

## DS05C,D,G DIAL-SET® PRESSURE REGULATING VALVES

### PRODUCT DATA



### APPLICATION

The Honeywell DS05C,D,G Dial-Set® Pressure Regulating Valve is a high quality pressure regulating valve that maintains a constant outlet pressure over a wide range of inlet supply pressures. It is suitable for potable water and irrigation applications. The downstream pressure adjustment dial eliminates the need for a pressure gauge when adjusting the pressure setting (static pressure only).

### FEATURES

- Built-in, factory calibrated outlet pressure adjustment dial.
- Noncorroding unitized cartridge contains all working parts and is easily replaceable.
- Includes built-in strainer and thermal bypass.
- Balanced seat construction provides superior pressure regulation.
- Inlet and outlet are internally threaded female NPT, and externally threaded for use with union assemblies.
- Stand-In Pipe available for temporary installation during construction or system flushing.

### SPECIFICATIONS

**Model:** DS05 Dial-Set Pressure Regulating Valves.

**Construction Materials:**

Body: Bronze.

Internal Parts: Stainless steel and engineered plastics.

Regulator Mechanism: Fabric-reinforced diaphragm.

**Seat Design:** Balanced single seat construction.

**Inlet Pressure (Maximum):** 400 psi maximum.

**Reduced Pressure Range:**

5 to 75 psi (1/2 in. to 1 in.).

15 to 130 psi (1-1/4 in.).

**Outlet Pressure:** Factory set at 60 psi.

**Dial Calibration:** ±4 psi.

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**Differential:** 14 psi minimum (inlet to outlet).

**Reduced Ratio:** 10:1 maximum.

**Temperature (Maximum):**

Air: 158° F (70° C).

Water: 180° F (82° C).

**Ambient Temperature Range:**

33° F to 140° F (1° C to 60° C).

**Pipe Sizes Available:**

1/2 in., 3/4 in., 1 in., and 1-1/4 in. available.

**Connections:**

Can be configured as female thread-by-thread, single-union or double-union, NPT threaded or sweat.

**Strainer Screen Size:** 0.032 in. (0.8 mm).

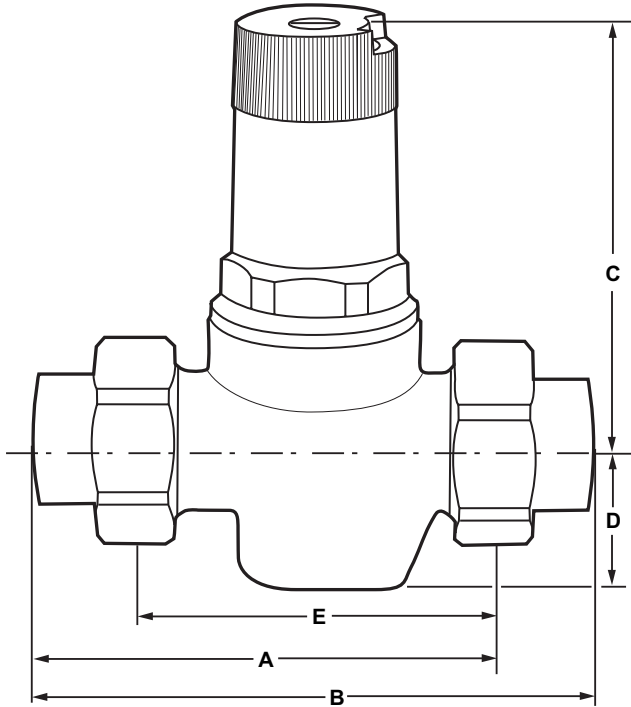
**Gauge Tap:** 1 1/4 in. model only.

**Approvals:**

ASSE (Std. 1003) Certified.

IAPMO, CSA, and City of L.A Listed.

