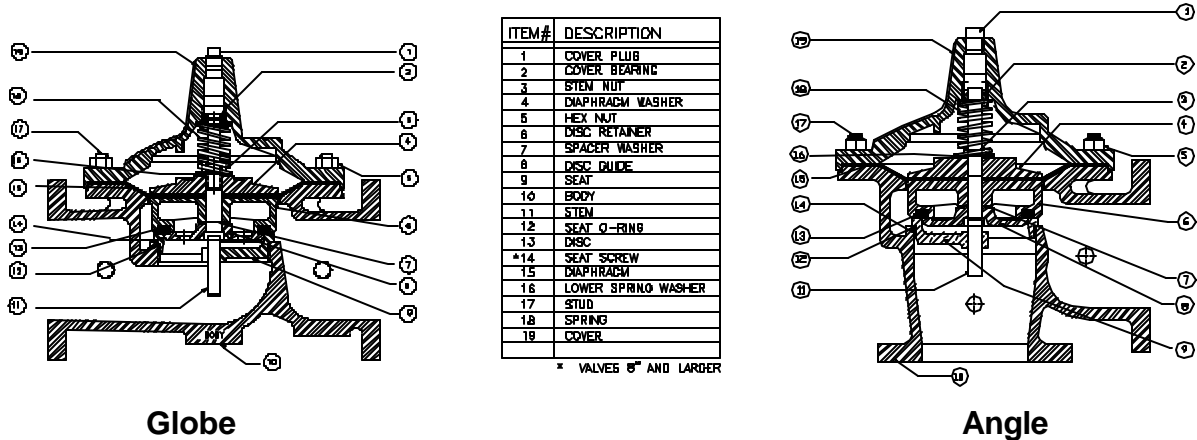




The Automatic Answer to Fluid Control

# Installation, Operation, and Maintenance Bulletin Single Chamber Basic Valve

## Model M100 (Globe) or M1100 (Angle) Model M6100 (Globe) or M61100 (Angle)



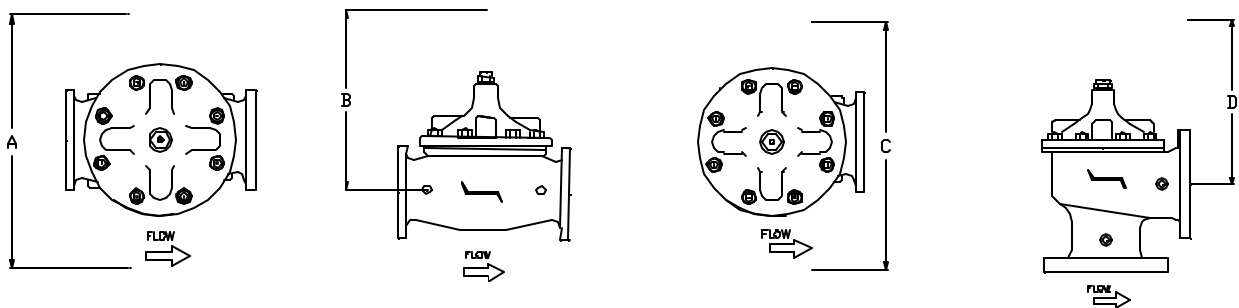
ITEM#	DESCRIPTION
1	COVER PLUG
2	COVER BEARING
3	BLEN NUT
4	DIAPHRAGM WASHER
5	HEX NUT
6	DISC RETAINER
7	SPACER WASHER
8	SEAT
9	DISC GUIDE
10	BODY
11	STEM
12	SEAT O-RING
13	DISC
*14	SEAT SCREW
15	DIAPHRAGM
16	LOWER SPRING WASHER
17	STUD
18	SPRING
19	COVER

\* VALVES 8" AND LARGER

### Basic Construction

The Basic Valve has three (3) major components: Body, Cover, and the Disc & Diaphragm Assembly. It is available in Globe or Angle patterns, and Full or Reduced port design. Model M100 and M1100 are Full port, Model M6100 and M61100 are Reduced port valves.

