numatics EXPRESS™

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EMERSON.
Industrial Automation

numatics EXPRESS™

Numatics, Inc. is a leading manufacturer of pneumatic products and motion control products. Our broad spectrum of standard, custom developed products and application components have made a significant impact on pneumatic innovation as well as pneumatic and motion control technology. Our company has an extensive history of generating innovative concepts and technological breakthroughs. Many of today's standard features in pneumatic technology were industry firsts from Numatics. We continue our innovative approach to product development by developing electric motion control solutions and enhancing our embedded Fieldbus and I/O products to continually meet and solve our customer's application requirements.

Today Numatics is proud to be a part of the Industrial Automation Division of Emerson Electric Co.
Emerson (NYSE:EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets through its network power, process management, industrial automation, climate technologies, and appliance and tools businesses. For more information, visit www.Emerson.com.

EMERSON™
Industrial Automation

Numatics Express Shipping Program guarantees† product shipment in two, three or five business days. Unlike most traditional quick ship programs, the Numatics Express Shipping Program includes the most comprehensive offering in the industry. This program encompasses the range and options that you require!

Numatics is committed to offering you the highest level of customer service, quality and performance.

2DAY

Numatics Express 2Day shipping program guarantees† product shipment in two business days. The program includes the most popular valve, air preparation and actuator products and includes applicable switches and mounting accessories.

Numatics guarantees† to ship any order received before 3 pm EST for up to 10 2Day products* in two business days.

3DAY

Numatics Express shipping program offers a 3Day shipping program that guarantees† product shipment of a fully assembled and tested valve manifold in 3 business days. The program includes the most popular manifold configurations of the 2000 and Mark series valves:

- Sub D, Terminal Strip and Fieldbus Electronic Options
- Can be configured for DIN Rail Mounting and Muffled Exhaust
- Shipped complete and 100% tested

The 3Day Express shipping program enables you to create a 2 to 8 station manifold assembly complete with any combination of valves, regulators, and blank stations that can be configured from the valve model charts in this catalog.

Numatics guarantees† to ship any order received before 3 pm EST for up to 5 manifold assemblies configured from this catalog in three business days or Numatics pays the shipping cost.

5DAY

We are pleased to expand Numatics Express to include a broad range of products in a 5Day shipping program. Numatics guarantees† to ship up to 10 of any 5Day product** for orders received before 3 pm EST in 5 business days or Numatics pays the shipping cost.

We are committed to providing you with an unmatched level of customer service, quality, and reliability.
If you cannot locate the specific product for your application or need additional product specifications, visit **www.numatics.com** or call **888-686-2842.** Numatics Express orders cannot be canceled or adjusted once entered. Saturdays, Sundays, and Holidays are excluded.

†As industry requirements change, Numatics reserves the right to modify the contents of this catalog and program without notification. Updates on this program can be obtained from the Numatics website www.numatics.com or by calling 888-686-2842, or by contacting your local Numatics representative or distributor and referencing the Numatics Express program.

***Sentronic^{D} Proportional Valves, CGT Compact Slides, NR Series Rodless and Air Bellows are limited to orders up to 5.**
****A Series Large Bore NFPA, ASP Series Steel Body NFPA and G Series Guide Rail Rodless are limited to orders up to 5.**

Welcome to the World of Fluid Automation...

Since 1945, Numatics has emerged as the prominent specialist in developing and manufacturing pneumatic and fluid power components for a widely diverse field of automated industry. From idea to implementation, leading engineers choose Numatics as their single source for:

- Quality Fluid Power components
- Technologically advanced design resources
- Quick response time in delivery and service from around the world

Numasizing®

Developed by Numatics, Numasizing® offers a whole new level of fluid power system optimization. Compare large amounts of component and process data against user objectives and industry benchmarks for the best possible size, pneumatic pressure, actuator stroke velocities and other part and process variable determinations.

CAD Modeling

Save critical development time with the most innovative CAD configuration program in the pneumatic component industry. Numatics in 3D eliminates the time consuming process associated with designing components from scratch based on information found in conventional paper catalogs. The models are available in 85 different native CAD formats in 2D drawings and 3D models, including all the popular formats including Catia, I-DEAS, Pro/Engineer, SolidWorks, Unigraphics and more.

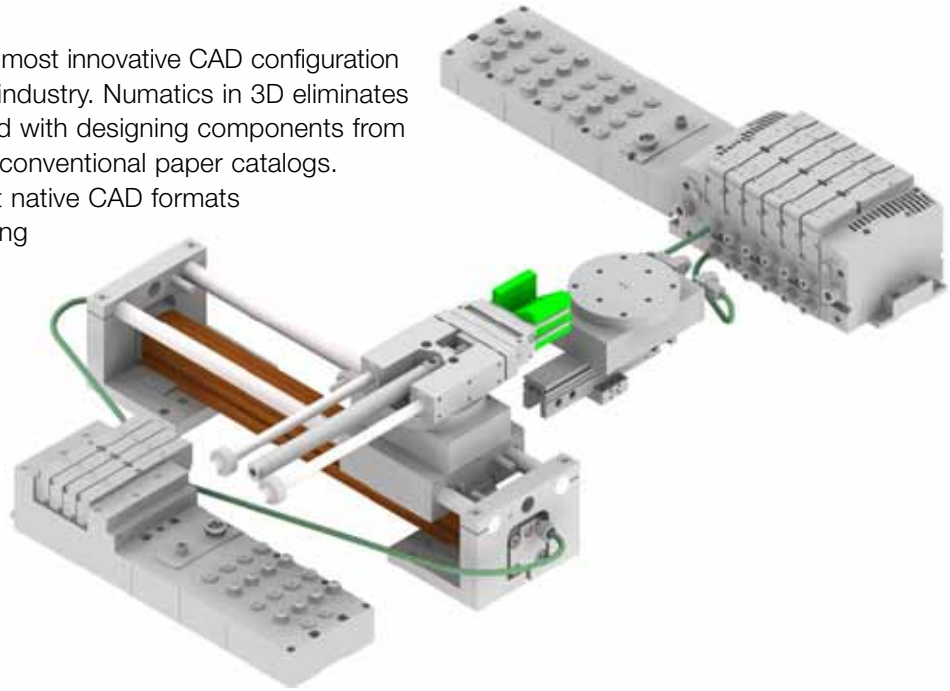


Table of Contents

FRLs

Particulate Filters 5
Features and Benefits 5
How to Order 5

Coalescing Filters 6
Features and Benefits 6
How to Order 6

Regulators 7
Features and Benefits 7
How to Order 7

Particulate Filter/Regulators 8
Features and Benefits 8
How to Order 8

Coalescing Filter/Regulators 9
Features and Benefits 9
How to Order 9

Lubricators 10
Features and Benefits 10
How to Order 10

Solenoid Soft Start Quick Exhaust Valves 11
Features and Benefits 11
How to Order 11

Solenoid Quick Exhaust Valves 12
Features and Benefits 12
How to Order 12

Shut Off Valves, Diverter Blocks and Gauges 13
Features and Benefits 13
How to Order 13

Valves

2002 Series 14-15
Features and Benefits 14
How to Order 15

2005 Series 16-17
Features and Benefits 16
How to Order 17

2012 Series 18-19
Features and Benefits 18
How to Order 19

2035 Series 20-21
Features and Benefits 20
How to Order 21

Table of Contents

Valves Continued

Mark 3 Series 22-23
Features and Benefits 22
How to Order 23

Mark 8 Series 24-25
Features and Benefits 24
How to Order 25

Mark 15 Series 26-27
Features and Benefits 26
How to Order 27

L1 Series 28-29
Features and Benefits 28
How to Order 29

L2 Series 30-31
Features and Benefits 30
How to Order 31

How to Order Manifolds 32

How to Order Fieldbus Electronics 33

Sentronic^D Proportional Valve 34-35
Advantages and Specifications 34
Features, Benefits, and How to Order 35

Cylinders (Actuators)

A Series NFPA Interchangeable 36-37
Features and Benefits 36
How to Order 37

A Series Large Bore NFPA Interchangeable 38-39
Features and Benefits 38
How to Order 39

ASP Series Steel Body NFPA 40-41
Features and Benefits 40
How to Order 41

M Series Non-Repairable Round Line 42-43
Features and Benefits 42
How to Order 43

452 Series ISO 15552 44-45
Features and Benefits 44
How to Order 45

C Series Compact 46-47
Features and Benefits 46
How to Order 47

Table of Contents

Cylinders (Actuators) Continued

NR Series Rodless **48-49**

Features and Benefits 48

How to Order 49

G Series Guide Rail Rodless **48-50**

Features and Benefits 48

How to Order 50

CGT Series Compact Guide Slide **51**

Features and Benefits 51

How to Order 51

SH Series Linear Slide **52-53**

Features and Benefits 52

How to Order 53

SPS Series Small Power Slide **54**

Features and Benefits 54

How to Order 54

Air Bellows **55**

Features and Benefits 55

How to Order 55

LR Series Low Profile Rotary **56**

Features and Benefits 56

How to Order 56

WBG Series Wide Body Gripper **57**

Features and Benefits 57

How to Order 57

WG Series Double Guided Wedge Gripper **58-59**

Features and Benefits 58

How to Order 59

PG Series Low Profile Parallel Gripper **60**

Features and Benefits 60

How to Order 60

RPG Series Parallel Gripper **61**

Features and Benefits 61

How to Order 61

TJ30 Series 3 Jaw Gripper **62**

Features and Benefits 62

How to Order 62

TJ200 Series 3 Jaw Gripper **63**

Features and Benefits 63

How to Order 63

Table of Contents

Cylinders (Actuators) Continued

PG6J80 Series O-Ring Gripper **64**
Features and Benefits 64
How to Order 64

MGP5 Series Miniature Parallel Gripper **65**
Features and Benefits 65
How to Order 65

GR90 Series Angular Gripper **66**
Features and Benefits 66
How to Order 66

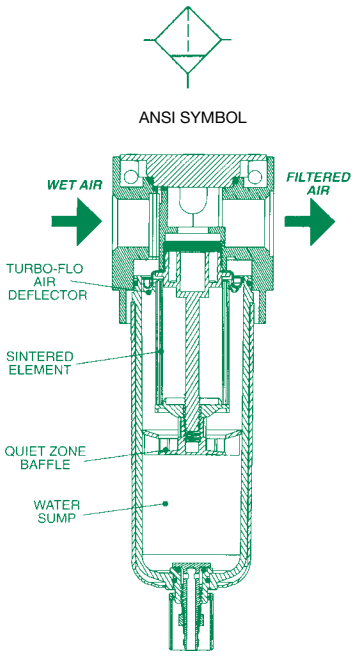
GR1400 Series Radial Gripper **67**
Features and Benefits 67
How to Order 67

FE Series Feed Escapement **68**
Features and Benefits 68
How to Order 68

SC Series Swing Clamp **69**
Features and Benefits 69
How to Order 69

F14, F22, F32, F42 Series

- Four convenient sizes
- 5 micron sintered elements standard
- Can be installed as modular or individual unit
- Includes screws and o-rings for modular connection
- Manual or automatic drain
- Polycarbonate bowl standard
- Optional metal bowl (sight glass available on 22, 32 and 42 Series)
- Bowl seal held captive (22, 32 and 42 Series)



Specifications

Bowl		14 Series	22 Series	32 Series	42 Series
Temperature Range °F (°C)		40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	Poly C	150 (10)	150 (10)	150 (10)	150 (10)
	Metal	200 (14)	200 (14)	200 (14)	200 (14)
Weight lbs. (kg)	Poly C	0.60 (0.28)	0.65 (0.30)	1.3 (0.59)	3.70 (1.68)
	Metal	0.65 (0.30)	1.25 (0.57)	2.5 (1.14)	4.80 (2.18)
Nominal Flow SCFM (L/M)*		32 (906)	65 (1841)	105 (2973)	270 (7647)
Body Material		Zinc	Aluminum	Aluminum	Aluminum

*Nominal flow with a 5 micron element at 80 psig (5.5 bar) inlet and 5 psig (0.35 bar) pressure drop

How to Order

2DAY - Particulate Filters

F 22 B – 04 A

Model
F = Filter

Series
14 = 1.5 oz. Bowl
22 = 3.8 oz. Bowl
32 = 8.5 oz. Bowl
42 = 8.5 oz. Bowl

Element
B = 5 Micron Element

Threads
– = NPTF

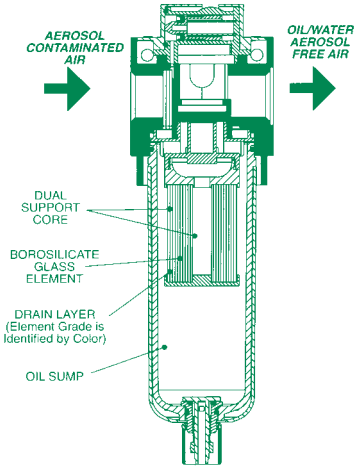
Options
A = Auto Drain (22, 32 and 42 Series)
J = External Pulse Drain (14 Series)
M = Metal Bowl with Sight Glass
Q = Metal Manual Drain

Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

F14D, F22D, F32D, F42D Series

- Four convenient sizes
- Cartridge element design
- Inner and outer support cores prevent element from crushing in either flow direction
- Optional metal bowl (sight glass available on 22, 32 and 42 Series)
- Manual or automatic drain
- DP indicator standard on 14, 22, 32 and 42 Series

ANSI SYMBOL



Recommended Uses

D grade element, identified by its green drain layer, is a fine filter for cylinder or valves - especially when the circuit is being run without lubrication ('dry'). Excellent filter for desiccant or regenerative style dryers.

Specifications

Bowl		14 Series	22 Series	32 Series	42 Series
Temperature Range ºF (ºC)		40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	Poly C	150 (10)	150 (10)	150 (10)	150 (10)
	Metal	200 (14)	200 (14)	200 (14)	200 (14)
Weight lbs. (kg)	Poly C	0.65 (0.28)	0.66 (0.30)	1.42 (0.65)	3.70 (1.68)
	Metal	0.70	1.28	2.56	4.80
Nominal Flow SCFM (L/M)*		12 (340)	18 (510)	48 (1359)	100 (2832)
Body Material		Zinc	Aluminum	Aluminum	Aluminum

*Nominal flow with a 0.3 micron element at 80 psig (5.5 bar) inlet pressure and 1.5 psig (0.1 bar) pressure drop

How to Order

2DAY - Coalescing Filters

F 22 D – 04 A

Model
F = Filter

Series
14 = 1.5 oz. Bowl
22 = 3.8 oz. Bowl
32 = 8.5 oz. Bowl
42 = 8.5 oz. Bowl

Element
D = 0.3 Micron Fine Coalescer

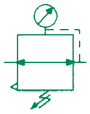
Threads
– = NPTF

Options
A = Auto Drain (22, 32 and 42 Series)
D = 3 Micron, Internal Pleated Prefilter
J = External Pulse Drain (14 Series)
M = Metal Bowl With Sight Glass
Q = Metal Manual Drain

Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

R14, R22, R32, R42 Series

- Four convenient sizes
- High flow in compact size
- Locking non-rising adjustment
- Can be installed as modular or individual unit
- Standard output pressure 0-125 PSIG



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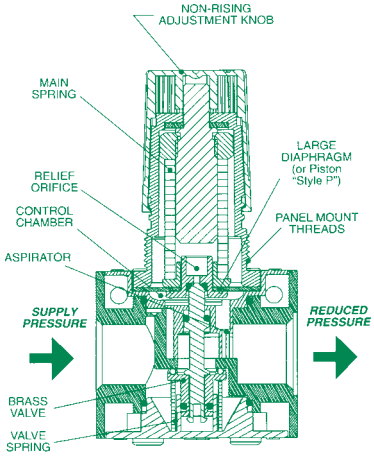


Specifications

	14 Series	22 Series	32 Series	42 Series
Temperature Range ºF (ºC)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	250 (17)	200 (14)	250 (17)	250 (17)
Weight lbs. (kg)	0.65 (0.30)	0.69 (0.31)	1.37 (0.62)	4.30 (1.95)
Body Material	Zinc	Aluminum	Aluminum	Aluminum

How to Order

2DAY - Regulators

R 22 R – 04 G

Model
R = Regulator

Series
14
22
32
42

Style
R = Relieving

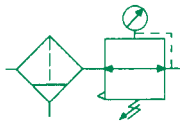
Threads
– = NPTF

Options
G = Gauge

Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

P14, P22, P32, P42 Series

- Four convenient sizes
- 5 micron element standard
- Can be installed as individual or modular unit
- Locking non-rising adjustment
- Polycarbonate bowl standard
- Optional metal bowl (sight glass available on 22, 32 and 42 Series)
- Standard output pressure 0-125 PSIG
- Bowl seal held captive (22, 32, and 42 Series)



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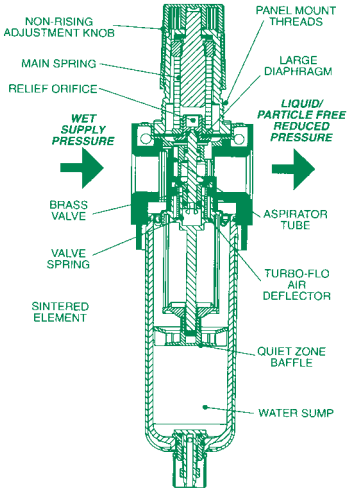


Specifications

Bowl		14 Series	22 Series	32 Series	42 Series
Temperature Range °F (°C)		40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	Poly C	150 (10)	150 (10)	150 (10)	150 (10)
	Metal	200 (14)	200 (14)	200 (14)	200 (14)
Weight lbs. (kg)	Poly C	0.75 (0.34)	0.91 (0.41)	1.81 (0.82)	5.05 (2.29)
	Metal	0.80 (0.37)	1.50 (0.68)	2.99 (1.34)	6.15 (2.79)
Nominal Flow SCFM (L/M)*		40 (1133)	60 (1699)	90 (2549)	300 (8496)
Body Material		Zinc	Aluminum	Aluminum	Aluminum

*Nominal flow using a 5 micron element, at 100 psig (6.9 bar) inlet pressure and 80 psig (5.5 bar) set pressure

How to Order

2DAY - Particulate Filter/Regulator

P 22 B – 04 G

Model
P = Particulate Filter/Regulator

Series
14 = 1.5 oz. Bowl
22 = 3.8 oz. Bowl
32 = 8.5 oz. Bowl
42 = 8.5 oz. Bowl

Style
B = 5 Micron Element

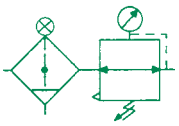
Threads
– = NPTF

Options
A = Auto Drain (22, 32, and 42 Series)
G = Gauge
J = External Pulse Drain (14 Series)
M = Metal Bowl with Sight Glass
Q = Metal Manual Drain

Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

C14D, C22D, C32D, C42D Series

- Four convenient sizes
- Cartridge element design
- Inner/outer support cores prevent element from crushing in either flow direction
- Manual or automatic drain
- Polycarbonate bowl standard
- Optional metal bowl (sight glass available on 22, 32 and 42 Series)
- Standard output pressure 0-125 PSIG



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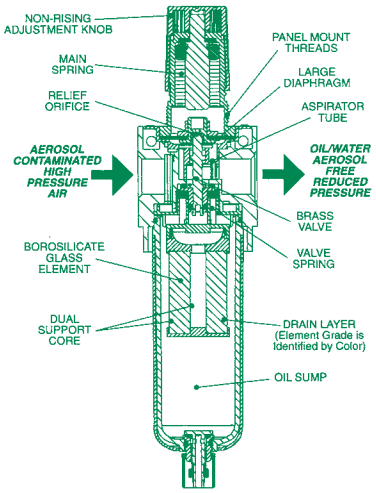


Recommended Uses

D grade element, identified by its green drain layer, is a fine filter for cylinder or valves - especially when the circuit is being run without lubrication ('dry'). Excellent filter for desiccant or regenerative style dryers.

Specifications

Bowl		14 Series	22 Series	32 Series	42 Series
Temperature Range ºF (ºC)		40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	Poly C	150 (10)	150 (10)	150 (10)	150 (10)
	Metal	200 (14)	200 (14)	200 (14)	200 (14)
Weight lbs. (kg)	Poly C	0.80 (0.35)	0.92 (0.42)	1.82 (0.83)	5.05 (2.29)
	Metal	0.85 (0.38)	1.60 (0.73)	2.95 (1.34)	6.15 (2.76)
Nominal Flow SCFM (L/M)*		20 (560)	35 (991)	50 (1416)	100 (2832)
Body Material		Zinc	Aluminum	Aluminum	Aluminum

*Nominal flow using a 0.3 micron element, at 100 psig (6.9 bar) inlet pressure and 80 psig (5.5 bar) set pressure

How to Order

2DAY - Coalescing Filter/Regulators

C 22 D – 04 ADG

Model
C = Coalescing Filter/Regulators

Series
14 = 1.5 oz. Bowl
22 = 3.8 oz. Bowl
32 = 8.5 oz. Bowl
42 = 8.5 oz. Bowl

Element
D = 0.3 Micron Fine Coalescer

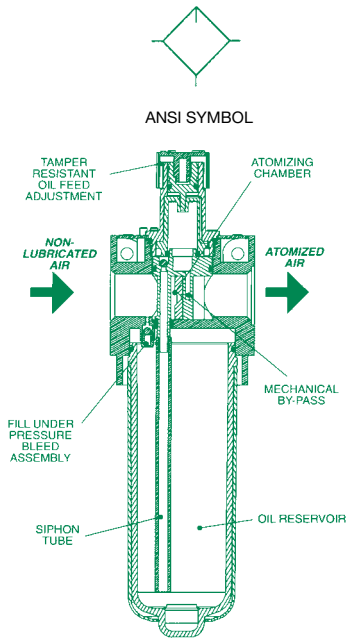
Threads
– = NPTF

Options
A = Auto Drain (22, 32, and 42 series)
D = 3 Micron, Internal Pleated Prefilter
G = Gauge
J = External Pulse Drain (14 Series)
M = Metal Bowl with Sight Glass
Q = Metal Manual Drain

Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

L14, L22, L32, L42 Series

- Four convenient sizes
- Lubrication to begin at 2 SCFM
- Can be filled under pressure (22, 32 and 42 series)
- Tamper-resistant knob standard
- Polycarbonate bowl standard
- Optional metal bowl (sight glass available on 22, 32 and 42 Series)
- Can be mounted as individual or modular unit



Specifications

	14 Series	22 Series	32 Series	42 Series
Temperature Range °F (°C)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Max. Pressure PSIG (BAR)	200 (14)	200 (14)	200 (14)	200 (14)
Weight lbs. (kg)	0.60 (0.27)	0.69 (0.31)	1.37 (0.62)	4.15 (2.18)
Body Material	Zinc	Aluminum	Aluminum	Aluminum

How to Order

2DAY - Lubricators

L 22 L – 04 M

Model
L = Lubricator

Series
14 = 1.5 oz. Bowl
22 = 3.8 oz. Bowl
32 = 8.5 oz. Bowl
42 = 8.5 oz. Bowl

Style
L = Standard Lubricators

Threads
– = NPTF

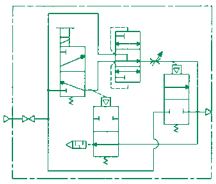
Port Size
02 = 1/4 (14 or 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

Options
M = Metal Bowl with Sight Glass

FlexiBlok® Solenoid Soft Start Quick Exhaust Valve

S22C, S32C, S42C Series

- Three convenient sizes
- Lockout feature prevents unauthorized pressurization of system.
- High exhaust capacity for quick depletion of downstream pressure
- High inlet to outlet flow capability
- Connects easily to **FlexiBlok®** Modular system
- Incorporated metering valve controls how quickly downstream pressure is reached, which controls the slow start feature.



