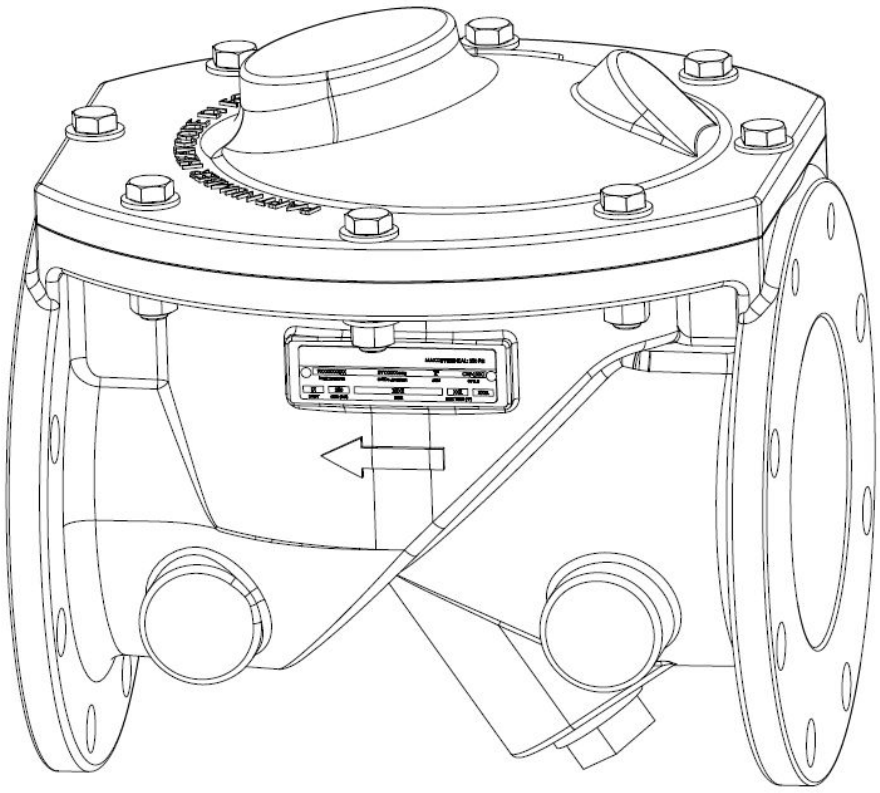
APCO 2-24” CRF-100C RUBBER FLAPPER SWING CHECK VALVES



Instruction **D12046**
April 2025

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Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

⚠WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your DeZURIK product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

If the valve has a data plate: please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any data plate visible on the valve: please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at DeZURIK.com.

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Description

A rubber flapper swing check valve consists of a valve body, cover, and a flapper that is connected to the body and cover. The flapper swings away from the valve seat to allow flow in the forward direction and returns to the valve seat when the upstream flow is stopped to prevent backflow. They can be equipped with an optional externally adjustable Spring Return (SR), Position Indicator (PI), and/or a Hold Open Device (HOD).

Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to piping or attached components. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, refer to **Form 1454 – Recommended Long & Short-Term Storage Procedures**.

Installation

The APCO CRF-100C Rubber Flapper Swing Check Valve may be installed in either horizontal or vertical position (with the flow upward). The embossed flow arrow on the valve body must be pointing in the direction of flow. Unless otherwise specified, the valves are shipped for horizontal installation.

1. Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
2. Prepare pipe ends and install valves in accordance with the pipe manufacturer's instructions for the joint used.

NOTICE

Do not deflect the pipe-valve joint. Minimize bending stresses in the valve end connection with pipe loading.
If excessive seat leakage occurs during startup, check the installation and eliminate any distortion to the valve body.

3. Ensure the valve and pipeline flanges are concentric to ensure proper flange sealing and seat leakage control.
4. Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.

Fusion Bonded Epoxy Coated Valves

NOTICE

Valves with fusion bonded epoxy coated exterior require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange. This is to prevent the coating from cracking or chipping.

CRF-100C Rubber Flapper Swing Check Valve

Maintenance

The CRF-100C Rubber Flapper Swing Check Valve does not require routine maintenance but should be included as part of the normal facility equipment inspections for any malfunction while under normal usage conditions. An inspection can be quickly performed as follows: Refer to Figure 1 for details and parts.

Disassembly Procedure (CRF-100C):

1. Ensure the pipeline is de-energized.

⚠WARNING

Pipeline pressure can cause injury or death. Relieve pipeline pressure before servicing.

2. Loosen each cover Bolt (A04, A05 if applicable) only three full turns.
3. Tap the side of Cover (A02) with a mallet to separate the Cover (A02) from the Body (A01).
4. Remove all cover Bolts (A04, A05 if applicable), Washers (A21) and Nuts (A31 if A05 is used), and lift off Cover (A02).
5. Remove Flapper (A10) from Body (A01) and inspect for cracks or tears. Check for wear on the Body (A01) seat surface.
6. Inspect Spring (A65). Replace it if damaged.