**Dimensions:** See Figure 1.



SIZE (INCHES)	C	D <sup>△4</sup>	E <sup>△1</sup>
1/2	4 (102)	1-3/4 (32)	3-3/16 (81)
3/4	4 (102)	1-3/4 (32)	3-1/2 (89)
1	4 (102)	1-3/4 (32)	3-15/16(100)
1-1/4	5-9/16 (141)	2-5/8 (66)	4-11/16(119)

SIZE (INCHES)	SWEAT TAILPIECE		THREADED TAILPIECE	
	A <sup>△2</sup>	B <sup>△3</sup>	A <sup>△2</sup>	B <sup>△3</sup>
1/2	3-7/8 (99)	4-5/8 (118)	4-1/16(103)	4-15/16 (126)
3/4	4-5/16 (110)	5-3/16 (132)	4-5/16(110)	5-3/16 (132)
1	5-1/4 (133)	6-1/2 (166)	5 (127)	6-1/16 (154)
1-1/4	6-3/16 (157)	7-11/16 (195)	6 (152)	7-5/16 (185)

- <sup>△1</sup> NON-UNION MODEL CONFIGURATION.
- <sup>△2</sup> SINGLE-UNION MODEL CONFIGURATION.
- <sup>△3</sup> DOUBLE-UNION MODEL CONFIGURATION.
- <sup>△4</sup> DIMENSION WITH GAUGE PLUG.

M13748

**Fig. 1. DS05 Installation dimensions in inches (mm).**

## ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE<sup>®</sup> wholesaler or distributor, refer to the TRADELINE<sup>®</sup> Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care  
1885 Douglas Drive North  
Golden Valley, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

## Water Capacities (See Table 1)

The suitability of a given regulator size is dependent on the pressure requirements where it will operate. For the pressure regulator valve size required for a specific installation, determine the following:

1. Pressure differential between inlet and outlet pressure in pounds per square inch (psi),
2. Capacity in gallons per minute, and
3. Allowable reduced pressure falloff in psi.

Given these variables, use Table 1 to determine the proper size pressure regulator valve for your application.

Example: An installation has 135 psi inlet pressure, 60 psi outlet pressure (75 psi pressure differential). If a 12 gpm capacity is required with only 10 psi falloff allowable, a 1/2 in. DS05 is required.

**Table 1. Water Capacities.**

Pressure Regulator Valve Size	Reduced Pressure Falloff (psi)	Pressure Differential Between Inlet and Outlet							
		25 psi		50 psi		75 psi		100 psi or more	
		Flow Capacity (US gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (US gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (US gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (US gpm)	Velocity (ft/sec) <sup>a</sup>
1/2 inch	6	1.2	1.3	2.3	2.4	3.3	3.5	4.4	4.6
	10	8.8	9.3	10.1	10.7	10.6	11.2	10.6	11.2
	15	13.2	13.9	15.0	15.8	17.6	18.6	17.6	18.6
	20	17.6	18.6	20.7	21.9	22.0	23.2	22.9	24.2
3/4 inch	6	3.6	2.1	4.0	2.4	4.0	2.4	4.0	2.4
	10	8.1	4.9	9.3	5.6	9.9	6.0	9.9	6.0
	15	14.7	8.8	17.6	10.6	19.8	11.9	20.6	12.4
	20	23.0	13.8	27.7	16.7	32.1	19.3	4.1	20.5
1 inch	6	5.7	2.1	5.9	2.2	5.9	2.2	6.3	2.4
	10	13.2	4.9	15.4	5.7	15.7	5.8	16.4	6.1
	15	19.6	7.3	24.6	9.1	18.6	10.6	31.7	10.8
	20	25.7	9.6	32.1	11.9	37.6	14.0	43.6	16.2
1-1/4 inch	6	13.5	2.6	16.0	3.4	20.0	4.3	22.0	4.7
	10	22.0	4.7	29.0	6.2	34.0	7.3	38.0	8.1
	15	37.0	7.9	56.0	12.0	62.5	13.4	73.0	15.6
	20	55.0	11.8	78.0	16.7	87.0	18.6	101.0	21.6

<sup>a</sup> Velocity in feet per second is based on schedule 40 pipe size. Recommended pressure falloff for general use is approximately 104 kPa (15 psi). Recommended velocities for the flow of water: residential and general use, 5 to 10 ft/sec; industrial use, 7 to 15 ft/sec; boiler feed, 7 to 15 ft/sec.