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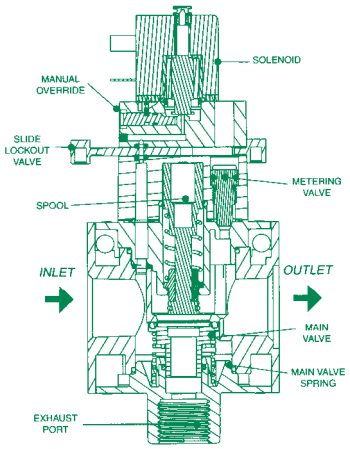


Specifications

	22 Series	32 Series	42 Series
Exhaust Ports NPTF	1/2	1/2	3/8 (3 exh. ports)
Gauge Ports NPTF	1/8	1/4	1/4
Temperature Range °F (°C)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Min. Pressure PSI (BAR)	60 (4)	60 (4)	20 (1.38)
Max. Pressure PSI (BAR)	150 (10)	150 (10)	150 (10)
Weight lbs. (kg)	0.94 (0.43)	1.56 (0.71)	4.35 (1.97)
Body Material	Aluminum	Aluminum	Aluminum

	CV	
Series	In/Out	Out/Exhaust
22 Series, 1/4	2.0	1.2
22 Series, 3/8	2.87	1.38
22 Series, 1/2	3.62	1.38
32 Series, 1/2	5.24	3.01
32 Series, 3/4	6.47	3.14
42 Series, 1	8.0	5.0

How to Order

2DAY - Solenoid Soft Start Quick Exhaust Valve

S 22 C – 04 B EGLM

Model
S = Solenoid Soft Start

Series
22
32
42

Element
C = Solenoid Soft Start

Threads
– = NPTF

Port Size
02 = 1/4 (22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

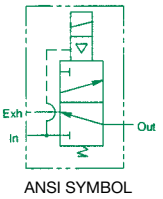
Revision Level
B

Options
E = 110V AC 50/60 Hz
G = Gauge
K = 24V DC Coil
L = Plug with Light
M = Muffler

FlexiBlok® Solenoid Quick Exhaust Valve

S14E, S22E, S32E, S42E Series

- Four convenient sizes
- Lockout feature (located in slide valve) prevents unauthorized pressurization of system (22, 32, and 42 Series)
- Standard manual override
- Low-wattage coil
- High exhaust capacity for quick depletion of pressure
- High inlet to outlet flow capability
- Connects easily to **FlexiBlok®** Modular system



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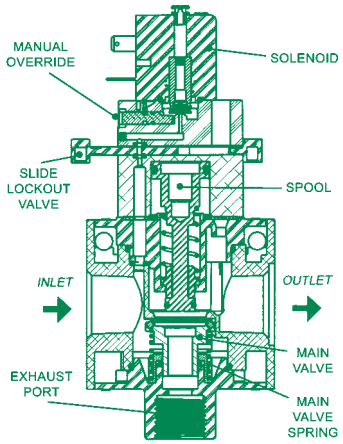


Specifications

	14 Series	22 Series	32 Series	42 Series
Exhaust Ports NPTF	1/2	1/2	1/2	3/8 (3 exh. ports)
Gauge Ports NPTF	1/8	1/8	1/4	1/4
Temperature Range °F (°C)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)	40-120 (4-50)
Min. Pressure PSI (BAR)	60 (4)	60 (4)	60 (4)	20 (1.38)
Max. Pressure PSI (BAR)	150 (10)	150 (10)	150 (10)	150 (10)
Weight lbs. (kg)	0.94 (0.43)	0.94 (0.43)	1.56 (0.71)	4.35 (1.97)
Body Material	Zinc	Aluminum	Aluminum	Aluminum

	CV	
Series	In/Out	Out/Exhaust
14 Series, 1/4	1.55	1.10
22 Series, 1/4	2.0	1.2
22 Series, 3/8	2.87	1.38
22 Series, 1/2	3.62	1.38
32 Series, 1/2	5.24	3.01
32 Series, 3/4	6.47	3.14
42 Series, 1	8.0	5.0

How to Order

2DAY - Solenoid Quick Exhaust Valve

S 22 E – 04 B EGLM

Model
S = Solenoid Quick Exhaust

Series
14
22
32
42

Style
E = Solenoid Quick Exhaust Valve

Threads
– = NPTF

Options
E = 110V AC 50/60 Hz
G = Gauge
K = 24V DC Coil
L = Plug with Light
M = Muffler

Revision Level
B

Port Size
02 = 1/4 (14 and 22 Series)
03 = 3/8 (22 Series)
04 = 1/2 (22 or 32 Series)
06 = 3/4 (32 Series)
08 = 1 (42 Series)

2DAY - Shut-Off Valve

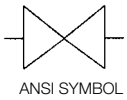
VS14, VS22, VS32, VSL42 Series

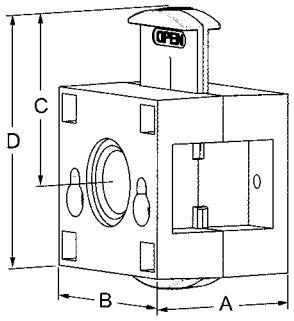
The **FlexiBlok®** Shut-Off Valve is an easy and inexpensive way to add shut off capability to an FRL. The valve includes a lockout feature designed for a padlock to prevent unauthorized downstream pressurization during maintenance. The shut off valve is usually mounted first in the assembly.

Max. inlet pressure: 200 PSI (13.7 bar)
250 PSI (17 bar) - 42 Series

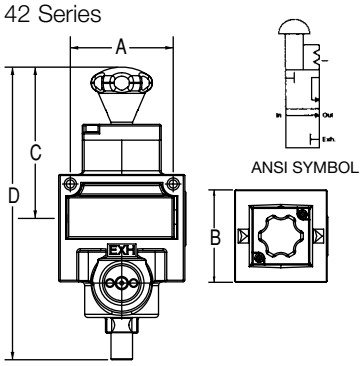
- Relieves downstream pressure when closed
- Lockout feature prevents unauthorized pressurization of system.

14, 22, 32 Series





42 Series



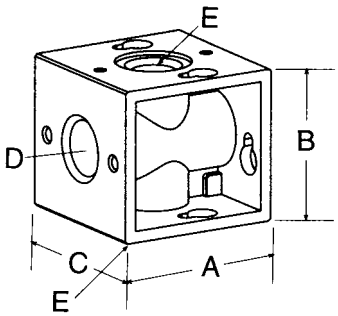
		Dimensions				
	NPTF	A	B	C	D	Ports
14	VS14-02	1.63 (41)	1.6 (41)	1.6 (41)	3 (76)	1/4
22	VS22-02	2.0 (50)	2.16 (55)	1.86 (47)	3.1 (79)	1/4
	VS22-03	2.0 (50)	2.16 (55)	1.86 (47)	3.1 (79)	3/8
	VS22-04	2.0 (50)	2.16 (55)	1.86 (47)	3.1 (79)	1/2
32	VS32-04	2.25 (57)	3.0 (76)	2.57 (65)	4.2 (107)	1/2
	VS32-06	2.25 (57)	3.0 (76)	2.57 (65)	4.2 (107)	3/4
42	VSL42-08	3.2 (83)	4.0 (102)	4.8 (122)	9.3 (236)	1

2DAY - Diverter Block and Gauges

DK14, DK22, DK32, DK42 Series

Designed to give **FlexiBlok®** components total versatility, the diverter block mounts directly inline with the FRL combination. Additional components can then be manifold mounted in a compact manner that doesn't cause excessive pressure drop. There are two available tapped ports per unit.

Max. inlet pressure: 200 PSI (13.7 bar) (14, 22, 32 Series)
250 PSI (17 bar) (42 Series)



		Dimensions					
Series	NPTF	A	B	C	D	E	Ports
14	DK14-02	1.72 (44)	1.54 (39)	1.6 (41)	1/4	1/8	Tapped 1/4 NPTF In & Out with two 1/8 NPTF branches
22	DK22-03	2.16 (55)	2.00 (50)	2.16 (55)	1/2	3/8	Tapped 1/2 NPTF in & out with two 3/8 NPTF branches
32	DK32-04	3.00 (76)	2.70 (69)	3.00 (76)	3/4	1/2	Tapped 3/4 NPTF in & out with two 1/2 NPTF branches
42	DK42-08	4.00 (102)	3.40 (87)	4.00 (102)	1	1	In & Out and branches 1 with two 1 NPTF branches

Gauges

Model	Face Diameter	Thread Size	Pressure Range PSI (BAR)
214-103	1.5	1/8 NPT	0-160 (0-11)
201-188	2.0	1/4 NPT	0-160 (0-11)

02 Series

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

Cv: 0.20

R2 Series

5 Ported, 2 and 3 position, 4-way and dual 3-way, Packed Spool

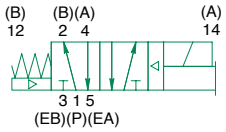
Cv: 0.25 (4-way) 0.20 (Dual 3-way)

- Solenoid air pilot actuated
- Low wattage plug-in - 0.5 watt for DC application
- Elimination of internal wiring
- Pusher piston – high spool shifting force
- Compact/modular Fieldbus electronics
- Interchangeable Push-In fittings to accommodate various tube sizes

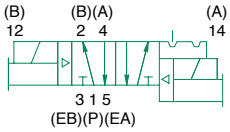
CE

02 Series and R2 Series

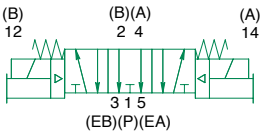
single solenoid air pilot
2 position 4-way



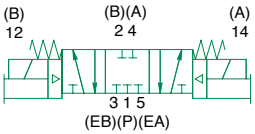
double solenoid air pilot
2 position 4-way



double solenoid 3 position
4-way open center

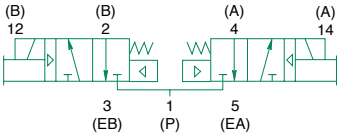


double solenoid 3 position
4-way closed center



R2 Series Only

double solenoid
air pilot dual 3-way
"12(B)" & "14(A)" NC



02 Series - Technical Data

Valve Data	English	Metric
Cv	0.20	0.20
Flow Capacity	9.2 SCFM @ 80 PSIG upstream pressure to atmosphere	197 Nl/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG	Vacuum to 10 bar
Pilot Pressure Range	35 to 100 PSIG	2.5 to 7 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

02 Series - Operating Data

All solenoids are continuous duty rated	24 VDC	
Power (Watts)	0.50	
Holding Current (Amps)	0.02	
Response time in sec.	**Energize**	**De-energize**
2 - Position, Single, Spring Return	0.014	0.020
2 - Position, Double, Detented	0.010	N/A
3 - Position, Spring Centered	0.009	0.057

R2 Series - Technical Data

Valve Data	English	Metric
Cv	0.25	0.25
Flow Capacity	11.5 SCFM @ 80 PSIG upstream pressure to atmosphere	246 Nl/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range: 4 way	28" Hg. Vacuum to 100 PSIG	Vacuum to 7 bar
Dual 3 Way	0 to 100 PSIG	0 to 7 bar
Pilot Pressure Range	35 to 100 PSIG	2.5 to 7 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

R2 Series - Operating Data

All solenoids are continuous duty rated	24 VDC	
Power (Watts)	0.50	
Holding Current (Amps)	0.02	
Response time in sec.	**Energize**	**De-energize**
2 - Position, Single, Spring Return	0.017	0.013
2 - Position, Double, Detented	0.010	N/A
3 - Position, Spring Centered	0.009	0.022
Dual 3-way	0.018	0.010

How to Order

2DAY Valves

R2 2 BB 4 Z4 M K 000 61

Series Identifier
02 = Spool/Sleeve with Body to Base Plug
R2 = Rubber Packed Spool With Body to Base Plug

Port Size
0 = Used for Valve Unit Only, Mounting = 00
2 = 1/4

"A" & "B" Actuator
B = Solenoid Pilot with Flush Non-Locking Override (4th or 4th And 5th Position)
W = Differential Air Return (5th Position Only)
00 = Manifold Block without Valve (Blank Station)

Function
4 = 2 Position, 4-Way
5 = 3 Position, 4-Way, Open Center, Dual Pressure
6 = 3 Position, 4-Way, Closed Center
D = Dual 3-Way, A Normally Closed - B Normally Closed*
P = Indicates Blank Station Plate

*Valve Functions for use in Pressure Applications only

Mounting
Z4 = Manifold Block, Side Ports Only, Double Solenoid Output
00 = Valve Unit Only

Wiring Option
M = Plug-In DC w/Light
O = Blank Station Plate

Port Type
K = Push-In Fitting (Manifold Mount Only)
P = Valve Unit Only

Options
000 = No Options

Voltage
00 = Blank Station
61 = 24 VDC

3DAY Manifold Assemblies

AK F 6 H 0000 2 L DWM

Electrical/Electronics Type & Location
3 = G3 Electronics
F = Terminal Strip
J = 25 Pin Sub-D

Valve Line
6 = 2002 Series

***Number of Valve Stations**
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size
2 = 1/4 (Port type "L" only)

Port Type
L = Push-In

Options
DWM = DIN Rail with MUF

See How To Order Manifolds (pg. 32-33) for Ordering Details.

2005 Series

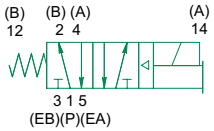
5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

Cv: 0.56

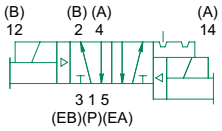
Dual 3-Way Pack Spool Cv: 0.56

- Solenoid air pilot actuated
- Low wattage plug-in - 1.0 watt for DC application
- DC solenoids polarity insensitive with surge suppression
- Plug together circuit boards eliminate internal wiring
- Integral recessed gaskets
- Interchangeable Push-In fittings to accommodate various tube sizes
- Simple conversion from internal to external pilot supply
- Modular plug-together Fieldbus electronics
- NEMA 4/IP65

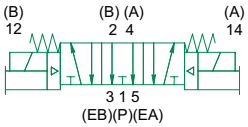
single solenoid air pilot
2 position 4-way



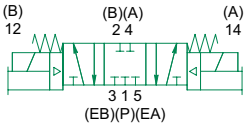
double solenoid air pilot
2 position 4-way



double solenoid air pilot
3 position 4-way
open center



double solenoid air pilot
3 position 4-way
closed center



Technical Data

Valve Data	English	Metric
Cv	0.56	0.56
Flow Capacity	26 SCFM @ 80 PSIG upstream pressure to atmosphere	552 Nl/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG	Vacuum to 10 bar
Operating Pressure Range – 3 Way	22" Hg. Vacuum to 100 PSIG	Vacuum to 7 bar
Pilot Pressure Range	26 to 120 PSIG	1.8 to 8.2 bar
Pilot Pressure Range – 3 Way	26 to 100 PSIG	1.8 to 7 bar
Pilot Pressure Vacuum	50 to 100 PSIG	3.5 to 7 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

Operating Data

All solenoids are continuous duty rated	24 VDC		110-120 VAC / 50/60 Hz.	
Power (Watts)	1.35		4.2	
Holding Current (Amps)	0.04		0.04	
Response time in seconds	**Energize**	**De-energize**	**Energize**	**De-energize**
2 - Position, Single, Spring Return	0.014	0.016	0.014	0.016
2 - Position, Double, Detented	0.013	N/A	0.013	N/A
3 - Position, Spring Centered	0.014	0.016	0.014	0.016
Dual 3 Way	0.014	0.016	0.014	0.016

How to Order

2DAY Valves

051 BB 4 Z2 M N 000 61

Valve Series & Port Size
051* = 1/8 (Threaded only)
052 = 1/4 (Push-In only)
*Use for valve unit only (Mounting = 00)

Valve Type
BA = Single Solenoid Pilot, (Spring Return) w/Flush Non-Locking Override
BB = Double Solenoid Pilot w/Flush Non-Locking Override
00 = Blank Station

Function
4 = 2 Position, 4-way
5 = 3 Position, 4-way Open Center
6 = 3 Position, 4-way Closed Center
D = Dual 3-way, A Normally Closed - B Normally Closed
P = Indicates Blank Station

Mounting
00 = Valve Unit only
Z2 = Manifold Block w/Side and Bottom Ports, Double Solenoid Internal Circuit Board
3A = Individual Base, Side Ports, Individual Exhaust (1/4 Ports Only)

Wiring Option
K = Plug-In AC w/Light
M = Plug-In DC w/Light
O = Blank Station Plate

Port Type
L = Push-In Fitting
N = NPTF (1/8 only)
0 = Valve Unit only

Options
000 = No Options

Voltage
00 = Blank Station
30 = 110-120/50-60 VAC
61 = 24 VDC

2DAY Regulators

051 RS 1 Z2 J P 000 00

Valve Series & Port Size
051* = 1/8
052 = 1/4 (Push-In only)
*Use for regulator unit only (Mounting = 00)

Regulator Type
RS = Single Pressure to Port 1(P)
RD = Dual Pressure to Ports 3 (EB) & 5 (EA)

Pressure Range
1 = 10-130 PSIG (0.7-9 bar)

Mounting
00 = Regulator Unit Only
Z2 = Manifold Block w/Side & Bottom Ports, Double Solenoid Internal Circuit Board

Wiring Option
J = Plug-In Receptacle Assembly

Port Type
K = Push-In
P = NPTF (1/8 only)

Options
000 = No Options
16W = Top Facing Gauge
61Y = Extended Gauge (Even Numbered Stations)
63D = 16W + 61Y Extended Top Facing Gauge (Even Numbered Stations)

3DAY Assembly Kit

AK J E D 0000 3 L STD

Electrical/Electronics Type & Location
3 = G3 Electronics
F = Terminal Strip 1-16
J = 25 Pin Sub-D

Valve Series
E = 2005 Series

Number of Valve Stations
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size 2005
3 = Port type L or N
Port 1 = 3/8 Port 3/5 = 3/8

Port Type
L = Push-In
N = NPTF

Options
STD = Standard
MUF = Muffler in End Plates

See How To Order Manifolds (pg. 32-33) for Ordering Details.

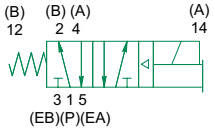
2012 Series

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

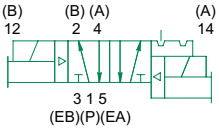
Cv: 1.2

- Solenoid air pilot actuated
- Low wattage plug-in – 2.5 watt for DC application
- DC solenoids polarity insensitive with surge suppression
- Plug together circuit boards eliminate internal wiring.
- Integral recessed gaskets
- Interchangeable Push-In fittings to accommodate various tube sizes
- Simple conversion from internal to external pilot
- Modular plug-together Fieldbus electronics
- NEMA 4/IP65

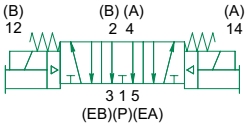
single solenoid air pilot
2 position 4-way



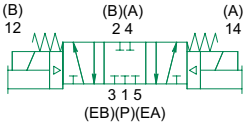
double solenoid air pilot
2 position 4-way



double solenoid air pilot
3 position 4-way
open center



double solenoid air pilot
3 position 4-way
closed center



Technical Data

Valve Data	English	Metric
Cv	1.20	1.20
Flow Capacity	56 SCFM @ 80 PSIG upstream pressure to atmosphere	1180 Nl/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28"Hg Vacuum to 150 PSIG	Vacuum to 10 bar
Pilot Pressure Range	26 to 120 PSIG	1.8 to 8.2 bar
Temperature Range (Ambient)	-10°F to + 115°F	-23°C to +46° C

Operating Data

All Solenoids are Continuous Duty Rated	24 VDC		110 - 120 VAC 50/60 Hz.	
Power (Watts)	2.5		4.2	
Holding Current (Amps.)	0.10		0.05	
Response Time in Seconds	**Energize**	**De-energize**	**Energize**	**De-energize**
2-Position, Single, Spring Return	0.010	0.020	0.010	0.020
2-Position, Double, Detented	0.010	N/A	0.010	N/A
3-Position, Spring Centered	0.010	0.020	0.010	0.020

How to Order

2DAY Valves

122 BB 4 Z2 M L 000 61

Valve Series & Port Size
122 * = 1/4
123 = 3/8
*Use for valve unit only (Mounting = 00).

Valve Type
BA = Single Solenoid Pilot, (Spring Return) w/Flush Non-Locking Override
BB = Double Solenoid Pilot w/Flush Non-Locking Override
00 = Blank Station

Function
4 = 2 Position, 4-way
5 = 3 Position, 4-way Open Center
6 = 3 Position, 4-way Closed Center
P = Blank Station Plate

Mounting
00 = Valve Unit only
3A = Individual Base, Side Ports, Individual Exhaust (3/8 Ports Only)
Z2 = Manifold Block w/Side and Bottom Ports Double Solenoid Internal Circuit Board

Wiring Option
K = Plug-In AC w/Light
M = Plug-In DC w/Light
O = Blank Station

Port Type
L = Push-In Fitting
N = NPTF
0 = Valve Unit only

Special Options
000 = No Options

Voltage
00 = Blank Station
30 = 110-120/50-60 VAC
61 = 24 VDC

2DAY Regulators

122 RS 1 Z2 J L 000 00

Valve Series & Port Size
122* = 1/4
123 = 3/8
*Use for regulator unit only (Mounting = 00).

Regulator Type
RS = Single Pressure to Port 1 (P)
RD = Dual Pressure to Ports 3 (EB) & 5 (EA)

Pressure Range
1 = 10-130 PSIG (0.7-9 bar)

Mounting
00 = Regulator Unit Only
Z2 = Manifold Block w/Side and Bottom Ports, Double Solenoid Internal Circuit Board

Wiring Option
J = Plug-In Receptacle Assembly

Port Type
0 = Regulator Unit Only
L = Push-In
N = NPTF

Special Options
000 = No Options
16W = Top Facing Gauge

3DAY Assembly Kit

A K J G D 0 000 3 L STD

Electrical Connection Type & Location
3 = G3 Electronics
F = Terminal Strip 1-16
J = 25 Pin Sub-D

Valve Series
G = 2012 Series

Number of Valve Stations*
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size 2012
3 = Port Type L or N
Port 1 = 3/8 Port 3/5 = 1/2

Port Type
L = Push-In
N = NPTF

Options
STD = Standard
MUF = Muffler in End Plates

See How To Order Manifolds (pg. 32-33) for Ordering Details.

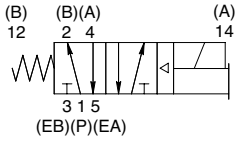
2035 Series

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

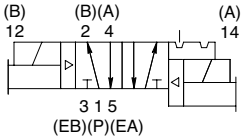
Cv: 3.5

- Solenoid air pilot actuated
- Low wattage plug-in - 2.5 watt for DC application
- DC solenoids polarity insensitive with surge suppression
- Plug together circuit boards eliminate internal wiring.
- Integral recessed gaskets
- Simple conversion from internal to external pilot supply
- Modular plug-together Fieldbus electronics
- Designed to meet NEMA 4/IP65
- Manifold connection allows disassembly at any station.

