

# RC Series Rodless Cylinder Maintenance Instructions

**Note:** Before attempting any repairs or modifications to the rodless cylinder, **READ, UNDERSTAND** and **FOLLOW ALL** maintenance instructions.

The integrity of the inner sealing band is critical to the proper performance of the rodless cylinder. Care must be exercised in the handling of this band.

Bore Size	25mm	32mm	40mm	50mm	63mm
Tool	Tool Size				
Hex Allen Wrench	3/32" & 1/8"	3/32", 1/8" & 3/16"		3/32", 1/8" & 1/4"	3/32", 1/8" & 1/4"
Screw Driver	Flat Blade Type				
Socket Wrench	5/16" & 3/8"	5/16" & 7/16"	7/16"	1/2"	1/2"



- Bore Sizes - 25mm, 32mm, 40mm, 50mm & 63mm
- Maximum Operating Pressure –115 P.S.I. Air

**NOTE: THE INTEGRITY OF THE INNER BAND IS CRITICAL TO THE PERFORMANCE OF THE RODLESS CYLINDER. THE EDGES OF THE INNER BAND MUST NOT BE DAMAGED.**

#### Disassembly of Cylinder:

1) Remove carriage screws (sym. #1) and nuts (sym. #2). Loosen band wiper screws (sym. #3) and band wiper (sym. #4). Remove carriage (sym. #5) assembly from cylinder.

2) Remove outer band set screws (sym. #6) in band clamp (sym. #22). Remove outer band (sym. #7) from cylinder. Caution: The corners of the outer band material may be sharp. Care should be exercised when handling band material.

3) Loosen inner band set screws (sym. #8) by inserting an Allen wrench through the holes for the outer band set screws, removed in step #2 (Photo #1).



**Photo #1**

4) Repeat steps #2 & #3 on opposite end.

5) Remove the end cap screws (sym. #9) and end caps (sym. #10) from each end of the cylinder. **NOTE: Do not twist caps to remove.**

#### Removal of Piston and Inner Band:

**CAUTION:** Inner band edges are very sharp. Extreme care must be taken during disassembly and re-assembly to protect individuals handling band material. Protective equipment should be utilized to prevent injury to exposed areas; i.e., hands, face, neck.

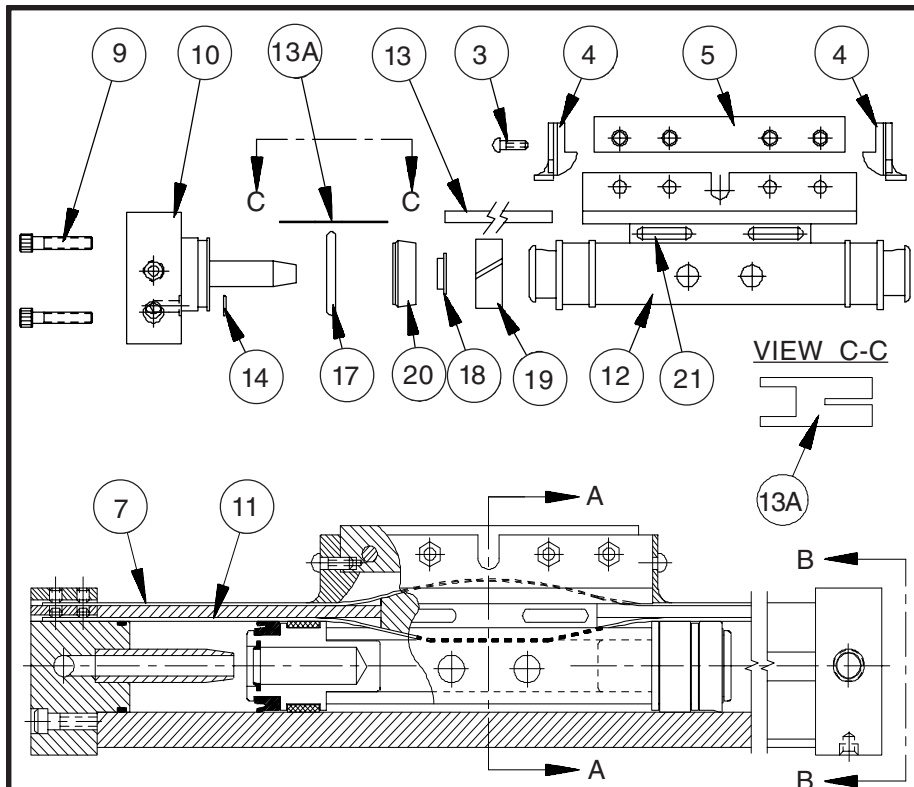
1) Using care not to damage the inner band, simultaneously slide the inner band (sym. #11) and piston assembly (sym. #12) out of the cylinder.

