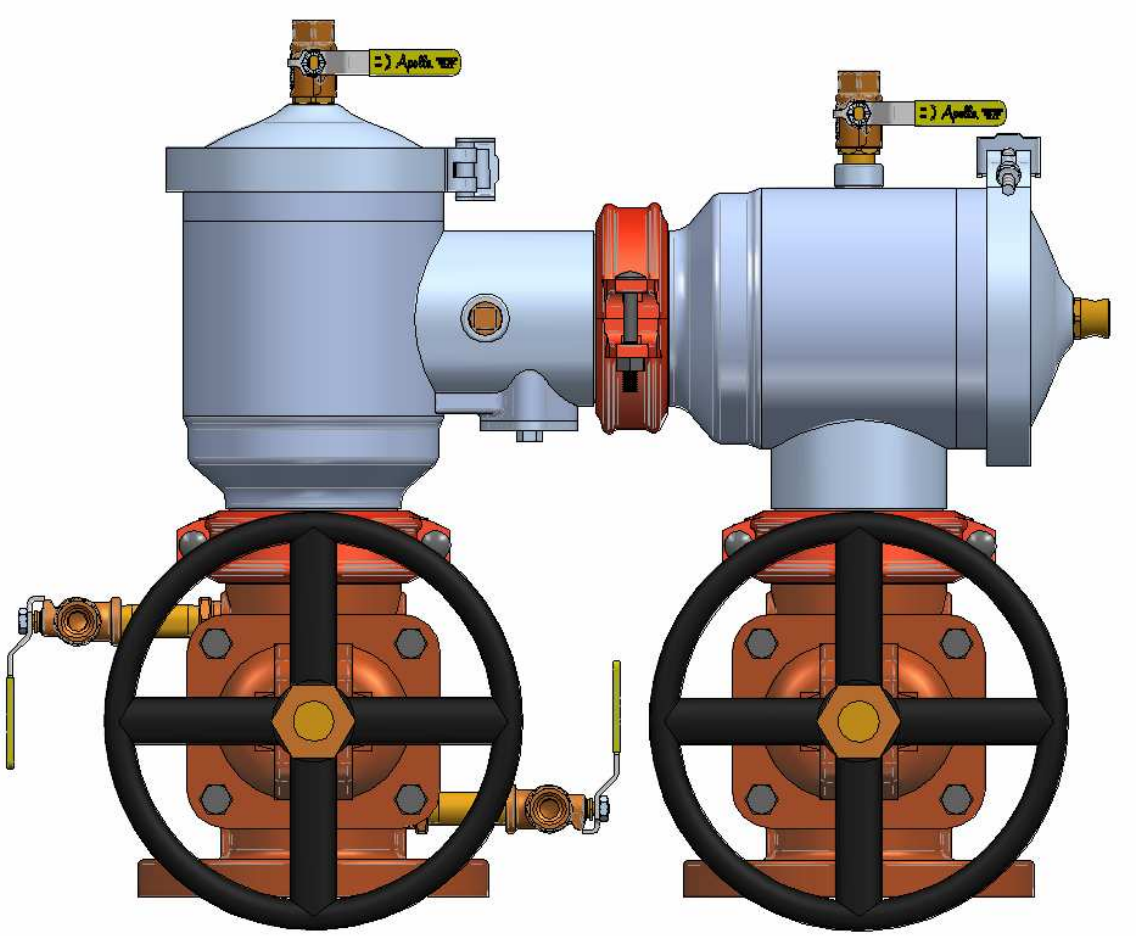
Made In The USA

Model DC 4AN
Model DCDA 4AN
Model DCDA2 4AN

Installation, Operation, and Maintenance Manual



2 ½” – 12”
Double Check Valve
Double Check Detector Assembly

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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 must 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 (#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.

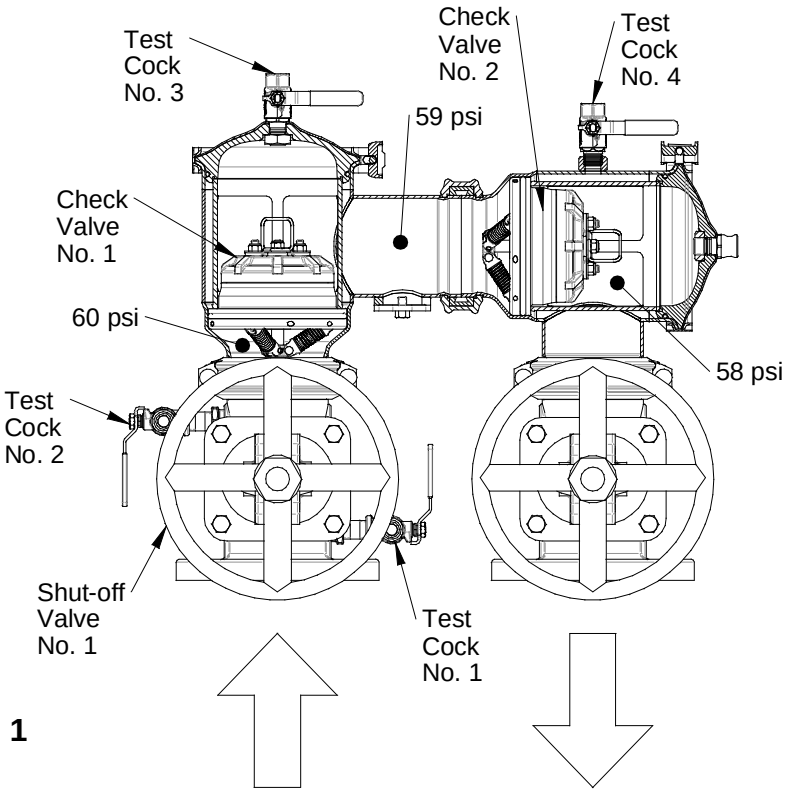


Figure 1

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

III. TROUBLE SHOOTING GUIDE

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

IV. MAINTENANCE INSTRUCTIONS

2 ½" – 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 either check 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. 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 screwdriver will aid in lifting the 2nd check cover out of the body. See Figure 2.

