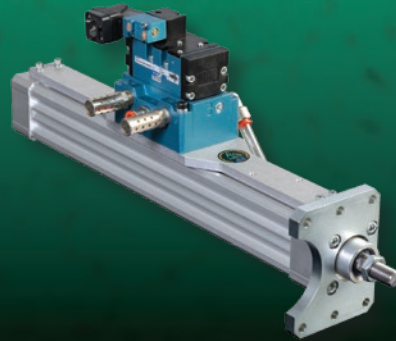
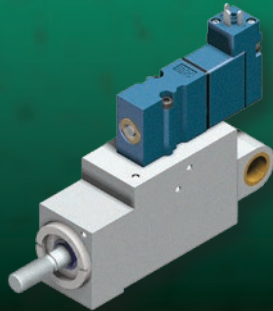
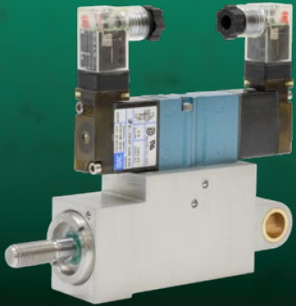


'K' STYLE

DIRECT COMPONENTS



INCREASE PRODUCTION • REDUCE MAINTENANCE • REDUCE DOWNTIME • REDUCE SCRAP

STRETCHING CYLINDERS

TRANSFER ARM HEADS

EJECT SLIDES

We understand

your unique requirements






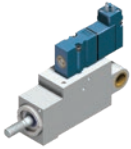


Focused on the specific needs of the plastic packaging industry, PHD offers many spare components for 'S' Style and 'K' Style machines such as stretching cylinders, nozzle and needle cylinders, and transfer arms. PHD also provides the added benefit of unique designs. Our built-to-need designs address your specific application issues.

Our components are the actuators of choice. Designed for long life, PHD products keep your blow molding lines running while increasing productivity and reducing downtime and scrap.

We also offer the added benefit of our rebuild program which refurbishes your existing PHD components, enabling even longer service life and savings.

See page 15 for more information.

'K' Style Component Reference Chart & Contents

STRETCHING CYLINDERS WITH VALVE	PHD MODEL WITH VALVE		PAGE
0-900-99-743-0	BCK1-5-50 x 390-DR-U23 or BCK1-5-50 x 390-DR-U19		3
0-902-52-569-9	BCK1-5-50 x 390-DR-U23 or BCK1-5-50 x 390-DR-U19		
0-902-52-268-9	BCK2-5-50 x 390-DR-U23 or BCK2-5-50 x 390-DR-U19		
0-901-85-956-4	BCK2-5-50 x 390-DR-U23 or BCK2-5-50 x 390-DR-U19		
0-902-18-438-0	BCK2-5-50 x 390-DR-U23 or BCK2-5-50 x 390-DR-U19		
NOZZLE CYLINDERS	PHD MODEL		
High-Pressure Nozzle Bell Seal	ML310864		11
TRANSFER ARMS	PHD MODEL		
Transfer Arm Head	ML311628		11
EJECT SLIDES	PHD MODEL		
25 mm Bore x 25 mm Stroke	ML310656		12
25 mm Bore x 8.5 mm Stroke	ML309880		12
Single Solenoid	ML317407		13
Double Solenoid	ML317408		14

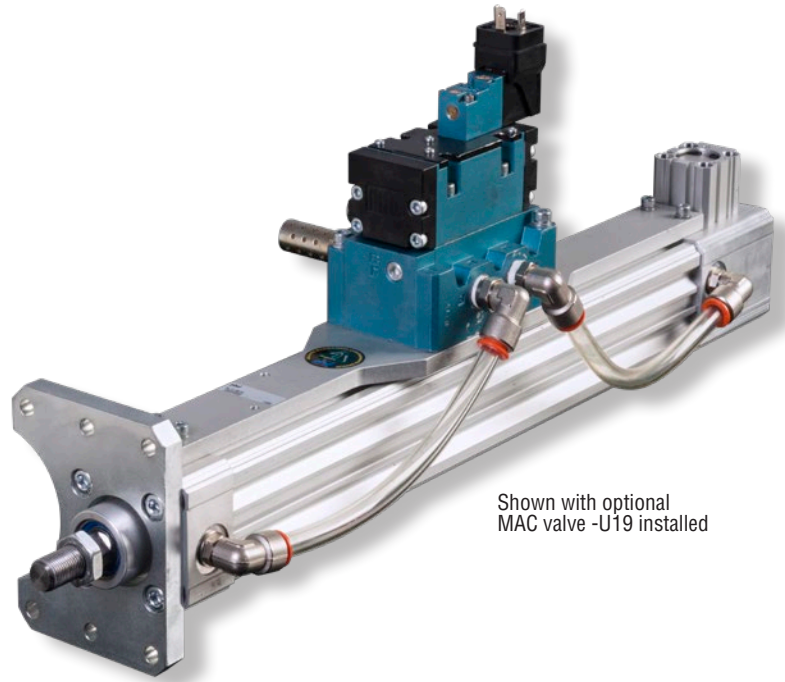
Any marks or names referenced herein are either registered trademarks or trademarks of their respective owners. No association with or endorsement of any company, organization, or product is intended or should be inferred.

© Copyright 2019, by PHD, Inc. All Rights Reserved. Printed in the U.S.A.

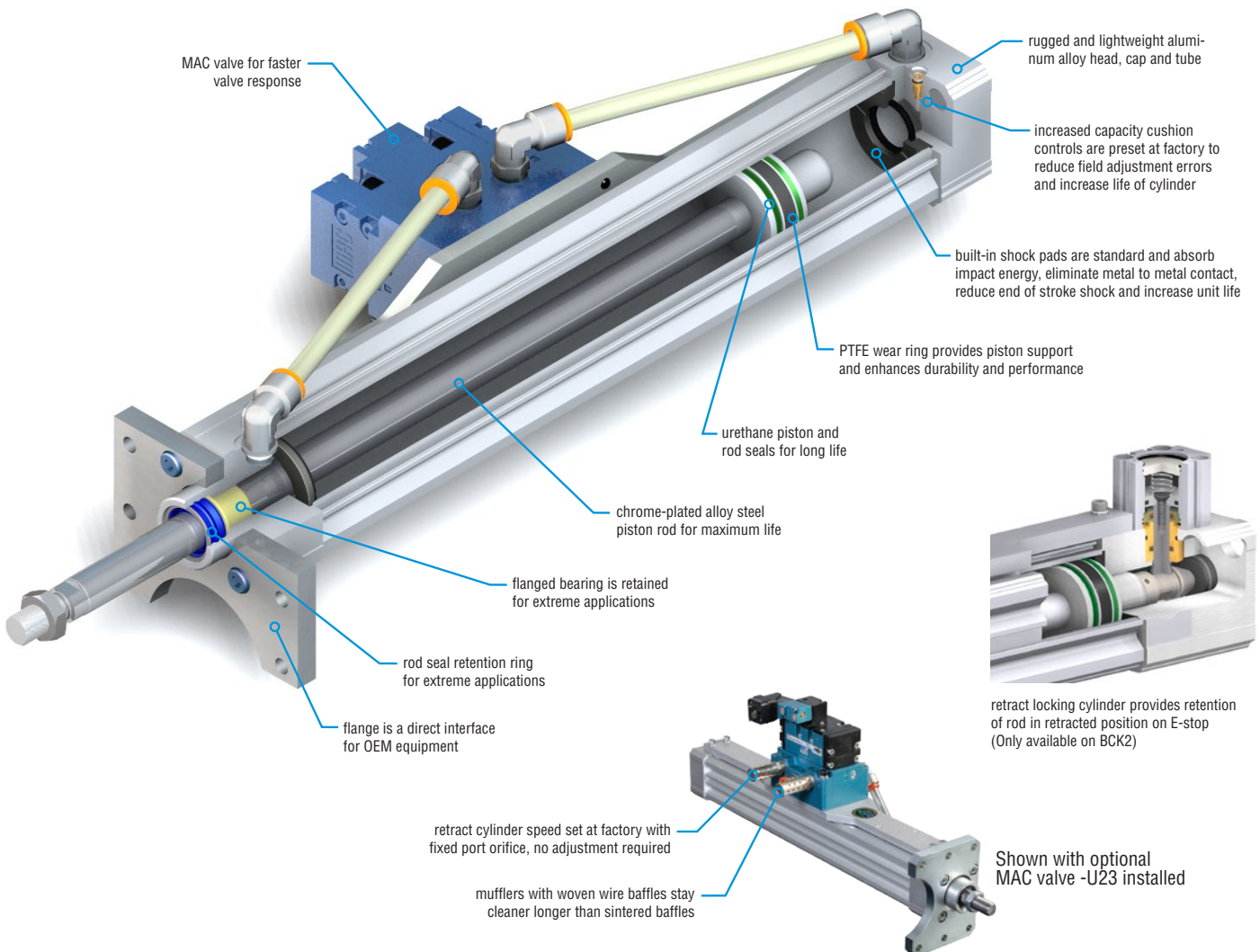
Stretching Cylinder

MAJOR BENEFITS

- Direct OEM replacement
- Single pressure operation
- ISO 2 valve compatible
- Retract cushion control factory set for retract end of stroke deceleration
- Cylinders easily field repairable to maximize investment
- Internal shock pads standard on extend and retract
- Food grade lubrication throughout



Shown with optional MAC valve -U19 installed

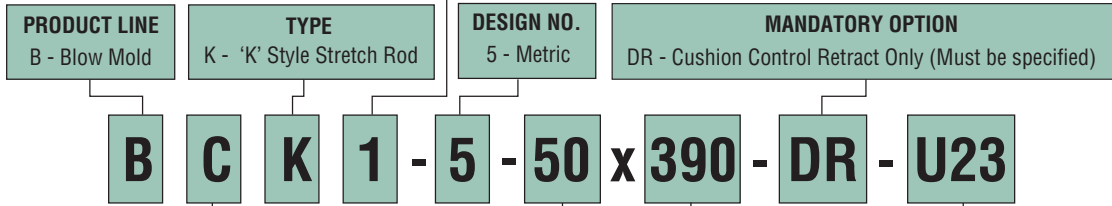


ORDERING DATA: SERIES BCK STRETCHING CYLINDERS

TO ORDER SPECIFY:

Product Line, Series, Type, OEM Cylinder No., Design No., Bore Size, Metric Stroke, Mandatory Option, and Cylinder Options if required.