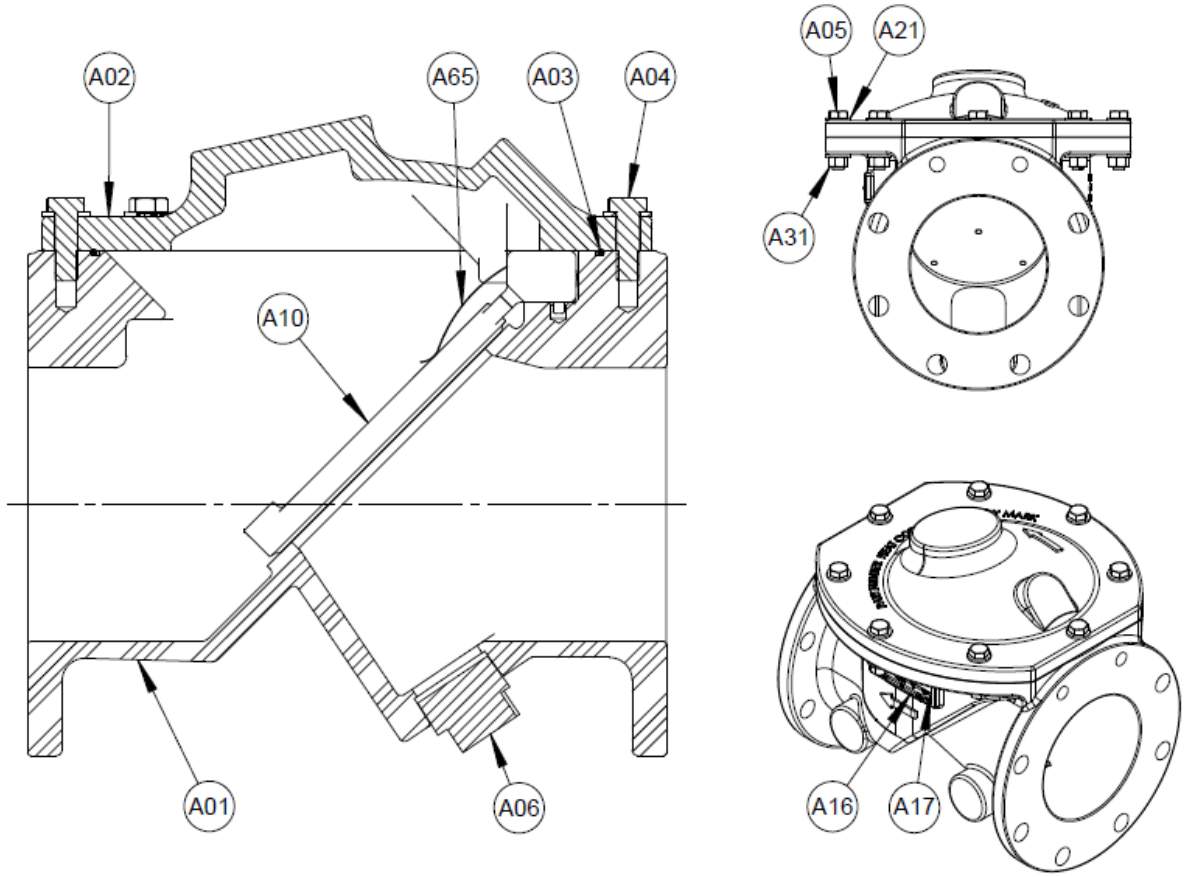
Assembly Procedure (CRF-100C):

1. Apply a coating of O-ring and media compatible grease (Molykote 111 or Phoenix 505) to Cover O-ring (A03).
2. Place Flapper (A10) into Body (A01) seat opening. Make sure Flapper (A10) is positioned correctly in the Body (A01) pocket by aligning the rubber pin in the Flapper (A10) with the locating hole in the Body (A01).
3. Push the rubber pin on the Flapper (A10) into the Body (A01) locating hole.
4. Place Spring (A65) on top of the Flapper(A10).

   Note: The Spring (A65) should be equally spaced between two flats on the Flapper (A10). The Flapper (A10) should rest flat on the Body (A01) seat as shown in Figure 1.
5. Place O-Ring (A03) into the O-ring groove of the Body (A01).
6. Install Cover (A02) onto Body (A01). Make sure the Cover (A02) properly aligns on the Flapper (A10) hinge pin section.
7. Install Washers (A21), Bolts (A04, A05 if applicable) and Nuts (A31 if A05 is used). Tighten all Bolts (A04, A05 if applicable) in Cover (A02) lightly in a crisscross pattern to prevent tilting the cover.
8. After all Bolts (A04, A05 if applicable) are lightly tightened and Cover (A02) is sitting flat on Body (A01). Torque bolts down per Table 1.
9. Slowly open discharge isolation valve to pressurize rubber flapper swing check valve and ensure there is no leaking from the Cover (A02) to Body (A01) joint.

Bolt Size	***Torque***
1/4”-20	62 in-lbs
5/16”-18	128 in-lbs
3/8”-16	19 ft-lbs
7/16”-14	30 ft-lbs
1/2”-13	46 ft-lbs
9/16”-12	67 ft-lbs
5/8”-11	92 ft-lbs
3/4”-10	113 ft-lbs
7/8”-9	182 ft-lbs
1”-8	273 ft-lbs
1-1/4”-7	545 ft-lbs
1-3/8”-6	715 ft-lbs
1-1/2”-6	949 ft-lbs