2) Carefully pull the inner band from the piston assembly.

#### Inspection of Cylinder:

1) Replacement seal kits (see Table A) are available for each bore size. Compare each of the parts of the seal kit to the corresponding part on the cylinder. Replace parts as required.

2) Inspect the inner band for nicks, kinks and any damage to the sharp edge. If any damage is evident, the inner band should



Symbol #	Description	Symbol #	Description
1	Carriage Screw	8	Inner Band Set Screw
2	Carriage Screw Nut	9	End Cap Set Screw
3	Band Wiper Screw	10	End Cap
4	Band Wiper	11	Inner Band
5	Carriage	12	Piston
6	Outer Band Set Screw	13	Carriage Support Rod*
7	Outer Band	13A	Carriage Spacer (25mm bore only)

\*Not applicable to 25mm.

**Table A**

Rodless Cylinder Repair Kits - Standard Carriage		
Bore Size	Part Number	Kit Includes:
25	L074840025	2 ea. sym. #4, 13A, 17, 18, 20, 21 & 23; 4 ea. sym. #14
32	L074840032	2 ea. sym. #4, 17, 18, 20 & 23; 4 ea. sym. #14;
40	L074840040	#21-32mm - 4 ea.,
50	L074840050	40mm - 4 ea., 50mm -
63	L074840063	6 ea., 63mm - 6 ea.
Rodless Cylinder Repair Kits - Double Carriage		
25	L075190025	2 ea. sym. #17, 18 & 23;
32	L075190032	4 ea. sym. #4, 13A, 14, 20, 21
40	L075190040	2 ea. sym. #17, 18 & 23;
50	L075190050	4 ea. sym. #4, 14, 20;
63	L075190063	#21-32mm - 8 ea.,
		40mm - 8 ea., 50mm -
		12 ea., 63mm - 12 ea.

be replaced. Inner bands can be ordered by specifying the model number and/or serial number of the cylinder. Bands (sym. #7 & #11) are not included in seal kits.

3) Inspect the I.D. of the cylinder body for scratches, grooves, scoring or any other imperfections. If the body is badly damaged, it should be replaced. A replacement body can be ordered by specifying the model number and/or serial number of the cylinder.

4) Inspect the piston carriage support rods (sym. #13, if applicable) or carriage spacers (sym. #13A), for any scoring or

**Table B**

Carriage Support Rod Requirements			
Bore Size	Type	Part Number	Qty. Req'd
25		Not Required*	
32	Standard	0864080628	2
	Double		4
40	Standard	0864080588	2
	Double		4
50	Standard	0864080833	2
	Double		4
63	Standard	0864080864	2
	Double		4

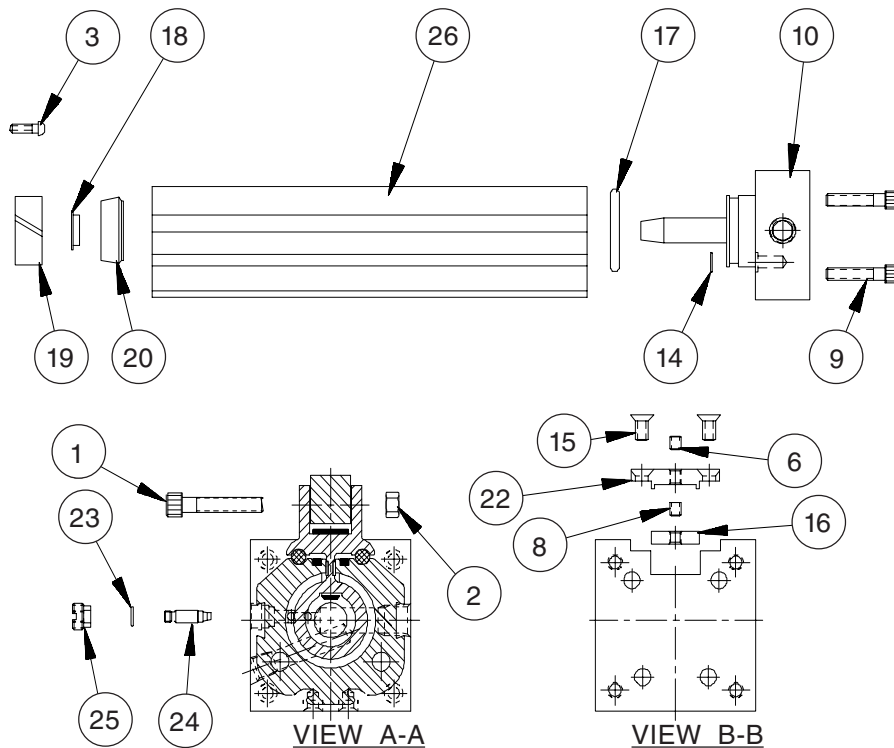
\*Carriage spacers included in seal kits.

