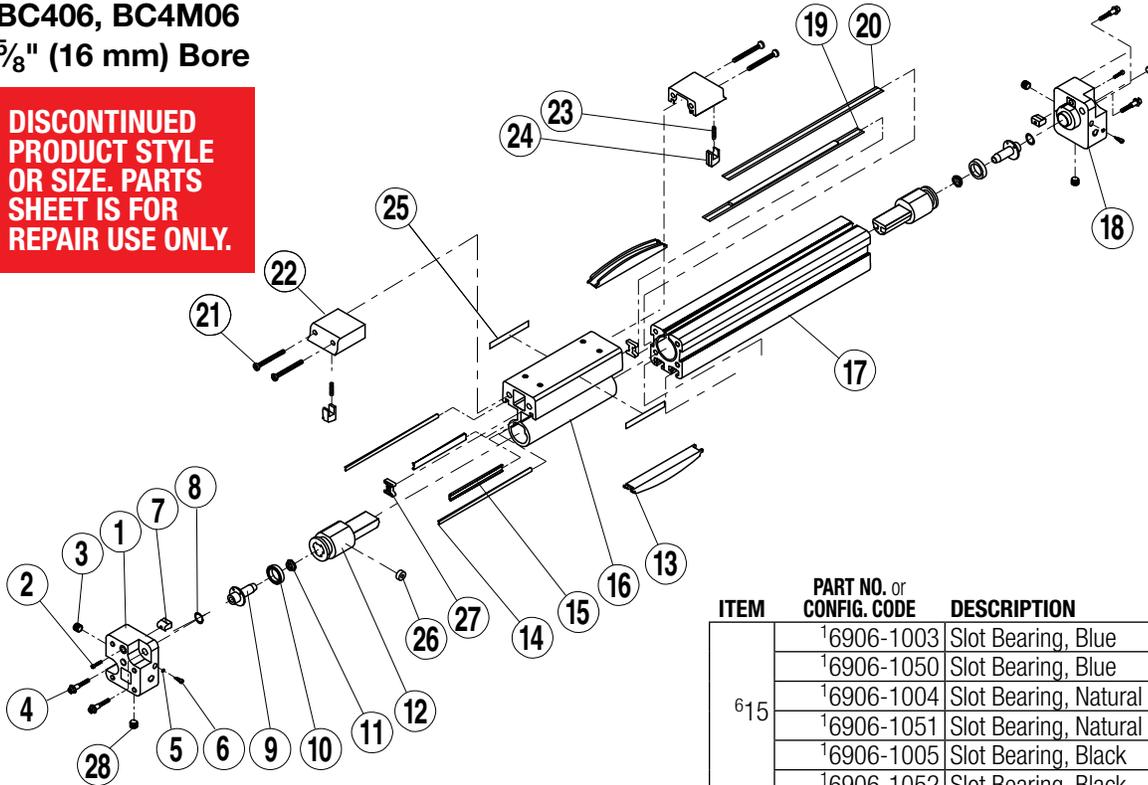


### BC4 Series™ Band Cylinder®

6900-4005\_15

BC406, BC4M06  
5/8" (16 mm) Bore

**DISCONTINUED  
PRODUCT STYLE  
OR SIZE. PARTS  
SHEET IS FOR  
REPAIR USE ONLY.**



ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.	
			BC4(L)06 U.S. Standard	BC4(L)M06 Metric
1	6906-9015	Left Head Assembly	1	—
	7906-9015	Left Head Assy. (Metric)	—	1
2	0605-1048	Socket Head Cap Screw	2	—
	5605-1045	SHCS (Metric)	—	2
3	5910-1008	Pipe Plug	4	—
	7906-1029	Pipe Plug (Metric)	—	4
4	0605-1011	Head Fastener	4	4
5	0912-1101	O-Ring	2	2
6	6906-1026	Cushion Needle	2	2
7	6906-1063	Band Clamp	2	—
	7906-1063	Band Clamp (Metric)	—	2
8	6906-1065	O-Ring	2	2
9	6906-1023	Cushion Spear	2	2
10	6906-1024	U-Cup	2	2
11	6906-1022	Cushion Seal	2	2
12	6906-1012	Piston	2	2
13	6906-1016	Band Ramp	2	2
14	6906-1029	Carrier Wiper	2	2
	6906-1053	Carrier Wiper (Metric)	2	2

