Tolomatic™
EXCELLENCE IN MOTION

Parts Sheet

1001-4003_12

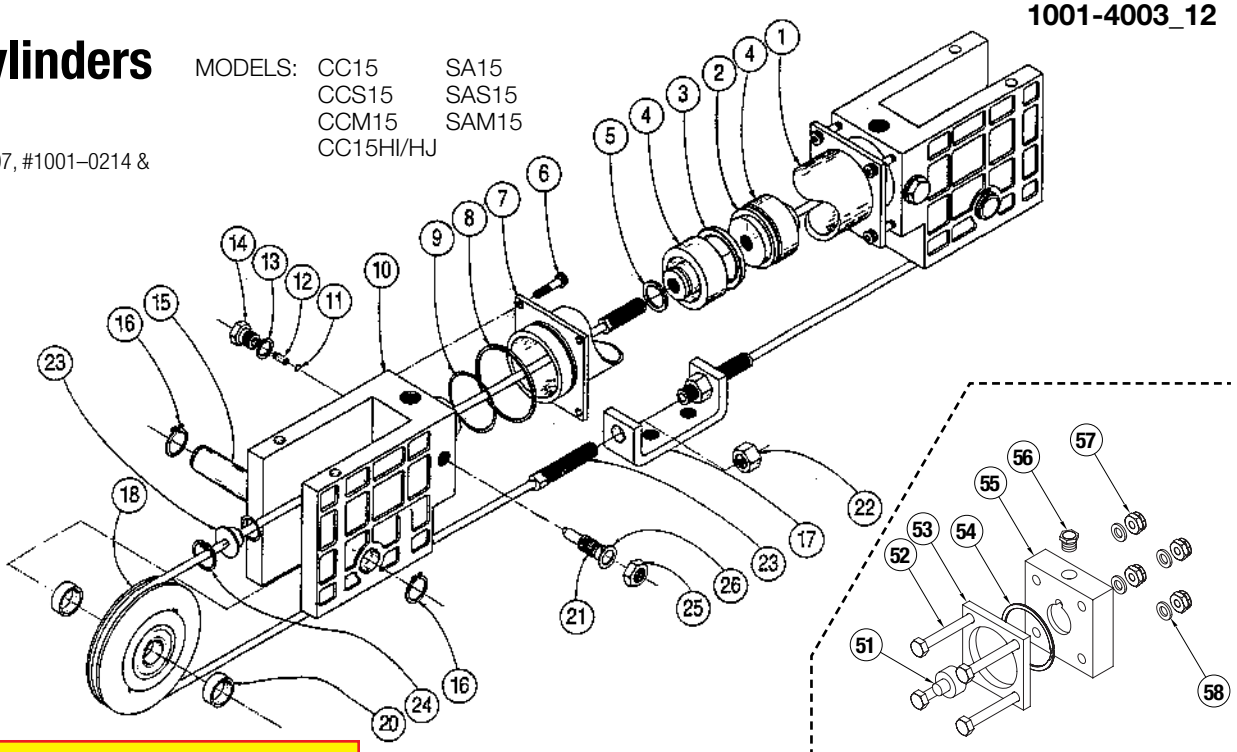
Cable Cylinders

MODELS: CC15 SA15
CCS15 SAS15
CCM15 SAM15
CC15HI/HJ

1½" Bore

Replaced #1001–0207, #1001–0214 & #1001–0236

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.