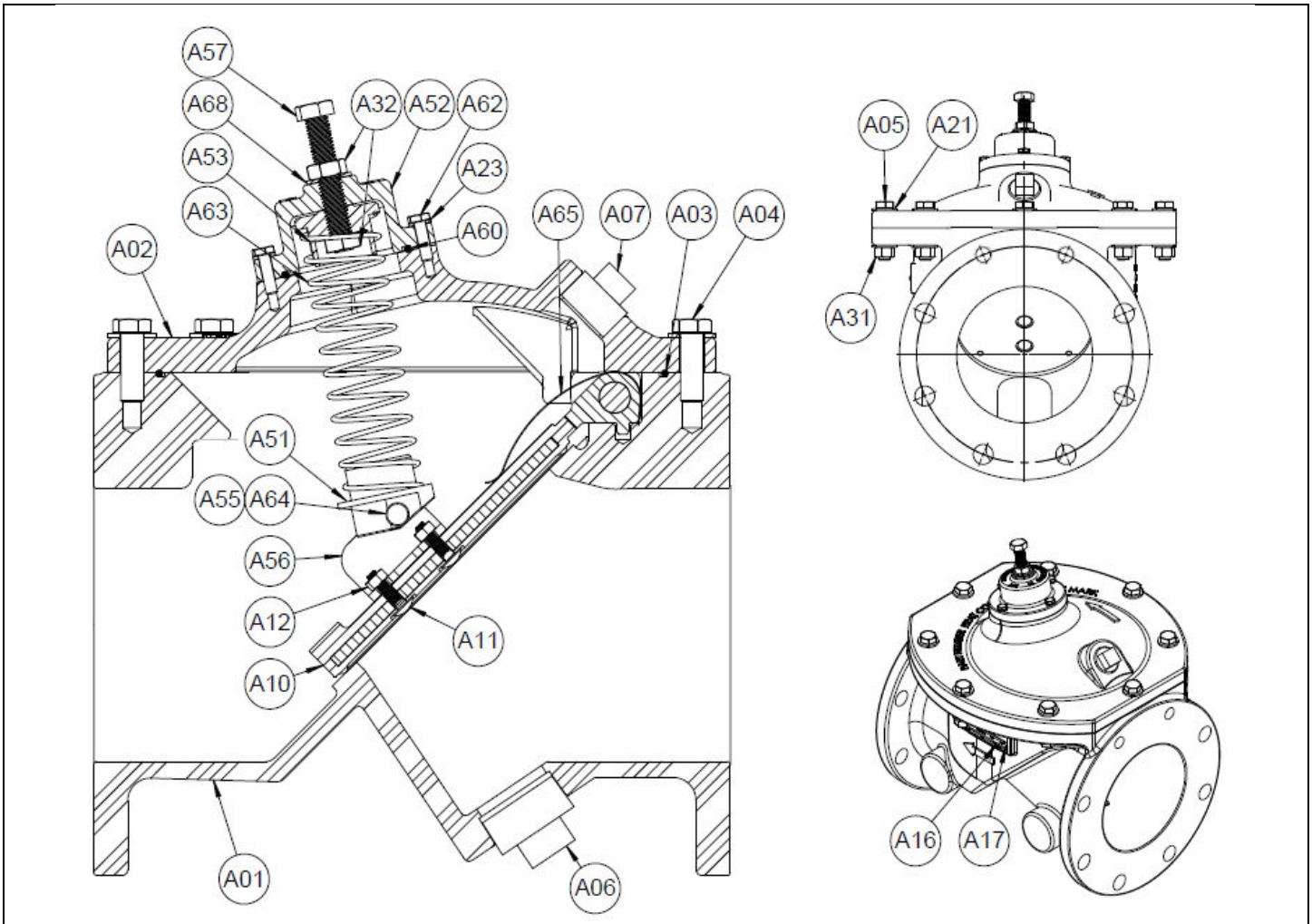
Table 1: Torque Specifications



Item No.	*Description*
A01	Body
A02	Cover
A03	Cover O-Ring
A04	Bolt (Short)
A05	Bolt (Long)
A06	Body Pipe Plug

Item No.	*Description*
A10	Flapper
A16	Data Plate
A17	Drive Screw
A21	Washer
A31	Nut
A65	Spring

Figure 1: APCO CRF-100C, Rubber Flapper Swing Check Valve



Item No.	*Description*
A01	Body
A02	Cover
A03	Cover O-Ring
A04	Bolt (Short)
A05	Bolt (Long)
A06	Body Pipe Plug
A07	Cover Pipe Plug
A10	Flapper
A11	Flapper Plug Bolt
A12	Nut
A16	Data Plate
A17	Drive Screw
A21	Washer
A23	Washer

Item No.	*Description*
A31	Nut
A32	Jam Nut
A51	Lower Spring Guide
A52	Spring Housing
A53	Upper Spring Guide
A55	Pivot
A56	Spring Bracket
A57	Spring Adjusting Screw
A60	Spring Housing O-Ring
A62	Spring Housing Screw
A63	Spring
A64	Pin Retainer
A65	Leaf Spring
A68	Thread Seal

Figure 2: Spring Return Attachment

CRF-100C Spring Return Option (SR)

The CRF-100C with Spring Return (SR) option is designed to minimize or eliminate slam in high head applications where rapid flow reversal causes standard swing check valves to slam. Adding a spring return feature causes the disc to speed up or accelerate valve closure. Having the valve closed before reverse flow occurs can, in many instances, drastically reduce or even eliminate valve slam.

Note: Pump does not need to be shut down or depressurized before external spring adjustments are made using external Spring Adjusting Screw (A57).

Adjustment of Closing Speed (to minimize slam)

Refer to Figure 2 for details and parts.

To Increase Closing Speed

1. Loosen Jam Nut (A32), and then turn Spring Adjusting Screw (A57) clockwise.
    a. This will increase the compressive load on the Spring (A63), as well as apply more pressure on the Flapper (A10) to cause it to close faster and reduce slam.
2. Lock the Spring Adjusting Screw (A57) with the Jam Nut (A32) when desired setting has been reached.

To Decrease Closing Speed (minimize head loss and increase flow rate)

1. Loosen Jam Nut (A32), and then turn Spring Adjusting Screw (A57) counterclockwise.
    a. This will decrease the pressure on the Flapper (A10) minimizing head loss and increasing flow rate.
2. Lock the Spring Adjusting Screw (A57) with the Jam Nut (A32) when desired setting has been reached.

Maintenance (SR)

There are very few moving parts in this valve – a spring adjusting mechanism and a rubber flapper. This valve requires little or virtually no maintenance.

For periodic inspection of the rubber flapper and the body seat surface, the following procedures may be taken: Refer to Figure 2 for details and parts.

Disassembly Procedure (SR)

1. Ensure pipeline is de-energized.

⚠WARNING

Pipeline pressure can cause injury or death. Relieve pipeline pressure before servicing.

2. Mark original position of Spring Adjusting Screw (A57)
3. Loosen Jam Nut (A32) and turn Spring Adjusting Screw (A57) counterclockwise until there is no pressure on Spring (A63).

