INSTALLATION, OPERATION, & MAINTENANCE MANUAL

BFMM DC4AN LBF 6-2012

2-1/2" - 12"
Double Check Valve
Double Check Detector Assembly

Model DC4AN / DCLF4AN
Model DCDA4AN / DCDALF4AN
Model DCDA24AN / DCDA2LF4AN

"Apollo" Valves
manufactured in the USA
by CONBRACO Industries

APOLLO VALVES 5 YEAR WARRANTY MADE IN USA

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DOUBLE CHECK BACKFLOW PREVENTER (DC)

I. DESCRIPTION AND OPERATION

The Double Check Valve (DC) device consists of two independently-acting, spring-loaded check valves. Two resilient seated shut-off valves and four test cocks complete the assembly. Each check is designed to maintain a minimum of 1 psi across the check during normal operation. If at any time the pressure downstream of the device increases above the supply pressure, both check valves will close to prevent any backflow from occurring. The no flow condition is illustrated in Figure 1. To initiate flow, supply pressure must be sufficient to open both checks and overcome friction, normally a minimum of 3 to 5 psi above the downstream pressure.

II. INSTALLATION

A. The DC must be installed in an accessible location to facilitate periodic field testing and maintenance.
B. Flush all upstream piping thoroughly to remove foreign matter prior to installing the device.
C. The device may be installed in the n-flow position as shown in Figure 1. Adequate clearance between the lower most portion of the device and flood grade or floor should be provided for ease of maintenance.
D. If shut-off valves are provided separately, they should be installed with test cocks on the upstream and downstream sides of the wedge of the inlet shut-off valve (as shown in Figure 1). Contact local jurisdictional authorities for local requirements.
E. After installing the assembly and with downstream or #2 shut-off valve closed, pressurize the device and bleed air through test cock #4. Then open #2 shut-off valve.

OTHER INSTALLATION TIPS

- Installing this device in a pit requires consideration for future maintenance and repair. Along with necessary clearances, there must be adequate drainage within the pit to deter potential accumulation of standing water. Check with local codes and/or inspectors prior to making such installations.
- Do not install in areas subject to freezing without using a properly designed enclosure.
- As in any piping system, provisions should be made to minimize water hammer and pressure rise due to thermal expansion, as these conditions can create damaging and dangerously high internal pressures.

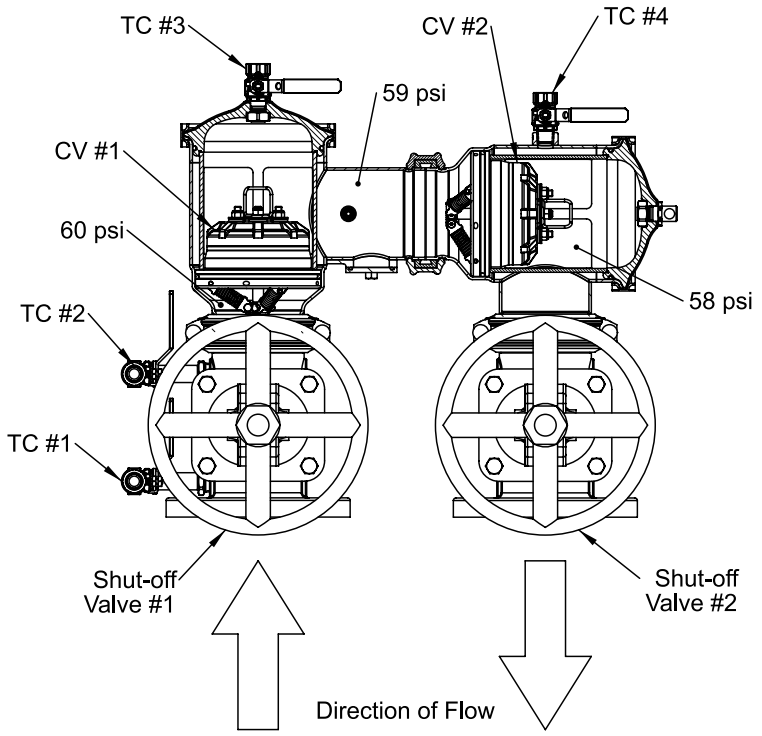


Figure 1

TC: Test Cock
CV: Check Valve

NOTE: Pressures are for illustrative purposes only and are not necessarily indicative of any actual valve.

III. TROUBLE SHOOTING

SYMPTOM	CAUSE	CORRECTIVE ACTION
1. Check valve fails to hold 1 psid.	a. Shut-off valve not closed completely.	a. Close #2 shut-off valve or inspect for possible through leakage.
	b. Check valve fouled with debris.	b. Inspect and clean seat disc and seat.
	c. Check poppet stem not moving freely in guide.	c. Inspect for debris or deposit on poppet stem or guide.

IV. MAINTENANCE INSTRUCTIONS

2-1/2" - 6" Sizes

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

A. Check Removal

***Note:** If the first check seat disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for seat disc cleaning instructions.*

1. Remove the cover clamp by backing off the nut until the latch can be disengaged from the T-bolt. Pull the clamp apart and slide away from the valve. See Figure 2.

2. Lift off the cover. A flat screwdriver will aid in lifting the cover out of the body. See Figure 2.

3. Remove the check-retaining spacer from the body. Pull the check module straight out of body. The check module is sealed in place with an o-ring. See Figure 3.

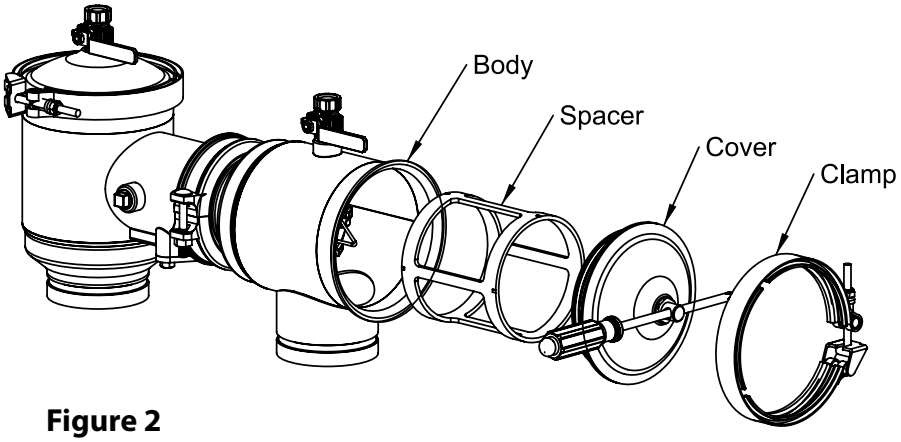


Figure 2

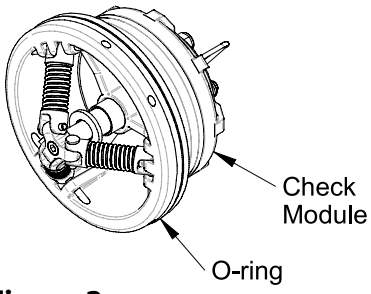


Figure 3

B. Check Maintenance

If only cleaning of either check is necessary, simply remove the three reusable (3) locknuts for 2-1/2" & 3" valves/ four(4) locknuts for 4" & 6" valves on the black plastic disc retainer (See Figure 4). Remove the check handle and washer and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. **Do not over tighten locknuts.**

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

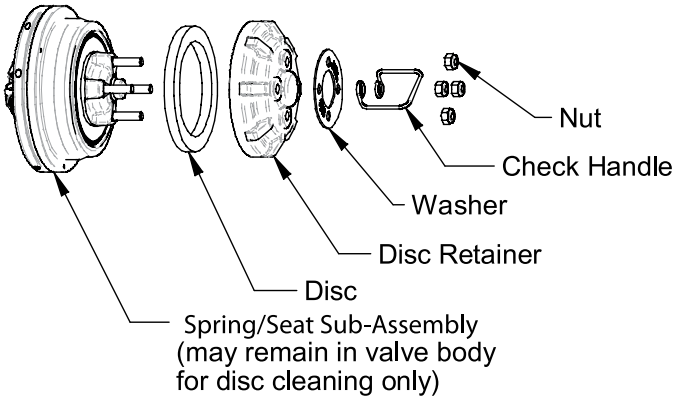


Figure 4
2-1/2" - 6" Sizes

Second check reassembly tip: Snap spacer into cover, then install cover/spacer into body (See Figure 5)

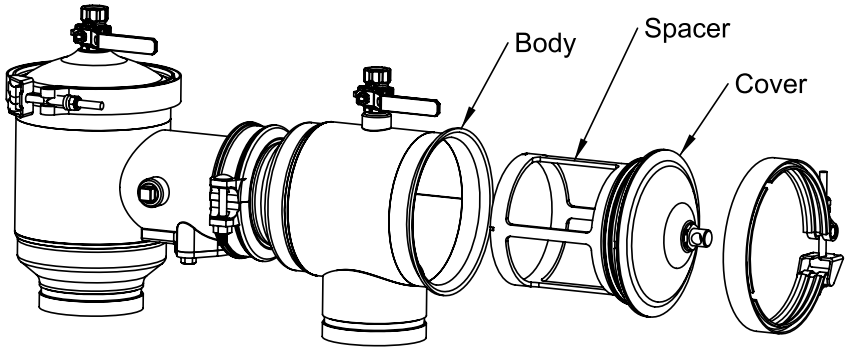


Figure 5

8" - 12" Sizes

Open test cocks #2, #3, and #4 to relieve pressure from the device. Both shut-off valves must be closed.

A. Check Removal

Note: If either disc needs only to be cleaned, it is not necessary to remove the entire check module from the valve body. See the next section, "Check Maintenance", for disc cleaning instructions.

1. Take off the cover coupling by removing the two bolts and nuts. The gasket may remain on the valve body.
2. Lift off the cover. (See Figure 6)
3. Remove the six (6) nuts for 8" valves/ eight (8) nuts for 10" & 12" valves with a 3/4" socket and ratchet.
4. Slide the entire check module off the body studs and remove from body (see Figure 7).

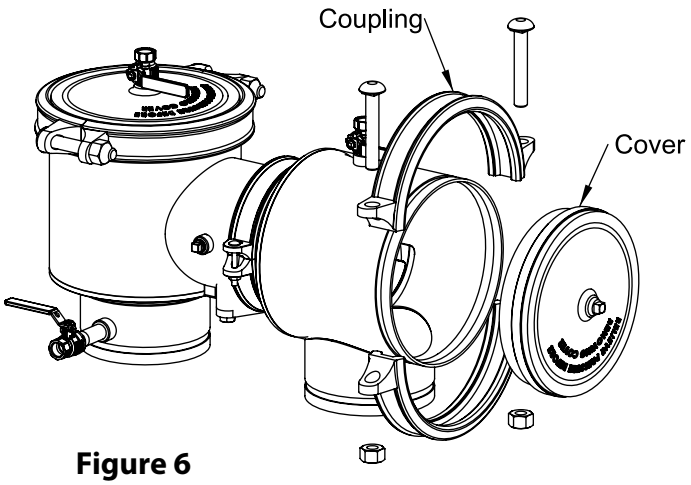


Figure 6

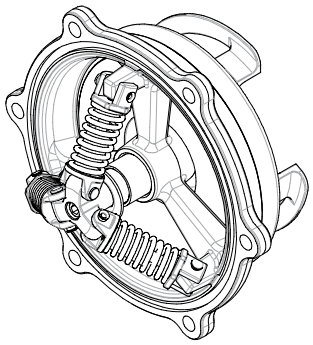


Figure 7

B. Check Maintenance (Can be achieved without removing entire check.)

If only cleaning of either check is necessary, simply remove the six (6) nuts for 8" valves / eight (8) nuts for 10" & 12" valves on the black plastic disc retainer (See Figure 8). Remove the check handles and washers and lift the disc retainer and disc out of the body. Rinse the disc with clean water or replace if necessary. The disc may be flipped over for a temporary repair, but should be replaced if damaged. Replace the disc, disc retainer, washer, handle, and nuts. **Do not over tighten locknuts.**

NOTE: The springs are factory installed and should not be removed or adjusted. Serious injury could occur if springs are disassembled.

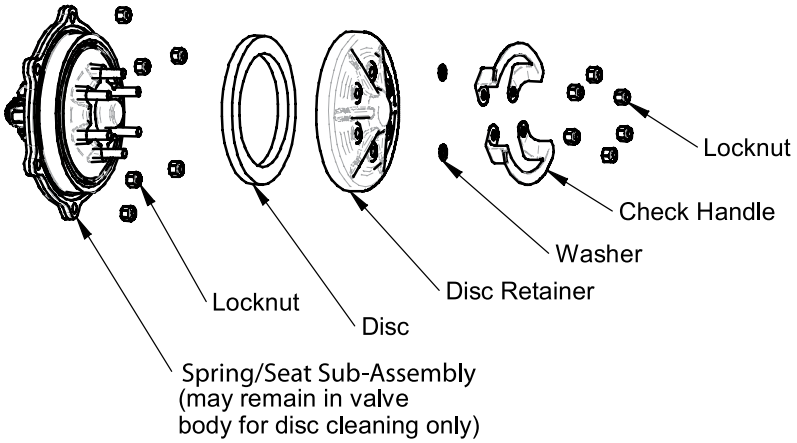


Figure 8
8" - 12" Sizes

V. TESTING PROCEDURES

NOTE: ***This is a three-valve test kit procedure. Your local water purveyor should be consulted for acceptable test procedures.*** *This procedure is to be used on a stand-alone double check valve (DC), the mainline DC of a double check detector, and/or the bypass DC of a standard (Type 1) double check detector. See Figure 9 for a schematic of the test setup.*

TEST SETUP:
Flush test cocks (TC) (#1, #2, #3 & #4). Close shut-off valve #2. All TCs should be closed.

CHECK VALVE #1:

1. Close all valves on test kit.
2. Connect the high side hose to TC #2 and the low side hose to TC #3. Open TC #2 and TC #3.
3. Open vent valve "C" and high "A" on the test kit to bleed air from the high side of the kit. Close high "A" valve and then open low "B" valve to bleed the low side. Close low "B" valve.
4. Record the gauge reading. It must be a minimum of 1.0 psid to pass. Close TC #2 and TC #3.

