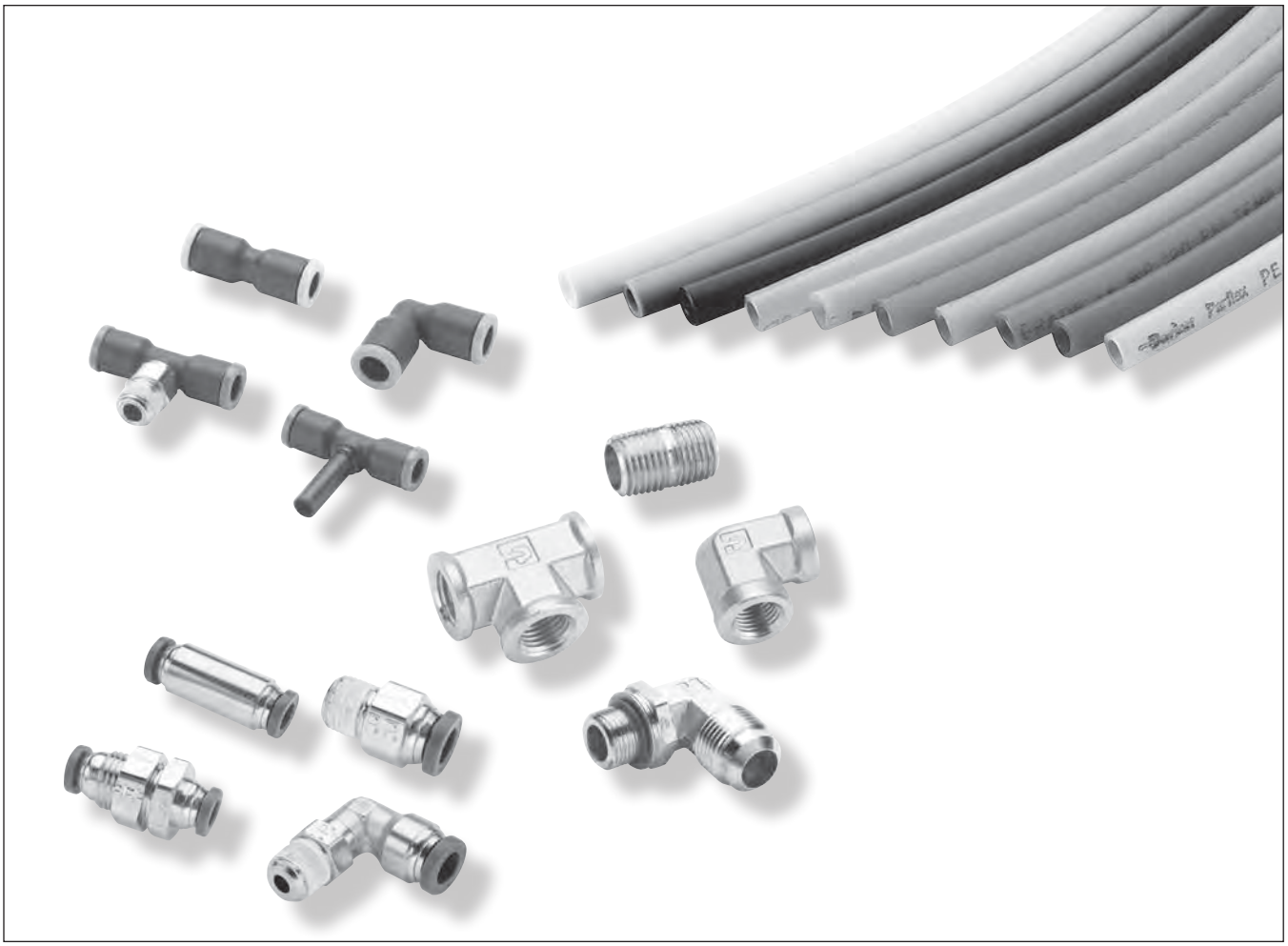
38282 Push-on Hose Barb Union

#				
Part No.	Hose Size Inch		A	
			Inch	mm
38282-4-4B	1/4	-4	1.80	46
38282-6-6B	3/8	-6	2.15	55
38282-8-8B	1/2	-8	2.51	64



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Tubing & Fittings



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Advantages

Chemical resistant, flexible, low cost, eight colors, five tube sizes and choice of reel lengths.

Construction

Flexible polyethylene thermoplastic tubing is extruded from high molecular weight resin for increased dimensional stability, uniformity and long-term strength. Its resistance to environmental stress cracking greatly exceeds that of ordinary polyethylene tubing as measured by ASTM D-1693, (10% IGEPAL).

Applications & Approvals

Polyethylene tubing is available in black as well as seven coding colors as recommended by the Instrument Society of America. Black (EB) tubing contains an ultra-violet inhibitor which is recommended for use in sunlit areas. Ingredients of natural and color tubing (except black) listed below meet FDA requirements for food contact applications. All tubing conforms to ASTM D-1248, Type I, Class A, Category 4, Grade E5.

Temperature Range

Suggested operating temperature range is -80°F to 150°F (-62°C to 66°C).

Fitting Recommendation

• Brass fittings

Nomenclature

Part numbers are constructed from symbols that identify the style and size of the fitting. Letters identify style and material. Numbers identify size in 1/16's of an inch.

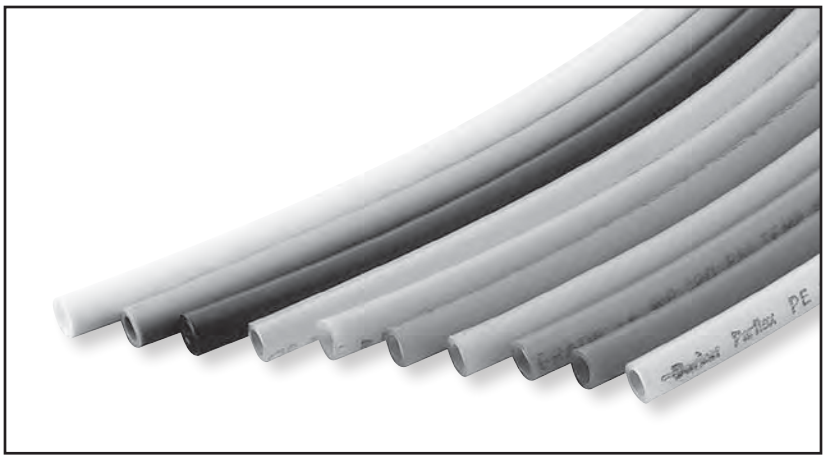
Example:

E - 6 4 - Y - 0500

- Polyethylene
- 3/8" (6/16) Tube O.D.
- 1/4" (4/16) Tube I.D.
- Color, Yellow
- Reel Footage

E Instrument Grade Tubing

Part Number	Color	O.D.	I.D.	Wall	Reel Length Feet	Working Pressure psi at 73°F	Min. Burst psi at 73°F	Min. Bend Radius Inches	Weight Per 100 Feet
E-43-0100	Natural	1/4	.170	.040	100	120	625	1	1.1
E-43-0500	Natural	1/4	.170	.040	500	120	625	1	1.1
E-43-1000	Natural	1/4	.170	.040	1000	120	625	1	1.1
EB-43-0100	Black	1/4	.170	.040	100	120	625	1	1.1
EB-43-0500	Black	1/4	.170	.040	500	120	625	1	1.1
EB-43-1000	Black	1/4	.170	.040	1000	120	625	1	1.1
E-43-R-0100	Red	1/4	.170	.040	100	120	625	1	1.1
E-43-R-0500	Red	1/4	.170	.040	500	120	625	1	1.1
E-43-B-0100	Blue	1/4	.170	.040	100	120	625	1	1.1
E-43-B-0500	Blue	1/4	.170	.040	500	120	625	1	1.1
E-43-O-0500	Orange	1/4	.170	.040	500	120	625	1	1.1
E-43-Y-0500	Yellow	1/4	.170	.040	500	120	625	1	1.1
E-43-P-0500	Purple	1/4	.170	.040	500	120	625	1	1.1
E-43-G-0500	Green	1/4	.170	.040	500	120	625	1	1.1
E-53-0500	Natural	5/16	.187	.062	500	145	800	1-1/8	2.1
EB-53-0500	Black	5/16	.187	.062	500	145	800	1-1/8	2.1
E-64-0100	Natural	3/8	.250	.062	100	125	675	1-1/4	2.5
E-64-0500	Natural	3/8	.250	.062	500	125	675	1-1/4	2.5
EB-64-0100	Black	3/8	.250	.062	100	125	675	1-1/4	2.5
EB-64-0500	Black	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-R-0500	Red	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-B-0500	Blue	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-O-0500	Orange	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-Y-0500	Yellow	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-P-0500	Purple	3/8	.250	.062	500	125	675	1-1/4	2.5
E-64-G-0500	Green	3/8	.250	.062	500	125	675	1-1/4	2.5
E-86-0100	Natural	1/2	.375	.062	100	90	425	2-1/2	3.6
EB-86-0100	Black	1/2	.375	.062	100	90	425	2-1/2	3.6
E-108-0100	Natural	5/8	.500	.062	100	70	325	4	4.6
EB-108-0100	Black	5/8	.500	.062	Coil	70	325	4	4.6



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

PEFR Flame Resistant Tubing

Part Number	Color	O.D.	I.D.	Wall	Reel Length Feet	Working Pressure psi at 73°F	Min. Burst psi at 73°F	Min. Bend Radius Inches	Weight Per 100 Feet
PEFR-2.5-0500	Black	5/32	.096	.030	500	225	900	1/2	.56
PEFR-4-0500	Black	1/4	.170	.040	500	160	650	3/4	1.24
PEFR-4-1000	Black	1/4	.170	.040	1000	160	650	3/4	1.24
PEFR-6-0500	Black	3/8	.250	.062	500	195	780	1-1/2	2.90
PEFR-8-0250	Black	1/2	.375	.062	250	135	540	1-3/4	4.05

Construction & Approvals

Flame resistant polyethylene is manufactured from a distinctively formulated compound which meets the UL94 V-2 flame classification. It also meets the flame spread, fuel contribution and smoke density requirements of the ASTM E84-81a tunnel test.

Applications

Parker series FRPE tubing is the preferred product for pneumatic control applications in the heating - ventilating - air conditioning - energy conservation industry. It is also suitable for use in petrochemical plants, petroleum refineries, pulp and paper mills, mines, steel mills and other industries where protection against intermittent flame and hot sparks is necessary.

Temperature Range

Suggested operating temperature range is -85°F to 150°F (-65°C to +66°C).

Nomenclature

Order by tubing part number and name.

Example:

PE FR 4 - 0500

- PE — Polyethylene
- FR — Flame Resistant
- 4 — 1/4" (4/16) Tube O. D.
- 0500 — Reel Footage

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Advantages

Flexible nylon tubing is carefully made from high-grade, abrasion-resistant, heat-and light-stabilized nylon. Resistance to stress-cracking greatly exceeds that of ordinary nylon tubing. Extremely low level water absorption.

Chemical-resistant nylon tubing has the additional benefits of better flexibility, lighter weight and resistance to flexural fatigue.

Colors

Available in natural (NN) and black (NB). Black tubing is recommended for use outdoors and in sunlit areas.

Temperature Range

Operating temperatures, depending upon conditions, are -65°F to 200°F (-54°C to 93°C) continuous.

Fitting Recommendations

• Brass fittings

Nomenclature

Order by tubing part number and name.

Example:

N N - 2 - 016

Nylon

Color Natural

1/8" (2/16) Tube O. D.

Wall Thickness (in thousandths of an inch)

N Flexible Tubing

Nylon Part No.	Color	Nom. Tube O.D.	Nom. Tube I.D.	Average Wall Thick.	*Min. Burst Pressure at 73°F psi	Min. Bend Radius Inches	Std. Reel Length Feet
NN-2-016	Natural	1/8	.093	.016	1000	1/4	250
NB-2-016	Black	1/8	.093	.016	1000	1/4	250
NN-2-031	Natural	1/8	.064	.031	2000	1/4	250
NB-2-031	Black	1/8	.064	.031	2000	1/4	250
NN-2.5-025	Natural	5/32	.106	.025	1200	1/2	250
NB-2.5-025	Black	5/32	.106	.025	1200	1/2	250
NN-3-025	Natural	3/16	.138	.025	1000	5/8	250
NB-3-025	Black	3/16	.138	.025	1000	5/8	250
NN-3-046	Natural	3/16	.096	.046	2000	7/16	250
NB-3-046	Black	3/16	.096	.046	2000	7/16	250
NN-4-035	Natural	1/4	.180	.035	1000	7/8	250
NB-4-035	Black	1/4	.180	.035	1000	7/8	250
NN-4-040	Natural	1/4	.170	.040	1250	7/8	250
NB-4-040	Black	1/4	.170	.040	1250	7/8	250
NN-4-062	Natural	1/4	.127	.062	2000	1/2	250
NB-4-062	Black	1/4	.127	.062	2000	1/2	250
NN-5-040	Natural	5/16	.233	.040	1250	1-1/8	250
NB-5-040	Black	5/16	.233	.049	1250	1-1/8	250
NN-6-050	Natural	3/8	.275	.050	1250	1-1/8	250
NB-6-050	Black	3/8	.275	.050	1250	1-1/8	250
NN-6-093	Natural	3/8	.190	.093	2000	3/4	250
NB-6-093	Black	3/8	.190	.093	2000	3/4	250
NN-8-062	Natural	1/2	.375	.062	1000	1-1/4	250
NB-8-062	Black	1/2	.375	.062	1000	1-1/4	250
NN-8-124	Natural	1/2	.253	.124	2000	1	250
NB-8-124	Black	1/2	.253	.124	2000	1	250

*Suggested working pressure is 1/4 of burst pressure.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Advantages

Series NR semi-rigid nylon tubing offers better chemical resistance than series N, good resistance to high ambient temperature and low moisture absorption. NR has a high tensile strength which will give excellent coupling retention in high pressure, temperature and vibration environments.