ITEM	PART NO. or CONFIG. CODE	DESCRIPTION	QTY.	
			BC4(L)06 U.S. Standard	BC4(L)M06 Metric
615	6906-1003	Slot Bearing, Blue	2	2
	6906-1050	Slot Bearing, Blue	2	2
	6906-1004	Slot Bearing, Natural	2	2
	6906-1051	Slot Bearing, Natural	2	2
	6906-1005	Slot Bearing, Black	2	2
	6906-1052	Slot Bearing, Black	2	2
16	6906-9025	Carrier US Std.	1	—
	6906-9028	Long Carrier US Std.	1	—
	7906-9025	Carrier (Metric)	—	1
	7906-9028	Long Carrier (Metric)	—	1
17	RTBBC4(M)06	Replacement Tube (6906-1010)	AR	AR
	RTBBC4L(M)06	specify stroke	AR	AR
18	6906-9016	Right Head Assembly	1	—
	7906-9016	Right Head Assy. (Metric)	—	1
19	NSBBC406	Replacement Sealing Band	AR	—
	NSBBC4M06	(6906-1046) specify stroke	—	AR
	NSBBC4L06	Replacement Sealing Band (long carrier) specify stroke (6906-1069)	AR	—
20	NSBBC4LM06	(6906-1046) specify stroke	—	AR
	NDBBC406	Replacement Dust Band (6906-1045) specify stroke	AR	—
	NDBBC4M06	(6906-1045) specify stroke	—	AR
20	NDBBC4L06	Replacement Dust Band (long carrier) specify stroke (6906-1068)	AR	—
	NDBBC4LM06	(6906-1068) specify stroke	—	AR
21	6906-1025	Pan Head Screw	4	4
22	6906-1006	End Cap	2	2
23	0605-1008	Spring	2	2
24	0605-1013	Band Wiper	2	2
25	6906-1042	Decal	2	2
26	2403-1008	Ring Magnet	1	1
27	6906-1007	Bearing Retainer Bracket	1	1
28	1014-1065	Pipe Plug US Std.	1	—
	4415-1009	Pipe Plug (Metric)	—	1