⚠WARNING

Valve contains a spring under pressure. Failure to de-energize the spring can result in injury or death.

4. Remove Spring Housing Screws (A62), Washers (A23), Spring Housing O-ring (A60) and Spring Housing (A52) from Cover (A02). This will disconnect Spring (A63) from Lower Spring Guide (A51).
5. Remove Upper Spring Guide (A53) from Spring (A63).
6. Remove Spring (A63) from Lower Spring Guide (A51).
7. Loosen each Bolt (A04, A05 if applicable) in Spring Return Cover (A02) only three full turns.
8. Tap the side of Spring Return Cover (A02) with a mallet to separate the Cover from Body (A01).
9. Remove all Bolts (A04, A05 if applicable), Washers (A21) and Nuts (A31 if A50 is used), and lift off Spring Return Cover (A02).

10. Remove Spring (A65).
11. Remove partially assembled Flapper (A10) from Body (A01) and inspect for cracks, tears, and wear on body/flapper seat surface.
12. Replace worn or damaged parts.
    a. If there is damage to Flapper (A10), remove Flapper Plug Bolts (A11), Nuts (A12) and Spring Bracket (A56) from Flapper (A10).

Assembly Procedure (SR)

1. Apply a coating of O-ring and media compatible grease (Molykote 111 or Phoenix 505) to Cover O-ring (A03), Spring Housing O-ring (A60) and Thread Seal (A68).
2. Place Spring Bracket (A56) onto the Flapper (A10) and make certain bolt holes on both parts are lined up.
3. Install Flapper Plug Bolts (A11) and Nuts (A12). Coat Flapper Plug Bolt (A11) with Loctite 243 or equivalent. Tighten all nuts to recommended torque:
    a. 1/4” bolts = 57 inch-pounds (6.4 Nm)
    b. 1/2” bolts = 43 foot-pounds (58.3 Nm)
4. Install Pivot (A55) through Spring Bracket (A56) and Lower Spring Guide (A51).
5. Install Pin Retainers (A64) on both ends of Pivot (A55).
6. Place Flapper (A10) into Body (A01) seat opening. Make sure the Flapper (A10) is positioned correctly in the Body (A01) pocket by aligning the rubber pin in the Flapper (A10) with the locating hole in the Body (A01).
7. Push the rubber pin on the Flapper (A10) into the Body (A01) locating hole.
8. Place Spring (A65) on top of Flapper (A10).
   Note: The Spring (A65) should be equally spaced between two flats on the Flapper (A10). The Flapper (A10) should rest flat on the Body (A01) seat as shown in Figure 1.
9. Place O-ring (A03) into O-ring groove of Body (A01).
10. Install Spring Return Cover (A02) onto Body (A01). Make sure cover fingers hold the flapper hinge pin section in position.
11. Install Washers (A21), cover Bolts (A04, A05 if applicable) and Nuts (A31 if A05 is used). Tighten all cover bolts lightly in a crisscross pattern to prevent tilting the cover. Torque bolts according to Table 1.
12. Install Thread Seal (A68), Adjusting Screw (A57) and Jam Nut (A32) into Spring Housing (A52). Secure the Upper Spring Guide (A53) on the Adjusting Screw (A57) using the second Jam Nut (A32).
    Note: The location of the Upper Spring Guide (A53) is adjustable. When the Upper Spring Guide (A53) sits flush against the Spring Housing (A52) the adjustment provides the least amount of tension. When the Upper Spring Guide (A53) sits farthest away from the Spring Housing (A52) the adjustment provides the most tension on the Flapper (A10).
13. Lubricate and install spring housing O-Ring (A60) into Spring Housing (A52).
14. Install Spring (A63) over Lower Spring Guide (A51).
15. Install Upper Spring Guide (A53) into Spring (A63). Coat connection with Loctite 243 or equivalent.
16. Install Spring Housing (A52), Spring Housing Screws (A62) and Washers (A23) to Spring Return Cover (A02).

Hold Open Device (HOD)

The CRF-100C can be equipped with a Hold Open Device (HOD). This device holds the rubber flapper away from the seat and holds the valve in the open position. The purpose of the HOD is to assist in back flushing operations. For valve sizes 2-4”, refer to Figure 3 and for valve sizes 6-24”, refer to Figure 4.

Maintenance and Operation (HOD)

NOTICE

Line pressure must be released prior to operating the hold open device. Operating the hold open device at valve rated working pressure will result in damage to the valve and/or hold open device.

Handle Bar Adjustment

Note: On 2-4” valves; the handlebar is not adjustable, there is no visual guide stop indicator, and it uses a rising stem design.

For 6-24” valve Hold Open Devices:

1. Unlock Handlebar (B03) by rotating the Lock Screw (B01) counterclockwise.
2. Adjust Handlebar (B03) to desired location.
3. Lock Handlebar (B03) by rotating the Lock Screw (B01) clockwise.

Back Flushing

1. Rotate the hold open device Handle Bar (B03) clockwise until the Guide Stop (B11) runs out of travel.
   Note: The Guide Stop (B11) is used as a visual indicator of the Buffer Rod (B13) position.
2. Perform back flushing operations.
3. Rotate the hold open device Handle Bar (B03) counter-clockwise until the Guide Stop (B11) runs out of travel
   Note: The valve Flapper (A10) will automatically return to the closed position.

O-Ring Replacement (HOD)

Maintenance is required if an O-ring (B15) becomes damaged. Hold Open Device maintenance instructions are divided into two categories based on size, 2-4” and 6-24”.

⚠WARNING

Pipeline pressure can cause injury or death. Relieve pipeline pressure before servicing.