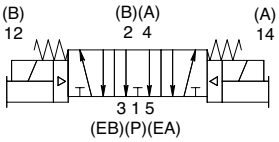
single solenoid air pilot
2 position 4-way



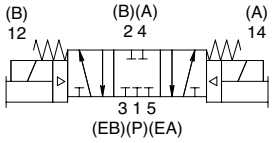
double solenoid air pilot
2 position 4-way



double solenoid air pilot
3 position 4-way
open center



double solenoid air pilot
3 position 4-way
closed center



Technical Data

Valve Data	English	Metric
Cv*	3.5*	3.5*
Flow Capacity	161 SCFM @ 80 PSIG upstream pressure to atmosphere	3500 Nl/m @ 6 bar upstream pressure to 5 bar atmosphere
Operating Pressure Range	28" Hg. Vacuum to 145 PSIG	Vacuum to 10 bar
Pilot Pressure Range	26.1 to 120 PSIG	1.8 to 8.2 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

Operating Data

All solenoids are continuous duty rated	24 VDC		110-120 VAC / 50/60 Hz.	
Power (Watts)	2.5		4.2	
Holding Current (Amps)	0.10		0.03	
Response time in seconds**	**Energize**	**De-energize**	**Energize**	**De-energize**
2 - Position, Single, Spring Return	.021	.067	.015	.070
2 - Position, Double, Detented	.017	N/A	.015	N/A
3 - Position, Spring Centered	.021	.072	.018	.080

* Valve on 1/2 NPTF Sub-Plate
** Per ISO12238 Standard

How to Order

2DAY Valves

353 BB 4 Z2 M N 000 61

Valve Series & Port Size
353* = 3/8
354 = 1/2
*Use for valve unit only (Mounting = 00).

Valve Type
BA = Single Solenoid Pilot, (Spring Return) w/Flush Non-Locking Override
BB = Double Solenoid Pilot w/Flush Non-Locking Override
00 = Blank Station Plate

Function
4 = 2 Position, 4-way
5 = 3 Position, 4-way Open Center
6 = 3 Position, 4-way Closed Center
P = Blank Station Plate

Mounting
00 = Valve Unit only
3A = Individual Base, Side Ports, Individual Exhaust (1/2 Ports Only)
Z2 = Manifold Block w/Side and Bottom Ports Double Solenoid Internal Circuit Board

Wiring Option
K = Plug-In AC w/Light
M = Plug-In DC w/Light
O = Blank Station Plate

Port Type
N = NPTF
0 = Valve Unit only

Special Options
000 = No Options

Voltage
30 = 110-120/50-60 VAC
61 = 24 VDC
00 = Blank Station Plate

2DAY Regulators

353 RS 1 Z2 J N 000 00

Valve Series & Port Size
353* = 3/8
354 = 1/2

*Use for regulator unit only (Mounting = 00).

Regulator Type
RS = Single Pressure to Port 1 (P)
RD = Dual Pressure to Ports 3 (EB) & 5 (EA)

Pressure Range
1 = 10-130 PSIG (0.7-9 bar)

Mounting
00 = Regulator Unit Only
Z2 = Manifold Block w/Side and Bottom Ports Double Solenoid Internal Circuit Board

Wiring Option
J = Plug-In Receptacle Assembly

Port Type
N = NPTF
0 = Regulator Unit Only

Special Options
000 = No Option

3DAY Assembly Kit

A K J B D 0000 4 N MUF

Electrical Connection Type & Location
F = Terminal Strip 1-16
J = 25 Pin Sub-D
3 = G3 Electronics

Valve Series
B = 2035 Series

Number of Valve Stations*
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size
4 = 1/2

Port Type
N = NPTF

Options
MUF = Muffler in End Plates

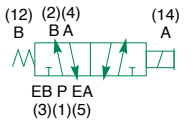
See How To Order Manifolds (pg. 32-33) for Ordering Details.

Mark 3 Series

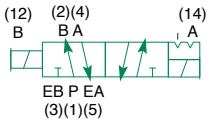
5 Ported, 2 and 3 position, 4-way, Spool & Sleeve
Cv: 0.35

- Direct solenoid actuated
- DIN plug-in solenoid with indicator light
- Unlubricated or lubricated service
- Integral regulators available
- NEMA 4/IP65

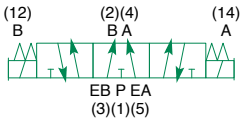
single solenoid
2 position 4-way



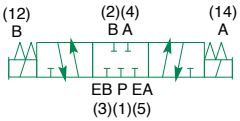
double solenoid
2 position 4-way



double solenoid
3 position 4-way
open center



double solenoid
3 position 4-way
closed center



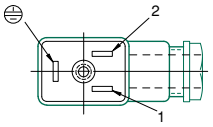
Technical Data

Valve Data		English	Metric
Cv		1/8 NPTF = 0.35 10-32 UNF = 0.18	1/8 = 0.35 M5 = .018
Flow Capacity		16.21 SCFM 8.34 SCFM Upstream pressure to atmosphere @80 PSIG	345 Nl/m 177 Nl/m @ 6 bar upstream/5 bar downstream
Operating Pressure Range		28" HG. Vacuum to 150 PSIG	Vacuum to 10 Bar
Temperature Range (ambient)	Direct Solenoid	-10°F to +115°F	-23°C to +46°C

Operating Data - Mark 3

All Solenoids are Continuous Duty Rated		24 VDC	115 VAC 50 Hz.	120 VAC 60 Hz.
Power (Watts)		6.0	5.5	4.0
Holding Current (Amps.)		0.250	0.063	0.052
Inrush Current (Amps.)		N/A	0.093	0.090
Energize in seconds	2-Position, Single, Spring Return	0.012	0.008	0.008
	2-Position, Double, Detented	0.012	0.008	0.008
	3-Position, Spring Centered	0.012	0.008	0.008
De-energize in seconds	2-Position, Single, Spring Return	0.008	0.012	0.012
	2-Position, Double, Detented	N/A	N/A	N/A
	3-Position, Spring Centered	0.008	0.012	0.012

Plug Connector Assemblies
Per DIN Spec. NO 43650. Accepts cable diameter 0.240 to 0.310.
11mm Industry Standard DIN Form B



Normal Polarity
1 = (+) Positive, High
2 = (-) Negative, Neutral
⏚ = Chassis Ground

Plug Connector Description	Part No.
Gray (14 end solenoid) Plug Assembly	230-363
Black (12 end solenoid) Plug Assembly	230-364
Plug Assembly with 24 V Light	230-365
Plug Assembly with 110 V Light	230-366

How to Order

2DAY Valves

031 SA 4 15 4 0 000 61

Valve Series & Port Size
031 = 1/8

Valve Type
SA = Single Solenoid, Spring Return w/Flush Non-Locking Override
SS = Double Solenoid w/Flush Non-Locking Override
00 = Blank Station

Function
4 = 2 Position, 4-Way
5 = 3 Position, 4-Way Open Center
6 = 3 Position, 4-Way Closed Center
P = Blank Station Plate

Mounting
00 = Valve Unit Only
15 = Manifold Block w/Side and Bottom Ports
41 = Standard Base, Side Ports, Individual Exhaust

Wiring Option
2 = DIN Plug-In AC Solenoid (SA or SS only)
4 = DIN Plug-In DC Solenoid (SA or SS only)
O = Blank Station

Port Type
0 = NPTF

Special Options
000 = No Options

Voltage
30 = 110-120/50-60 VAC
61 = 24 VDC
00 = Blank Station

2DAY Regulators

031 RS 7 00 O 0 000 00

Valve Series & Port Size
031 = 1/8

Regulator Type
RS = Single Pressure to Port 1 (P)
RD = Dual Pressure to Ports 3 (EB) & 5 (EA)

Pressure Range
7 = 0-100 PSIG (0-6.9 Bar)

Mounting
00 = Regulator Unit Only

Wiring Option
O = Non Plug-In

Port Type
0 = NPTF

Special Options
000 = No Options

3DAY Assembly Kit

AK 0 C E 0000 2 N STD

Electrical/Electronics Type & Location
0 = Standard

Valve Line
C = Mark 3 Series

Number of Valve Stations
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size
2 = 1/4

Port Type
N = NPTF

Options
STD = Standard

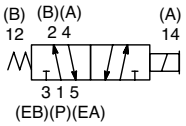
See How To Order Manifolds (pg. 32-33) for Ordering Details.

Mark 8 Series

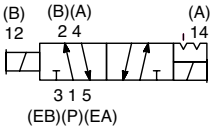
5 Ported, 2 and 3 position, 4-way, Spool & Sleeve
Cv: 0.8 - 1.0

- Direct solenoid actuated
- Plug-in solenoid with indicator light
- Unlubricated or lubricated service
- Integral regulators available
- NEMA 4/IP65

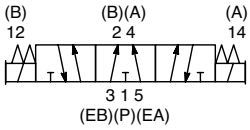
single solenoid
2 position 4-way



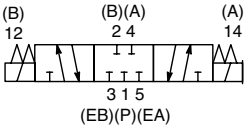
double solenoid
2 position 4-way



double solenoid
3 position 4-way
open center



double solenoid
3 position 4-way
closed center



Technical Data

Valve Data	English		Metric	
Cv	1/8 NPTF = 0.80	1/4 NTPF = 1.0	1/8 G Tap = 0.80	1/4 G Tap = 1.0
Flow Capacity	37 SCFM Upstream pressure to atmosphere @80 PSIG	46 SCFM	790 Nl/m @ 6 bar upstream/5 bar downstream	985 Nl/m
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG		Vacuum to 10 Bar	
Temperature Range (Ambient)	-10°F to +115°F		-23°C to +46°C	

Operating Data

All Solenoids are Continuous Duty Rated		24 VDC	115 VAC 50 Hz.	120 VAC 60 Hz.
Power (Watts)		6.0	N/A	N/A
Holding Current (Amps.)		0.25	0.15	0.09
Inrush Current (Amps.)		N/A	0.41	0.38
Energize in seconds	2-Position, Single, Spring Return	0.032	0.011	0.011
	2-Position, Double, Detented	0.028	0.012	0.012
	3-Position, Spring Centered	0.028	0.012	0.012
De-energize in seconds	2-Position, Single, Spring Return	0.010	0.011	0.011
	2-Position, Double, Detented	N/A	N/A	N/A
	3-Position, Spring Centered	0.008	0.018	0.018

How to Order

2DAY Valves

082 SA 4 15 K 0 000 30

Valve Series & Port Size
081* = 1/8
082 = 1/4
*Valve Unit Only

Valve Type
SA = Single Direct Solenoid, Spring Return w/Flush Non-Locking Override
SS = Double Direct Solenoid w/Flush Non-Locking Override
00 = Blank Station

Function
4 = 2 Position 4-Way (5/2)
5 = 3 Position 4-Way (5/3), Open Center, Dual Pressure
6 = 3 Position 4-Way (5/3), Blocked Center

Mounting
00 = Valve Unit, w/o Mounting
15 = Manifold Block, Side & Bottom Cylinder Ports
3A = Plug-In Base, Individual Exhaust, Side Cylinder Ports (1/4 Ports Only)

Wiring Option
K = Plug-In, w/ Light, VAC
M = Plug-In, w/ Light, VDC
O = Blank Station

Port Type
0 = NPTF Pressure Ports w/NPTF Conduit Ports or Valve Unit w/o Mounting

Options
000 = No Options
46T = Zinc Plated Solenoid Armature (AC Only)

Voltage
00 = Blank Station
30 = 110-120 VAC, 50-60 Hz
61 = 24 VDC

2DAY Regulators

082 RS 1 15 J 0 000 00

Valve Series & Port Size
081* = 1/8
082 = 1/4
*Regulator Unit Only

Regulator Type
RS = Single Pressure to Port P(1)
RD = Dual Pressure to Ports EB(3) & EA(5)

Pressure Range
1 = 10-130 PSIG (0.7-9 Bar)

Mounting
00 = Regulator Unit Only
15 = Manifold Block w/Side and Bottom Cylinder Ports
3A = Individual Base, Side Ports, Individual Exhaust (1/4 Ports Only)

Wiring Option
J = Plug-In Receptacle Assembly

Port Type
0 = NPTF Pressure Ports w/NPTF Conduit Ports or Valve Unit w/o Mounting

Options
000 = No Options

3DAY Assembly Kit

AK 0 H F 0000 3 N STD

Electrical/Electronics Type & Location
0 = Standard

Valve Series
H = Mark 8 Series

Number of Valve Stations
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

End Plate Port Size
3 = 3/8

Port Type
N = NPTF Pressure Ports w/ NPTF Conduit Ports

Options
STD = Standard

See How To Order Manifolds (pg. 32-33) for Ordering Details.

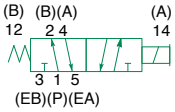
Mark 15 Series

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

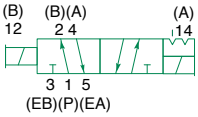
Cv: 1.5

- Direct solenoid actuated
- Plug-in solenoid with indicator light
- Unlubricated or lubricated service
- Integral regulators available
- NEMA 4/IP65
- Body to base plug-in

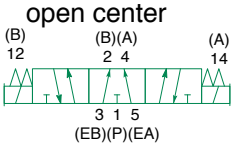
single solenoid
2 position 4-way



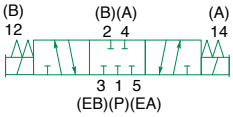
double solenoid
2 position 4-way



double solenoid
3 position 4-way
open center



double solenoid
3 position 4-way
closed center



Technical Data

Valve Data	English		Metric Mark 15 Only	
Cv	1/4 NPTF = 1.4	3/8 NTPF = 1.5	1/4 G Tap = 1.4	3/8 G Tap = 1.5
Flow Capacity	65 SCFM Upstream pressure to atmosphere @80 PSIG	69 SCFM	1379 Nl/m @ 6 bar upstream/5 bar downstream	1477 Nl/m
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG		Vacuum to 10 Bar	
Temperature Range (ambient)	-10°F to +115°F		-23°C to +46°C	

Operating Data

All Solenoids are Continuous Duty Rated		24 VDC	115 VAC 50 Hz.	120 VAC 60 Hz.
Power (Watts)		6.0	N/A	N/A
Holding Current (Amps.)		0.250	0.110	0.090
Inrush Current (Amps.)		N/A	0.630	0.580
Energize in seconds	2-Position, Single, Spring Return	0.034	0.010	0.010
	2-Position, Double, Detented	0.035	0.010	0.010
	3-Position, Spring Centered	0.040	0.010	0.010
De-energize in seconds	2-Position, Single, Spring Return	0.011	0.015	0.015
	2-Position, Double, Detented	N/A	N/A	N/A
	3-Position, Spring Centered	0.010	0.012	0.012

How to Order

2DAY Valves

153 SA 4 15 K 0 000 30

Valve Series & Port Size
152* = 1/4
153 = 3/8
*Valve unit only

Valve Type
SA = Single Solenoid, Spring Return W/Flush Non-Locking Override
SS = Double Direct Solenoid w/Flush Non-Locking Override (Standard)
00 = Blank Station

Function
4 = 2 Position, 4-Way
5 = 3 Position, 4-Way Open Center
6 = 3 Position, 4-Way Closed Center
P= Blank Station Plate

Mounting
00 = Valve Unit, w/o Mounting
15 = Manifold Block, Side and Bottom Cylinder Ports
3A = Plug-In Base, Individual Exhaust, Side Cylinder Ports (1/4 Ports Only)

Voltage
00 = Blank Station
30 = 110-120 VAC, 50-60 Hz
61 = 24 VDC

Options
000 = No Options
46T = Zinc Plated Solenoid Armature (AC Only)

Port Type
0 = NPTF Pressure Ports w/NPTF Conduit Ports or Valve Unit w/o Mounting

Wiring Option
K = Plug-In, w/ Light, VAC
M = Plug-In, w/ Light, VDC
O = Blank Station

2DAY Regulators

153 RS 1 15 J 0 000 00

Valve Series & Port Size
152* = 1/4
153 = 3/8
*Regulator unit only

Regulator Type
RS = Single Pressure to Valve P(1)
RD = Dual Pressure to Valve EB(3) & EA(5)

Pressure Range
1 = 10-130 PSIG (0.7-9 bar)

Mounting
00 = Regulator Unit, w/o Mounting
15 = Manifold Block, Side and Bottom Cylinder Ports
3A = Plug-In Base, Individual Exhaust, Side Ports (1/4 Ports Only)

Options
000 = No Options

Port Type
0 = NPTF Pressure Ports w/NPTF Conduit Ports or Valve Unit w/o Mounting

Wiring Option
J = Plug-In Receptacle Assembly

3DAY Assembly Kit

AK 0 J H 0000 4 N STD

Electrical/Electronics Type & Location
0 = Standard

Valve Line
J = Mark 15 Series or PA 15 Series

Number of Valve Stations
B = 2 F = 6
C = 3 G = 7
D = 4 H = 8
E = 5

Options
STD = Standard

Port Type
N = NPTF Pressure Ports w/NPTF Conduit Ports

End Plate Port Size
4 =1/2

See How To Order Manifolds (pg. 32-33) for Ordering Details.

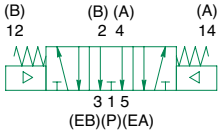
L1 Series

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve

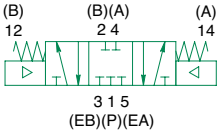
Cv: 1.0

- Solenoid pilot or air pilot actuated
- DIN plug-in solenoid and plug connector with indicator light
- Unlubricated or lubricated service
- In-line or manifold mounted

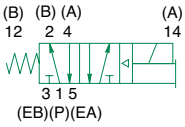
double air pilot
3 position 4-way
open center



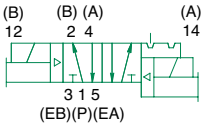
double air pilot
3-position 4-way
closed center



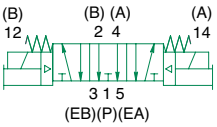
single solenoid pilot
2 position 4-way



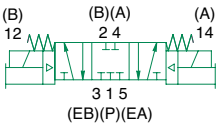
double solenoid pilot
2 position 4-way



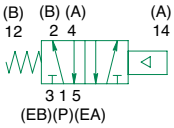
double solenoid pilot
3 position 4-way
open center



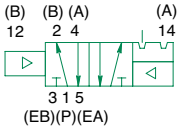
double solenoid pilot
3 position 4-way
closed center



single air pilot
2 position 4-way



double air pilot
2 position 4-way



Technical Data

Valve Data	English		Metric	
Cv	1/8 = 1.0	1/4 = 1.0	1/8 = 1.0	1/4 = 1.0
Flow Capacity	46 SCFM upstream pressure to atmosphere @ 80 PSIG		985 Nl/m @ 6 bar upstream/5 bar downstream	
Main Valve Operating Pressure Range	28" HG. Vacuum to 150 PSIG		Vacuum to 10 bar	
Pilot Pressure Range: Internal and External	14.5 to 150 PSIG		1 to 10 bar	
Temperature Range: Solenoid Pilot (ambient)	-10°F to +115°F		-23°C to +46°C	
Temperature Range: Air Pilot (ambient)	-10°F to +150°F		-23°C to +66°C	

Operating Data

All Solenoids are Continuous Duty Rated		24 VDC	115 VAC 50 Hz.	120 VAC 60 Hz.
*Power (Watts)		3.5	4.8	4.0
Holding Current (Amps.)		0.15	0.064	0.054
Inrush Current (Amps.)		N/A	0.087	0.082
Energize in seconds	2-Position, Single, Spring Return	0.010	0.007	0.007
	2-Position, Double, Detented	0.010	0.007	0.007
	3-Position, Spring Centered	0.010	0.007	0.007
De-energize in seconds	2-Position, Single, Spring Return	0.035	0.035	0.035
	2-Position, Double, Detented	N/A	N/A	N/A
	3-Position, Spring Centered	0.035	0.035	0.035

*A 1.4 Watt DC solenoid is available.
Add "17G" to the model number.
EXAMPLE: L12BA400B017G61.
Maximum pilot pressure is reduced to 116 PSIG (8 bar).