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

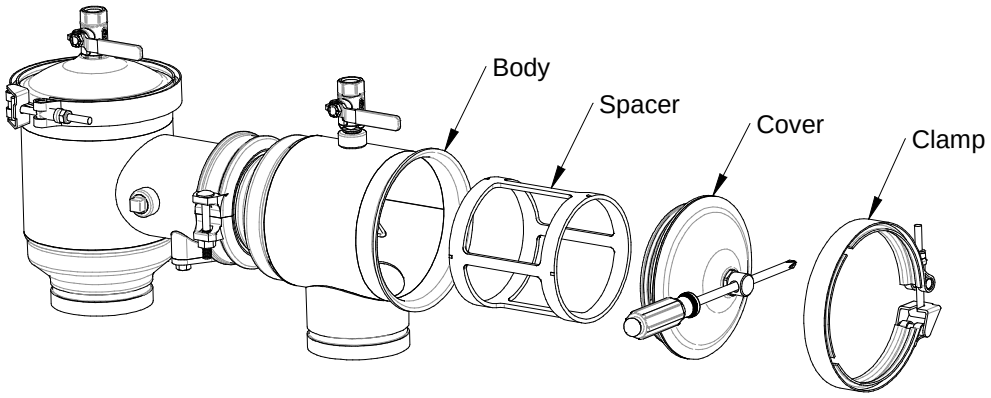


Figure 2

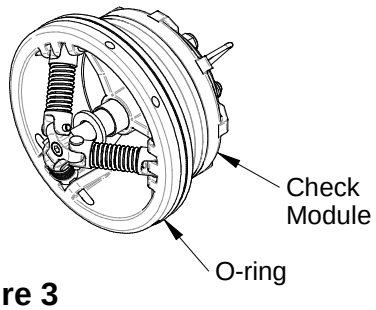


Figure 3

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 locknuts. 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.

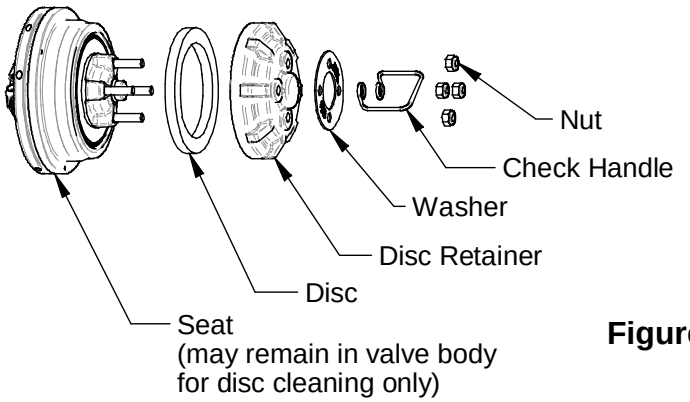


Figure 4

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

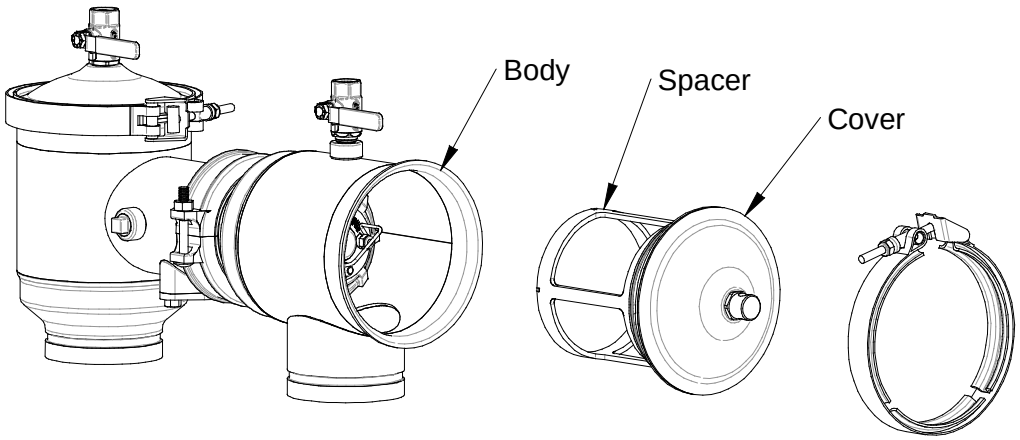


Figure 5

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 check 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).

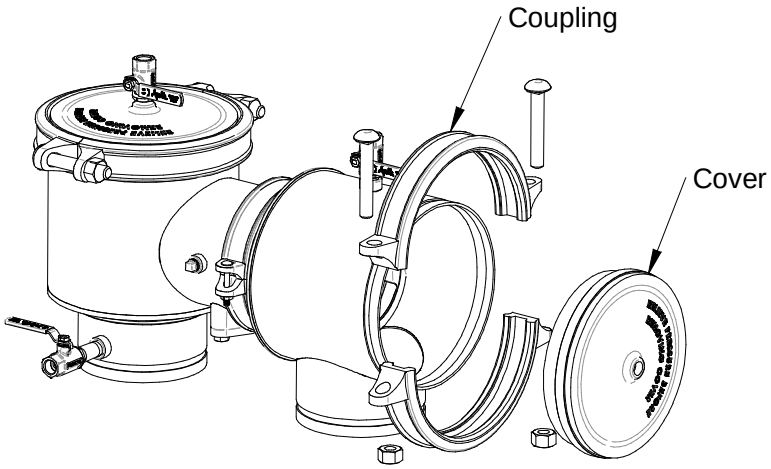


Figure 6

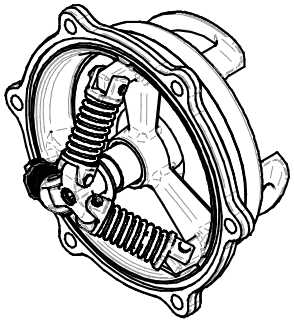


Figure 7

B. Check Maintenance

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.