**1 Repair Kit:** Parts contained in Repair Kit RKBC4(M)06SK\_ \_ \_

**2 Seal Kit:** Parts contained in Seal Kit #6906-9022, 7906-9022 or long carrier #6906-9041, 7906-9041

**3 Head Assy.:** Parts contained in Head Assy. #6906-9015 & 6906-9016

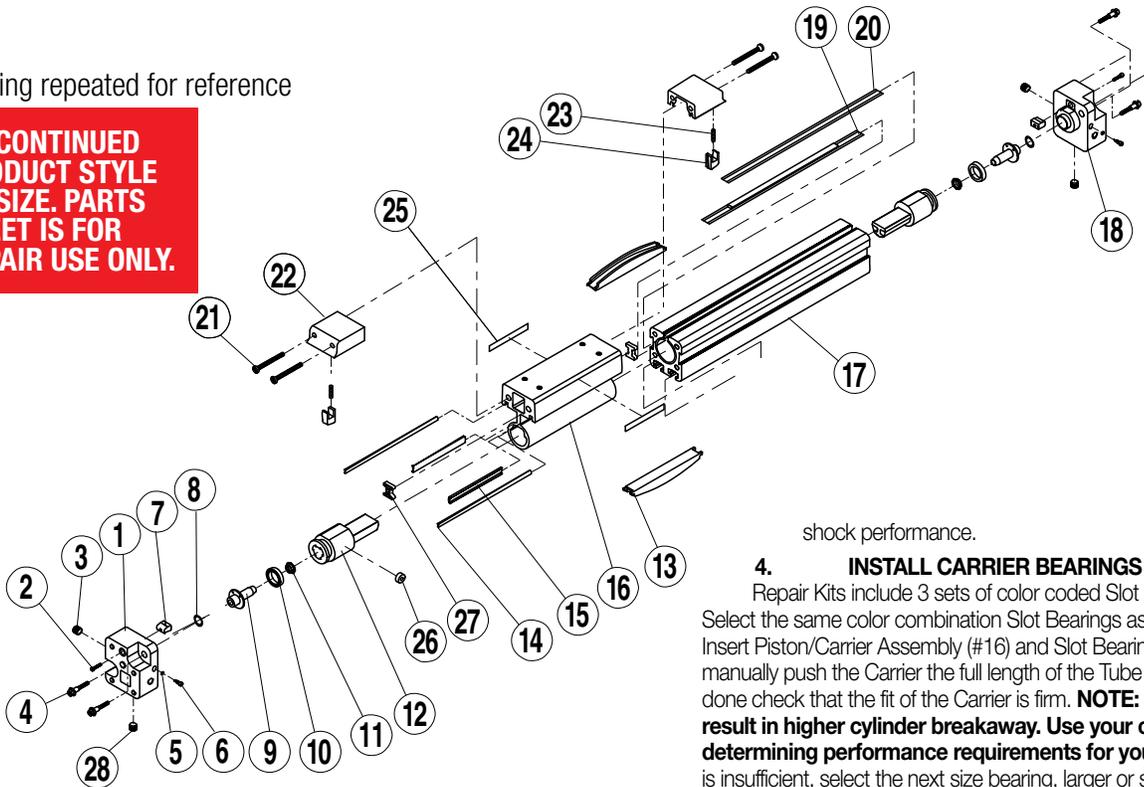
**4 Head Assy.:** Parts contained in Head Assy. #7906-9000 & 7906-9001

**5** After configuration code add: **SK** \_ \_ (note: the letters SK indicate stroke, follow these letters with the stroke length in decimal inches.) If the actuator has the dual carrier option add the code **DC** \_ \_ (note: follow the letters DC with the distance between the carriers in decimal inches.)

**6 NOTE:** Repair Kits include 3 sets of color coded Slot Bearings. Select the same color combinations as originally installed.

Drawing repeated for reference

**DISCONTINUED  
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**CYLINDER DISASSEMBLY INSTRUCTIONS FOR INSTALLATION OF REPAIR KITS ONLY**

1. Remove Band Cylinder from machinery.
2. Remove any foot mounting hardware external shock absorbers or switches if present. Remove the two Head Bolts (#4) and loosen the SHCS (#2) on each cylinder Head (#1, #18). Remove Heads.
3. Remove Screws (#21) from End Caps (#22) and slide End Caps off Carrier (#19). Remove top Dust Band (#20). Remove the Carrier Assembly (#16) from the Tube (#17).
4. Dislodge the inner Sealing Band (#19) from its groove by gently pressing down on the band with an O-ring Pick or similar tool. (When doing so, take care that NO SCRATCHES are made in the tube bore slot.) Remove Sealing Band (#19).

**CYLINDER ASSEMBLY INSTRUCTIONS**

**1. CLEAN AND LUBRICATE**

Thoroughly clean all components, particularly the tube bore slot and bands. Thoroughly lubricate the tube with RheoGel TEK664 grease. Apply light coat of grease to Sealing Band (#19) and Dust Band (#20).

**2. ASSEMBLE SEALING BAND**

**CAUTION: Metal edges of Sealing Band are sharp. Exercise caution to avoid injury to yourself of the Band and Tube when inserting.**

Carefully install Sealing Band (#19) by passing it sideways though the slot in the tube. Position Sealing Band, rubber up, on the bottom of the tube with equal length of band extending out both ends of the tube.

**3. INSTALL PISTON/CARRIER ASSEMBLY**

Lubricate and install new U-Cups (#10) (lip seals facing out) onto Piston ends (#12). Lubricate and install new Cushion Seals (#11) (small end facing out) into Piston ends and rotate to seat them in their grooves.

**NOTE:** If the cylinder will be used with optional shock absorber packages, do not install the Cushion Seals. Doing so will adversely affect

shock performance.