How to Order

2DAY Valves

L12 PA 4 52 O 0 000 00

Valve Series & Port Size
L11 = 1/8
L12 = 1/4

Valve Type
BA = Single Solenoid Pilot, Spring Return w/Flush Locking Override
BB = Double Solenoid Pilot W/Flush Locking Override
PA = Single Air Pilot w/Spring Return
PP = Double Air Pilot

Function
4 = 2 Position, 4-Way
5 = 3 Position, 4-Way Open Center
6 = 3 Position, 4-Way Closed Center

Mounting
52 = Line Mounted

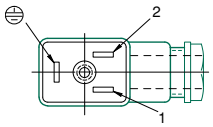
Wiring Option
B = DIN Plug-In DC Solenoid
O = DIN Plug-In AC Solenoid or Air Pilot

Port Type
0 = NPTF

Options
000 = No Options
17G = Low Watt Solenoid 1.42 Watt

Voltage
30 = 110-120/50-60 VAC
61 = 24 VDC
00 = N/A (Used with Air Pilot)

Plug Connector Assemblies
Per DIN Spec. NO 43650. Accepts cable diameter 0.240 to 0.310. 11mm Industry Standard DIN Form B



Normal Polarity
1 = (+) Positive, High
2 = (-) Negative, Neutral
⏚ = Chassis Ground

Plug Connector Description	Part No.
Gray (14 end solenoid) Plug Assembly	230-363
Black (12 end solenoid) Plug Assembly	230-364
Plug Assembly with 24 V Light	230-365
Plug Assembly with 110 V Light	230-366

3DAY Assembly Kit

AK 0 2 D 0000 2 N STD

Electrical/Electronics Type & Location
0 = Standard

Valve Line
2 = L1 Series

Number of Valve Stations
B = 2
D = 4
F = 6
H = 8

End Plate Port Size
2 = 1/4

Port Type
N = NPTF

Options
STD = Used with Line Mounted Valves, Includes Adaptor Kits (valve mounting = 52)

Example order:

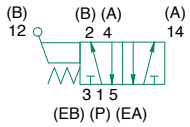
Assembly Kit:	AK02D00002NSTD
Station 1:	L12BB552O000030
Station 2:	L12BA452O000030
Station 3:	L12PP452O000000
Station 4:	L12PA452O000000
	ASSEMBLED

L2 Series

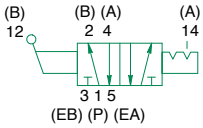
5 Ported, 2 and 3 position, 4-way, Spool & Sleeve
Cv: 1.7

- Solenoid pilot or air pilot actuated
- Hand-lever valves available
- DIN plug-in solenoid and plug connector with indicator light
- Unlubricated or lubricated service
- In-line or manifold mounted

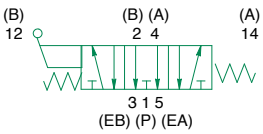
hand lever 2 position 4-way w/spring return



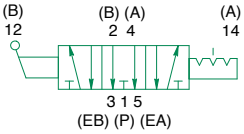
hand lever 2 position 4-way w/detent



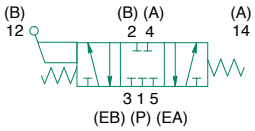
hand lever 3 position 4-way open center w/spring center



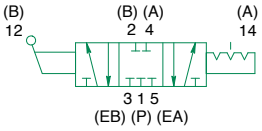
hand lever 3 position 4-way open center w/detent



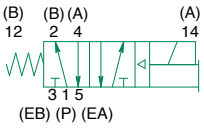
hand lever 3 position 4-way closed center w/spring center



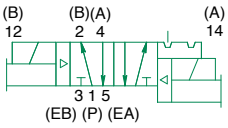
hand lever 3 position 4-way closed center w/detent



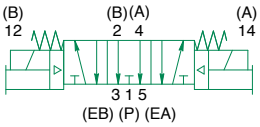
single solenoid 2 position 4-way



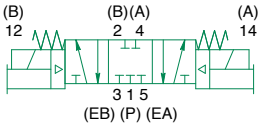
double solenoid pilot 2 position 4-way



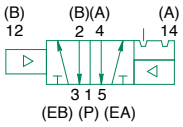
double solenoid pilot 3 position 4-way open center



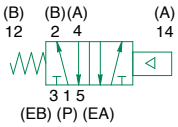
double solenoid pilot 3 position 4-way closed center



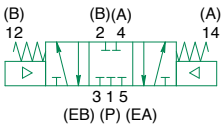
single air pilot 2 position 4-way no override



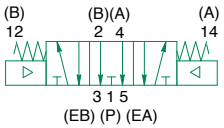
single air pilot 2 position 4-way no override



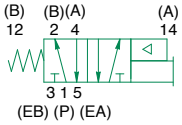
double air pilot 3 position 4-way closed center no override



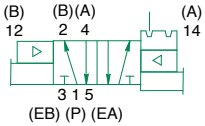
double air pilot 3 position 4-way open center no override



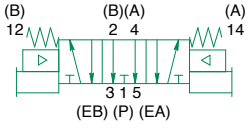
single air pilot 2 position 4-way w/override



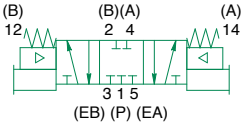
double air pilot 2 position 4-way w/override



double air pilot 3 position 4-way open center w/override



double air pilot 3 position 4-way closed center w/override



Technical Data

Valve Data	English		Metric	
Cv	1/4 = 1.7	3/8 = 1.7	1/4 = 1.7	3/8 = 1.7
Flow Capacity	79 SCFM @ 80 PSIG upstream pressure to atmosphere		1674 Nl/m @ 6 bar upstream/5 bar downstream	
Main Valve Operating Pressure Range	28" HG. Vacuum to 150 PSIG		Vacuum to 10 bar	
Pilot Pressure Range: Internal and External	14.5 to 150 PSIG		1 to 10 bar	
Temperature Range: Solenoid Pilot (Ambient)	-10°F to +115°F		-23°C to +46°C	
Temperature Range: Air Pilot (Ambient)	-10°F to +150°F		-23°C to +66°C	

Operating Data

All Solenoids are Continuous Duty Rated		24 VDC	115 VAC 50 Hz.	120 VAC 60 Hz.
Power (Watts)*		3.5	4.8	4.0
Holding Current (Amps.)		0.15	0.064	0.054
Inrush Current (Amps.)		N/A	0.087	0.082
Energize in seconds	2-Position, Single, Spring Return	0.010	0.007	0.007
	2-Position, Double, Detented	0.010	0.007	0.007
	3-Position, Spring Centered	0.010	0.007	0.007
De-energize in seconds	2-Position, Single, Spring Return	0.035	0.035	0.035
	2-Position, Double, Detented	N/A	N/A	N/A
	3-Position, Spring Centered	0.035	0.035	0.035

*A 1.4 Watt DC solenoid is available.
Add "**17G**" to the model number.
EXAMPLE: L22BA452B017G61.
Maximum pilot pressure is reduced to 116 PSIG (8 bar).

How to Order

2DAY Valves

L22 JA 4 52 O 0 000 00

Valve Series & Port Size
L22 = 1/4
L23 = 3/8

Valve Type
BA = Single Solenoid Pilot, Spring Return w/Flush Locking Override
BB = Double Solenoid Pilot w/Flush Locking Override
PA = Single Air Pilot Cap w/Spring Return
PP = Double Air Pilot Cap
JA = Single Air Pilot w/Flush Non-Locking Override and Spring Return
JJ = Double Air Pilot w/Flush Non-Locking Override
LA = Hand Lever w/Spring Return
LD = Hand Lever w/Detent

Function
4 = 2 Position, 4-Way
5 = 3 Position, 4-Way Open Center
6 = 3 Position, 4-Way Closed Center

Mounting
52 = Line Mounted

Wiring Option
B = DIN Plug-In DC Solenoid
O = DIN Plug-In AC Solenoid or Air Pilot or Handlever

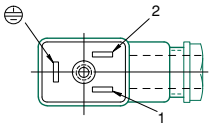
Port Type
0 = NPTF

Options
000 = No Options
17G = Low Watt Solenoid – 1.42 Watt

Voltage
30 = 110-120/50-60 VAC
61 = 24 VDC
00 = N/A (Use With Air Pilot or Hand Lever)

NOTE: Plug connector is NOT included with DIN solenoid. Order plug-in connector assembly separately (see ordering information below).

Plug Connector Assemblies
Per DIN Spec. NO 43650. Accepts cable diameter 0.240 to 0.310.
11mm Industry Standard DIN Form B



Normal Polarity
1 = (+) Positive, High
2 = (-) Negative, Neutral
⏚ = Chassis Ground

Plug Connector Description	Part No.
Gray (14 end solenoid) Plug Assembly	230-363
Black (12 end solenoid) Plug Assembly	230-364
Plug Assembly with 24 V Light	230-365
Plug Assembly with 110 V Light	230-366

3DAY Assembly Kit

AK 0 3 D 0000 3 N STD

Electrical/Electronics Type & Location
0 = Standard

Valve Line
3 = L2 Series

Number of Valve Stations
B = 2 F = 6
D = 4 H = 8

End Plate Port Size
3 = 3/8

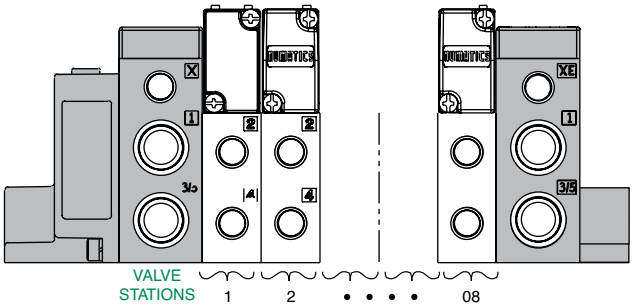
Port Type
N = NPTF

Options
STD = Standard (Common Supply and Exhaust)

3DAY Manifold Assembly

AKJ 25 Pin Sub-D

- Shaded components described by Assembly Kit (AK) model number designation **(See Valve Series Order Charts.)**
- Each valve manifold station is listed in sequential order from left to right when facing the port side of the manifold as indicated.

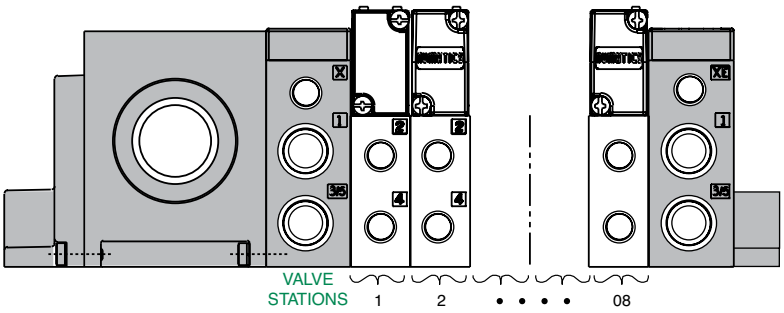


Example order: (2005)

25 Pin Sub-D	AKJED00003NDWM
valve station 1	051BA4Z2MN00061
valve station 2	051BA4Z2MN00061
valve station 3	051BB4Z2MN00061
valve station 4	051BB5Z2MN00061
	ASSEMBLED

AKF 1-16 Terminal Strip

• Ordered using the same method as Sub-D:



Example order: (2005)

	AKFEF00003LDWM
valve station 1	052BA4Z2ML00061
valve station 2	052BA4Z2ML00061
valve station 3	052BB4Z2ML00061
valve station 4	052BB4Z2ML00061
valve station 5	052BB5Z2ML00061
valve station 6	052BB6Z2ML00061
	ASSEMBLED

How to Order

3DAY **Assembly Kit**

G3 EP1 00 R 0 STD

Fieldbus Protocols
DN = DeviceNet™
EP = EtherNet/IP™
DS2 = Sub-Bus Valve Manifold
DS3 = Sub-Bus I/O Assembly

Number of Discrete Inputs
00 = 0
01 = 1
02 = 2

I/O Type
D = w/Sub-Bus Out
R = w/Terminating Resistor

Voltage
0 = Initial Release

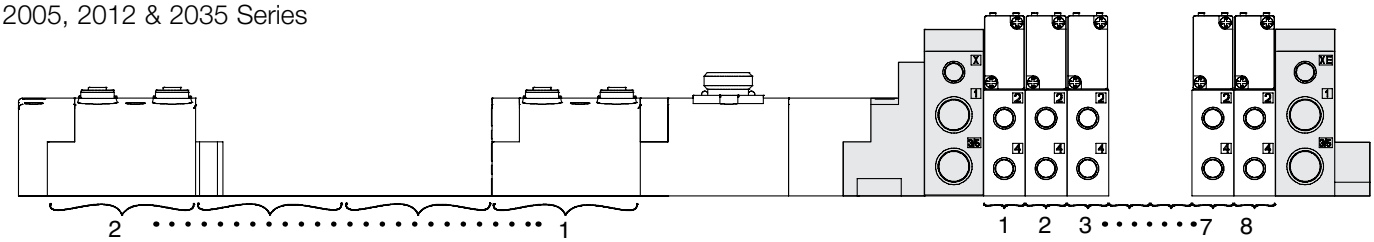
Special Options
STD = Standard
DRM = DIN Rail Mounting
E40 = Auto Recovery Module
G32 = DRM-DIN Rail Mounting
E-40 Auto Recovery Module

Digital I/O 5-Pin M12 Modules

Description	Part Number
16 PNP Inputs	240-205
16 PNP Outputs	240-207
8 PNP Inputs and 8 PNP Outputs	240-211

When Ordering

AK3 Manifold Assembly Kit with G3 Fieldbus Electronics
2005, 2012 & 2035 Series



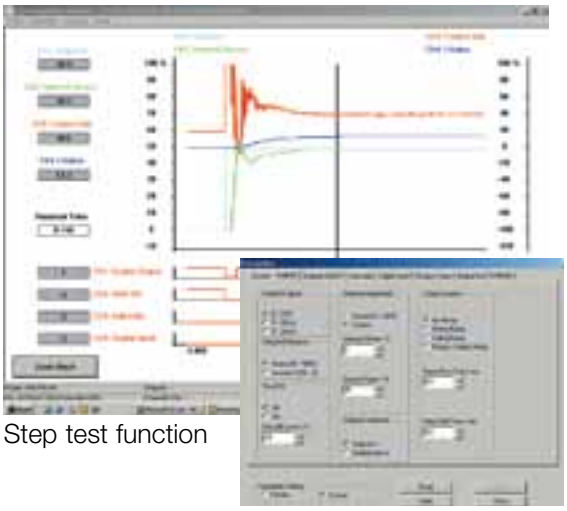
- Shaded components described by Assembly Kit (AK) model number designation, with the exception of the communication module are described by Electronic Interface (G3) model number designation.
- Each valve manifold station is listed in sequential order from left to right when facing the port side of the manifold as indicated.
- Input station listed as indicated.

Example Order: (2005)

	AKCEH00003NDWN
valve station 1	051BB4Z2MN00061
valve station 2	051BB4Z2MN00061
valve station 3	051BB4Z2MN00061
valve station 4	051BB4Z2MN00061
valve station 5	051BB4Z2MN00061
valve station 6	051BB4Z2MN00061
valve station 7	051BB4Z2MN00061
valve station 8	051BB4Z2MN00061
	G3DN101ROSTD
Input Station	240-205
	ASSEMBLED

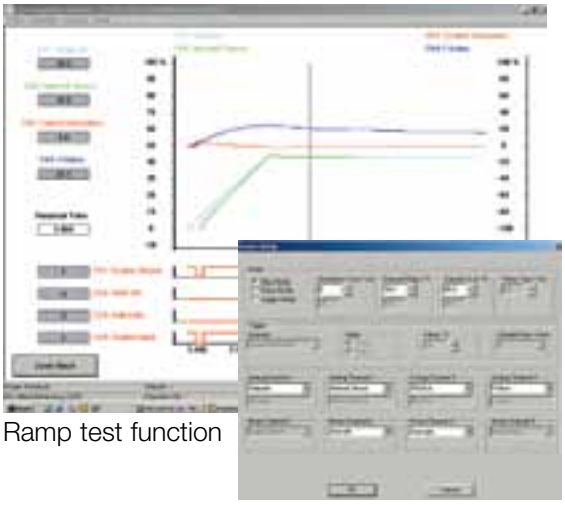
Sentronic^{D} Pressure Control

2DAY



Step test function

Parameters setup



Ramp test function

Scope setup

Advantages

- Minimum hysteresis
- Quick response times
- Very high sensitivity
- Standard 50 µm filtration
- No constant air consumption
- Analog feedback output
- Easy change of control parameters
- Digital control
- Integrated display
- PC communication

Specifications

Fluids: Air or neutral gases
Pressure Range: 0 - 50 psi,
0 - 100 psi, 0 - 150 psi
Ports: 1/4, 3/8 (NPT)
Construction: Poppet Valve
Actuation: Proportional Solenoid
Command Signal: 0 – 10 V,
4 – 20 mA

By connecting the Sentronic^{D} to a PC with an RS232 interface, the Data Acquisition Software (DaS) can be used to optimally adjust the valve's control parameters to a specific application. DaS has an oscilloscope function that allows the user to select and visually see various response characteristics as the valve operates in an application. Control loop parameters can be adjusted using the software without removing the valve from service. This functionality streamlines the application development process. Control parameters can be saved and reloaded at any time.

The DaS software offers the following features:

- Real time display of: command signal, outlet pressure, internal control parameters (e.g. P, I or D), pressure switch signal, etc.
- Parameter setting: command signal, zero offset, span, limitation of output current, ramp function, etc.
- Diagnostics menu for error detection and testing
- Custom adjustment to an application
- Control of Sentronic^{D}

Sentronic^{D}

1/8 to 3/8 NPT tapped body

Construction

Body:	Aluminum
Internal parts:	POM (polyacetal)
Seals:	NBR (nitrile) and FPM (fluoroelastomer)

Features

- Sentronic^{D} is a highly dynamic 3-way proportional valve with digital control.
- Sentronic^{D} stands for:
- - Digital communication and control
- - Display (integrated)
- - Direct operated valve
- A special feature of the Sentronic^{D} is its DaS software supplied for optimum adjustment via PC and viewing of command and feedback signals.
- Other functions are valve diagnostics, parameter setting and maintenance.
- Sentronic^{D} can be configured for dual loop control of process variables such as flow, force, speed, RPM and temperature.

General

Fluids: Air or neutral gas, filtered at 50 µm, condensate-free, lubricated or unlubricated

Maximum allowable pressure (MAP): 90 to 190 psi (6 to 13 bar)

Pressure range:	0-50 psi to 0-150 psi
Fluid temperature:	32°F - 140°F (0ºC - 60ºC)

Ambient temperature: 32ºF - 122ºF (0°C - 50°C)

Flow (Qv at 6 bar):	470 to 1300 l/min (ANR)
Command signal:	0 - 10 V (impedance 100 kΩ) 4 - 20 mA (impedance 250 Ω)
Hysteresis:	< 1% of span
Linearity:	< 0.5% of span
Repeatability:	< 0.5% of span
Minimum setpoint:	100 mV (4.2mA) with shut-off function

Minimum outlet pressure: 1% of span

Electrical Characteristics

Nominal Diameter DN (mm)	Voltage *	Max. Power (W)	Max. Current (mA)	Insulation Class	Degree of Protection	Electrical Connection
4	24 VDC ±10%	21	850	H	IP 65	5-pin M12 connector (not supplied)
8	24 VDC ±10%	40	1650	H	IP 65	5-pin M12 connector (not supplied)

* Max. ripple: 10 %

Specifications

Ø Ports	Ø Orifice DN (mm)	Flow	
		C_v Flow Factor (K_v Nm³/h)	at 6 Bar (l/min - ANR)
1/8, 1/4 NPT or GTap	4	0.29 (0.25)	470
1/4, 3/8 NPT or GTap	8	0.81 (0.7)	1300

Test conditions according to ISO 8778: temperature: 20 °C, relative inlet pressure: 6 bar, relative outlet pressure: 5 bar

How to Order 2DAY

608 6 C 0 1 1 1

Nominal diameter
608 = DN 4mm
609 = DN 8mm

Version (ports), body
6 = NPT 1/4 (DN 4), NPT 3/8 (DN 8)

Pressure range

Maximum pressure

A = 0 - 50 psi — 90 psi
B = 0 -100 psi — 140 psi
C = 0 -150 psi — 190 psi

Command signal
0 = 0 - 10 V [1]
2 = 4 - 20 mA [1]

Feedback
1 = Feedback output 0 -10 V [1]
3 = Feedback output 0 -20 mA [1]

Digital output
1 = Pressure switch output PNP ± 5 %

Display
1 = with display

Notes:

[1] Command signal and feedback signal type must be the same for Express shipping.

Numatics Express 2Day for Sentronic^{D} applies to **order quantities of up to 5 units.**

A Series NFPA Interchangeable

The A Series is an aluminum NFPA Interchangeable cylinder line that is designed and built to excel in the most demanding applications. The A Series encompasses many value-added features such as an extra long graphite filled cast iron rod bushing and a standard oversized wear band that is located on the rear of the piston. Additionally, the A Series includes the well-proven "T Seal" piston seal configuration made from carboxilated nitrile with self-lubricating PTFE compound. These are just a sample of the features that make the A Series the superior NFPA Interchangeable air cylinder line.

2DAY

Tube
The **tube** is hard coat anodized. The hard coating is an electro-chemical process, which produces a very dense surface of aluminum oxide. This surface has extreme hardness (60 Rc), excellent wear and corrosion resistance, and a low coefficient of friction.

End Caps
The **end caps** are accurately machined from (6061-T6) solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway.

Rod Bushing
The A Series includes a graphite filled, cast iron **rod bushing** that is extra long in length. Graphite filled offers the best bearing surface when using a hard chrome plated steel piston rod. Cast iron provides maximum resistance against wear. The added length adds superior alignment and support of the piston rod as well as provides maximum load bearing support.

Rod Seal
The carboxilated nitrile with PTFE compound **rod seal** is self-lubricating and durable. The rounded lip design ensures proper sealing and long life.

Rod Wiper
The standard **rod wiper** construction is a highly durable polyurethane.

Piston Rod
High strength steel (100,000 psi minimum yield) **piston rod** has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Bushing Retainer
The **bushing retainer** allows cartridge removal (cylinder repair) without complete disassembly.

Tie Rods
The **tie rods** are 100,000 psi minimum yield steel for maximum holding power. The threads are roll formed for superior strength and engagement.

Piston Seal
The **piston seal** is a carboxilated nitrile with PTFE compound making it self-lubricating. The "T" seal with back-up ring construction prevents rolling and seals at all pressures.

Wear Band
The **wear band** is a stable, lubricating strip located on the piston. We separated the load bearing points by locating the wear band at the rear of the piston. This maximizes column strength at full extension.

Piston
The solid aluminum alloy **piston** is strong and durable.

Cushion Seal
The floating **cushion seal** design enables rapid stroke reversal by providing instantaneous full flow to the piston. Each cushion has a flush, retained adjustment needle.

Tube End Seal
The **tube end seals** are compression type and reusable.

Ports
Our enhanced **port** design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

Standard Specifications

- Meets NFPA specifications
- Bore sizes from 1-1/2" through 6"
  (10" through 14" available, but Express Program does not apply)
- Piston rod diameters from 5/8" to 1-3/4"
- Nominal pressure rating is 250 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- NPTF ports
- Flexible port and cushion location
- Multitude of mounting options

How to Order

2DAY

P1 A L - 04 A 1 D - C AA 0

Mount
E3 = Head Square Mount (8" Bore Only)
E4 = Cap Square Mount (8" Bore Only)
F1 = Front Flange (Not Available 8" Bore)
F2 = Rear Flange (Not Available 8" Bore)
P1 = Fixed Clevis
P2 = Detachable Clevis
P3 = Fixed Eye
P4 = Detachable Eye
S1 = Angle Mount
S2 = Side Lug Mount
S4 = Bottom Tap
T6 = Head Trunnion (Removable Aluminum Ears)
T7 = Cap Trunnion (Removable Aluminum Ears)
SN = Sleeve Nut
X0 = Basic No Mount
X1 = Extended Tie Rods Both Ends
X2 = Extended Tie Rod Cap
X3 = Extended Tie Rod Head

Type
A = A Series NFPA Interchangeable

Bore
K = 1-1/2" R = 4"
L = 2" T = 5"
M = 2-1/2" U = 6"
P = 3-1/4" W = 8"

Full Inches of Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke
99 = 99" Stroke
99" Max. for Fast Ship Program

Fractional Inches of Stroke
A = 0" I = 1/2"
B = 1/16" J = 9/16"
C = 1/8" K = 5/8"
D = 3/16" L = 11/16"
E = 1/4" M = 3/4"
F = 5/16" N = 13/16"
G = 3/8" O = 7/8"
H = 7/16" P = 15/16"

Rod Code
1 = Style #1 Standard Rod Diameter
2 = Style #2 Standard Rod Diameter
3 = Style #3 Standard Rod Diameter
6 = Style #1 Oversize Rod Diameter
7 = Style #2 Oversize Rod Diameter
8 = Style #3 Oversize Rod Diameter

Magnet
0 = No Magnet
2 = Reed Magnet

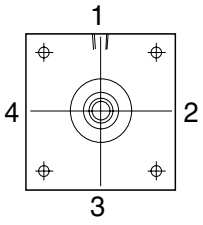
Options
AA = No Options
BA** = Bumpers Both Ends
BC** = Bumper Cap Only
BH** = Bumper Head
DA = Double Rod End
EB = Silencer Bumpers (Not Available with 8" Bore)
LB = Low Breakaway Seals
MA = Metallic Rod Scraper
PA = Polypak Rod Seal
SA = Stainless Steel Piston Rod
SS = Stainless Piston Rod and Tie Rod
ST = Stainless Tie Rods
VA = FKM Seals
1A* = Rod Extension
2A* = Thread Extension
12* = Rod and Thread Extension
3A = Studded Rod End
* Specify length.
** Bumpers add .062" to OAL (per bumper).

Cushions

Position	1	2	3	4	Fixed
No Cushion	A	A	A	A	A
Head and Cap	B	C	D	E	Y
Head Only	F	G	H	J	W
Cap Only	K	L	M	N	V

Ports

Position	1/8"	1/4"	3/8"	1/2"	3/4"
1	B	C	D	E	F
2	H	I	J	K	L
3	N	O	P	Q	R
4	T	U	V	W	X



Cylinder Orientation

Ports are normally located in position 1. **Cushions** are normally located in position 2.