OEM CYLINDER NO.
 1 - Without retract lock
 0-900-99-743-0 / 0-902-52-569-9
 2 - With retract lock
 0-902-52-268-9 / 0-901-85-956-4 / 0-902-18-438-0



BORE SIZE

BORE		AREA	
(mm)	(in)	(sq mm)	(sq in)
50	1.969	1963	3.05

Contact PHD for smaller or larger bores.

METRIC STROKE

STANDARD STROKE LENGTHS	
BORE (mm)	MAXIMUM STROKE (mm)
50	390

(164 mm = Minimum Stroke in 1 mm Increments)
 Contact PHD for longer strokes.

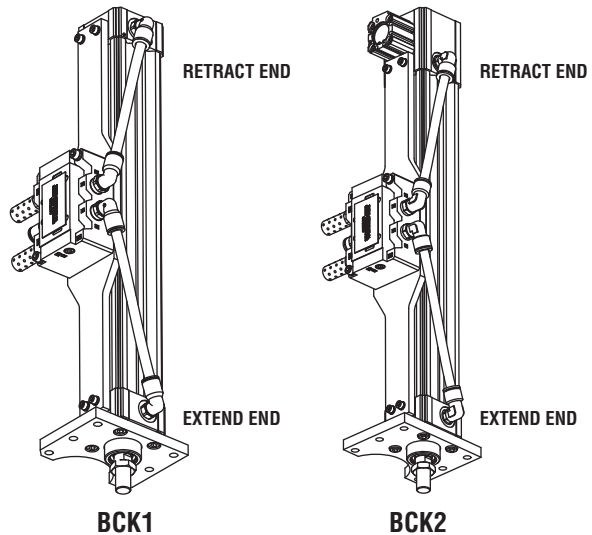
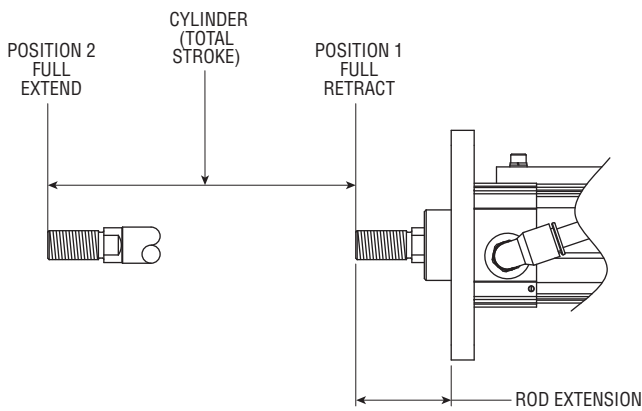
CYLINDER OPTIONS

- K_ - Extra Rod Extension in 1 mm increments
 Length Code (BCKxxx) is
 -K5 = 5 mm, -K17 = 17 mm, etc.
- U19 - MAC ISO 2 Series Valve with DIN Connector on Top*
- U23 - MAC ISO 2 Series Valve with DIN Connector Rotated 90°
- R13 - Rod Eye Attached to Rod End of Cylinder
- L2116 - 16 mm incoming air line (12 mm standard)
- F66 - 6 wrench flats (2 wrench flats standard)*

*Recommended Option

SERIES
 C - Cylinder
 150 psi [10 bar] Air

NOTE: Standard stretching cylinder ordering number is as follows: BCK1-5-50 x 390 - DR (-U19) -U23 or -U19. Options need to be specified for valve to be attached to unit.



ENGINEERING DATA: SERIES BCK STRETCH CYLINDERS

SPECIFICATIONS	IMPERIAL	METRIC
TYPE	Pneumatic Cylinder	
SERIES	BCK Stretch Rod Actuator	
BORE SIZE	1.969 in	50 mm
BORE AREA – EXTEND	3.04 in ²	1963 mm ²
BORE AREA – RETRACT	2.56 in ²	1649 mm ²
THEORETICAL OUTPUT @ 87psi [6 bar]	264.5 lb	1176.6 N
FLUID	Air	
OPERATION	Double Acting	
OPERATING PRESSURE RANGE	7.5 - 150 psi	0.5 - 10 bar
AMBIENT AND FLUID TEMPERATURE	-20° to 180°F	-29° to 82°C
OPERATING PISTON SPEED (TYPICAL)	Factory Set on Retract Cam Controlled on Machine	
CUSHION, RETRACT	Standard (Factory Set)	
LUBRICATION	FDA Regulation 21 CFR 1789.3570	
PORT SIZE	G 1/4	
STROKE	15.354 in	390 mm
STROKE TOLERANCE	+0.079/-0.000 in	+2.0/-0.0 mm
BUMPER	Thermoplastic Polyester Elastomer	
HEADS & CAPS	Anodized Aluminum	
CYLINDER TUBE	Anodized Aluminum	
PISTON ROD	Hard Chrome Plated Steel	
ROD BEARING	Engineered Polymer	
PISTON & ROD SEAL MATERIAL	Urethane	

VALVE SPECIFICATIONS	IMPERIAL	METRIC
SERIES	ISO 2 (ISO 5599/1)	
FUNCTION	5 / 2	
FLUID	Air	
OPERATOR	Single	
PILOT	Internal	
SPOOL RETURN	Air Only	
SOLENOID	24 Vdc (5.4 W)	
VOLTAGE RANGE	-15% to +10% from Nominal	
ELECTRICAL CONNECTOR	DIN 43650, Form A	
MANUAL OPERATOR	Non-locking Recessed	
PILOT EXHAUST	Muffled	
FLOW	3.0 Cv	
LUBRICATION	FDA Regulation 21 CFR 1789.3570	
FILTRATION	40 Micron	
OPERATING PRESSURE RANGE	20 to 150 psi	1.37 to 10 bar
AMBIENT AND FLUID TEMPERATURE	0° to 120°F	-18° to +50°C

ACTUATOR SPEEDS

Factory set on retract. Cam controlled velocity on extend by machine.

MAXIMUM ALLOWABLE KINETIC ENERGY

Series BCK Cylinder is provided with a cushion retract. Its maximum kinetic energy rating is 60.5 in-lb [6.84 Nm].

LIFE EXPECTANCY

Series BCK Cylinders have been designed for over 20 million trouble-free cycles.

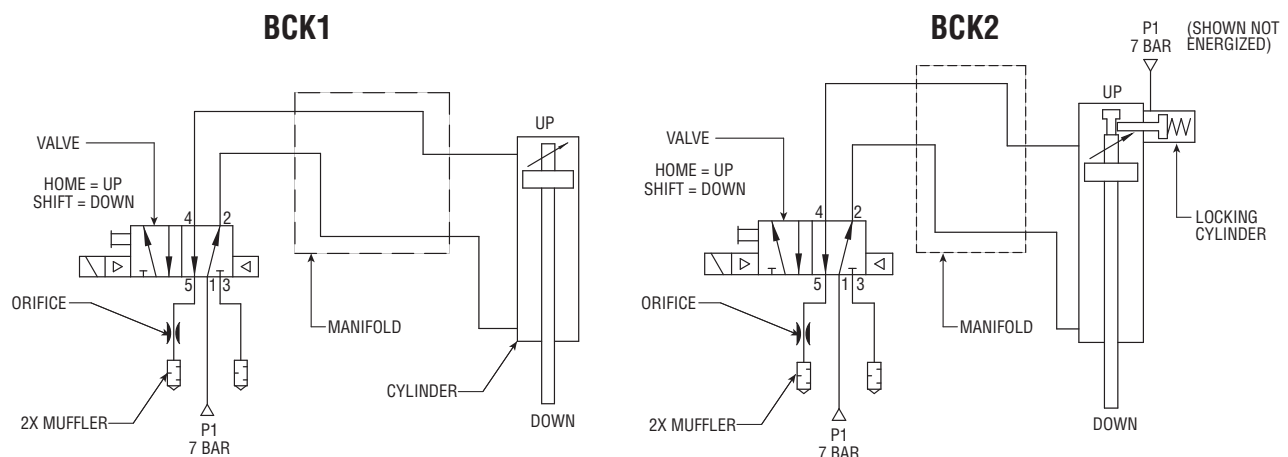
LUBRICATION

Series BCK Cylinders are lubricated internally at the factory for the life of the cylinder. PHD uses FDA food grade lubrication per regulation 21 CFR 1789.3570. Any other lubrication applied to the cylinder may decrease the life expectancy.

