Tolomatic™
EXCELLENCE IN MOTION

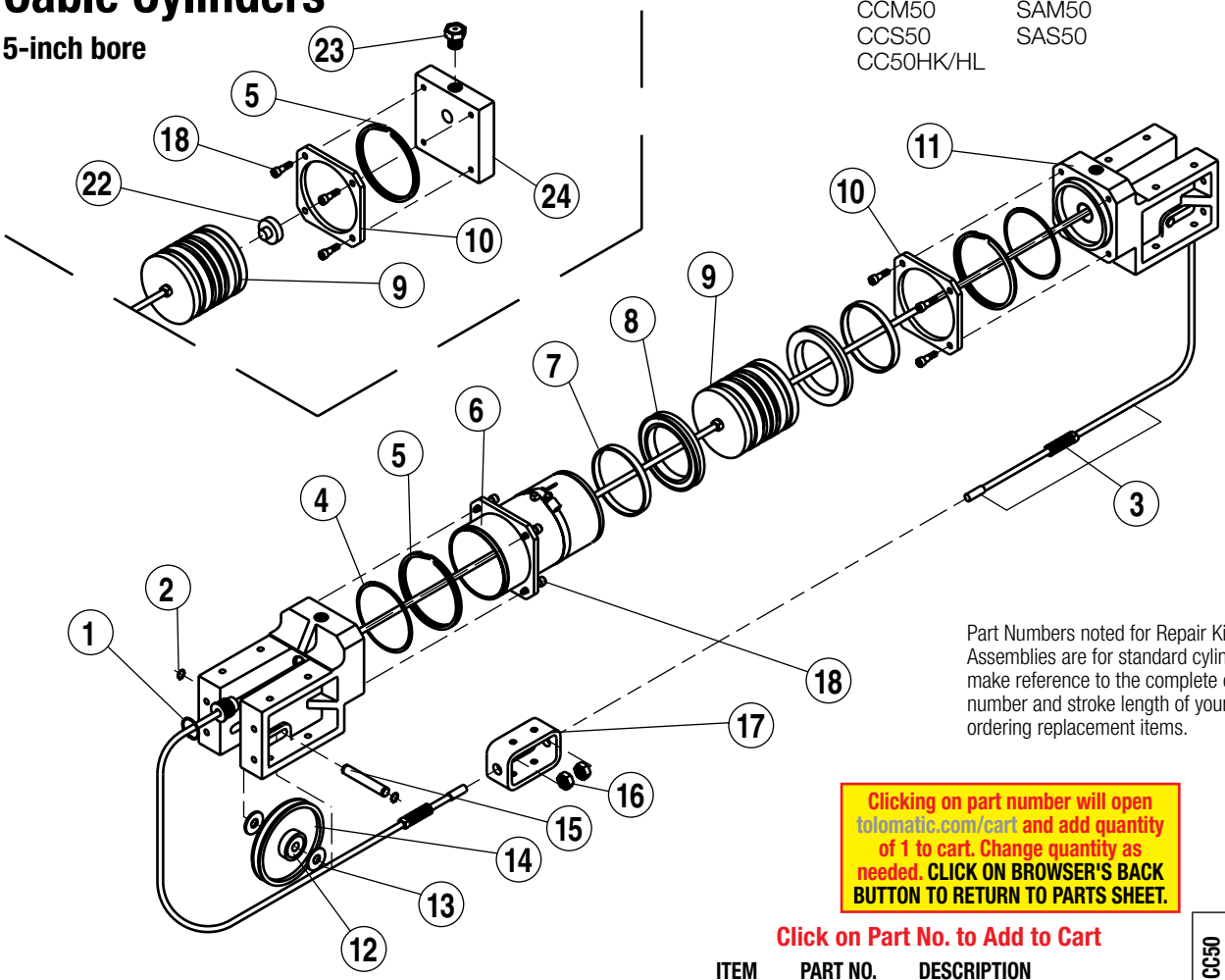
Parts Sheet

1001-4006_05

Cable Cylinders

5-inch bore

MODELS: CC50, CCM50, CCS50, CC50HK/HL, SA50, SAM50, SAS50



Part Numbers noted for Repair Kits and Cable Assemblies are for standard cylinders only. Always make reference to the complete configuration number and stroke length of your cylinder when ordering replacement items.

Clicking on part number will open tolomatic.com/cart and add quantity of 1 to cart. Change quantity as needed. CLICK ON BROWSER'S BACK BUTTON TO RETURN TO PARTS SHEET.