### Valve Servicing Dimensions



The following tables detail the recommended minimum valve servicing dimensions.

#### Globe

Size	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"	14"	16"	*20"	*24"
A (in)	16	16	20	22	22	24	32	34	38	44	48	52	56	56
B (in)	10	10	12	14	14	16	24	26	28	30	34	40	48	48

\* Model M6100 Reduced Port

#### Angle

Size	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"	14"	16"
C (in)	16	16	20	22	22	24	32	34	38	44	48	52
D (in)	10	10	12	14	14	16	24	26	28	30	34	40

## Installation

1. Prior to installation, flush line to remove debris.
2. Install valve so the flow arrow matches flow through the line, and gauges to monitor valve inlet and outlet pressures. A Position Indicator can be installed to provide visual indication of valve position and operation without disassembly.
3. Install isolation valves upstream and downstream of the main valve.  
**Note: If using butterfly valves, ensure valve disc does not contact the main valve.**
4. Provide adequate clearance for valve servicing and maintenance. Refer to valve servicing dimensions on Page 1.
5. Avoid installing valves 6" and larger in the vertical position (main valve stem horizontal). Automatic Control Valves (ACVs) are designed for horizontal in-line installation, with the cover facing up (main valve stem vertical). Slow operation or premature stem and guide wear may occur if valve is not installed according to factory recommendations. Consult factory for detailed engineering review prior to ordering if valve is to be installed other than horizontally in-line.
6. If valve is equipped with a pilot control system, extra precautions should be made during installation to protect the piping circuit from damage. Only remove the pilot control system from the valve if necessary. Tubing and fittings should be kept clean, and replaced exactly as removed. Consult appropriate hydraulic schematic to ensure proper re-assembly.
7. After installation, vent entrapped air from valve cover and pilot system by following instructions on Technical Bulletin.

## Operation

The main valve, sometimes called a "Basic" or "Bare" valve, does not perform any function until it is commanded to do so by Pilots or Controls. These are connected to the valve by pipe fittings and tubing, and "pilot" or "control" the valve hydraulically to perform various functions. The Pilot Control System allows fluid and pressure to be 1) applied to, 2) exhausted from, or 3) regulated within the sealed chamber above the diaphragm. Depending on the configuration of the Pilot Control System, the valve may act either as an On-Off, a Regulating, or a Combination On-Off and Regulating Control Valve.

On-Off, Regulating, and Combination On-Off and Regulating ACVs operate on the difference in effective areas of the seat and diaphragm, and the forces exerted upon them by inlet and outlet pressures. The diaphragm area is approximately 1-1/2 times the area of the seat. This ratio, commonly referred to as the 1.5 : 1 Ratio, assures that valve will open and close as illustrated in the following example.

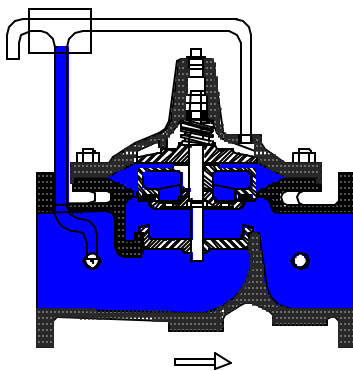


Figure 1

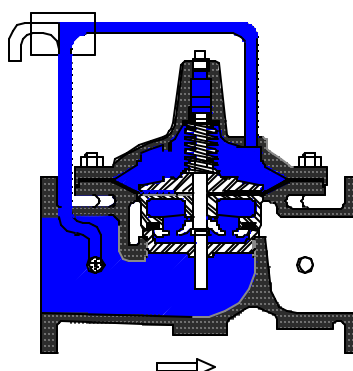


Figure 2

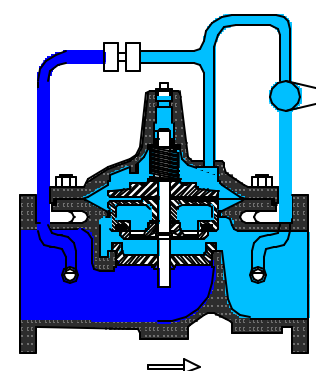


Figure 3

Valve Size: 4"  
Diaphragm Area: 19 sq. in.  
Seat Area: 13 sq. in.