CHECK VALVE #2:

1. Move the high side hose to TC #3 and the low side hose to TC #4. Open TC #3 and TC #4.
2. Open vent "C" valve. Then open high "A" and bleed air from the high side of the kit. Close high "A" valve, and then open low "B" valve and bleed the low side of the kit. Close low "B" valve.
3. Record the gauge reading. It must be a minimum of 1.0 psid to pass. Close TC #3 and TC#4. Remove hoses and drain test kit. Slowly open shut-off valve #2 to restore water flow.

LEAKING #2 SHUT-OFF VALVE:

The following test will expose a leaking #2 shut-off valve.

1. Both shut-off valves should be open. Make sure all valves on test kit are closed. Connect the high "A" hose to TC #2 and the low "B" hose to TC #3. Open TC #2 and TC #3.
2. Open the high "A" valve and vent "C" valve to bleed air from high side of gauge. Open low "B" valve to bleed air from low side of gauge. Close valves "A", "B" and "C" on test kit.
3. Connect the vent hose to TC #4. Open TC #4.
4. Close shut-off valve #2. The differential gauge needle should read at least 1.0 psid.
5. Open the high "A" valve and vent "C" valve. This will put back pressure on check valve #2.
6. Close TC #2.

If gauge is steady, then shut-off valve #2 is holding tight. However, if gauge drops to zero psid, then shut-off valve #2 is leaking. If the gauge rises then the #2 shut-off valve is still leaking, but is under back-pressure from a downstream source.

TESTING PROCEDURE FOR SINGLE CHECK ON DCDA TYPE 2 BYPASS:

Note: The first check of the mainline valve is also the first check of the bypass assembly and the test results for the first mainline check should be recorded as the first check of the bypass assembly. If the local water authority requires a second test for the first check, perform the test again and record the results. The second check is the single check on the bypass line. (See page 10 for test cock locations)

1. Flush water through the bypass line test cocks to eliminate foreign material.
2. To test the bypass single check, connect the "high" side hose to the first test cock on the bypass line (upstream of single check valve). Hold the "low" side hose level with the gauge.
3. Close the inlet shut-off valve on the mainline and bypass line. The single check valve must hold at least 1.0 psid.

WRAP UP: CLOSE ALL TEST COCKS. OPEN #2 SHUT-OFF VALVE. DRAIN GAUGE.

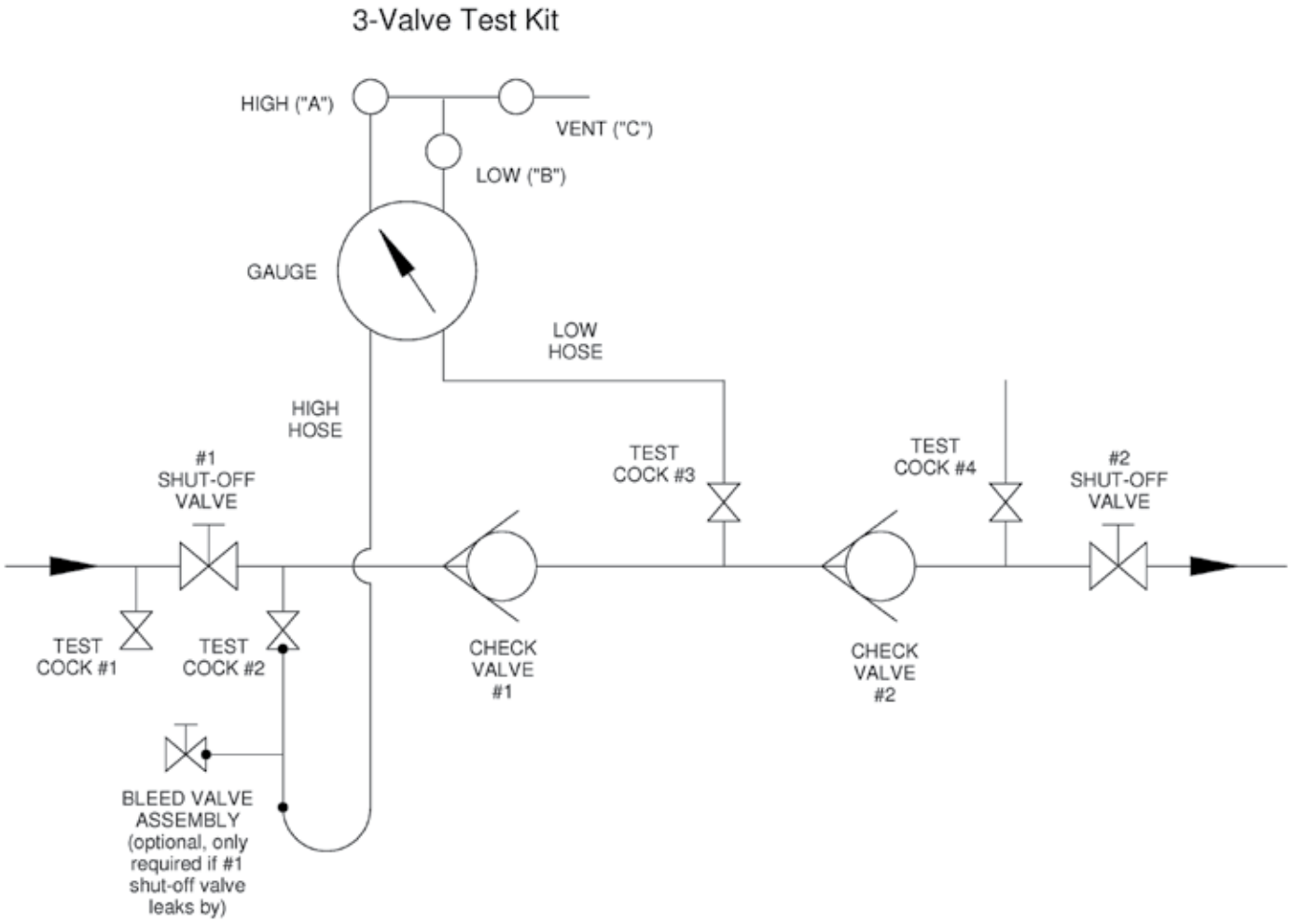

3-Valve Test Kit
HIGH ("A")
VENT ("C")
LOW ("B")
GAUGE
LOW HOSE
HIGH HOSE
#1 SHUT-OFF VALVE
TEST COCK #3
TEST COCK #4
#2 SHUT-OFF VALVE
TEST COCK #1
TEST COCK #2
CHECK VALVE #1
CHECK VALVE #2
BLEED VALVE ASSEMBLY (optional, only required if #1 shut-off valve leaks by)

Figure 9

DOUBLE CHECK DETECTOR ASSEMBLY (DCDA)

VI. DESCRIPTION AND OPERATION

The Double Check Detector Assembly (DCDA Type 1) contains a mainline DC incorporating two spring loaded check valves and a bypass line consisting of an approved DC assembly and a water meter. The DCDA Type 2 contains a mainline DC incorporating two spring loaded check valves and a bypass line consisting of a single check valve and a water meter. Each device is equipped with test cocks for periodic field testing and is normally supplied with inlet and outlet shut-off valves. *NOTE: UL and FM installations must include indicating type shut-off valves.*

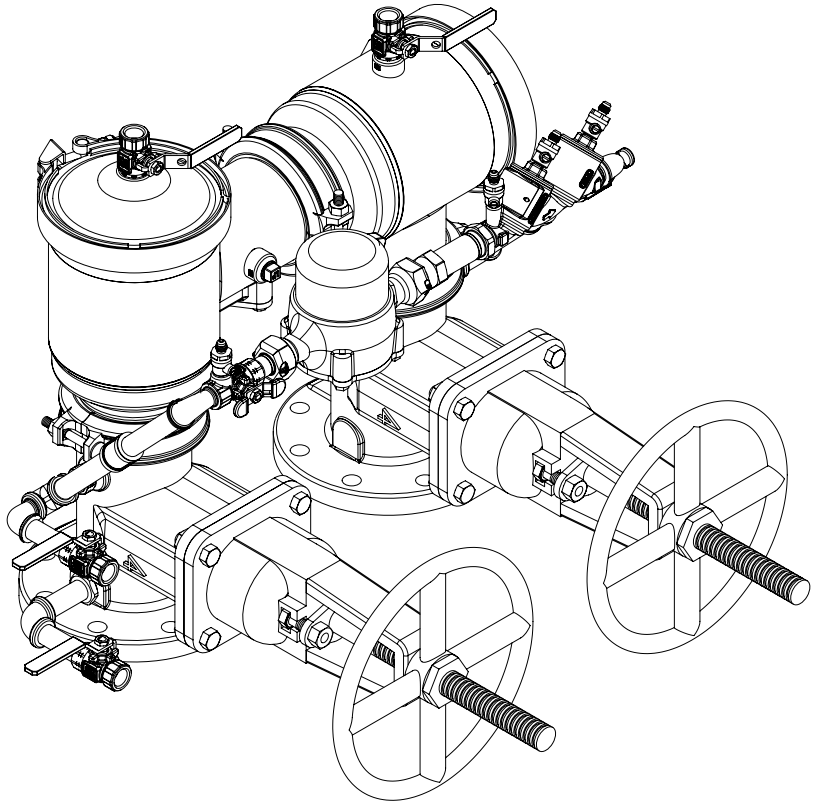
During no flow conditions, the mainline and by-pass check valves will remain closed. If there is a low flow demand (up to a minimum of 2 gpm) of water downstream, the flow is routed through the water meter to monitor such consumption. If the downstream pressure increases above the supply pressure or there is a reduction in the inlet pressure, the mainline and bypass check valves will close to prevent backflow.

VII. INSTALLATION

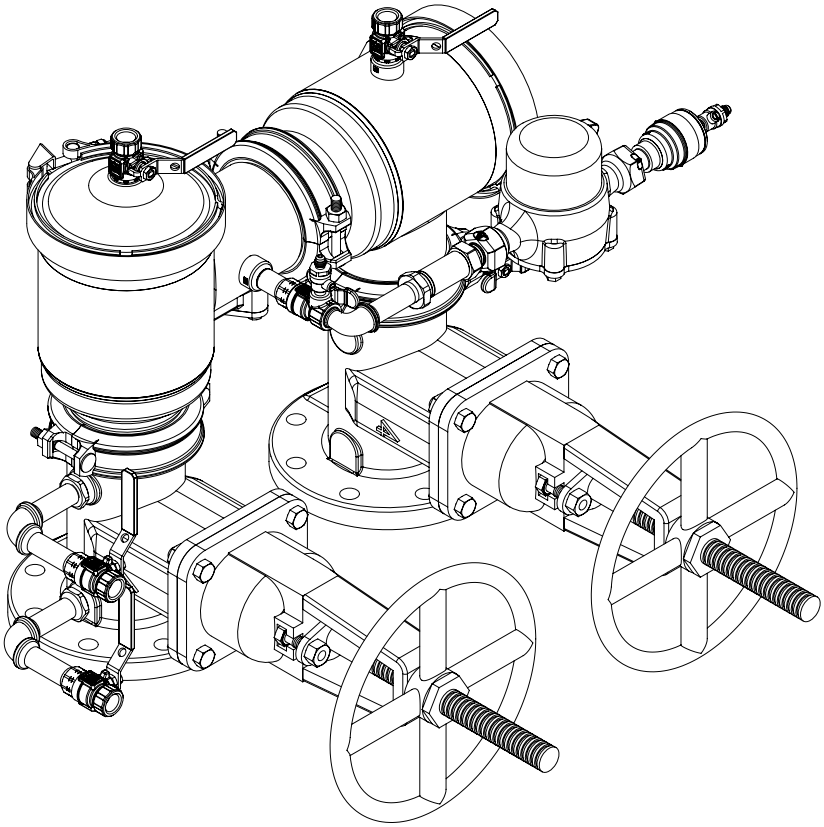
A. The DCDA must be installed in an accessible location to facilitate periodic field testing and maintenance.
B. Flush all upstream piping thoroughly to remove foreign matter prior to installing the device.
C. The device may be installed in the n-flow position. A clearance of 12" to 30" between the lower most portion of the device and flood grade or floor should be provided for ease of maintenance.
D. After installing the assembly and with downstream (#2) shut-off valve closed, pressurize the device and bleed air through test cock #4. Then open #2 shut-off valve.

OTHER INSTALLATION TIPS

- Installing this device in a pit requires consideration for future maintenance and repair. Along with necessary clearances, there must be adequate drainage within the pit to deter potential accumulation of standing water. Also, check with local codes and/or inspectors prior to making such installations.
- Do not install in areas subject to freezing without using a properly designed enclosure.
- As in any piping system, provisions should be made to minimize water hammer and pressure rise due to thermal expansion, as these conditions can create damaging and dangerously high internal pressures.