Rod Diameters by Bore Size

Bore	Standard Dia.
1-1/2"	0.625
2"	0.625
2-1/2"	0.625
3-1/4"	1.000
4"	1.000
5"	1.000
6"	1.375
8"	1.375

Rod End Styles, Diameters and Threads

Diameter	Style #1 Standard Male	Style #2 Optional Male	Style #3 Optional Female
0.625	7/16-20	1/2-20	7/16-20
1.000	3/4-16	7/8-14	3/4-16
1.375	1-14	1 1/4-12	1-14
1.750	1 1/4-12	1 1/2-12	1 1/4-12

*Switches and Cylinder Mounting Accessories available to ship with Cylinders.

Large Bore A Series NFPA Interchangeable

The **Large Bore A Series** is an NFPA Interchangeable cylinder line that is designed and built to excel in the most demanding applications. The Large Bore A Series encompasses many of the proven design features of the A Series.

5DAY

Tube
The 10", 12", and 14" Large Bore **tubes** use a honed, chrome plated steel tube.

End Caps
The **end caps** are accurately machined from (6061-T6) solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway.

Rod Bushing
All bores are equipped with a bronze **bushing** that is extra long in length. The added length adds superior alignment and support of the piston rod as well as provides maximum load bearing support. The bronze bushing offers an excellent bearing surface for a hard chrome plated piston rod.

Rod Seal
The carboxilated nitrile with PTFE compound **rod seal** is self-lubricating and durable. The rounded lip design ensures proper sealing and long life.

Rod Wiper
The standard **rod wiper** construction is a highly durable polyurethane.

Piston Rod
High strength steel (100,000 psi minimum yield) **piston rod** has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Bushing Retainer
The **bushing retainer** allows cartridge removal (cylinder repair) without complete disassembly.

Tie Rods
The **tie rods** are 100,000 psi minimum yield steel for maximum holding power. The threads are roll formed for superior strength and engagement.

Piston Seal
The **piston seal** is a carboxilated nitrile with PTFE compound making it self-lubricating. A lip seal configuration is used on all bores which prevents rolling and is designed to seal at all pressures.

Wear Band
The **wear band** is a stable, lubricating strip located on the piston. We separated the load bearing points by locating the wear band at the rear of the piston. This maximizes column strength at full extension.

Piston
The solid aluminum alloy **piston** is strong and durable. We use a nylon locking insert nut to attach the piston to the piston rod. This enables piston rod disassembly if necessary.

Cushion Seal
The floating **cushion seal** design enables rapid stroke reversal by providing instantaneous full flow to the piston. Each cushion has a flush, retained adjustment needle.

Tube End Seal
The **tube end seals** are compression type and reusable.

Ports
Our enhanced **port** design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

Standard Specifications

- Meets NFPA specifications
- Bore sizes from 10" through 14"
- Piston rod diameters from 1-3/4" through 2-1/2"
- Maximum pressure rating is 250 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- NPTF ports
- Flexible port and cushion location
- Multitude of mounting options

How to Order

5DAY

E3 A W - 06 A 1 F - C AA 0

Mount
E3 = Head Square Mount
E4 = Cap Square Mount
X1 = Extended Tie Rods Both Ends
X2 = Extended Tie Rod Cap
X3 = Extended Tie Rod Head

Type
A = Large Bore A Series
NFPA Interchangeable

Bore
X = 10"
Y = 12"
B = 14"

Full Inches of Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke
99 = 99" Stroke
NOTE: Consult factory for strokes greater than 99".

Fractional Inches of Stroke

A	= 0"	I	= 1/2"
B	= 1/16"	J	= 9/16"
C	= 1/8"	K	= 5/8"
D	= 3/16"	L	= 11/16"
E	= 1/4"	M	= 3/4"
F	= 5/16"	N	= 13/16"
G	= 3/8"	O	= 7/8"
H	= 7/16"	P	= 15/16"

Numatics Express 5Day for A Series Large Bore NFPA applies to order quantities of up to 5 units.

Magnet
0 = No Magnet
2 = Magnet

Options
AA = No Option
DA = Double Rod
MA = Metallic Rod Scraper
PA = Polypak Rod Seal
1A* = Rod Extension
2A* = Thread Extension
3A = Studded Rod End
4A* = Stop Tube

SA = Stainless Steel Rod
SS = Stainless Steel Rod and Tie Rods
ST = Stainless Steel Tie Rods
*Must specify length.

Cushions

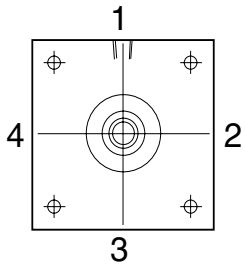
Position	1	2	3	4
No Cushion	A	A	A	A
Head and Cap	B	C	D	E
Head Only	F	G	H	J
Cap Only	K	L	M	N

Ports

Position	3/4"	1"	1 1/4"
1	F	G	1
2	L	M	2
3	R	S	3
4	X	Y	4

Rod End Codes
1 = #1 Standard Rod Diameter
2 = #2 Standard Rod Diameter
3 = #3 Standard Rod Diameter
4* = Special Standard Rod Diameter
5* = Special Oversize Rod Diameter
6 = #1 Oversize Rod Diameter
7 = #2 Oversize Rod Diameter
8 = #3 Oversize Rod Diameter
A = #1 Second Oversize Rod Diameter
B = #2 Second Oversize Rod Diameter
C = #3 Second Oversize Rod Diameter
* Must specify threads.

Cylinder Orientation



Ports Normally in Position 1

Ports are normally located in position 1.

Cushions are normally located in position 2.

NOTE: Ports -
10" & 12" Bore-standard port size is 1" NPTF, smaller port sizes available.
14" Bore-standard port size is 1 1/4" NPTF, smaller port sizes available.

Rod End Styles, Diameters and Threads

Diameter	Style #1 Standard Male	Style #2 Optional Male	Style #3 Optional Female
1.38	1-14	1 1/4-12	1-14
1.75	1 1/4-12	1 1/2-12	1 1/4-12
2.00	1 1/4-12	1 3/4-12	1 1/2-12
2.50	1 7/8-12	2 1/4-12	1 7/8-12

ASP Series Steel Body NFPA

The **ASP Cylinder Line** is a heavy-duty, steel body cylinder line that is designed and built to exceed all of your strenuous application requirements. The **ASP Series** is an NFPA Steel Body pneumatic cylinder line. The ASP Series encompasses many of the same proven design features as our original NFPA Interchangeable cylinder, the A Series. This includes the extra long graphite filled cast iron rod bushing and a standard oversize wear band (located on the rear of the piston). Additionally, we have also included the proven "T" piston seal configuration with carboxilated nitrile with self-lubricating PTFE compound. These are just a sample of things that make the ASP Series the superior Steel Body air cylinder line.

5DAY

Tube
Our honed tubing is produced using our Suitable To Hone Drawn Over Mandrel (DOM) and Cold Drawn Seamless CDS. This tubing is ready to use for pneumatic or hydraulic cylinders without further ID processing. The honing process involves using abrasive polishing stones and abrasive paper to remove small amounts of material, to produce extremely precise ID dimensions and improved finishes.

End Caps
The **end caps** are accurately machined from precision square steel blocks. They also have a black oxide finish to protect from corrosion. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway (even at low pressures).

Rod Bushing
The ASP Series (1-1/2" through 6") includes a graphite filled, cast iron **rod bushing** that is extra long in length. Graphite filling offers the best bearing surface when using a hard chrome plated piston rod. Cast iron provides maximum resistance against wear. The added length adds superior alignment and support of the piston rod as well as provides maximum load bearing support. Sizes 10" through 14" bores include an extra long bronze rod bushing.

Rod Seal
The carboxilated nitrile with PTFE compound **rod seal** is self-lubricating and durable. The rounded lip design ensures proper sealing and long life.

Rod Wiper
The standard **rod wiper** construction is highly durable polyurethane.

Piston Rod
The high strength steel (100,000 psi minimum yield) **piston rod** has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Bushing Retainer
The **bushing retainer** allows cartridge removal (cylinder repair) without complete disassembly (except X1 and X3 mounts). Full-face retainer on 1-1/2" through 2-1/2" bore. Round retainer on 3-1/4" through 6" bore. Both the full-face and round retainer are steel construction.

Tie-Rods
The **tie-rods** are 100,000 psi minimum yield steel for maximum holding power. They are roll formed for superior strength and engagement (up to 5/8").

Piston Seal
The **piston seal** is carboxilated nitrile with PTFE compound for self-lubricating. The "T" seal with back-up rings prevents rolling and seals at all pressures.

Wear Band
The **wear band** is a stable, lubricating strip located on the piston. We separated the load bearing points by locating the wear band at the rear of the piston. This maximizes column strength at full-extension.

Piston
The solid aluminum alloy **piston** is strong and durable.

Cushion Seal
The floating **cushion seal** design enables rapid stroke reversal by providing instantaneous full-flow to the piston. Each cushion has a flush, retained adjustment needle.

Tube End Seal
The **tube end seals** are compression type and reusable.

Ports
Our enhanced **port** design enables the cylinder to work more efficiently. The use of precise machining depths and tool shape allows a smooth flow path into and out of the cylinder.

Standard Specifications

- Meets NFPA specifications
- Bore sizes from 1-1/2" through 6"
- Piston rod diameters from 5/8" to 2-1/2"
- Maximum pressure rating is 250 psi air
- Standard temperature -10° F to 165° F (-23° C to 74° C)
- All steel construction, except piston (aluminum)
- NPTF ports
- Flexible port locating

How to Order

5DAY

P1 ASP L – 04 A 1 1 D – C AA

Cylinder Mounting
F1 = Front Flange
F2 = Rear Flange
P2 = Detachable Clevis
P4 = Detachable Eye
X0 = Basic No Mount
X1 = Extended Tie Rods (Both Ends)
X2 = Cap Extended Tie Rods
X3 = Head Extended Tie Rods

Cylinder Type
ASP = Steel Body NFPA Pneumatic Cylinder Line

Cylinder Bore

K	= 1.50	R	= 4.00
L	= 2.00	T	= 5.00
M	= 2.50	U	= 6.00
P	= 3.25		

Full Inches of Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke
04 = 4" Stroke
05 = 5" Stroke
99 = 99" Stroke
Note: Consult factory for strokes greater than 99".

Fractional Inches of Stroke

A	= 0"	E	= 1/4"	I	= 1/2"	M	= 3/4"
B	= 1/16"	F	= 5/16"	J	= 9/16"	N	= 13/16"
C	= 1/8"	G	= 3/8"	K	= 5/8"	O	= 7/8"
D	= 3/16"	H	= 7/16"	L	= 11/16"	P	= 15/16"

Rod Diameter
1 = 0.625"
2 = 1.000"
3 = 1.375"
4 = 1.750"

*Standard and first oversized rod diameter per bore size are available for 5Day Express.

Options
AA = No Options
EB = Silencer Bumpers
KA = Stroke Adjuster
DA = Double Rod End
MA = Metallic Rod Scraper
LB = Low Breakaway
SA = Stainless Rod
ST = Stainless Tie Rods
SS = Stainless Rod and Tie Rods
VA** = FKM Seals
1A* = Rod Extension
2A* = Thread Extension
3A = Rod Stud
4A* = Stop Tube
4D* = Double Piston Stop Tube
FB = Four Wrench Flats
JN = Jam Nut
PA = Polypak Rod Seal
PP = Polypak Piston

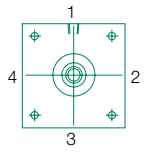
* Specify length.
** FKM is not recommended for non-lube service.
Note: For additional and combination options, consult factory for details.

Cushions

Position	1	2	3	4	Fixed
No Cushions	A	A	A	A	A
Head & Cap	B	C	D	E	Y
Head Only	F	G	H	J	W
Cap Only	K	L	M	N	V

NOTE: Standard port location is position 1 and Standard cushion location is position 2.

Cylinder Orientation



Port Size

Position	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"
1	B	C	D	E	F	G	1
2	H	I	J	K	L	M	2
3	N	O	P	Q	R	S	3
4	T	U	V	W	X	Y	4

Rod End Style
1 = Style #1 Male Thread
2 = Style #2 Male Thread
3 = Style #3 Female Thread
4 = Special Rod End (Specify Threads)

Numatics Express 5Day for ASP Series Steel Body NFPA applies to order quantities of up to 5 units.

Rod End Styles, Diameters and Threads

Diameter	Style #1 Standard Male	Style #2 Optional Male	Style #3 Optional Female
0.625	7/16-20	1/2-20	7/16-20
1.000	3/4-16	7/8-14	3/4-16
1.375	1-14	1 1/4-12	1-14
1.750	1 1/4-12	1 1/2-12	1 1/4-12

Rod Diameter by Bore Size

Bore	Standard Diameter	1st Oversized
1-1/2"	0.625	1.000
2"	0.625	1.000
2-1/2"	0.625	1.000
3-1/4"	1.000	1.375
4"	1.000	1.375
5"	1.000	1.375
6"	1.375	1.750

M Series Round Line

The **M Series** is a stainless steel body air cylinder line that is the perfect solution for tight design budgets. This cylinder is reliable and is designed and built to maximize performance. It will exceed all of your light-duty cylinder application requirements. The M Series comes standard with a multitude of value-added features such as stainless steel piston rods, roll-formed threads at both ends of the piston rod, and pre-lubed for non-lube added service. These are just a sample of things that make the M Series the superior interchangeable round body air cylinder line.

2DAY

Piston Rod
The type 303 stainless steel **piston rod** is ground, polished, and roller burnished for a mirror finish to ensure corrosion-free longevity.

Rod Thread
Roll-formed **rod threads** (at both ends) ensure a durable customer-end connection as well as piston to rod connection.

Rod Bushing
Oil impregnated sintered bronze **rod bushing** provides excellent wear resistance and anti-friction qualities for smooth operation and long life.

End Caps
The **end caps** are made from a high strength aluminum alloy.

Ports
Unrestricted (full-flow) **ports** in conjunction with rectangular slots on the piston-mating surface (at both ends) enable the air to work on a larger piston area for effortless breakaway (even at low pressures).

Tube
The type 304 stainless steel **tube**, drawn and polished to a micro-inch finish on the I.D., enables low friction and longevity.

Crimp
The cylinder body is attached to the end caps using innovative assembly equipment that ensures a consistent and reliable double rolled-in **crimp**.

Piston
High strength aluminum alloy **piston** with blow-by flats (double acting only) ensure proper and rapid seal inflation. Piston rod connections are threaded (roll-formed threads), sealed with Loctite Threadlocker®, torqued, and staked for a solid, leak-proof connection.

Piston Seals
Low friction Buna N "U" cup **pistons seals** (optional low and high temperature seals) are wear compensating for millions of maintenance free cycles.

Magnet
Magnetic band position indication is optional in 9/16" – 3" bore sizes. The **magnet** does not affect the overall length of the cylinder 3/4" – 3" (bore sizes - double acting only) but does add .250" to the overall length of the 9/16" bore cylinders.

Rod Seal
The low friction Buna N "U" cup **rod seal** (optional low and high temperature seals) is wear compensating to ensure longevity.

Pre-Lubricated
Pre-lubricated with our specially formulated oil-based compound for extensive maintenance free performance.

Threadlocker® is a registered trademark of the Loctite Corporation.

Standard Specifications

- 303 stainless steel piston rods are standard
- 304 stainless steel cylinder tube
- Aluminum head and caps
- Nominal pressure rating is 250 psi air
- Twelve bore sizes – 5/16" – 3"
- Standard temperature -10°F to +165°F
- Single and double acting

Optional Specifications

- Magnetic pistons
- Delrin® end caps
- Double rods
- High and low temperature seals
- Rod wipers

Delrin® is a registered trademark of Dupont. For detailed information regarding the properties of Delrin, please call 1-800-441-0573.

How to Order

2DAY

1500 D01 - 02 A - 01 - 1A01A

Bore Size
0313 = 5/16"
0438 = 7/16"
0563 = 9/16"
0750 = 3/4"
0875 = 7/8"
1062 = 1-1/16"
1250 = 1-1/4"
1500 = 1-1/2"
1750 = 1-3/4"
2000 = 2"
2500 = 2-1/2"
3000 = 3"

Mounting Style
S01 = Single Acting Spring Return Nose Mount
S02 = Single Acting Spring Return Rear Pivot
R01 = Single Acting Spring Extend Nose Mount
R02 = Single Acting Spring Extend Rear Pivot
N01 = Single Acting Spring Return Non-Rotating Nose Mount
N02 = Single Acting Spring Return Non-Rotating Rear Pivot
D01 = Double Acting Nose Mount
D02 = Double Acting Rear Pivot
D03 = Double Acting Through Rod
D04 = Double Acting Double Nose
D05 = Double Acting Front Block
D13 = Interchange Option for 1-1/16" Bore Double Acting Through Rod
DH3 = Double Acting Through Rod Hollow Rod
D06 = Double Acting Trunnion Mount
DL1 = Double Acting Nose Mount 2" Bore, 1" Rod
DL2 = Double Acting Rear Pivot 2" Bore, 1" Rod
DC1 = Double Acting Delrin® Nose Mount
DC2 = Double Acting Delrin® Rear Pivot
DC3 = Double Acting Delrin® Through Rod
V01 = Nose Mount Volume Chamber
V02 = Rear Pivot Mount Volume Chamber
DM1 = Nose Mount MRS Interchange
DM2 = Rear Pivot Mount MRS Interchange

Rod and/or Thread Extension
Note: Leave blank if rod and/or thread extension is not required.
1A = Rod Extension (must specify extension)
Example: 1A01A (full and fractional length)
2A = Thread Extension (must specify extension)
Example: 2A01A (full and fractional length)
RT = Rod and Thread Extension (must specify extension)
Example: RT01A01A (full and fractional length)
Note: When applying the option, rod extension length must be specified first and the thread extension length must be specified last.

Options
00 = No Options (or leave blank)
01 = Bumpers*
02 = FKM Seals
03 = Magnet**
04 = Bumpers with Magnet*
05 = Pivot Bushing***
06 = Pivot Bushing with Bumpers*
07 = Pivot Bushing with FKM Seals
08 = Pivot Bushing with Magnet*
09 = Pivot Bushing with Bumper and Magnet*
Available with these mounting styles: D02, S02, R02, N02
20 = Port Rotated with No Options
30 = Rod Wiper with No Options
31 = Rod Wiper with Bumpers
32* = Rod Wiper with FKM Seals
33 = Rod Wiper with Magnet
34 = Rod Wiper with Bumpers and Magnet
35 = Rod Wiper with Pivot Bushing
36 = Rod Wiper with Bumpers and Pivot Bushing
37 = Rod Wiper with FKM Seals and Pivot Bushing
38 = Rod Wiper with Magnet and Pivot Bushing
39 = Rod Wiper with Bumpers, Magnet and Pivot Bushing
Rod Wiper option available on 3/4" Bore and Up.
Not available with these mount styles: S01, S02, N01, N02

Does Not Include Multi-Position, Hole Punch, etc.

Fractional Inch Stroke
A = 0" Stroke
B = 1/16" Stroke
C = 1/8" Stroke
D = 3/16" Stroke
E = 1/4" Stroke
F = 5/16" Stroke
G = 3/8" Stroke
H = 7/16" Stroke
I = 1/2" Stroke
J = 9/16" Stroke
K = 5/8" Stroke
L = 11/16" Stroke
M = 3/4" Stroke
N = 13/16" Stroke
O = 7/8" Stroke
P = 15/16" Stroke

Full Inch Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke

32 = 32" Stroke (maximum)

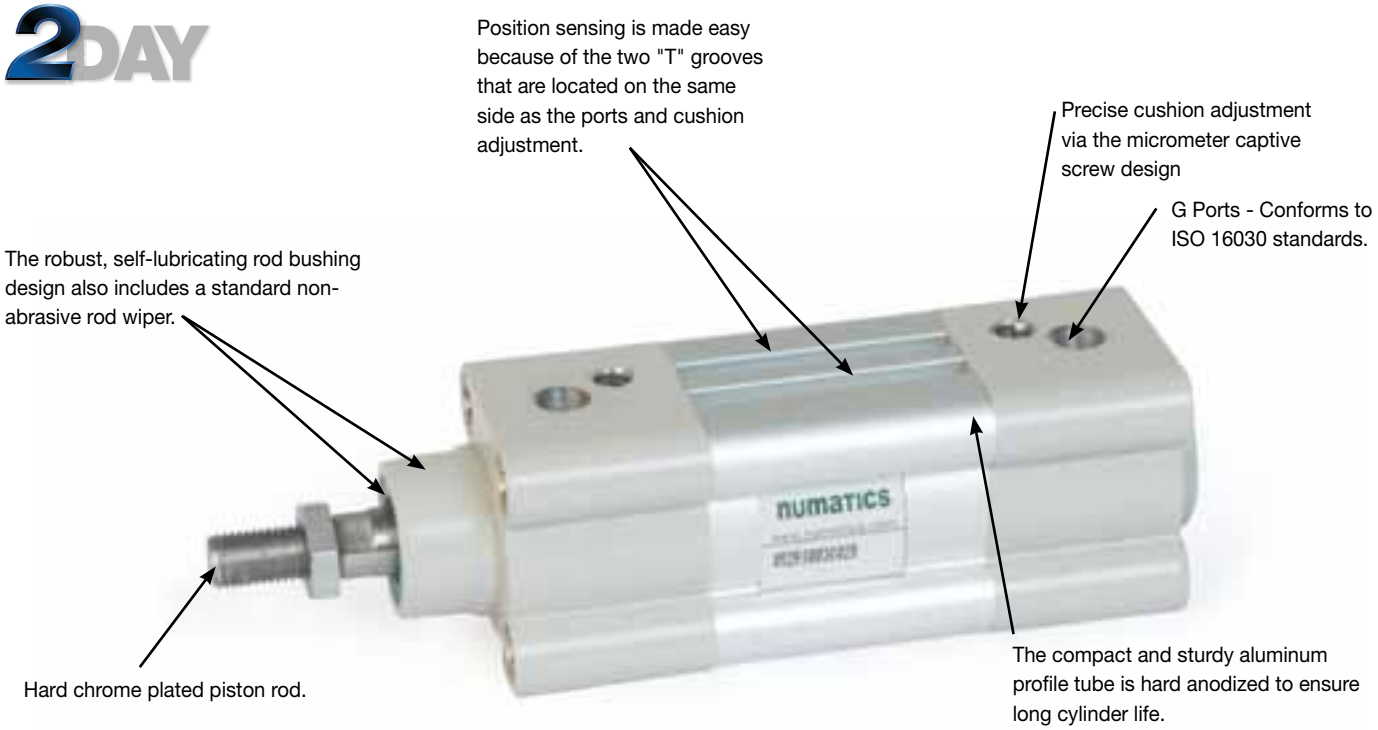
* Bumpers available on 9/16" through 3" Bore Cylinders. See length adder charts for more information. (N/A on DG1 and DG2 types)
** Magnet available on 9/16" Bore. See length adder charts for more information.
*** Pivot Bushing standard on 5/16", 9/16", 2", 2 1/2", and 3" bore sizes. Optional on all other Rear Pivot Cylinders.

*Switches and Cylinder Mounting Accessories available to ship with Cylinders.