2-4” O-ring Replacement (Figure 3)

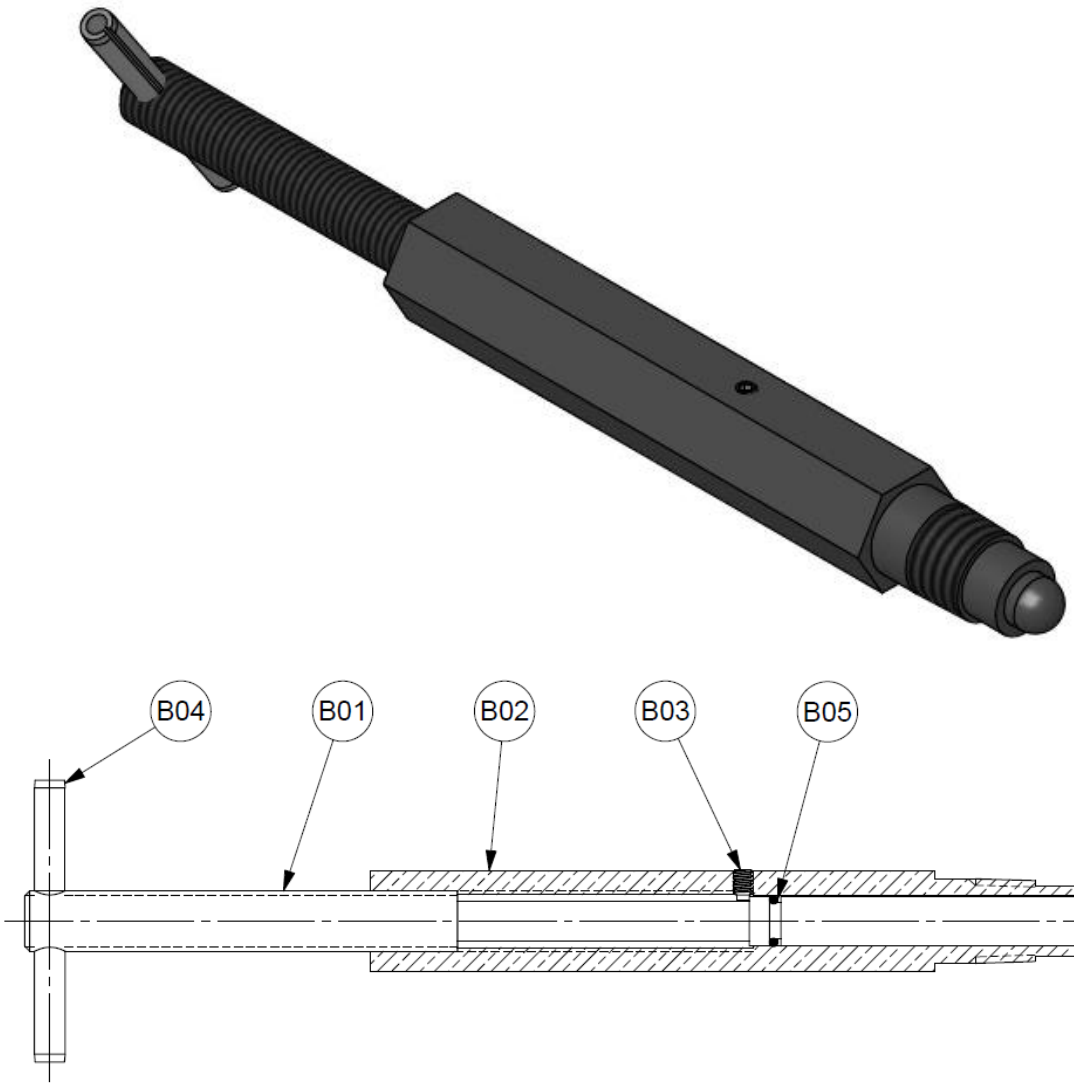
1. Using a wrench, rotate the entire Hold Open Device assembly counterclockwise and remove it from the valve.
2. Unlock Screw (B03) by rotating counterclockwise.
3. Rotate HOD Handle Bar (B04) counter-clockwise until Stem (B01) is out of Stem Guide (B02).
4. Remove damaged O-ring (B05).
5. Lubricate new O-ring (B05) with Molykote 111 and install on Stem (B01).
6. Install Stem (B01) into Stem Guide (B02) and Handle Bar (B04) clockwise until the Stem Guide (B02) hole lines up with the groove in Stem (B01).
7. Tighten Set Screw (B03) until it reaches the Stem (B01) then back off screw by 1/8 of a turn and apply Loctite 263 on the set screw.
8. Apply thread sealant to Stem Guide (B02) NPT thread.

6-24” O-Ring Replacement (Figure 4)

1. Using a wrench on the flats located on the exterior of Buffer Rod Housing (B12), rotate the entire HOD assembly counterclockwise and remove it from the valve.
2. Remove Bolt (B10) and Guide Stop (B11) from the Buffer Rod (B13).
3. Remove Bolts (B06).
4. Remove Buffer Rod Housing (B12).
5. Remove damaged O-ring (B15)
6. Lubricate new O-ring (B15) with Molykote 111 install in Buffer Rod Housing (B12).
7. Install Buffer Rod Housing (B12) back onto buffer rod assembly.
8. Fasten Bolts (B06) to fix Buffer Rod Housing (B12) to Housing Cover (B07).
9. Coat Bolt (B10) with Never-Seez and install Guide Stop (B11) onto Buffer Rod (B13) with Bolt (B10). Torque to values on Table 2.
10. Rotate Handle Bar (B03) and ensure the HOD operates smoothly. If the operation is not smooth, back off Bolt (B10) 1/8 of a turn.
11. Apply Loctite 565 PST to Buffer Rod Housing (B12) NPT threads.