Click on Part No. to Add to Cart

ITEM	PART NO.	DESCRIPTION	CC50	CCM50	SA50	SAM50
1.	1014-1023	RETAINING RING	2	2	1	1
2.	1004-1056	RETAINING RING	4	4	2	2
[2,3]3.	CACC50SK_	CABLE ASSEMBLY	2			
	CACCM50SK_	CABLE ASSEMBLY W/ MAGNET		2		
	CASA50SK_	CABLE ASSEMBLY			1	
	CASAM50SK_	CABLE ASSEMBLY W/ MAGNET				1
[3]4.	1037-1014	O-RING	2	2	1	1
5.	1037-1010	RETAINING RING	2	2	2	2
[1]6.	RTBCC50SK_	TUBE, ALUMINUM	1	1	1	1
	RTBCCM50SK_	TUBE, ALUMINUM W/ MAGNET	1	1	1	1
[3]7.	1037-1013	WEAR RING	2	2	2	2

Click on Part No. to Add to Cart

ITEM	PART NO.	DESCRIPTION	CC50	CCM50	SA50	SAM50
[3]8.	1037-1012	PISTON U-CUP	2	2	1	1
9.	1037-1016	PISTON	1	1	1	1
10.	1037-1004	CLAMP PLATE	2	2	2	2
11.	1037-1020	SINGLE PORTED HEAD	2	2	1	1
12.	1004-1055	BEARING	6	6	3	3
13.	1004-1053	WASHER	4	4	2	2
14.	1037-1018	PULLEY	2	2	1	1
15.	1037-1009	PULLEY SHAFT	2	2	1	1
16.	2324-1004	LOCK NUT	2	2	1	1
17.	1037-1028	CLEVIS	1	1	1	1
18.	1310-3110	SOCKET HEAD CAP SCREW	8	8	8	8
22.	1037-1038	BUMPER	NA	NA	1	1
23.	1037-1043	FTG, PIPE, BREATHER	NA	NA	1	1
24.	1037-1037	END PLATE	NA	NA	1	1

Tube — Magnet[4] — Extra Cable[5]

[1] Replacement Tube ordering method: RTB __ M 50 SK ____ XA_

EXAMPLE: RTB CC M 50 SK 21·25 XA 9

[2] Repair Kit (RK) & Cable Assembly (CA) ordering method: __ __ M 50 SK ____ XA_

EXAMPLE: RK CC M 50 SK 21·25 XA 9

Repair Kit — Model — Size — Stroke Length

[3] Repair Kit (RK) includes: Piston U-Cups, Wearing Rings, O-Rings, Cable Assembly

[4] M is for optional switch magnet, which is required for switches to function. Since the Magnet Option adds length to the piston and the tube length, it must be included when ordering.

[5] XA & XB are for extra cable length [include addition cable required measured in decimal inches]

INSTALLATION

When unpacking a Tolomatic cable cylinder, BE EXTRA CAREFUL NOT TO SCRATCH OR MAR THE NYLON COVERING ON THE CABLE. The cylinder may be mounted using the bolt holes in the head. When attaching the cable bracket to the driven mechanism, be sure it is in perfect alignment and that it does not deflect the cable to the side. Misalignment can cause excessive wear.

Pretensioning and proof-loading instructions: All double-acting cable cylinders are shipped without being pretensioned. They must be pretensioned after mounting to insure maximum service life of the device. There are two types of stretch in cable— constructional and elastic. The constructional stretch is removed by proof-loading of the cable. The elastic stretch is removed by proper pretensioning of the cable.

Proof-loading of cables (for cylinders without Auto Tensioners):

1. Tighten the bracket terminal lock nuts equally with a torque wrench to torque requirements listed in Table A.
2. Let set for 30 seconds.
3. Loosen lock nuts to remove tension. (But leave them tight enough to eliminate any slack.)
4. Follow Pretensioning Instructions.

TABLE A: TORQUE TO PROOF-LOAD THE CABLE	
MODEL	**REQUIRED TORQUE**
CC50	325 INCH-POUNDS OR 36.72 NEWTON-METERS

Pretensioning of cables:

1. Block the load some distance from the end of travel to keep cylinder from bottoming.
2. Apply pressure that is 15-20 percent higher than actual load pressure needed to move the load.

