

BCZ2

CSD AND HR NOZZLE CYLINDER

Major Benefits

- PHD Cylinder mounts into the same space and bolt patterns.
- Provides significantly longer life and reduces maintenance and downtime.
- Internal shock pads are standard, eliminating metal-to-metal contact.
- Cylinders are easily field repairable, maximizing your investment.
- Consult PHD for other standard and custom options available

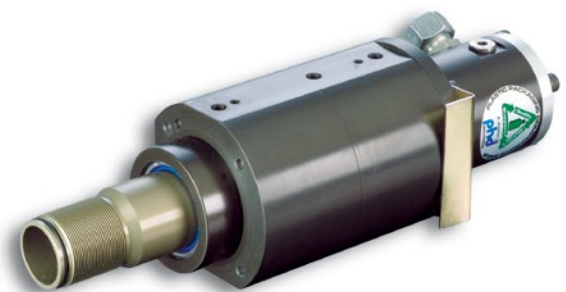
CSD Nozzle Cylinder



MODEL BCZ2S-8-80x45 CYLINDER

Component for 'S' style model Series2 machines.

HR Nozzle Cylinder



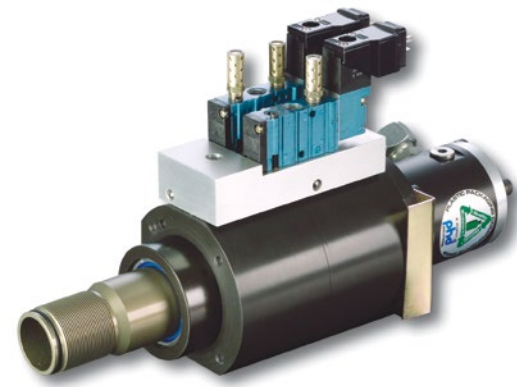
MODEL BCZ2D-8-80x43 CYLINDER

Component for 'S' style model Series2 machines.



MODEL BCZ2S-8-80x45-U22 CYLINDER

Component for 'S' style model Series2 machines.
Valve manifold provides exceptional response time.

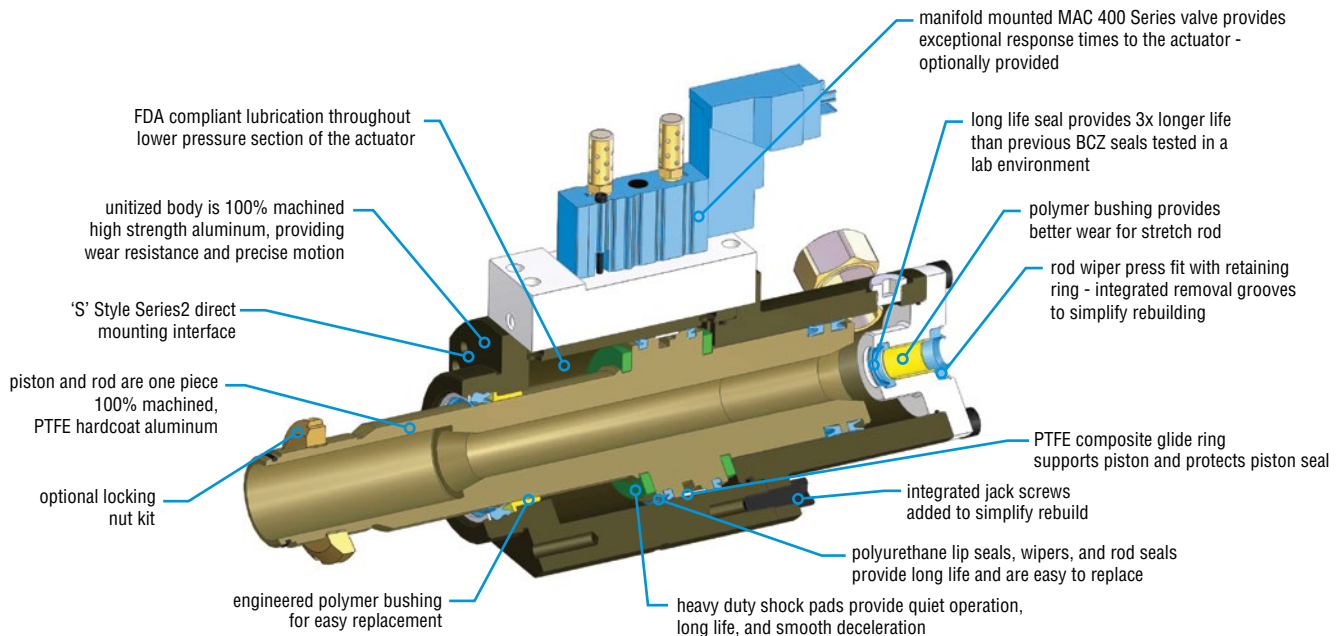


MODEL BCZ2D-8-80x43-U22 CYLINDER

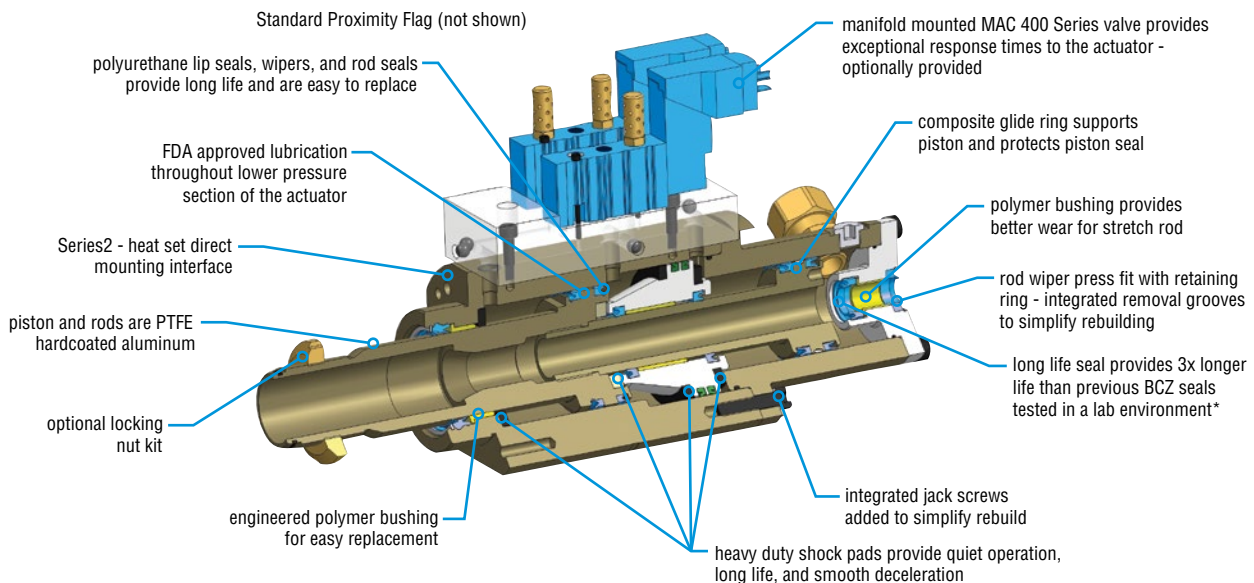
Component for 'S' style model Series2 machines.
Valve manifold provides exceptional response time.