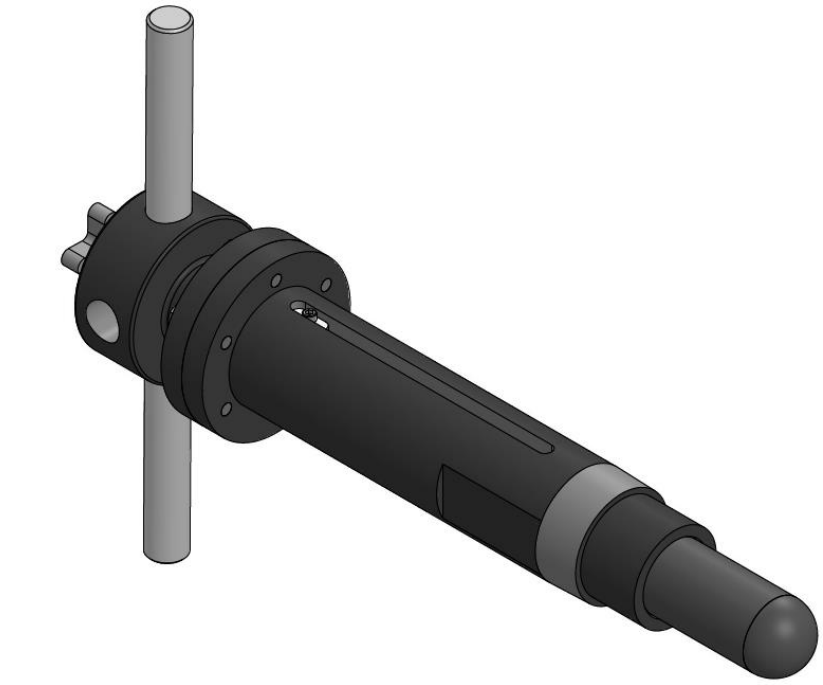
Bolt Size	*Part No.*	*Torque*
#10-32	B10 (6-24”)	28.1 in-lbs
1/4”-20	B06 (6-24”)	142 in-lbs
1/4”-20	B03 (2-4”)	57.3 in-lbs
3/8”-16	B06 (6-24”)	132 in-lbs

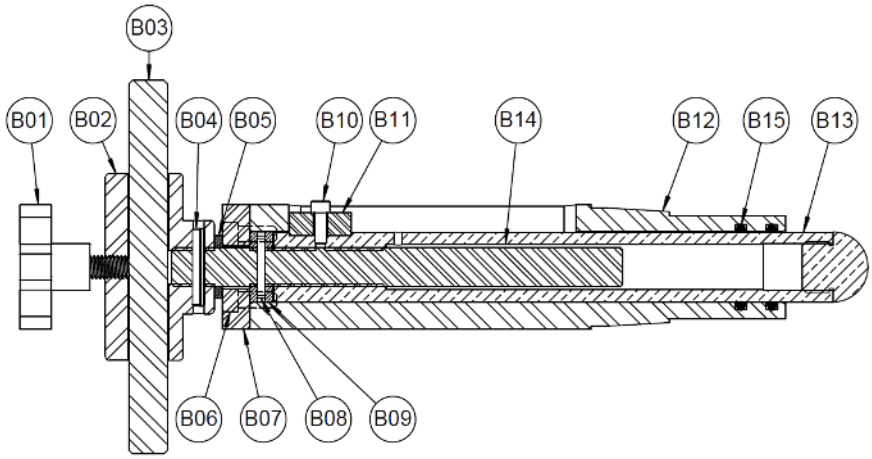
Table 2: Torque Specifications



Item No.	*Description*
B01	Stem
B02	Stem Guide
B03	Set Screw
B04	Handle Bar
B05	O-Ring

Figure 3: Hold Open Device Assembly (2-4”)





Item No.	Description	Item No.	Description
B01	Lock Screw	B09	Buffer Bushing
B02	Handle Bar Hub	B10	Bolt
B03	Handle Bar	B11	Guide Stop
B04	Pin	B12	Buffer Rod Housing
B05	Thrust Washer	B13	Buffer Rod
B06	Bolt	B14	Buffer Screw
B07	Housing Cover	B15	O-Ring
B08	Pin		

Figure 4: Hold Open Device Assembly (6-24”)

Position Indicator Option (PI)

The Position Indicator option is mounted to the cover and identifies the position of the flapper.

Maintenance (PI)

Refer to Figure 5 for details and parts.

Disassembly Procedure (PI)

1. Ensure the pipeline is de-energized.

⚠WARNING
Pipeline pressure can cause injury or death. Relieve pipeline pressure before servicing.

2. Remove position indicator assembly Spring (J08) and Indicator (J11).
3. Remove Screws (J07) and Mounting Plate (J05).
4. Unthread Upper Body (J02) from Lower Body (J01).
5. Remove Indicator Arm (J04) from assembly.
6. Remove O-rings (J06) and O-ring (J03).
7. Clean Upper Body (J02) and Lower Body (J01).

   Note: Inspect all components and replace those with visible wear or damage.

Assembly Procedure (PI)