**4. INSTALL CARRIER BEARINGS**

Repair Kits include 3 sets of color coded Slot Bearings (#15). Select the same color combination Slot Bearings as originally installed. Insert Piston/Carrier Assembly (#16) and Slot Bearings into tube and manually push the Carrier the full length of the Tube (#17). As this is done check that the fit of the Carrier is firm. **NOTE: A tight fit will result in higher cylinder breakaway. Use your own discretion in determining performance requirements for your application.** If fit is insufficient, select the next size bearing, larger or smaller as needed. Repeat until fit is correct.

Remove Piston/Carrier Assembly (#16) and place a small amount of RheoGel TEK664 into the Cushion Seals (#11) then fill both sides of Piston completely with grease. Install Piston/Carrier Assembly into Tube (#17) with Magnet facing the die mark that is located in the switch groove and feed the Sealing Band (#19) between the Piston and the bracket.

**NOTE:** Take care that the U-Cup (#10) is not cut as the first end of the Piston is inserted into the Tube.

Manually slide Piston/Carrier Assembly (#16) the length of the Tube (#17) to seat the Sealing Band (#19) into the groove. As the end of the Piston exits the other end of the Tube, grease should be present on the Piston. If not, the tube was not properly greased. Wipe off excess grease.

**5. TRIM SEALING BAND**

With a razor blade, remove rubber from extended band until flush with the end of tube. With tin snips, trim band to length indicated.

<i>Cylinder Size</i>	<i>Trim Length From Tube</i>
5/8" (16 mm)	.375" (9.5 mm) (Tolerance of +/- .032")

**6. INSTALL HEADS**

Lubricate and install new O-Rings (#8) onto Heads (#1, #18). Remove Cushion Needle Valve (#6) and lubricate and install new O-Rings (#5) onto Cushion Needle Valves. Insert Cushion Needle Valves (#6) back into Heads (#1, #18). Insert Heads into Tube (#17) using a slight rocking motion. DO NOT TWIST. Twisting the Head during installation may cut the O-Ring resulting in excessive leakage during operation.

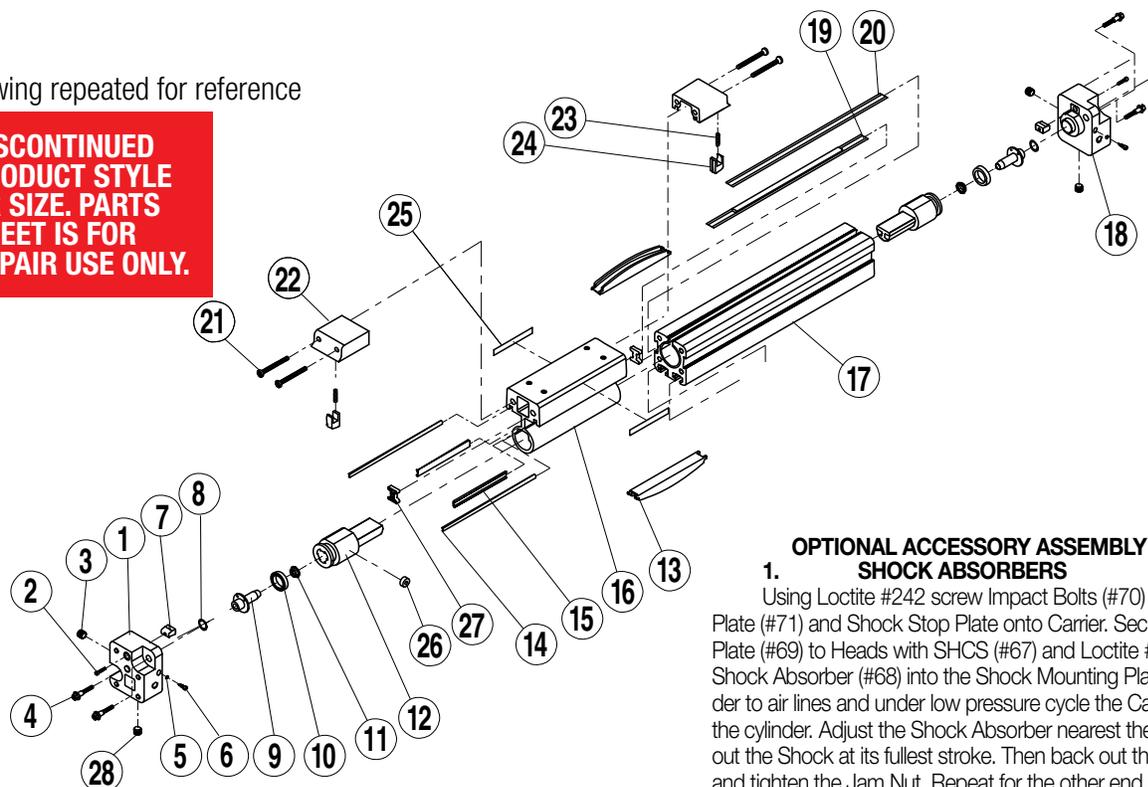
**NOTE:** When inserting heads, make sure band does not get pushed backwards into tube. Rubber on band must remain flush to the tube after head installation. Install Head Bolts (#4) into Heads (#1, #18). **Torque Head Bolts (#4) to 45 in.-lbs (5.09 Nm).**