Inlet Pressure: 100 p.s.i  
Flow Direction: Under the Disc

**Figure 1:** 100 psi enters the valve below the seat, lifting the Disc and Diaphragm Assembly with approximately 1300 lbs of force (area x 100 psi). With no pressure in the cover chamber (above the diaphragm), the valve moves to a wide open position.

**Figure 2:** The 100 psi is admitted to the cover chamber (above the diaphragm), resulting in a downward force of approximately 1900 lbs (area x 100 psi). The downward force is greater than the upward force by 600 lbs, and the valve now moves to, and will remain in, a closed position due to the 1.5 : 1 ratio. Venting the cover chamber to atmosphere will again result in the valve traveling to a wide open position.

**Figure 3:** By regulating or balancing the pressure in the cover chamber (above the diaphragm), the valve will hold or modulate at an intermediate position until commanded to regulate open or closed by a modulating control pilot.

## Flow Direction

The direction of flow through the valve can be either of two directions: Under-the-Disc or Over-the-Disc.

Under-the-Disc flow is the normal direction of flow through the valve. In the event of a diaphragm failure, the valve will fail to an open position. Over-the-Disc is not standard, however, is available for certain applications. When the valve is configured with Over-the-Disc flow, it will fail to a closed position in event of diaphragm failure.

The valve must be installed according to nameplate data and flow arrow designations.

## Valve Travel

The travel or stroke of the valve is approximately 25% of the seat diameter. To properly measure valve travel, a Position Indicator should be installed. If the valve is equipped with a Limit Switch, the actuating stem provides visual indication of valve position and travel. Table 1 details approximate valve travel.

**Table 1: Valve Travel (Inches)**

Valve Size	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	20	24
Full Port	3/8	3/8	1/2	5/8	3/4	1	1 1/2	2	2 1/2	3	3 1/2	4		
Reduced Port					1/2	1	1	1 1/2	2	2 1/2		3	4	4

## Maintenance

It is recommended that a Periodic Maintenance Schedule be established to inspect the valve stem for calcium or hard water deposits, and the condition of the diaphragm and seat disc. An annual Preventive Maintenance Schedule should help identify potential problem situations before emergency repairs are needed.

The normal replacement parts are the Seat Disc and the Diaphragm. These are available individually or together in a Rubber Repair Kit. Rubber repair kits for Control Pilots are sold separately. For maximum life expectancy, all rubber repair parts should be stored in a cool, dry environment, and not exposed to direct sunlight. In the event a non-rubber component part is required, review the cross-sectional drawing on Page 1 and consult your local representative or the factory.

## Disc & Diaphragm Assembly

The valve employs a top and bottom guided stainless steel stem which is guided by a bearing in the valve cover and a bearing which is integral to the valve seat. A *Diaphragm*, consisting of nylon fabric bonded between two sheets of synthetic rubber is sandwiched between the *Diaphragm Washer* and the *Disc Retainer*. The bottom of the Disc Retainer contains a rectangular replaceable synthetic rubber *Seat Disc*. The Seat Disc is securely held in place by a plate called the *Disc Guide*. The Disc Retainer and Disc Guide surrounds the Seat Disc on 3-1/2 sides, preventing it from becoming dislodged. The exposed 1/2 side of the Seat Disc contacts the *Seat Ring*, and seals drip tight. When assembled, these components make what is called the *Disc & Diaphragm Assembly*.

This assembly is the only moving part inside the valve, and can be removed while the body remains in line. When the Disc & Diaphragm Assembly is installed in the valve, the diaphragm forms a seal between the valve body and cover, creating a *Cover Chamber*. Understanding what happens inside the cover chamber is of paramount importance to understanding what action the valve will take. (Refer to Figures 1, 2, and 3).

## Disassembly, Inspection, and Re-Assembly

All maintenance and disassembly can be performed while the valve remains installed in the line.

**Warning:** The valve must be isolated from line pressure and fully depressurized before disassembly to avoid personal injury or equipment damage.