See page 2 for Single Action (SA) Option

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			QUANTITY		
ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	CC15	CCS15	CCM15
[1]1.	RTBCC15SK_	TUBE - ALUM.	AR		
	RTBCCS15SK_	TUBE - STEEL		AR	
	RTBCCM15SK_	TUBE - ALUM. W/MAGNET OPTION			AR
2.	1004-1040	PISTON	1	1	
	1004-1337	PISTON			1
[3]3.	1004-1020	PISTON U-CUP, BUNA-N MATERIAL	2	2	2
	1004-1268	PISTON U-CUP, VITON® MATERIAL	2	2	2
4.	1004-1041	PISTON SKIRT	2	2	2
[3]5.	1004-1022	QUAD RING, BUNA-N MATERIAL	2	2	2
	1004-1269	QUAD RING, VITON® MATERIAL	2	2	2
6.	1004-1064	SOCKET HEAD CAP SCREW	8	8	8
7.	1004-1034	CLAMP PLATE	2	2	2
8.	1004-1036	RETAINING RING	2	2	2
[3]9.	1004-1037	O-RING, BUNA-N MATERIAL	2	2	2
	1004-1267	O-RING, VITON® MATERIAL	2	2	2
10.	1004-1279	SINGLE-PORTED HEAD	AR	AR	AR
	1004-1305	3-PORTED HEAD	AR	AR	AR

Click on Part No. to Add to Cart			QUANTITY		
ITEM	PART NO. OR CONFIG. CODE	DESCRIPTION	CC15	CCS15	CCM15
11.	1004-1047	CHECK VALVE BALL	2	2	2
12.	1004-1046	CHECK VALVE SPRING	2	2	2
13.	1004-1048	WASHER SEAL	2	2	2
14.	1004-1045	CHECK VALVE SCREW	2	2	2
15.	1004-1052	PULLEY SHAFT	2	2	2
16.	1004-1056	RETAINING RING	4	4	4
17.	1004-1057	CLEVIS	1	1	1
18.	1004-9005	PULLEY ASSEMBLY	2	2	2
20.	1004-1410	SPACER RING	4	4	4
21.	1004-1212	CUSHION NEEDLE	2	2	2
22.	1004-1190	LOCK NUT	2	2	2
[2,3]23.	CACC15SK_	CABLE ASSEMBLY	2	2	
	CACCM15SK_	CABLE ASSEMBLY W/MAGNET			2
24.	1004-1278	RETAINING RING	2	2	2
25.	1004-1050	NUT	2	2	2
26.	1004-1067	SEAL WASHER	2	2	2

Tube — Steel Tube[4] — Magnet[6] — Extra Cable[7]

[1] Replacement Tube ordering method: RTB __ __ S V M 1 5 SK __ __ __ __ __ XA __

EXAMPLE: RTB CC V M 15 SK 21·25 XA 9

[2] Repair Kit (RK) & Cable Assembly (CA) ordering method: __ __ __ __ S V M 1 5 SK __ __ __ __ __ XA __

EXAMPLE: RK CC V M 15 SK 21·25 XA 9

Repair Kit — Model — Viton® Seals[5] — Size — Stroke Length

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

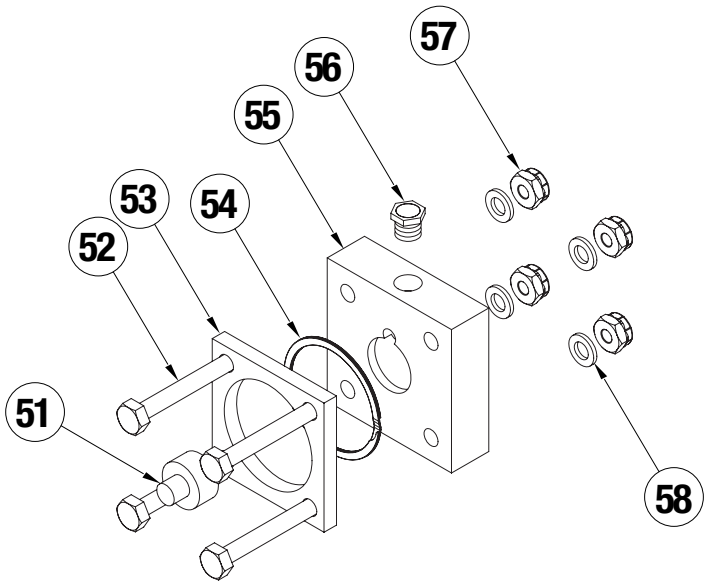
[4] Steel tubes (S) are incompatible with switches and magnets.

[5] V refers to optional seals of Viton® material.