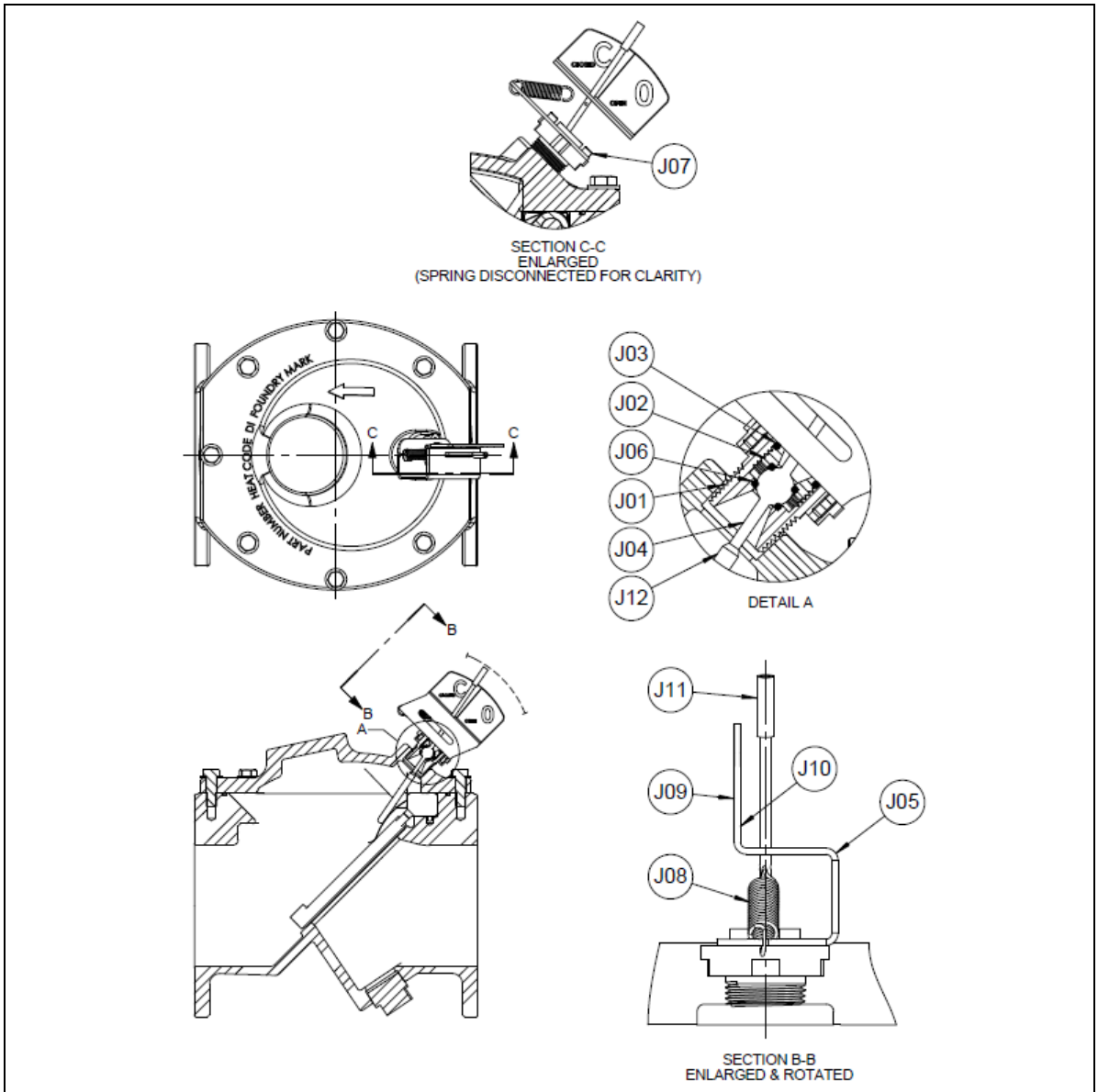
1. Apply a coating of O-ring and media compatible grease (Molykote 111 or Phoenix 505) to O-rings (J06) and O-ring (J03) and install in Upper Body (J02).
2. Place Indicator Arm (J04) in Lower Body (J01) and install Upper Body (J02).
3. Tighten Upper Body (J02) to Lower Body (J01) to 25 ft-lbs. [34 Nm].
4. Apply thread sealer to NPT threads of Lower Body (J01).
5. Insert Lower Body (J01) into NPT hole in valve Cover (A02) and tighten.

   Note: Verify two tapped holes in Lower Body (J01) are in line with valve and pipeline. This will ensure proper position indicator alignment.

6. Attach Mounting Plate (J05) with two Screws (J07) to Lower Body (J01) and torque to 22 in-lbs. (2.5 Nm).

   Note: Place mounting plate in line with valve and pipeline.

7. Connect Spring (J08) to Indicator Arm (J04) and Mounting Plate (J05).
8. Attach Indicator (J11) to Indicator Arm (J04).



Item No.	Description	Item No.	Description
J01	LOWER BODY	J07	SCREW
J02	UPPER BODY	J08	SPRING
J03	O-RING	J09	RIGHT LABEL
J04	INDICATOR ARM	J10	LEFT LABEL
J05	MOUNTING PLATE	J11	INDICATOR
J06	O-RING	J12	INDICATOR ARM EXTENSION
Note: Replaceable wear parts are J03, J06, and J08.			

Figure 5: Position Indicator Assembly

Proximity Switch (SEL30)