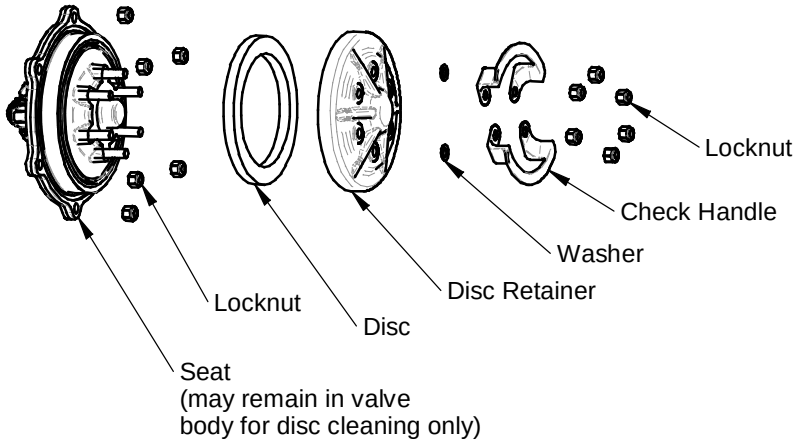


Figure 8

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 the 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 backpressure from a downstream source.

TESTING PROCEDURE FOR SINGLE CHECK ON DCDA TYPE 2 BYPASS:

Note: The first check of the mainline valve is <u>also</u> 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 NO. 2 SHUT-OFF VALVE. DRAIN GAGE.

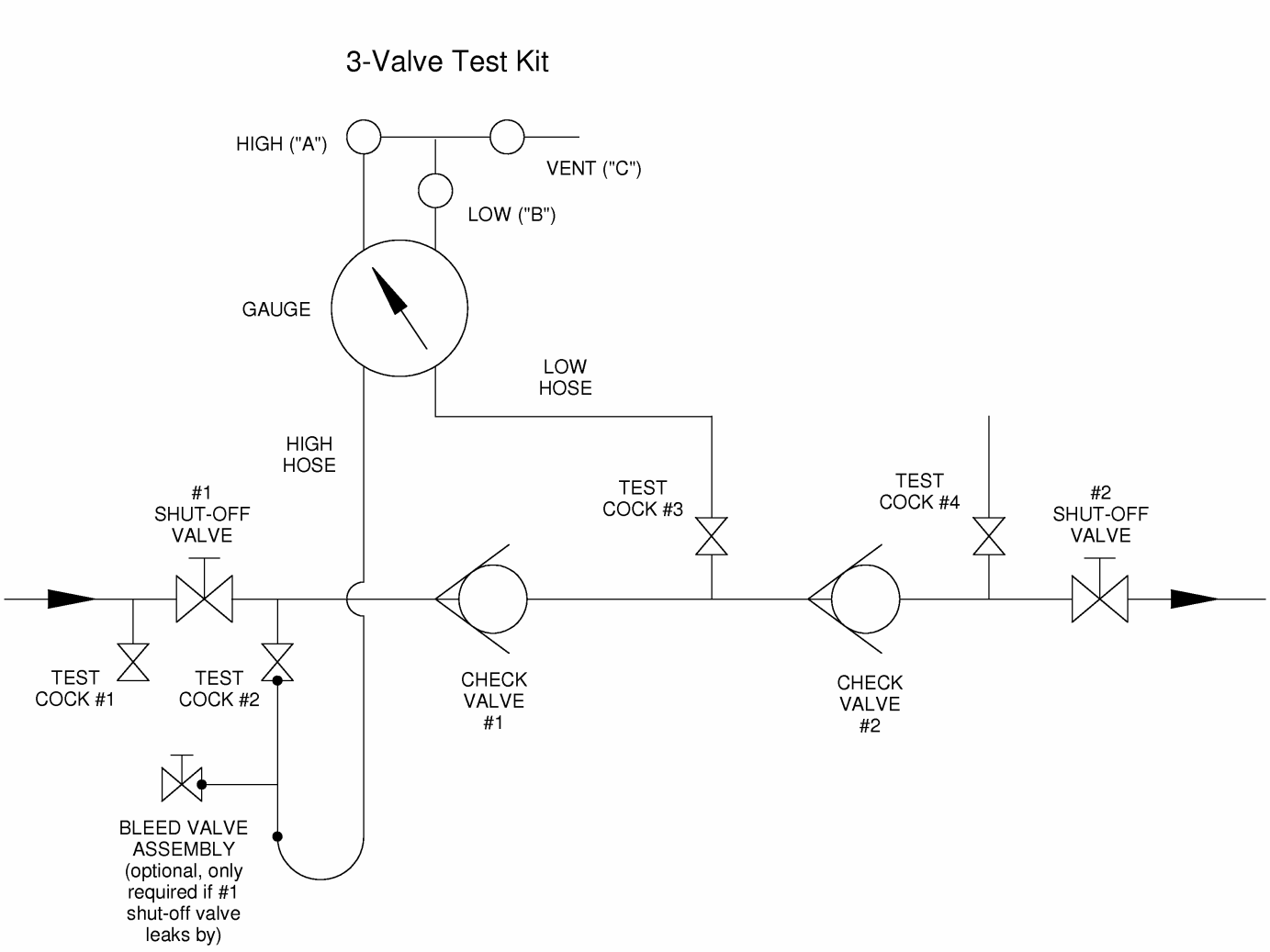

3-Valve Test Kit
HIGH ("A")
VENT ("C")
LOW ("B")
GAUGE
LOW
HOSE
HIGH
HOSE
#1
SHUT-OFF
VALVE
TEST
COCK #3
TEST
COCK #4
#2
SHUT-OFF
VALVE
TEST
COCK #1
TEST
COCK #2
CHECK
VALVE
#1
CHECK
VALVE
#2
BLEED VALVE
ASSEMBLY
(optional, only
required if #1
shut-off valve
leaks by)

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.