MAINTENANCE

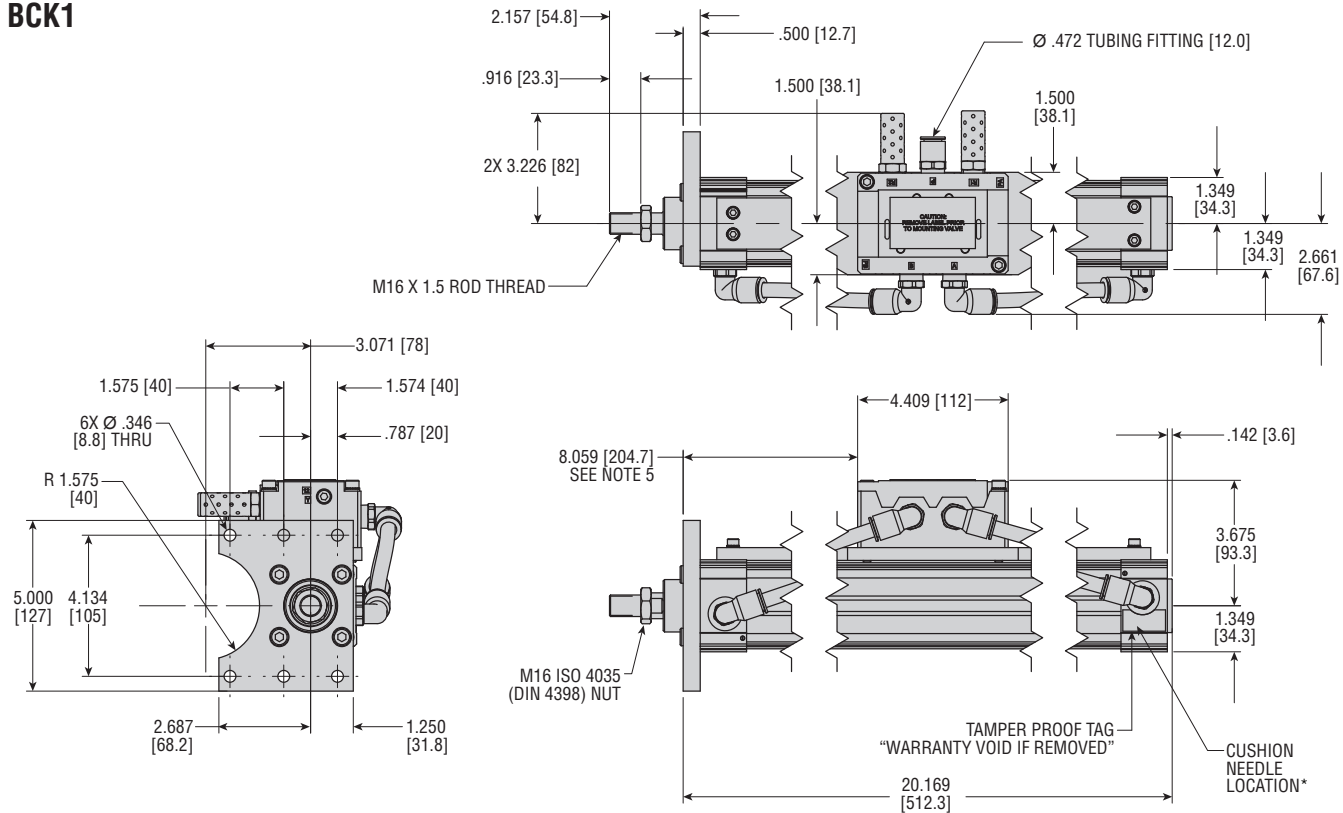
As with most PHD products, these cylinders are field repairable. Repair kits, piston and rod assemblies, and main structural components are available as needed for extended service.

SCHEMATIC DIAGRAMS



DIMENSIONS: SERIES BCK STRETCHING CYLINDERS

BCK1

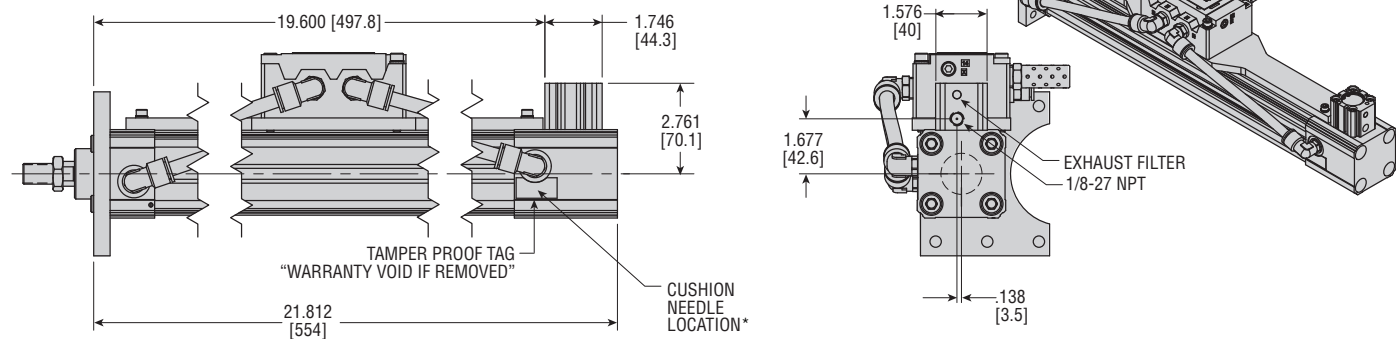


NOTES:

- 1) UNIT SHOWN AT 390 mm TRAVEL
- 2) DIMENSIONS IN [] INDICATE VALUES IN mm
- 3) MAXIMUM STROKE IS 15.354 [390]
- 4) MINIMUM STROKE IS 6.457 [164]
- 5) FOR STROKES SHORTER THAN 390 SUBTRACT .019 [.5 mm] FOR EACH 1 mm OF STROKE REDUCTION.

CAUTION: * A tamper evident tag is placed over the cushion control needle cavity. Removal of the tag and/or adjustment of the cushion needle will void the warranty of the Series BCK Cylinder.

BCK2 Refer to BCK1 Cylinder above for all other dimensions not shown



NOTES:

- 1) UNIT SHOWN AT 390 mm TRAVEL
- 2) DIMENSIONS IN [] INDICATE VALUES IN mm
- 3) MAXIMUM STROKE IS 15.354 [390]
- 4) MINIMUM STROKE IS 6.457 [164]

CAUTION: * A tamper evident tag is placed over the cushion control needle cavity. Removal of the tag and/or adjustment of the cushion needle will void the warranty of the Series BCK Cylinder.

All dimensions are reference only unless specifically toleranced.

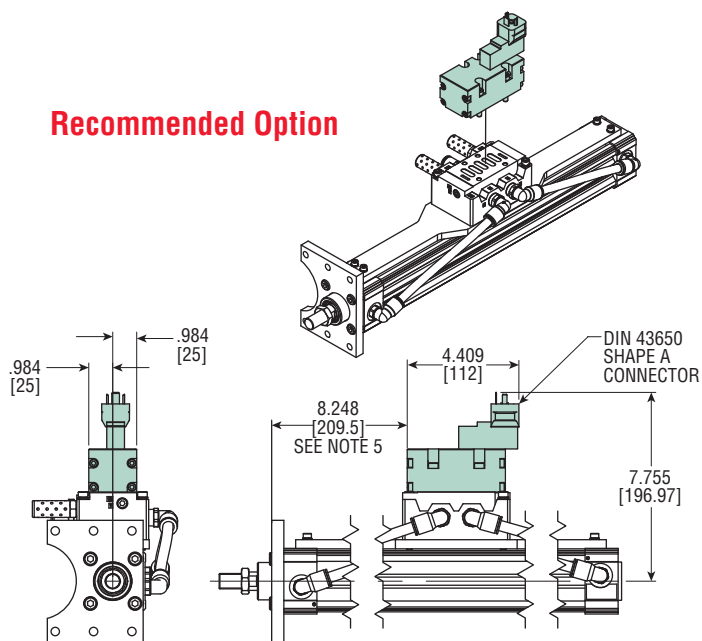
OPTIONS: SERIES BCK STRETCHING CYLINDERS

U19 MAC ISO 2 SERIES VALVE TOP ORIENTED DIN CONNECTION

A MAC ISO 2 Series valve is optionally provided and assembled to the unit by specifying the -U19 option. The valve is equipped with a top oriented DIN 43650, shape A connector, and is lubricated with FDA Regulation 21 CFR 1789.3570 food grade lubrication. Refer to valve specification chart on page 5.