Construction

Parker series NR tubing is manufactured from a semi-rigid nylon II material. The tubing does not contain plasticizers.

Applications & Approvals

NR tubing is specified for machine tool lubricating systems, marine control systems, process lines for chemicals and oils and other applications requiring a high quality nylon tube.

Temperature Range

The recommended operating temperature range for service at rated pressures with compatible fluids is -60°F to 200°F (-51°C to 93°C).

Fitting Recommendations

• Brass fittings

Nomenclature

Order by tubing part number and name.

Example:

N B R 2 016

Nylon

Color, Black

Rigid

1/8" (2/16) Tube O.D.

Wall Thickness (in thousandths of an inch)

NR Semi-rigid High Strength Tubing

Nylon Part No.	Color	Nom. Tube O.D.	Nom. Tube I.D.	Average Wall Thick.	*Min. Burst Pressure at 73°F psi	Min. Bend Radius Inches	Std. Reel Length Feet
NNR-2-017	Natural	1/8	.091	.017	1700	1/2	500
NBR-2-017	Black	1/8	.091	.017	1700	1/2	500
NNR-2-026	Natural	1/8	.073	.026	2500	3/8	500
NBR-2-026	Black	1/8	.073	.026	2500	3/8	500
NNR-3-024	Natural	3/16	.140	.024	1700	3/4	500
NBR-3-024	Black	3/16	.140	.024	1700	3/4	500
NNR-3-039	Natural	3/16	.110	.039	2500	5/8	500
NBR-3-039	Black	3/16	.110	.039	2500	5/8	500
NNR-4-035	Natural	1/4	.180	.035	1700	1	250
NBR-4-035	Black	1/4	.180	.035	1700	1	250
NNR-4-050	Natural	1/4	.150	.050	2500	7/8	250
NBR-4-050	Black	1/4	.150	.050	2500	7/8	250
NNR-5-040	Natural	5/16	.233	.040	1700	1-1/2	250
NBR-5-040	Black	5/16	.233	.040	1700	1-1/2	250
NNR-6-048	Natural	3/8	.279	.048	1700	1-3/4	250
NBR-6-048	Black	3/8	.279	.048	1700	1-3/4	250
NNR-6-075	Natural	3/8	.225	.075	2500	1-1/2	250
NBR-6-075	Black	3/8	.225	.075	2500	1-1/2	250
NNR-8-062	Natural	1/2	.376	.062	1500	2-3/8	250
NBR-8-062	Black	1/2	.376	.062	1500	2-3/8	250
NNR-8-075	Natural	1/2	.350	.075	2200	2-1/2	250
NBR-8-075	Black	1/2	.350	.075	2200	2-1/2	250

*Suggested working pressure is 1/4 of burst pressure.

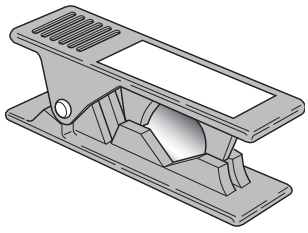
PTC Plastic Tube Cutter
Part No. PTC-001

An easy to handle razor/edged tube cutter, closes automatically, assuring clean and square cuts.

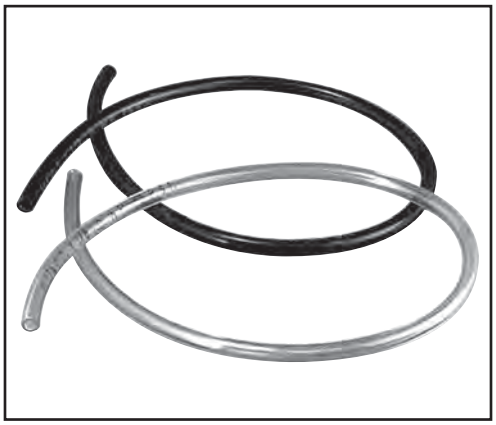
May be used with polyethylene, polypropylene, nylon and other plastic tubing.

How To Use

Insert plastic tube to desired length, allow tube cutter to close, then apply pressure until tube snaps off.



Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



Advantages

Polyurethane tubing is a high quality, precision-made tubing used in a wide range of demanding and critical applications.

Polyether based, polyurethane tubing occupies a unique position among polymers, sharing the best properties of both rubber and plastic. Urethane exhibits the elongation and recovery characteristics of rubber and the chemical resistance associated with plastics. The tubing is tough, strong, kink-resistant and abrasion resistant, yet it's flexible and easy to assemble onto designated fittings.

- Tough
- Flexible
- Broad Temperature Range
- Eight Colors
- Abrasion Resistant
- Chemical Resistant

Applications & Approvals

Polyurethane tubing is used for a wide variety of applications. Typical usage includes air tools, robotics, pneumatic logic and actuation systems, analytical instrumentation, vacuum equipment, pressure measurement apparatus, semiconductor equipment manufacturers and a variety of medical and laboratory applications.

Temperature Range

Suggested operating temperatures, depending upon conditions are 0°F to 200°F (-18°C to 93°C).

Fitting Recommendations

- Thermoplastic fittings
- Brass fittings

Nomenclature

Order by tubing part number and name.

Example:

U - 2 1 - BLK - 0250

- Polyurethane
- 1/8" (2/16) Tube O.D.
- 1/6" (1/16) Tube I.D.
- Color - Black
- Reel Length in Feet

U Polyether Base Tubing

Part No.*	Nom. Tube O.D.	Nom. Tube I.D.	Wall Thick.	Working** Pressure (PSI)	Burst Pressure (PSI)	Reel Length Feet
U-21-0500	1/8	1/16	1/32	125	375	500
U-21-0250						250
U-42-0500	1/4	1/8	1/16	125	375	500
U-42-0250						250
U-64-0250	3/8	1/4	1/16	125	375	250
U-64-0100						100 (coil)
U-86-0250	1/2	3/8	1/16	85	255	250
U-86-0100						100 (coil)

* Colors: Clear-Blank, Black-BLK, Green-GRN, Red-RED, Yellow-YEL, Blue-BLU, Orange-ORG, Gray-GRA

** Based on a full 4:1 safety factor.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Tube to Male NPTF	**W68PLP** Male Connector  Page E102	**W68PLPR** Male Connector Round Body  Page E103	**W68PW** Male Connector  Page E108	**W169PLP** Male Elbow Swivel  Page E105	**W169PLPNS** Male Elbow  Page E105
W169PW Male Elbow Swivel  Page E109	**W171PLP** Male Run Tee Swivel  Page E106	**W171PW** Male Run Tee Swivel  Page E109	**W172PLP** Male Branch Tee Swivel  Page E107	**W172PW** Male Branch Tee Swivel  Page E109	
Tube to Tube	**62PLP** Union  Page E101	**62PW** Union  Page E108	**164PLP** Union Tee  Page E104	**164PW** Union Tee  Page E109	**165PLP** Union Elbow  Page E104
165PW Union Elbow  Page E109	**Tube to Female NPTF**	**66PLP** Female Connector  Page E102	**66PW** Female Connector  Page E108		
Bulkhead Unions	**62PLPBH** Union Bulkhead  Page E101	**66PLPBH** Female Bulkhead  Page E101	**62PWBH** Union Bulkhead  Page E108	**66PWBH** Female Bulkhead  Page E108	
Tube to Male BSPP	**PLHBF4-B** Male Connector  Page E103	**Auxiliary Components**	**DB** Dust/Weld Spatter Boot  Page E108		
Metric Tube to Male NPTF	**FPB** Male Connector  Page E103	**C6PB** Male Elbow  Page E105	**Metric Tube to Metric Tube**	**HPB** Union  Page E109	**JPB** Union Tee  Page E104
EPB Union Elbow  Page E104	**Metric Bulkhead Unions**	**WBMPB** Mixed Bulkhead Union  Page E101	**WPB** Union Bulkhead  Page E101	**WE6PB** Union Elbow Bulkhead  Page E104	

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Metric Tube to Female BSPP	**G4PB** Female Connector  Page E102	**WG4PB** Union Female Bulkhead  Page E102	**Metric Tube to Male BSPP**	**C64PB** Male Elbow Swivel  Page E105	**C64SPB** Male Elbow Swivel  Page E106
F4PB Male Connector  Page E103	**R64PB** Male Run Tee Swivel  Page E106	**S64PB** Male Branch Tee Swivel  Page E107	**Metric Tube to Metric Straight Thread**	**C68PB** Male Elbow Swivel  Page E106	**C68SPB** Male Elbow Swivel  Page E106
F28PB Male Connector  Page E103	**F8PB** Male Connector  Page E103	**R68PB** Male Run Tee Swivel  Page E106	**S68PB** Male Branch Tee Swivel  Page E107		
Metric Auxiliary Components	**TRPB** Tube End Reducer  Page E107	**FNPB** Plug  Page E108	**TEPB** Tube End Expander  Page E107		

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Materials of Construction	
Nickel Plated Bodies:	Nickel plated brass
O-ring:	Nitrile (other compounds available on request)
Release Button:	Polyacetal
Grab Ring:	Stainless Steel
Note:	For brass body Prestolok replace PLP with PLN

Nomenclature	
Example: W68PLP-4-2	**Attribute:**
W	White Arcylic Thread Sealant
68	Male Connector
PlP	Prestolok
4	1/4" (4/16) Tube O.D.
2	1/8" (2/16) Pipe Thread

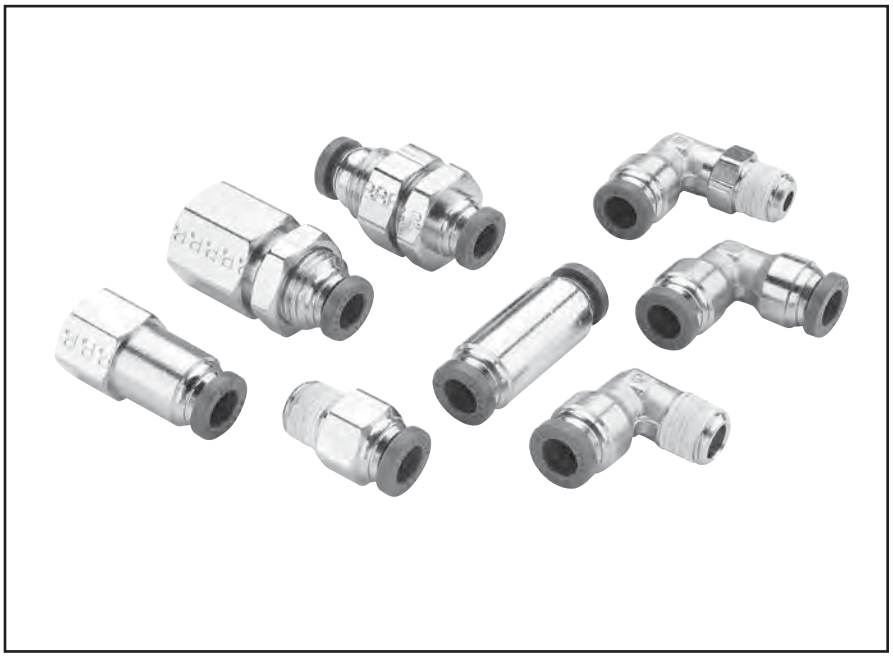
Specifications	
Pressure Range:	Up to 300 PSI depending on tubing
Temperature Range:	0° to +200°F
Note:	Vacuum applications are dependent upon temperature and type of tubing used.

Tubing sizes	
Tube O.D.:	1/8, 3/16, 5/32, 1/4, 5/16, 3/8, 1/2
Tube O.D. (mm):	4,6,8,10,12,14

Recommended Tubing
Prestolok nickel plated and composite fittings are designed to be used with the following Parker Hannifin Parflex Division tubing.

Tubing Series	Tubing Material
E	Linear Low Density Polyethylene
PP	Polypropylene
N	Plasticized Polyamide (Nylon)
NR	Unplasticized Polyamide (Rigid Nylon)
U	Polyurethane 90 Durometer Shore A
HU	Polyurethane 95 Durometer Shore A

Other materials for Prestolok inch sized nickel plated fittings: Polyurethane 85 Durometer Shore A



A compact one-piece push-to-connect fitting. Designed for low pressure circuits where assembly, disassembly and reassembly is important. Stainless steel grab ring grips the tubing to provide retention. Swivels are featured on all male pipe threaded shapes for installation in tight places and for precise positioning. Prestolok should not be used for live swivel applications. Prestolok fittings come with a pre-applied white acrylic sealant.

CAUTION: All current manufacturers of 85A PU tubing do not approve the use of push-to-connect fittings with their product.

Testing has shown acceptable use with certain O.D – I.D. combinations. Applications and service conditions vary and therefore the use of a tube support may be required for any 85A PU tubing.

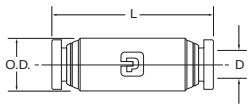
The following commercially available O.D. – I.D. 85A tubing sizes require the use of a tube support regardless of application.