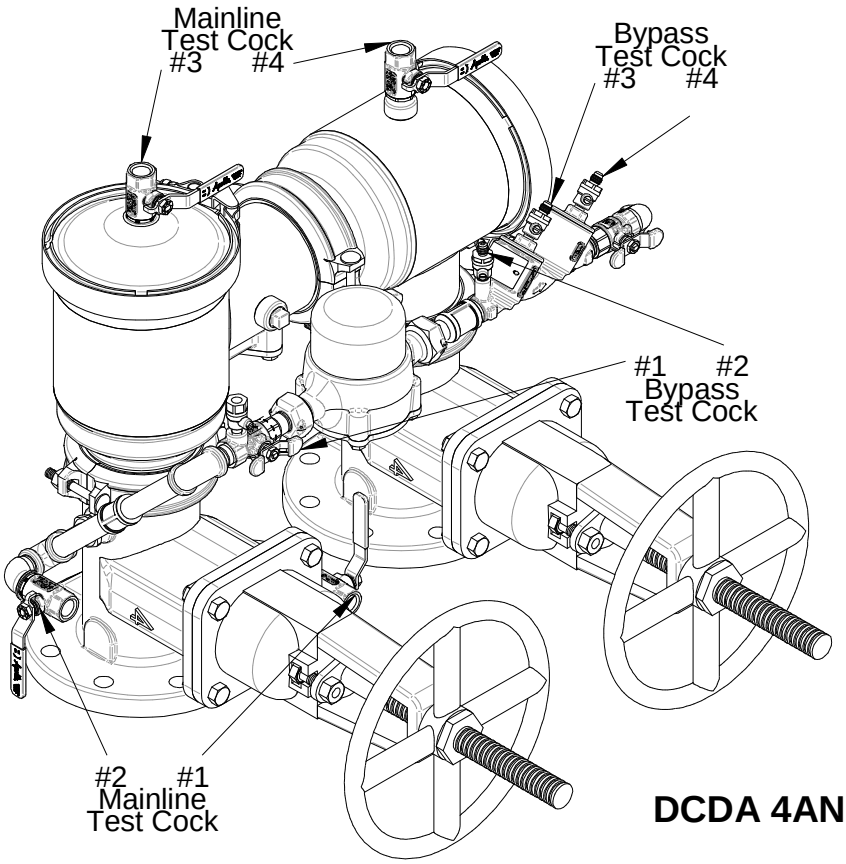
During no flow conditions, the mainline and by-pass check valves will remain closed. If there is a low flow demand (up to a minimum of 2 gpm) of water downstream, the flow is routed through the water meter to monitor such consumption. If the downstream pressure increases above the supply pressure or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

VII. INSTALLATION

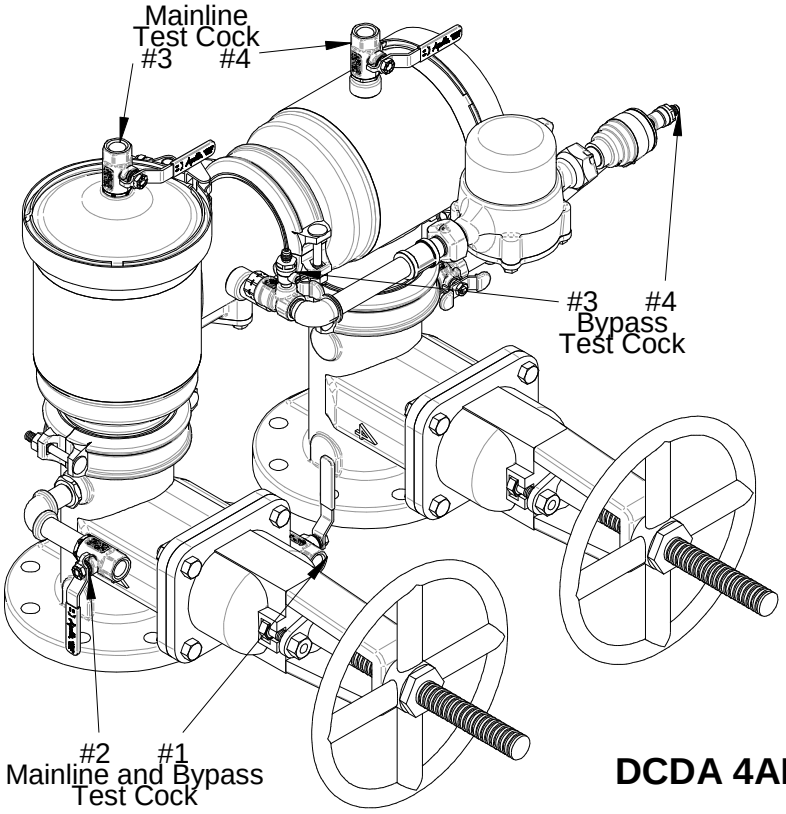
A. The DCDA must be installed in an accessible location to facilitate periodic field testing and maintenance.
B. Flush all upstream piping thoroughly to remove foreign matter prior to installing the device.
C. The device must be installed in the n-flow position. A clearance of 12” to 30” between the 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 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. 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.