CUTAWAY VIEWS: SERIES BCZ2 NOZZLE CYLINDER

CSD NOZZLE CYLINDER



HR NOZZLE CYLINDER

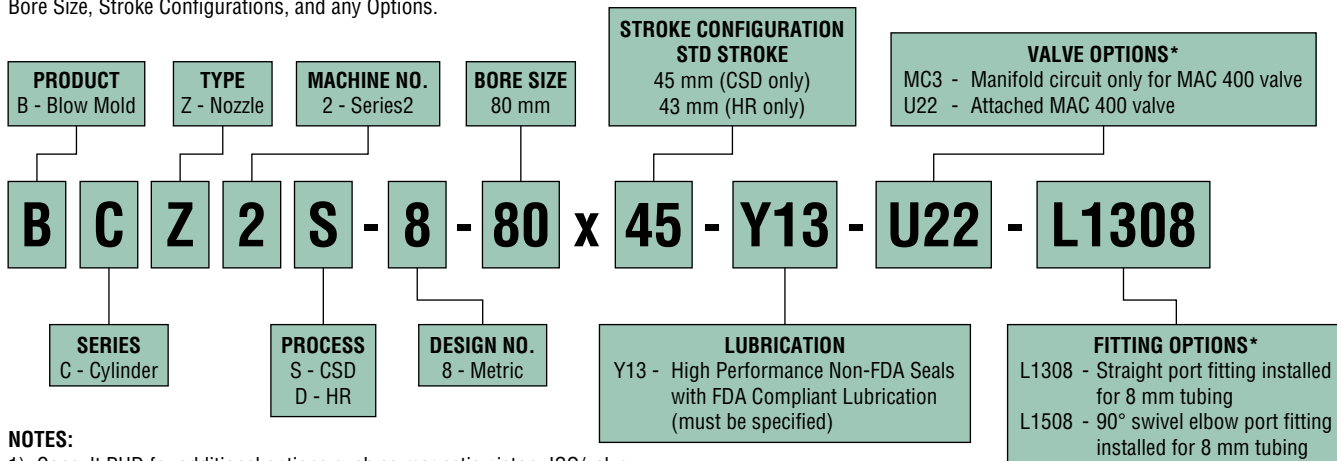


*As machine set-ups and conditions vary, PHD, Inc. cannot guarantee the same extended life will be seen as that resulting from PHD's own lab testing of the stretch rod seal.

ORDERING & ENGINEERING DATA: SERIES BCZ2 NOZZLE CYLINDER

TO ORDER, SPECIFY:

Product, Series, Type, Machine No., Process, Design No., Bore Size, Stroke Configurations, and any Options.



NOTES:

- 1) Consult PHD for additional options such as magnetic piston, ISO/valve manifold combinations and alternative MAC 400 valve combinations.
- 2) *If no fittings or valves are required, leave blank.

CYLINDER SPECIFICATIONS	BCZ2S		BCZ2D	
	IMPERIAL	METRIC	IMPERIAL	METRIC
TYPE	Pneumatic		Pneumatic	
SERIES	BCZ CSD Nozzle Cylinder		BCZ HR Nozzle Cylinder	
CYLINDER BORE SIZE	3.149 in	80 mm	3.149 in	80 mm
PISTON ROD DIAMETER	1.965 in	50 mm	1.965 in	50 mm
CYLINDER - LOW PRESSURE	Double Acting		Double Acting	
BORE AREA - EXTEND	4.748 in ²	30.63 cm ²	2.368 in ²	15.28 cm ²
BORE AREA - RETRACT	4.748 in ²	30.63 cm ²	3.011 in ²	19.43 cm ²
THEORETICAL EXTEND OUTPUT	357 lb @ 87 psi	1588 N @ 6 bar	206 lb @ 87 psi	916 N @ 6 bar
THEORETICAL RETRACT OUTPUT	413 lb @ 87 psi	1837 N @ 6 bar	262 lb @ 87 psi	1165 N @ 6 bar
OPERATING PRESSURE RANGE	7.5 - 150 psi	0.5 - 10 bar	7.5 - 150 psi	0.5 - 10 bar
BLOW CYLINDER - HIGH PRESSURE	Double Acting		Double Acting	
BORE SIZE	2.165 in	55 mm	2.165 in	55 mm
BORE AREA	3.094 in ²	19.96 cm ²	3.437 in ²	22.17 cm ²
OPERATING PRESSURE	600 psi	41.4 bar	600 psi	41.4 bar
THEORETICAL CLAMP FORCE	1856 lb @ 600 psi	8256 N @ 41.4 bar	2062 lb @ 600 psi	9172 N @ 41.4 bar
AMBIENT & FLUID TEMPERATURE	-20 to +180°F	-29 to +82°C	-20 to +180°F	-29 to +82°C
STROKE TIME (TYPICAL)	93 ms 78 ms		57 ms 75 ms 113 ms 90 ms	
LUBRICATION	FDA Regulation 21CFR 178.3570		FDA Regulation 21CFR 178.3570	
PORT SIZE	G1/8		G1/8	
STROKE	1.772 in (+0.079-0.000)	45 mm (+2.0-0.0)	1.693 in (+0.098-0.000)	43 mm (+2.5-0.0)

LIFE EXPECTANCY

Series BCZ Cylinders have been designed for 15 million trouble-free cycles except for high pressure stretch rod seal. Long life stretch rod seal provides three times longer life than previous Series BCZ seals tested in a lab environment. Operation with lubricated air can extend cylinder life.