DCDA4AN Type 1 Bypass
DCDALF4AN Type 1 Bypass



DCDA24AN Type 2 Bypass
DCDA2LF4AN Type 2 Bypass

PARTS LIST 2 1/2" - 6"

DC4AN, DCLF4AN
DCDA4AN, DCDALF4AN (Mainline)
DCDA24AN, DCDA2LF4AN (Mainline)

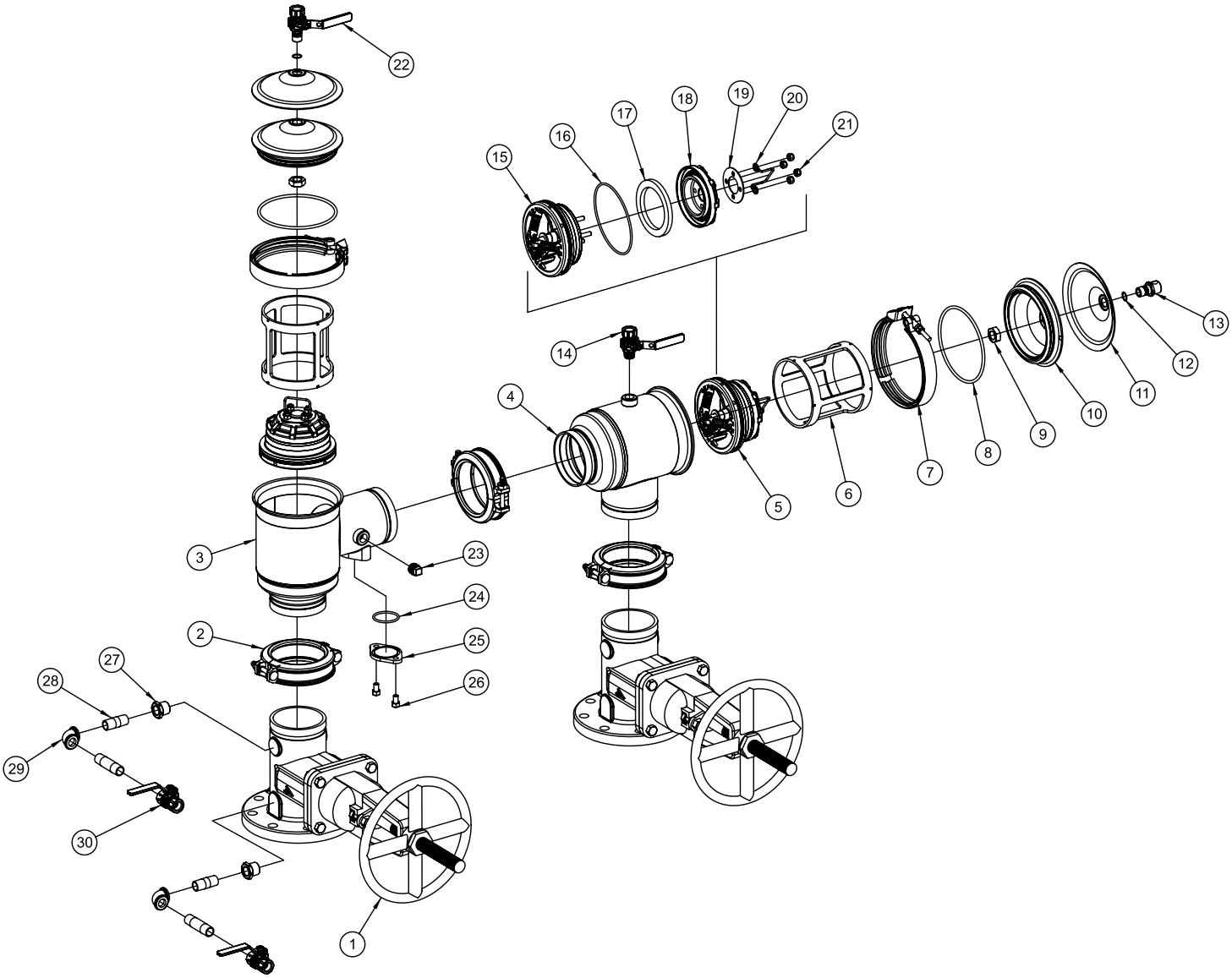


Figure 10

DC4AN/DCDA4AN (Mainline) / DCDA24AN (Mainline) Parts List
DCLF4AN/DCDALF4AN (Mainline) / DCDA2LF4A (Mainline) Parts List

Item #	Description	Qty.	Part Number			
			2-1/2″	3″	4″	6″
1	Shut-off Valve	2	See Pages 18 & 19			
2	Coupling	3	W-5237-00	W-5238-00	W-5239-00	W-5240-00
3	First Check Body	1	Consult Factory			
4	Second Check Body	1	Consult Factory			
5	Check Module	2	W-9856-05		W-9668-05	W-9669-05
6	Check Retaining Spacer	2	G-4832-00		G-4804-00	G-4805-00
7	Cover Clamp	2	W-9293-00		W-9183-00	W-9221-00
8	O-ring, Cover	2	D-4976-00		D-4870-00	D-5001-00
9	Retaining Nut	2	C-2635-00			C-1756-00
10	Cover, Inner	2	F-3900-00		F-3864-00	F-3865-00
11	Cover, Outer	2	E-2903-00		E-2865-00	E-2866-00
12	O-ring, Test Cock	2	D-4892-00			D-3904-00
13	Second Check Cover Plug	1	L-8462-06			L-8463-06
14	Test Cock, MxF	1	77CLF-803-10			77CLF-804-10
15	Seat/Spring Sub-Assy	2	W-9715-05		W-9717-05	W-9719-05
16	Check Seat O-ring	1	D-5171-00		D-4869-00	D-5000-00
17	Disc	1	D-4958-00		D-4862-00	D-4890-00
18	Disc Retainer	1	L-7800-00		F-3862-00	F-3863-00
19	Washer	(QTY)	E-2905-00 (1)		E-2920-00 (1)	E-2878-00 (4)
20	Handle	1	H-3814-00		H-3792-00	H-3793-00
21	Locknut	(QTY)	C-1900-00 (3)		C-2052-00 (4)	C-2053-00 (4)
22	Test Cock, Cover	2	77CLF-803-A0			77CLF-804-A0
23	Plug, 1/2″ NPT	2	K-4594-05			
24	O-ring, RV Port	1	D-4866-00			
25	Cover, RV Port	1	F-3875-00			
26	Screw, 3/8-16 x .63	2	B-1921-00			
27	Reducer Bushing	2	K-4605-00			N/A
28	Nipple	4	K-3406-00			K-3412-00
29	Elbow, 90°	2	K-4598-00			K-3501-00
30	Test Cock, FxF	2	77CLF-103-10			77CLF-104-10

Individual parts are only available for bulk sales. Please refer to the appropriate repair kits below and on page 13.

*Note: All bronze components listed are lead-free**

* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

Repair Kits (Mainline) 2-1/2″ - 6″

Check Rubber Only Kit (One kit repairs one check)		Size		
		2-1/2″ & 3″	4″	6″
	Repair Kit Model Number	**RK4A3CMR**	**RK4A4CMR**	**RK4A6CMR**
Item #	Ordering Number	4A-000-01	4A-00A-01	4A-00C-01
not Shown	Lubricant	I-9016-00		
17	Disc	D-4958-00	D-4862-00	D-4890-00
16	Check O-ring	D-5171-00	D-4869-00	D-5000-00
24	Relief Valve Port O-ring	D-4866-00		
8	Cover O-ring	D-4976-00	D-4870-00	D-5001-00
12	Test Cock O-ring	D-4892-00		D-3904-00

*Note: All bronze components listed are lead-free**

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Repair Kits (Mainline) 2-1/2" - 6"

DC Check Complete Kit (One kit repairs one check)		Size		
		2-1/2" & 3"	4"	6"
	Repair Kit Model Number	**RK4A3CMC**	**RK4A4CMC**	**RK4A6CMC**
Item #	Ordering Number	4A-000-02	4A-00A-02	4A-00C-02
not Shown	Lubricant	I-9016-00		
5	Check Module S-Assy	W-9856-05	W-9668-05	W-9669-05
16	Check O-ring	D-5171-00	D-4869-00	D-5000-00
8	Cover O-ring	D-4976-00	D-4870-00	D-5001-00

*Note: All bronze components listed are lead-free**

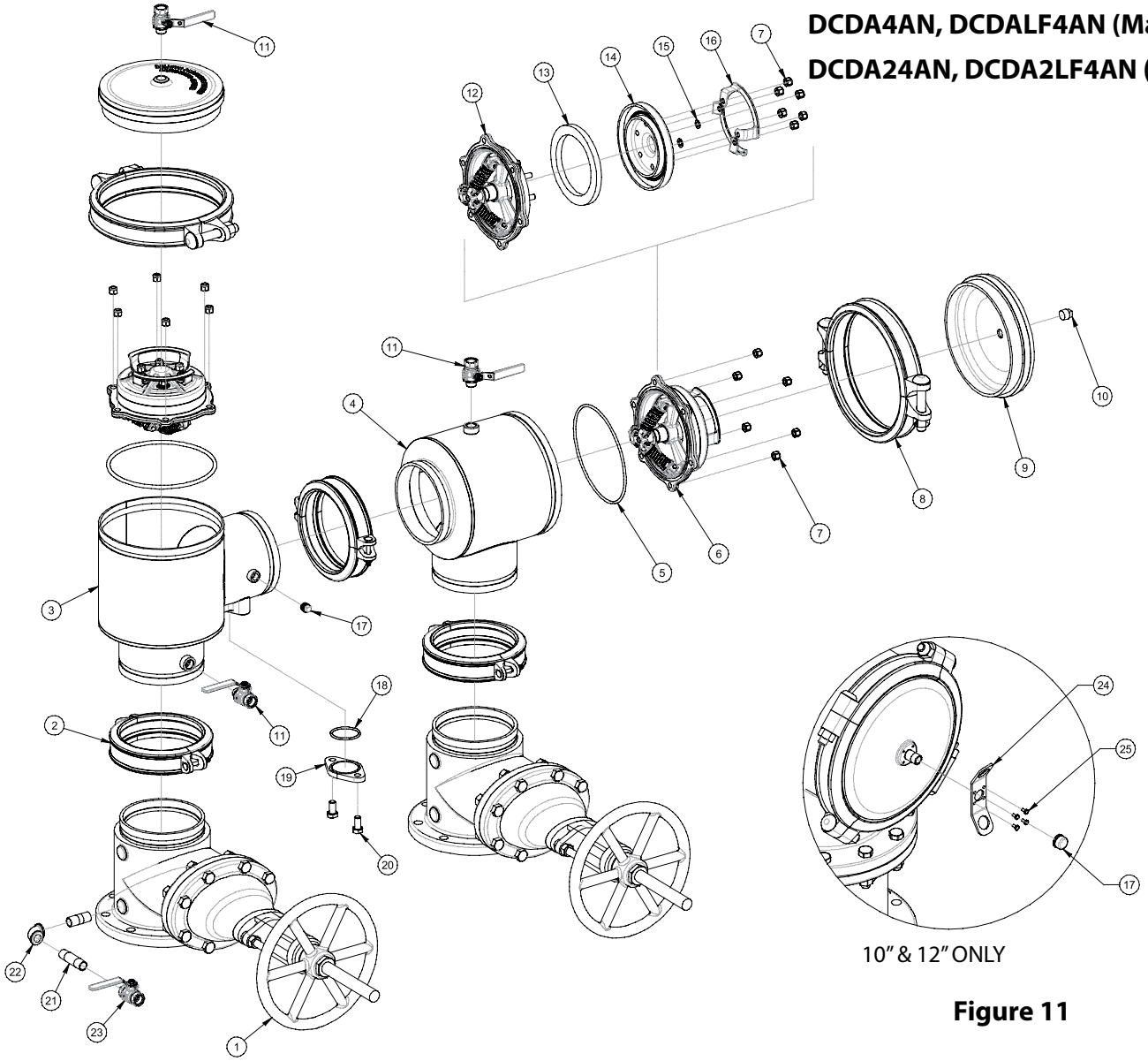
* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

PARTS LIST 8" - 12"

DC4AN, DCLF4AN

DCDA4AN, DCDALF4AN (Mainline)

DCDA24AN, DCDA2LF4AN (Mainline)



10" & 12" ONLY

Figure 11

DC4AN/DCDA4AN (Mainline) / DCDA24AN (Mainline) Parts List
DCLF4AN/DCDALF4AN (Mainline) / DCDA2LF4AN (Mainline) Parts List

Item #	Description	Qty.	Part Number		
			8″	10″	12″
1	Shut-off Valve	2	See Page 18 & 19		
2	Coupling	(QTY)	W-9791-00 (3)	W-5242-00 (3)	W-9243-00 (1)
	Bolt Pack	1	N/A	N/A	40-00H-BP
3	First Check Valve Body	1	Consult Factory		
4	Second Check Valve Body	1	Consult Factory		
5	Check O-ring	2	D-4935-00	D-4997-00	
6	Check Module	2	W-9672-05	W-9861-05	
7	Locknut, 1/2-13	(QTY)	C-2638-00 (24)	C-2638-00 (32)	
8	Cover Clamp	2	W-9243-00	W-9355-00	
9	Cover	2	E-2898-05	Q-7064-19	
10	Plug, 3/4" NPT	1	K-4595-05	N/A	
11	Test Cock	3	77CLF-804-10	77CLF-104-10	
12	Seat/Spring Sub-Assy	2	W-9721-05	W-9723-05	
13	Disc	2	D-4934-00	D-4960-00	
14	Disc Retainer	1	F-3899-00	F-3903-00	
15	Washer	2	E-2897-00		
16	Handle	2	H-3828-00	H-3813-00	
17	Cap, 1/2" NPT	5	N/A	K-4656-00	
	Plug, 1/2" NPT	2	K-4594-05	N/A	N/A
18	O-ring, RV Port	1	D-4963-00	D-2304-00	
19	Cover, RV Port	1	F-3898-05	F-3922-00	
20	Nut	2	N/A	CX-02736	
	Screw	2	B-2348-00	N/A	
21	Nipple	2	K-3412-00		
22	Elbow, 3/4", 90°	1	K-4599-00		
23	Test Cock, FxF	1	77CLF-104-10		
24	Lifting Tab	2	N/A	E-2955-05	
25	Screw, 1/4-20 X .50	8	N/A	B-1913-00	

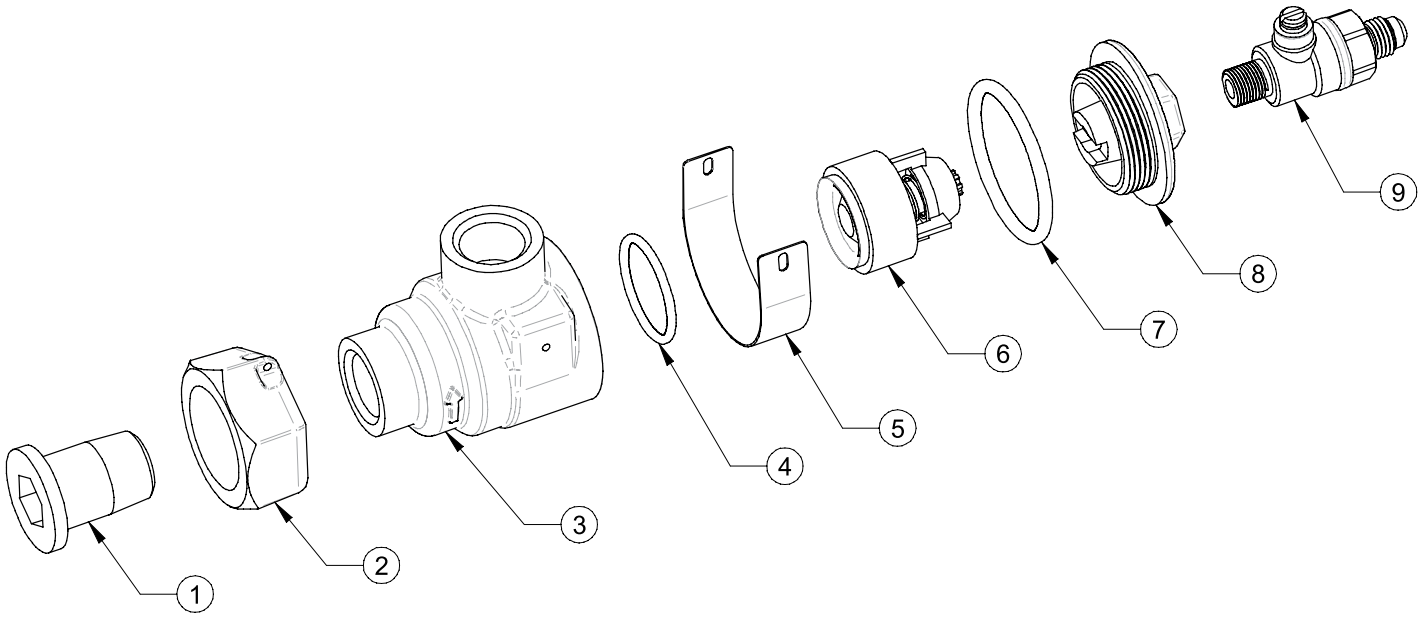
Individual parts are only available for bulk sales. Please refer to the appropriate repair kits below.
*Note: All bronze components listed are lead-free**
* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