   NOTE: When the load is stopped externally before the piston bottoms, the relief valve or regulator setting becomes the load pressure.
   WARNING: The CC50 cable cylinder develops up to 1919 pounds of force at 100 PSI. Be certain the materials used to block the load are sufficient to withstand these forces.
   When pressurized, one cable becomes tight and the other becomes slack. Manually adjust out the slack. Release the pressure. Block the load on the opposite side and pressurize the other port. Repeat the manual adjustment on the other cable. Release pressure and remove blocks. Return the regulator or relief valve to the original load pressure.
   The cylinder is now pretensioned. Additional manual adjustment should not be required. It is suggested however, that the cables be checked periodically.
   Alternate Method: If the load cannot be blocked for cable pretensioning as stated above, tighten the bracket terminal lock nuts with a torque wrench to total pretensioning torque as stated in Table B.

TABLE B: TORQUE FOR UNBLOCKABLE LOADS					
MODEL	**PRETENSIONING TORQUE**	**+**	**STARTING TORQUE OF TERMINAL NUTS**	**=**	**TOTAL PRETENSIONING TORQUE**
CC50	180.0 IN-LBS.	+	30.0 IN.-LBS.	=	210.0 IN.-LBS.

NOTE: For cylinders with Auto Tensioners, the cables must be proof-loaded and pretensioned before pressure is applied to the AT unit.

TO REBUILD THE CYLINDER

1. Remove cylinder from machinery.
2. Disconnect Cable (21) from the Clevis (17) and remove Pulleys (14) on both ends of the cylinder.
3. Remove internal retaining rings (2) from both heads and remove one head from cylinder by removing the four Socket Head Cap Screws (18)
4. Pull Piston (9) towards the opened tube end and remove from Tube (6).
5. Disconnect Cables (21) from Piston (9) and pull back through the Heads (11) with their Gland Seals (3) to remove them.
6. Install new U-cups (8) and O-rings (4) on piston (9) and rethread new Cables (21) through Heads (11), and connect them to the Piston (9).
7. Being careful not to damage the cable, lubricate and install the Gland Seals (3) in the Heads (11), and reinstall the retaining rings (2).
8. Push the piston back into tube by gently tucking in the U-cup (8) with a screwdriver or pencil. Mount head back on cylinder with socket head cap screws (18). Replace the Pulleys (14) and connect cable (21) to the clevis (17).
9. Operate cylinder back and forth by hand several times to be sure it is properly assembled before reconnecting air or hydraulic service.
10. Reinstall cylinder on machinery.

    IMPORTANT NOTE: Apply (Blue) Loctite® #242 or equivalent to threaded cable terminal before connecting to the piston.

MAINTENANCE

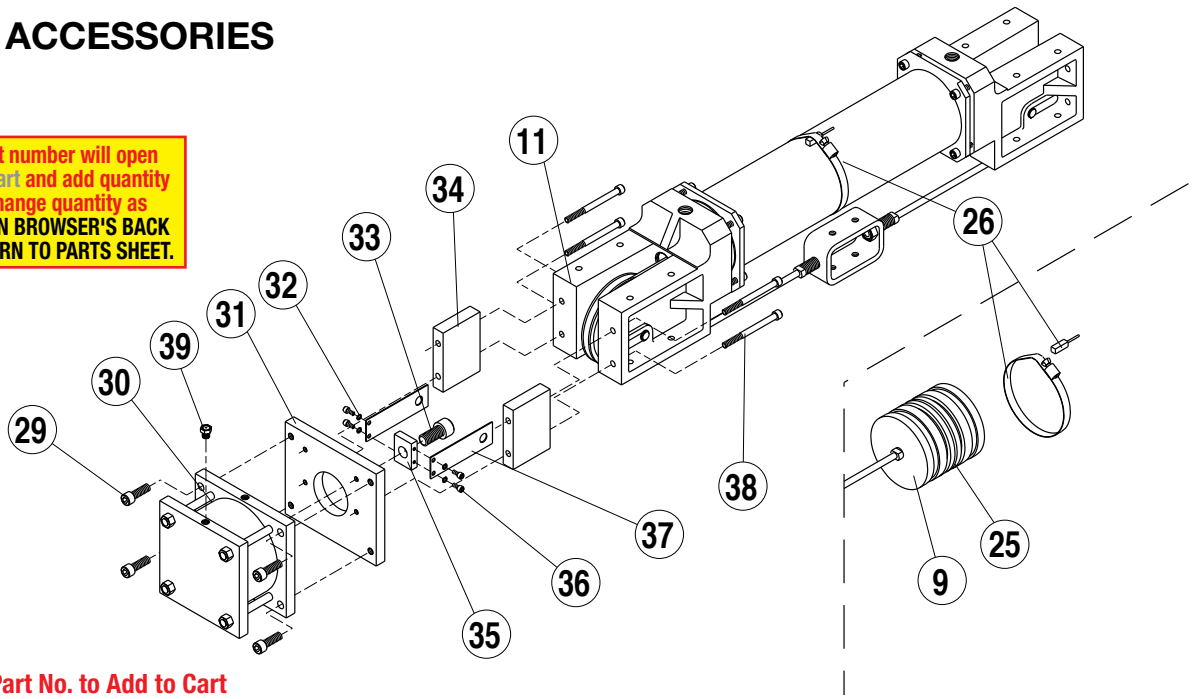
Keep the cylinder as clean as possible around pulleys, glands, etc. Pneumatic service should be adequately lubricated with SAE 10 or 20 grade non-detergent oil.