NOTES:

- 1) UNIT SHOWN AT 390 mm TRAVEL
- 2) DIMENSIONS IN [] INDICATE VALUES IN mm
- 3) MAXIMUM STROKE IS 15.354 [390]
- 4) MINIMUM STROKE IS 6.457 [164]
- 5) FOR STROKES SHORTER THAN 390 SUBTRACT 0.019 [0.5 mm] FOR EACH 1 mm OF STROKE REDUCTION.



U23 MAC ISO 2 SERIES VALVE SIDE ORIENTED DIN CONNECTION (OEM ORIENTATION)

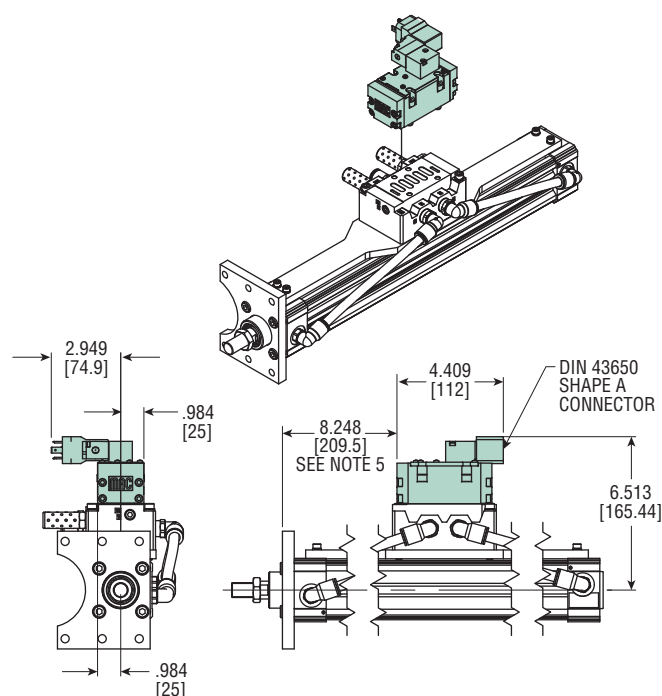
A MAC ISO 2 Series valve with side oriented DIN connection is an option and assembled to the unit by specifying the -U23 option. The valve is equipped with a DIN 43650, shape A connector, and is lubricated with FDA Regulation 21 CFR 1789.3570 food grade lubrication. Refer to valve specification chart on page 5.

NOTES:

- 1) UNIT SHOWN AT 390 mm TRAVEL
- 2) DIMENSIONS IN [] INDICATE VALUES IN mm
- 3) MAXIMUM STROKE IS 15.354 [390]
- 4) MINIMUM STROKE IS 6.457 [164]
- 5) FOR STROKES SHORTER THAN 390 SUBTRACT 0.019 [0.5 mm] FOR EACH 1 mm OF STROKE REDUCTION.



CAUTION: When attaching the -U23 Option to the cylinder manifold, the two M3 SHCS holding the pilot block to the valve body must be removed in order to properly attach the valve to the manifold. If the M6 SHCS are not properly torqued, the valve may leak and the SHCS will damage both the pilot block and the valve body.

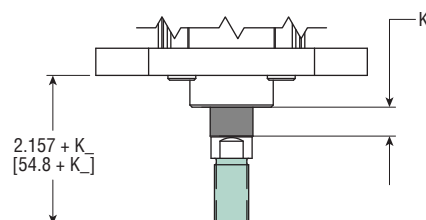


K EXTRA ROD EXTENSION

Extra rod extension can be achieved by specifying the option -K followed by the length code. Rod extension is available in 1 mm increments. Contact PHD for other combinations.

NOTES:

- 1) -K_n = EXTRA ROD EXTENSION IN 1 mm INCREMENT LENGTHS
CODE EXAMPLES: -K5 = 5 mm EXTENSION
-K15 = 15 mm EXTENSION
- 2) ROD EXTENSION SHOWN AT -K15 (15 mm)

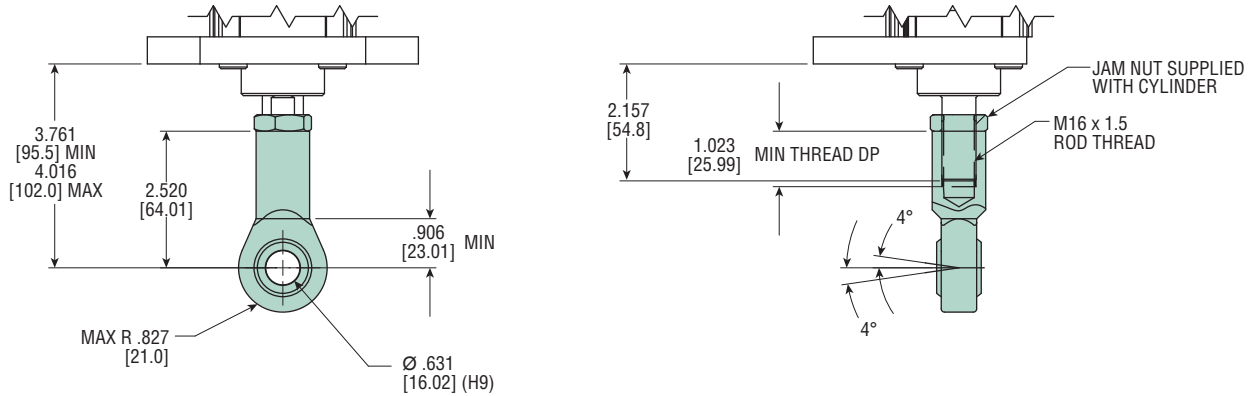


All dimensions are reference only unless specifically toleranced.

OPTIONS: SERIES BCK STRETCHING CYLINDERS

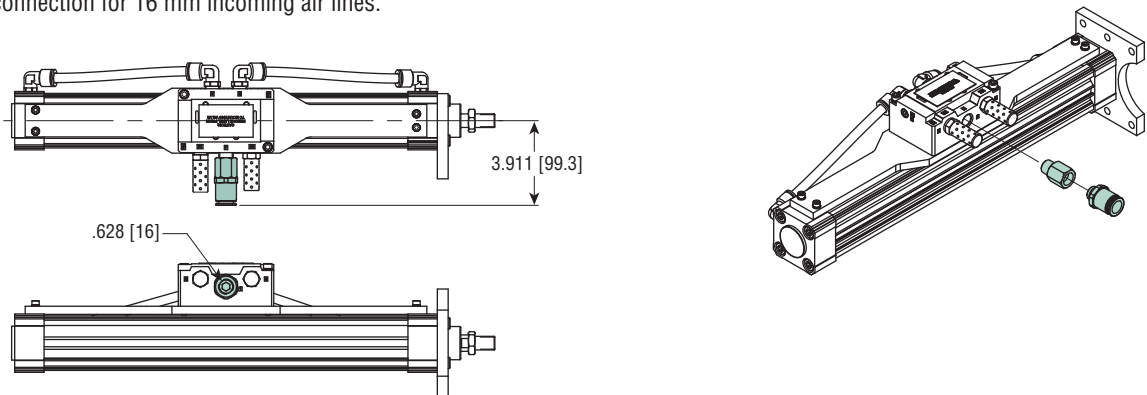
R13 ROD EYE MOUNTING WITH SPHERICAL BEARING (DIN 8139)

This option includes a rod eye attached to the rod end of the cylinder.



L2116 16 mm INCOMING AIR FITTING

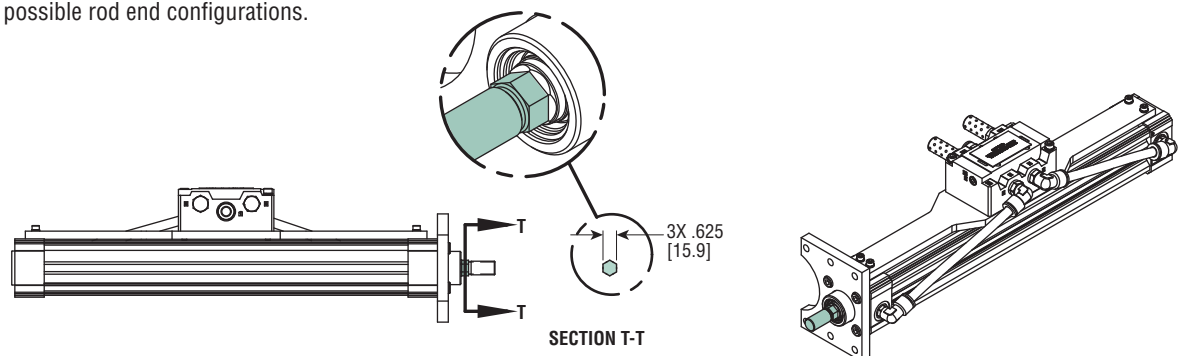
This option provides connection for 16 mm incoming air lines.