MAINTENANCE

As with most PHD products, these cylinders are field repairable. Repair kits, tooling kits, and main structural components are available as needed for extended service. Optional rebuild service is available.

CYCLE RATE

Series BCZ Nozzle Cylinders meet or exceed cycle rate of competitor's unit when using optional manifold/valve combinations.

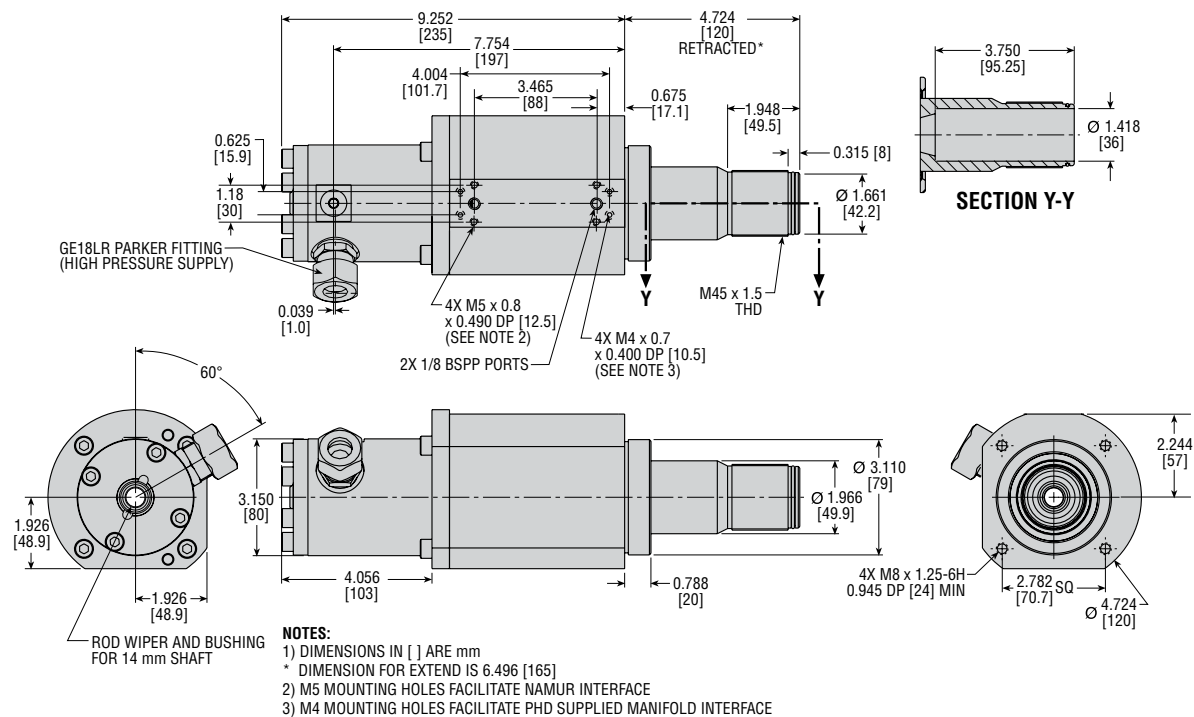
LUBRICATION

Series BCZ Nozzle Cylinders are lubricated using lubrication per FDA Regulations 21CFR 178.3570 which provides extended life and better performance.

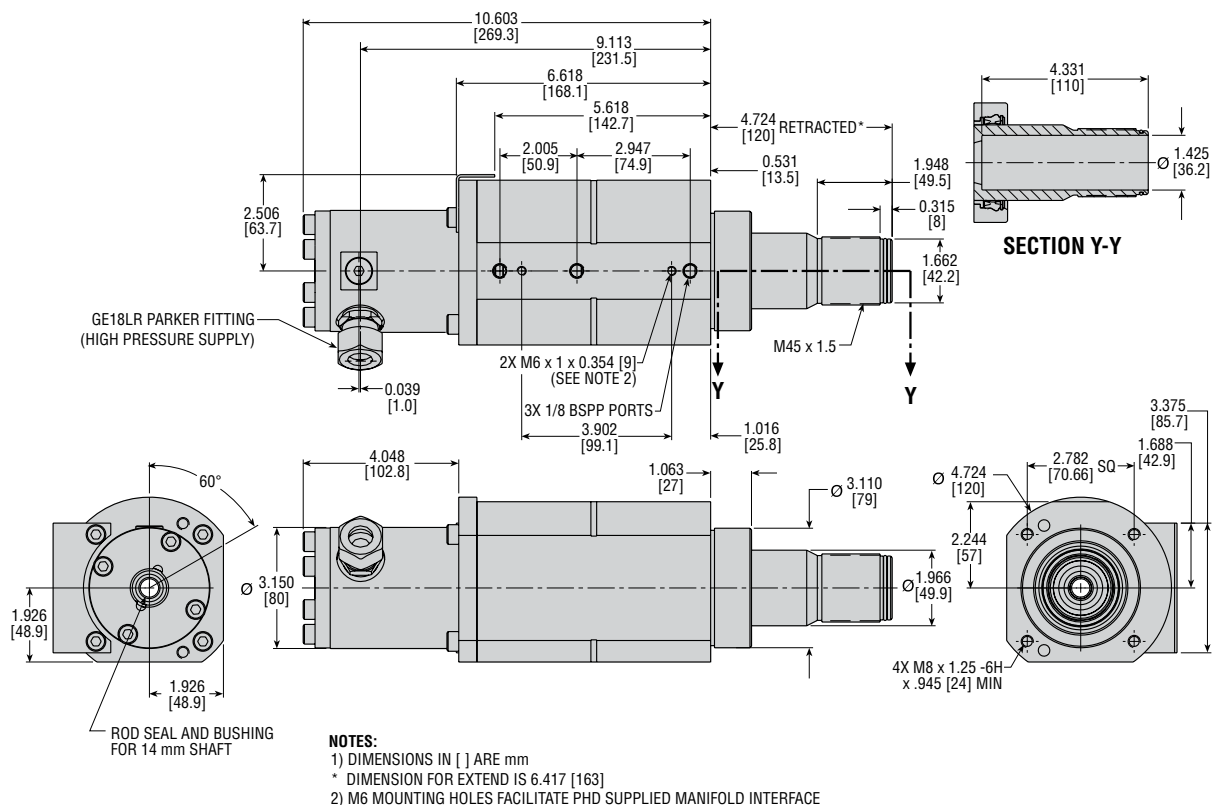
As machine set-ups and conditions vary, PHD, Inc. cannot guarantee the same extended life will be seen as that resulting from PHD's own lab testing of the stretch rod seal.