452 Series ISO Standard Cylinder

The **Series 452** is an aluminum body air cylinder line that is designed to meet all international cylinder requirements. The Series 452 meets the following international standards: ISO/DIS 15552 & AFNOR. The combination of robust construction and a multitude of value-added features make the Series 452 the superior ISO 15552 cylinder line on the market.

2DAY



General

Detection:	Equipped for magnetic position sensors
Fluid:	Air
Operating pressure:	10 bar max./150 PSI
Ambient temperature:	–20°C to +70°C (-4°F to 158°F)
Optimal max. speed:	≤ 1 m/s (for optimal service life)
Max. speed rate:	2 m/s
Standards:	ISO 15552-AFNOR NF ISO 15552-DIN ISO 15552 (replace ISO 6431-AFNOR NFE 49003-VDMA 24562)

Construction

Tube:	Hard anodized aluminum alloy
End Caps:	Aluminum alloy
Tube/End Cap Connection:	Steel sleeve bolts
Bearing:	Self lubricating steel backed composite
Cushioning seals:	PUR (polyurethane)
Cushioning:	Pneumatic, adjustable from both sides with captive screw
Rod:	Hard chrome plated steel
Rod nut:	Galvanized steel
Piston:	Ø 32 to 80 mm: POM (polyacetal) Ø 100 mm: light alloy, fitted with an annular permanent magnet
Piston seals:	PUR (polyurethane)

How to Order

2DAY

452 1 00 0 5 0080 000

Series
452 Series = Profile Tube

Version
1 = ISO 155552

Cylinder Type
00 = Single Rod, Cushioned
0A = Double Rod, Cushioned

Sensor Groove Location
0 = Position 1
3 = Position 2
6 = Position 3
9 = Position 4

Bore
3 = 32mm
4 = 40mm
5 = 50mm
6 = 63mm
8 = 80mm
1 = 100mm

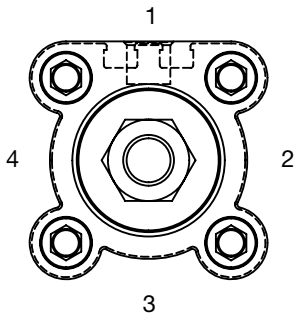
Options
000 = Cylinder w/o mounting parts and options
01A* = Rod Extension
02A* = Thread Extension
0SA = Stainless Rod
C01 = Foot Bracket (Outside) Mount
CV9 = Mid Trunnion
CF2 = Front Flange Mount
CR2 = Rear Flange Mount
CF4 = Rod Clevis Mount
CD4 = Rod Clevis Mount Both Ends (Double Rod)
CF5 = Spherical Eye Mount (Front Side)
CD5 = Spherical Eye Mount (Both Sides - Double Rod)
C07 = Oscillating Bracket with Lugs
C08 = Oscillating Bracket with Wide Fork Type Mount
C13 = Spherical Eye Mount (Back Side)
C14 = Oscillating Bracket with Narrow Fork Type Mount
Consult factory for combination options.
*Specify length.

Stroke
0015 = 15mm (Minimum Stroke)
0400 = 400mm (Maximum Stroke)

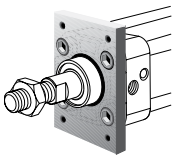
Port Chart

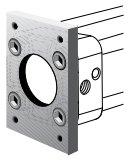
Bore	Port Size	Rod Threads
32mm	G 1/8	M10 x 1.25
40mm	G 1/4	M12 x 1.25
50mm	G 1/4	M16 x 1.25
63mm	G 3/8	M16 x 1.50
80mm	G 3/8	M20 x 1.50
100mm	G 1/2	M20 x 1.50

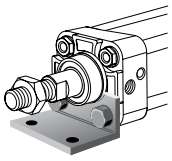
Switch/Sensor Position

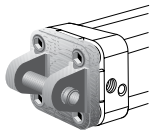


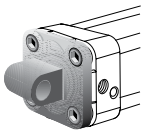
Standard Cylinder Mounting Options

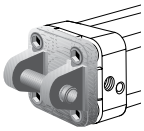

CF2 - Front Flange

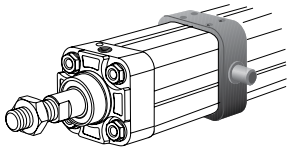

CR2 - Rear Flange

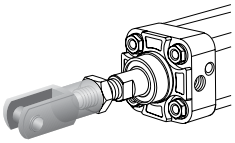

C01 - Foot

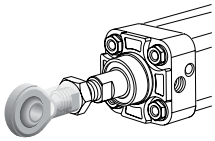

C08 - Oscillating Bracket with Wide Fork Type Mount


C07 = Oscillating Bracket with Lugs


C14 - Oscillating Bracket with Narrow Fork Type Mount


CV9 - Mid Trunnion


CF4 - Front Clevis


CF5 - Spherical Eye Mount (Front Side)

C Series Rugged Compact

The **C Series** is a robust compact cylinder line that is designed to fit tight space requirements. The low profile design and variety of mounting options makes this cylinder line extremely popular. Furthermore, its unique style and diversity makes the C Series a one of a kind compact cylinder line.

2DAY

Tube
The **tube** is hard coat anodized aluminum. The hard coating is an electrochemical process which produces a very dense surface of aluminum oxide. This surface has extreme hardness (60 RC.), excellent wear and corrosion resistance, and a low coefficient of friction. Additionally, profile tubing is standard on 3/4" through 2-1/2" bore sizes (3" and 4" bores are the tie rod configuration). The profile tubing has a custom dovetail groove on all sides for trouble-free switch and accessory mounting.

End Caps
The **end caps** are accurately machined from solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway.

Rod Bushing
The C Series includes a sintered bronze **rod bushing** for maximum load bearing support.

Rod Seal
The quad ring **rod seal** ensures proper sealing even at low pressures.

Piston Rod
High strength steel (100,000 psi minimum yield) **piston rod** has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Piston Seal
The quad ring **piston seal** ensures proper sealing even at low pressures.

Piston
The solid aluminum alloy **piston** is strong and durable.

Tie Rods
The **tie rods** (3" and 4" only) are 100,000 psi minimum yield steel for maximum holding power. The threads are roll formed for superior strength and engagement.

Tube End Seal
The **tube end seals** are compression type and reusable.

Ports
Our enhanced **port** design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

Mounting Holes
The dual purpose **mounting holes** allow use of through bolts or threaded-in attachments.

Standard Specifications:

- Variety of mounts
- Bore sizes from 3/4" through 4"
- Piston rod diameters from 1/4" to 1"
- Maximum pressure rating is 250 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- All aluminum construction
- NPTF ports
- Flexible port locating

How to Order

2DAY

P1 C L - 04 A 1 B - A AA 0

Mount
F1 = Front Flange
F2 = Rear Flange
P1 = Fixed Clevis
P2 = Detachable Clevis
P3 = Fixed Eye
P4 = Detachable Eye
S2 = Foot Mount
*S4 = Bottom Tapped
X0 = Basic-No Mount

*S4 mount is standard on 3/4" and 1 1/8" bore.

Type
C = Compact Cylinder Line

Bore
C = 3/4"
G = 1-1/8"
K = 1-1/2"
L = 2"
M = 2-1/2"
N = 3"
R = 4"

Full Inches of Stroke
00 = 0" Stroke
01 = 1" Stroke
02 = 2" Stroke
03 = 3" Stroke
20 = 20" Stroke

Fractional Inches of Stroke

A	= 0"	I	= 1/2"
B	= 1/16"	J	= 9/16"
C	= 1/8"	K	= 5/8"
D	= 3/16"	L	= 11/16"
E	= 1/4"	M	= 3/4"
F	= 5/16"	N	= 13/16"
G	= 3/8"	O	= 7/8"
H	= 7/16"	P	= 15/16"

Rod End Code
1* = #1 Standard Rod Diameter
2 = #2 Standard Rod Diameter
3 = #3 Standard Rod Diameter
4 = Special Standard Rod Diameter (must specify threads)
5 = Special Oversize Rod Diameter (must specify threads)
6 = #1 Oversize Rod Diameter
7 = #2 Oversize Rod Diameter
8 = #3 Oversize Rod Diameter

Magnet Piston
0 = No Magnet
*2 = Reed Magnet & Wear Band
* Adds to OAL of cylinder, see online PDF.

Options
AA = No Options
**BA = Bumpers Both Ends
KA = Stroke Adjuster (Specify Length)
DA = Double Rod End
SA = Stainless Steel Rod
SS = Stainless Steel Rod and Tie Rods (3 and 4 Bores)
ST = Stainless Steel Tie Rods (3 and 4 Bores)
VA = FKM Seals
1A = Rod Extension (specify length)
2A = Thread Extension (specify length)
*WA = Wear Band
* Adds to OAL of cylinder, see online PDF.
**Bumpers add .062" to OAL (per bumper).

Cushions
A = No Cushions

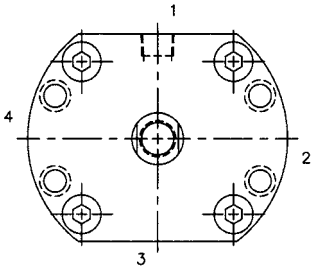
Ports

Position #	10-32	*1/8"	1/4"
1	A	B	C
2	G	H	I
3	M	N	O
4	S	T	U

NOTE: 1/8" and 1/4" ports can affect OAL of cylinder.

See online PDF for more information.

Cylinder Orientation



Ports Normally in Position 1

Rod End Styles, Diameters and Threads

Bore	Diameter	Style #1 Standard Male	Style #2 Optional Female	Style #3 Standard Female
3/4"	.250	#8-32	N/A	#8-32
1 1/8"	.500	1/4-28	5/16-24	1/4-28
1 1/2"	.625 .750	7/16-20 1/2-20	3/8-24 N/A	7/16-20 1/2-20
2"	.625 .750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
2 1/2"	.625 .750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
3"	1.000	3/4-16	5/8-18	3/4-16
4"	1.000	3/4-16	N/A	3/4-16

*NOTE: Style #1 Male rods are studded female rods.

NR & G Series Rodless Cylinders

Numatics, a world leader in air powered products and systems, offers an extensive range of rodless cylinders. Utilizing the most advanced design and production criteria, Numatics provides solutions for automation throughout all sectors of industry.

Specifications

Bore Sizes: 25, 32, 40, and 50 mm

Single Barrel Extrusions

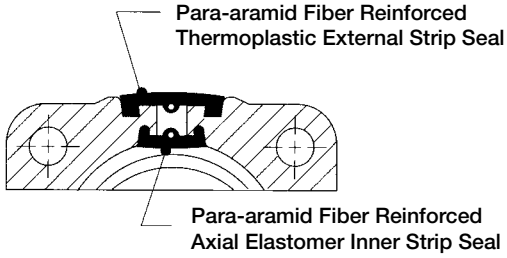
Working Pressure: (min) 45 to 145 PSIG (max)

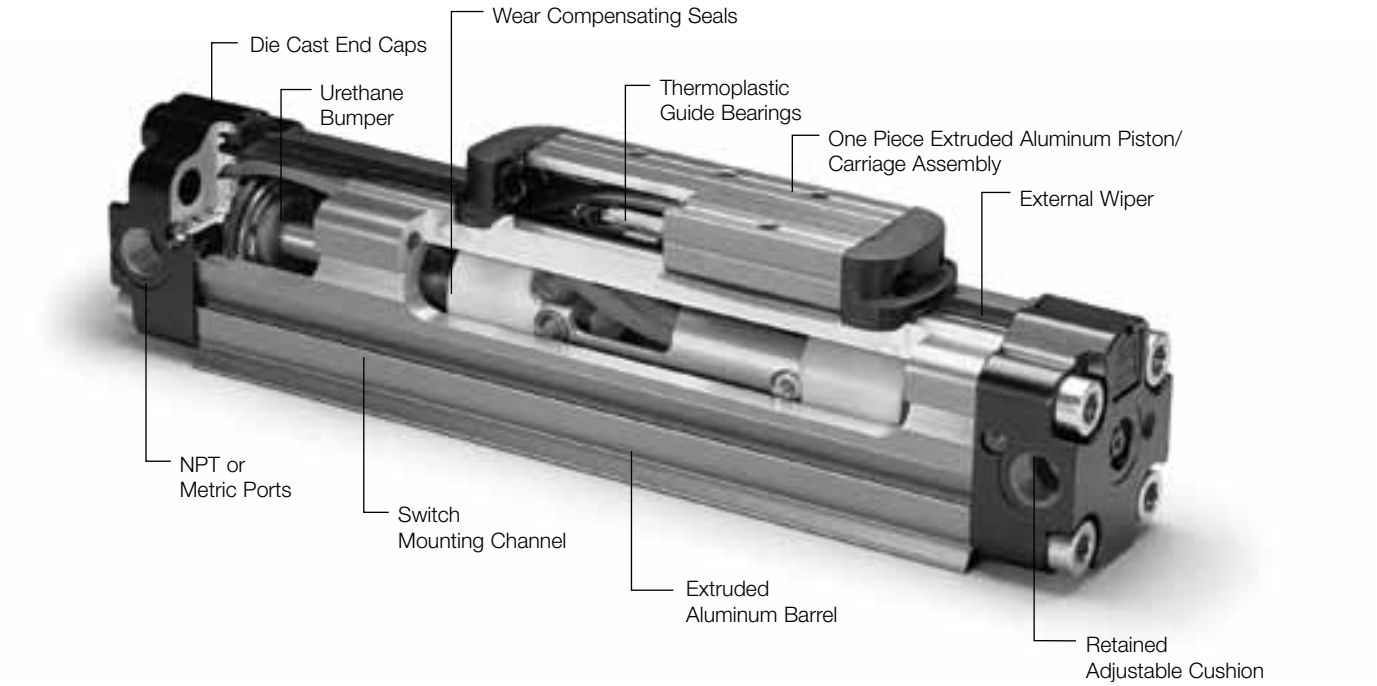
Ambient Temperature Range: -4°F to 175°F (-20°C to 80°C)

Medium: Filtered Air, with or without lubrication

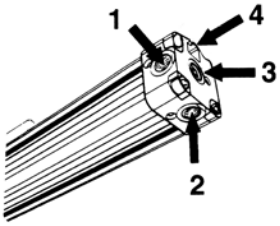
Standard Stroke Lengths: Up to 19.5 ft. (6 meters)

Operating Speed: Up to 9.75 ft./sec. (3m/sec.)





Supply Port Options



0 = No Supply Port (left end cap only when both chambers are supplied from the right end cap)
1 = Side
2 = Bottom
3 = Rear
4 = Both Chambers supplied from one end cap

NR Series How to Order

2DAY

S1 0 1 1 25 0048 E M O

Series
S1 = Single Barrel

Carriage Type
0 = Standard
2 = Medium
3 = Long
4 = Double Standard
5 = Double Medium
6 = Double Long

Right End-Cap Supply Port
1 = Side Supply Port, NPT
2 = Bottom Supply Port, NPT
3 = Rear Supply Port, NPT
4 = Both Chambers Supplied from Right End-Cap, NPT
5 = Side Supply Port, G Tap
6 = Bottom Supply Port, G Tap
7 = Rear Supply Port, G Tap
8 = Both Chambers Supplied from Right End-Cap, G Tap

Left End-Cap Supply Port
0 = No Supply Port (when both chambers are supplied from right end-cap)
1 = Side Supply Port, NPT
2 = Bottom Supply Port, NPT
3 = Rear Supply Port, NPT
5 = Side Supply Port, G Tap
6 = Bottom Supply Port, G Tap
7 = Rear Supply Port, G Tap

Cylinder Bore Sizes
25 = 25 Millimeters (1/8" Ports)
32 = 32 Millimeters (1/4" Ports)
40 = 40 Millimeters (3/8" Ports)
50 = 50 Millimeters (3/8" Ports)

Special Options
Reserved for Special Options

Sensing Type
M = Magnetic Carriage Only
O = No Magnet

Standard Cord (ALL switches come with mounting brackets - see online PDF.)
1 = Hall Effect PNP (Sourcing) - magnet sensing
2 = Hall Effect NPN (Sinking) - magnet sensing
3 = Reed Switch - magnet sensing

Quick Disconnect Switch***
Z = Hall Effect PNP (Sourcing) - magnet sensing
Y = Hall Effect NPN (Sinking) - magnet sensing
X = Reed Switch - magnet sensing
***Cord to be purchased as separate item. Information found in the PDF online.
NOTE: Individual switch part numbers are in the PDF online.

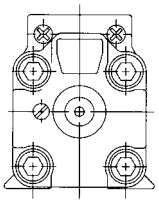
Fractional Inches of Stroke
(If ordering cylinder stroke in millimeters, place the letter "M" in this box.)
A = 0"
B = 1/8"
C = 1/4"
D = 3/8"
E = 1/2"
F = 5/8"
G = 3/4"
H = 7/8"
M = Millimeters

Full Inches or Millimeters of Stroke
(Note: This section requires four digits.)
0048 = 48" Stroke

Numatics Express 2Day for NR Series Rodless applies to order quantities of up to 5 units.

Barrel Configuration

S1 Series with Single Chamber



Single chamber bore sizes 25 mm to 50 mm in extruded aluminum alloy
Standard stroke length up to 19.5 ft.
Various supply port configurations available
Various carriage sizes
High speed up to 9.75 ft./sec.

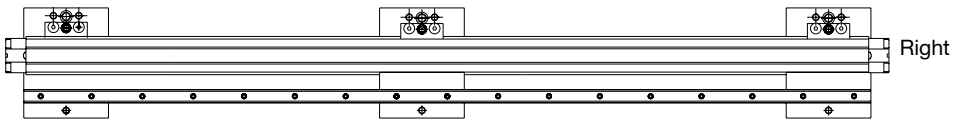
Rodless Cylinder Theoretical Force Charts for NR Series

Single Barrel

Bore Diameter	Piston Area inches (mm)	Pressure PSIG (Bar)						
		20 (1.4)	40 (2.8)	60 (4.1)	80 (5.5)	100 (6.9)	120 (8.3)	145 (10.0)
25mm	0.76 (19.3)	15 (1.0)	30 (2.1)	46 (3.2)	61 (4.2)	76 (5.2)	91 (6.3)	110 (7.6)
32mm	1.25 (31.8)	25 (1.7)	50 (3.4)	75 (5.2)	100 (6.9)	125 (8.6)	150 (10.3)	181 (12.5)
40mm	1.95 (49.5)	39 (2.7)	78 (5.4)	117 (8.1)	156 (10.8)	195 (13.4)	234 (16.1)	283 (19.5)
50mm	3.04 (77.2)	61 (4.2)	122 (8.4)	182 (12.5)	243 (16.8)	304 (21.0)	365 (25.2)	441 (30.4)

G Series How to Order

5DAY



G1 2 1 1 25 0048 E M O

Series
G1 = Single Barrel / Single Bearing Rail
G2 = Single Barrel / Twin Bearing Rail

Carriage Type
2 = Medium Carriage
3 = Long Carriage
5 = Double Medium Carriage
6 = Double Long Carriage

Right End-Cap Supply Port
0 = No Supply Port (When Both Chambers are Supplied from the Left End-Cap)
1 = Side Supply Port, NPT
2 = Bottom Supply Port, NPT
3 = Rear Supply Port, NPT
4 = Both Chambers Supplied from the Right End-Cap, NPT
5 = Side Supply Port, G Tap
6 = Bottom Supply Port, G Tap
7 = Rear Supply Port, G Tap
8 = Both Chambers Supplied from the Right End-Cap, G Tap

Left End-Cap Supply Port
0 = No Supply Port (When Both Chambers Are Supplied from the Right End-Cap)
1 = Side Supply Port, NPT
2 = Bottom Supply Port, NPT
3 = Rear Supply Port, NPT
4 = Both Chambers Supplied from the Left End-Cap, NPT
5 = Side Supply Port, G Tap
6 = Bottom Supply Port, G Tap
7 = Rear Supply Port, G Tap
8 = Both Chambers Supplied from the Left End-Cap, G Tap

Cylinder Bore Size in Millimeters
25 = 25 Millimeters (1/8" Ports)
32 = 32 Millimeters (1/4" Ports)
40 = 40 Millimeters (3/8" Ports)
50 = 50 Millimeters (3/8" Ports)

Sensing Position & Other Options
A = Single Position (one switch)
B = Both Left & Right Position (two switches)
O = No Sensing
L = Lock Unit
M = Lock Unit & One Switch
N = Lock Unit & Two Switches

Sensing Type
M = Magnetic Carriage Only
O = No Magnet
Standard Cord (ALL switches come with mounting brackets - see online PDF.)
1 = Hall Effect PNP (Sourcing) - magnet sensing
2 = Hall Effect NPN (Sinking) - magnet sensing
3 = Reed Switch - magnet sensing
Quick Disconnect Switch***
Z = Hall Effect PNP (Sourcing) - magnet sensing
Y = Hall Effect NPN (Sinking) - magnet sensing
X = Reed Switch - magnet sensing
***Cord to be purchased as separate item.

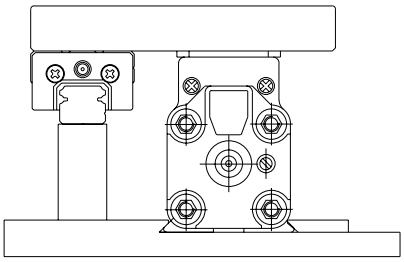
NOTE: Individual switch part numbers are in the PDF online.

Fractional Inches of Stroke
(If ordering cylinder stroke in millimeters, place the letter "M" in this box.)
A = 0"
B = 1/8"
C = 1/4"
D = 3/8"
E = 1/2"
F = 5/8"
G = 3/4"
H = 7/8"
M = Millimeters

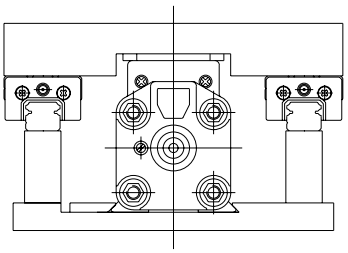
Full Inches or Millimeters of Stroke
(Note: This section requires four digits.)
0048 = 48" Stroke

Barrel Configurations

G1 Series
Single Rail Heavy Duty



G2 Series
Twin Rail Super Heavy Duty



Single chamber bore sizes 25mm to 50mm in extruded aluminum alloy
Various supply port configurations available
Medium and long carriage types
High speed up to 9.75 ft./sec.

CGT Series Compact Guide Slide

A. Body
Anodized aluminum alloy, lightweight and durable. Multiple mounting options, counter bored holes, drilled and tapped holes and extruded "T" slots.

B. Tool Plate
Nickel-plated steel, easy access mounting holes for tooling attachment.

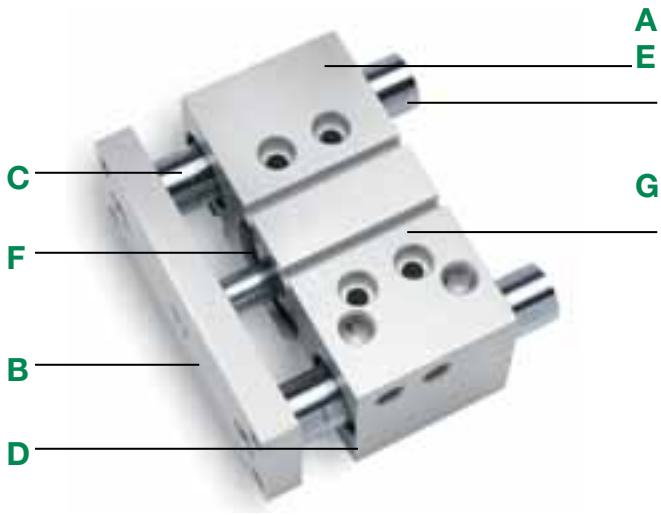
C. Bearings
Two choices, recirculating ball for heavy-duty applications and sintered bronze for medium to light duty applications.