5/32" – 3/32"	3/16" – 1/8"	1/4" - .170"	1/4" – 3/16"
5/16" – 1/4"	3/8" – 5/16"	1/2" – 3/8"	

Assembly Instructions

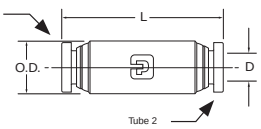
1. Cut thermoplastic tubing squarely, using Parker Tube Cutter PTC-001. Be certain the port or mating part is clean and free of debris.
2. Insert tubing into fitting until it bottoms. A slight twisting motion will ease the insertion. Pull on tubing to verify it is properly retained in the fitting.
3. To disassemble, simply push the release button against the body and remove tubing.
4. It is recommended to trim the tubing after every disassembly to insure a proper seal.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

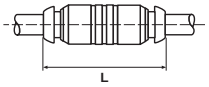
62PLP Union

Part No.	Tube Size (In.)	O.D.	L	Flow Dia. D
62PLP-2	1/8	.375	1.40	.094
62PLP-3	3/16	.437	1.41	.156
62PLP-5/32	5/32	.375	1.41	.125
62PLP-4	1/4	.500	1.43	.188
62PLP-5	5/16	.562	1.65	.250
62PLP-6	3/8	.625	1.66	.312
62PLP-8	1/2	.750	1.82	.375

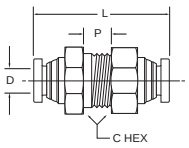
62PLP Unequal Union

Part No.	Tube 1 Size (In.)	Tube 2 Size (In.)	O.D.	L	Flow Dia. D
62PLP-5/32-2	5/32	1/8	.375	1.41	.094
62PLP-4-2	1/4	1/8	.500	1.43	.094
62PLP-4-5/32	1/4	5/32	.500	1.43	.125
62PLP-4-6	1/4	3/8	.625	1.66	.188
62PLP-6-8	3/8	1/2	.750	1.82	.312

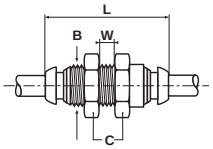
HPB Equal Union

Part No.	Tube Size (mm)	L
HPB4	4	33.0
HPB5	5	34.5
HPB6	6	36.0
HPB8	8	38.0
HPB10	10	48.0
HPB12	12	48.0
HPB14	14	54.0

62PLPBH Bulkhead Union

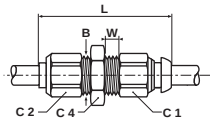
Part No.	Tube Size (In.)	Bulkhead Hole Dia. B	C Hex	p Max.	I	D
62PLPBH-2	1/8	7/16	9/16	.39	1.40	.094
62PLPBH-5/32	5/32	7/16	9/16	.39	1.41	.125
62PLPBH-4	1/4	9/16	11/16	.29	1.43	.188
62PLPBH-5	5/16	5/8	3/4	.60	1.65	.250
62PLPBH-6	3/8	3/4	7/8	.54	1.66	.312
62PLPBH-8	1/2	7/8	1	.66	2.04	.375

WPB Bulkhead Union

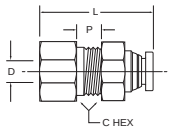
Part No.	Tube Size (mm)	B-mm Thread	C Hex	L	W	Bulkhead Hole Dia.
WPB4	4	M11x0.75	16	33	6	11mm
WPB6	6	M13x1	19	35	6	13mm
WPB8	8	M15x1.25	22	36	6	16mm
WPB10	10	M18x1	22	43	8	18mm
WPB12	12	M23x1.5	27	46	10	23mm
WPB14	14	M24x1.5	30	52	10	24mm

Jam nut is supplied loose in box

WBMPB Mixed Bulkhead Union

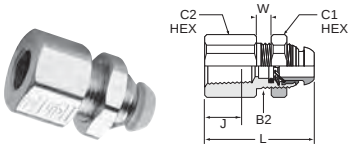
Part No.	Tube 1 Size (mm)	Tube 2 Size (mm)	B-mm Thread	C1	C2	C4	L	W	Bulkhead Hole Dia.
WBMPB4	4	4	M8x1	10	10	12	34	5	8mm
WBMPB6	6	6	M10x1	12	10	12	37	5	10mm
WBMPB8	8	8	M12x1	14	14	16	39	5	12mm
WBMPB10	10	10	M14x1	17	17	19	45	5	14mm
WBMPB12	12	12	M16x1	22	19	22	49	5	16mm
WBMPB14	14	14	M18x1	24	22	22	52	7	18mm

66PLPBH Female Bulkhead

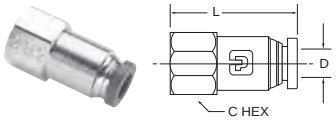
Part No.	Tube Size (In.)	Pipe Thd (NPTF)	C Hex	P Max.	L	Flow Dia. D	Bkhd Hole Dia.
66PLPBH-5/32-4	5/32	1/4	11/16	.19	1.39	.125	1/2
66PLPBH-4-4	1/4	1/4	11/16	.24	1.35	.188	9/16
66PLPBH-6-6	3/8	3/8	1	.22	1.47	.312	7/8
66PLPBH-8-6	1/2	3/8	1 1/4	.35	1.56	.344	1

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



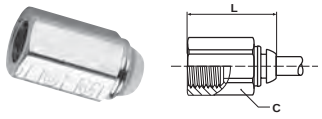
WG4PB Bulkhead Union Female BSPP

Part No.	Tube Size (mm)	BSPP	B2	C1 Hex	C2 Hex	J	L	W
WG4PB4-1/8	4	G1/8	M11x0.75	14	14	8	25.0	6
WG4PB6-1/8	6	G1/8	M13x1	17	17	8	25.0	6
WG4PB6-1/4	6	G1/4	M13x1	17	19	12	29.5	6
WG4PB8-1/8	8	G1/8	M15x1.25	19	17	8	25.0	6
WG4PB8-1/4	8	G1/4	M15x1.25	19	19	12	30.0	6
WG4PB10-3/8	10	G3/8	M18x1	22	22	12	34.0	8
WG4PB12-3/8	12	G3/8	M23x1.5	27	24	12	35.0	10
WG4PB12-1/2	12	G1/2	M23x1.5	27	27	14	40.0	10



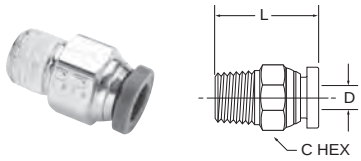
66PLP Female Connector

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	L	Flow Dia. D
66PLP-2-2	1/8	1/8	9/16	1.17	.094
66PLP-2-4	1/8	1/4	11/16	1.34	.094
66PLP-3-2	3/16	1/8	9/16	1.13	.156
66PLP-5/32-2	5/32	1/8	9/16	1.17	.125
66PLP-5/32-4	5/32	1/4	11/16	1.38	.125
66PLP-4-2	1/4	1/8	9/16	1.17	.188
66PLP-4-4	1/4	1/4	11/16	1.38	.188
66PLP-5-2	5/16	1/8	9/16	1.25	.250
66PLP-5-4	5/16	1/4	11/16	1.45	.250
66PLP-6-4	3/8	1/4	11/16	1.46	.312
66PLP-6-6	3/8	3/8	13/16	1.51	.312



G4PB Female Connector BSPP

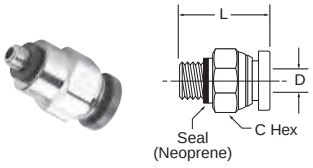
Part No.	Tube Size (mm)	BSPP	C Hex	L
G4PB4-1/8	4	1/8	14	26.0
G4PB6-1/8	6	1/8	14	27.5
G4PB6-1/4	6	1/4	17	33.0
G4PB8-1/8	8	1/8	17	29.0
G4PB8-1/4	8	1/4	17	33.0



W68PLP Male Connector

Part No.	Tube Size (In.)	Pipe Thd (NPTF)	C Hex	I	Flow Dia. D
W68PLP-2-1	1/8	1/16	3/8	.79	.094
W68PLP-2-2	1/8	1/8	7/16	.79	.094
W68PLP-2-4	1/8	1/4	9/16	1.02	.094
W68PLP-3-2	3/16	1/8	7/16	.85	.156
W68PLP-3-4	3/16	1/4	9/16	1.01	.156
W68PLP-5/32-1	5/32	1/16		.88	.940
W68PLP-5/32-2	5/32	1/8	7/16	.80	.125
W68PLP-5/32-4	5/32	1/4	9/16	1.03	.125
W68PLP-4-1	1/4	1/16	1/2	1.07	.141
W68PLP-4-2	1/4	1/8	1/2	.89	.188
W68PLP-4-4	1/4	1/4	9/16	1.00	.188
W68PLP-4-6	1/4	3/8	3/4	1.04	.188
W68PLP-5-2	5/16	1/8	9/16	1.18	.250
W68PLP-5-4	5/16	1/4	9/16	1.04	.250
W68PLP-5-6	5/16	3/8	11/16	1.04	.250
W68PLP-6-2	3/8	1/8	5/8	1.21	.250
W68PLP-6-4	3/8	1/4	5/8	1.08	.312
W68PLP-6-6	3/8	3/8	11/16	1.02	.312
W68PLP-6-8	3/8	1/2	7/8	1.28	.312
W68PLP-8-4	1/2	1/4	13/16	1.44	.344
W68PLP-8-6	1/2	3/8	13/16	1.24	.344
W68PLP-8-8	1/2	1/2	7/8	1.35	.375
68PLP-5/32-4LT*	5/32	1/4-28	7/16	.88	.093

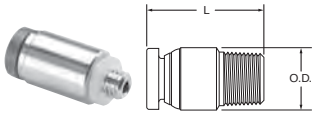
*SAE-LT Threads



68PLP-X-0 Male Connector

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	I	Flow Dia. D
68PLP-2-0	1/8	10x32	3/8	.92	.094
68PLP-5/32-0	5/32	10x32			
68PLP-4-0	1/4	10x32	1/2	.96	.094

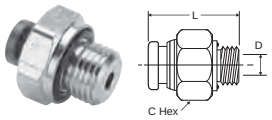
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



68PLPR Round Body Male Connector

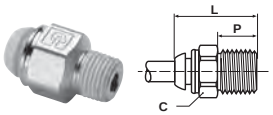
Part No.	Tube Size (In.)	Thread Size NPTF	Internal Hex Broach	Body Dia. O.D.	L	Flow Dia.
68PLPR-2-0*	1/8	10-32	3/32	3/8"	.89	.094
68PLPR-5/32-0*	5/32	10-32	3/32	3/8"	.91	.094
68PLPR-4-0*	1/4	10-32	3/32	1/2"	.95	.094
W68PLPR-5/32-1	5/32	1/16	1/8	7/16"	.87	.125
W68PLPR-5/32-2	5/32	1/8	1/8	7/16"	.79	.125
W68PLPR-4-1	1/4	1/16	5/32	1/2"	1.06	.156
W68PLPR-4-2	1/4	1/8	3/16	1/2"	.88	.188
W68PLPR-4-4	1/4	1/4	3/16	5/8"	.99	.188

*10-32 seal is neoprene



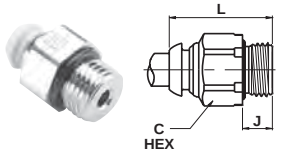
PLPHBF4-B Male Connector BSPP

Part No.	Tube Size (In.)	Pipe Thd BSPP	C Hex	I	Flow Dia. D
3-1/8PLPHBF4-B	3/16	1/8-28	11/16	.96	.156
3-1/4PLPHBF4-B	3/16	1/4-19	3/4	.97	.156
4-1/8PLPHBF4-B	1/4	1/8-28	11/16	1.13	.188
4-1/4PLPHBF4-B	1/4	1/4-19	3/4	1.13	.188
4-3/8PLPHBF4-B	1/4	3/8-19	7/8	1.13	.188
6-1/4PLPHBF4-B	3/8	1/4-19	3/4	1.26	.256
6-3/8PLPHBF4-B	3/8	3/8-19	7/8	1.26	.312
6-1/2PLPHBF4-B	3/8	1/2-14	1-1/16	1.26	.312
8-3/8PLPHBF4-B	1/2	3/8-19	7/8	1.41	.452
8-1/2PLPHBF4-B	1/2	1/2-14	1-1/16	1.37	.452



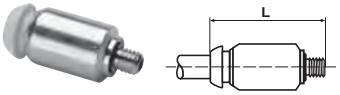
FPB Male Connector NPT

Part No.	Tube Size (mm)	NPT	C Hex	L	P	Int. Hex
W68PLP-5/32-2	4	1/8-27	7/16"	21.7	9.7	-
W68PLP-5/32-4	4	1/4-18	9/16"	28.1	14.2	-
FPB6-1/8	6	1/8-27	14	26.0	10.1	4
FPB6-1/4	6	1/4-18	14	28.5	14.6	4
FPB10-1/4	10	1/4-18	19	40.0	14.6	8
FPB10-3/8	10	3/8-18	19	34.0	14.6	8
FPB12-3/8	12	3/8-18	22	36.5	14.6	10



F4PB Compact Male Connector BSPP

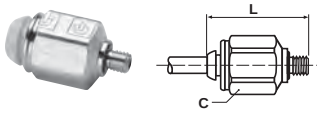
Part No.	Tube Size (mm)	BSPP	C Hex	J	L
F4PB4-1/8	4	1/8	13	4.7	19.9
F4PB4-1/4	4	1/4	16	6.0	20.3
F4PB6-1/8	6	1/8	13	4.7	23.4
F4PB6-1/4	6	1/4	16	6.0	22.2
F4PB8-1/4	8	1/4	16	6.0	23.8
F4PB8-1/8	8	1/8	14	4.7	25.1
F4PB8-3/8	8	3/8	20	6.5	23.5
F4PB10-1/4	10	1/4	17	6.0	31.3
F4PB10-3/8	10	3/8	20	6.5	26.8
F4PB10-1/2	10	1/2	24	7.5	26.1
F4PB12-1/4	12	1/4	20	6.0	31.9
F4PB12-3/8	12	3/8	20	6.5	31.8
F4PB12-1/2	12	1/2	24	7.5	27.8
F4PB14-3/8	14	3/8	22	6.5	35.0
F4PB14-1/2	14	1/2	24	7.5	30.0



F28PB Male Connector Metric Straight Thread

Part No.	Tube Size (mm)	Thread (mm)	L
F28PB4M3	4	M3x0.5	24
F28PB4M5	4	M5x0.8	25
F28PB6M5	6	M5x0.8	25

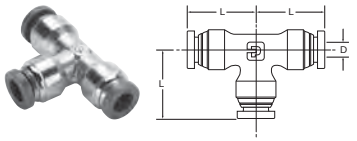
This fitting has been designed for use where space is at a premium. It is assembled using the internal hexagon and an allen key.