[6] 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.

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

Single Action Option



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Click on Part No. to Add to Cart

ITEM	PART NO.	DESCRIPTION	QTY
51.	1004-1226	RUBBER BUMPER	1
52.	1004-1225	END CAP FASTENER	4
53.	1004-1034	CLAMP PLATE	1
54.	1004-1036	RETENTION RING	1
55.	1004-1224	END CAP	1
56.	0768-1022	BREATHER	1
57.	1004-1013	LOCK NUT	4
58.	1004-1144	WASHER	4

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.

Pre-tensioning and proof-loading instructions: All double-acting cable cylinders are shipped without being pre-tensioned. They must be pre-tensioned 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 pre-tensioning 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 Pre-tensioning Instructions.

TABLE A: TORQUE TO PROOF-LOAD THE CABLE	
MODEL	**REQUIRED TORQUE**
CC15	45 IN-LBS (5.08 N-M)

Pre-tensioning 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: Load pressure is defined as the actual pressure required to move the load. When the load is stopped externally before the piston bottoms, the relief valve or regulator setting becomes the load pressure.

   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.

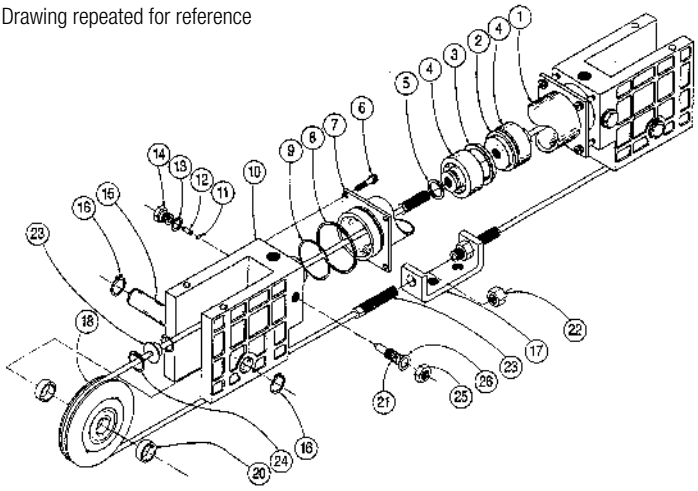
   The cylinder is now pre-tensioned. Additional manual adjustment should not be required. It is suggested however, that the cables be checked periodically.

   Alternate Method: If the load cannot be blocked for cable pre-tensioning as stated above, tighten the bracket terminal lock nuts with a torque wrench to total pre-tensioning torque as stated in Table B.

TABLE B: TORQUE FOR UNBLOCKABLE LOADS					
MODEL	**PRE-TENSIONING TORQUE**	**+**	**STARTING TORQUE OF TERMINAL NUTS**	**=**	**TOTAL PRE-TENSIONING TORQUE**
CC15	8.0 IN-LBS	+	20.0 IN-LBS	=	28.0 IN-LBS
	0.904 N-M	+	2.26 N-M	=	3.164 N-M

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

Drawing repeated for reference



TO REBUILD THE CYLINDER

1. Remove cylinder from machinery.
2. Disconnect Cable (#22) from the Clevis (#17) and remove Pulleys (#18) on both ends of the cylinder.
3. Remove internal retaining rings (#8) from both heads and remove one head from cylinder by removing the four Socket Head Cap Screws (#6)
4. Pull Piston (#2) towards the open tube end and remove from Tube (#1).
5. Disconnect Cables (#22) from Piston (#2) and pull back through the Heads (#10) to remove them.
6. Install new U-cups (#3) and Quad-rings (#5) on Piston (#2) and rethread new Cables (#22) through Heads (#10), and connect them to the Piston (#2).
7. Being careful not to damage the cable, lubricate and install the Gland Seals on the Cable Assembly (#22) in the Heads (#10), and reinstall the retaining rings (#23).
8. Push the Piston (#2) back into Tube (#1) by gently tucking in the U-cup (#3) with a screwdriver or pencil. Mount head back on cylinder with socket head cap screws (#6). Replace the Pulleys (#18) and connect cable (#22) 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.