## INSTALLATION

### When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in these instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out the product operation as provided in the instructions.

### Procedure

1. Flush the system clear of sediment or debris.
2. Close the supply valve and downstream isolating valve (if one is installed).
3. Install the DS05 with the arrow on the body pointing in the direction of water flow. (The DS05 can be mounted in any position.)

The DS05 can be installed directly onto the pipe by using the female NPT threads on each end. If space limitations restrict turning the DS05, install single-unions or double-unions.

**NOTE:** Heat from soldering can damage internal parts of the DS05. Always solder the tailpieces separately from the DS05.

4. Open the supply valve slowly and check for leakage and proper operation of the DS05.

### Changing the Downstream Pressure (See Fig. 2)

Remove the dust cap from the DS05. The DS05 is factory set to 60 psi.

To adjust the outlet pressure to a desired setting:

1. Loosen the locking screw by turning one turn counter-clockwise ↺ (do not remove this screw).
2. Turn the adjusting knob counter-clockwise ↺ to reduce pressure or clockwise ↻ to increase pressure.
3. Lock the setting by turning the locking screw clockwise ↻.
4. Replace the dust cap over the dial.

## MAINTENANCE

### Replacing the Cartridge (See Fig. 3)

The working parts of the DS05 including diaphragm, valve seat, strainer and disk are all contained in a replaceable cartridge. To replace the cartridge:

1. Shut off the supply valve and open a downstream faucet to relieve the system pressure.
2. Loosen the setpoint screw by turning it counter-clockwise ↺ (Do not remove this screw).

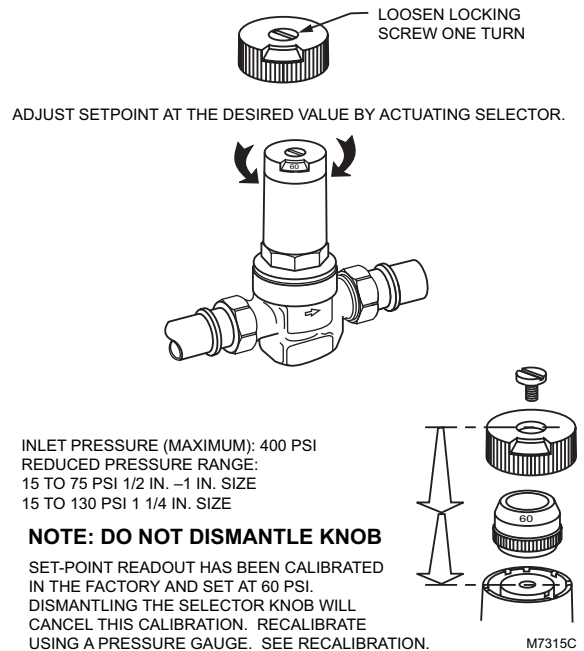


Fig. 2. Changing outlet pressure.



### CAUTION

To prevent injury and/or equipment damage, loosen locking screw and turn adjusting knob counter-clockwise ↺ to remove spring tension.

3. Turn adjusting knob counter-clockwise ↺ to remove spring tension.
4. Remove the bonnet and washer using an MT06A Service Tool.
5. Remove the cartridge using two screwdrivers as levers. Attach new O-rings and screen onto the new cartridge.
6. Make sure O-rings are properly installed above and below the screen.
7. Insert the new cartridges. Do not scratch the sides.
8. Place the washer on top of the cartridge.

**NOTE:** The inner lip must be pointing up to avoid damaging the diaphragm.

9. Replace the spring and bonnet.
10. Readjust the outlet pressure to the desired setting by using the procedure described in Changing the Downstream Pressure section.