F8PB Male Connector Metric Straight Thread

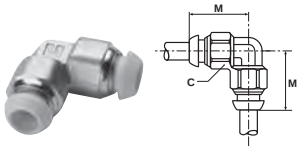
Part No.	Tube Size (mm)	Thread (mm)	C Hex	L
F8PB4M5	4	M5x0.8	10	26.6
F8PB4M10	4	M10x1	14	24.0
F8PB6M5	6	M5x0.8	12	27.8
F8PB6M10	6	M10x1	14	28.0
F8PB6M12	6	M12x1.5	17	23.5
F8PB8M12	8	M12x1.5	17	27.0
F8PB8M16	8	M16x1.5	22	28.0
F8PB8M22	8	M22x1.5	27	30.0

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



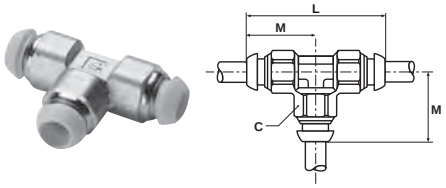
164PLP Union Tee

Part No.	Tube Size (In.)	L	Flow Dia. D
164PLP-2	1/8	.74	.094
164PLP-3	3/16	.82	.156
164PLP-5/32	5/32	.77	.125
164PLP-4	1/4	.85	.188
164PLP-5	5/16	.97	.250
164PLP-6	3/8	1.01	.250
164PLP-8	1/2	1.15	.375



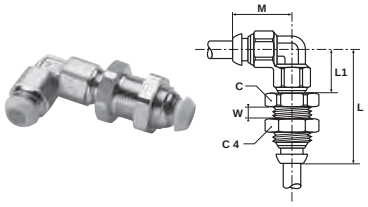
EPB 90° Union Elbow

Part No.	Tube Size (mm)	C Hex	M
EPB4	4	10	18.0
EPB5	5	12	20.5
EPB6	6	12	20.0
EPB8	8	14	22.0
EPB10	10	17	28.0
EPB12	12	22	30.0
EPB14	14	25	35.0



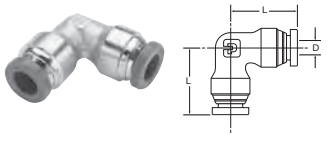
JPB Union Tee

Part No.	Tube Size (mm)	C	L	M
JPB4	4	10	36	18
JPB5	5	12	41	21
JPB6	6	12	40	20
JPB8	8	14	44	22
JPB10	10	17	56	28
JPB12	12	22	60	30
JPB14	14	25	68	34



WE6PB Adjustable Bulkhead Union Elbow

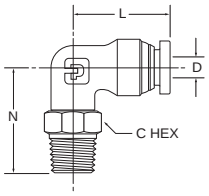
Part No.	Tube Size (mm)	Thread B (mm)	C Hex	C4 Hex	L	L1	M	W	Bkhd Hole Dia.
WE6PB4	4	M11x0.75	14	16	37	18.0	18.0	6	11mm
WE6PB6	6	M13x1	17	17	39	19.5	20.5	6	13mm
WE6PB8	8	M15x1.25	19	19	43	21.5	22.5	6	15mm
WE6PB10	10	M18x1	22	22	54	22.8	28.5	8	18mm
WE6PB12	12	M23x1.5	27	27	59	30.0	30.0	10	23mm



165PLP Union Elbow

Part No.	Tube Size (In.)	L	Flow Dia. D
165PLP-2	1/8	.74	.094
165PLP-5/32	5/32	.77	.125
165PLP-3	3/16	.82	.156
165PLP-4	1/4	.85	.188
165PLP-5	5/16	.97	.250
165PLP-6	3/8	1.01	.312
165PLP-8	1/2	1.15	.375

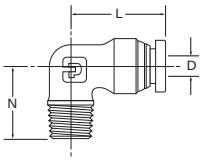
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



W169PLP Male Elbow Swivel 90°

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	I	N	Flow ia. D
W169PLP-2-1	1/8	1/16	3/8	.74	.93	.160
W169PLP-2-2	1/8	1/8	7/16	.74	.92	.094
169PLP-2-0*	1/8	10-32	3/8	.74	.74	.080
W169PLP-2-4	1/8	1/4	9/16	.74	1.10	.094
W169PLP-3-2	3/16	1/8	7/16	.82	.92	.156
W169PLP-5/32-1	5/32	1/16	3/8	.84	.93	.160
W169PLP-5/32-2	5/32	1/8	7/16	.77	.92	.125
W169PLP-5/32-4	5/32	1/4	9/16	.77	1.10	.125
169PLP-5/32-0*	5/32	10-32	3/8	.85	.74	.080
W169PLP-4-1	1/4	1/16	3/8	.84	.93	.160
W169PLP-4-2	1/4	1/8	7/16	.85	.92	.156
W169PLP-4-4	1/4	1/4	9/16	.85	1.10	.156
W169PLP-4-6	1/4	3/8	11/16	.85	1.19	.156
169PLP-4-0*	1/4	10-32	3/8	.85	.74	.080
W169PLP-5-2	5/16	1/8	9/16	.97	1.02	.250
W169PLP-5-4	5/16	1/4	9/16	.97	1.24	.250
W169PLP-6-2	3/8	1/8	9/16	1.01	1.02	.250
W169PLP-6-4	3/8	1/4	9/16	1.01	1.24	.250
W169PLP-6-6	3/8	3/8	11/16	1.01	1.24	.250
W169PLP-6-8	3/8	1/2	7/8	1.01	1.48	.250
W169PLP-8-4	1/2	1/4	9/16	1.15	1.28	.312
W169PLP-8-6	1/2	3/8	11/16	1.15	1.31	.312
W169PLP-8-8	1/2	1/2	7/8	1.15	1.52	.312

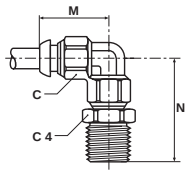
*10-32 seal is neoprene



W169PLPNS Male Elbow 90°

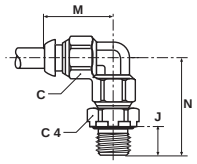
Part No.	Tube Size (In.)	Pipe Thread (NPTF)	L	N	Flow Dia. D
W169PLPNS-2-2	1/8	1/8	.74	.67	.094
W169PLPNS5/32-2	5/32	1/8	.77	.67	.125
W169PLPNS5/32-4	5/32	1/4	.77	.87	.125
W169PLPNS-4-2	1/4	1/8	.85	.67	.188
W169PLPNS-4-4	1/4	1/4	.85	.87	.188
W169PLPNS-5-2	5/16	1/8	.97	.75	.234
W169PLPNS-5-4	5/16	1/4	.97	.94	.250
W169PLPNS-6-4	3/8	1/4	1.01	.94	.312
W169PLPNS-6-6	3/8	3/8	1.01	1.01	.312
W169PLPNS-6-8	3/8	1/2	1.01	1.27	.312
W169PLPNS-8-6	1/2	3/8	1.15	1.00	.375
W169PLPNS-8-8	1/2	1/2	1.15	1.27	.375
169PLPNS532-4LT*	5/32	1/4-28	.60	.48	.090

* SAE-LT Threads



C6PB Adjustable Male Elbow NPT

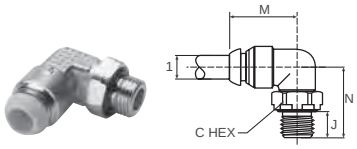
Part No.	Tube Size (mm)	NPT	C Hex	C4 Hex	M	N
C6PB6-1/4	6	1/4-18	12	14	20	36.0
C6PB6-3/8	6	3/8-18	12	19	20	36.5
C6PB10-1/4	10	1/4-18	17	16	28	41.5
C6PB10-3/8	10	3/8-18	17	19	28	41.5
C6PB12-1/2	12	1/2-14	22	22	30	47.5



C64PB Adjustable Male Elbow BSPP

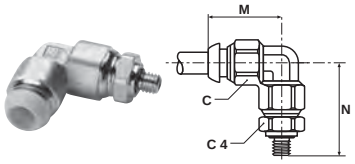
Part No.	Tube Size (mm)	BSPP	C Hex	C4 Hex	J	M	N
C64PB4-1/8	4	1/8	10	13	4.7	18	23.4
C64PB4-1/4	4	1/4	10	16	6.0	18	25.2
C64PB6-1/8	6	1/8	12	13	4.7	20	26.1
C64PB6-1/4	6	1/4	12	16	6.0	20	26.4
C64PB8-1/8	8	1/8	14	13	4.7	22	28.1
C64PB8-1/4	8	1/4	14	16	6.0	22	28.4
C64PB8-3/8	8	3/8	14	20	6.5	22	30.6
C64PB10-1/4	10	1/4	17	16	6.0	28	34.9
C64PB10-3/8	10	3/8	17	20	6.5	28	37.4
C64PB12-1/4	12	1/4	22	19	6.0	30	36.5
C64PB12-3/8	12	3/8	22	22	6.5	30	39.0
C64PB12-1/2	12	1/2	22	24	7.5	30	38.5
C64PB14-3/8	14	3/8	25	22	6.5	34	44.7
C64PB14-1/2	14	1/2	25	24	7.5	34	44.3

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



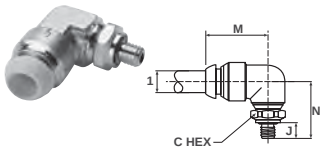
C64SPB Compact Adjustable Male Elbow BSPP

Part No.	Tube Size (mm)	BSPP	C Hex	J	M	N
C64SPB4-1/8	4	1/8	13	4.7	17	17.3
C64SPB6-1/8	6	1/8	13	4.7	22	17.3
C64SPB6-1/4	6	1/4	16	6.0	22	19.1
C64SPB8-1/8	8	1/8	13	4.7	24	16.9
C64SPB8-1/4	8	1/4	16	6.0	24	18.7
C64SPB8-3/8	8	3/8	20	6.5	24	20.7
C64SPB10-1/4	10	1/4	16	6.0	29	20.5
C64SPB10-3/8	10	3/8	20	6.5	29	22.5
C64SPB12-1/4	12	1/8	16	6.0	31	20.5
C64SPB12-3/8	12	3/8	20	6.5	31	23.2
C64SPB12-1/2	12	1/2	24	7.5	31	25.2



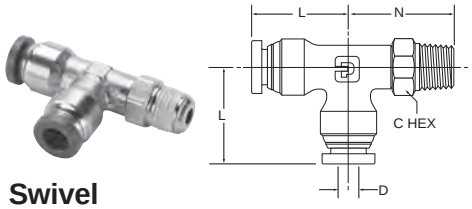
C68PB Adjustable Male Elbow Metric Straight Thread

Part No.	Tube Size (mm)	Thread (mm)	C Hex	C4 Hex	M	N
C68PB4M5	4	M5x0.8	11	10	17	18
C68PB6M5	6	M5x0.8	11	10	17	18



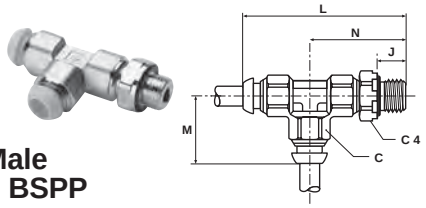
C68SPB Compact Adjustable Male Elbow Metric Straight Thread

Part No.	Tube Size (mm)	Thread (mm)	C Hex	J	M	N
C68SPB4M5	4	M5x0.8	12.5	5	17	18
C68SPB6M5	6	M5x0.8	12.5	5	17	18



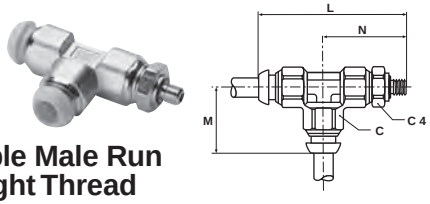
W171PLP Male Run Tee Swivel

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	L	N	Flow Dia. D
W171PLP-2-2	1/8	1/8	7/16	.74	.92	.094
W171PLP-5/32-2	5/32	1/8	7/16	.77	.92	.125
W171PLP-4-2	1/4	1/8	7/16	.85	.92	.156
W171PLP-4-4	1/4	1/4	9/16	.85	1.10	.156
W171PLP-4-6	1/4	3/8	11/16	.85	1.24	.156
W171PLP-5-2	5/16	1/8	9/16	.97	1.02	.250
W171PLP-5-4	5/16	1/4	9/16	.97	1.24	.250
W171PLP-6-4	3/8	1/4	9/16	1.01	1.24	.250
W171PLP-6-6	3/8	3/8	11/16	1.01	1.24	.250
W171PLP-8-6	1/2	3/8	11/16	1.15	1.31	.312
W171PLP-8-8	1/2	1/2	7/8	1.15	1.52	.312



R64PB Swivel Male Branch Run Tee BSPP

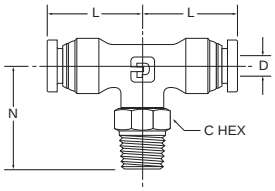
Part No.	Tube Size (mm)	BSPP	C Hex	C4 Hex	J	L	M	N
R64PB4-1/8	4	1/8	10	13	4.7	41.4	18	23.4
R64PB4-1/4	4	1/4	10	16	6.0	43.2	18	25.2
R64PB6-1/8	6	1/8	12	13	4.7	46.1	20	26.1
R64PB6-1/4	6	1/4	12	16	6.0	46.4	20	26.4
R64PB8-1/8	8	1/8	14	13	4.7	50.1	22	28.1
R64PB8-1/4	8	1/4	14	16	6.0	50.4	22	28.4
R64PB8-3/8	8	3/8	14	20	6.5	52.6	22	30.6
R64PB10-1/4	10	1/4	17	16	6.0	62.9	28	34.9
R64PB10-3/8	10	3/8	17	20	6.5	65.4	28	37.4
R64PB12-1/4	12	1/4	22	19	6.0	65.5	29	36.5
R64PB12-3/8	12	3/8	22	22	6.5	68.0	29	39.0
R64PB14-3/8	14	3/8	25	22	6.5	78.7	34	44.7
R64PB14-1/2	14	1/2	25	24	7.5	78.3	34	44.3