### Recommended Tools for Disassembly

- Small & Large Adjustable Wrenches
- Fine Wire Brush
- Hammer & Dull Cold Chisel
- Hexagonal Wrench Set
- Small, Medium, and Large Screwdrivers
- Small and Large Pipe Wrenches
- Bench Vise
- Heavy Duty Ratchet and Socket Set
- Appropriate Technical Bulletin for Proper Start-Up Procedure
- Basic Valve IOM Manual
- 320 Grit (or fine) Emery Cloth
- Machinist Fine Metal File

1. Isolate the valve from line pressure and depressurize it to ensure safe working conditions. Disconnect any electrical connections if so equipped.
2. Carefully remove Position Indicator or Limit Switches if equipped. Remove all tubing, fittings, and Control Pilots necessary to easily access and remove the cover. Remove cover nuts and washers.
3. Remove the cover. If cover is not free to be removed, loosen it by tapping upward along its outside edge with a dull cold chisel (Figure 4). Another method is to carefully admit upstream pressure to the valve by partially opening the upstream isolation valve, allowing water pressure to push the cover upward. Leave at least 4 opposing cover nuts in place approximately 3 to 4 threads above the cover. **Extreme caution should be taken when using this method.**
4. Remove the Disc and Diaphragm Assembly from the valve body by lifting straight up. Large diameter valves may require a lifting “eye” bolt to be installed in the valve stem accessory threads located on the very top of the valve stem.

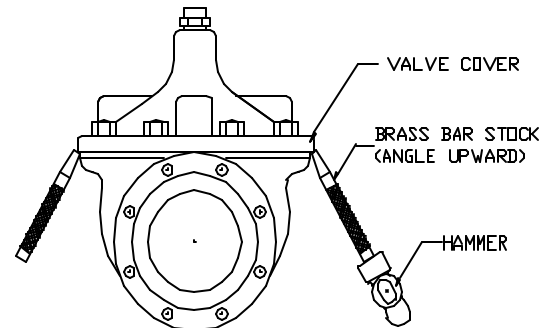


Figure 4

Table 2: Valve Stem Accessory Threads

Valve Size (in)	1 1/4 - 2 1/2	3	4	6	8 - 12	14	16	20	24
Full Port	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	1/2-20		
Reduced Port		10-32	1/4-28	1/4-28	3/8-24		3/8-24	1/2-20	1/2-20

5. Before removing Stem Nut, examine stem threads for mineral build-up. Remove deposits with a fine wire brush. Extreme care should be taken not to damage the finish on stem guiding surfaces when disassembling. Avoid applying pipe wrenches to top or bottom stem guide surfaces.
6. After removing the Stem Nut, the remainder of the Disc & Diaphragm Assembly should disassemble easily. Polish stem guide surfaces with fine emery cloth to remove any mineral deposits, and inspect for excessive wear. Remove any mineral build-up from other components with wire brush or by using a Mineral Dissolving Solution. Inspect parts for wear and replace if necessary.
7. Inspect valve seat. If seat is not damaged, removal is not necessary. Valve seats 6” and smaller are threaded into the body of the valve and require a seat removal tool (Figure 5) (Table 3 details the tool dimensions for seat removal). Valve seats 8” and larger are held in the valve body with stainless steel cap screws. Remove seat retaining screws and lift seat straight up (Figure 6).