F66 6 WRENCH FLATS

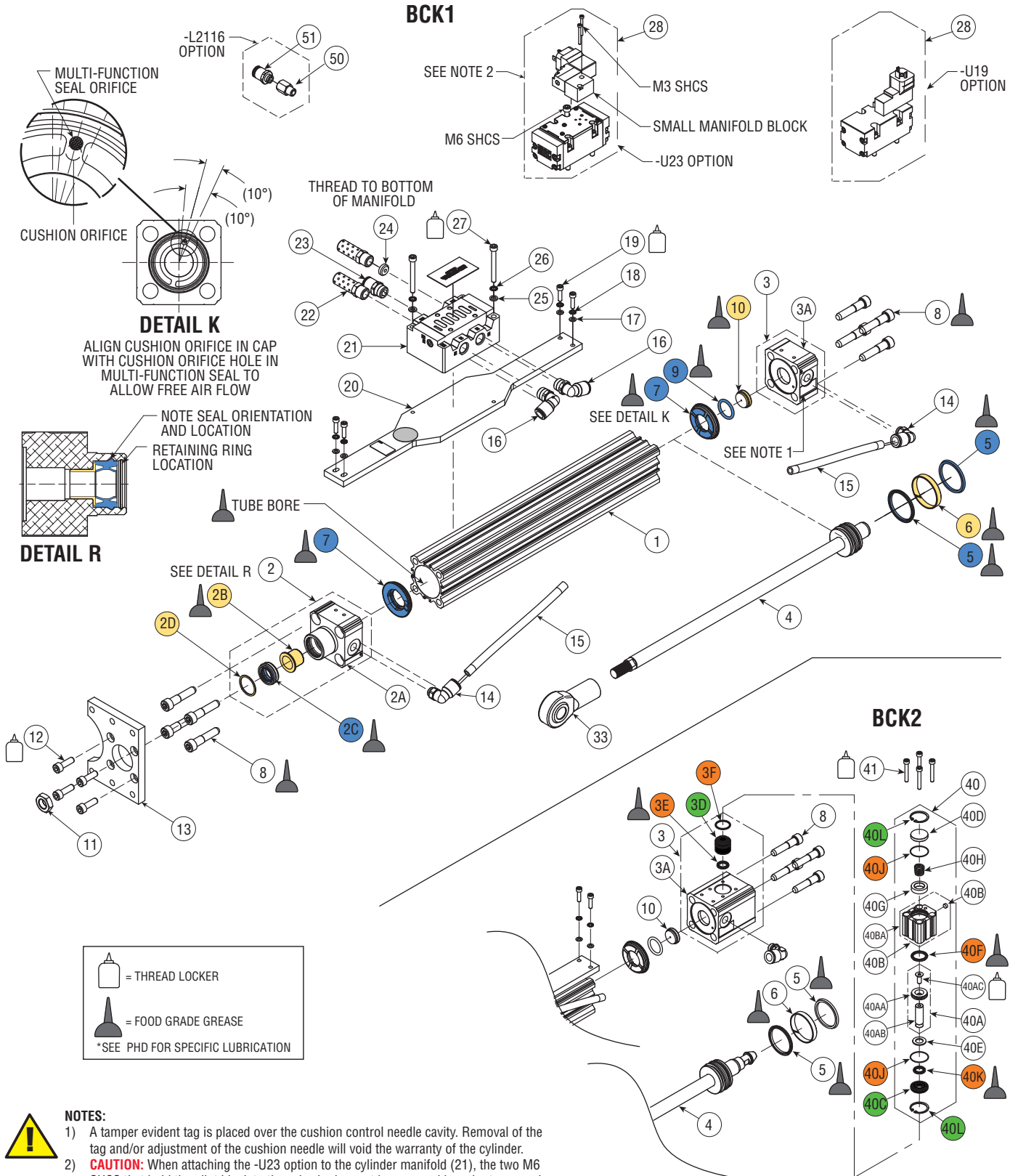
Extra wrench flats can be achieved by specifying this option. Contact PHD for other possible rod end configurations.

Recommended Option



All dimensions are reference only unless specifically tolerated.

PARTS LIST & REPAIR KITS: SERIES BCK STRETCHING CYLINDERS



= THREAD LOCKER
 = FOOD GRADE GREASE
 *SEE PHD FOR SPECIFIC LUBRICATION






NOTES:



- 1) A tamper evident tag is placed over the cushion control needle cavity. Removal of the tag and/or adjustment of the cushion needle will void the warranty of the cylinder.
- 2) **CAUTION:** When attaching the -U23 option to the cylinder manifold (21), the two M6 SHCS that hold the pilot block to the valve body must be removed in order to properly attach the valve to the manifold. If the M6 SHCS are not properly torqued, the valve may leak and the SHCS will damage both the pilot block and the valve body.

PARTS LIST & REPAIR KITS: SERIES BCK STRETCHING CYLINDERS

KEY	PART DESCRIPTION	BCK1 & BCK2
1	Finished Tube	Full unit description required followed by -H1300
2	Head Assembly	Full unit description required followed by -H1100
2A	Head	Sold as part of Head Assembly
2B	Rod Bushing	Sold as part of Head Assembly, Sold as part of Repair Kit (-H9010*)
2C	Rod Seal	Sold as part of Head Assembly, Sold as part of Seal Kit (-H9000*) and Repair Kit (-H9010*)
2D	Retaining Ring	15484-119
3	Cap Assembly	Full unit description required followed by -H1200
3A	Cap	Sold as part of Cap Assembly
3D	Bushing	Sold as part of Cap Assembly, Seal Kit (-H9004*) and Repair Kit (H9014*)
3E	Rod Seal	Sold as part of Cap Assembly & Seal Kit (-H9004*)
3F	O-Ring Seal	Sold as part of Cap Assembly & Seal Kit (-H9004*)
4	Piston & Rod Assembly	Full unit description required followed by -H1000
5	Piston Seal	Sold as part of Seal Kit (-H9000*)
6	Wear Ring	Sold as part of Repair Kit (-H9010*)
7	Multi-function Impact Seal	Sold as part of Seal Kit (-H9000*) and Repair Kit (-H9010*)
8	Custom Shoulder Bolt	61933-1-01
9	Cushion O-Ring Seal	Sold as part of Seal Kit (-H9000*) and Repair Kit (-H9010*)
10	Cap Shock Pad	84507
11	Jam Nut	Full unit description required followed by -H2001
12	Socket Head Cap Screw	61054-141
13	Flange	Full unit description required followed by -H2005
14	1/4 BSPP Elbow Fitting	74345-071
15	Finished Urethane Tubing	Full unit description required followed by -H4210
16	3/8 NPT Elbow Fitting	74345-183
17	Metric Washer	59022-005-1
18	Serrated Safety Washer	84141-007-02
19	Socket Head Cap Screw	61054-102
20	Mounting Plate	Full unit description required followed by -H4810
21	3/8 NPT ISO 2 Manifold	83421
22	3/8 NPT Muffler	83424
23	3/8 NPT Straight Fitting	74345-135
24	Port Orifice	85268
25	Metric Washer	59022-006-1
26	Serrated Safety Washer	84141-008-02
27	Socket Head Cap Screw	61054-124
50	Fitting Adaptor	86873
51	16 mm Tube Fitting	61734-138

KEY	PART DESCRIPTION	BCK2
40	Locking Cylinder Assembly	85073
40A	Piston & Rod Assembly	86849
40AA	Piston	Sold as part of Piston & Rod Assembly
40AB	Rod	Sold as part of Piston & Rod Assembly
40AC	Flat Head Cap Screw	Sold as part of Piston & Rod Assembly
40B	Body Assembly	85075
40BA	Body	Sold as part of Body Assembly
40BB	Exhaust Filter	Sold as part of Body Assembly
40C	Bushing	Sold as part of Seal Kit (-H9004*) and Repair Kit (H9014*)
40D	Plug	73878
40E	Shock Pad	53803
40F	Piston Seal	Sold as part of Seal Kit (-H9004*) and Repair Kit (H9014*)
40G	Stop Tube	86846
40H	Compression Spring	5168-002
40J	O-Ring Seal	Sold as part of Seal Kit (-H9004*) and Repair Kit (H9014*)
40K	Rod Seal	Sold as part of Seal Kit (-H9004*) and Repair Kit (H9014*)
40L	Retaining Ring	Sold as part of Repair Kit (H9014*)
41	Socket Head Cap Screw	61054-106

BCK1 & BCK2 KIT DESCRIPTION	KIT NUMBER	COLOR CODE
Seal Kit* (Main Cylinder Only)	-H9000*	
Repair Kit* (Main Cylinder Only)	-H9010*	
Rod Eye Mounting Kit	52493-03-1	

BCK2 KIT DESCRIPTION	KIT NUMBER	COLOR CODE
Seal Kit* (Retract Lock Cylinder Only)	-H9004*	
Repair Kit* (Retract Lock Cylinder Only)	-H9014*	