R68PB Adjustable Male Run Tee Metric Straight Thread

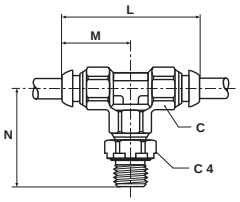
Part No.	Tube Size (mm)	Thread (mm)	C Hex	C4 Hex	L	M	N
R68PB4M3	4	M3x0.5	10	10	41.0	18	23.0
R68PB4M5	4	M5x0.8	10	10	42.5	18	24.5
R68PB6M5	6	M5x0.8	12	11	45.5	20	25.5

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



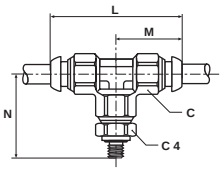
W172PLP Male Branch Tee Swivel

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	L	N	Flow Dia. D
W172PLP-2-2	1/8	1/8	7/16	.74	.92	.094
W172PLP-3-2	3/16	1/8	7/16	.82	.92	.156
W172PLP-5/32-2	5/32	1/8	7/16	.77	.92	.125
W172PLP-4-2	1/4	1/8	7/16	.85	.92	.156
W172PLP-4-4	1/4	1/4	9/16	.85	1.10	.156
W172PLP-4-6	1/4	3/8	11/16	.85	1.10	.156
W172PLP-5-2	5/16	1/8	9/16	.97	1.02	.250
W172PLP-5-4	5/16	1/4	9/16	.97	1.24	.250
W172PLP-6-4	3/8	1/4	9/16	1.01	1.24	.250
W172PLP-6-6	3/8	3/8	11/16	1.01	1.24	.250
W172PLP-8-4	1/2	1/4	9/16	1.15	1.30	.312
W172PLP-8-6	1/2	3/8	11/16	1.15	1.31	.312
W172PLP-8-8	1/2	1/2	7/8	1.15	1.52	.312



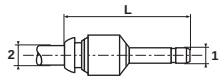
S64PB Swivel Male Branch Tee BSPP

Part No.	Tube Size (mm)	BSPP	C Hex	C4 Hex	L	M	N
S64PB4-1/8	4	1/8	10	13	36	18	23.4
S64PB4-1/4	4	1/4	10	16	36	18	25.2
S64PB6-1/8	6	1/8	12	13	40	20	26.1
S64PB6-1/4	6	1/4	12	16	40	20	26.4
S64PB8-1/8	8	1/8	14	13	44	22	28.1
S64PB8-1/4	8	1/4	14	16	44	22	28.4
S64PB8-3/8	8	3/8	14	20	44	22	30.6
S64PB10-1/4	10	1/4	17	16	56	28	34.9
S64PB10-3/8	10	3/8	17	20	56	28	37.4
S64PB12-1/4	12	1/4	22	19	58	29	36.5
S64PB12-3/8	12	3/8	22	22	58	29	39.0
S64PB14-3/8	14	3/8	25	22	68	34	44.7
S64PB14-1/2	14	1/2	25	24	68	34	44.3



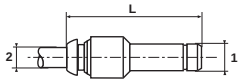
S68PB Adjustable Male Branch Tee Metric Straight Thread

Part No.	Tube Size (mm)	Thread (mm)	C Hex	C4 Hex	L	M	N
S68PB4M3	4	M3X0.5	10	10	36	18	23.0
S68PB4M5	4	M5X0.8	10	10	36	18	24.5
S68PB6M5	6	M5X0.8	12	11	40	20	25.5



TEPB Tube End Expander

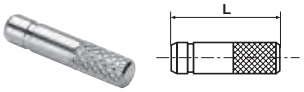
Part No.	Tube 1 Size (mm)	Tube 2 Size (mm)	L
TEPB4-6	4	6	39



TRPB Tube End Reducer

Part No.	Tube 1 Size (mm)	Tube 2 Size (mm)	L
TRPB6-4	6	4	40.0
TRPB8-4	8	4	39.5
TRPB8-6	8	6	41.5
TRPB10-4	10	4	37.0
TRPB10-6	10	6	43.0
TRPB10-8	10	8	47.5
TRPB12-6	12	6	38.0
TRPB12-8	12	8	44.0
TRPB12-10	12	10	52.0
TRPB14-8	14	8	41.0
TRPB14-10	14	10	51.0
TRPB14-12	14	12	55.0

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

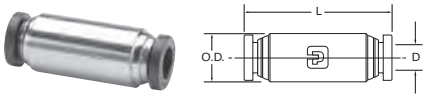


FNPB Plug

Part No.	Tube Size (mm)	L
FNPB4	4	27
FNPB6	6	27
FNPB8	8	30
FNPB10	10	30
FNPB12	12	35
FNPB14	14	36

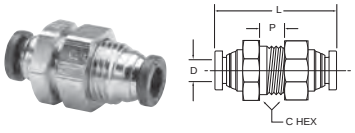
DB Dust/Weld Spatter Boot

Part No.	Tube Size (In.)	L	D
DB-4	1/4	.50	.53
DB-6	3/8	.50	.76
DB-8	1/2	.50	.88



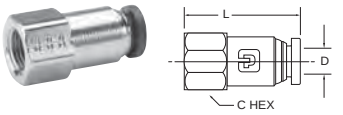
62PW Union (Nickel Plated)

Part No.	Tube Size (In.)	O.D.	L	Flow Dia. D
62PW-4	1/4	.500	1.43	.188
62PW-5	5/16	.562	1.65	.250
62PW-6	3/8	.625	1.66	.312
62PW-8	1/2	.750	1.82	.375



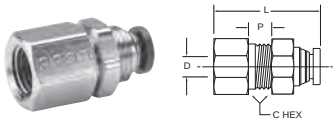
62PWBH Bulkhead Union (Nickel Plated)

Part No.	Tube Size (In.)	Bulkhead Hole Dia. B	C Hex	P Max.	L	D
62PWBH-4	1/4	9/16	11/16	.29	1.43	.188
62PWBH-5	5/16	5/8	3/4	.60	1.65	.250
62PWBH-6	3/8	3/4	7/8	.54	1.66	.312
62PWBH-8	1/2	7/8	1	.66	2.04	.375



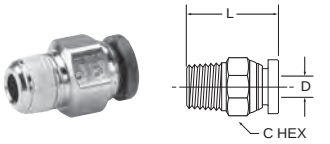
66PW Female Connector (Nickel Plated)

Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	L	Flow Dia. D
66PW-4-2	1/4	1/8	9/16	1.17	.188
66PW-4-4	1/4	1/4	11/16	1.38	.188
66PW-5-2	5/16	1/8	9/16	1.25	.250
66PW-5-4	5/16	1/4	11/16	1.45	.250
66PW-6-4	3/8	1/4	11/16	1.46	.312
66PW-6-6	3/8	3/8	13/16	1.51	.312



66PWBH Female Bulkhead (Nickel Plated)

Part No.	Tube Size (In.)	Thread (NPTF)	C Hex	P Max.	L	Flow Dia. D	Bulkhead Hole Dia.
66PWBH-4-4	1/4	1/4	11/16	.24	1.35	.188	9/16
66PWBH-6-6	3/8	3/8	1	.22	1.47	.312	7/8
66PWBH-8-6	1/2	3/8	1 1/4	.35	1.56	.344	1

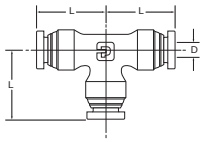


W68PW Male Connector (Nickel Plated)

Part No.	Tube Size (In.)	Thread (NPTF	C Hex	L	Flow Dia. D
W68PW-4-2	1/4	1/8	1/2	.89	.188
W68PW-4-4	1/4	1/4	9/16	1.00	.188
W68PW-4-6	1/4	3/8	3/4	1.04	.188
W68PW-5-2	5/16	1/8	9/16	1.18	.250
W68PW-5-4	5/16	1/4	9/16	1.04	.250
W68PW-5-6	5/16	3/8	11/16	1.04	.250
W68PW-6-2	3/8	1/8	5/8	1.21	.250
W68PW-6-4	3/8	1/4	5/8	1.08	.312
W68PW-6-6	3/8	3/8	11/16	1.02	.312
W68PW-6-8	3/8	1/2	7/8	1.28	.312
W68PW-8-4	1/2	1/4	13/16	1.44	.344
W68PW-8-6	1/2	3/8	13/16	1.24	.344
W68PW-8-8	1/2	1/2	7/8	1.35	.375

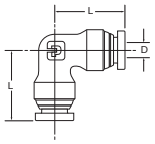
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

164PW Union Tee (Nickel Plated)

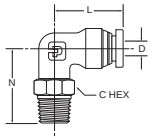
Part No.	Tube Size (In.)	L	Flow Dia. D
164PW-4	1/4	.85	.188
164PW-5	5/16	.97	.250
164PW-6	3/8	1.01	.250
164PW-8	1/2	1.15	.375

165PW Union Elbow (Nickel Plated)

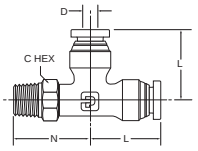
Part No.	Tube Size (In.)	L	Flow Dia. D
165PW-4	1/4	.85	.188
165PW-5	5/16	.97	.250
165PW-6	3/8	1.01	.312
165PW-8	1/2	1.15	.375

W169PW Male Elbow Swivel 90° (Nickel Plated)

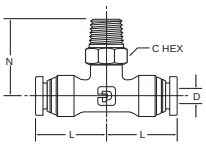
Part No.	Pipe Size (In.)	Thread (NPTF)	C Hex	L	N	Flow Dia. D
W169PW-4-2	1/4	1/8	7/16	.85	.92	.156
W169PW-4-4	1/4	1/4	9/16	.85	1.10	.156
W169PW-4-6	1/4	3/8	11/16	.85	1.19	.156
W169PW-5-2	5/16	1/8	9/16	.97	1.02	.250
W169PW-5-4	5/16	1/4	9/16	.97	1.24	.250
W169PW-6-2	3/8	1/8	9/16	1.01	1.02	.250
W169PW-6-4	3/8	1/4	9/16	1.01	1.24	.250
W169PW-6-6	3/8	3/8	11/16	1.01	1.24	.250
W169PW-6-8	3/8	1/2	7/8	1.01	1.48	.250
W169PW-8-4	1/2	1/4	9/16	1.15	1.28	.312
W169PW-8-6	1/2	3/8	11/16	1.15	1.31	.312
W169PW-8-8	1/2	1/2	7/8	1.15	1.52	.312

W171PW Male Run Tee Swivel (Nickel Plated)

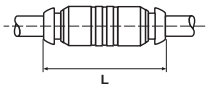
Part No.	Tube Size (In.)	Pipe Thread (NPTF)	C Hex	L	N	Flow Dia. D
W171PW-4-2	1/4	1/8	7/16	.85	.92	.156
W171PW-4-4	1/4	1/4	9/16	.85	1.10	.156
W171PW-4-6	1/4	3/8	11/16	.85	1.24	.156
W171PW-5-2	5/16	1/8	9/16	.97	1.02	.250
W171PW-5-4	5/16	1/4	9/16	.97	1.24	.250
W171PW-6-4	3/8	1/4	9/16	1.01	1.24	.250
W171PW-6-6	3/8	3/8	11/16	1.01	1.24	.250
W171PW-8-6	1/2	3/8	11/16	1.15	1.31	.312
W171PW-8-8	1/2	1/2	7/8	1.15	1.52	.312

W172PW Male Branch Tee Swivel (Nickel Plated)

Part No.	Pipe Size (In.)	Thread (NPTF)	C Hex	L	N	Flow Dia. D
W172PW-4-2	1/4	1/8	7/16	.85	.92	.156
W172PW-4-4	1/4	1/4	9/16	.85	1.10	.156
W172PW-4-6	1/4	3/8	11/16	.85	1.10	.156
W172PW-5-2	5/16	1/8	9/16	.97	1.02	.250
W172PW-5-4	5/16	1/4	9/16	.97	1.24	.250
W172PW-6-4	3/8	1/4	9/16	1.01	1.24	.250
W172PW-6-6	3/8	3/8	11/16	1.01	1.24	.250
W172PW-8-4	1/2	1/4	9/16	1.15	1.30	.312
W172PW-8-6	1/2	3/8	11/16	1.15	1.31	.312
W172PW-8-8	1/2	1/2	7/8	1.15	1.52	.312

HPB Equal Union

Part No.	Tube Size (mm)	L
HPB6	6	36.0
HPB8	8	38.0
HPB10	10	48.0
HPB12	12	48.0

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Industrial Pipe Fittings	**207ACBH** Anchor Coupling  Page E112	**207P** Pipe Coupling  Page E112	**208P** Reducer Coupling  Page E112	**209P** Pipe Bushing  Page E112	**210P** Lock Nut  Page E112
211P Square-head Plug  Page E112	**212P** Union  Page E112	**213P** Cap  Page E113	**215PN** Close Nipple  Page E113	**215PNL** Long Nipple  Page E113	**216P** Hex Nipple  Page E113
218P Hex-Head Plug  Page E113	**219P** Countersunk Plug  Page E113	**220P** Slotted-Head Plug  Page E114	**222P** Adapter  Page E114	**1200P-2200P** Union Elbow  Page E114	**1202P-2202P** Street Elbow  Page E114
1203P-2203P Union Tee  Page E114	**1204P** Male Elbow  Page E114	**2224P** Male Branch Tee  Page E115	**2225P** Street Tee  Page E115	**1201P-2201P** 45° Female Elbow  Page E115	**2205P** Cross  Page E115
2214P 45° Street Elbow  Page E115	**Metric Adapters BSP**	**DD44** 90° Elbow  Page E117	**FF44** BSPP Hex Nipple  Page E117	**FHG4** Adapter Male-BSPP  Page E117	**GG44** Pipe Connector  Page E117
KMM004 BSPP Cross  Page E117	**MM0444** Pipe Tee  Page E117	**WGG44** Bulkhead Female Union  Page E117			