DIMENSIONS: SERIES BCZ2 NOZZLE CYLINDER

MODEL BCZ2S-8-80X45 CSD CYLINDER



MODEL BCZ2D-8-80X43 HR CYLINDER



All dimensions are reference only unless specifically toleranced.

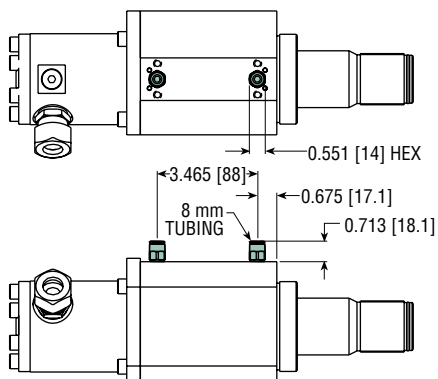
OPTIONS: SERIES BCZ2 NOZZLE CYLINDER

L1308 STRAIGHT PORT FITTING INSTALLED FOR 8 mm TUBING

This option provides straight fittings for 8 mm tubing. See page 41 for dimensions of fittings with valve options.

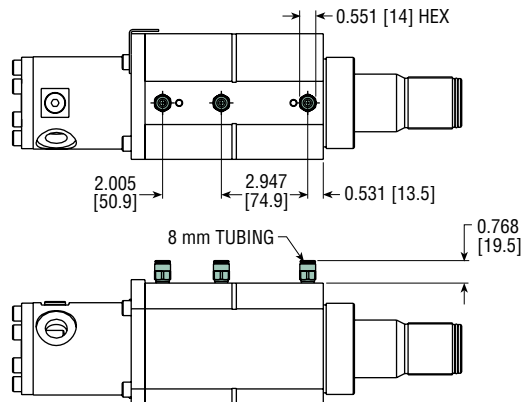
MODEL BCZ2S CSD CYLINDER

For standard units without manifold and/or valve options, two fittings will be supplied. For manifold and valve circuit options, only one fitting will be supplied.



MODEL BCZ2D HR CYLINDER

For standard units without manifold and/or valve options, three fittings will be supplied. For manifold and valve circuit options, only two fittings will be supplied.

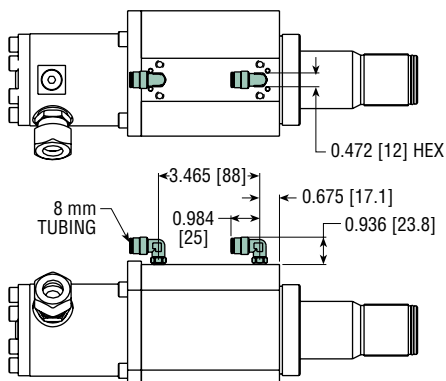


L1508 90° ELBOW PORT FITTING INSTALLED FOR 8 mm TUBING

This option provides 90° swivel elbow fittings for 8 mm tubing. See page 41 for dimensions of fittings with valve options.

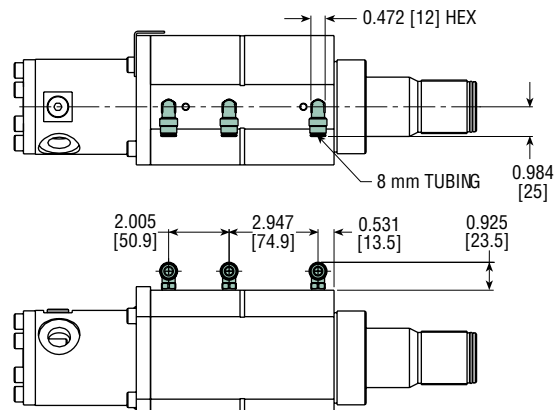
MODEL BCZ2S CSD CYLINDER

For standard units without manifold and/or valve options, two fittings will be supplied. For manifold and valve circuit options, only one fitting will be supplied.



MODEL BCZ2D HR CYLINDER

For standard units without manifold and/or valve options, three fittings will be supplied. For manifold and valve circuit options, only two fittings will be supplied.



All dimensions are reference only unless specifically toleranced.

OPTIONS: SERIES BCZ2 NOZZLE CYLINDER

Y13 HIGH PERFORMANCE NON-FDA SEALS WITH FDA-COMPLIANT LUBRICATION

This option contains high performance seals with extended life and wear.

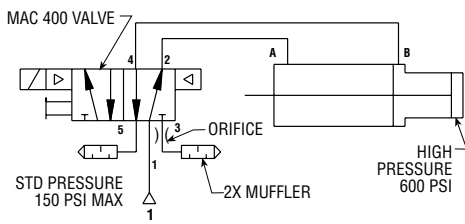
U22 ATTACHED MAC 400 VALVE

This option provides a manifold mounted valve combination that uses a MAC 400 Series valve. This option improves reaction time and simplifies plumbing issues. An exhaust orifice is installed in the valve so that the cylinder will achieve cycle rates of an OEM cylinder. Removing this orifice will decrease actuation time.