Repair Kits (Mainline) 8″–12″

Check Rubber Only Kit (One kit repairs one check)		Size	
		8″	10″ & 12″
	Repair Kit Model Number	**RK4A8CMR**	**RK4A12INCMR**
Item #	Ordering Code	4A-00E-01	4A-00H-01
not shown	Lubricant	I-9016-00	
13	Disc	D-4934-00	D-4960-00
5	Check O-ring	D-4935-00	D-4997-00
18	Relief Valve Port O-ring	D-4963-00	D-2304-00
DC Check Complete Kit (One kit repairs one check)		**Size**	
		8″	**10″ & 12″**
	Repair Kit Model Number	**RK4A8CMC**	**RK4A12INCMC**
Item #	Ordering Code	4A-00E-00	4A-00H-00
not shown	Lubricant	I-9016-00	
6	Check Module S-Assy	W-9672-05	W-9861-05
5	Check O-ring	D-4935-00	D-4997-00

*Note: All bronze components listed are lead-free**
* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

PARTS LIST – BYPASS SINGLE CHECK (TYPE 2)



W977005 Single Check Valve (Lead Free*)

Item	Part #	Description	Qty
1	K-4587-06	Tailpiece	1
2	C-1844-05	Union Nut	1
3	Q-7281-05	Body	1
4	D-3885-00	Check O-ring	1
5	I-9342-00	Nameplate	1
6	F-3228-00	Check Valve	1
7	D-3589-00	Cap O-ring	1
8	F-4042-05	Cap	1
9	78LF-270-01	Test Cock	1

Individual parts are only available for bulk sales.
Please refer to the appropriate repair kits below.

Bypass Single Check Repair Kits
4A-003-12: Check Repair Kit: Includes items 4, 6, and 7 (1ea.)
4A-003-13: Check Complete Kit: Includes items 1-9 (1 ea.)

*Note: All bronze components listed are lead-free**
* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

VIII. MAINTENANCE INSTRUCTIONS - BYPASS SINGLE CHECK (TYPE 2)

A. Disassembly - Check Valve Module

1. Close #2 bypass line shut-off valve, then close #1 bypass line shut-off valve.
2. Bleed pressure from the assembly by opening the upstream test cock (located on the bypass line #1 shut-off valve) and the downstream test cock (located on the check valve cap).
3. Unscrew cap using hex head provided.
4. Pull check module straight out of body. Needle-nose pliers will aid in removing check valve. Check o-ring may remain in valve body. *NOTE: Check valve modules are not user serviceable. In the event of check failure, replacement modules are sold individually. However, debris caught in the check may be rinsed out.*

B. Assembly - Check Valve Module

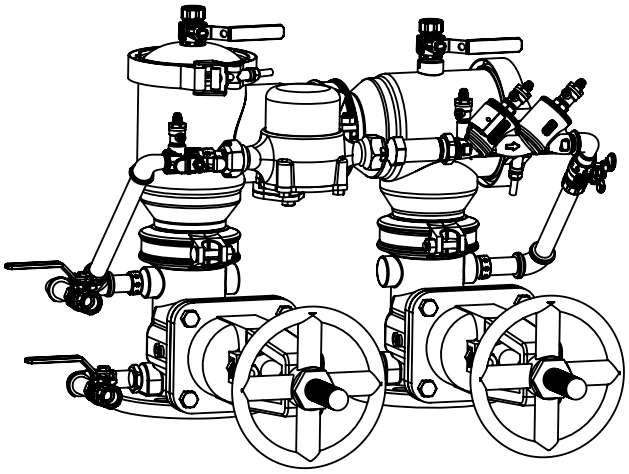
1. Install new or cleaned check valve module into body (ensure check o-ring is in place).
2. Apply a thin coat of Apollo supplied lubricant, DOW 111 or equal, on cap o-ring.
3. Install cap.

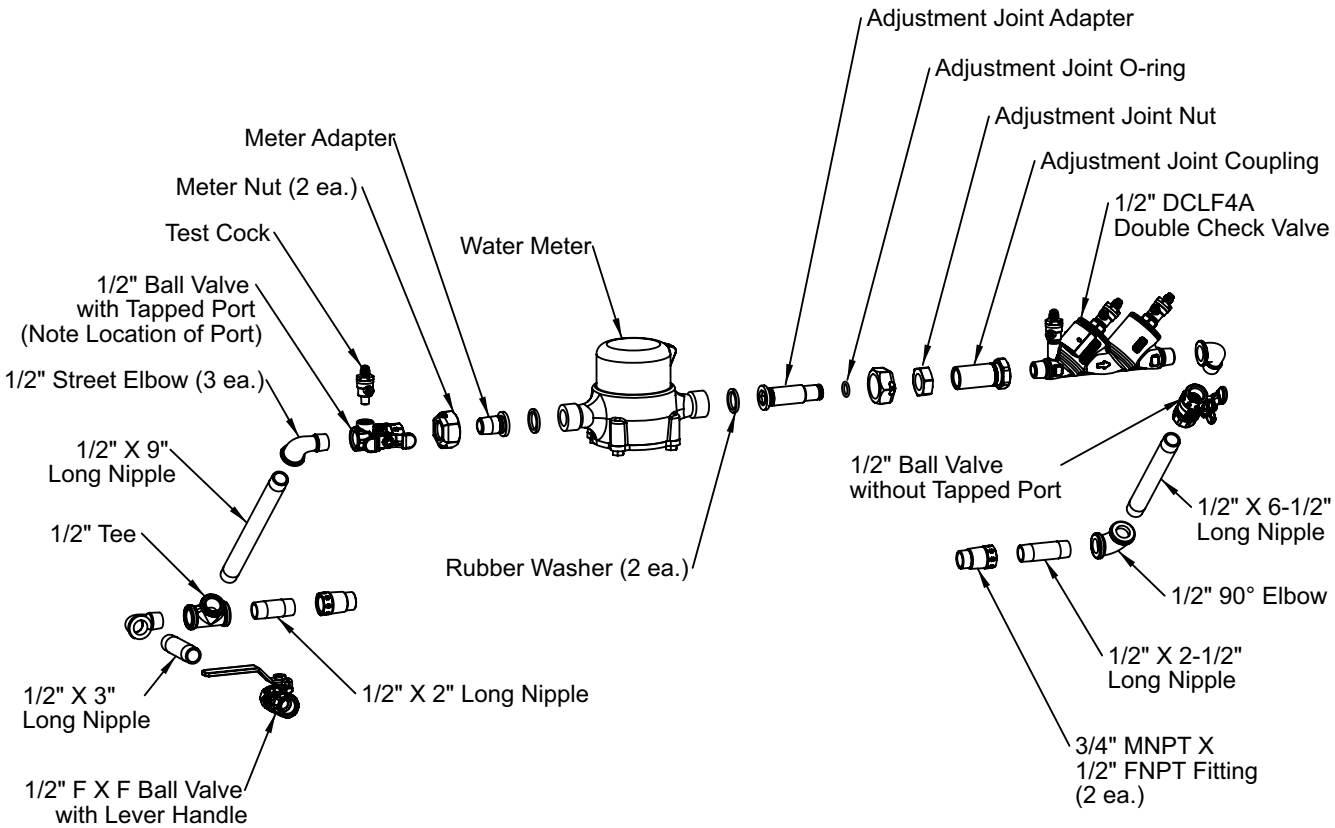
BYPASS LINE KITS

SIZE	METER OPTION	TYPE 1 BYPASS KIT PART NO.	TYPE 2 BYPASS KIT PART NO.
2-1/2"	GALLONS PER MIN	4ANLF-600-BPE	4ANLF-620-BPE
	CUBIC FT PER MIN	4ANLF-600-BPC	4ANLF-620-BPC
	NO METER	4ANLF-600-BPG	4ANLF-620-BPG
3"	GALLONS PER MIN	4ANLF-600-BPE	4ANLF-620-BPE
	CUBIC FT PER MIN	4ANLF-600-BPC	4ANLF-620-BPC
	NO METER	4ANLF-600-BPG	4ANLF-620-BPG
4"	GALLONS PER MIN	4ANLF-60A-BPE	4ANLF-62A-BPE
	CUBIC FT PER MIN	4ANLF-60A-BPC	4ANLF-62A-BPC
	NO METER	4ANLF-60A-BPG	4ANLF-62A-BPG
6"	GALLONS PER MIN	4ANLF-60C-BPE	4ANLF-62C-BPE
	CUBIC FT PER MIN	4ANLF-60C-BPC	4ANLF-62C-BPC
	NO METER	4ANLF-60C-BPG	4ANLF-62C-BPG
8"	GALLONS PER MIN	4ANLF-60E-BPE	4ANLF-62E-BPE
	CUBIC FT PER MIN	4ANLF-60E-BPC	4ANLF-62E-BPC
	NO METER	4ANLF-60E-BPG	4ANLF-62E-BPG
10"	GALLONS PER MIN	4ANLF-60G-BPE	4ANLF-62G-BPE
	CUBIC FT PER MIN	4ANLF-60G-BPC	4ANLF-62G-BPC
	NO METER	4ANLF-60G-BPG	4ANLF-62G-BPG
12"	GALLONS PER MIN	4ANLF-60H-BPE	4ANLF-62H-BPE
	CUBIC FT PER MIN	4ANLF-60H-BPC	4ANLF-62H-BPC
	NO METER	4ANLF-60H-BPG	4ANLF-62H-BPG