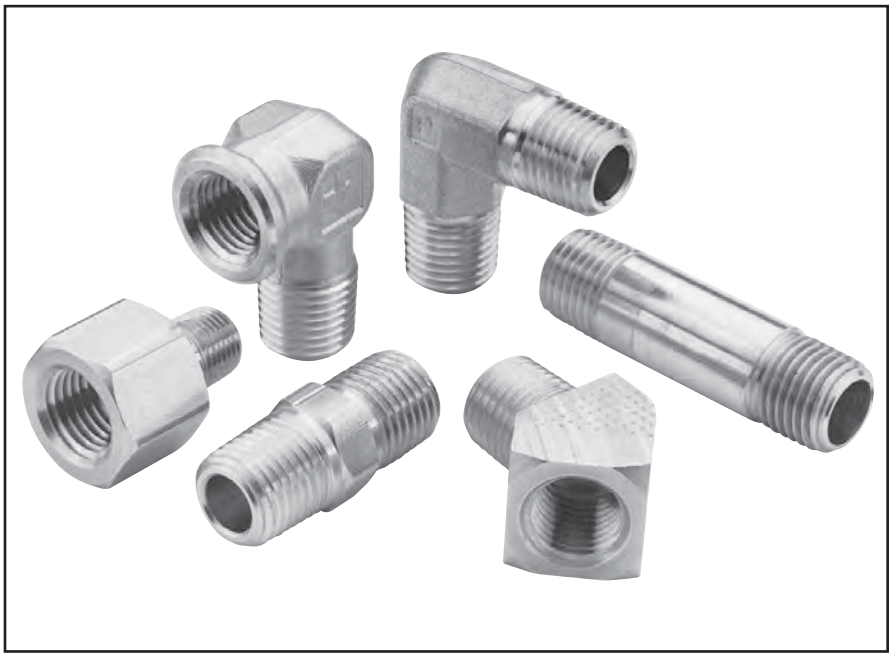
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

MATERIALS OF CONSTRUCTION	
Fittings:	CA345, CA360, CA377

NOMENCLATURE	
EXAMPLE: 2214P–2–2	**ATTRIBUTE:**
2	Extrusion
1 (not shown)	Forging
214	45° Street Elbow
p	Pipe
2	1/8" Pipe Thread
2	1/8" Pipe Thread

APPLICABLE TUBE	
Tube Material:	Copper, brass, iron pipe
Thread size:	1/8, 1/4, 3/8, 1/2, 3/4, 1

SPECIFICATIONS	
Pressure Range:	Up to 1,000 PSI
Temperature Ranges:	-65° to +250°F



All pipe fittings meet functional requirements of SAE J530 and SAE J531. Threads are made to Dryseal standards.

Pipe thread assembly guide (turns method) for Dryseal threads with pre-applied Vibra Seal

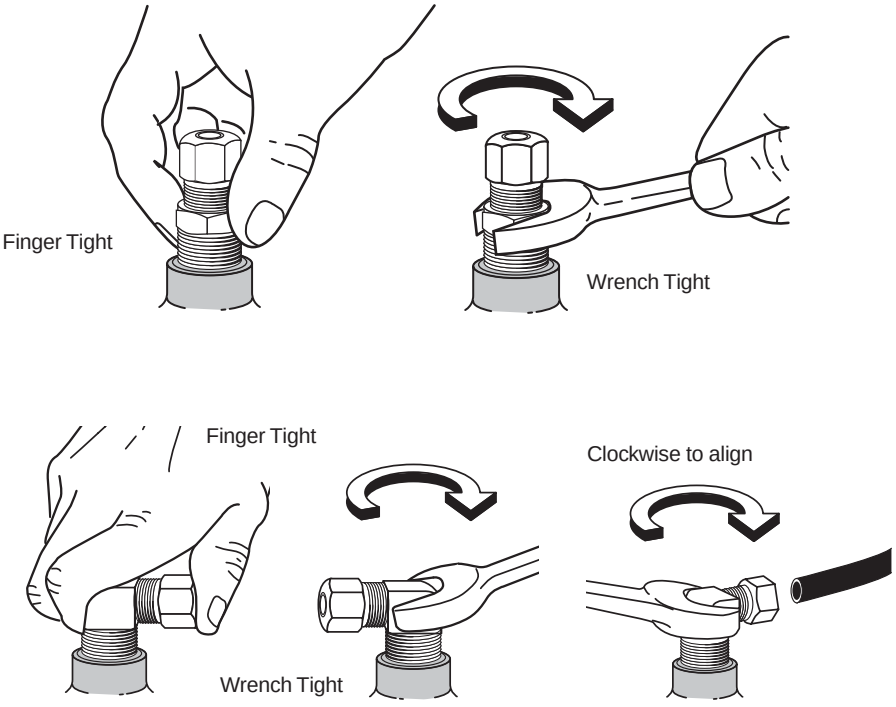
Straight Fittings

1. Tighten external thread into the internal thread.
2. Tighten an additional 2 revolutions with a wrench up to 1⁄2 in. male pipe thread. Above 1⁄2 in., 1-1⁄2 to 2-1⁄2 revolutions.

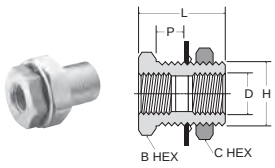
Elbow or Tee Fittings

1. Tighten external thread into the internal thread.
2. Tighten an additional 1 to 1-1⁄2 revolutions with a wrench.
3. Tighten fitting, Clockwise, to Align with Tubing (never counter clockwise).

Note: To minimize the possibility of a leaking threaded joint after assembling male to female pipe threads, neither end should be backed out (loosened) once the assembly has been made.



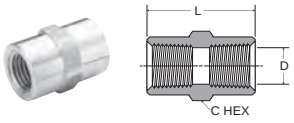
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



207ACBH Anchor Coupling

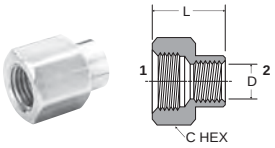
PART NO.	FEMALE PIPE THREAD	STRAIGHT THREAD	MAX. BULK HEAD P	B HEX	C HEX	L	BLKHD HOLE DIA. H	FLOW DIA. D
207ACBH-2	1/8	5/8-18	.89	7/8	15/16	1.50	5/8	.339
207ACBHS-2	1/8	5/8-18	.35	7/8	15/16	.96	5/8	.339
207ACBH-4	1/4	3/4-16	.81	1	1-1/8	1.50	3/4	.441
207ACBHS-4	1/4	3/4-16	.26	1	1	.94	3/4	.441
207ACBH-6	3/8	1-14	.62	1-1/8	1-1/4	1.31	1	.571
207ACBH-8	1/2	1-1/8-14	.75	1-1/4	1-3/8	1.50	1-1/8	.703
207ACBH-12	3/4	1-5/16-12	.65	1-1/2	1-1/2	1.50	1-5/16	.906
207ACBH-16*	1	1-5/8-14	1.00	2	2	1.68	1-5/8	1.140

*Lock Washer not Available



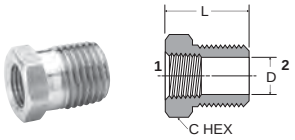
207P Coupling

PART NO.	PIPE THREAD	C HEX	L	FLOW DIA. D
207P-2	1/8	9/16	.75	.339
207P-4	1/4	3/4	1.12	.441
207P-6	3/8	7/8	1.12	.571
207P-8	1/2	1-1/16	1.50	.703
207P-12	3/4	1-3/8	1.53	.906



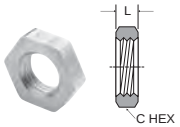
208P Reducer Coupling

PART NO.	1 PIPE THREAD	2 PIPE THREAD	C HEX	L	FLOW DIA. D
208P-4-2	1/4	1/8	3/4	.97	.339
208P-6-4	3/8	1/4	7/8	1.16	.441
208P-8-4	1/2	1/4	1-1/16	1.28	.441
208P-8-6	1/2	3/8	1-1/16	1.38	.571
208P-12-6	3/4	3/8	1-3/8	1.32	.571
208P-12-8	3/4	1/2	1-3/8	1.50	.703



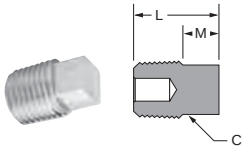
209P Bushing

PART NO.	1 PIPE THREAD	2 PIPE THREAD	C HEX	L	FLOW DIA. D
209P-4-2	1/8	1/4	9/16	.75	.339
209P-6-2	1/8	3/8	11/16	.75	.339
209P-6-4	1/4	3/8	3/4	.75	.441
209P-8-2	1/8	1/2	7/8	1.00	.339
209P-8-4	1/4	1/2	7/8	1.00	.441
209P-8-6	3/8	1/2	7/8	1.00	.571
209P-12-2	1/8	3/4	1-1/8	1.00	.339
209P-12-4	1/4	3/4	1-1/8	1.00	.441
209P-12-6	3/8	3/4	1-1/8	1.00	.571
209P-12-8	1/2	3/4	1-1/8	1.00	.703
209P-16-8	1/2	1	1-3/8	1.31	.703
209P-16-12	3/4	1	1-3/8	1.31	.906



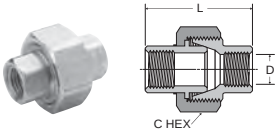
210P Lock Nut

PART NO.	PIPE THREAD	C HEX	L
210P-2	1/8 NPSL	11/16	.19
210P-4	1/4 NPSL	7/8	.25
210P-6	3/8 NPSL	1	.25
210P-8	1/2 NPSL	1-1/8	.25



211P Square-Head Plug

PART NO.	PIPE THREAD	C	L	M
211P-2	1/8	9/32	.59	.25
211P-4	1/4	3/8	.80	.29
211P-6	3/8	7/16	.83	.32
211P-8	1/2	9/16	1.07	.39
211P-12	3/4	5/8	1.14	.45

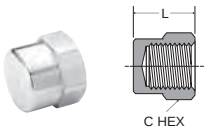


212P Union

PART NO.	PIPE THREAD	C HEX	L	D
212P-4	1/4	1-3/16	1.54	.441
212P-6	3/8	1-1/4	1.76	.571

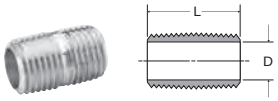
Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

213P Cap



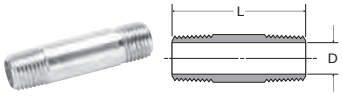
PART NO.	PIPE THREAD	C HEX	L
213P-2	1/8	9/16	.50
213P-4	1/4	11/16	.63
213P-6	3/8	13/16	.63
213P-8	1/2	1-1/16	.87
213P-12	3/4	1-1/4	.89

215PN Close Nipple



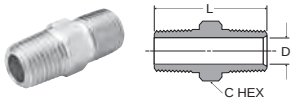
PART NO.	PIPE THREAD	L	FLOW DIA. D
215PN-2	1/8	.75	.281
215PN-4	1/4	.88	.375
215PN-6	3/8	1.00	.500
215PN-8	1/2	1.13	.625
215PN-12	3/4	1.31	.750

215PNL Long Nipple



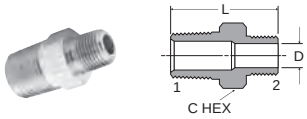
PART NO.	PIPE THREAD	L	FLOW DIA. D
215PNL-2-15	1/8	1-1/2	.250
215PNL-4-15	1/4	1-1/2	.375
215PNL-6-15	3/8	1-1/2	.500
215PNL-8-15	1/2	1-1/2	.625
215PNL-2-20	1/8	2	.250
215PNL-4-20	1/4	2	.375
215PNL-6-20	3/8	2	.500
215PNL-8-20	1/2	2	.625
215PNL-2-25	1/8	2-1/2	.250
215PNL-4-25	1/4	2-1/2	.375
215PNL-6-25	3/8	2-1/2	.500
215PNL-8-25	1/2	2-1/2	.625
215PNL-2-30	1/8	3	.250
215PNL-4-30	1/4	3	.375
215PNL-6-30	3/8	3	.500
215PNL-8-30	1/2	3	.625
215PNL-2-35	1/8	3-1/2	.250
215PNL-4-35	1/4	3-1/2	.375
215PNL-6-35	3/8	3-1/2	.500
215PNL-8-35	1/2	3-1/2	.625

216P Hex Nipple



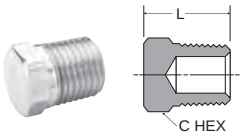
PART NO.	PIPE THREAD	C HEX	L	FLOW DIA. D
216P-2	1/8	7/16	.97	.220
216P-4	1/4	9/16	1.38	.314
216P-6	3/8	11/16	1.41	.440
216P-8	1/2	7/8	1.81	.564
216P-12	3/4	1-1/16	1.81	.752

216P Hex Nipple Reducers



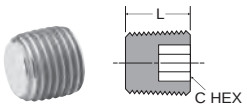
PART NO.	1 PIPE THREAD	2 PIPE THREAD	C HEX	L	FLOW DIA. D
216P-4-2	1/4	1/8	9/16	1.19	.220
216P-6-2	3/8	1/8	11/16	1.22	.220
216P-6-4	3/8	1/4	11/16	1.41	.314
216P-8-4	1/2	1/4	7/8	1.62	.314
216P-8-6	1/2	3/8	7/8	1.62	.440
216P-12-8	3/4	1/2	1-1/16	1.80	.564

218P Hex-Head Plug



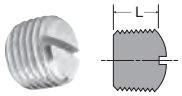
PART NO.	PIPE THREAD	C HEX	L
218P-2	1/8	7/16	.560
218P-4	1/4	9/16	.747
218P-6	3/8	11/16	.780
218P-8	1/2	7/8	.970
218P-12	3/4	1-1/16	1.054

219P Countersunk Hex-Head Plug



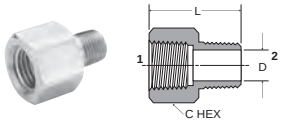
PART NO.	PIPE THREAD	C HEX	L
219P-2	1/8	3/16	.30
219P-4	1/4	1/4	.46
219P-6	3/8	5/16	.46
219P-8	1/2	3/8	.61
219P-12	3/4	9/16	.62