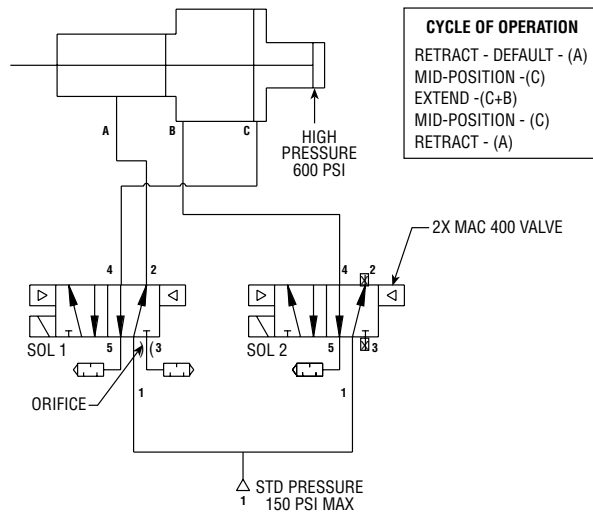
VALVE SPECIFICATIONS	
TYPE	MAC Series 400411A-BOA-DM-DDAJ-1JM=4357
PRESSURE (MAX)	125 psi
FLOW (MAX)	1.0 Cv
FUNCTION	5/2
OPERATOR	Single
PILOT	Internal
SPOOL	4-Way Pilot
SOLENOID	24 VDC, (5.4 W)
ELECTRICAL CONNECTOR	Rectangular, DIN 43650, Form B Style
MANUAL OPERATOR	Non-locking Recessed
PILOT EXHAUST	Muffled

PLUMBING SCHEMATICS

BCZ2S CSD CYLINDER

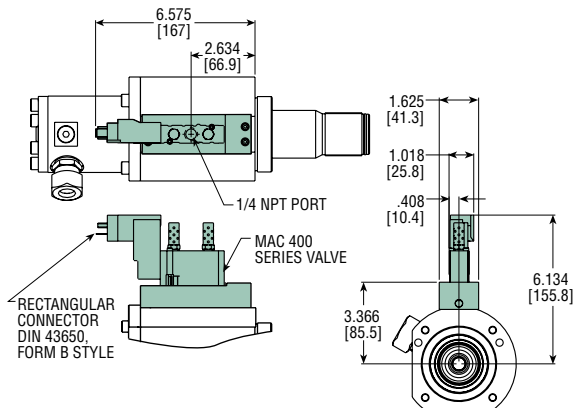


BCZ2D HR CYLINDER

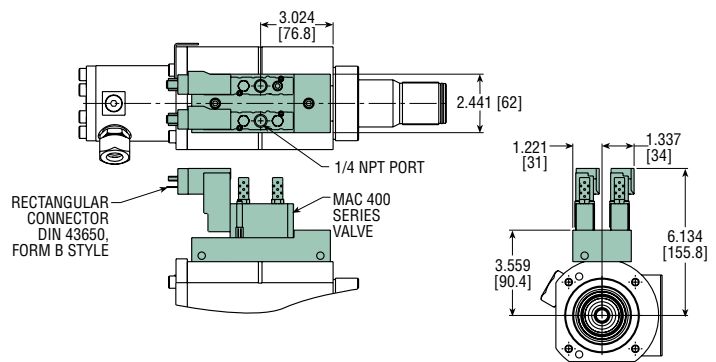


-U22

MODEL BCZ2S CSD CYLINDER



MODEL BCZ2D HR CYLINDER

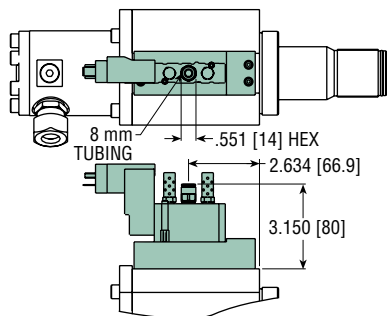


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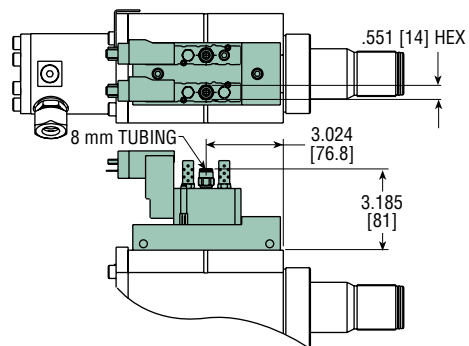
OPTIONS: SERIES BCZ2 NOZZLE CYLINDER

-L1308-U22

MODEL BCZ2S CSD CYLINDER

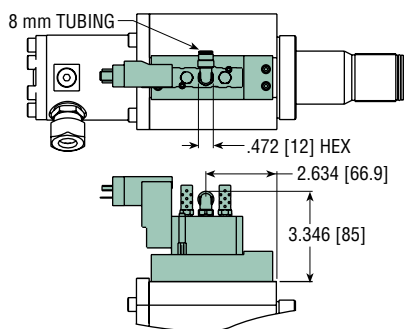


MODEL BCZ2D HR CYLINDER

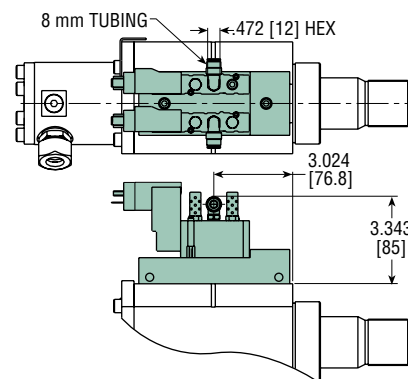


-L1508-U22

MODEL BCZ2S CSD CYLINDER



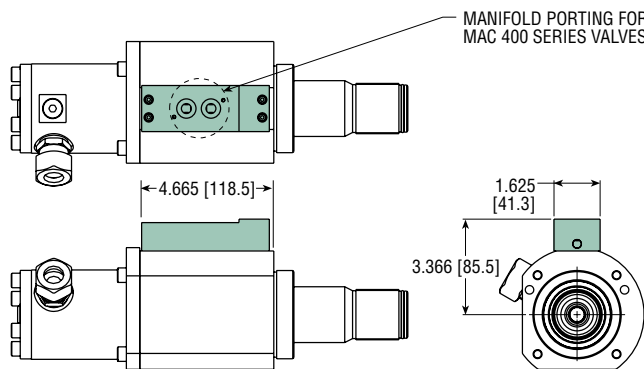
MODEL BCZ2D HR CYLINDER



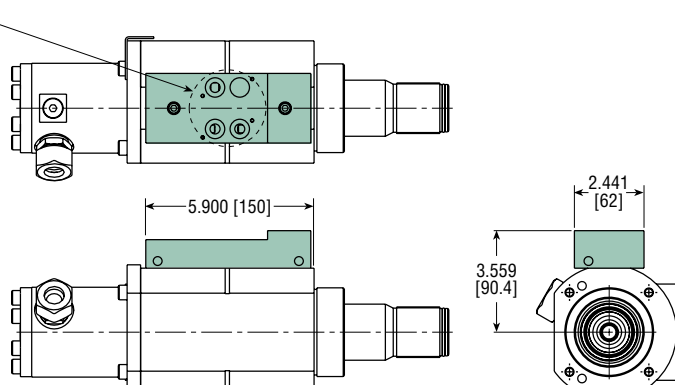
MC3 MANIFOLD CIRCUIT ONLY FOR MAC 400 VALVE

The MC3 option provides a manifold circuit only for use with MAC 400 Series valves. All hardware relating to mounting the valve such as mufflers and seals will be provided in kit form. An exhaust orifice is supplied with the kit so that the cylinder will achieve cycle rates of an OEM cylinder. Removing this orifice will decrease actuation time.