DCDA 4AN Type 1 Bypass



DCDA 4AN Type 2 Bypass

VIII. PARTS LIST 2 ½” – 6”

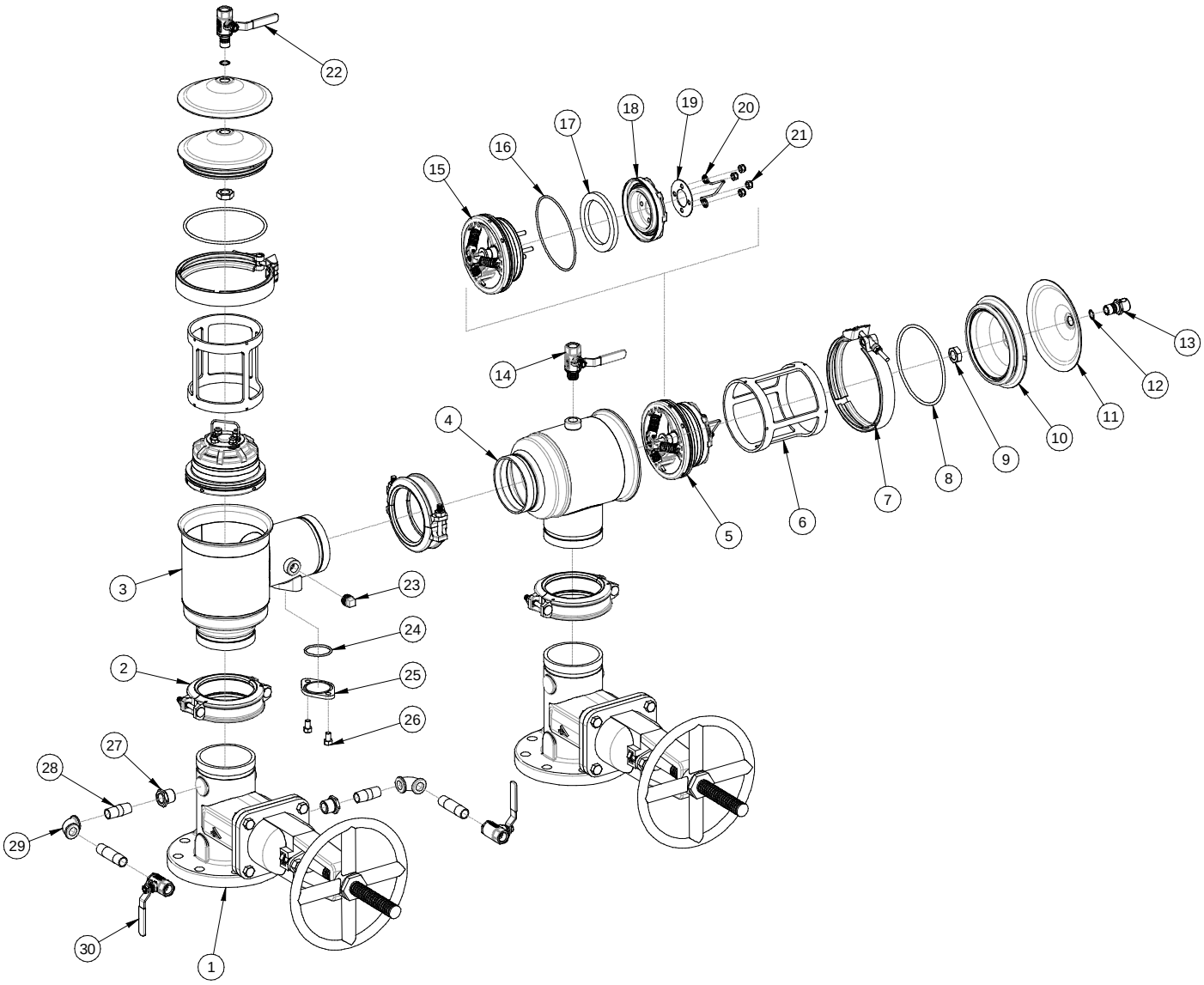


Figure 10

DC4A / DCDA 4A (Mainline) / DCDA2 4A (Mainline) Parts List

Item #	Description	Qty.	Part Number			
			2 1/2"	3"	4"	6"
1	Shut-off Valve	2	See Pages 19 & 20			
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-9288-05		W-9188-05	W-9219-05
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-8407-06			L-8408-06
14	Test Cock, MxF	1	70-803-10			70-804-10
15	Seat/Spring Sub-Assy	2	W-9715-05		W-9717-05	W-9719-05
16	Check Seat O-ring	1	D-4975-00		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	78-220-10			78-221-10
23	Plug, 1/2" NPT	1	K-3008-00			
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-3503-00			N/A
28	Nipple	4	K-3406-00			K-3412-00
29	Elbow, 90°	2	K-3959-00			K-3501-00
30	Test Cock, FxF	2	70-103-10			70-104-10

REPAIR KITS
2 ½" – 6"

Check Rubber Only Kit (One kit repairs one check)		Size		
		2-1/2" & 3"	**4"**	**6"**
ITEM #	Repair Kit Model Number	**RK4A3CMR**	**RK4A4CMR**	**RK4A6CMR**
	Ordering Code	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-4975-00	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

DC Check Complete Kit (One kit repairs one check)		Size		
		2-1/2" & 3"	**4"**	**6"**
ITEM #	Repair Kit Model Number	**RK4A3CMFC**	**RK4A4CMFC**	**RK4A6CMFC**
	Ordering Code	4A-000-00	4A-00A-00	4A-00C-00
not shown	Lubricant	I-9016-00		
5	Check Module S-Assy	W-9288-05	W-9188-05	W-9219-05
16	Check O-ring	D-4975-00	D-4869-00	D-5000-00
8	Cover O-ring	D-4976-00	D-4870-00	D-5001-00