BYPASS KITS

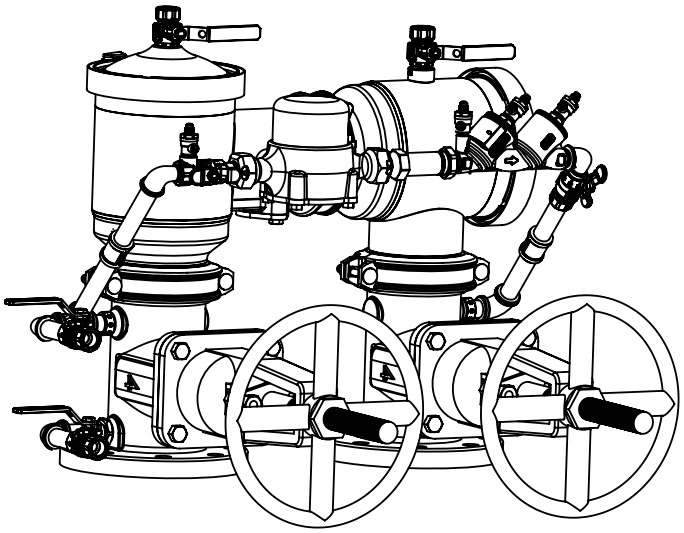
2-1/2" & 3" TYPE 1 BYPASS LINE

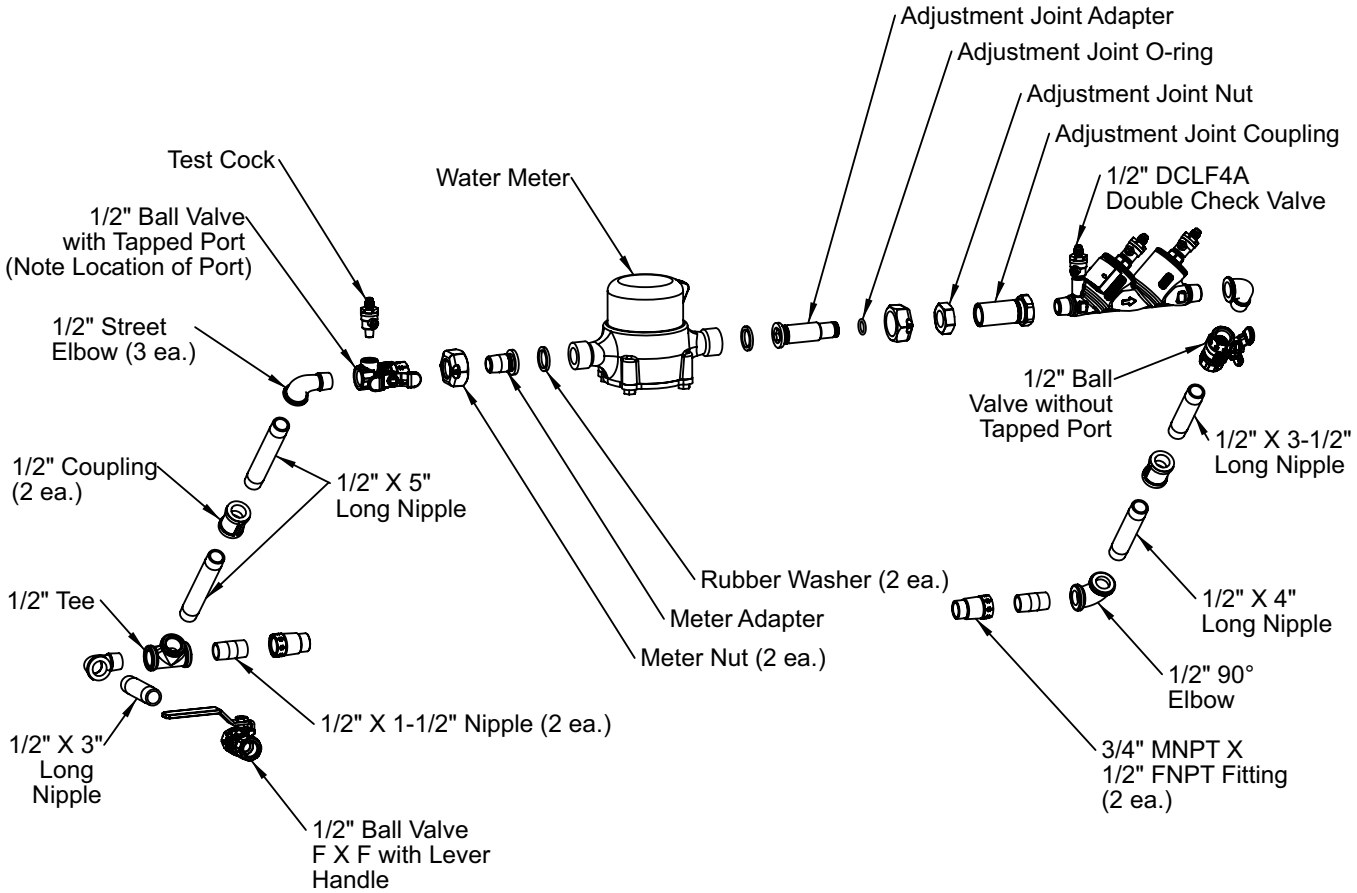




APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

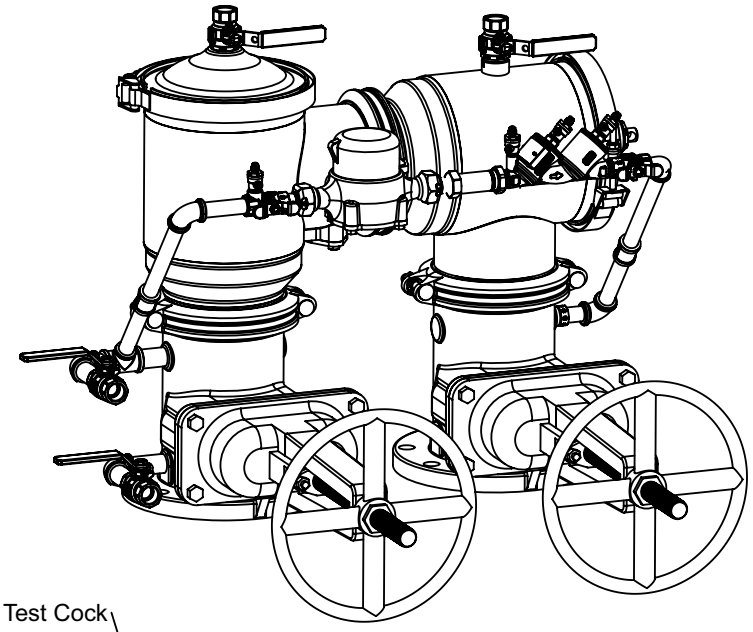
4" TYPE 1 BYPASS LINE

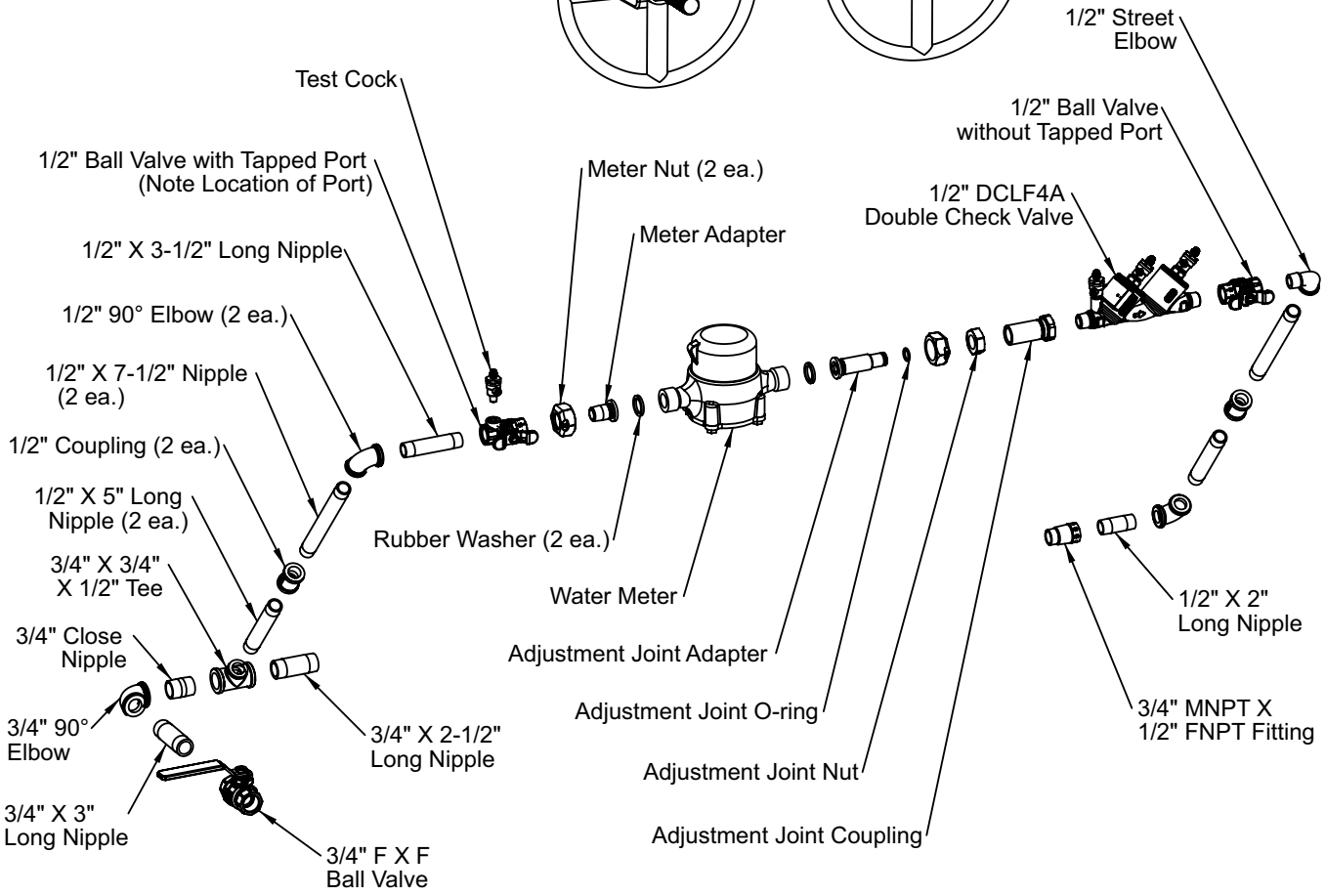




APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

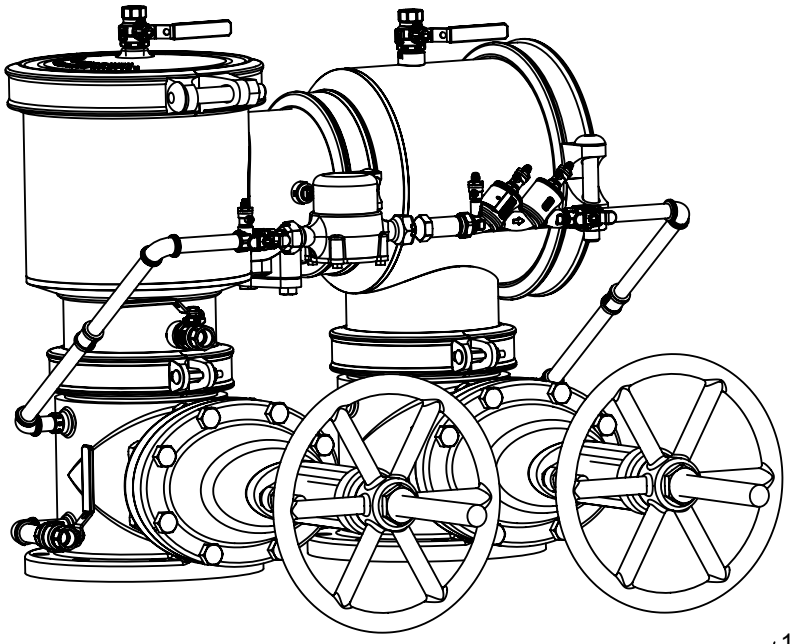
6" TYPE 1 BYPASS LINE

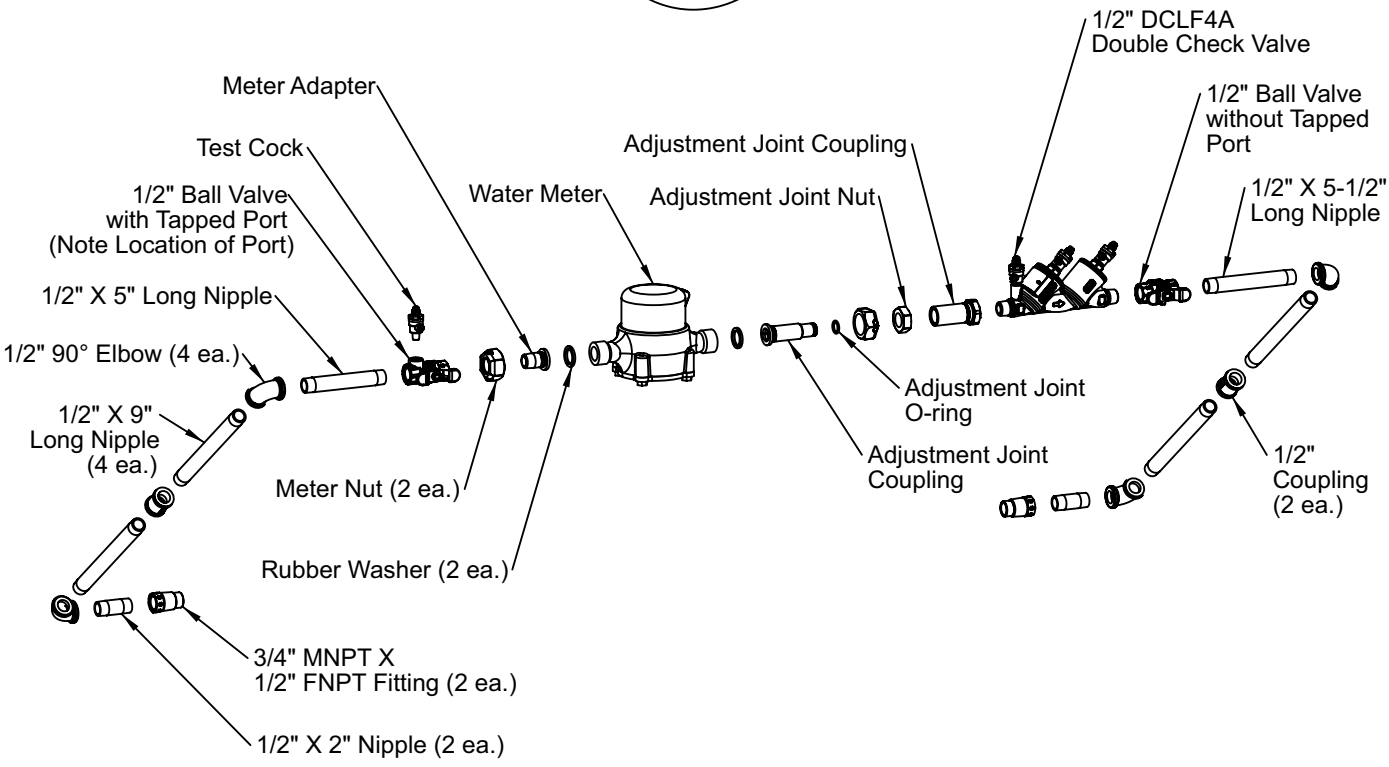




APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

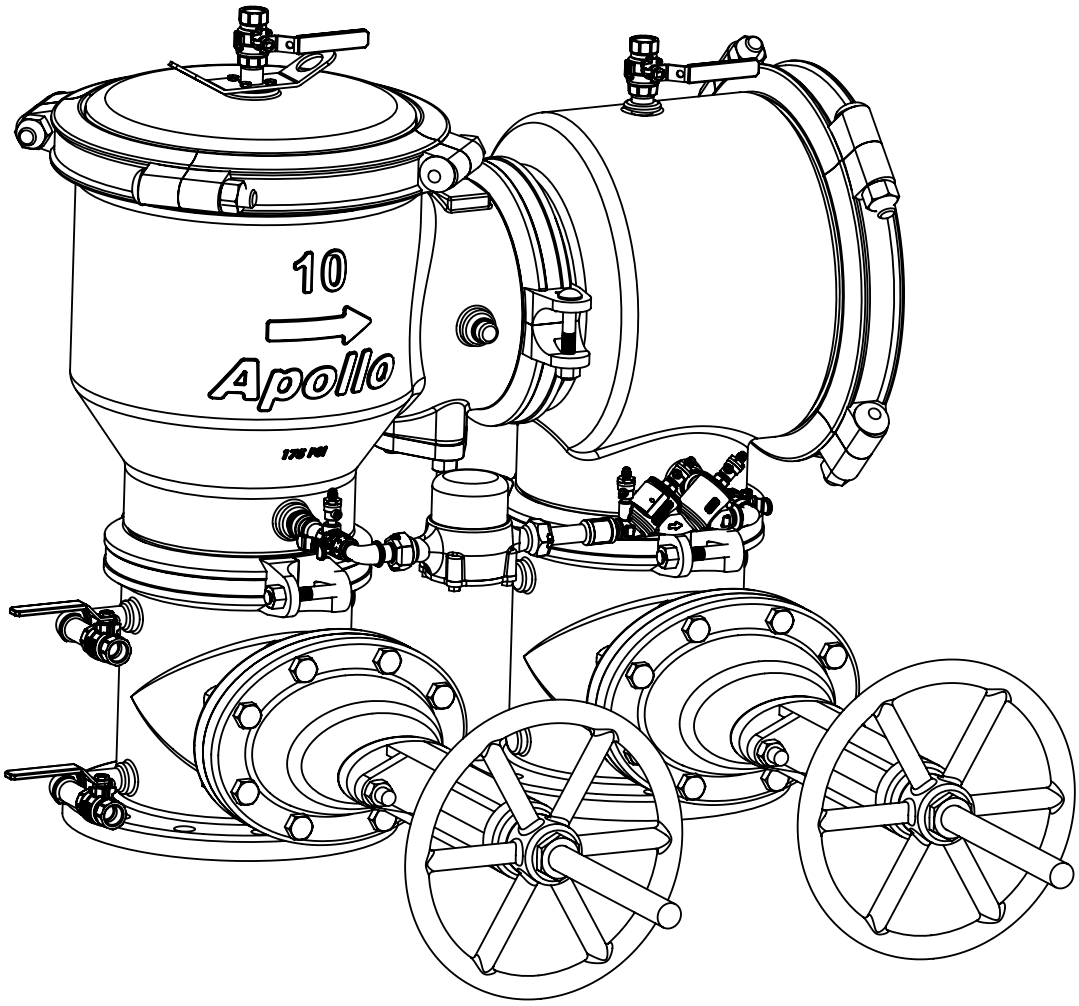
8" TYPE 1 BYPASS LINE

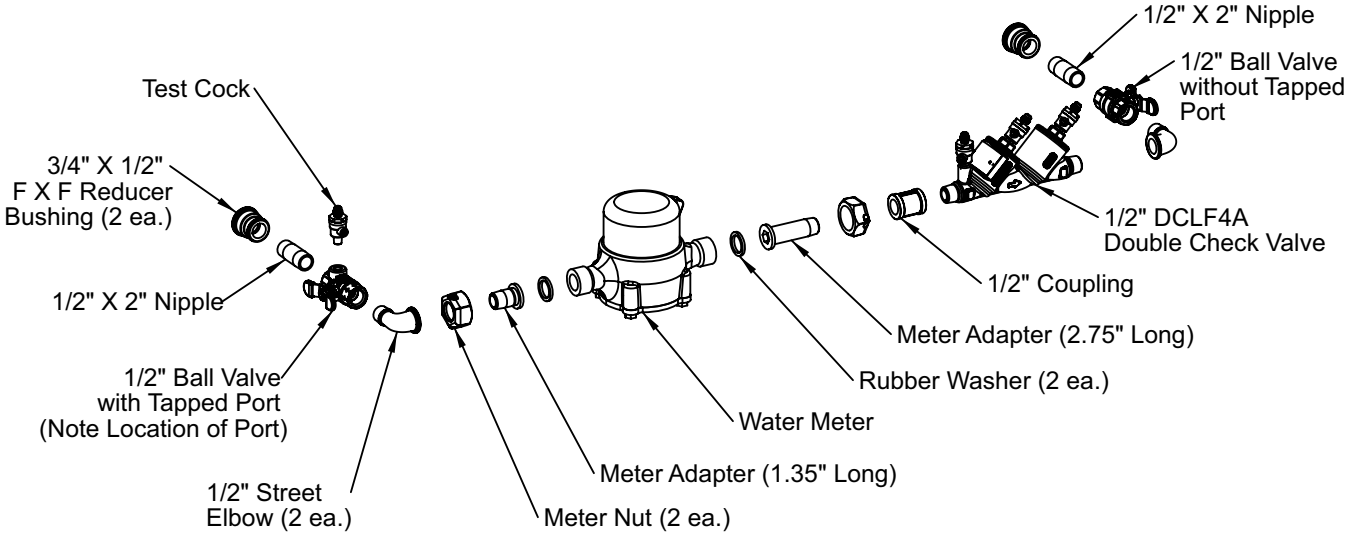




APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

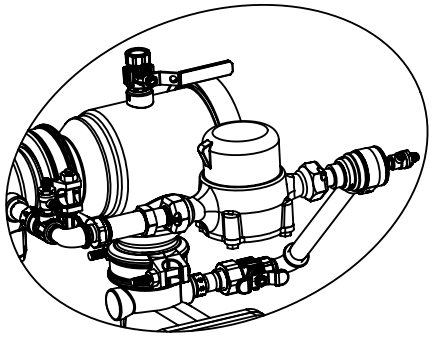
10" TYPE 1 BYPASS LINE





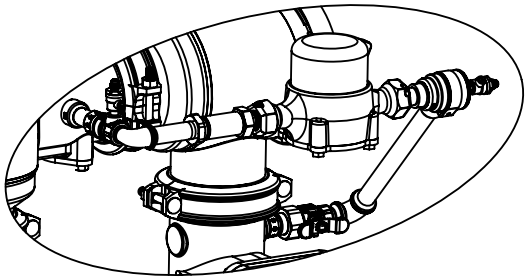
APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

2-1/2" & 3" TYPE 2 BYPASS LINE

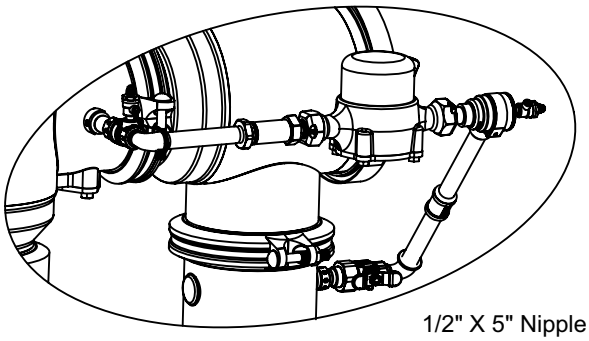


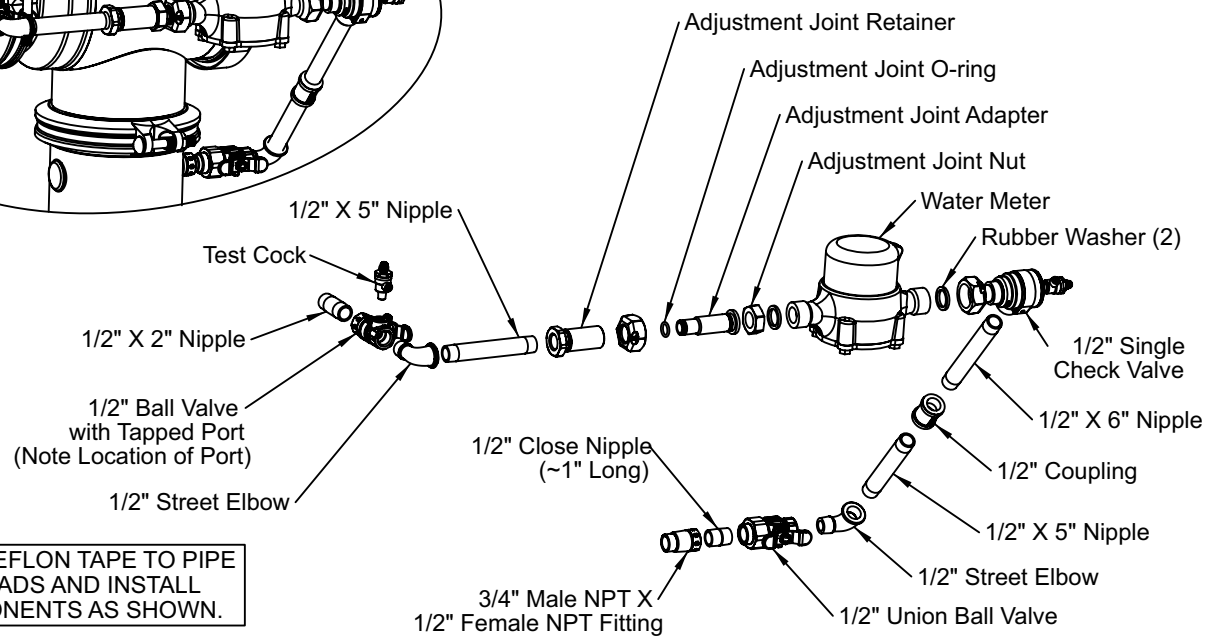
APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

4" TYPE 2 BYPASS LINE



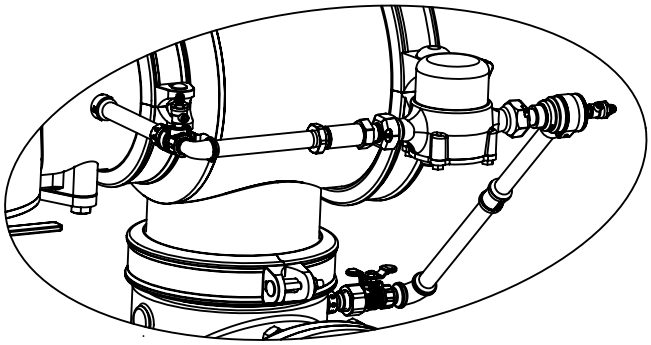
6" TYPE 2 BYPASS LINE

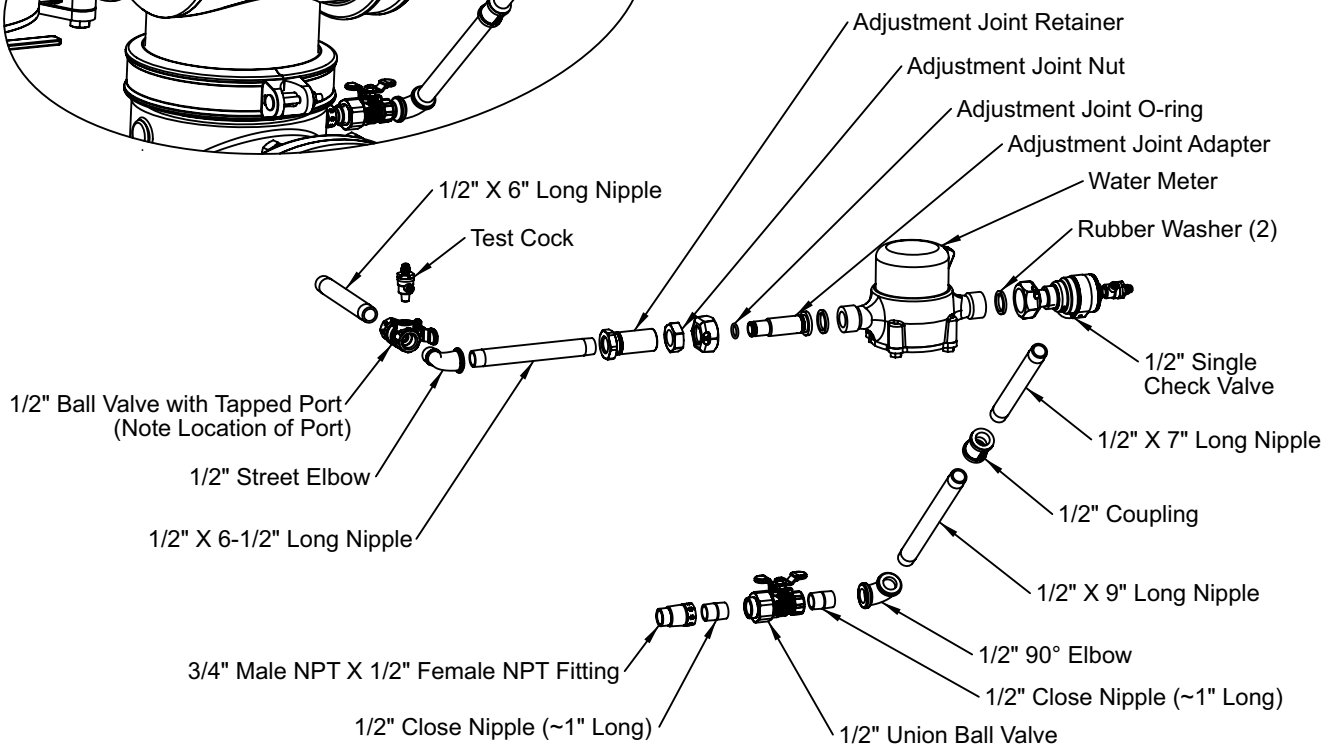




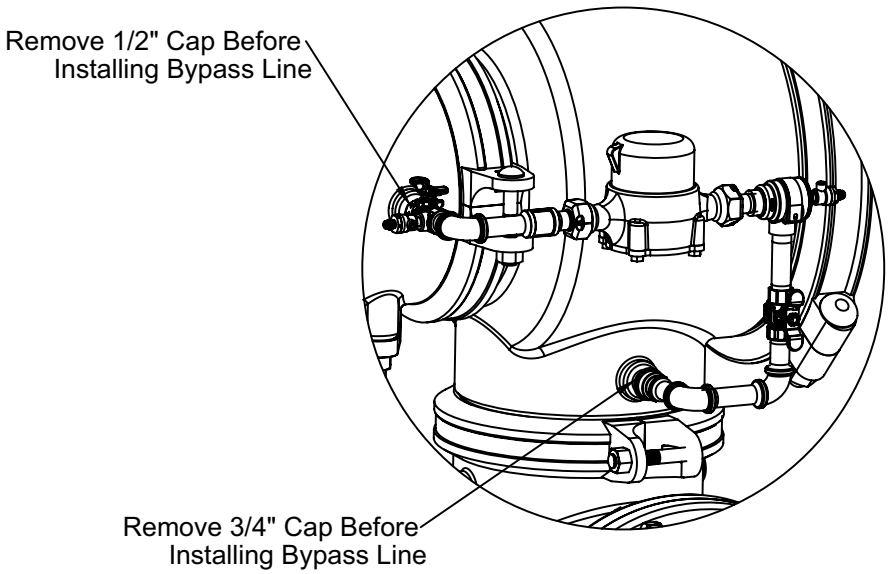
APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