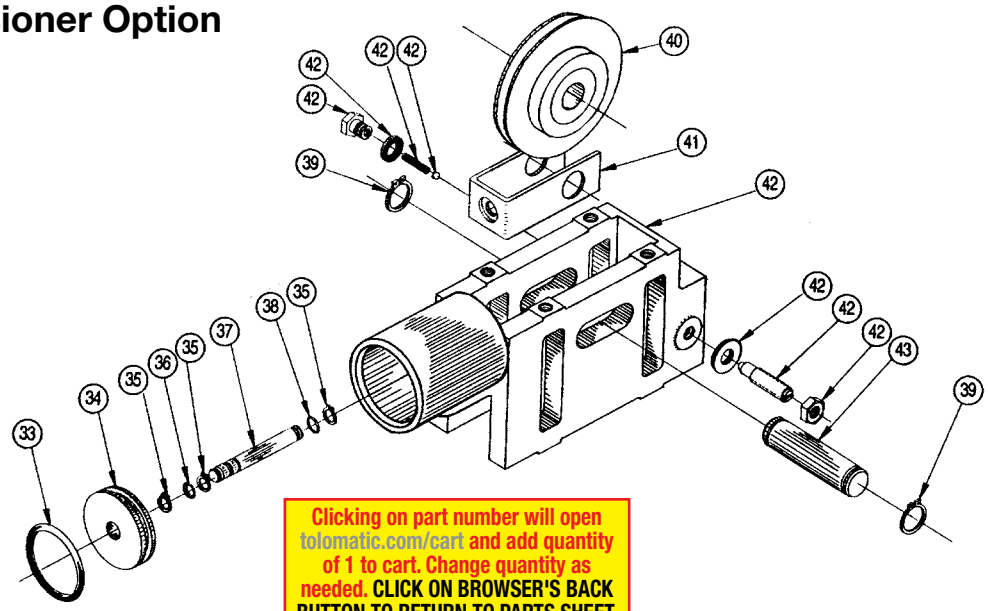
MAINTENANCE

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.

Auto Tensioner Option



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	QTY.
		AUTO TENSIONER	
33.	1001-1075	O-RING	1
34.	1001-1165	TENSIONER PISTON	1
35.	1001-1255	RETAINING RING	3
36.	0720-1003	O-RING	1
37.	1001-1213	TENSIONER PISTON ROD	1
38.	1001-1021	O-RING	1
39.	1004-1056	RETAINING RING	2
40.	1004-1409	PULLEY	1
41.	1004-1347	TIE PLATE ASSEMBLY	1
*42.	1004-9302	TENSIONER HEAD ASSEMBLY (SINGLE-PORT)	1
	1004-1306	TENSIONER HEAD ASSEMBLY (3-PORT)	1
43.	1004-1052	PULLEY SHAFT	1

*Indicates check valve components used only in the single ported head.

AUTO TENSIONER OPTION

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

BORE SIZE (IN.)	% OF LOAD PRESSURE
0.75	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%

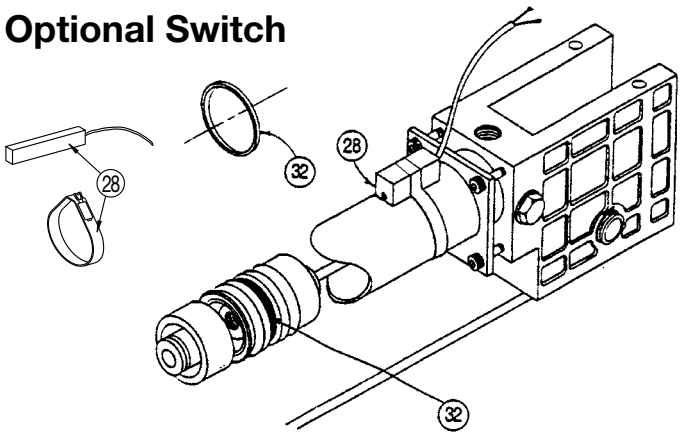
In the above table, load pressure is defined as the pressure required to move the load, NOT the regulated pressure (pneumatic) or the relief valve setting (hydraulic).