IX. PARTS LIST 8” – 12”

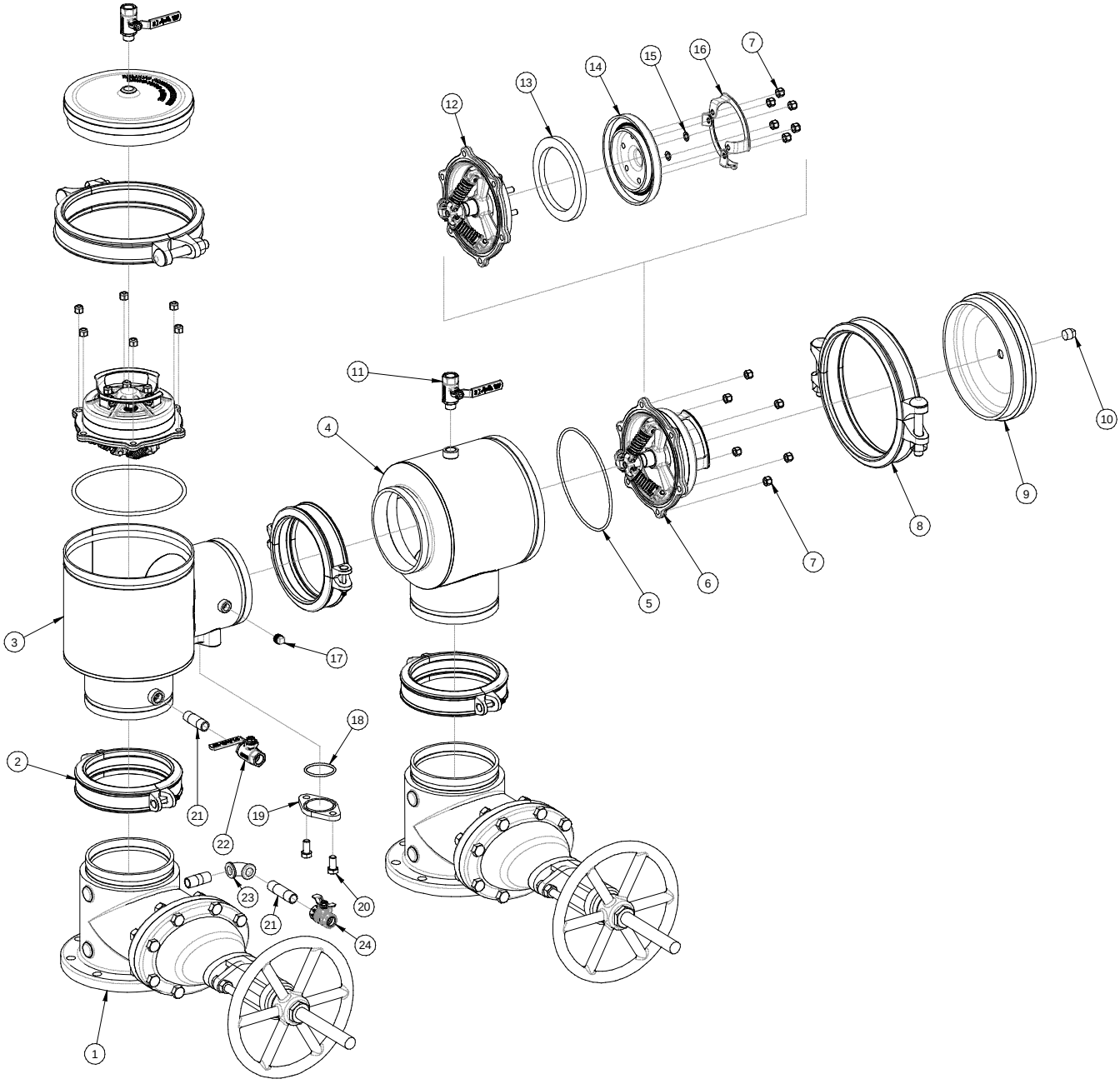
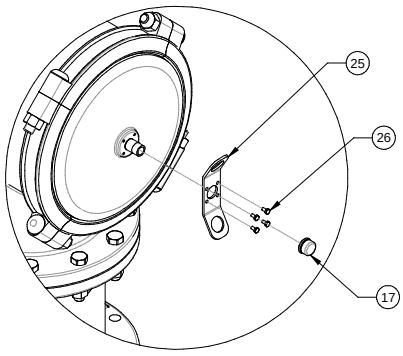


Figure 11



10” & 12” ONLY

DC4A / DCDA 4A (Mainline) / DCDA2 4A (Mainline) Parts List

Item #	Description	Qty.	Part Number		
			8"	10"	12"
1	Shut-off Valve	2	See Page 19 & 20		
2	Coupling	3	W-5241-00	W-5242-00	N/A
	Bolt Pack	3	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-9337-05	W-9345-05	
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-3010-00	N/A	
11	Test Cock	1	70-804-10	70-104-10	
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	(QTY)	E-2897-00 (2)		
16	Handle	2	H-3828-00	H-3813-00	
17	Cap, 1/2" NPT	5	N/A	K-4578-00	
	Plug, 1/2" NPT	1	K-3008-00	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	(QTY)	K-3412-00 (3)	K-3412-00 (2)	
22	Test Cock, FxF	3	70-104-10		
23	Elbow, 3/4", 90°	1	K-3501-00		
24	Test Cock, FxF	1	77C-104-83		
25	Lifting Tab	2	N/A	E-2955-05	
26	Screw, 1/4-20 X .50	8	N/A	B-1913-00	

REPAIR KITS
8” – 12”

Check Rubber Only Kit (One kit repairs one check)		Size	
		8"	**10" & 12"**
ITEM #	Repair Kit Model Number	**RK4A8CMR**	**RK4A12INCMR**
	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"**
ITEM #	Repair Kit Model Number	**RK4A8CMFC**	**RK4A12INCMFC**
	Ordering Code	4A-00E-00	4A-00H-00
not shown	Lubricant	I-9016-00	
6	Check Module S-Assy	W-9337-05	W-9345-05
5	Check O-ring	D-4935-00	D-4997-00