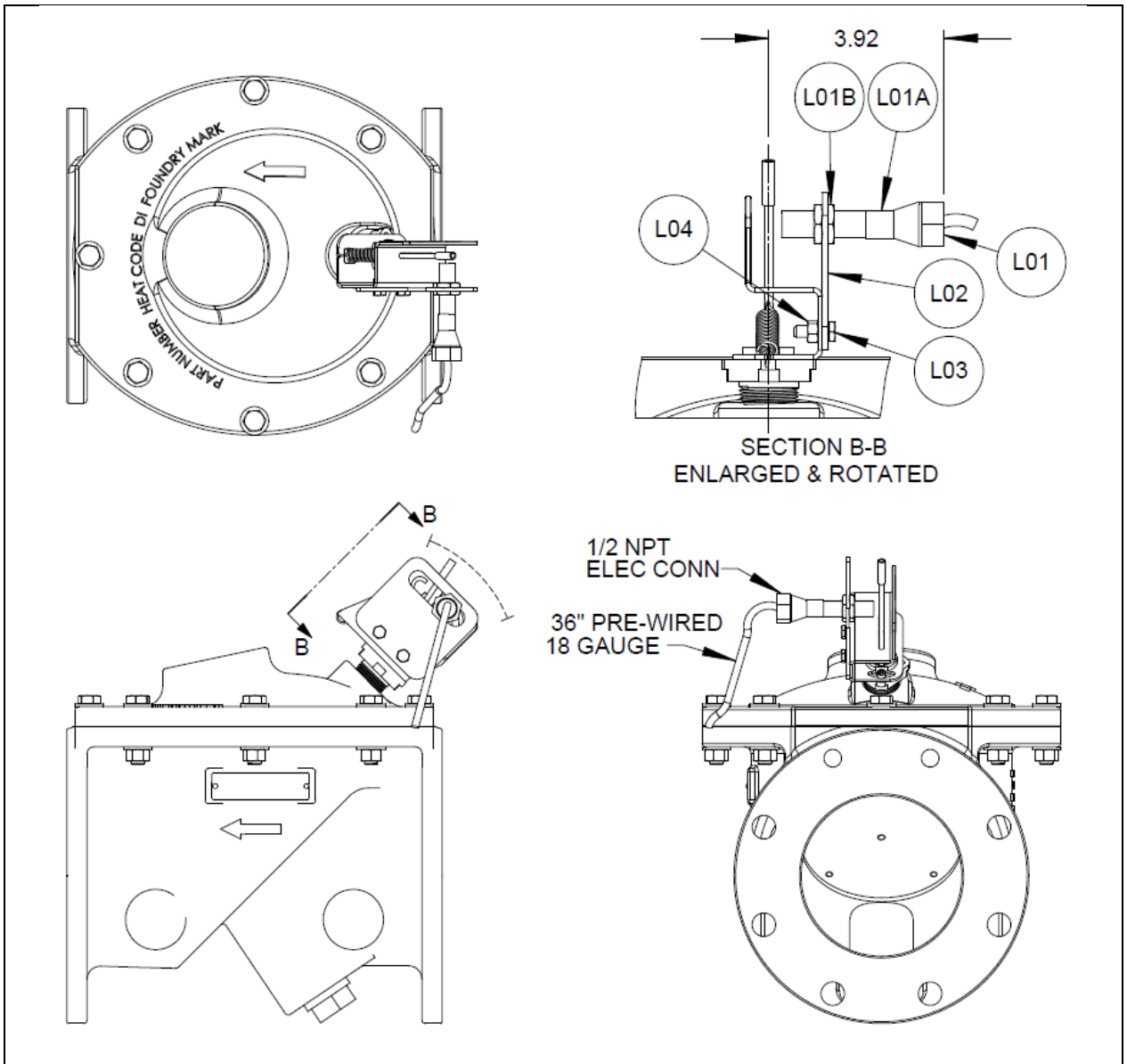
CRF-100C valves that are equipped with a Position Indicator (PI) can also be equipped with a proximity switch. The proximity switch senses the position of the PI Indicator (J11) and can be set up to relay that position

Installation

Refer to Figure 6 for component identification.

Note: The proximity switch can only be installed onto a valve that is already equipped with an optional position indicator.

1. Connect the Bracket (L02) to the position indicator bracket using Screw (L03) and Nut (L04).
2. Remove one of the Adjusting Nuts (L01B) from the Switch Assembly (L01).
3. With the valve in the closed position, place the Switch Assembly (L01) into the Bracket (L02) and align with the Indicator (J11).
4. Adjust the Adjusting Nut (L01B) until the proper distance (shown in Section B-B in Figure 6) is achieved.
5. Install the second Adjusting Nut (L01B) onto the Switch Assembly (L01) and tighten securely.



Item No.	*Description*
L01	SWITCH ASSEMBLY
L01A	SWITCH
L01B	ADJUSTING NUT

Item No.	*Description*
L02	BRACKET
L03	SCREW
L04	NUT

Figure 6: Proximity Switch Assembly

Troubleshooting

Condition	*Possible Cause*	*Corrective Action*
Cover leaks.	Cover O-ring is damaged.	Replace cover O-ring.
Valve leaks excessively from one side of the flapper to the other.	Foreign matter caught between flapper and seat.	Fully open valve to remove object.
	Flapper is worn or damaged.	Replace flapper.
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Misalignment or damage to field piping and supports.	Adjust misalignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.
Valve does not fully close.	Object is wedged between seat and disc.	Fully open valve to remove object.
Spring Housing leaks.	Spring housing O-ring is damaged.	Replace Spring housing O-ring.
	Thread seal is damaged.	Replace Thread seal.
Hold open device leaks.	Stem/Buffer rod O-ring is damaged.	Replace Stem/Buffer rod O-ring.
Position indicator leaks.	O-ring (J03 or J06) is damaged.	Replace damaged O-rings.
The proximity switch isn’t working properly and doesn’t respond when the valve moves.	The proximity switch isn’t installed at the valve closed position.	Set the proximity switch to sense when the indicator (J11) is in the closed position.
	The proximity switch is too far or too close to the indicator (J11).	Adjust the proximity switch to the appropriate installation distance.
	The proximity switch is faulty or damaged.	Replace the proximity switch.

Limited Warranty

DeZURIK, Inc. (“Seller”) manufactured products, auxiliaries and parts thereof that we manufacture for a period of twenty-four (24) months from date of shipment from Seller’s factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller’s recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller’s option, FCA Incoterms 2020 Seller’s facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller may provide repair or replacement for other’s products or parts only to the extent provided in and honored by the original manufacturer’s warranty to Seller, in each case subject to the limitations contained in the original manufacturer’s warranty.

No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant a minimum length of service.

Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than Seller or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to store, install, or operate said products and parts according to the recommendations and instructions furnished by Seller shall be a waiver by you of all rights under this limited warranty.

This limited warranty is voided by any misuse, modification, abuse or alteration of Seller’s product or part, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

The foregoing limited warranty shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to; an actuator is attached to the item by anyone other than a Seller factory authorized service personnel.

All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous warranty, and this shall be the only effective guarantee or warranty binding on Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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Disclaimer

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Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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