D. Rod Wipers
Steel reinforced rod wiper assures wiping action on guide shafts to protect bearings form operating environment contamination.

E. Guide Shafts
Hardened, ground and polished, oversized diameter for additional load support and rigidity.

F. Piston
Internal to body. Magnetic band for position sensing standard on all sizes and strokes.

G. Sensor Mounting Track
Extruded directly in body, no external brackets, easy access for Hall effect and Reed switches.



2DAY

How to Order

CGT 032 050 B 1 6 D X

Bore Diameter
016 = 16 mm (20, 50 mm strokes only)
020 = 20 mm (20, 50 mm strokes only)
025 = 25 mm (20, 25, 50 mm strokes only)
032 = 32 mm (25, 50 mm strokes only)
040 = 40 mm (25, 50 mm strokes only)
050 = 50 mm (25, 50 mm strokes only)

Stroke
020 = 20 mm
025 = 25 mm
050 = 50 mm

Bearing Option
B = Bronze Bushing
L = Linear Ball Bearing

Seal Option
1 = Polyurethane

Sensing Type
Standard Cord Set
1 = Hall Effect - PNP (Sourcing)
2 = Hall Effect - NPN (Sinking)
3 = Reed Switch
6 = No Sensing
Quick Connect Cord Set
Z = Hall Effect - PNP (Sourcing)
Y = Hall Effect - NPN (Sinking)
X = Reed Switch

Sensing Position
A = Single Position Extend
B = Single Position Retract
C = Two Position Sensing
D = No Sensing

Options
X = No Options

Numatics Express 2Day for CGT Slides applies to order quantities of up to 5 units.

When Ordering Additional Sensors

Switch Description	Standard Part No.
Hall Effect - PNP (Sourcing)	PNP-FL2-00-U
Hall Effect - NPN (Sinking)	NPN-FL2-00-U
Reed Switch	REED-FL2-00S

The **SH Series** is a robust linear pneumatic slide that is designed to excel in the most strenuous applications. The SH Series encompasses a multitude of desirable features, i.e., adjustable shaft collars, alignment coupler, and *NuMate*™ universal mounting pattern, just to mention a few. Additionally, the SH Series includes the well-proven Numatics M Series cylinder as the driving mechanism. These are just a sample of the features that make the SH Series the superior pneumatic linear slide line.

2DAY

Body:
The hard coat anodized aluminum **body** is lightweight yet extremely durable. The body includes standard dowel location holes for precision mounting. Multi-surface mounting holes enable flexible and easy access mounting.

Air Cylinder:
The driving mechanism of all SH Series Slides is the proven Numatics M Series **air cylinder**. The cylinder includes stainless steel end caps and piston rod for corrosion resistance. With the exception of 5/16" bore, all other bore sizes include a cylinder with a magnetic piston for position sensing applications.

Alignment Coupler:
The **alignment coupler** has 360º of rotation. Subsequently, it protects the cylinder piston rod from side loading. This enables maximum cylinder life.

Tooling Plate:
The tooling plate includes the *NuMate*™ universal mounting pattern. *NuMate*™ is a standardized mounting system that is unique to Numatics. The mounting system eliminates the need for custom transition plates. The holes are drilled, tapped and counter bored from the opposite side which enables mounting the unit to be effortless.

Guide Shafts:
Hardened steel (Rc 60 – 65) **guide shafts** are standard with the Linear Ball Bearing and Sintered Bronze bearing units. Hardened stainless steel (Rc 50 – 55) guide rods are standard with the PTFE bearing units. All guide shafts are precision ground and polished to 15u/RMS for smooth cycling and low breakaway. The large diameters enable increased load capacity. The shaft pilot is mounted directly to the tooling plate for maximum rigidity.

Bearings Options:
Each SH Series Slide includes 4 **bearings**. The SH Series is unique because of the 3 bearing options.

Linear Ball Bearing
This consists of 4 self-aligning bearings that reduce wear while maximizing load capability. It is sealed with rod wipers that protect against dirt and contamination.

Sintered Bronze
This consists of 4 oil impregnated (self-lubricating) sintered bronze sleeves with a high Pv rating that enables long application life.

PTFE
This has 4 maintenance free, self-lubricating PTFE bearings that enables long application life and low friction.

Bumper/Wiper
All SH Series Slides include a standard polyurethane **bumper/wiper** combo that is durable and long lasting. The bumper/wiper is integrated into the body of the slide and reduces shock and loading on both the extend and retract stroke. The wiper removes contamination from the guide shafts.

Adjustable Shaft Collars
The adjustable shaft collars enable extend stroke adjustment.

Standard Specifications

- Bore sizes from 5/16" through 3"
- *NuMate*™ universal mounting pattern
- 3 bearing options
- Nominal pressure rating is 250 psi air
- Alignment coupler standard on all slides
- Standard temperature -10°F to +165°F

How to Order

2DAY

SH 075 03 LB 1 3 C S 3

Bore Size
031 = 5/16"
056 = 9/16"
075 = 3/4"
106 = 1-1/16"
150 = 1-1/2"
200 = 2"
250 = 2-1/2"
300 = 3"

Standard Stroke (inches)

X5	= 1/2"	09	= 9"
01	= 1"	10	= 10"
X9	= 1-1/2"	11	= 11"
02	= 2"	12	= 12"
03	= 3"	13	= 13"
04	= 4"	14	= 14"
05	= 5"	15	= 15"
06	= 6"	16	= 16"
07	= 7"	17	= 17"
08	= 8"	18	= 18"

Bearing Option
LB = Linear Ball
TB* = PTFE
BB = Sintered Bronze
* Supplied Standard with 440 C Stainless Steel Guide Rods, Stop Collars and Hardware.

Cylinder Type
1 = Buna-N Seals***
2 = FKM Seals (no magnet)
4 = FKM Seals with magnet***
*** Magnet not available on SH031

Shock Option
Shock Hardware Only
1 = Extend
2 = Retract
3 = Extend/Retract
4 = No Shock Hardware
Hardware & Shocks
A = Extend
B = Retract
C = Extend/Retract

Mounting Option
S = Std. Mount
B = Base Mount
A = Angle Mount

Sensing Position
A = Single Pos. Extend
B = Single Pos. Retract
C = Two Position
D = No Sensing

Sensing Type
Standard Cord Set
1 = Hall Effect PNP (Sourcing)
2 = Hall Effect NPN (Sinking)
3 = Reed Switch
6 = No Sensing
7 = 8mm Threaded Barrel Prox Bracket*
Quick Disconnect Cord Set
Z = Hall Effect PNP (Sourcing)
Y = Hall Effect NPN (Sinking)
X = Reed Switch
* Bracket only - does not include switch

SPS Series Small Power Slide

The **SPS Series'** small size makes it the ideal slide for getting into those tight spaces.

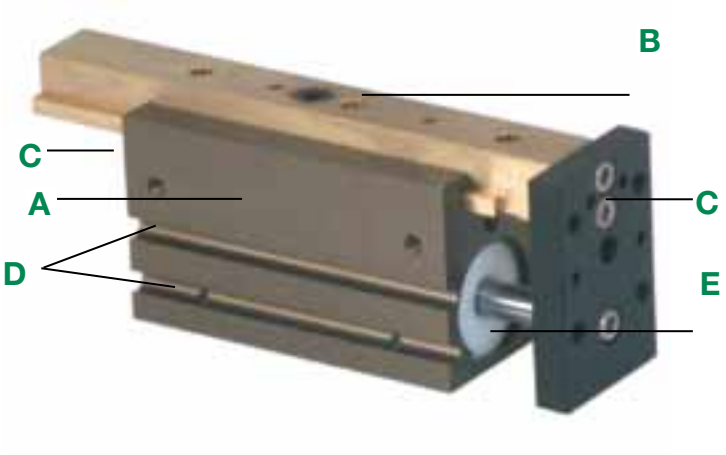
A. Body
Hardcoat Anodized, PTFE impregnated inside & out.
Lightweight, durable, high strength to weight ratio.

B. Slide
Aluminum Bronze alloy. Heavy cross section T-Slot style to prevent fatigue failure and breakage. Offers superior load bearing capabilities throughout stroke. Payload can be attached to top of slide or tooling plate.

C. Stroke adjustment
Fine adjustments can be made to extend stroke accessible through the tooling plate. Retract stroke can be adjusted from backside of unit. Locking set screws ensure precise repetitive operation.

D. Sensing
Hall effect sensing is available for sensing extend & retract.

E. Bearing
Special engineered material, low friction, long life, maximum rigidity.



5DAY

How to Order

SPS 075 X9 1 4 C X

Bore Sizes
050 = 8 mm
075 = 12 mm

Standard Stroke
X5 = 1/2 Inch
01 = 1 Inch
X9 = 1-1/2 Inches
02 = 2 Inches

Seal Option
1 = Buna-N

Special Options
M = Metric
X = Standard

Stroke Adjustment
A = Single Position Extend
B = Single Position Retract
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
1 = Hall Switch - PNP (Sourcing)
2 = Hall Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Switch - PNP (Sourcing) Straight
Y = Hall Switch - NPN (Sinking) Straight
See Sensor section.

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Hall Effect–PNP (Sourcing)	CS-20TP	CS-18P-QD
Hall Effect–NPN (Sinking)	CS-20TN	CS-20TN-QD

Single/Double/Triple Convoluted and Sleeve Series

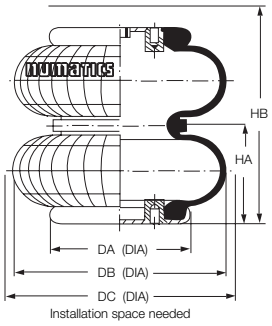
Typical Of All Models

Specifications

Medium: Filtered compressed air with or without lubrication
Ambient Temperature Range: -40ºF to +140ºF (-40ºC to +70ºC)
Working Pressure: Up to 120 PSIG (8 bar)
Materials: Caps, Galvanized steel. Bellows, Reinforced Rubber
Force: Up to 15,000 lbs.
Stroke: Up to 16.75 inches

End Cap Styles for Model Numbers Listed Below

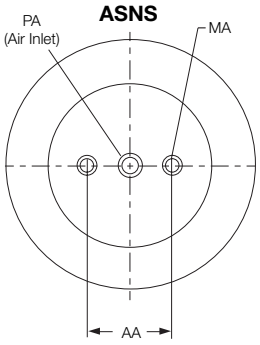
Air inlet caps shown. Opposite end does not include a supply port.



(Double Convoluted Unit Shown)

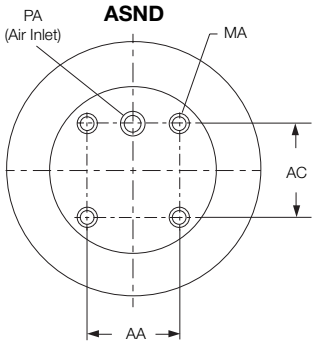
DA = Cap Diameter
DB = Maximum Bellows Diameter
DC = Installation Space Required
HA = Minimum Collapse Height*
HB = Maximum Extend Height*
*Do not exceed - may cause damage to the air bellow.

ASNS



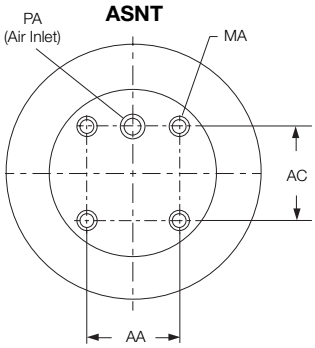
ANS11-1-1
ASNS11-2-1
ASNS11-3-1
ASNS18-3-1
ASNS18-4-1
ASNS18-5-1
ASND11-4-1
ASND18-5-1
ASND18-6-1

ASND



ASNS31-3-1
ASNS51-3-1
ASND31-6-1
ASND51-7-1
ASND51-8-1
ASNT51-11-1

ASNT



ASNS82-4-1
ASND82-7-1
ASND82-10-1
ASNT82-12-1

Sleeve Type Bellow Model
ASNC2-1-1*
ASNC6-1-1*
ASNC6-2-1*

*Reference online PDF for specifications.

How To Order

Depending on your adapter selection, add either a -2 or -3 to the end of bellows part number (ie. ASNS18-3-1-2).

Model Number Reference	Adapter Option Code											
Bellow Model	3/4 to 1/4	3/4 to 3/8	AA	AB	AC	DA	DB	DC	HA	HB	MA	PA
Single Convoluted												
ASNS11-1-1	NA	NA	1.75	N/A	N/A	4.25	5.91	6.50	2.00	3.70	3/8"-16 UNC	1/4"NPTF
ASNS11-2-1	NA	NA	1.75	N/A	N/A	4.25	6.50	7.09	2.00	4.50	3/8"-16 UNC	1/4"NPTF
ASNS11-3-1	NA	NA	1.75	N/A	N/A	4.25	7.88	8.46	2.00	5.90	3/8"-16 UNC	1/4"NPTF
ASNS18-3-1	-2	-3	2.75	N/A	N/A	5.55	8.47	9.06	2.00	5.30	3/8"-16 UNC	3/4"NPTF
ASNS18-4-1	-2	-3	2.75	N/A	N/A	5.55	9.10	9.65	2.00	5.90	3/8"-16 UNC	3/4"NPTF
ASNS18-5-1	-2	-3	2.75	N/A	N/A	5.55	9.25	9.84	2.00	6.70	3/8"-16 UNC	3/4"NPTF
ASNS31-3-1	-2	-3	3.50	1.50	N/A	6.34	9.84	10.43	2.00	5.60	3/8"-16 UNC	3/4"NPTF
ASNS51-3-1	-2	-3	6.20	2.88	N/A	8.98	12.80	13.40	2.20	6.00	3/8"-16 UNC	3/4"NPTF
ASNS82-4-1	-2	-3	6.25	N/A	6.25	11.30	15.16	15.75	2.20	6.90	3/8"-16 UNC	3/4"NPTF
Double Convoluted												
ASND11-4-1	NA	NA	1.75	N/A	N/A	4.25	6.50	7.09	3.00	7.90	3/8"-16 UNC	1/4"NPTF
ASND18-5-1	-2	-3	2.75	N/A	N/A	5.55	8.47	9.06	3.00	9.10	3/8"-16 UNC	3/4"NPTF
ASND18-6-1	-2	-3	2.75	N/A	N/A	5.55	8.60	9.25	3.00	10.60	3/8"-16 UNC	3/4"NPTF
ASND31-6-1	-2	-3	3.50	1.50	N/A	6.34	9.84	10.43	3.00	10.80	3/8"-16 UNC	3/4"NPTF
ASND51-7-1	-2	-3	6.20	2.88	N/A	8.98	12.80	13.40	3.00	12.00	3/8"-16 UNC	3/4"NPTF
ASND51-8-1	-2	-3	6.20	2.88	N/A	8.98	13.40	14.00	3.10	14.20	3/8"-16 UNC	3/4"NPTF
ASND82-7-1	-2	-3	6.25	N/A	6.25	11.30	14.96	15.75	3.03	12.20	3/8"-16 UNC	3/4"NPTF
ASND82-10-1	-2	-3	6.25	N/A	6.25	11.30	15.95	16.55	3.03	15.35	3/8"-16 UNC	3/4"NPTF
Triple Convoluted												
ASNT51-11-1	-2	-3	6.20	2.88	N/A	8.98	12.80	13.40	4.40	18.10	3/8"-16 UNC	3/4"NPTF
ASNT82-12-1	-2	-3	6.25	N/A	6.25	11.30	14.96	15.94	4.40	21.30	3/8"-16 UNC	3/4"NPTF

Numatics Express 2Day for Bellows applies to order quantities of up to 5 units.

All mounting holes are .625 deep.

LR Series Rotary Actuator

The **LR Series** rotary actuator is a low profile rack and pinion design. Two independent pistons drive their corresponding racks against the pinion thereby rotating the platform.

A. Body
Hardcoated anodized aluminum PTFE impregnated, lightweight, high strength to weight ratio.

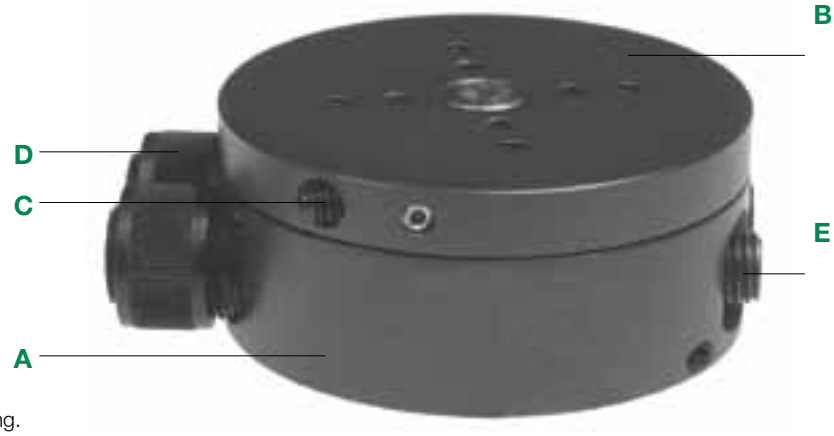
B. Rotary Platform
Hardcoated anodized aluminum, durable. Supported by two bearings, one on each side of the pinion shaft, providing superior dynamic load capacity.

C. Stroke Adjustment
Built-in rotary hard stops protect rotary platform from over travel. External stroke adjust screws with locking set screws provide fine tuned rotary position.

D. Flow Controls
Built in design is easily adjustable, provides precise deceleration speed control in both directions.

E. Position Sensing
Proximity switch sensors available for rotary position sensing.

F. Shocks
LR60, LR125 & LR270 come standard with internal shock absorbers.



How to Order

5DAY

LR 06 A 1 6 D 4 X

Torque Rating
06 = 6 in-lb
20 = 21 in-lb
60 = 62.5 in-lb
60M* = 62.5 in-lb
125 = 125 in-lb
125M* = 125 in-lb
270 = 270 in-lb
*Manifold option, contact factory.

Rotation
A = 90°
B = 180°

Seal Option
1 = Buna-N

Special Options
M = Metric
Q = No Switch Cables
X = Standard

Shock Absorbers
3 = Clockwise and Counter Clockwise Shock (standard on LR-60, LR-125 & LR-270)
4 = No Shocks (Shocks are not available on LR-06 and LR-20.)

Sensing Position
A = Single Position Clockwise
B = Single Position Counter Clockwise
C = Two Position
D = No Sensing

Sensing Type
Standard Cord Set
4 = Prox Switch - PNP (Sourcing)
5 = Prox Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
W = Prox Switch - PNP (Sourcing) Straight
U = Prox Switch - PNP (Sourcing) 90 Deg.
Prox switches are 5 mm diameter.

See PDF online.

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Prox Switch - PNP (Sourcing)	PROX-5FL2-P	PROX-5QDS-P
Prox Switch - NPN (Sinking)	PROX-5FL2-N	Not Available
Quick Disconnect Cable	–	PXCST
90º 5 meter cable	–	PXC90
Bronze switch housing for LR & RM Rotaries	–	RSH05

Gripper Summary of Operation

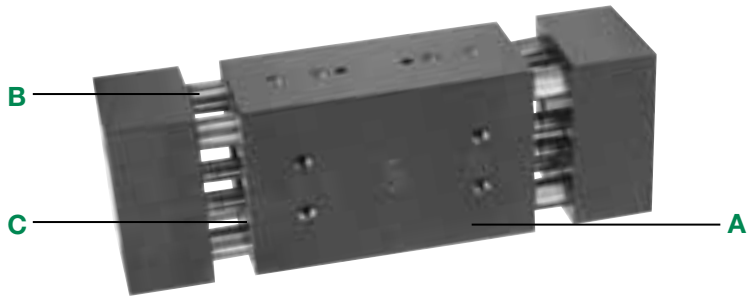
WBG Series utilizes four independent pistons to power the jaws open and closed. Jaws utilize a rack and pinion for synchronization which are independent from force rods and support rods. Non-Synchronous operation is available.

A. Body
High strength, anodized aluminum.
Ultra high gripping force to weight ratio.

B. Support Rods
Hardened steel support shafts are guided through the full width of the body. Wiper seals assist in keeping rods free of debris.

C. Seals
Piston seals are quad ring type for long service life.

- Pre-lubricated with our specially formulated oil based compound for extensive maintenance free performance.
- Proximity switches are available to monitor open and closed position of the jaws.



5DAY

How to Order

WBG S 60 S 1 W C X

Gripper Stroke
S = Short Stroke
L = Long Stroke
X* = Extra Long
*Only available in WBG 90 Series.

Gripper Model Number
60
90
200
300

Gripper Motion
S = Synchronous
C = Compliant

Seal Type
1 = Buna-N

Options
X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
4 = Prox Switch - PNP (Sourcing)
5 = Prox Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
W = Prox Switch - PNP (Sourcing) Straight
V = Prox Switch - NPN (Sinking) Straight
U = Prox Switch - PNP (Sourcing) 90 Deg.
T = Prox Switch - NPN (Sinking) 90 Deg.
Prox switches are 4 mm diameter.

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Prox Switch - PNP (Sourcing)	PROX-4FL2-P	PROX-4QDS-P
Prox Switch - NPN (Sinking)	PROX-4FL2-N	Not Available
Quick disconnect cable straight	–	PXCST
Quick disconnect cable 90 deg.	–	PXC90

WGS-50 Parallel Gripper Double Guided Wedge

Gripper summary of operation:

Synchronous motion is achieved with a double acting piston attached via the piston shaft to a double sided wedge. The double sided angles of the wedge convert vertical motion to synchronous horizontal motion of the jaws.

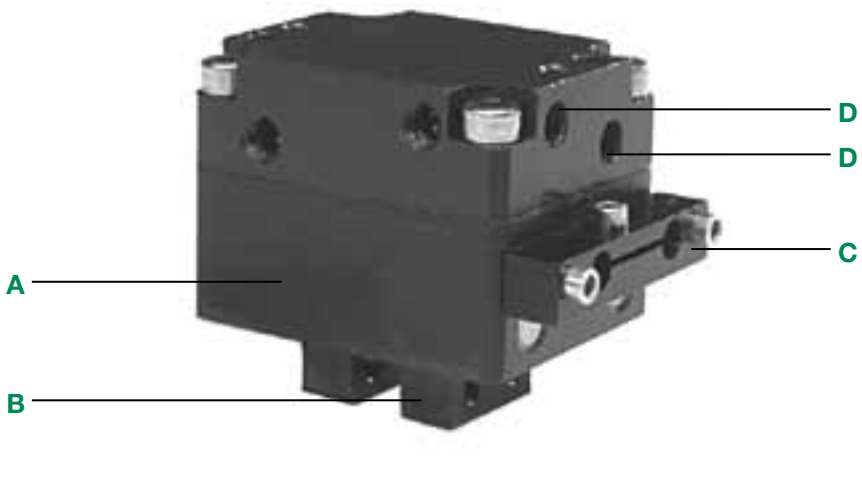
A. Body
Hardcoat anodized PTFE impregnated aluminum inside and out. Ultra high gripping force to weight ratio.