**Table C**

Inner and Outer Band Kits – Must Specify Length of Stroke		
Part Number	Description	Kit Includes:
L0784500XX	Inner Band Single Carriage	1 ea. Sym. #11
L0784600XX	Inner Band Double Carriage	1 ea. Sym. #11
L0784700XX	Outer Band Single Carriage	1 ea. Sym. #7
L0784800XX	Outer Band Double Carriage	1 ea. Sym. #7

Note: Replace XX with bore size.

Example: L078450032 x 40" is the inner band for 32CFMRCUDC x 40.00



Symbol #	Description	Symbol #	Description
14	Transfer O-Ring	21	Bearing Strips
15	Flat Head Fastener	22	Band Clamp
16	Band Clamp Spacer	23	Needle Valve O-Ring
17	End Seal O-Ring	24	Needle Valve
18	Cushion Seal	25	Needle Valve Retainer
19	Piston Bearing	26	Cylinder Body
20	Piston Seal		

excessive wear. If damaged, they should be replaced (see Table B).

### Cylinder Assembly:

#### A) Piston and Inner Band Assembly.

1) Insert the plastic strap supplied in the repair kit into one end of the piston assembly (Photo #2).



Photo #2

2) Carefully insert the inner band, bevelled side down, into the piston at the end opposite the plastic strap (Photo #3 & #4).



Photo #3

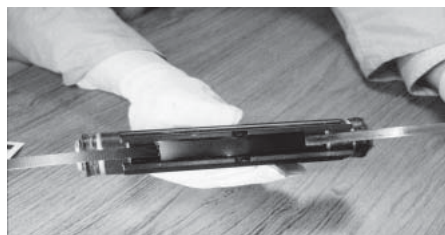


Photo #4

3) After the leading edge of the inner band travels past the piston seal at the opposite end (Photo #5), stop and remove the plastic strap.

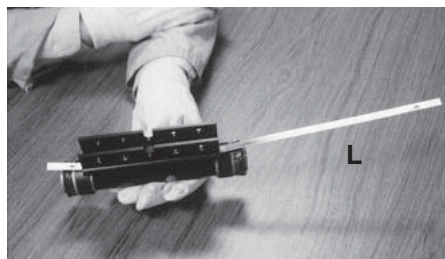


Photo #5

4) With the inner band installed into the piston, insert end "L" (Photo #6) of the piston and band sub-assembly into the cylinder body making sure the band is centered under the groove (Photo #7).

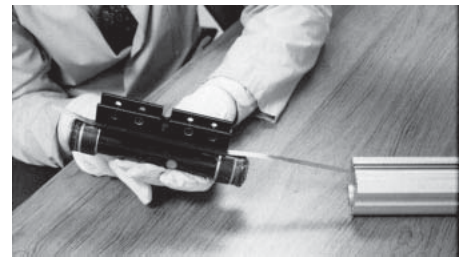


Photo #6

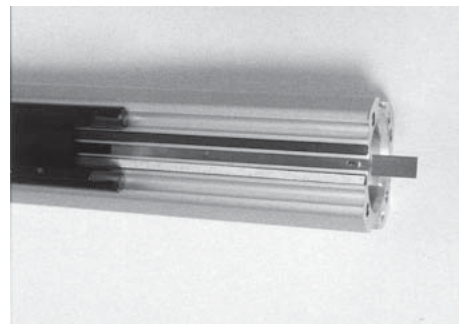


Photo #7

5) After the piston/band sub-assembly is completely inserted into the body, position the band so that an equal length of band protrudes from each end of the tube (Photo #8). Again, verify that both ends of the inner band are centered under the groove.