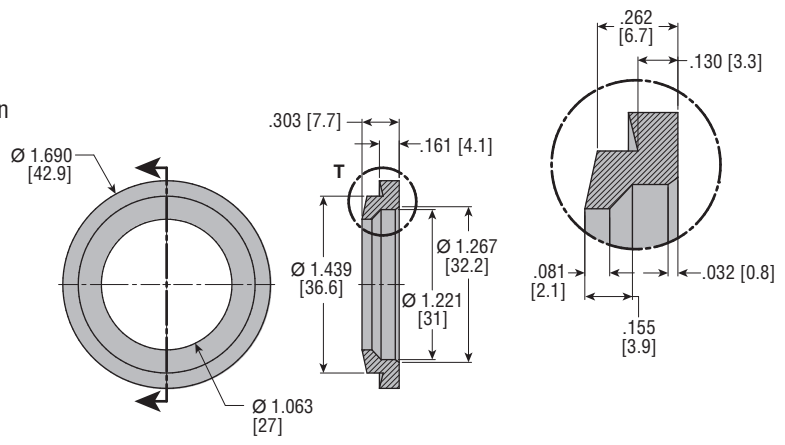
NOTE: *Full unit description required (followed by -Hxxxx)

KEY	OPTION	PART NUMBER
28	-U19 (ISO 2 Valve, Connector out Top)	78212
28	-U23 (ISO 2 Valve, Connector out Side)	83392
33	-R13 (See Rodeye Kit Number)	—
50	Fitting Adaptor	86873
51	16 mm Tube Fitting	61734-138

ML310864

MAJOR BENEFITS

- FDA material
- Longer life than OEM solution

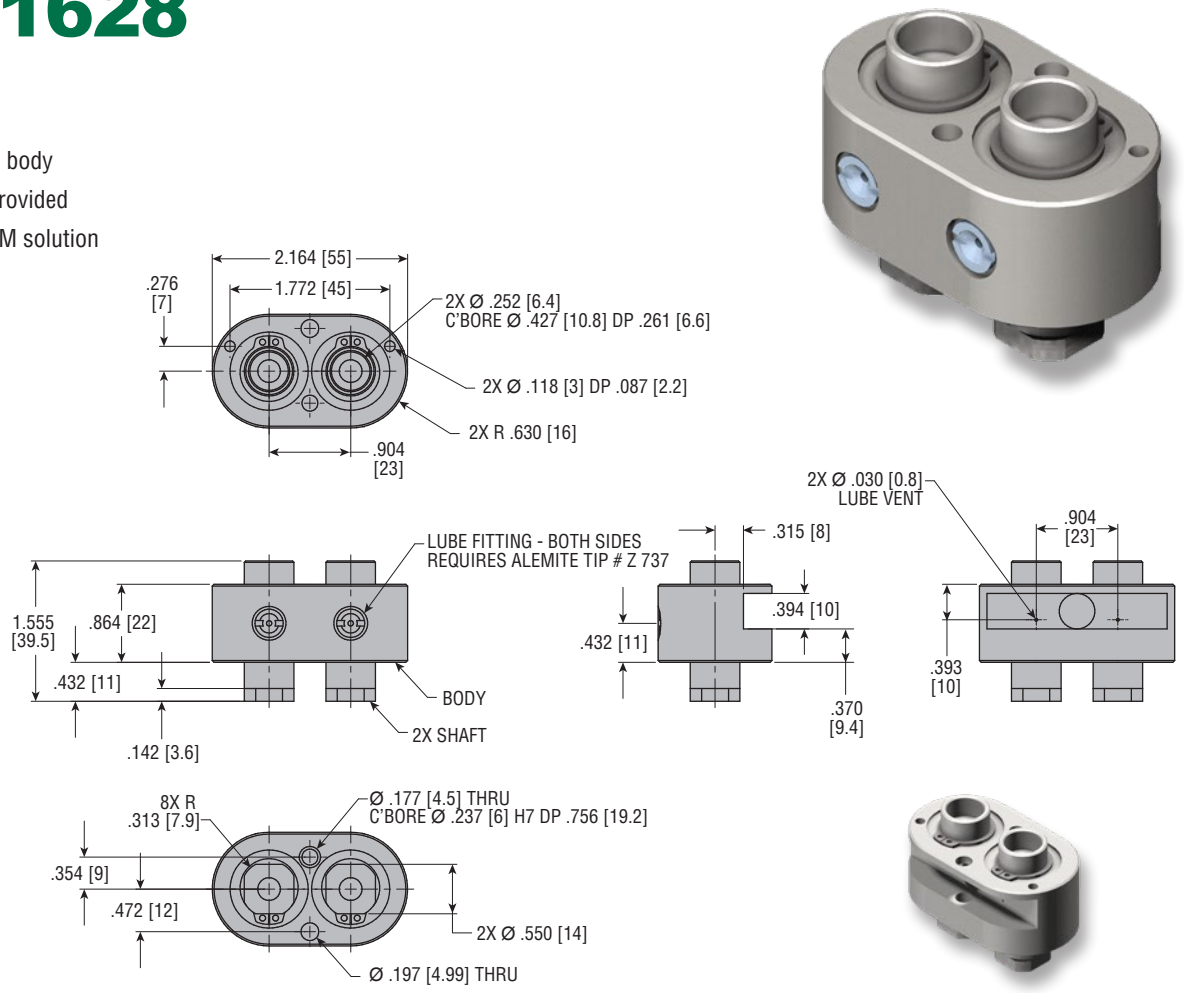


Transfer Arm Head

ML311628

MAJOR BENEFITS

- Hardened tool steel body
- Lubrication ports provided
- Longer life than OEM solution

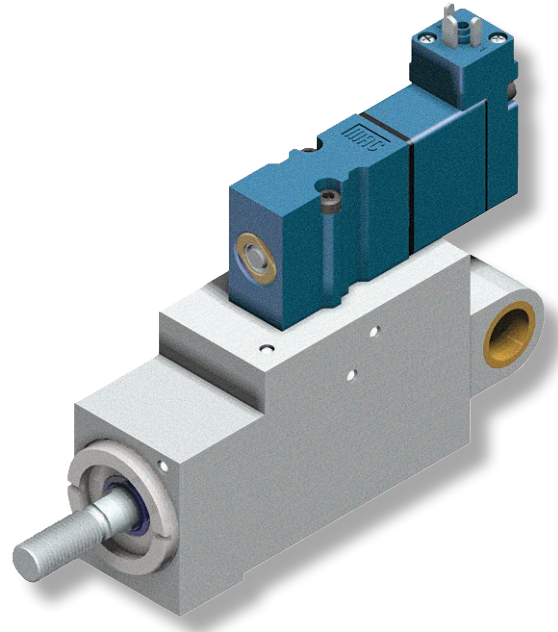


All dimensions are reference only unless specifically toleranced.

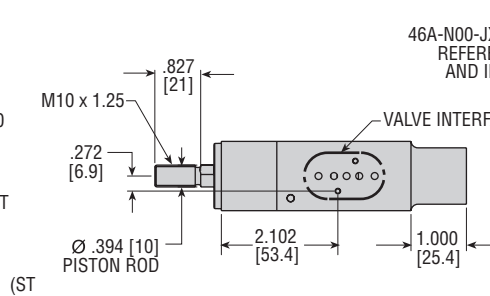
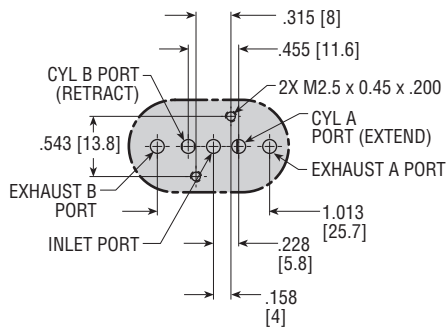
ML309880 (25x8.5) ML310656 (25x25)

MAJOR BENEFITS

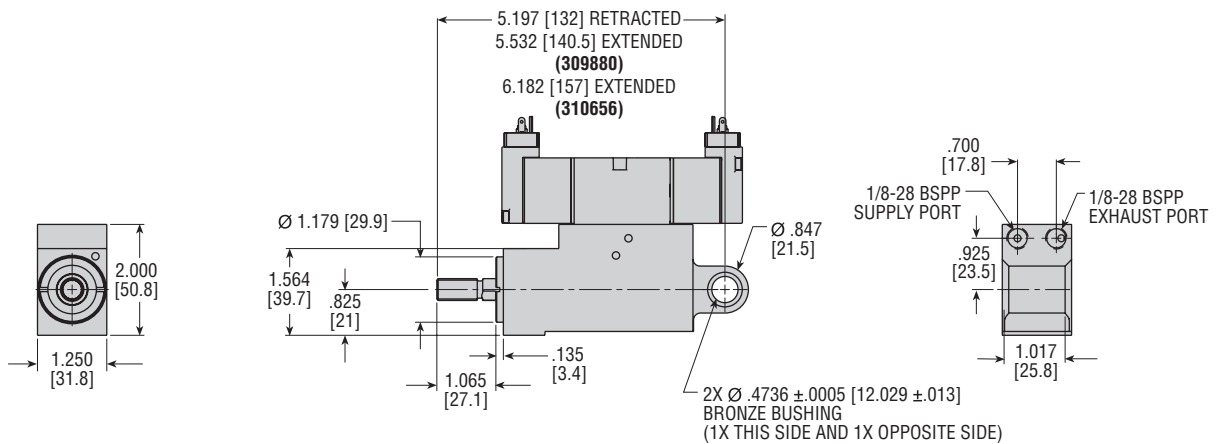
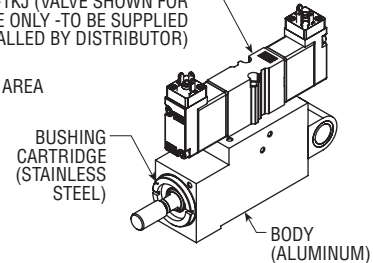
- Provides rapid repeatable ejection function due to MAC valve design and PHD cylinder.
- High kinetic energy capacity
- Provides faster delivery times than OEM product
- In many cases lower cost solution than OEM product
- Intended for high speed part rejection