B. Jaws
Jaws machined from S7 tool steel to prevent jaw breakage.

C. Switches
Proximity switches are available to monitor open and closed position of the jaws.

D. Side Ports
Additional side mounting holes and side air ports for optional mounting and porting.

E. Lubrication
Pre-lubricated with our specially formulated oil based compound for extensive maintenance free performance.



WGL-50 Long Stroke and WGS-90 Short Stroke Parallel Grippers Double Guided Wedge

Gripper summary of operation:

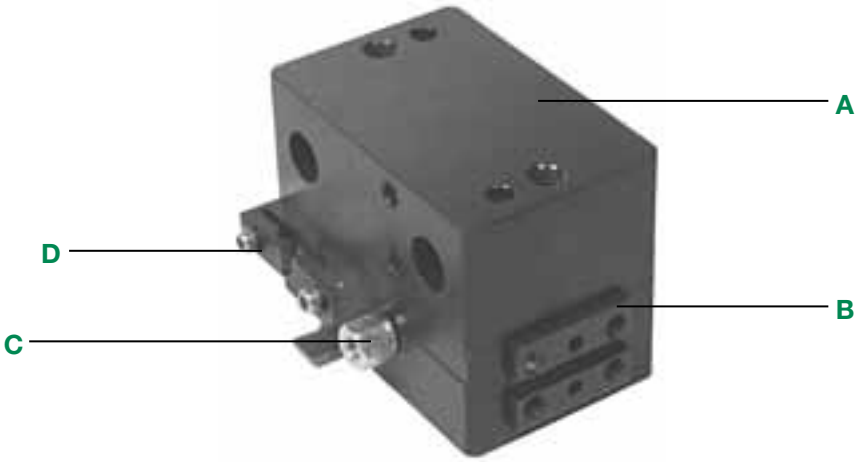
Synchronous motion is achieved with a double acting piston attached via the piston shaft to a double sided wedge. The double sided angles of the wedge convert vertical motion to synchronous horizontal motion of the jaws.

A. Body
Hardcoat anodized PTFE impregnated aluminum inside and out. Ultra high gripping force to weight ratio.

B. Jaws
Hardcoat anodized PTFE impregnated aluminum. Lightweight, durable, high strength.

C. Purge Port
Unit can be slightly pressurized to prevent debris or coolant from entering. A vacuum can be applied to evacuate contaminants from inside the unit in a clean room environment.

D. Switches
Proximity switches are available to monitor open and closed position of the jaws.



How to Order

5DAY

WG S 50 1 4 C X

Gripper Stroke
S = Short Stroke
L = Long Stroke

Gripper Series
50
90

Seal Type
1 = Buna-N

Special Options
X = No Options

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
4 = Prox Switch - PNP (Sourcing)
5 = Prox Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
W = Prox Switch - PNP (Sourcing)
V = Prox Switch - NPN (Sinking)
U = Prox Switch - PNP (Sourcing) 90 Deg.
T = Prox Switch - NPN (Sinking) 90 Deg.
Prox switches are 4mm diameter.

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Prox Switch - PNP (Sourcing)	PROX-4FL2-P	PROX-4QDS-P
Prox Switch - NPN (Sinking)	PROX-4FL2-N	Not Available
Quick disconnect cable straight	–	PXCST
Quick disconnect cable 90 deg.	–	PXC90

PG Series Parallel Gripper

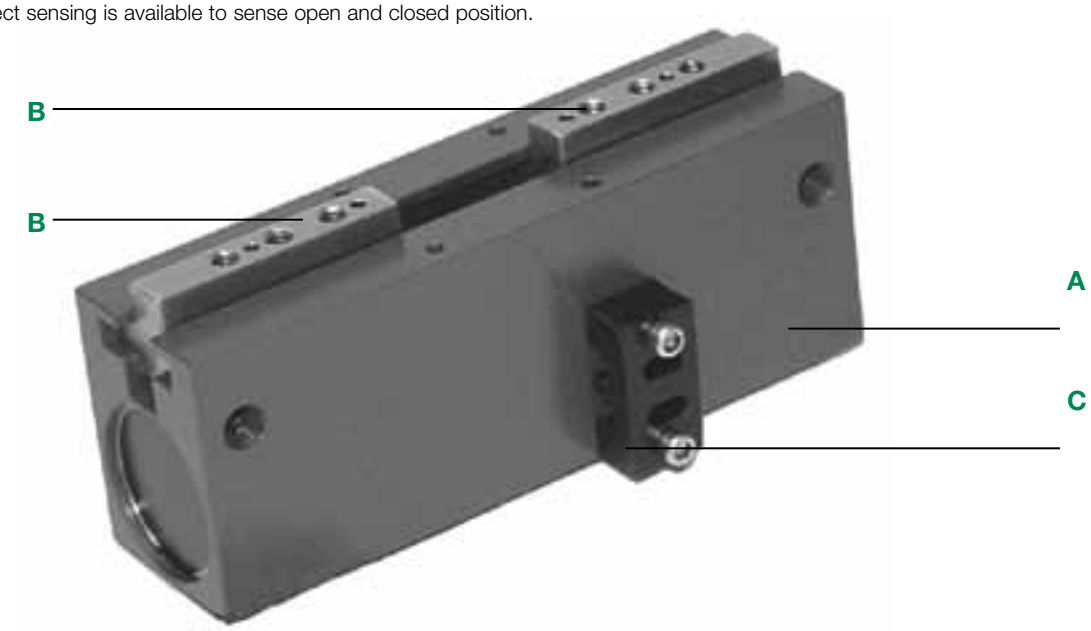
Gripper Summary of Operation

PG Series has true parallel motion that is generated by a pinion mechanism powered by a double acting piston.

A. Body
Hardcoat anodized, PTFE impregnated inside and out. Two different strokes with the same size low profile body.

B. Jaws
Jaws are aluminum bronze alloy and T-Slot style to prevent jaw breakage and offers superior load bearing capabilities.

C. Sensing
Reed & Hall effect sensing is available to sense open and closed position.



How to Order

5DAY

PG S 35 1 1 C X

Gripper Stroke
S = Short Stroke
L = Long Stroke

Gripper Series
25
35

Seal Type
1 = Buna-N

Special Options
X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
1 = Hall Switch - PNP (Sourcing)
2 = Hall Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Switch - PNP (Sourcing)
Y = Hall Switch - NPN (Sinking)
See Sensor section.

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Hall Effect - PNP (Sourcing)	CS-20TP	CS-18P-QD
Hall Effect - NPN (Sinking)	CS-20TN	CS-20TN-QD

Gripper Summary of Operation

RPG Series has true parallel motion that is generated by a double acting piston attached to the pinion mechanism with a linkage that is guided in the body for precise centering.

A. Body
Hardcoat anodized, PTFE impregnated inside and out. High force to weight ratio.

B. Jaws
Jaws are aluminum bronze alloy to prevent jaw breakage. T-Slot style jaws offers superior load bearing capabilities.

C. Sensing
Proximity switches available for sensing open and closed positions.

5DAY

How to Order

RPG 35 1 4 C X

Gripper Series
25
35
80

Seal Type
1 = Buna-N

Special Options
X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

Sensing Type
Standard Cord Set
4 = Prox Switch - PNP (Sourcing)
5 = Prox Switch - NPN (Sinking)
6 = No Sensing
Prox switches are 4 mm diameter.

When ordering additional switches

Switch Description	Standard Part No.
Hall Effect - PNP (Sourcing)	PROX-4FL2-P
Hall Effect - NPN (Sinking)	PROX-4FL2-N

TJ30 Series 3 Jaw Gripper

TJ30 3 jaw gripper provides high grip force in a compact design. Stripper plate option provides 9 lbs. of linear spring force to facilitate part insertion when gripper jaws release part.

A. Jaws
Jaws are T-Slot bearing supported to prevent Jaw breakage and offer superior load bearing performance.

B. Flexible Mounting
Flexible mounting, thru hole for SHCS, tapped from opposite side.

C. Dowel Holes
Dowel holes for locating.

D. Body
Hardcoated aluminum body.

E. Sensing Tracks
Sensing tracks for Hall effect switches sensing.

F. Stripper Plate
Optional Stripper Plate.

Specifications

Series	Grip Force Close 100 PSI	Stroke	Weight	Displacement	Maximum Operating Pressure
TJ30	36 lbs.	0.300	9 oz.	0.35 cu. in.	120 psi

How To Order

5DAY

TJ 30 1 6 D SP X

Series
30

Seal Option
1 = Buna-N

X = Standard

Stripper Plate
SP = With Stripper Plate
NP = No Stripper Plate

Sensing Position
A = Single Position Open
B = Single Position Closed
D = No Sensing

Sensing Type
1 = Hall Switch – PNP (Sourcing)
2 = Hall Switch – NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Switch – PNP (Sourcing)
Y = Hall Switch – NPN (Sinking)

Sensing Kits

Switch Description	Standard Cord Set Part No.	Quick Disconnect Part No.
Hall Effect - PNP Sourcing	CS-20TP	CS-18P-QD
Hall Effect - NPN Sinking	CS-20TN	CS-20TN-QD
90˚ 5 Meter Cable	N/A	PXC90
Straight 5 Meter Cable	N/A	PXCST

TJ200 Series 3 Jaw Gripper

Provides high grip force in a compact design. Shielded design makes the TJ ideal for machine loading and unloading. Compact design to grip force ratio are ideal for confined work areas.

A. Jaws
Jaws are T-Slot bearing supported to prevent Jaw breakage and offer superior load bearing performance.

B. Flexible Mounting
Flexible mounting, thru hole for SHCS, tapped from opposite side.

C. Dowel Holes
Dowel holes for locating.

D. Body
Hardcoated aluminum body.

E. Sensing
Sensing tracks for Hall effect switches sensing.

Specifications

Series	Grip Force Close 100 PSI	Stroke	Weight	Maximum Operating Pressure
TJ200	250 lbs.	0.330	2.3 oz.	120 psi

How To Order

5DAY

TJ 200 1 6 D X

Series
200

Seal Option
1 = Buna-N

X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No sensing

Sensing Type
CS Series Switch
1 = Hall Switch – PNP (Sourcing)
2 = Hall Switch – NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Switch – PNP (Sourcing)
Y = Hall Switch – NPN (Sinking)

When ordering additional switches

Switch Description	Standard Cord Set Part No.	Quick Disconnect Part No.
Hall Effect - PNP Sourcing	CS-20TP	CS-18P-QD
Hall Effect - NPN Sinking	CS-20TN	CS-20TN-QD

PG6J80 Series 6 Jaw Gripper With Ejectors

The **PG6J80 Series** 6 finger gripper design utilizes a dual acting piston to open and close gripper jaws. All six jaws are synchronized for accurate positioning. The included ejectors operate independent of the gripper jaws, providing a convenient method to strip parts from the jaws. An example of this could be expanding an o-ring and pushing it on to the desired part.

A. Body
Hardcoat, anodized, PTFE impregnated aluminum, lightweight durable.

B. Jaws
T-slot design for superior load bearing support, six jaws in synchronized parallel motion.

C. Ejectors
Independent motion from jaws. Single acting, air pressure to extend, spring return. All ejectors extend and retract together.

D. Stroke adjustment
Easy access stroke adjustment screw provides precise controllability of jaw travel. Locking jam nut secures adjusted position.

5DAY

How to Order

PG6J 80 1 6 D X

Series
80

Seal Type
1 = Buna-N

Special Option
X = No Options

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Ejection Position
D = All Positions
E = No Sensing

Sensing Type
Standard Cord Set
4 = Prox Switch - PNP (Sourcing)
5 = Prox Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
W = Prox Switch - PNP (Sourcing) Straight
V = Prox Switch - NPN (Sinking) Straight
U = Prox Switch - PNP (Sourcing) 90 Deg.
T = Prox Switch - NPN (Sinking) 90 Deg.
Prox switch 6.5 mm diameter

When ordering additional switches

Switch Description	Standard Part No.	Quick Disconnect Part No.
Prox Switch - PNP (Sourcing)	PROX-65FL2-PN	PROX-65QDS-P
Prox Switch - NPN (Sinking)	PROX-65FL2-PN	Not Available
Quick Disconnect Cable	–	PXCST
90º 5 meter cable	–	PXC90

MPG5 Miniature Parallel Gripper

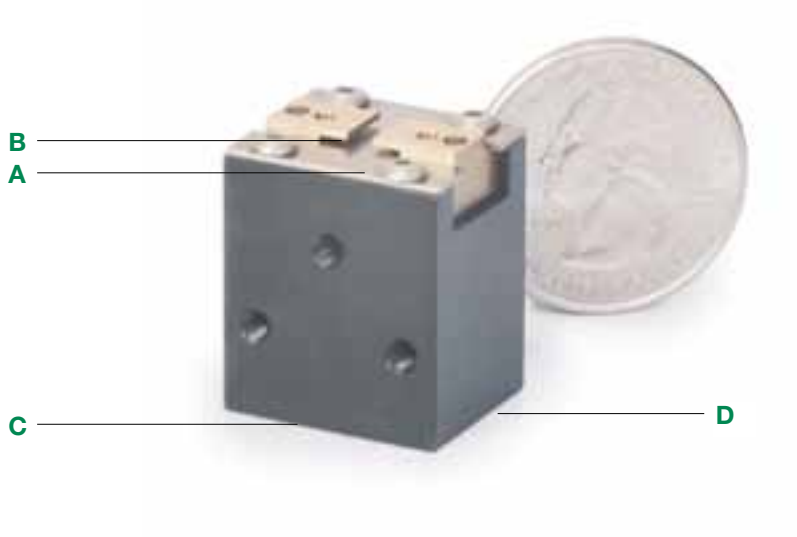
The **MPG5 Gripper** is designed for pick & place of small pieces. The cutting edge design of the MPG5 allows for manifold mounting a series of MPG5s in line without the concerns of space for fittings or air lines. Another unique feature of the MPG5 is the dual-purpose purge port that is part of every gripper. This feature facilitates use of the MPG5 in some clean room applications and very dirty environments.

A.
Shielded design for long service life. High grip force to weight ratio.

B.
Top porting allows units to be manifold mounted eliminating air fittings. Side and Top porting standard.

C.
Purge port will evacuate any contaminants from inside for a clean room environment. When pressurized the purge will keep debris from entering unit in dirty environments.

D.
Jaws are aluminum bronze alloy and T-Slot style to prevent jaw breakage.



5DAY

Specifications

Grip Force Close 80 PSI	Grip Force Open 80 PSI	Stroke	Weight	Displacement	Maximum Operating Pressure
9 lbs.	9 lbs.	0.19	1.7 oz.	0.008 cu. in.	100 psi

How To Order

MPG 5 1 6 D X

Series
5

Seal Option
1 = Buna

GR90-Series Angular Grippers

The **GR90 Series** has a double acting piston attached to a cross bar by a connecting rod. The linear movement of the piston is transformed into angular movement of the jaws through a double toggle link mechanism.

A. Body:
Hardcoat anodized with PTFE for reduced friction and wear. Front and side ports standard.

B. Jaws:
Hardened alloy steel.
Keyway slot for tooling location.
180° jaw motion.

C. Locking Adjustment Screw:
Jaw rotations can be adjusted from 0-90° to be custom fit to each application.

How to Order

5DAY

GR90 1 6 D X

Seal Type
1 = Buna-N Seals

Sensing Type
Standard Cord Set
4 = Prox Switch – PNP (Sourcing)
5 = Prox Switch – NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
W = Prox Switch – PNP (Sourcing) Straight
V = Prox Switch – NPN (Sinking) Straight
U = Prox Switch – PNP (Sourcing) 90 Deg.
T = Prox Switch – NPN (Sinking) 90 Deg.
Prox switches are 4 mm diameter.

Special Options
X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

When ordering additional switches & Seal Kits

Sensing Kits Standard Cord Set	
Hall Effect - PNP Sourcing	PROX-4FL2-P
Hall Effect - NPN Sinking	PROX-4FL2-N

Sensing Kits Quick Disconnect Cord Set	
Hall Effect - PNP Sourcing	PROX-4QDS-P
Hall Effect - NPN Sinking	Not Available
90° 5 meter cable	PXC90
Straight 5 meter cable	PXCST
(5m Cables)	

GR1400 – 180° Radial Gripper

The **GR1400** has a double acting piston attached to a cross bar by a connecting rod. The linear movement of the piston is transformed into radial movement of the jaws through a double toggle link mechanism.

A. Body
Hardcoat anodized, T- Slot Sensing track for direct mount of the Numatics Global Switch. Side and top mounting standard. Dowel holes for locating.

B. Jaws
Keyway slot for tooling location, 180° Jaw motion.

C. Pivot Pins
Hardened steel, needle bearings reduce friction, reduce wear.

D. Center Toggle
Aluminum bronze guided in body for repeatability to center. Bumper for cushion at full open and noise reduction.

Specifications

Grip Force Close 80 PSI	Grip Force Open 80 PSI	Side Play	Weight	Maximum Operating Pressure
720 lbs.	317 lbs.	±0.001	5.62 lbs.	120 psi

How To Order

5DAY

GR 1400 1 6 D X

Series
1400

Seal Option
1 = Buna-N

X = Standard

Sensing Position
A = Single Position Open
B = Single Position Closed
C = Two Position Sensing
D = No Sensing

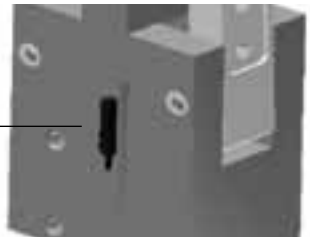
Sensing Type
1 = Hall Effect – PNP (Sourcing)
2 = Hall Effect – NPN (Sinking)
3 = Reed Switch
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Effect – PNP (Sourcing)
Y = Hall Effect – NPN (Sinking)
X = Reed Switch

Sensing Kits

Switch Description	Standard Cord Set Part No.	Quick Disconnect Part No.
Hall Effect - PNP Sourcing	PNP-FL2-00-U	PNP-QDS-M8-U
Hall Effect - NPN Sinking	NPN-FL2-00-U	NPN-QDS-M8-U
Reed Switch	REED-FL2-00	REED-QDS-M8U
90° 5 Meter Cable	N/A	PXC90
Straight 5 Meter Cable	N/A	PXCST

GR1400 Series Gripper

Direct Mount
No Bracket Required



Sensor Description	Standard Cord Set	Quick Disconnect
Reed Switch	REED-FL2-00	REED-QDS-M8U
Hall PNP	PNP-FL2-00-U	PNP-QDS-M8-U
Hall NPN	NPN-FL2-00-U	NPN-QDS-M8-U

See online PDF for sensor specifications.

FE Series

The **FE Series** design uses two double acting cylinders that are cross-ported and internally sequenced for smooth functioning parts regulation. Internal back pressure cross-port design allows both rods to be retracted with the air off to easily clear jammed parts. A four-way two-position valve is required for operation.

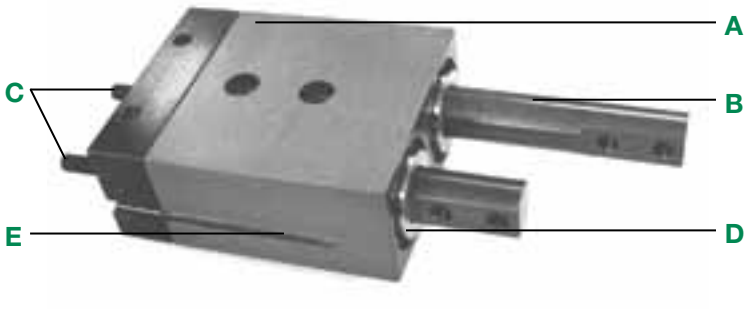
A. Body
High strength hardcoat aluminum.

B. Rods
Ground aluminum, hardcoat anodized, PTFE impregnated non-rotating.

C. Retract Stop Adjustments
Two adjustment screws allow flexibility to adjust the retract stroke on both rods independently.

D. Bronze Bushings
High side load capabilities, self lubricating, long life.

E. Sensing
Hall effect sensors available to sense extend and retract positions.



5DAY

How to Order

FE 12 1 A 1 1 X

Bore Size
12 = 1.25

Sensing Type
Standard Cord Set
1 = Hall Switch - PNP (Sourcing)
2 = Hall Switch - NPN (Sinking)
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Switch - PNP (Sourcing) Straight
Y = Hall Switch - NPN (Sinking) Straight

Special Options
X = No Options

Sensing Position
1 = Single Position Left Side
2 = Single Position Right Side
5 = Two Position Left and Right Side
6 = No Sensing

Sensing Position
A = Extend
B = Retract
C = Extend and Retract
D = No Sensing

When ordering additional switches

Switch Description	Part No.	Quick Disconnect Part No.
Hall Effect PNP (Sourcing)	CS-20TP	CS-18P-QD
Hall Effect NPN (Sinking)	CS-20TN	CS-20TN-QD

Numatics Motion Control **SC Series** Swing Clamps combine linear and rotary motions. A specially machined spline internal to the piston rod develops the combined motions. When the clamp is extended, a linear movement first happens. This removes the clamp tooling from the clamped surface so it is not damaged. After completing the linear travel, rotation occurs swinging the clamp arm away from the work holding area. When clamping, the opposite motions occur.

A. Body
Hardcoat anodized aluminum, lightweight, durable PTFE impregnated, lubricated, maximizes seal life.

B. Rod Bushing
Large bearing area provides maximum rod support, side load protected.

C. Piston Rod
Hardened electroless nickel plated, corrosion resistant, durable low wearing surface.

D. Clamp Arm
Taper mounted convenient arm adjustment, 360 degree adjustment.

E. Mounting Surface
Convenient location precision machined to accept standard industrial fasteners.

5DAY

How to Order

SC 025 A 1 6 D X

Bore Size
025 = 25 mm
032 = 32 mm
040 = 40 mm
050 = 50 mm
063 = 63 mm

Arm Rotation
A = CW
B = CCW

Clamp Arm
1 = Single
2* = Double
*Not available on SC025.

Special Options
X = No Options

Sensing Position
A = Clamp
B = Unclamp
C = Clamp and Unclamp
D = No Sensing
E = Magnetic Piston - No Sensing

Sensing Type
Standard Cord Set
1 = Hall Effect - PNP (Sourcing)
2 = Hall Effect - NPN (Sinking)
3 = Reed Switch
6 = No Sensing
Quick Disconnect Cord Set
Z = Hall Effect - PNP (Sourcing)
Y = Hall Effect - NPN (Sinking)
X = Reed Switch

See online PDF.

Sensing Kits

Standard Cord Set Switch	Part No.
Hall Effect PNP (Sourcing)	PNP-FL2-00-U
Hall Effect NPN (Sinking)	NPN-FL2-00-U
Reed Switch	REED-FL2-00S

Quick Disconnect Cord Set	Part No.
Hall Effect PNP (Sourcing)	PNP-QDS-M8-U
Hall Effect NPN (Sinking)	NPN-QDS-M8-U
Reed Switch	REED-QDS-M8S
90° 5 meter cable	PXC90
Straight 5 meter cable	PXCST

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