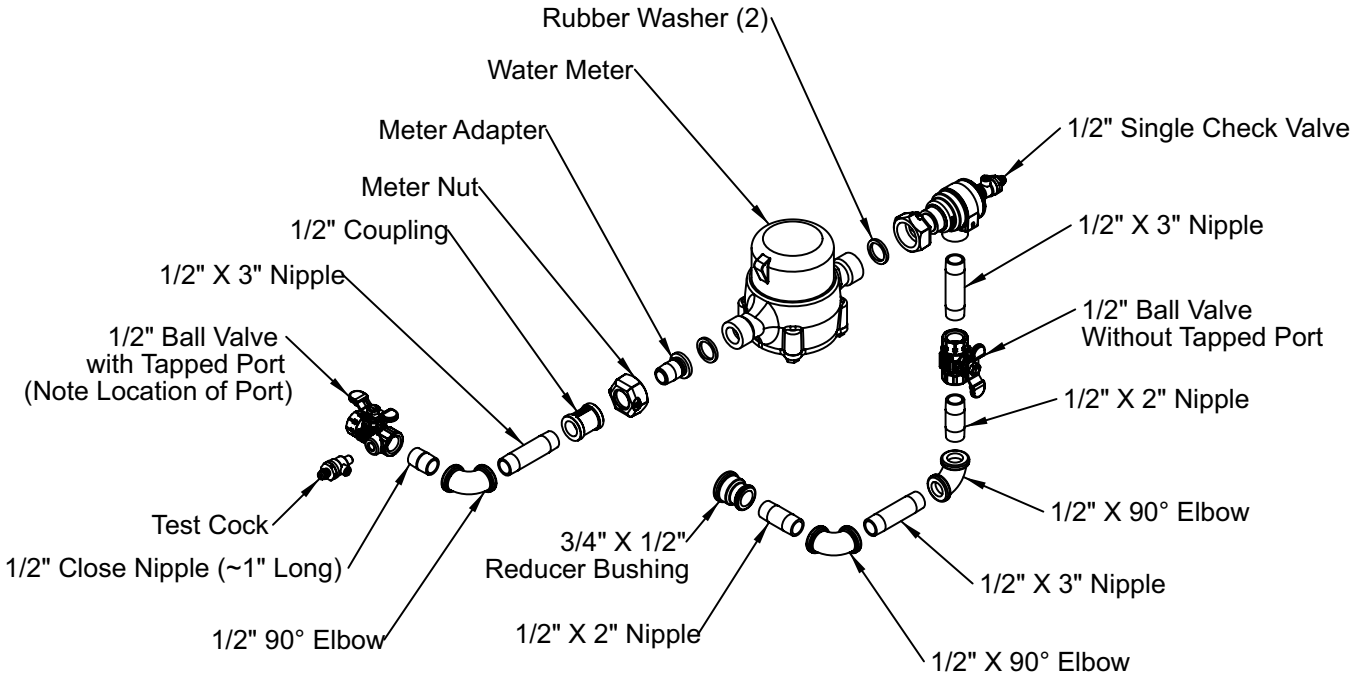
8" TYPE 2 BYPASS LINE





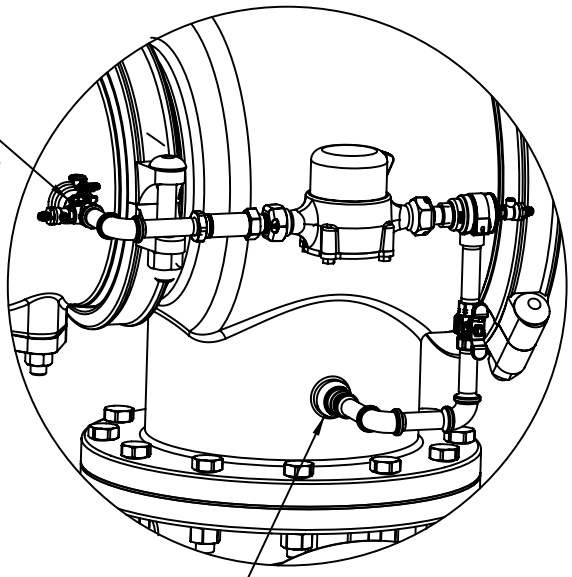
10" TYPE 2 BYPASS LINE

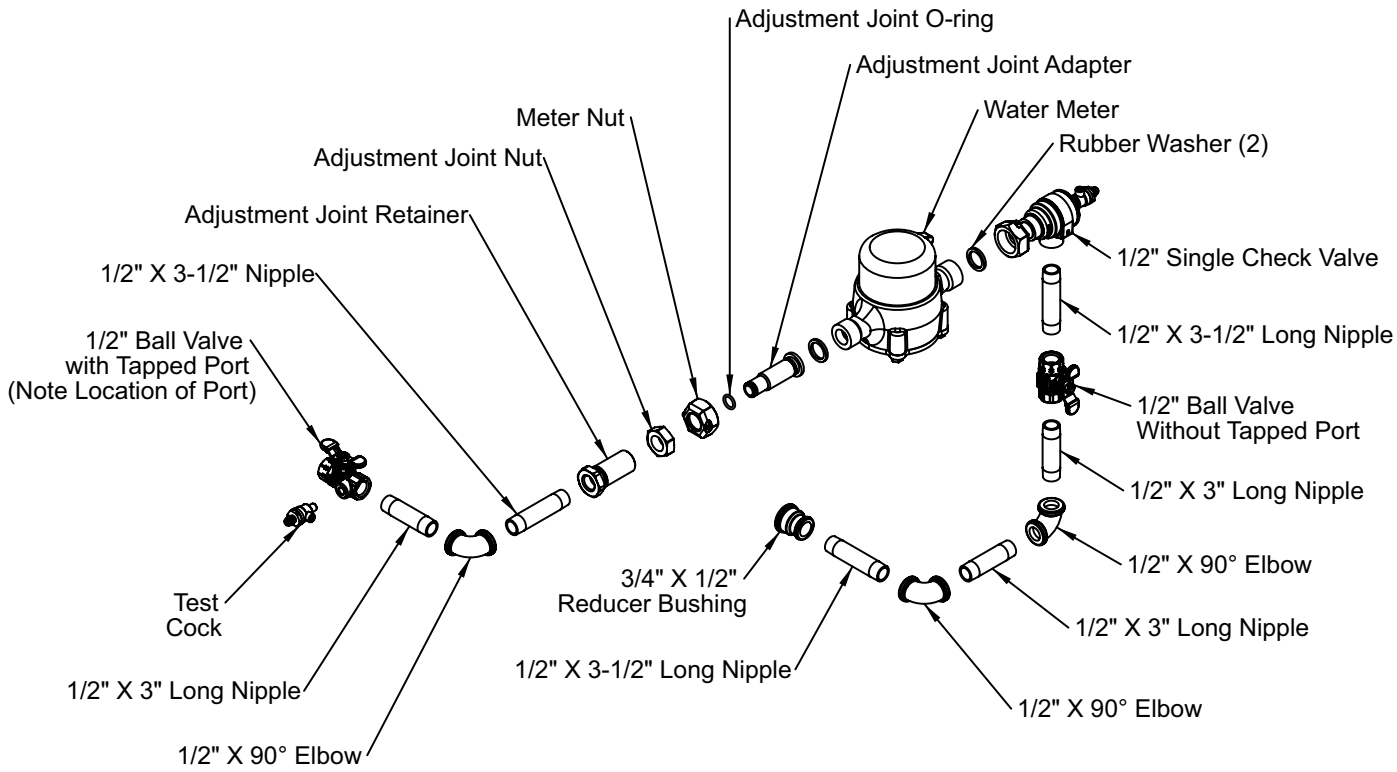




APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

12" TYPE 2 BYPASS LINE





APPLY TEFLON TAPE TO PIPE THREADS AND INSTALL COMPONENTS AS SHOWN.

IX. MAINTENANCE INSTRUCTIONS - BYPASS DOUBLE CHECK (TYPE 1)

A. Disassembly - Check Valve Module

1. Close #2 bypass line shut-off valve, then close #1 bypass line shut-off valve.
2. Bleed pressure from the assembly by opening all test cocks on bypass DC.
3. Unscrew cap using hex head provided.
4. Push down and turn the spring retainer 90° to remove. Remove the spring. Remove the poppet from the check seat.
5. Normally, the check seat need not be removed. If removal is required, rock it back and forth while pulling outward.

B. Disassembly - Check Valve Poppet

CAUTION: Do not use pliers or other tools, which may damage or scratch the plastic stem.

1. Holding the poppet assembly in one hand, remove screw and retaining washer.
2. Remove the seat disc.
3. All parts should be carefully inspected for any damage or excessive wear and thoroughly rinsed in clean water prior to reassembly. Replace worn parts as necessary.

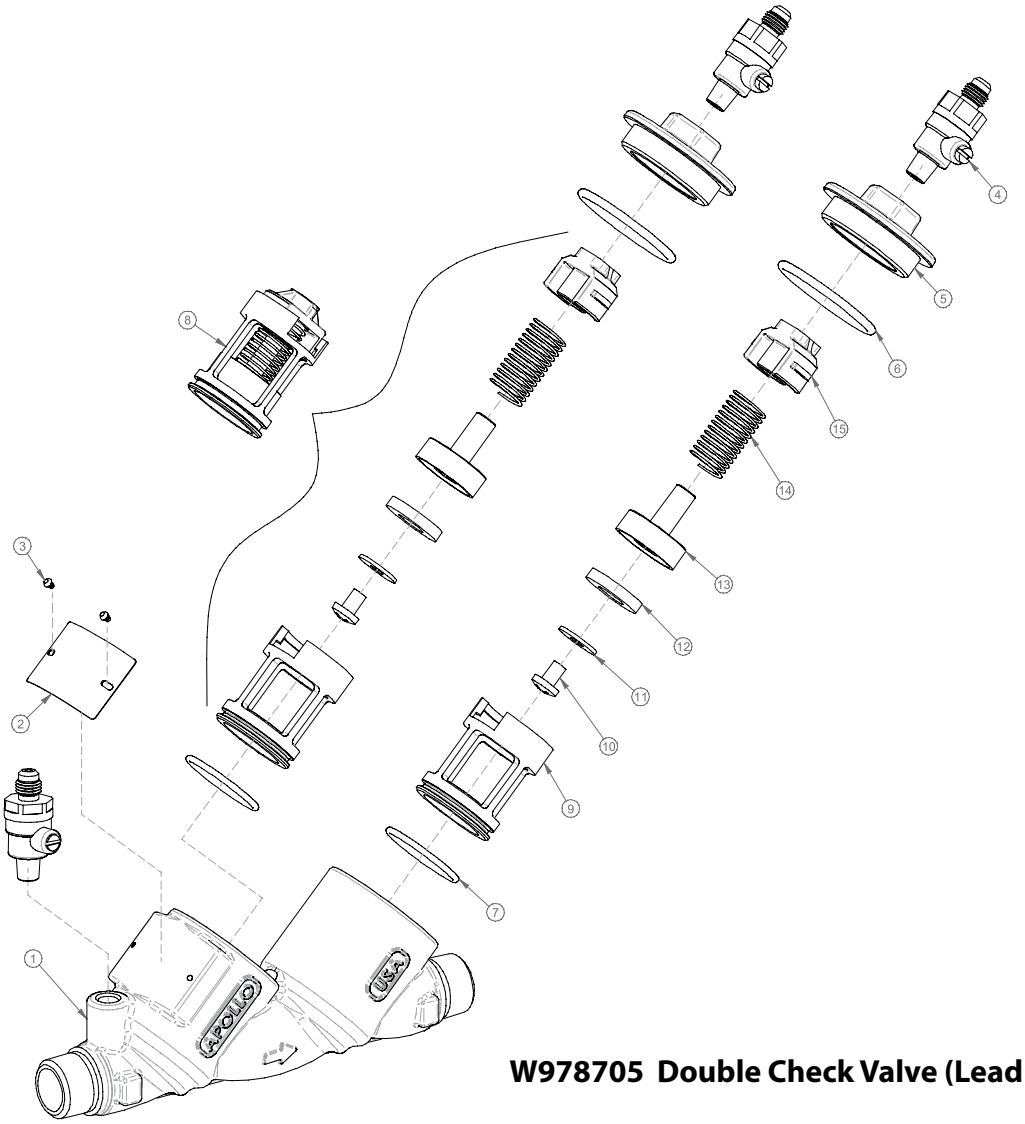
C. Assembly - Check Valve Poppet

1. Install new or cleaned disc in poppet and secure with washer and screw.

D. Assembly - Check Valve Module

1. If the check seat was removed, install the new o-ring and lubricate. Line up the seat with the bore and push it firmly into place.
2. Place and center the poppet assembly in the check seat.
3. Install the spring onto the poppet.
4. Install the spring retainer onto the spring by pushing down into the grooves of the check seat and turning 90°. Ensure spring retainer pops up about 1/8" and locks into the lugs. **CAUTION: Ensure the spring retainer orientation matches that in the parts list drawing or the device's flow will be significantly restricted (i.e. - do not install the spring retainer upside down).**
5. Apply a thin coat of Apollo supplied lubricant, DOW 111 or equal, on cap o-ring.
6. Install cap.

PARTS LIST – BYPASS DOUBLE CHECK (TYPE 1)



W978705 Double Check Valve (Lead Free*)

Bypass DC Parts List

Item	Part #	Description	Qty
1	Q-6869-05	Body	1
2	I-9024-00	Nameplate	1
3	I-2614-00	Nameplate Tack	2
4	78LF-292-01	Test Cock	3
5	F-3846-05	Cap	2
6	D-4881-00	Cap O-ring	2
7	D-4880-00	Check O-ring	2
8	W-9075-05	Check Module	2

Bypass DC Check Module Parts LIst

Item	Part #	Description	Qty
9	L-7815-00	Check Seat	1
10	B-3279-00	Screw	1
11	E-2372-00	Disc-retaining Washer	1
12	D-4771-00	Seat Disc	1
13	K-4491-00	Poppet	1
14	A-2505-00	Spring	1
15	L-7814-00	Spring Retainer	1

Individual parts are only available for bulk sales. Please refer to the appropriate repair kits below.

*Note: All bronze components listed are lead-free**

* LEAD FREE: The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB1953, VT Act 193, MD HB372, LA HB471, and Federal Public Law 111-380.

Bypass DC Repair Kits

4A-003-01: Check Rubber Repair Kit: Includes items 6, 7, and 12 (1 ea.)
4A-003-02: DC Check Repair Kit: Includes items 6, 7, and 8 (1 ea.)
4A-003-08: DC Complete Repair Kit: Includes items 6, 7, and 8 (2 ea.)