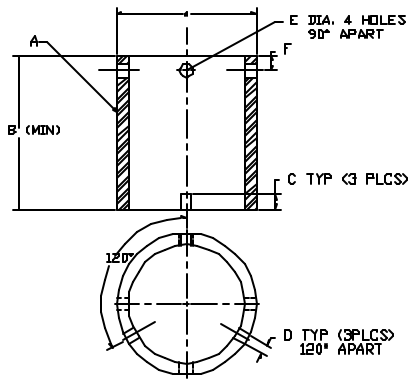


Figure 5

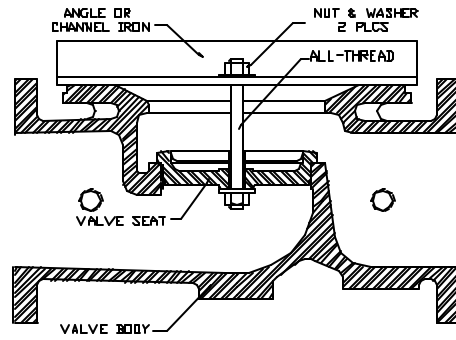


Figure 6

Table 3: Seat Removal Tool Dimensions

Size	A (Pipe Size)*	B (Min. Length)	C	D	E (Dia)	F
1-1/4"	1"	3.12"	0.38"	0.25"	0.44"	0.50"
1-1/2"	1"	3.12"	0.38"	0.25"	0.44"	0.50"
2"	1-1/4"	3.38"	0.38"	0.25"	0.44"	0.50"
2-1/2"	2"	4"	0.38"	0.38"	0.56"	0.62"
3"	2-1/2"	4.5"	0.50"	0.38"	0.56"	0.62"
4"	3"	5.0"	0.50"	0.44"	0.56"	0.62"
6"	5"	6.50"	0.62"	0.44"	0.56"	0.62"

\* Schedule 40 Steel Pipe

8. Replace Seat Disc, Diaphragm and Spacer Washers provided in Main Valve repair kit (refer to Table 5 or 6 for correct repair kit part number). Re-assemble in the reverse order of disassembly.
9. Re-Install Disc and Diaphragm Assembly in the valve, taking care not to damage the lower guide area in the center of the valve seat.
10. Re-install Cover Spring. Replace Valve Cover and tighten Cover Nuts in a crossing pattern to ensure even distribution. Test the Disc and Diaphragm Assembly for smooth travel by following the Freedom of Movement Test procedure in next Section.
11. Test the integrity of the Seat Seal by following the Seat Seal Test procedure in next Section.
12. Return valve to service by following instructions on the Technical Bulletin matching the valve function.

## Troubleshooting

**Warning:** The valve cannot be serviced under pressure. Upstream and downstream Isolation Valves must be installed to protect system piping. Accurate diagnosis and troubleshooting requires the valve to open fully, and may subject downstream piping and equipment to high pressure and/or flow rates. The downstream Isolation Valve should be kept closed while diagnosing the valve. Extreme caution should be used while performing the troubleshooting techniques listed below.

It is recommended that three (3) pressure gauges be installed on the valve to monitor: 1) valve inlet, 2) valve outlet, and 3) valve cover chamber pressures. A Position Indicator should also be installed to visually determine the position of the Disc & Diaphragm Assembly.

### Diaphragm Seal Test

1. Close upstream and downstream isolation valves. Close ball cocks or remove control tubing to isolate cover chamber from receiving fluid and pressure. Remove uppermost Cover Plug, Position Indicator, or Limit Switch.
2. With the cover chamber vented to atmosphere, partially open the upstream Isolation Valve, allowing pressure to lift the Disc & Diaphragm Assembly. A volume of water will be displaced from the cover chamber as the valve opens (Table 4 details approximate full cover capacity). A continuous flow of water from the open port indicates a damaged diaphragm or a loose Disc & Diaphragm Assembly. Disassemble and replace diaphragm or tighten the Disc & Diaphragm Assembly.

**Table 4: Cover Volume**

Valve Size (in)	1 1/4 -2	2 1/2	3	4	6	8	10	12	14	16	20	24
Full Port (fl. oz)	4	10	10	22	70							
Full Port (U.S gal)						1.25	2.5	4	6.5	9.5		
Reduced Port (fl. oz)			4	10	22	70						
Reduced Port (U.S gal)							1.25	2.5		4	9.5	9.5

**Seat Seal Test**

1. Close downstream isolation valve, and admit inlet pressure to the Cover Chamber of the valve. Wait for the valve to close.
2. Install a pressure gauge in either of the two outlet ports on the valve, and monitor pressure reading. Gauge pressure should hold steady, and not rise. If gauge pressure rises to match inlet pressure, leakage is occurring through the seat of the valve. Disassemble, inspect, and replace required parts. If gauge pressure rises to match outlet pressure (downstream of closed isolation valve), yet remains below inlet pressure, the isolation valve may be leaking as opposed to the seat of the main valve.