**7. INSTALL DUST BAND**

Clean Dust Band (#20) thoroughly with a clean cloth. Remove any rubber residue on the solid steel surface with a razor blade. Strip rubber

Drawing repeated for reference

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from steel on end of Dust Band (#20) flush with the end of the Tube. With a tin snips, trim Band to the proper length.

Cylinder Size	Trim Length From Tube
5/8" (16 mm)	.375" (9.5 mm) (Tolerance of +/- .032")

Insert trimmed Band into Head. Position Band above Band Clamp (#7). Tighten screw (#2) and press into groove in Tube.

#### 8. INSTALL END CAPS

Lightly lubricate the Band Wiper (#24). Place a Spring (#23) into the hole of the Band Wiper and insert the Band Wiper into the End Cap (#22). Compress the Band Wiper and insert the End Cap onto the Carrier (#16). While pressing down on the End Cap tighten End Cap fasteners (#21).

**NOTE:** The top surface of the End Cap must be below the top surface of the Carrier.

Work the slack out of both the Sealing Band (#19) and Dust Band (#20) by moving the Carrier by hand, from the Head with the Bands retained to the opposite Head. Trim rubber, cut to length and secure the free end of Bands as described in steps 5 and 8.

**CAUTION:** Improper cut length of Band may introduce slack into Band when free end is secured.

#### 9. CHECK ASSEMBLY

Run the Carrier (#16) back and forth along the full stroke to make certain the cylinder is properly assembled before applying air. Before mounting cylinder back in application, check the cylinder's internal cushions. (If optional shock absorber kits are being used, this step can be eliminated as Cushion Seals (#11) were not installed.) Push the Carrier (#16) to one end. You should feel the Cushion decelerate the Carrier before the Cushion bottoms out. If the Carrier slams into the end of the cylinder, either the Cushion Seals have not been properly installed or the Cushion Needle Valve (#6) is adjusted too far out.

#### 10. REMOUNT THE CYLINDER ONTO MACHINERY

#### OPTIONAL ACCESSORY ASSEMBLY INSTRUCTIONS SHOCK ABSORBERS

1.

Using Loctite #242 screw Impact Bolts (#70) into Shock Stop Plate (#71) and Shock Stop Plate onto Carrier. Secure Shock Mounting Plate (#69) to Heads with SHCS (#67) and Loctite #242. Screw the Shock Absorber (#68) into the Shock Mounting Plate. Attach the cylinder to air lines and under low pressure cycle the Carrier to one end of the cylinder. Adjust the Shock Absorber nearest the Carrier to bottom out the Shock at its fullest stroke. Then back out the Shock one full turn and tighten the Jam Nut. Repeat for the other end of the cylinder.