X. PARTS LIST – BYPASS DC (TYPE 1)

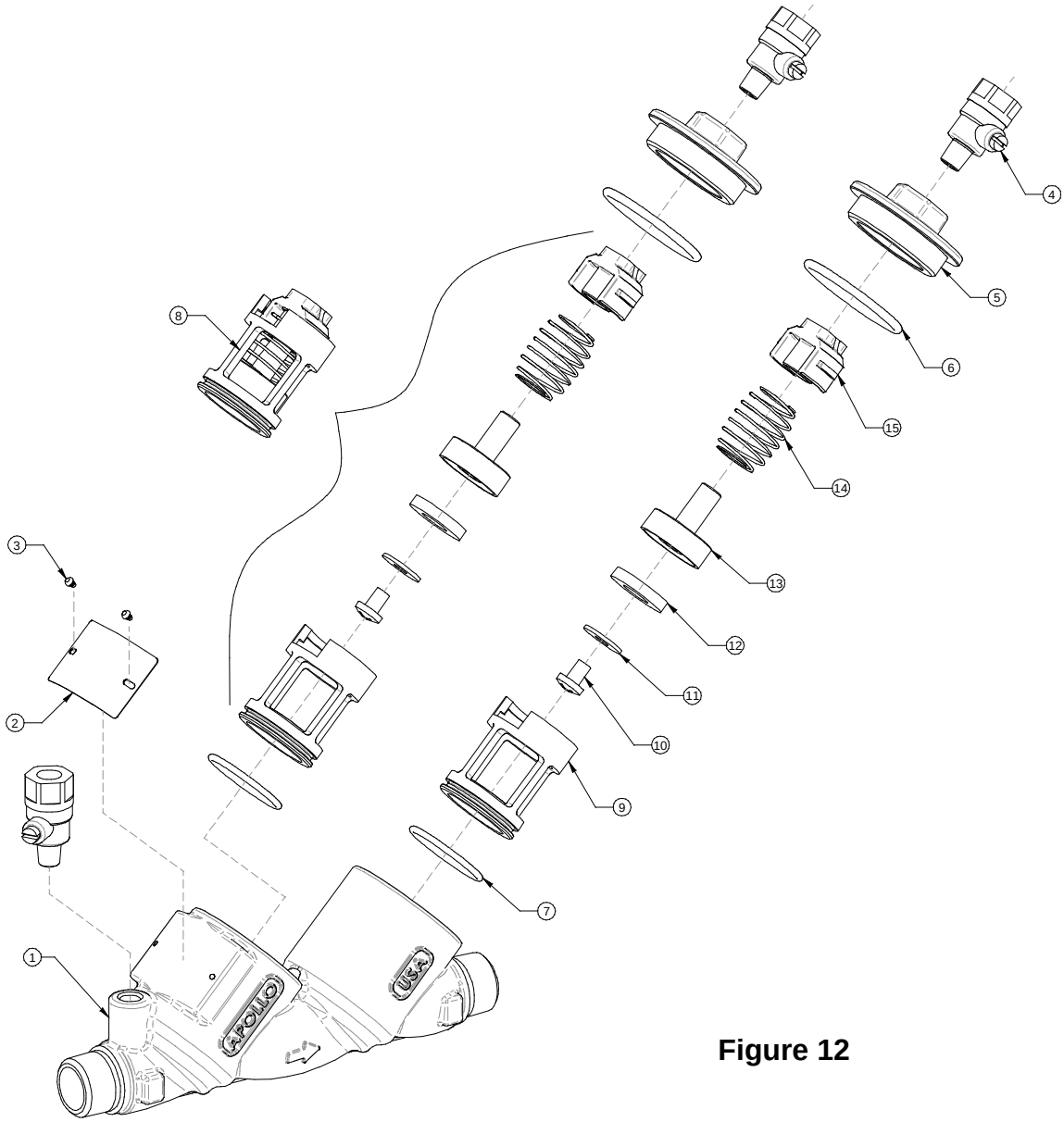


Figure 12

Bypass DC Parts List

Item	Part #	Description	Qty
1	Q-6868-05	Body	1
2	I-9024-00	Nameplate	1
3	I-2614-00	Nameplate Tack	2
4	78-290-01	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

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.)

XI. MAINTENANCE INSTRUCTIONS – BYPASS DC (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 re move. 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.

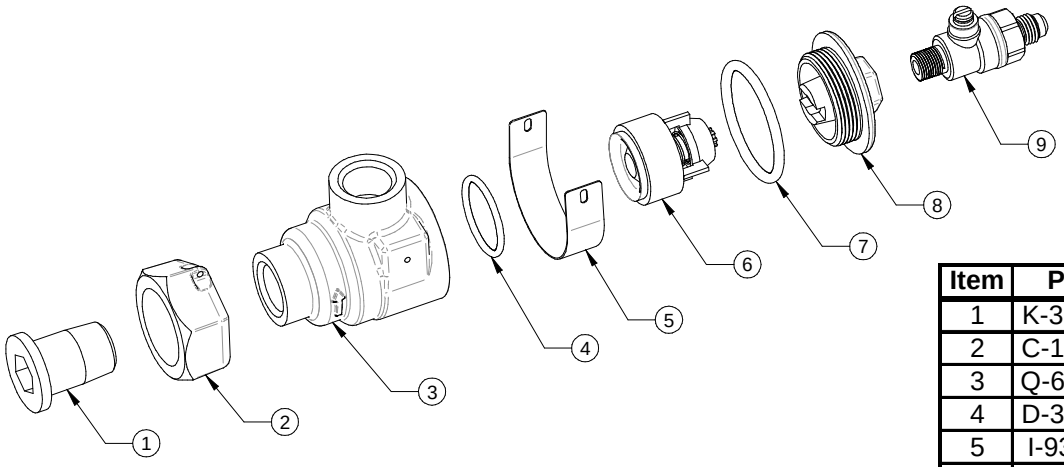
C. Assembly – Check Valve Poppet

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 ⅛" 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.

XII. PARTS LIST – BYPASS SINGLE CHECK (TYPE 2)



Item	Part #	Description	Qty
1	K-3960-06	Tailpiece	1
2	C-1844-05	Union Nut	1
3	Q-6783-05	Body	1
4	D-3885-00	Check O-ring	1
5	I-9341-00	Nameplate	1
6	F-3228-00	Check Valve	1
7	D-3589-00	Cap O-ring	1
8	F-3818-05	Cap	1
9	78-292-01	Test Cock	1

4A-003-12: Check Repair Kit: Includes items 4, 6, and 7 (1 each)
4A-003-13: Check Complete Kit: Includes items 1 – 9 (1 each)