**Freedom-of-Movement / Valve Travel Test**

1. Close upstream and downstream isolation valves and install Valve Position Indicator. Partially open upstream isolation valve to admit inlet fluid and pressure into the cover chamber closing the valve fully. Mark the Position Indicator's Full Closed position.
2. Isolate cover chamber from receiving fluid and pressure by closing ball cocks or removing control tubing. Carefully vent cover chamber to atmosphere by removing a cover plug, and observe the Valve Position Indicator as the valve travels to the full open position. The Disc & Diaphragm assembly should move freely from the full closed to full open position without binding or grabbing. Close upstream Isolation Valve and depressurize the valve body by opening an isolation ball valve or removing a body plug. The Disc & Diaphragm Assembly should move freely from the full open position to the closed position without binding or grabbing. The Disc & Diaphragm Assembly may momentarily "hesitate" while traveling from the full open to the full closed position. This "hesitation" is a normal characteristic of Diaphragm Control Valves, and does not indicate mechanical binding or improper valve operation.

**Note:** A continuous discharge of fluid from the open cover port indicates leakage past the Diaphragm.

Disassemble, inspect Diaphragm (replace if needed), and retighten Disc & Diaphragm Assembly before proceeding further. Reinstall Pilot Control System.

**Repair Kits**

Main valve repair kits contain all rubber components (diaphragm, seat disc, spacer washers, and seat O-ring) necessary to repair a basic valve. Repair kits for Pilot Controls are sold separately. Table 5 and 6 detail the part numbers for full port and reduced port Main Valve repair kits.

**Table 5: Full Port Valve (M100 / M1100) Repair Kits**

Size (in)	1 1/4	1 1/2	2	2 1/2	3	4
P/N	0677-01	0677-01	0677-02	0677-03	0677-04	0677-05
Size (in)	6	8	10	12	14	16
P/N	0677-06	0677-07	0677-08	0677-09	0677-10	0677-11

**Table 6: Reduced Port Valve (M6100 / M61100) Repair Kits**

Size (in)	3	4	6	8	10	12	16	20 & 24
P/N	0677-02	0677-04	0677-05	0677-06	0677-07	0677-08	0677-09	0677-11

## COMPONENT PART LISTING: M100 / M1100 SERIES BASIC VALVE

ITEM	DESCRIPTION	MATERIAL	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
			P / N	P / N	P / N	P / N	P / N	P / N
1	Pipe Plug	Brass	260-3	260-3	260-3	260-4	260-4	260-6
2	Cover Bearing	Stainless Steel	A101505	A101505	A102005	A102505	A103005	A104005
3	Stem Nut *	Stainless Steel	A101508	A101508	A102008	A102508	A103008	A104008
4	Diaphragm Washer *	Cast Iron	A101502	A101502	A102002	A102502	A103002	A104002
5	Cover Nut	Steel	A101501	A101501	A102001	A102501	A103001	A104001
6	Disc Retainer *	Cast Iron	A101512	A101512	A102012	A102512	A103012	A104012
7	Spacer Washer *	Fiber Gasket	A101510	A101510	A102010	A102510	A103010	A104010
8	Disc Guide *	Stainless Steel	A101507	A101507	A102007	A102507	A103007	A104007
9	Seat Ring	Stainless Steel	A101515	A101515	A102015	A102515	A103015	A104015
10	Body (Globe Threaded NPT)	Ductile Iron	A101240	A101540	A102040	A102540	A103040	N/A
10	Body (Globe ANSI 150 Flanged)	Ductile Iron	N/A	A101542	A102042	A102542	A103042	A104042
10	Body (Angle Threaded NPT)	Ductile Iron	N/A	A101541	A102041	A102541	A103041	N/A
10	Body (Angle ANSI 150 Flanged)	Ductile Iron	N/A	N/A	A102043	A102543	A103043	A104043
11	Stem *	Stainless Steel	A101514	A101514	A102014	A102514	A103014	A104014
12	Seat Gasket (o-ring) *	Buna-N	A101523	A101523	A102023	A102523	A103023	A104023
13	Seat Disc *	Buna-N	A101518	A101518	A102018	A102518	A103018	A104018
14	Seat Screws	Stainless Steel	N/A	N/A	N/A	N/A	N/A	N/A
15	Diaphragm *	Buna-N	A101009	A101009	A102009	A102509	A103009	A104009
16	Spring Guide *	Stainless Steel	A101503	A101503	A102003	A102503	A103003	A104003
17	Cover Stud	Steel	A101504	A101504	A102004	A102504	A103004	A104004
18	Cover Spring	Stainless Steel	A1011511	A1011511	A102011	A102511	A103011	A104011
19	Valve Cover	Ductile Iron	A101506	A101506	A102006	A102506	A103006	A104006
	Main Valve Repair Kits		0677-01	0677-01	0677-02	0677-03	0677-04	0667-05
*	Disc & Diaphragm Assemblies		A101550	A101550	A102050	A102550	A103050	A104050