Pulleys have permanently lubricated bearings and will require no maintenance. Check the cylinder's cables periodically to help prevent premature or unexpected failures.

Your Tolomatic Cable Cylinder will give you many cycles of trouble free service. However, should a leak occur, a rebuilding kit may be obtained which enables you to replace all the seals in a cylinder to return it to normal operating condition.

OPTIONAL ACCESSORIES

Clicking on part number will open tolomatic.com/cart and add quantity of 1 to cart. Change quantity as needed. CLICK ON BROWSER'S BACK BUTTON TO RETURN TO PARTS SHEET.



Click on Part No. to Add to Cart

REED SWITCH			
ITEM	**PART NO.**	**DESCRIPTION**	**QTY**
25.	1037-1039	MAGNET	1
*26.	SWCC50RT	SWITCH, REED, FORM A, 5M WIRE	A/R
	SWCC50RM	SWITCH, REED, FORM A, MALE CON	A/R
	SWCC50BT	SWITCH, REED, FORM C, 5M WIRE	A/R
	SWCC50BM	SWITCH, REED, FORM C, MALE CON	A/R
	SWCC50CT	SWITCH, TRIAC, 5M WIRE	A/R
	SWCC50CM	SWITCH, TRIAC, MALE CONNECT	A/R
SWITCH KITS, ORDER VIA SWITCH TYPE CODE TABLE ON PAGE 4			
AUTO TENSIONER			
ITEM	**PART NO.**	**DESCRIPTION**	**QTY**
29.	1037-1035	SOCKET HEAD CAP SCREW	4
30.	1037-1034	CYLINDER	1
31.	1037-1036	MOUNTING PLATE	1
32.	0801-1261	LOCK WASHER	4
33.	1037-1033	SOCKET HEAD CAP SCREW	1
34.	1037-1032	SPACER	2
35.	1037-1030	TIE PLATE	1
36.	0801-1251	SOCKET HEAD CAP SCREW	4
37.	1037-1031	TENSIONER PLATE	2
38.	1820-1060	SOCKET HEAD CAP SCREW	4
39.	1037-1043	FTG, PIPE, BREATHER	1

* Available in Reed Switch Kit, Order via Switch Type Code Table on page 4, each kit contains one switch and one clamp

AUTO TENSIONER OPTION

All cable cylinder models with Auto Tensioner units should be plumbed with a separate, regulated, non-fluctuating pressure source which is a set percentage of the actual operating pressure.

BORE SIZE (IN.)	% OF LOAD PRESSURE
.75	22%
1.0	40%
1.5	86%
2.0	32%
2.0 (500 PSI)	24%
2.5	51%
3.0	54%
4.0	96%
5.0	75%
6.0	57%
8.0	102%

In the above table, load pressure is defined as the pressure required to move the load, NOT the regulated pressure (pneumatic) or the relief valve setting (hydraulic).

NOTE: If the load will be stopped mechanically prior to the piston bottoming, then the regulator pressure or the relief valve setting must be considered to be the load pressure.

If the application is hydraulic, a pressure-reducing valve must be used to ensure a non-fluctuating pressure source to the tensioner(s) or the pressure source must be an independent circuit that will maintain the required differential.

REED 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 Tolomatic.