#### 2. FOOT MOUNTS

Apply Loctite #242 to Screws (#65) and secure Foot Mount (#64) to each Head.

#### 3. TUBE SUPPORTS

Four Square Nuts (#61) are required on the bottom of Tube. Tube Supports should be secured at the required distances determined for the application to prevent Tube deflection. Apply Loctite #242 to Screws (#63) and secure Tube Supports (#62) to tube aligning holes in Square Nuts with holes in Tube Supports.

#### 4. FLOATING MOUNT

Place Pin (#73), flat side towards carrier, between the two center holes as shown. Place Floating Mount Clamp (#74) over pin and secure to the Carrier with Screws (#75) and Loctite #242. Place Floating Mount Bracket (#76) over pin.

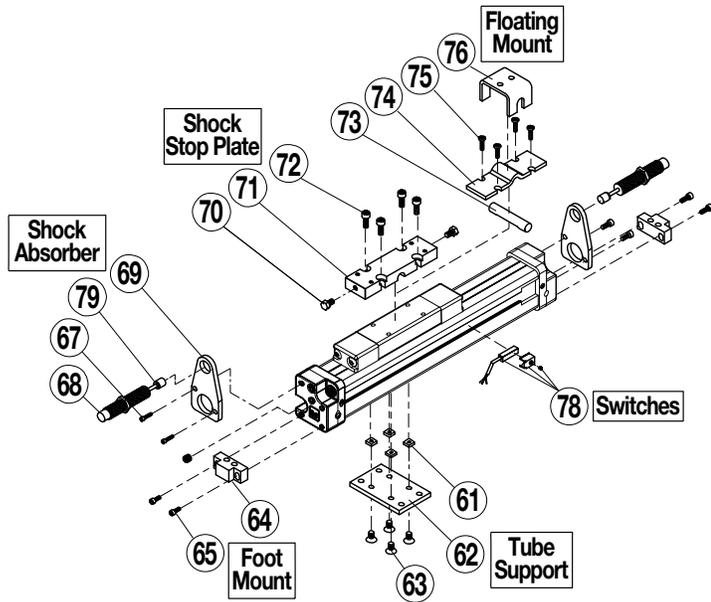
#### 5. SWITCHES

**NOTE:** Form A Reed Switches should not be used in TTL logic circuits. A voltage drop caused by the L.E.D. indicator will result. For applications where TTL circuits are used, please contact the factory.

**WARNING:** An ohmmeter is recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.

Reed and TRIAC switches are only recommended for signalling position, not directly powering solenoids. For shifting a solenoid, a relay or resistor is recommended between it and the Reed Switch. Switch ratings must not be exceeded at any time.

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ITEM	PART NO.	DESCRIPTION	QTY.	
			BC4(L)06 U.S. Std.	BC4(L)M06 Metric
<b>TUBE SUPPORTS<sup>1</sup></b>				
KIT <sup>1</sup>	6906-9002	Tube Support Kit <sup>1</sup> US Standard	A/R	–
	7906-9002	Tube Support Kit <sup>1</sup> Metric	–	A/R
61	0605-1042	Square Nut	4	–
	5605-1042	Square Nut (Metric)	–	4
62	6906-1013	Bracket, Tube Support	1	1
63	1812-1003	Flat Head Cap Screw	4	–
	7906-1068	FHCS (Metric)	–	4
<b>FOOT MOUNT</b>				
KIT <sup>2</sup>	6906-9003	Foot Mount Kit <sup>2</sup> US Standard	A/R	–
	7906-9003	Foot Mount Kit <sup>2</sup> Metric	–	A/R
64	6906-1018	Foot Mount	2	2
65	0905-1038	Socket Head Cap Screw	2	–
	4905-1005	SHCS (Metric)	–	2

**Service Parts Ordering NOTES:**

- 1 A minimum of 2 (two) Tube Supports required per cylinder
- 2 Foot Mount Kit contains two foot mount brackets and mounting hardware
- 3 Shock Mount Kit contains one set of mounting hardware only
- 4 Shock Absorber Kit contains one Shock Absorber and mounting hardware
- 5 Standard end-of-stroke shock absorbers are designed to operate without the assistance of the standard band cylinder cushion. To ensure proper shock absorber performance, make sure the air cushion is disabled.