ITEM	DESCRIPTION	MATERIAL	6"	8"	10"	12"	14"	16"
			P / N	P / N	P / N	P / N	P / N	P / N
1	Pipe Plug	Brass	260-6	260-8	260-8	260-8	260-8	260-8
2	Cover Bearing	Stainless Steel	A106005	A108005	A110005	A112005	A114005	A116005
3	Stem Nut *	Stainless Steel	A106008	A108008	A110008	A112008	A114008	A116008
4	Diaphragm Washer *	Cast Iron	A106002	A108002	A110002	A112002	A114002	A116002
5	Cover Nut	Steel	A106001	A108001	A110001	A112001	A114001	A116001
6	Disc Retainer *	Cast Iron	A106012	A108012	A110012	A112012	A114012	A116012
7	Spacer Washer *	Fiber Gasket	A106010	A108010	A110010	A112010	A114010	A116010
8	Disc Guide *	Stainless Steel	A106007	A108007	A110007	A112007	A114007	A116007
9	Seat Ring	Stainless Steel	A106015	A108015	A110015	A112015	A114015	A116015
10	Body (Globe ANSI 150 Flanged)	Ductile Iron	A106042	A108042	A110042	A112042	A114042	A116042
10	Body (Angle ANSI 150 Flanged)	Ductile Iron	A106043	A108043	A110043	A112043	A114043	A116043
11	Stem *	Stainless Steel	A106014	A108014	A110014	A112014	A114014	A116014
12	Seat Gasket (o-ring) *	Buna-N	A106023	A108023	A110023	A112023	A114023	A116023
13	Seat Disc *	Buna-N	A106018	A108018	A110018	A112018	A114018	A116018
14	Seat Screws	Stainless Steel	N/A	A108016	A110016	A112016	A114016	A116016
15	Diaphragm *	Buna-N	A106009	A108009	A110009	A112009	A114009	A116009
16	Spring Guide *	Stainless Steel	A106003	A108003	A110003	A112003	A114003	A116003
17	Cover Stud	Steel	A106004	A108004	A110004	A112004	A114004	A116004
18	Cover Spring	Stainless Steel	A106011	A108011	A110011	A112011	A114011	A116011
19	Valve Cover	Ductile Iron	A106006	A108006	A110006	A112006	A114006	A116006
	Main Valve Repair Kits		0677-06	0677-07	0677-08	0677-09	0677-10	0677-11
*	Disc & Diaphragm Assemblies		A106050	A108050	A110050	A112050	A114050	A116050