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



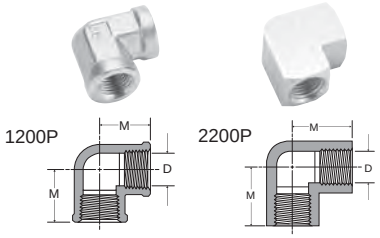
220P Slotted-Head Plug

PART NO.	PIPE THREAD	L
220P-2	1/8	.31
220P-4	1/4	.42
220P-6	3/8	.43



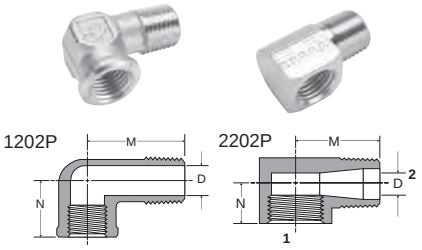
222P Adapter

PART NO.	1 PIPE THREAD	2 PIPE THREAD	C HEX	L	FLOW DIA. D
222P-2-2	1/8	1/8	9/16	.88	.220
222P-4-2	1/4	1/8	3/4	1.06	.220
222P-4-4	1/4	1/4	3/4	1.25	.314
222P-6-2	3/8	1/8	7/8	1.10	.220
222P-6-4	3/8	1/4	7/8	1.25	.314
222P-6-6	3/8	3/8	7/8	1.25	.440
222P-8-4	1/2	1/4	1	1.47	.314
222P-8-6	1/2	3/8	1-1/16	1.47	.440
222P-8-8	1/2	1/2	1-1/16	1.66	.564
222P-12-6	3/4	3/8	1-3/8	1.50	.440
222P-12-8	3/4	1/2	1-3/8	1.69	.564
222P-12-12	3/4	3/4	1-3/8	1.69	.752



1200P-2200P 90° Union Elbow

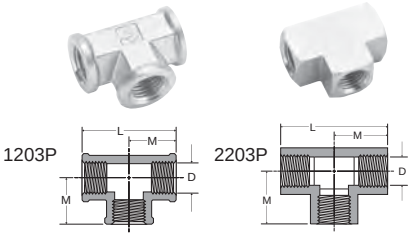
PART NO.	PIPE THREAD	M	FLOW DIA. D
1200P-2-2	1/8	.56	.329
2200P-2-2	1/8	.55	.339
1200P-4-4	1/4	.81	.441
2200P-4-4	1/4	.78	.441
1200P-6-6	3/8	.84	.571
2200P-6-6	3/8	.84	.571
2200P-8-8	1/2	1.07	.703



1202P-2202P 90° Street Elbow

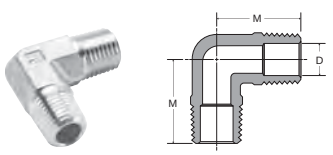
PART NO.	1 PIPE THREAD	2 PIPE THREAD	M	N	FLOW DIA. D
1202P-2-2	1/8	1/8	.81	.56	.22
2202P-2-2	1/8	1/8	.62	.48	.22
2202PA-2-2*	1/8	1/8	.66	.48	.22
2202P-4-2	1/4	1/8	.72	.45	.23
1202P-4-4	1/4	1/4	1.08	.69	.31
2202P-4-4	1/4	1/4	.91	.45	.34
2202PA-4-4*	1/4	1/4	.91	.72	.31
2202P-4-6	1/4	3/8	.97	.78	.43
1202P-6-4	3/8	1/4	1.25	.78	.31
1202P-6-6	3/8	3/8	1.25	.78	.42
2202P-6-6	3/8	3/8	.98	.54	.41
2202PA-6-6*	3/8	3/8	.97	.78	.43

*Meets SAE Dimensions



1203P-2203P Union Tee

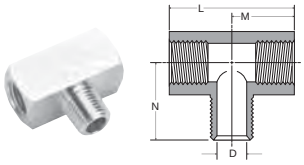
PART NO.	PIPE THREAD	L	M	FLOW DIA. D
1203P-2	1/8	1.12	.56	.339
2203P-2	1/8	1.06	.53	.339
1203P-4	1/4	1.38	.69	.441
2203P-4	1/4	1.52	.76	.441
2203P-6	3/8	1.68	.84	.571
1203P-8	1/2	2.14	1.07	.703
2203P-8	1/2	2.14	1.07	.703
2203P-12	3/4	2.28	1.14	.906



1204P Male Elbow

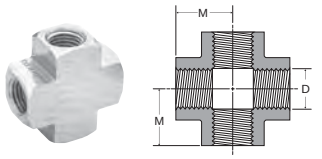
PART NO.	PIPE THREAD	M	FLOW DIA. D
1204P-2	1/8	.71	.220
1204P-4	1/4	1.09	.312
1204P-6	3/8	1.09	.408
1204P-8	1/2	1.41	.502

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



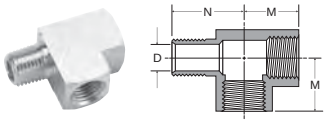
2224P Male Branch Tee

PART NO.	PIPE THREAD	L	M	N	FLOW DIA. D
2224P-2	1/8	1.06	.53	.66	.220
2224P-4	1/4	1.52	.76	.91	.314
2224P-6	3/8	1.68	.84	.97	.440
2224P-8	1/2	2.18	1.09	1.25	.564
2224P-12	3/4	2.32	1.16	1.38	.752



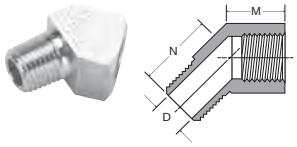
2205P Cross

PART NO.	PIPE THREAD	M	FLOW DIA. D
2205P-2	1/8	.53	.339
2205P-4	1/4	.75	.441
2205P-6	3/8	.81	.571
2205P-8	1/2	1.07	.703
2205P-12	3/4	1.14	.906



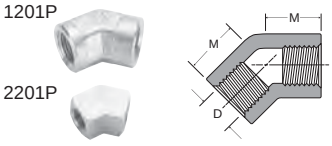
2225P Street Tee

PART NO.	PIPE THREAD	M	N	FLOW DIA. D
2225P-2	1/8	.53	.66	.220
2225P-4	1/4	.76	.91	.314
2225P-6	3/8	.84	.98	.440
2225P-8	1/2	1.07	1.26	.564
2225P-12	3/4	1.14	1.38	.752



2214P 45° Street Elbow

PART NO.	PIPE THREAD	M	N	FLOW DIA. D
2214P-2-2	1/8	.38	.50	.220
2214P-4-4	1/4	.54	.70	.314
2214P-6-6	3/8	.56	.78	.440
2214P-8-8	1/2	.73	1.00	.564



1201P-2201P
45° Female Elbow

PART NO.	PIPE THREAD	M	FLOW DIA. D
2201P-2-2	1/8	.43	.339
1201P-8-8	1/2	.89	.703

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

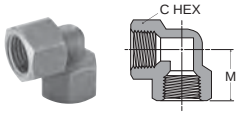
MATERIALS OF CONSTRUCTION	
Adapters:	Brass

APPLICABLE TUBE	
Tube Material:	Copper, brass, iron pipe
NPT:	1/8, 1/4, 3/8, 1/2
BSPT:	1/8, 1/4, 3/8, 1/2, 3/4, 1
BSPP:	1/8, 1/4, 3/8, 1/2, 3/4, 1

SPECIFICATIONS	
Pressure Range:	Up to 1,000 PSI
Temperature Ranges:	-65° to +250°F

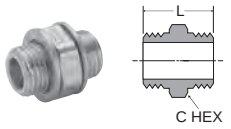
A comprehensive range of adapters for NPT, BSPT and BSPP pipe threads. Produced in both forgings and extrusions. Parker brass adapters are produced from forgings and extrusions to meet exacting requirements. The hot forging process increases the density of the material, refines the grain structure and improves material strength.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com



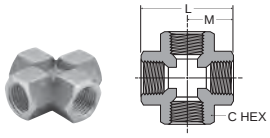
DD44 Pipe 90° Elbow BSPP

PART NO.	BSPP	C HEX	M
1/8DD44B	1/8	14	15
1/4DD44B	1/4	17	18
3/8DD44B	3/8	22	22
1/2DD44B	1/2	27	29



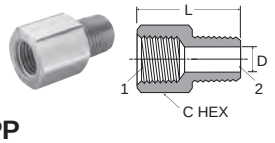
FF44 Pipe Nipples BSPP

PART NO.	BSPP	C HEX	L
1/8FF44B	1/8	14	19
1/4FF44B	1/4	17	22
3/8FF44B	3/8	22	24
1/2FF44B	1/2	27	31



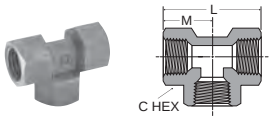
KMMOO4 Pipe Cross BSPP

PART NO.	BSPP	C HEX	L	M
1/8KMMOO4B	1/8	14	29	14.5
1/4KMMOO4B	1/4	17	36	18.0
3/8KMMOO4B	3/8	22	44	22.0
1/2KMMOO4B	1/2	27	58	29.0



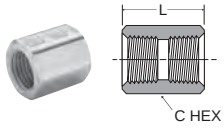
FHG4 Adapter Male NPTF BSPP

PART NO.	BSPP 1	NPTF 2	C HEX	L	FLOW D
1/8FHG4-B	1/8	1/8	0.562	0.87	.22
1/4FHG4-B	1/4	1/4	0.750	1.33	.31
3/8FHG4-B	3/8	3/8	0.875	1.44	.44
1/2FHG4-B	1/2	1/2	1.062	1.74	.56



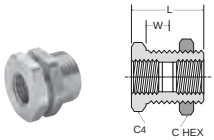
MM0444 Pipe Tee BSPP

PART NO.	BSPP	C HEX	L	M
1/8MMO444B	1/8	14	29	14.5
1/4MMO444B	1/4	17	36	18.0
3/8MMO444B	3/8	22	44	22.0
1/2MMO444B	1/2	27	58	29.0
3/4MMO444B	3/4	32	62	31.0
1MMO444B	1	40	85	42.5



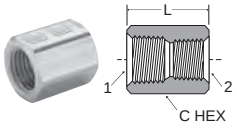
GG44 Pipe Connector BSPP

PART NO.	BSPP	C HEX	L
1/8GG44B	1/8	14	16
1/4GG44B	1/4	17	20
3/8GG44B	3/8	22	24
1/2GG44B	1/2	27	28
3/4GG44B	3/4	32	32
1GG44B	1	41	36



WGG44 Bulkhead Female Union BSPP

PART NO.	BSPP	STRAIGHT THREAD	C HEX	C4	L	W
1/8WGG44B	1/8	M16x1.5	19	22	21.5	12
1/4WGG44B	1/4	M20x1.5	24	24	22.0	12
3/8WGG44B	3/8	M23x1.5	27	27	24.0	12
1/2WGG44B	1/2	M27x1.5	32	32	28.0	14
3/4WGG44B	3/4	M34x1.5	41	41	31.0	13
1WGG44B	1	M45x2	55	55	36.0	12



GG44 Unequal Pipe Connector BSPP

PART NO.	BSPP 1	BSPP 2	C HEX	L
1/8x1/4GG44B	1/8	1/4	17	18
1/8x3/8GG44B	1/8	3/8	22	20
1/8x1/2GG44B	1/8	1/2	27	22
1/4x3/8GG44B	1/4	3/8	22	22
1/4x1/2GG44B	1/4	1/2	27	24
3/8x1/2GG44B	3/8	1/2	17	26

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Safety Guide for Selecting and Using Hydraulic, Pneumatic Cylinders and Their Accessories

WARNING: ⚠ FAILURE OF THE CYLINDER, ITS PARTS, ITS MOUNTING, ITS CONNECTIONS TO OTHER OBJECTS, OR ITS CONTROLS CAN RESULT IN:

- **Unanticipated or uncontrolled movement of the cylinder or objects connected to it.**
- **Falling of the cylinder or objects held up by it.**
- **Fluid escaping from the cylinder, potentially at high velocity.**

THESE EVENTS COULD CAUSE DEATH OR PERSONAL INJURY BY, FOR EXAMPLE, PERSONS FALLING FROM HIGH LOCATIONS, BEING CRUSHED OR STRUCK BY HEAVY OR FAST MOVING OBJECTS, BEING PUSHED INTO DANGEROUS EQUIPMENT OR SITUATIONS, OR SLIPPING ON ESCAPED FLUID.

Before selecting or using Parker (The Company) cylinders or related accessories, it is important that you read, understand and follow the following safety informa-tion. Training is advised before selecting and using The Company's products.

1.0 General Instructions

1.1 Scope – This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) cylinder products. This safety guide is a supplement to and is to be used with the specific Company publications for the specific cylinder products that are being considered for use.

1.2 Fail Safe – Cylinder products can and do fail without warning for many reasons. All systems and equipment should be designed in a fail-safe mode so that if the failure of a cylinder product occurs people and property won't be endangered.

1.3 Distribution – Provide a free copy of this safety guide to each person responsible for selecting or using cylinder products. Do not select or use The Company's cylinders without thoroughly reading and understanding this safety guide as well as the specific Company publications for the products considered or selected.

1.4 User Responsibility – Due to very wide variety of cylinder applications and cylinder operating conditions, The Company does not warrant that any particular cylinder is suitable for any specific application. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The hydraulic and pneumatic cylinders outlined in this catalog are designed to The Company's design guidelines and do not necessarily meet the design guideline of other agencies such as American Bureau of Shipping, ASME Pressure Vessel Code etc. The user, through its own
analysis and testing, is solely responsible for:

- Making the final selection of the cylinders and related accessories.
- Determining if the cylinders are required to meet specific design requirements as required by the Agency(s) or industry standards covering the design of the user's equipment.
- Assuring that the user's requirements are met, OSHA requirements are met, and safety guidelines from the applicable agencies such as but not limited to ANSI are followed and that the use presents no health or safety hazards.
- Providing all appropriate health and safety warnings on the equipment on which the cylinders are used.