A/R = As Required

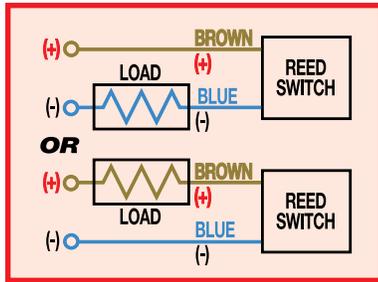
ITEM	PART NO.	DESCRIPTION	QTY.			
			BC4(L)06 U.S. Std.	BC4(L)M06 Metric		
<b>SHOCK ABSORBERS<sup>5</sup></b>						
KIT <sup>3</sup>	6906-9024	Shock Mount	US Standard	A/R	–	
	7906-9024	Kit <sup>3</sup> (Hardware Only)	Metric	–	A/R	
KIT <sup>4</sup>	6906-9006	Shock Absorber Kit <sup>4</sup>	Heavy Duty	US Standard	A/R	–
	7906-9020		Metric	–	A/R	
	6906-9005	Light Duty	US Standard	A/R	–	
	7906-9005	Metric	–	A/R		
67	0905-1135	Socket Head Screw		4	–	
	7906-1067	Socket Head Screw (Metric)		–	4	
68	2403-1062	Heavy Duty Shock		1	–	
	2403-1091	Heavy Duty Shock (Metric)		–	1	
	2403-1062	Light Duty Shock		1	–	
	2403-1091	Light Duty Shock (Metric)		–	1	
69	6906-1017	Shock Mounting Plate	US Standard	1	–	
	7906-1017		Metric	–	1	
70	6910-1024	Shock Impact Bolt		2	2	
71	6906-1019	Shock Stop Plate	US Standard	1	–	
	7906-1019		Metric	–	1	
72	0605-1045	Socket Head Screw		4	–	
	5605-1045	Socket Head Screw (Metric)		–	4	
<b>FLOATING MOUNT</b>						
KIT	6906-9004	Floating Mount Kit	US Standard	1	–	
	7906-9004	Floating Mount Kit	Metric	–	1	
73	6906-1021	Floating Mount Pin		1	1	
74	6906-1020	Floating Mount Bracket		1	1	
75	0905-1038	Socket Head Screw		4	–	
	4905-1005	Socket Head Screw (Metric)		–	4	
76	6906-1020	Floating Mount Bracket		1	1	
<b>SWITCHES</b>						
<b>CONFIG. CODE ORDERING</b>						
Mounting Hardware & FE conn. included						
78	<b>CODE</b>	<b>DESCRIPTION</b>				
	BT	Switch Kit, Reed, Form C, 5m				
	BM	Switch Kit, Reed, Form C, Male Conn.				
	RT	Switch Kit, Reed, Form A, 5m				
	RM	Switch Kit, Reed, Form A, Male Conn.				
	CT	Switch Kit, Triac, 5m				
	CM	Switch Kit, Triac, Male Conn.				
	KT	Switch Kit, Hall-effect, Sinking, 5m				
	KM	Switch Kit, Hall-effect, Sinking, Male Conn.				
	TT	Switch Kit, Hall-effect, Sourcing, 5m				
	TM	Switch Kit, Hall-effect, Sourcing, Male Conn.				
	NOTE: When ordered female connector & all mounting hardware is included.					
79	2403-1015	Shock Stop Spacer		2	2	

**Switch Ordering NOTES:**

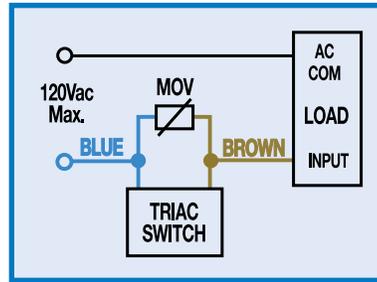
To order field retrofit switch and hardware kits for all Tolomatic actuators: SW (Then the model and bore size, and type of switch required)  
**Example: SWBC406RT**  
 (Hardware and Form A Reed switch with 5 meter lead for .625" bore BC4 band cylinder)