VALVE INTERFACE AREA DETAIL



MAC VALVE PER 46A-N00-JXX0-1KJ (VALVE SHOWN FOR REFERENCE ONLY - TO BE SUPPLIED AND INSTALLED BY DISTRIBUTOR)



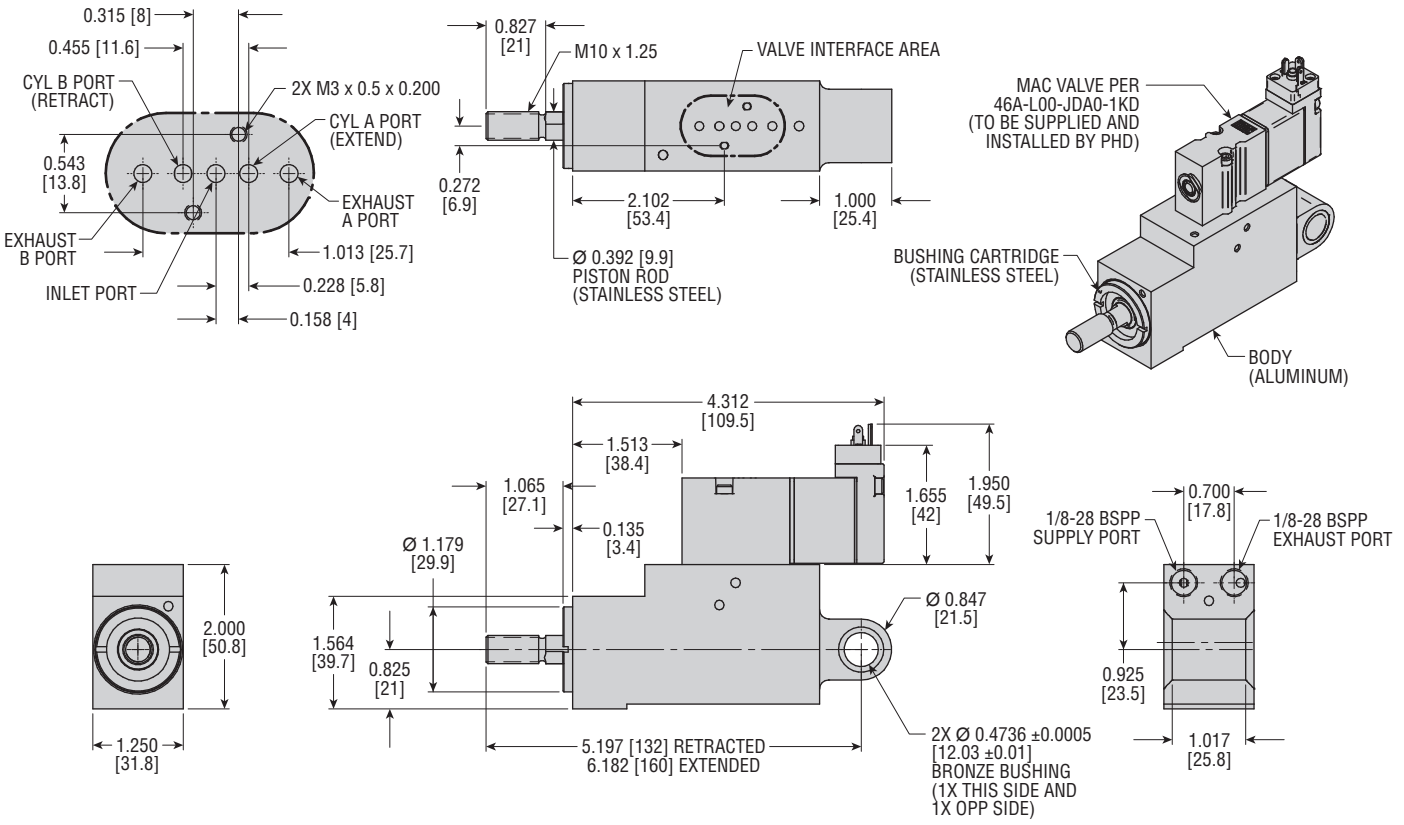
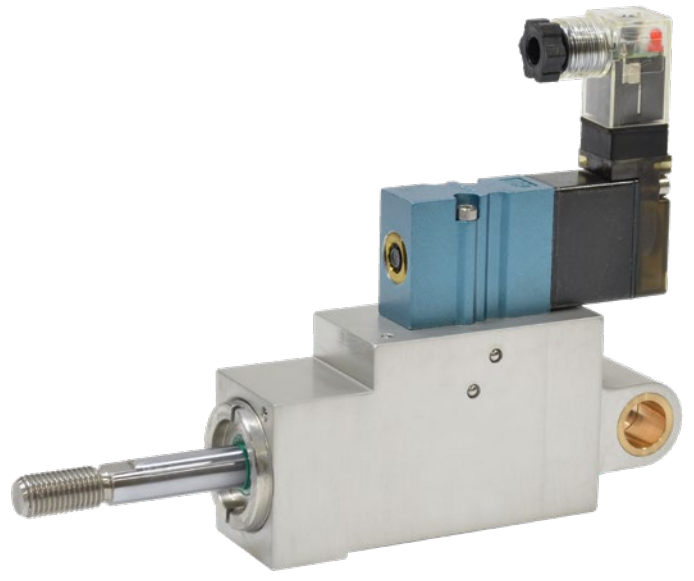
NOTE: UNIT TO ACCEPT SERIES 46 BASE MOUNT MAC VALVE PER MAC PART# 46A-N00-JXX0-1KJ.

All dimensions are reference only unless specifically tolerated.

ML317407

MAJOR BENEFITS

- Provides rapid repeatable ejection function due to MAC valve design and PHD cylinder.
- High kinetic energy capacity
- Provides faster delivery times than OEM product
- Intended for high speed part rejection
- Unit comes with 25 mm bore x 25 mm stroke



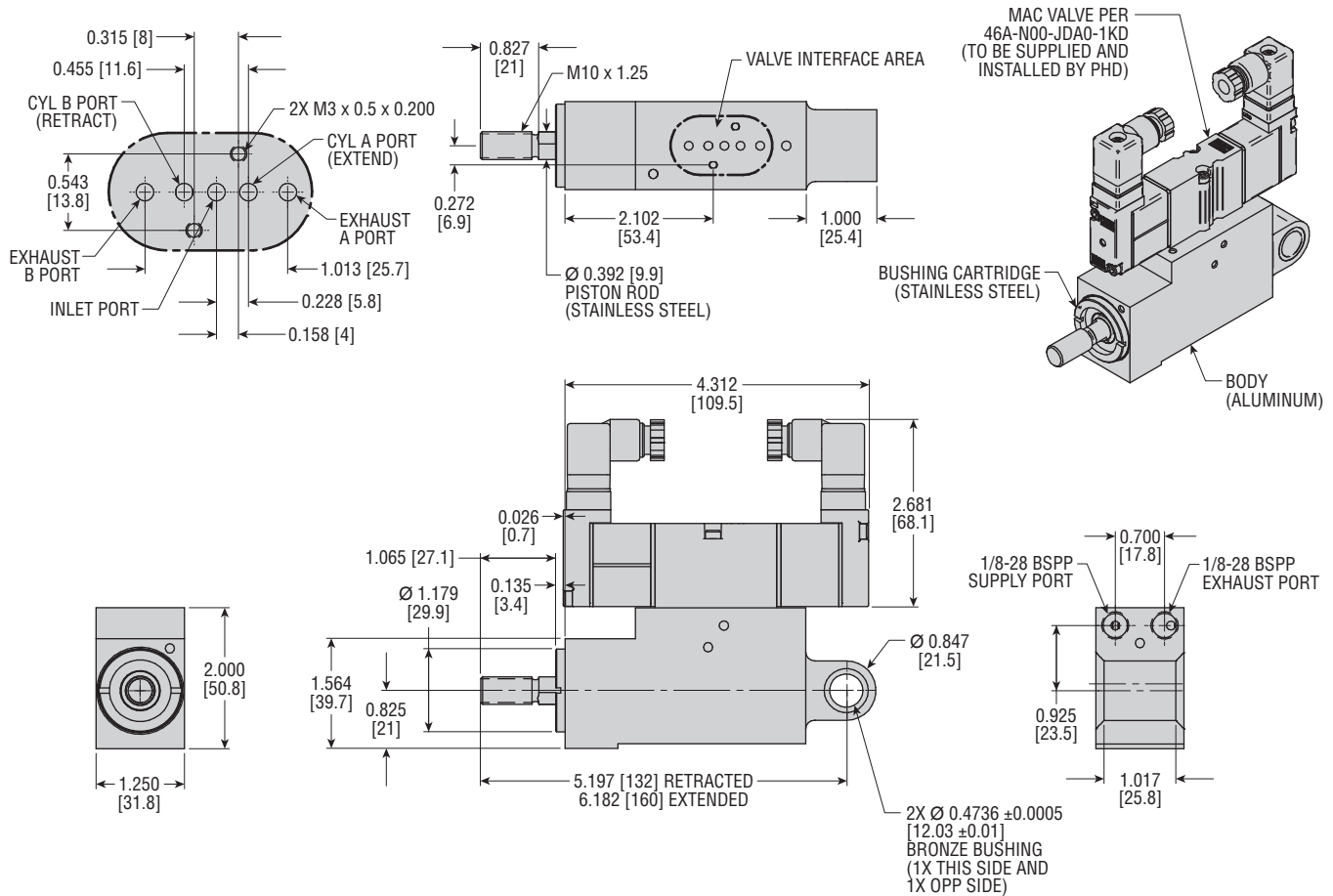
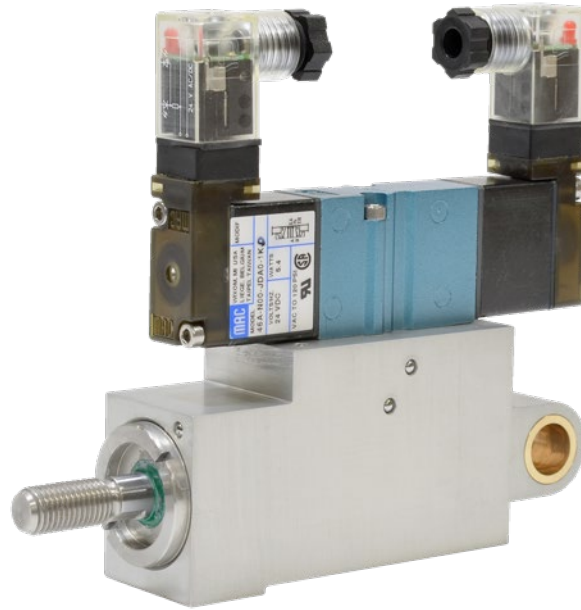
All dimensions are reference only unless specifically toleranced.