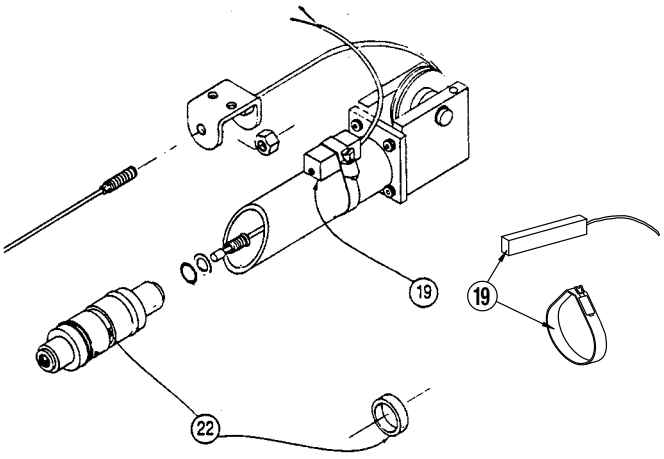
WARNING: An ohmmeter is recommended for testing Reed Switches. NEVER use an incandescent light bulb as a high current rush may damage the switch.
Reed and TRIAC switches are only recommended for signalling position, not directly powering soleniods. For shifting a solenoid, a relay or resistor is recommended between it and the switch. Switch ratings must not be exceeded at any time

	CONFIG. CODE ORDERING MOUNTING HARDWARE & FE CONN. INCLUDED	
ITEM	**CODE**	**DESCRIPTION**
19.	BT	SWITCH KIT, REED, FORM C, 5M
	BM	SWITCH KIT, REED, FORM C, QD MALE CONN.
	RT	SWITCH KIT, REED, FORM A, 5M
	RM	SWITCH KIT, REED, FORM A, QD MALE CONN.
	CT	SWITCH KIT, TRIAC, 5M
	CM	SWITCH KIT, TRIAC, QD MALE CONN.

NOTE: When ordered female connector & all mounting hardware is included

To Order Retrofit Kits
All Switch Kits come with 1 switch and mounting hardware.

Retrofit ordering method: SW ☐☐ ☐☐ ☐☐ ☐☐
EXAMPLE: SW CC 20 RT
Switch Kit — Model — Size — Switch Type Code

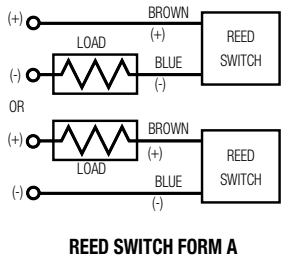


Click on Part No. to Add to Cart

ITEM	PART NO.	DESCRIPTION	QUANTITY CC50	CCS50	CCM50	SA50	SAS50	SAM50
22.	1075-1019	MAGNET			1			
	1001-1202	MAGNET						1

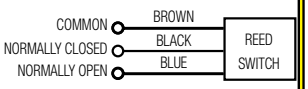
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Universal Switch Wiring Diagrams and Label Color Coding

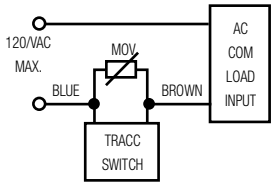


REED SWITCH FORM A
LABEL COLOR: RED
10VA MAX. 200 VDC
500MA MAX. CURRENT

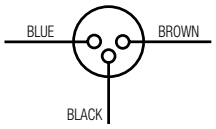
NOTE: The side of the switch with the groove indicates the sensing surface. This must face toward the magnet.



REED SWITCH FORM C
LABEL COLOR: YELLOW
120 VDC/120 VAC MAX.
250MA MAX. CURRENT



TRIAC SWITCH
LABEL COLOR: BLUE
MAX. 1AMP. CONT.
CURRENT @ 86°F
MAX. .5AMP. CONT.
CURRENT @ 140°F
PEAK SURGE CURRENT 10AMP.



QUICK-DISCONNECT
(APPLIES TO ALL SWITCH TYPES)

An Important Note Regarding Field Retrofit of Quick-Disconnect Couplers:
If replacing a Quick-Disconnect switch manufactured before 7-1-97 it will also be necessary to replace or rewire the female-end coupler with the in-line splice

Female Connector 5M

For complete Reed and TRIAC Switch Performance Data, refer to the Tolomatic Pneumatic Products Catalog.

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Viton® is a registered trademark of the E.I. Du Pont de Newmours Co., www.dupont.com

SWITCH TYPE CODE	
BT	FORM C REED SWITCH WITH 5-METER LEAD
BM	FORM C REED SWITCH WITH 5-METER LEAD AND QD
RT	FORM A REED SWITCH WITH 5-METER LEAD

SWITCH TYPE CODE	
RM	FORM A REED SWITCH WITH 5-METER LEAD AND QD
CT	TRIAC SWITCH WITH 5-METER LEAD
CM	TRIAC SWITCH WITH 5-METER LEAD AND QD

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