1.5 Additional Questions – Call the appropriate Company technical service department if you have any questions or require any additional information. See the Company publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 Cylinder and Accessories Selection

2.1 Seals – Part of the process of selecting a cylinder is the selection of seal compounds. Before making this selection, consult the "seal information page(s)" of the publication for the series of cylinders of interest.

The application of cylinders may allow fluids such as cutting fluids, wash down fluids etc. to come in contact with the external area of the cylinder. These fluids may attack the piston rod wiper and or the primary seal and must be taken into account when selecting and specifying seal compounds.

Dynamic seals will wear. The rate of wear will depend on many operating factors. Wear can be rapid if a cylinder is mis-aligned or if the cylinder has been improperly serviced. The user must take seal wear into consideration in the application of cylinders.

2.2 Piston Rods – Possible consequences of piston rod failure or separation of the piston rod from the piston include, but are not limited to are:

- Piston rod and or attached load thrown off at high speed.
- High velocity fluid discharge.
- Piston rod extending when pressure is applied in the piston retract mode.

Piston rods or machine members attached to the piston rod may move suddenly and without warning as a consequence of other conditions occurring to the machine such as, but not limited to:

- Unexpected detachment of the machine member from the piston rod.
- Failure of the pressurized fluid delivery system (hoses, fittings, valves, pumps, compressors) which maintain cylinder position.
- Catastrophic cylinder seal failure leading to sudden loss of pressurized fluid.
- Failure of the machine control system.

Follow the recommendations of the "Piston Rod Selection Chart and Data" in the publication for the series of cylinders of interest. The suggested piston rod diameter in these charts must be followed in order to avoid piston rod buckling.

Piston rods are not normally designed to absorb bending moments or loads which are perpendicular to the axis of piston rod motion. These additional loads can cause the piston rod to fail. If these types of additional loads are expected to be imposed on the piston rod, their magnitude should be made known to our engineering department.

The cylinder user should always make sure that the piston rod is securely attached to the machine member.

On occasion cylinders are ordered with double rods (a piston rod extended from both ends of the cylinder). In some cases a stop is threaded on to one of the piston rods and used as an external stroke adjuster. On occasions spacers are attached to the machine member connected to the piston rod and also used as a stroke adjuster. In both cases the stops will create a pinch point and the user should consider appropriate use of guards. If these
external stops are not perpendicular to the mating contact surface, or if debris is trapped between the contact surfaces, a bending moment will be placed on the piston rod, which can lead to piston rod failure. An external stop will also negate the effect of cushioning and will subject the piston rod to impact loading. Those two (2) conditions can cause piston rod failure. Internal stroke adjusters are available with and without cushions. The use of external stroke adjusters should be reviewed with our engineering department.

The piston rod to piston and the stud to piston rod threaded connections are secured with an anaerobic adhesive. The strength of the adhesive decreases with increasing temperature. Cylinders which can be exposed to temperatures above +250°F (+121°C) are to be ordered with a non studded piston rod and a pinned piston to rod joint.

2.3 Cushions – Cushions should be considered for cylinder applications when the piston velocity is expected to be over 4 inches/second.

Cylinder cushions are normally designed to absorb the energy of a linear applied load. A rotating mass has considerably more energy than the same mass moving in a linear mode. Cushioning for a rotating mass application should be review by our engineering department.

2.4 Cylinder Mountings – Some cylinder mounting configurations may have certain limitations such as but not limited to minimum stroke for side or foot mounting cylinders or pressure de-ratings for certain mounts. Carefully review the catalog for these types of restrictions.

Always mount cylinders using the largest possible high tensile alloy steel socket head cap screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

2.5 Port Fittings – Hydraulic cylinders applied with meter out or deceleration circuits are subject to intensified pressure at piston rod end.

The rod end pressure is approximately equal to:

$$\frac{\text{operating pressure x effective cap end area}}{\text{effective rod end piston area}}$$

Contact your connector supplier for the pressure rating of individual connectors.

3.0 Cylinder and Accessories Installation and Mounting

3.1 Installation

3.1.1 – Cleanliness is an important consideration, and cylinders are shipped with the ports plugged to protect them from contaminants entering the ports. These plugs should not be removed until the piping is to be installed. Before making the connection to the cylinder ports, piping should be thoroughly cleaned to remove all chips or burrs which might have resulted from threading or flaring operations.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

3.1.2 – Cylinders operating in an environment where air drying materials are present such as fast-drying chemicals, paint, or weld splatter, or other hazardous conditions such as excessive heat, should have shields installed to prevent damage to the piston rod and piston rod seals.

3.1.3 – Proper alignment of the cylinder piston rod and its mating component on the machine should be checked in both the extended and retracted positions. Improper alignment will result in excessive rod gland and/or cylinder bore wear. On fixed mounting cylinders attaching the piston rod while the rod is retracted will help in achieving proper alignment.

3.1.4 – Sometimes it may be necessary to rotate the piston rod in order to thread the piston rod into the machine member. This operation must always be done with zero pressure being applied to either side of the piston. Failure to follow this procedure may result in loosening the piston to rod-threaded connection. In some rare cases the turning of the piston rod may rotate a threaded piston rod gland and loosen it from the
cylinder head. Confirm that this condition is not occurring. If it does, re-tighten the piston rod gland firmly against the cylinder head.

For double rod cylinders it is also important that when attaching or detaching the piston rod from the machine member that the torque be applied to the piston rod end of the cylinder that is directly attaching to the machine member with the opposite end unrestrained. If the design of the machine is such that only the rod end of the cylinder opposite to where the rod attaches to the machine member can be rotated, consult the factory for further instructions.

3.2 Mounting Recommendations

3.2.1 – Always mount cylinders using the largest possible high tensile alloy steel socket head screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

3.2.2 – Side-Mounted Cylinders – In addition to the mounting bolts, cylinders of this type should be equipped with thrust keys or dowel pins located so as to resist the major load.

3.2.3 – Tie Rod Mounting – Cylinders with tie rod mountings are recommended for applications where mounting space is limited. The standard tie rod extension is shown as BB in dimension tables. Longer or shorter extensions can be supplied. Nuts used for this mounting style should be torqued to the same value as the tie rods for that bore size.

3.2.4 – Flange Mount Cylinders – The controlled diameter of the rod gland extension on head end flange mount cylinders can be used as a pilot to locate the cylinders in relation to the machine. After alignment has been obtained, the flanges may be drilled for pins or dowels to prevent shifting.

3.2.5 – Trunnion Mountings – Cylinders require lubricated bearing blocks with minimum bearing clearances. Bearing blocks should be carefully aligned and rigidly mounted so the trunnions will not be subjected to bending moments. The rod end should also be pivoted with the pivot pin in line and parallel to axis of the trunnion pins.

3.2.6 – Clevis Mountings – Cylinders should be pivoted at both ends with centerline of pins parallel to each other. After cylinder is mounted, be sure to check to assure that the cylinder is free to swing through its working arc without interference from other machine parts.

4.0 Cylinder and Accessories Maintenance, Troubleshooting and Replacement

4.1 Storage – At times cylinders are delivered before a customer is ready to install them and must be stored for a period of time. When storage is required the following procedures are recommended.

4.1.1 – Store the cylinders in an indoor area which has a dry, clean and noncorrosive atmosphere. Take care to protect the cylinder from both internal corrosion and external damage.

4.1.2 – Whenever possible cylinders should be stored in a vertical position (piston rod up). This will minimize corrosion due to possible condensation which could occur inside the cylinder. This will also minimize seal damage.

4.1.3 – Port protector plugs should be left in the cylinder until the time of installation.

4.1.4 – If a cylinder is stored full of hydraulic fluid, expansion of the fluid due to temperature changes must be considered. Installing a check valve with free flow out of the cylinder is one method.

4.1.5 – When cylinders are mounted on equipment that is stored outside for extended periods, exposed unpainted surfaces, e.g. piston rod, must be coated with a rust-inhibiting compound to prevent corrosion.

4.2 Cylinder Trouble Shooting

4.2.1 – **External Leakage**

4.2.1.1 – Rod seal leakage can generally be traced to worn or damaged seals. Examine the piston rod for dents, gouges or score marks, and replace piston rod if surface is rough.

Rod seal leakage could also be traced to gland wear. If clearance is excessive, replace rod bushing and seal. Rod seal leakage can also be traced to seal deterioration. If seals are soft or gummy or brittle, check compatibility of seal material with lubricant used if air cylinder, or operating fluid if hydraulic cylinder. Replace with seal material, which is compatible with these fluids. If the seals are hard or have lost elasticity, it is usually due to exposure to temperatures in excess of 165°F. (+74°C). Shield the cylinder from the heat source to limit temperature to 350°F. (+177°C.) and replace with fluorocarbon seals.

4.2.1.2 – Cylinder body seal leak can generally be traced to loose tie rods. Torque the tie rods to manufacturer's recommendation for that bore size.

Excessive pressure can also result in cylinder body seal leak. Determine maximum pressure to rated limits. Replace seals and retorque tie rods as in paragraph above. Excessive pressure can also result in cylinder body seal leak. Determine if the pressure rating of the cylinder has been exceeded. If so, bring the operating pressure down to the rating of the cylinder and have the tie rods replaced.

Pinched or extruded cylinder body seal will also result in a leak. Replace cylinder body seal and retorque as in paragraph above.

Cylinder body seal leakage due to loss of radial squeeze which shows up in the form of flat spots or due to wear on the O.D. or I.D. – Either of these are symptoms of normal wear due to high cycle rate or length of service. Replace seals as per paragraph above.

4.2.2 – **Internal Leakage**

4.2.2.1 – Piston seal leak (by-pass) 1 to 3 cubic inches per minute leakage is considered normal for piston ring construction. Virtually no static leak with lipseal type seals on piston should be expected. Piston seal wear is a usual cause of piston seal leakage. Replace seals as required.

4.2.2.2 – With lipseal type piston seals excessive back pressure due to over-adjustment of speed control valves could be a direct cause of rapid seal wear. Contamination in a hydraulic system can result in a scored cylinder bore, resulting in rapid seal wear. In either case, replace piston seals as required.

4.2.2.3 – What appears to be piston seal leak, evidenced by the fact that the cylinder drifts, is not always traceable to the piston. To make sure, it is suggested that one side of the cylinder piston be pressurized and the fluid line at the opposite port be disconnected. Observe leakage. If none is evident, seek the cause of cylinder drift in other component parts in the circuit.

4.2.3 – **Cylinder Fails to Move the Load**

4.2.3.1 – Pneumatic or hydraulic pressure is too low. Check the pressure at the cylinder to make sure it is to circuit requirements.

4.2.3.2 – Piston Seal Leak – Operate the valve to cycle the cylinder and observe fluid flow at valve exhaust ports at end of cylinder stroke. Replace piston seals if flow is excessive.

4.2.3.3 – Cylinder is undersized for the load – Replace cylinder with one of a larger bore size.

4.3 Erratic or Chatter Operation

4.3.1 – Excessive friction at rod gland or piston bearing due to load misalignment – Correct cylinder-to-load alignment.

4.3.2 – Cylinder sized too close to load requirements – Reduce load or install larger cylinder.

4.3.3 – Erratic operation could be traced to the difference between static and kinetic friction. Install speed control valves to provide a back pressure to control the stroke.

4.4 Cylinder Modifications, Repairs, or Failed Component – Cylinders as shipped from the factory are not to be disassembled and or modified. If cylinders require modifications, these modifications must be done at company locations or by The Company's certified facilities. The Cylinder Division Engineering Department must be notified in the event of a mechanical fracture or permanent deformation of any cylinder component (excluding seals). This includes a broken piston rod, tie rod, mounting accessory or any other cylinder component. The notification should include all operation and application details. This information will be used to provide an engineered repair that will prevent recurrence of the failure.

It is allowed to disassemble cylinders for the purpose of replacing seals or seal assemblies. However, this work must be done by strictly following all the instructions provided with the seal kits.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Offer of Sale

The goods, services or work (referred to as the "Products") offered by **Parker-Hannifin Corporation**, its subsidiaries, groups, divisions, and authorized distributors ("Seller") are offered for sale at prices indicated in the offer, or as may be established by Seller. The offer to sell the Products and acceptance of Seller's offer by any customer ("Buyer") is contingent upon, and will be governed by all of the terms and conditions contained in this Offer of Sale. Buyer's order for any Products specified in Buyer's purchase document or Seller's offer, proposal or quote ("Quote") attached to the purchase order, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions. Seller's willingness to offer Products for sale or accept an order for Products is subject to the terms and conditions contained in this Offer of Sale or any newer version of the same, published by Seller electronically at www.parker.com/saleterms/. Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document or other communication issued by Buyer.

2. Price; Payment. Prices stated on Seller's Quote are valid for thirty (30) days, except as explicitly otherwise stated therein, and do not include any sales, use, or other taxes or duties unless specifically stated. Seller reserves the right to modify prices to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified by Seller's Credit Department). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate. Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of normal use, whichever occurs first. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. No other claims against Seller will be allowed unless asserted in writing within thirty (30) days after delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the defect is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

6. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller retains a security interest in all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. Improper Use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Products; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. Cancellations and Changes. Buyer may not cancel or modify or cancel any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change Product features, specifications, designs and availability.

13. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate this agreement, in writing, if Buyer: (a) breaches any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

17. Governing Law. This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and refund the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged. The terms contained herein may not be modified unless in writing and signed by an authorized representative of Seller.

20. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards of care, including those of the United Kingdom, the United States of America, and the country or countries in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act") and the U.S. Food Drug and Cosmetic Act ("FDCA"),each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.

05/14

Parker Hannifin Corporation
Pneumatic Division
Wadsworth, OH
www.parkeroriga.com

Catalog 0961 06/2012

Parker Hannifin Corporation
Pneumatic Division
135 Quadral Drive
Wadsworth, OH 44281 USA

Tel: 330 336 3511
Fax: 330 334 3335
website www.parkeroriga.com
actuatorsales@parker.com