## Cleaning the Cartridge Screen

To clean the cartridge screen:

1. Shut off the supply valve and open a downstream faucet to relieve the system pressure.



### CAUTION

To prevent injury and/or equipment damage, loosen locking screw and turn adjusting knob counter-clockwise to remove spring tension. Do not remove screw.

2. Loosen locking screw and turn adjusting knob counter-clockwise to remove spring tension.
3. Remove the bonnet and washer using an MT06A service tool.
4. Remove the cartridge using two screwdrivers as levers as shown in Figure 3.
5. Remove and clean the cartridge screen.
6. Replace the cartridge screen and make sure the O-rings are installed properly.
7. Carefully clean the cartridge seat area.
8. Insert the cartridge. Do not scratch the sides.
9. Place the washer on top of the cartridge.

NOTE: The inner lip must be pointing up to avoid damaging the diaphragm.

10. Replace the spring and bonnet.
11. Readjust the outlet pressure to the desired setting by using the procedure described in Changing the Outlet Pressure section.

## Recalibration

If the dial knob assembly has been dismantled, recalibration is necessary. Recalibrate as follows:

1. Install a good quality pressure gauge at the gauge tap connection.
2. Open supply pressure and adjust spindle until the gauge shows 60 psi.
3. Reassemble dial ring and adjustment knob so dial reads 60 psi.

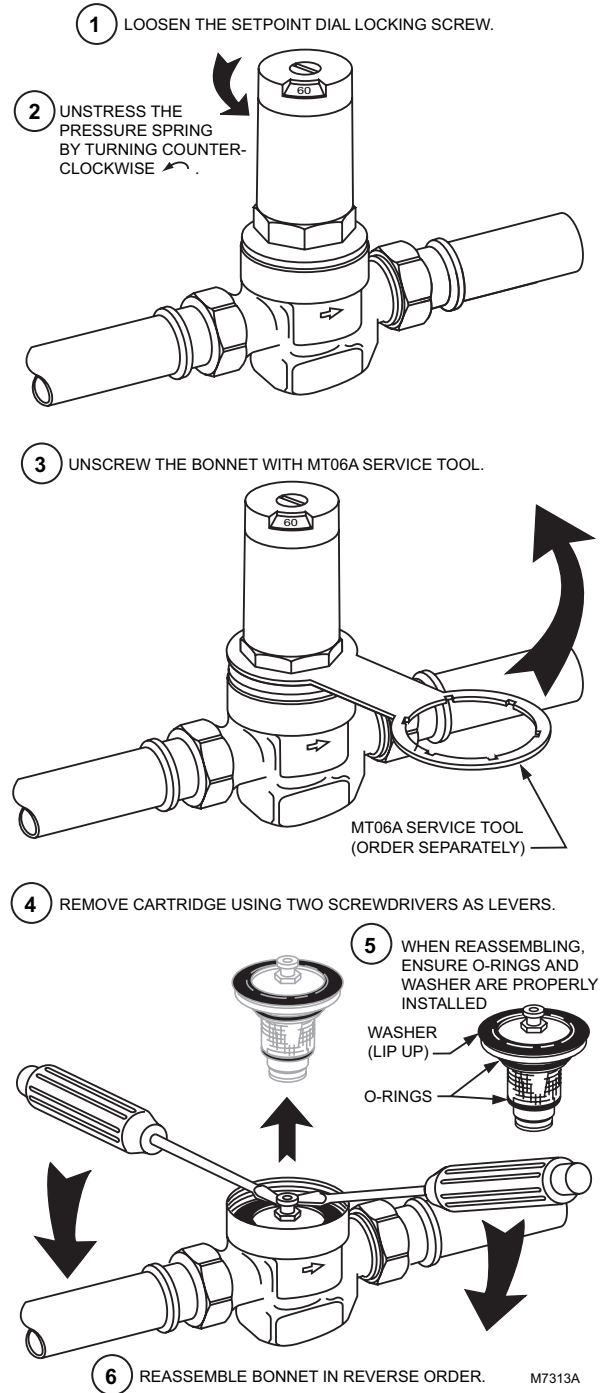


Fig. 3. Replacing the DS05 cartridge.