Items contained in Main Valve Repair Kit

\* Contained in Disc & Diaphragm Assembly

## COMPONENT PART LISTING: M6100 / M61100 SERIES BASIC VALVE

ITEM	DESCRIPTION	MATERIAL	3"	4"	6"	8"	10"	12"
			P / N	P / N	P / N	P / N	P / N	P / N
1	Pipe Plug	Brass	260-3	260-4	260-6	260-6	260-8	260-8
2	Cover Bearing	Stainless Steel	A102005	A103005	A104005	A106005	A108005	A110005
3	Stem Nut *	Stainless Steel	A102008	A103008	A104008	A106008	A108008	A110008
4	Diaphragm Washer *	Cast Iron	A102002	A103002	A104002	A106002	A108002	A110002
5	Cover Nut	Steel	A102001	A103001	A104001	A106001	A108001	A110001
6	Disc Retainer *	Cast Iron	A102012	A103012	A104012	A106012	A108012	A110012
7	Spacer Washer *	Fiber Gasket	A102010	A103010	A104010	A106010	A108010	A110010
8	Disc Guide *	Stainless Steel	A102007	A103007	A104007	A106007	A108007	A110007
9	Seat Ring	Stainless Steel	A102015	A103015	A104015	A106015	A108015	A110015
10	Body (Globe ANSI 150 Flanged)	Ductile Iron	Consult	Consult	Consult	Consult	Consult	Consult
10	Body (Angle ANSI 150 Flanged)	Ductile Iron	Consult	Consult	Consult	Consult	Consult	Consult
11	Stem *	Stainless Steel	A102014	A103014	A104014	A106014	A108014	A110014
12	Seat Gasket (o-ring) *	Buna-N	A102023	A103023	A104023	A106023	A108023	A110023
13	Seat Disc *	Buna-N	A102018	A103018	A104018	A106018	A108018	A110018
14	Seat Screws	Stainless Steel	N/A	N/A	N/A	N/A	A108016	A110016
15	Diaphragm *	Buna-N	A102009	A103009	A104009	A106009	A108009	A110009
16	Spring Guide *	Stainless Steel	A102003	A103003	A104003	A106003	A108003	A110003
17	Cover Stud	Steel	A102004	A103004	A104004	A106004	A108004	A110004
18	Cover Spring	Stainless Steel	A102011	A103011	A104011	A106011	A108011	A110011
19	Valve Cover	Ductile Iron	A102006	A103006	A104006	A106006	A108006	A110006
	Main Valve Repair Kits		0677-02	0677-04	0667-05	0677-06	0677-07	0677-08
*	Disc & Diaphragm Assemblies		A102050	A103050	A104050	A106050	A108050	A110050

ITEM	DESCRIPTION	MATERIAL	16"	20"	24"
			P / N	P / N	P / N
1	Pipe Plug	Brass	260-8	260-8	260-8
2	Cover Bearing	Stainless Steel	A112005	A116005	A116005
3	Stem Nut *	Stainless Steel	A112008	A116008	A116008
4	Diaphragm Washer *	Cast Iron	A112002	A116002	A116002
5	Cover Nut	Steel	A112001	A116001	A116001
6	Disc Retainer *	Cast Iron	A112012	A116012	A116012
7	Spacer Washer *	Fiber Gasket	A112010	A116010	A116010
8	Disc Guide *	Stainless Steel	A112007	A116007	A116007
9	Seat Ring	Stainless Steel	A112015	A116015	A116015
10	Body (Globe ANSI 150 Flanged)	Ductile Iron	Consult	Consult	Consult
10	Body (Angle ANSI 150 Flanged)	Ductile Iron	Consult	Consult	Consult
11	Stem *	Stainless Steel	A112014	A116014	A116014
12	Seat Gasket (o-ring) *	Buna-N	A112023	A116023	A116023
13	Seat Disc *	Buna-N	A112018	A116018	A116018
14	Seat Screws	Stainless Steel	A112016	A116016	A116016
15	Diaphragm *	Buna-N	A112009	A116009	A116009
16	Spring Guide *	Stainless Steel	A112003	A116003	A116003
17	Cover Stud	Steel	A112004	A116004	A116004
18	Cover Spring	Stainless Steel	A112011	A116011	A116011
19	Valve Cover	Ductile Iron	A112006	A116006	A116006
	Main Valve Repair Kits		0677-09	0677-11	0677-11
*	Disc & Diaphragm Assemblies		A112050	A116050	A116050

Items contained in Main Valve Repair Kit

\* Contained in Disc & Diaphragm Assembly