XIII. 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.

XIV. BYPASS LINE KITS

SIZE	METER OPTION	TYPE 1 BYPASS KIT PART NO.	TYPE 2 BYPASS KIT PART NO.
2 1/2"	GALLONS PER MIN	4AN-609-BPE	4AN-629-BPE
	CUBIC FT PER MIN	4AN-609-BPC	4AN-629-BPC
	NO METER	4AN-609-BPG	4AN-629-BPG
3"	GALLONS PER MIN	4AN-600-BPE	4AN-620-BPE
	CUBIC FT PER MIN	4AN-600-BPC	4AN-620-BPC
	NO METER	4AN-600-BPG	4AN-620-BPG
4"	GALLONS PER MIN	4AN-60A-BPE	4AN-62A-BPE
	CUBIC FT PER MIN	4AN-60A-BPC	4AN-62A-BPC
	NO METER	4AN-60A-BPG	4AN-62A-BPG
6"	GALLONS PER MIN	4AN-60C-BPE	4AN-62C-BPE
	CUBIC FT PER MIN	4AN-60C-BPC	4AN-62C-BPC
	NO METER	4AN-60C-BPG	4AN-62C-BPG
8"	GALLONS PER MIN	4AN-60E-BPE	4AN-62E-BPE
	CUBIC FT PER MIN	4AN-60E-BPC	4AN-62E-BPC
	NO METER	4AN-60E-BPG	4AN-62E-BPG
10"	GALLONS PER MIN	4AN-60G-BPE	4AN-62G-BPE
	CUBIC FT PER MIN	4AN-60G-BPC	4AN-62G-BPC
	NO METER	4AN-60G-BPG	4AN-62G-BPG
12"	GALLONS PER MIN	4AN-60H-BPE	4AN-62H-BPE
	CUBIC FT PER MIN	4AN-60H-BPC	4AN-62H-BPC
	NO METER	4AN-60H-BPG	4AN-62H-BPG

XV. 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 GRV OS&Y	W-4733-00	W-5282-00	-07
GRV OS&Y X GRV 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**	**Suffix**
FLG NRS X FLG NRS	W-5311-00	W-5311-00	-02
FLG OS&Y X FLG OS&Y	W-4734-00	W-4734-00	-03
FLG OS&Y X MONIT. BFLY	W-4734-00	W-5245-00	-04
FLG OS&Y X FLG PI	W-4734-00	W-5311-00	-06
FLG OS&Y X GRV OS&Y	W-4734-00	W-5283-00	-07
GRV OS&Y X GRV OS&Y	W-5283-00	W-5283-00	-08
MONITORED BFLY X MONITORED BFLY	W-5245-00	W-5245-00	-09
FLG OS&Y X GRV PI	W-4734-00	W-9370-00	-010
GRV NRS X GRV NRS	W-9370-00	W-9370-00	-011
FLG NRS X GRV NRS	W-5311-00	W-9370-00	-012

Shut-off Valve Options -- 4"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-5312-00	W-5312-00	-02
FLG OS&Y X FLG OS&Y	W-4735-00	W-4735-00	-03
FLG OS&Y X MONIT. BFLY	W-4735-00	W-5246-00	-04
FLG OS&Y X FLG PI	W-4735-00	W-5312-00	-06
FLG OS&Y X GRV OS&Y	W-4735-00	W-5284-00	-07
GRV OS&Y X GRV OS&Y	W-5284-00	W-5284-00	-08
MONITORED BFLY X MONITORED BFLY	W-5246-00	W-5246-00	-09
FLG OS&Y X GRV PI	W-9126-00	W-9371-00	-010
GRV NRS X GRV NRS	W-9371-00	W-9371-00	-011
FLG NRS X GRV NRS	W-5312-00	W-9371-00	-012

Shut-off Valve Options -- 6"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-5313-00	W-5313-00	-02
FLG OS&Y X FLG OS&Y	W-4736-00	W-4736-00	-03
FLG OS&Y X MONIT. BFLY	W-4736-00	W-5247-00	-04
FLG OS&Y X FLG PI	W-4736-00	W-5313-00	-06
FLG OS&Y X GRV OS&Y	W-4736-00	W-5285-00	-07
GRV OS&Y X GRV OS&Y	W-5285-00	W-5285-00	-08
MONITORED BFLY X MONITORED BFLY	W-5247-00	W-5247-00	-09
FLG OS&Y X GRV PI	W-4736-00	W-9372-00	-010
GRV NRS X GRV NRS	W-9372-00	W-9372-00	-011
FLG NRS X GRV NRS	W-5313-00	W-9372-00	-012

Shut-off Valve Options -- 8"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-5314-00	W-5314-00	-02
FLG OS&Y X FLG OS&Y	W-4737-00	W-4737-00	-03
FLG OS&Y X MONIT. BFLY	W-4737-00	W-5248-00	-04
FLG OS&Y X FLG PI	W-4737-00	W-5314-00	-06
FLG OS&Y X GRV OS&Y	W-4737-00	W-5286-00	-07
GRV OS&Y X GRV OS&Y	W-5286-00	W-5286-00	-08
MONITORED BFLY X MONITORED BFLY	W-5248-00	W-5248-00	-09
FLG OS&Y X GRV PI	W-4737-00	W-9373-00	-010
GRV NRS X GRV NRS	W-9373-00	W-9373-00	-011
FLG NRS X GRV NRS	W-5314-00	W-9373-00	-012

Shut-off Valve Options -- 10"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-5315-00	W-5315-00	-02
FLG OS&Y X FLG OS&Y	W-4738-00	W-4738-00	-03
FLG OS&Y X MONIT. BFLY	W-4738-00	W-5249-00	-04
FLG OS&Y X FLG PI	W-4738-00	W-5315-00	-06
FLG OS&Y X GRV OS&Y	W-4738-00	W-5321-00	-07
GRV OS&Y X GRV OS&Y	W-5321-00	W-5321-00	-08
MONITORED BFLY X MONITORED BFLY	W-5249-00	W-5249-00	-09

Shut-off Valve Options -- 12"			
Assembly Description (Inlet x Outlet)	**Inlet**	**Outlet**	**Suffix**
FLG NRS X FLG NRS	W-9529-00	W-9529-00	-02
FLG OS&Y X FLG OS&Y	W-9528-00	W-9528-00	-03