MODEL BCZ2S CSD CYLINDER



MODEL BCZ2D HR CYLINDER



NOTE: MUFFLERS, SCREWS AND MANIFOLD O-RINGS WILL BE PROVIDED IN SEPARATE BAG FOR INSTALLATION OF VALVES

All dimensions are reference only unless specifically tolerated.

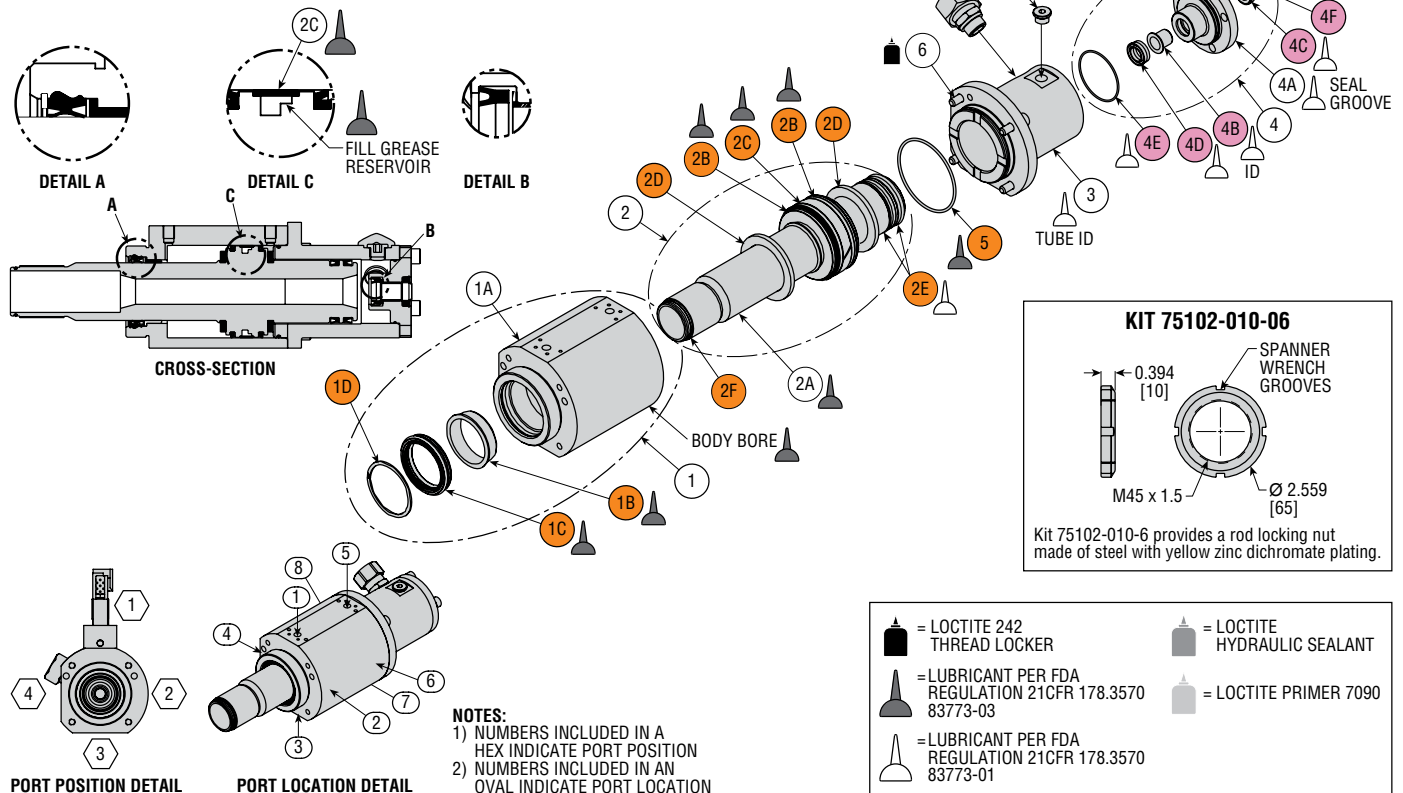
EXPLODED VIEW & PARTS LIST: SERIES BCZ2S NOZZLE CYLINDER

KEY	PART DESCRIPTION	BCZ2S-8-80x45
1	Body Assembly	Full unit description required followed by -H2400
1A	Body	75824-00
1B	Bushing	Sold as part of Repair Kit -H9010
1C	Rod Seal	Sold as part of Repair Kit -H9010
1D	Retaining Ring	Sold as part of Repair Kit -H9010
2	Piston and Rod Assembly	Full unit description required followed by -H1000
2A	Piston and Rod	75063
2B	Piston Seal	Sold as part of Repair Kit -H9010
2C	Wear Ring	Sold as part of Repair Kit -H9010
2D	Shock Pad	Sold as part of Repair Kit -H9010
2E	High Pressure Piston Seal	Sold as part of Repair Kit -H9010
2F	Rod O-Ring	Sold as part of Repair Kit -H9010
3	Tube	75065
4	Cap Assembly	Full unit description required followed by -H1200
4A	Cap	77169
4B	Bushing	Sold as part of Cap Repair Kit
4C	Rod Wiper	Sold as part of Cap Repair Kit
4D	Rod Seal ⁵	Sold as part of Cap Repair Kit
4E	Cap O-Ring	Sold as part of Cap Repair Kit
4F	Retaining Ring	Sold as part of Cap Repair Kit
5	Tube O-Ring	Sold as part of Repair Kit -H9010
6	Tube Standard Head Cap Screws	Sold as part of Fastener Kit -H9020
7	Cap Standard Head Cap Screws	Sold as part of Fastener Kit -H9020
8	High Pressure Fitting	12135-024
9	Plug	59144-002
10	Manifold Plate Assembly	75078
11	Manifold O-Ring	Sold As Part of Manifold Kit
12	Manifold SHCS	Sold As Part of Manifold Kit
13	Muffler	Sold As Part of Manifold Kit
15	Mac 400 Series Valve	MAC 411A-B0A-DM-DDAJ-1JM =4357
16	Valve Manifold O-Ring	Sold As Part of Manifold Kit
17A	Straight Port Fitting (-L1308)	62195-024
17B	Straight Port Fitting (-L1308-U22 OR -L1308-MC3)	61734-130
17C	90° Swivel Port Fitting (-L1508)	62195-007
17D	90° Swivel Port Fitting (-L1508-U22 OR -L1508-MC3)	61734-014
18	Valve SHCS	Sold As Part of Manifold Kit
19	Valve Orifice	Sold As Part of Orifice Kit or Manifold Kit