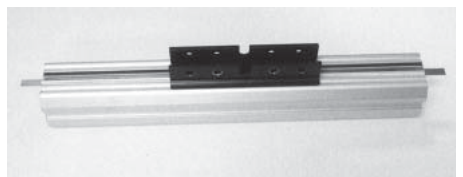


Photo #8

#### B) End Cap Re-assembly

1) Ensure transfer O-Rings (sym. #14) are in place.

2) Make sure the band is still positioned along the center of the tube slot; then install the end cap onto the cylinder body. The end caps must be oriented as they were in the original assembly. The cutout for the band should be properly oriented (in line with the band). Use a gentle but firm pushing motion, NOT a twisting motion to insert the cap into the tube (Photo #9).



Photo #9



- 3) Repeat the preceding two steps to install the opposite end cap.
- 4) Place the cylinder assembly on a flat surface so the end caps are aligned.
- 5) Insert the end cap mounting screws (sym. #9) at both ends and tighten to the recommended torque value (see Table C).

### C) Final Assembly

- 1) Using a thin flat blade screwdriver, remove the slack of the inner band by pushing the slot at each end (Photo #10).  
NOTE: The goal is not to tension the band, merely to eliminate any slack. Use of excessive force may cause the band to move out of position and/or band damage.



Photo #10

- 2) Install the band clamp (sym. #22) on each end cap with the flat head fasteners (sym. #15). Tighten fasteners to the recommended torque value (see Table C).
- 3) If the outer band set screws (sym. #6) have not already been removed, remove them now.
- 4) Insert the band clamp spacers (sym. #16) into each end cap with the set screws (sym. #8) pre-installed and with the hex side of the set screws facing up.
- 5) Insert a hex wrench through the outer band set screw holes (Photo #11) to access the set screws in the band spacer.



Photo #11

- 6) Tighten the inner band set screws at each end to the recommended torque value (Table C).

- 7) Test cylinder for audible leakage.
- 8) Install outer band through the piston carriage and into each end cap above the band spacer. Position the band so no band material protrudes from the face of either end cap.
- 9) Place carriage on piston.
- 10) Install carriage bolts and tighten on each end of carriage.
- 11) Install carriage support rods (sym. #13 if applicable) or carriage spacer #13A (25mm bore).
- 12) Install band wipers with button head screws. (On 25mm and 32mm bores with double carriage mounting, install thinner 2 band wipers on inner ends of carriages.)
- 13) Install outer band set screws into band clamp at each end and tighten to the recommended torque value (Table C).

Table C

RC Series Rodless Cylinder Torque Values (inch - pounds)

Bore Size	End Cap Screws	Band Clamp Screws	Inner Band Screws	Outer Band Screws
	Sym. #9	Sym. #15	Sym. #8	Sym. #6
25mm	35 + 5	10 + 2	10 + 5	10 + 5
32mm	35 + 5	10 + 5	10 + 5	10 + 5
40mm	60 + 10	15 + 5	10 + 5	10 + 5
50mm	40 + 10	15 + 5	10 + 5	10 + 5
63mm	70 + 10	15 + 5	10 + 5	10 + 5

RC Series Rodless Cylinder Torque Values (Kg cm)

Bore Size	End Cap Screws	Band Clamp Screws	Inner Band Screws	Outer Band Screws
	Sym. #9	Sym. #15	Sym. #8	Sym. #6
25mm	40 + 6	12 + 2	12 + 6	12 + 6
32mm	40 + 6	12 + 6	12 + 6	12 + 6
40mm	69 + 12	17 + 6	12 + 6	12 + 6
50mm	46 + 12	17 + 6	12 + 6	12 + 6
63mm	81 + 12	17 + 6	12 + 6	12 + 6

Note: Rodless cylinder fasteners should be properly torqued using a calibrated torque wrench. Torquing of the end cap fasteners should be performed first using the opposite corner sequencing technique to approximately 75% of the final torque value shown in the table to the left. Then, continuing the opposite corner technique, torque to the final value.

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**10. Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

**11. Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright

infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

**12. Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

**13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

**14. Force Majeure.** Seller does not assume the risk and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure") Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

**15. Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidity of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

**16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) the dissolves or liquidates all or a majority of its assets.

**17. Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

**18. Indemnity for Infringement of Intellectual Property Rights.** Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

**19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

**20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which the Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

02/12



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