## TROUBLESHOOTING

Table 2 provides a troubleshooting guide for the DS05 Dial Pressure Regulating Valve.

**Table 2. Troubleshooting the DS05 Dial-Set Pressure Regulating Valve.**

<b>Problem</b>	<b>Solution</b>
Whistling noise.	<ul style="list-style-type: none"> <li>Slightly increase or decrease the outlet pressure until the noise goes away.</li> </ul>
Will not hold pressure.	<ul style="list-style-type: none"> <li>Clean the filter cartridge as described in the installation section.</li> </ul>
Chatters.	<ul style="list-style-type: none"> <li>Replace screen and O-rings.</li> <li>Replace the cartridge as shown in Figure 3.</li> </ul>
Freezes up.	<ul style="list-style-type: none"> <li>Replace bonnet or cartridge if damaged.</li> <li>To avoid further freeze up:               <ul style="list-style-type: none"> <li>— Temporarily (slightly) open a downstream faucet if the DS05 will be exposed to temperatures below 32° F (0° C). The slight water flow will eliminate freeze-up.</li> <li>— Move the DS05 to a location with an ambient temperature above 32° F (0° C) if it is currently exposed to prolonged temperature below 32° F (0° C).</li> </ul> </li> </ul>
Pressure gauge measures a lower pressure under flow conditions than was originally set during static conditions.	<ul style="list-style-type: none"> <li>DS05 is functioning properly. No action is necessary. The pressure decrease is characteristic of all direct acting pressure regulating valves and is referred to as falloff.</li> </ul>

## OPERATION

The Honeywell DS05 Dial-Set Pressure Regulating Valve is a balanced, direct acting pressure regulating valve. The DS05 provides constant downstream pressure regardless of varying inlet pressures and downstream flow demands.

The spring force holds the valve in the open position until downstream pressure sensed by a port, is sufficient to press on the underside of the diaphragm and close the valve. As downstream pressure drops due to demand, the force on the diaphragm is reduced and the valve opens. Adjustment is made by manually turning the adjustment knob clockwise ↻ to increase the spring force and require a higher downstream pressure to close the valve. Similarly, reducing the spring force lowers the outlet set pressure. A factory-calibrated dial is built into the adjustment mechanism to allow outlet pressure (no flow) to be set without a gauge. A locking screw maintains the setting. A black plastic cover is provided to conceal the setting and protect the Dial-Set from moisture and debris.

Once the outlet pressure is set, the DS05 automatically regulates to maintain the downstream pressure. See Figure 5 for the internal construction of the DS05.

Minimum ambient rating is 33° F (1° C).