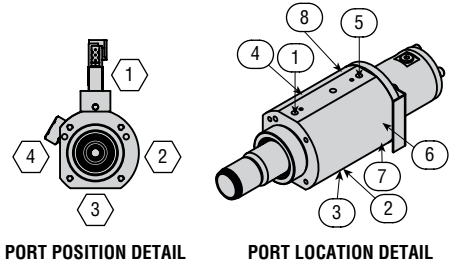
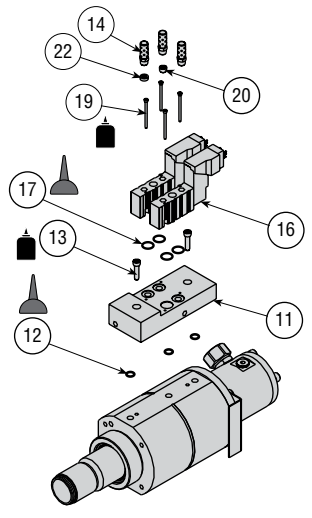
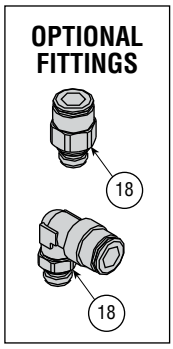
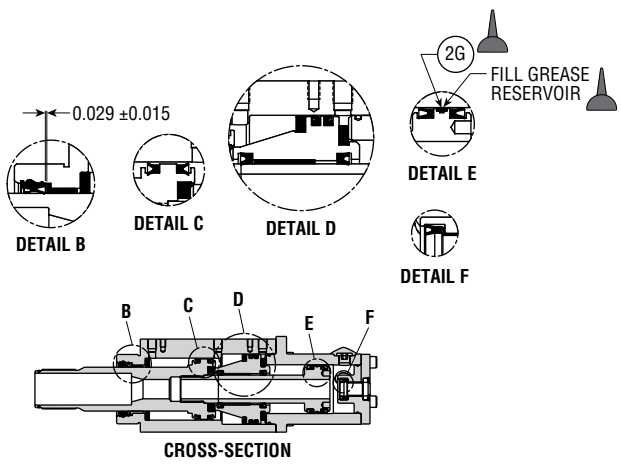
KIT DESCRIPTION	KIT NO.	COLOR CODE
Unit Repair Kit ¹	Full unit description required followed by -H9010	
Cap Repair Kit ²	76249	
Cap Seal Only Kit ³	76676	
Tooling Kit ⁴	75536	
Cap Seal Tooling Kit ⁵	80828	
Rod Locking Nut	75102-010-06	
Fastener Kit	Full unit description required followed by -H9020	
Manifold Kit	75103	
Orifice Kit	75677	

NOTES:

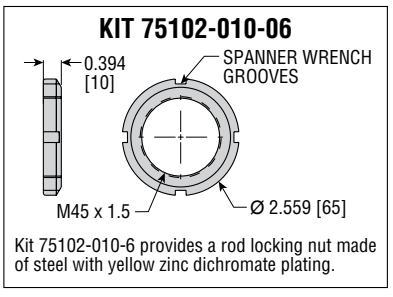
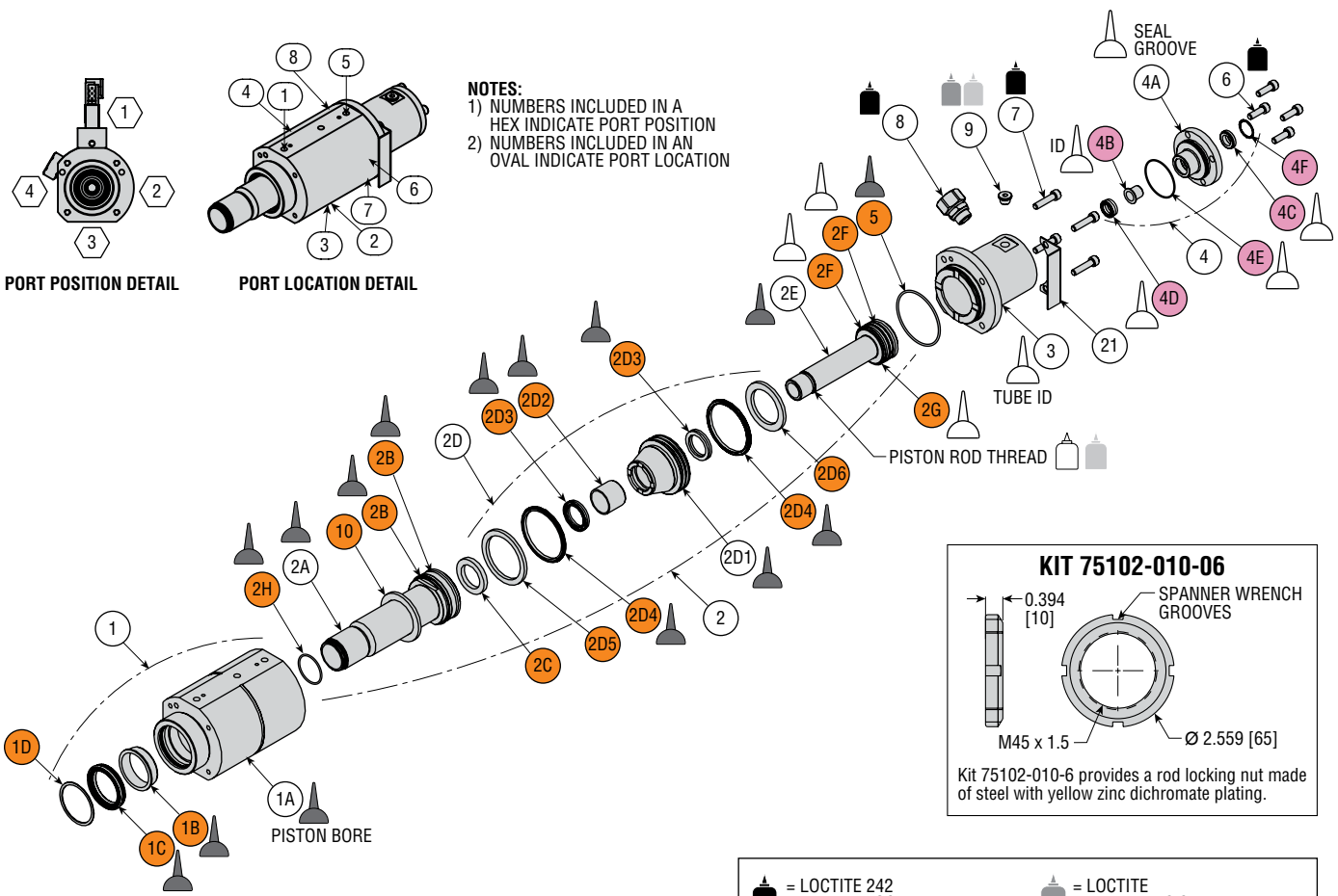
- 1) Includes all parts to repair the full unit excluding cap parts.
- 2) Includes all hardware to completely repair cap.
- 3) Includes rod seal and grease to replace cap seal only.
- 4) Includes all specialized tools required to rebuild unit.