Eject Slide

ML317408

MAJOR BENEFITS

- Provides rapid repeatable ejection function due to MAC valve design and PHD cylinder.
- High kinetic energy capacity
- Provides faster delivery times than OEM product
- Intended for high speed part rejection
- Unit comes with 25 mm bore x 25 mm stroke



All dimensions are reference only unless specifically tolerated.

Rebuild Program

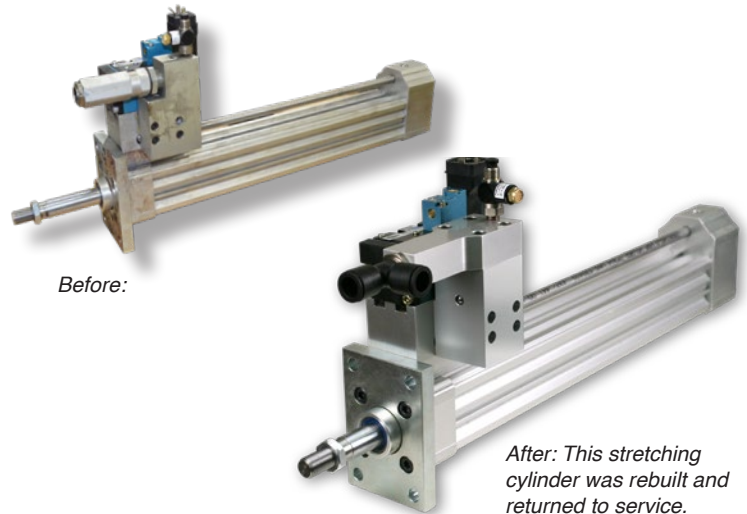
**REBUILD
REPAIR
RECYCLE**

**Return your old units
for rebuilding**



**Get a 12 Month
“Like New” Warranty**

*Plastic Packaging Components such as
Stretching Cylinders, Transfer Arms,
Blow Nozzles, Filler Cylinders, Slip Sheet
Grippers, and Eject Slides are rebuildable.*



Before:

After: This stretching cylinder was rebuilt and returned to service.

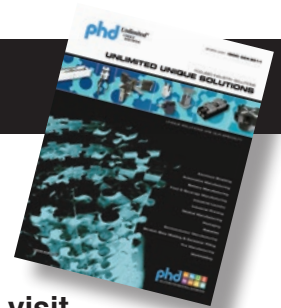
- ➔ PHD's Rebuild Program refurbishes your existing PHD products with all new wear items.
- ➔ Rebuilt units offer the same PHD quality that you're used to, but for a fraction of the cost of a new unit, reducing your total cost of ownership.
- ➔ Rebuilt units are placed back into service, thus reducing your total cost and saving valuable components from scrap.
- ➔ All PHD factory rebuilt units receive a 12 month "like new" warranty.

UNIQUE SOLUTIONS® SPECIAL REQUIREMENTS



PHD Unlimited Unique Solutions® designs and manufactures units to meet the special requirements of our customers. We welcome and encourage requests for specialized products, regardless of quantity or frequency of order. Our solutions range from one-time-only units to high quantity requirements. With over 30,000 designs and over 100,000 quotes already in our database, we can provide most quotes within eight working hours. When it comes to delivery, PHD is the best. Give us a call or go online and see how we can become your engineering partner.

www.phdinc.com/unlimited/quote



**To request a free brochure, visit
www.phdinc.com/resources/inforequest/**

Capabilities

- Most quotes delivered within eight working hours
- Dedicated application assistance
- 24 hours a day, 7 days a week service
- Fast delivery and competitive pricing
- Separate unique solutions engineering and manufacturing areas dedicated to our customers, ensuring prompt quotes and dependable delivery
- Over 30,000 unique solutions provided and over 100,000 quotes in our database

FILLING

2 Position Filler Cylinder

'K' Style spare component
55 & 60 mm bolt spacing
Replaces failure-prone diaphragm with simple piston design



ML31337B,
ML31282B

Series FCB Filler Cylinder

'K' Style spare component
Reliable, field-tested design provides consistent performance
Food grade seal



Machine Lift Cylinder

Used on 'K' Style volumetric filler machines
40 mm bore x 25 mm stroke
Food grade seals
Stainless construction
Hygienic design for washdown



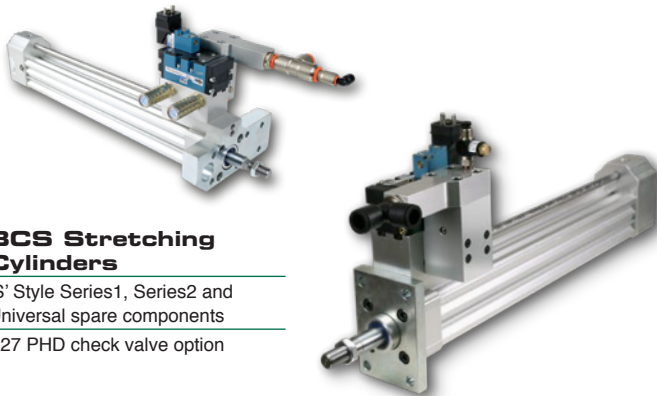
To request more literature, visit www.phdinc.com/resources/inforequest



'S' STYLE

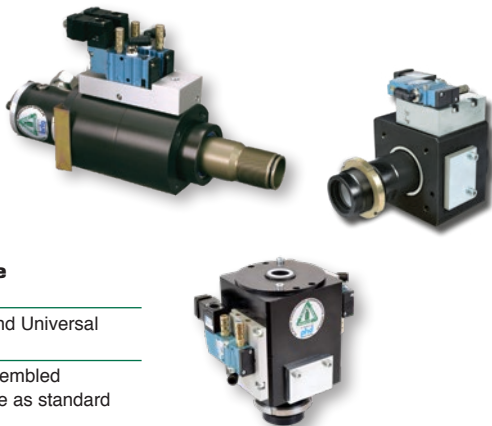
BCS Stretching Cylinders

'S' Style Series1, Series2 and Universal spare components
X27 PHD check valve option



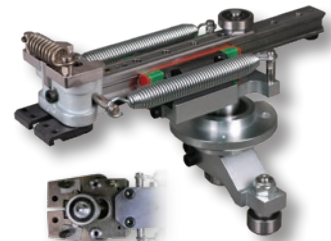
BCZ Nozzle Cylinders

'S' Style Series2 and Universal spare components
Valve manifold assembled to cylinder available as standard



BST1 Transfer Arm

'S' Style Series1 spare component
Significantly more robust and precise than other transfer arms
Designed to operate over 20 million cycles



BST Transfer Arm Preferential Head

BST2 Transfer Arm

'S' Style Series2 spare component
Vertical height adjustment eliminates need for shims
Designed to operate over 20 million cycles



Preform/ Bottle Eject Slide

'S' Style Series2 spare component
Consistent preform/bottle ejection
Minimizes stress on transfer arm jaws