SHUT-OFF VALVE PART NUMBERS

SHUT-OFF VALVE OPTIONS -- 2-1/2"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-5310-00	W-5310-00	-02
FLG OS&Y X FLG OS&Y	W-4733-00	W-4733-00	-03
FLG OS&Y X MONIT. BFLY	W-4733-00	W-5244-00	-04
FLG OS&Y X GROOVED OS&Y	W-4733-00	W-5282-00	-07
GROOVED OS&Y X GROOVED OS&Y	W-5282-00	W-5282-00	-08
MONITORED BFLY X MONITORED BFLY	W-5244-00	W-5244-00	-09
GRV NRS X GRV NRS	W-9369-00	W-9369-00	-011
FLG NRS X GRV NRS	W-5310-00	W-9369-00	-012

SHUT-OFF VALVE OPTIONS -- 3"					
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**	**Suffix**
FLG NRS X FLG NRS	W-5311-00	W-5311-00	N/A	N/A	-02
FLG OS&Y X FLG OS&Y	W-4734-00	W-4734-00	N/A	N/A	-03
FLG OS&Y X MONIT. BFLY	W-4734-00	W-5245-00	N/A	N/A	-04
FLG OS&Y X FLG PI	W-4734-00	W-5311-00	E-2922-00	C-2640-00	-06
FLG OS&Y X GROOVED OS&Y	W-4734-00	W-5283-00	N/A	N/A	-07
GROOVED OS&Y X GROOVED OS&Y	W-5283-00	W-5283-00	N/A	N/A	-08
MONITORED BFLY X MONITORED BFLY	W-5245-00	W-5245-00	N/A	N/A	-09
FLG OS&Y X GRV PI	W-4734-00	W-9370-00	E-2922-00	C-2640-00	-010
GRV NRS X GRV NRS	W-9370-00	W-9370-00	N/A	N/A	-011
FLG NRS X GRV NRS	W-5311-00	W-9370-00	N/A	N/A	-012
FLG PI X MONITORED BFLY	W-5311-00	W-5245-00	E-2922-00	C-2640-00	-013
FLG PI X FLG PI	W-5311-00	W-5311-00	E-2922-00	C-2640-00	-014
MONITORED BFLY X FLG PI	W-5245-00	W-5311-00	E-2922-00	C-2640-00	-016
FLG PI X GRV OS&Y	W-5311-00	W-5283-00	E-2922-00	C-2640-00	-017

SHUT-OFF VALVE OPTIONS -- 4"					
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**	**Suffix**
FLG NRS X FLG NRS	W-5312-00	W-5312-00	N/A	N/A	-02
FLG OS&Y X FLG OS&Y	W-4735-00	W-4735-00	N/A	N/A	-03
FLG OS&Y X MONIT. BFLY	W-4735-00	W-5246-00	N/A	N/A	-04
FLG OS&Y X FLG PI	W-4735-00	W-5312-00	E-2922-00	C-2640-00	-06
FLG OS&Y X GROOVED OS&Y	W-4735-00	W-5284-00	N/A	N/A	-07
GROOVED OS&Y X GROOVED OS&Y	W-5284-00	W-5284-00	N/A	N/A	-08
MONITORED BFLY X MONITORED BFLY	W-5246-00	W-5246-00	N/A	N/A	-09
FLG OS&Y X GRV PI	W-9126-00	W-9371-00	E-2922-00	C-2640-00	-010
GRV NRS X GRV NRS	W-9371-00	W-9371-00	N/A	N/A	-011
FLG NRS X GRV NRS	W-5312-00	W-9371-00	N/A	N/A	-012
FLG PI X MONITORED BFLY	W-5312-00	W-5246-00	E-2922-00	C-2640-00	-013
FLG PI X FLG PI	W-5312-00	W-5312-00	E-2922-00	C-2640-00	-014
MONITORED BFLY X FLG PI	W-5246-00	W-5312-00	E-2922-00	C-2640-00	-016
FLG PI X GRV OS&Y	W-5312-00	W-5284-00	E-2922-00	C-2640-00	-017

SHUT-OFF VALVE PART NUMBERS - cont'd

SHUT-OFF VALVE OPTIONS -- 6"					
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**	**Suffix**
FLG NRS X FLG NRS	W-5313-00	W-5313-00	N/A	N/A	-02
FLG OS&Y X FLG OS&Y	W-4736-00	W-4736-00	N/A	N/A	-03
FLG OS&Y X MONIT. BFLY	W-4736-00	W-5247-00	N/A	N/A	-04
FLG OS&Y X FLG PI	W-4736-00	W-5313-00	E-2923-00	C-2641-00	-06
FLG OS&Y X GROOVED OS&Y	W-4736-00	W-5285-00	N/A	N/A	-07
GROOVED OS&Y X GROOVED OS&Y	W-5285-00	W-5285-00	N/A	N/A	-08
MONITORED BFLY X MONITORED BFLY	W-5247-00	W-5247-00	N/A	N/A	-09
FLG OS&Y X GRV PI	W-4736-00	W-9372-00	E-2923-00	C-2641-00	-010
GRV NRS X GRV NRS	W-9372-00	W-9372-00	N/A	N/A	-011
FLG NRS X GRV NRS	W-5313-00	W-9372-00	N/A	N/A	-012
FLG PI X MONITORED BFLY	W-5313-00	W-5247-00	E-2923-00	C-2641-00	-013
FLG PI X FLG PI	W-5313-00	W-5313-00	E-2923-00	C-2641-00	-014
MONITORED BFLY X FLG PI	W-5247-00	W-5313-00	E-2923-00	C-2641-00	-016
FLG PI X GRV OS&Y	W-5313-00	W-5285-00	E-2923-00	C-2641-00	-017

SHUT-OFF VALVE OPTIONS -- 8"					
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**	**Suffix**
FLG NRS X FLG NRS	W-5314-00	W-5314-00	N/A	N/A	-02
FLG OS&Y X FLG OS&Y	W-4737-00	W-4737-00	N/A	N/A	-03
FLG OS&Y X MONIT. BFLY	W-4737-00	W-5248-00	N/A	N/A	-04
FLG OS&Y X FLG PI	W-4737-00	W-5314-00	E-2924-00	C-2642-00	-06
FLG OS&Y X GROOVED OS&Y	W-4737-00	W-5286-00	N/A	N/A	-07
GROOVED OS&Y X GROOVED OS&Y	W-5286-00	W-5286-00	N/A	N/A	-08
MONITORED BFLY X MONITORED BFLY	W-5248-00	W-5248-00	N/A	N/A	-09
FLG OS&Y X GRV PI	W-4737-00	W-9373-00	E-2924-00	C-2642-00	-010
GRV NRS X GRV NRS	W-9373-00	W-9373-00	N/A	N/A	-011
FLG NRS X GRV NRS	W-5314-00	W-9373-00	N/A	N/A	-012
FLG PI X MONITORED BFLY	W-5314-00	W-5248-00	E-2924-00	C-2642-00	-013
FLG PI X FLG PI	W-5314-00	W-5314-00	E-2924-00	C-2642-00	-014
MONITORED BFLY X FLG PI	W-5248-00	W-5314-00	E-2924-00	C-2642-00	-016
FLG PI X GRV OS&Y	W-5314-00	W-5286-00	E-2924-00	C-2642-00	-017

SHUT-OFF VALVE OPTIONS -- 10"					
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**	**Suffix**
FLG NRS X FLG NRS	W-5315-00	W-5315-00	N/A	N/A	-02
FLG OS&Y X FLG OS&Y	W-4738-00	W-4738-00	N/A	N/A	-03
FLG OS&Y X MONIT. BFLY	W-4738-00	W-5249-00	N/A	N/A	-04
FLG OS&Y X FLG PI	W-4738-00	W-5315-00	E-2925-00	C-2643-00	-06
FLG OS&Y X GROOVED OS&Y	W-4738-00	W-5321-00	N/A	N/A	-07
GROOVED OS&Y X GROOVED OS&Y	W-5321-00	W-5321-00	N/A	N/A	-08
MONITORED BFLY X MONITORED BFLY	W-5249-00	W-5249-00	N/A	N/A	-09
FLG OS&Y X GRV PI	W-4738-00	W-2341-00	E-2925-00	C-2643-00	-010
GRV NRS X GRV NRS	W-2341-00	W-2341-00			-011
FLG NRS X GRV NRS	W-5315-00	W-2341-00			-012
FLG PI X MONITORED BFLY	W-5315-00	W-5249-00	E-2925-00	C-2643-00	-013
FLG PI X FLG PI	W-5315-00	W-5315-00	E-2925-00	C-2643-00	-014
MONITORED BFLY X FLG PI	W-5249-00	W-5315-00	E-2925-00	C-2643-00	-016
FLG PI X GRV OS&Y	W-5315-00	W-5321-00	E-2925-00	C-2643-00	-017

SHUT-OFF VALVE PART NUMBERS - cont'd

SHUT-OFF VALVE OPTIONS -- 12"				
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Post Plate**	**Operating Nut**
FLG NRS X FLG NRS	W-4737-00	W-5314-00	N/A	N/A
FLG OS&Y X FLG OS&Y	W-4737-00	W-4737-00	N/A	N/A
FLG OS&Y X FLG PI	W-4737-00	W-5314-00	E-2925-00	C-2643-00

NOTES

SALES & CUSTOMER SERVICE:

Phone: (704) 841-6000
Fax: (704) 841-6020
www.apollovalves.com

	AGENCY	AREAS COVERED	EMAIL	PHONE	FAX
SOUTHEAST REGION	Mid South Marketing, Inc.	VA/MD/Washington, D.C./WV-East	michael.uecker@msmsales1.com	804-213-3801	804-213-3802
	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Spirit Group	FL (except Panhandle)	info@spiritgroupinc.com	407-291-6035	407-299-0378
	Tim Morales & Associates, Inc.	AL/FL Panhandle	sales@timmorales.com	251-602-8333	251-602-8339
	White Wolf Group	GA	info@whitewolfgroupinc.com	800-401-4870	888-908-9372
SOUTHERN REGION	BWC Inc.	LA (Commercial Products)	chuck@bwcassoc.com	504-734-0229	504-734-3711
	Marathon Flow Control	TX, OK, KS except Northeast, LA (Industrial)	sales@marathonflowcontrol.com	214-201-0100	214-201-0104
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
MIDWESTERN REGION	FourMation Sales	MN/ND/SD/WI-West	ryan@fourmationsales.com	763-420-6900	763-420-6993
	Marshall-Rodeno Heartland	NE/IA (Except River Counties)	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Midwest Spec	Northern OH, Western PA, WV	glsales@mwspec.com	330-538-0406	330-538-0410
	Midwest Spec	Southern OH, KY	rvsales@mwspec.com	513-353-9191	513-353-1589
	New Tech Marketing	Northern-IL/WI-East/IN/MI-UP/IA-River Counties	sales@new-techmarketing.com	630-378-4300	630-378-0343
	New Tech Marketing	MO/Southern IL/Northeast Kansas	ntm112@aol.com	618-394-0329	618-394-0427
	V.E. Sales Co., Inc.	MI (Except Upper Peninsula)	tomv@vesalesinc.com	586-774-7760	586-774-1490
WESTERN REGION	Elmco Duddy	CA - South	tduddy@elmcoduddy.com	626-333-9942	626-855-4811
	Gordon & Associates	WA, OR, AK, Northern counties ID	kenn@gordonandassoc.com	907-441-7184	425-228-7777
	HC Fletcher	CA - North (AB 1953 Compliant Product & Fire Protection)	apollosales@hcfletcher.com	800-432-7047	949-660-9072
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE/NM/El Paso-TX	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Romatec	CA - North PVF (Non AB 1953)	apollo@romatec.com	877-530-3530	661-588-3534
	Southwest Valves	CA (Waterworks)	d.burell@southwestvalve.com	559-261-2703	559-261-2711
	Southwestern Industrial Sales Co.	AZ/Nevada-SW	eduardop@sw-ind.com	480-458-5838	480-458-5843
	Spec Management Group	HI	msmarch4@cox.net	949-481-4225	949-487-0990
NORTHEAST REGION	Conroy & Griese Sales, Inc.	NY-East/NJ-North	iezzi52@aol.com	856-663-4440	856-663-6644
	Keith Engle & Associates	OEM accounts	keith.engle@verizon.net	610-827-9560	610-827-9561
	Layden Company	NY-Upstate/PA-East/DE/NJ-South	joejr@laydencompany.com	610-363-6657	877-529-3361
	Urell, Inc.	MA/New England States	conbraco@urell.com	617-923-9500	617-926-9414
IRRIGATION ONLY REPS	Active Sales Northwest, Inc.	OR, WA, Western ID	skactive@aol.com	541-726-0320	541-726-1148
	Biz Sales Company	OH, KY, MI, IN, parts of PA, WV, WI	dzavelson@bizpvf.com	216-595-2888	216-595-2899
	Fourmation Sales	MN/ND/SD/WI-West	dean@fourmationsales.com	763-262-4700	763-262-4740
	Hall Marketing	AL, LA	hallmarketing@bellsouth.net	228-547-4637	228-832-6666
	J&J Midwest Sales	NE, IA, MO, KS	john@jandjmidwestsales.com	314-422-8419	
	Jim Benton & Associates	AL, FL Panhandle	jim@bentonandassoc.com	205-664-1221	205-664-1277
	John Hart	FL	jhart@lascofittings.com	772-595-7773	772-489-4305
	Larry Perkins	TX - Southern	lperkins@lascofittings.com	936-443-1096	
	Marel Enterprises	New England, NY, DE, MD, VA, DC, parts of PA & WV	marelenterprise@gmail.com	631-271-1718	631-427-8558
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	NSC Marketing Group Inc.	OK	nsc_tulsa@sbcglobal.net	918-627-5340	918-664-1408
	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Sherman Dobbs	TX - Northern	sdobbs@lascofittings.com	469-442-8510	972-417-9733
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
	Spec Management Group	CA-South	msmarch4@cox.net	949-481-4225	949-487-0990
	VPC Sales	AZ	chudson@vpcsales.com	661-257-3923	661-257-3928
	APOLLO FIRE PROTECTION SYSTEM SOLUTIONS				
	Brian Fiorisi	US	brian.fiorisi@conbraco.com	574-524-6675	
CANADA	Barclay Sales Ltd.	British Columbia	sales@barclaysales.com	604-945-1010	604-945-3030
	Conbraco Industries, Canada	178 Pennsylvania Ave., Unit 1, Concord, Ontario L4K 4B1	conbraco.canada@conbraco.com	905-761-6161	905-761-6666
	D & M Mechanical Sales	Ontario/East	don@dandmsales.ca	613-384-7084	613-384-3407
	Dynamic Agencies, Ltd.	Saskatchewan	doug.dynamicage@sasktel.net	306-343-1901	306-343-1901
	J. Levandier Sales, Inc.	Nova Scotia, New Brunswick, Prince Edward Island & Newfoundland	service@jlevandiersales	506-858-1615	506-858-1084
	Kern Industries, Ltd.	Alberta-North	kernind@telusplanet.net	780-451-2056	780-454-6687
	Kern Industries Calgary, Ltd.	Alberta-South	marty.yucytus@kernindustries.ca	403-730-7791	403-239-8179
	Key to the North Sales Agency, Inc.	Ontario-North	hmehes@keytothenorth.ca	705-524-6714	705-566-0148
	Task Controls, Inc.	Ontario	infotoronto@taskcontrols.com	416-291-3004	416-754-3481
	Tom Beggs Agencies Ltd.	Manitoba/NW Ontario	tba@mts.net	204-953-1900	204-774-6915
	Ventes Techniques Nimatec	Quebec	nimatec@nimatec.com	450-691-9427	450-691-4949