**WIRING DIAGRAMS**

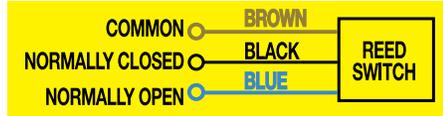
**RT & RM DC REED, FORM A**



**CT & CM AC REED, TRIAC**

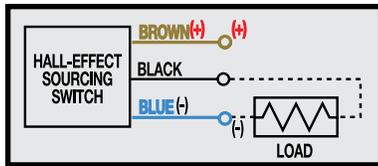


**BT & BM DC REED, FORM C**

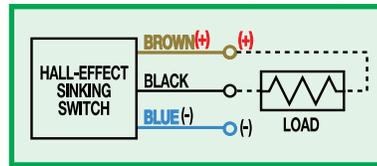


Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

**TT & TM HALL-EFFECT, SOURCING, PNP**



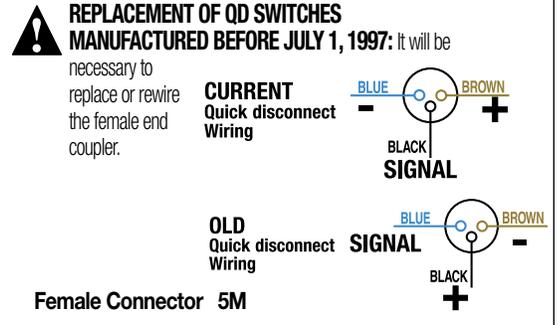
**KT & KM HALL-EFFECT, SINKING, NPN**



**INSTALLATION INFORMATION**



**⚠ THE NOTCHED FACE OF THE SWITCH INDICATES THE SENSING SURFACE AND MUST FACE TOWARD THE MAGNET.**



**LUBRICATION AND MAINTENANCE**

All Tolomatic BC4 Band Cylinders are prelubricated at the factory. To ensure maximum cylinder life, the following guidelines should be followed.

**1. Filtration**

We recommend the use of dry, filtered air in our products. "Filtered air" means a level of 10 Micron or less. "Dry" means air should be free of appreciable amounts of moisture. Regular maintenance of installed filters will generally keep excess moisture in check.

**2. External Lubricators (optional)**

The factory prelubrication of Tolomatic Band Cylinders will provide optimal performance without the use of external lubrication. However, external lubricators can further extend service life of pneumatic actuators *if* the supply is kept constant.

Oil lubricators, (mist or drop) should supply a minimum of 1 drop per 20 standard cubic feet per minute to the cylinder. As a rule of thumb, double that rate if water in the system is suspected. Demanding conditions may require more lubricant.

If lubricators are used, we recommend a non-detergent, 20cP @ 140F 10-weight lubricant. Optimum conditions for standard cylinder operation is

+32° to +150F (+0° to 65.5°C).

NOTE: Use of external lubricators may wash away the factory installed lubrication. External lubricants must be maintained in a constant supply or the results will be a dry actuator prone to premature wear.

**3. Sanitary environments**

Oil mist lubricators must dispense "Food Grade" lubricants to the air supply. Use fluids with ORAL LD50 toxicity ratings of 35 or higher such as Multitherm® PG-1 or equivalent. Demanding conditions can require a review of the application.

**4. Bearing lubrication**

The bearing system is prelubricated at the factory with a high quality RheoGel TEK664 grease. Relubrication is recommended every .5-1 million cycles using RheoGel TEK664 grease.

**5. Cushion Adjustment**

Adjust the cushion needles in the cylinder heads carefully to obtain a smooth, hesitation free deceleration for your particular application. If there are questions on proper adjustment, please consult Tolomatic, Inc.

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3800 County Road 116, Hamel, MN 55340 USA  
 http://www.Tolomatic.com • Email: Help@Tolomatic.com  
 Phone: (763) 478-8000 • Fax: (763) 478-8080 • Toll Free: 1-800-328-2174

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

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