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.

When installing cable cylinder models with Auto tensioner units, take up the cable slack manually according to the pretensioning instructions under General Installation and Maintenance.

Optional Switch



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. OR CONFIG. CODE	DESCRIPTION	QTY.
		SWITCH KIT	
28.	BT	SWITCH KIT, REED, FORM C, 5M	A/R
	BM	SWITCH KIT, REED, FORM C, MALE CONN.	A/R
	RT	SWITCH KIT, REED, FORM A, 5M	A/R
	RM	SWITCH KIT, REED, FORM A, MALE CONN.	A/R
	CT	SWITCH KIT, TRIAC, 5M	A/R
	CM	SWITCH KIT, TRIAC, MALE CONN.	A/R
	Mounting hardware & fe conn. Included **Note:** When ordered female connector & all mounting hardware is included		
32.	1004-1338	MAGNET	1

To Order Retrofit Kits

All Switch Kits come with 1 switch and mounting hardware.

Retrofit ordering method: SW ☐☐ ☐☐ ☐☐

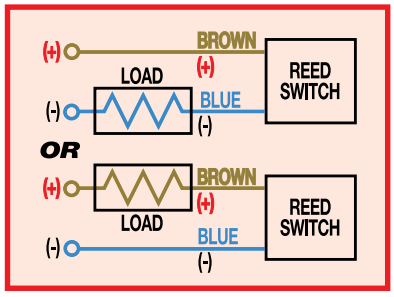
EXAMPLE: SW CC 15 RT

Switch Kit — Model — Size — Switch Type Code

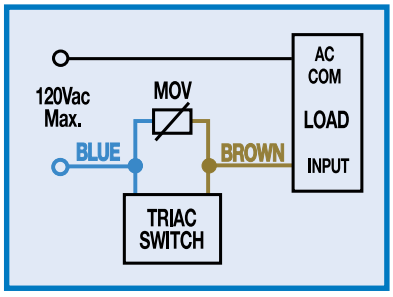
Hardware and Form A Reed switch with 5 meter lead for 1.5" bore Cable cylinder

WIRING DIAGRAMS

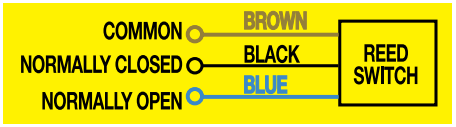
RT & RM DC REED, FORM A



CT & CM AC REED, TRIAC

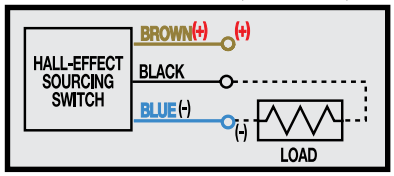


BT & BM DC REED, FORM C

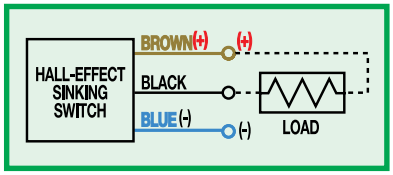


Some actuators may require switch mounting on a specific side of the assembly. Call Tolomatic for details.

TT & TM HALL-EFFECT, SOURCING, PNP



KT & KM HALL-EFFECT, SINKING, NPN

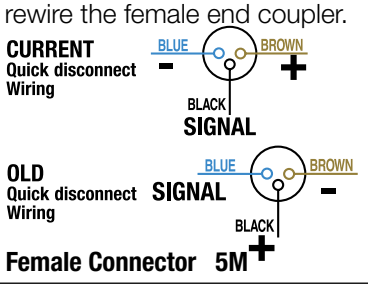


INSTALLATION INFORMATION



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

REPLACEMENT OF QD SWITCHES MANUFACTURED BEFORE JULY 1, 1997:
It will be necessary to replace or rewire the female end coupler.



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