EXPLODED VIEW: SERIES BCZ2D NOZZLE CYLINDER



NOTES:
 1) NUMBERS INCLUDED IN A HEX INDICATE PORT POSITION
 2) NUMBERS INCLUDED IN AN OVAL INDICATE PORT LOCATION



- = LOCTITE 242 THREAD LOCKER
- = LOCTITE HYDRAULIC SEALANT
- = LUBRICANT PER FDA REGULATION 21CFR 178.3570 83773-03
- = LOCTITE PRIMER 7090
- = LOCTITE 266 THREAD LOCKER
- = LUBRICANT PER FDA REGULATION 21CFR 178.3570 83773-01

PARTS LIST: SERIES BCZ2D NOZZLE CYLINDER

KEY	PART DESCRIPTION	BCZ2D-8-80x43
1	Body Assembly	Full unit description required followed by -H2400
1A	Double Stage Body	75084-00
1B	Bushing	Sold as part of Repair Kit -H9010
1C	Rod Seal	Sold as part of Repair Kit -H9010
1D	Retaining Ring	Sold as part of Repair Kit -H9010
2	Piston and Rod Assembly	Full unit description required followed by -H1000
2A	Double Stage Cylinder 1 Piston & Rod	75087
2B	Piston Seal	Sold as part of Repair Kit -H9010
2C	Shock Pad	Sold as part of Repair Kit -H9010
2D	Intermediate Piston Assembly	Full unit description required followed by -H1010
2D1	Piston	75089
2D2	Bushing	Sold as part of Repair Kit -H9010
2D3	Rod Seal	Sold as part of Repair Kit -H9010
2D4	Piston Seal	Sold as part of Repair Kit -H9010
2D5	Shock Pad	Sold as part of Repair Kit -H9010
2D6	Shock Pad	Sold as part of Repair Kit -H9010
2E	Double Stage Cylinder 2 Piston & Rod	75090
2F	High Pressure Piston Seal	Sold as part of Repair Kit -H9010
2G	Wear Ring	Sold as part of Repair Kit -H9010
2H	Rod O-Ring	Sold as part of Repair Kit -H9010
3	Double Stage Tube	75065
4	Cap Assembly	Full unit description required followed by -H1200
4A	Cap	77169
4B	Bushing	Sold As Part of Cap Repair Kit
4C	Rod Wiper	Sold As Part of Cap Repair Kit
4D	Rod Seal ⁴	Sold As Part of Cap Repair Kit
4E	Cap O-Ring	Sold As Part of Cap Repair Kit
4F	Retaining Ring	Sold As Part of Cap Repair Kit
5	Tube O-Ring	Sold as part of Repair Kit -H9010
6	Cap Screw	Sold as part of Fastener Kit -H9020
7	Tube Screws	Sold as part of Fastener Kit -H9020
8	High Pressure Fitting	12135-024
9	Plug	59144-002
10	Shock Pad	Sold as part of Repair Kit -H9010
11	Manifold Plate Assembly	75566
12	Manifold O-Ring	Sold As Part of Manifold Kit
13	Manifold Screw	Sold As Part of Manifold Kit
14	Muffler	Sold As Part of Manifold Kit
15	Label	6441-494
16	MAC 400 Series Valve	MAC 411A-BOA-DM-DDAJ-1 JM = 4357
17	Valve Manifold O-Ring	Sold As Part of Manifold Kit
18	8 mm Tube Fitting (-L1308)	62195-024
18	8 mm Tube Fitting (-L1508)	62195-007
18	8 mm Tube Fitting (-L1308-U22 OR -L1308-MC3)	61734-130
18	8 mm Tube Fitting (-L1508-U22 OR -L1508-MC3)	61734-014
19	Valve Screw	Sold As Part of Manifold Kit
20	PTF Port Plug	1992-001
21	Proximity Flag	76232-02
22	Orifice Disk	Sold As Part of Orifice Kit or Manifold Kit

KIT DESCRIPTION	KIT NO.	COLOR CODE
Unit Repair Kit ¹	Full unit description required followed by -H9010	
Rod Locking Nut	75102-010-06	
Tooling Kit ³	75537	
Cap Seal Tooling Kit ⁴	80828	
Fastener Kit	Full unit description required followed by -H9020	
Manifold Kit	75696	
Cap Repair Kit ²	76249	
Cap Seal Repair Kit	76676	
Orifice Kit	75677	

NOTES:

- 1) Includes all parts to repair the full unit excluding cap parts.
- 2) Includes all hardware to completely repair cap.
- 3) Includes all specialized tools required to rebuild unit.
- 4) Includes tools to rebuild cap. Tools in this kit are also included in Kit #75536.