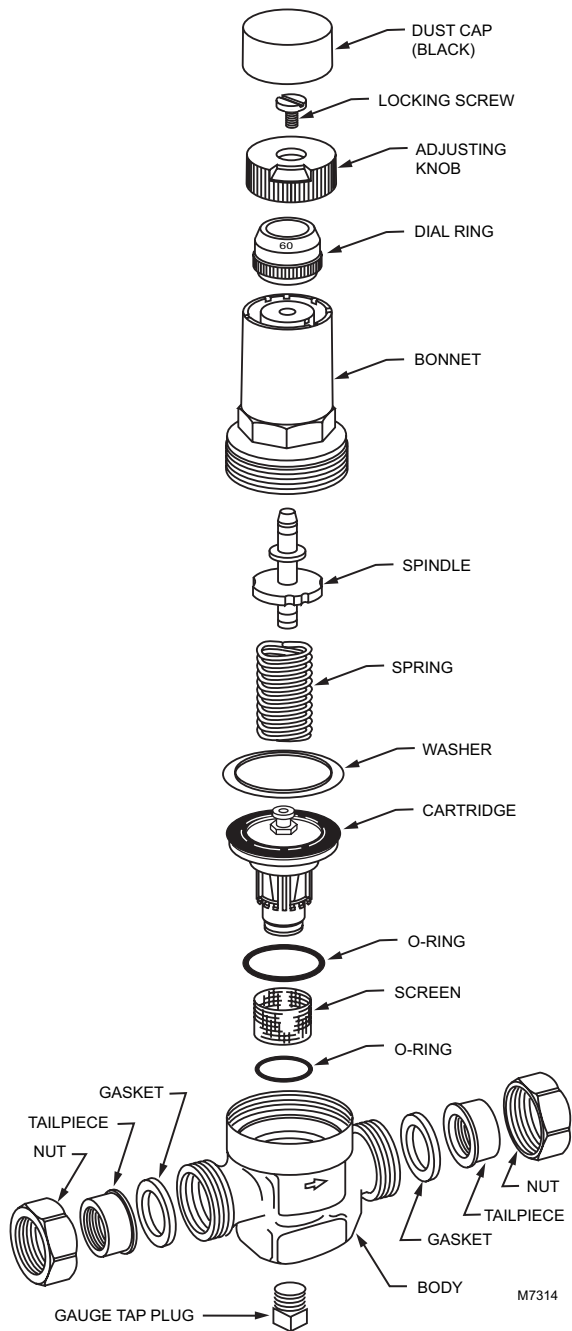


Fig. 4. DS05 exploded view.

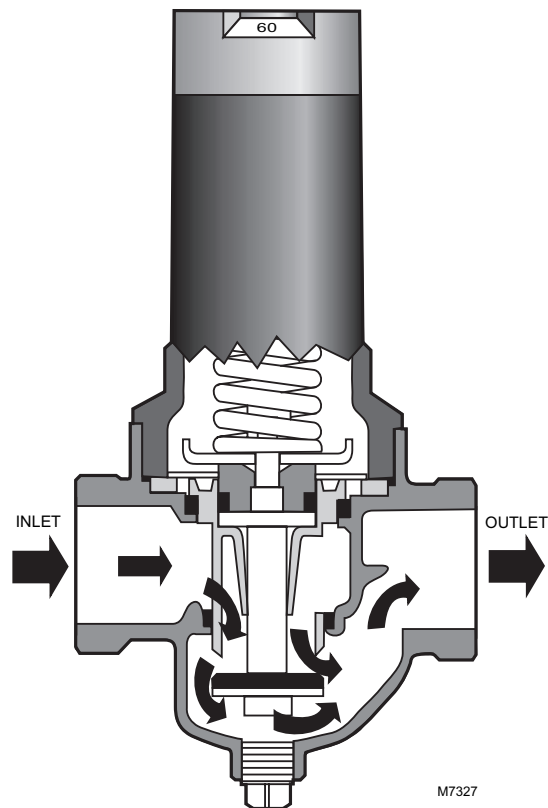


Fig. 5. Internal construction of DS05.

## DS05 Parts & Accessories

Product Number	Pipe Size		Pipe Connection	Description
	(inch)	DN		
K06U1135	1-1/4	DN32	-	Union kit for 1-1/4 in. NPT D05 and DS05 Series Valves.
K06U1150	3/4	DN20	Sweat	3/4 in. Jumper Kit- 2 Sweat Unions, Gaskets and Nuts.
K06U1168	1	DN25	Sweat	1 in. PRV Jumper Kit- 2 Sweat Unions, Gaskets and Nuts.
K06U1184	3/4	DN20	Female NPT	3/4 in. PRV Jumper Kit- 2 Threaded Unions, Gaskets and Nuts.
K06U1192	1	DN25	Female NPT	1 in. PRV Jumper Kit- 2 Threaded Unions, Gaskets and Nuts.
K06U1200	1-1/4	DN32	Sweat	1-1/4 in. Jumper Kit - 2 Sweat Unions, Gaskets, and Stand-in Pipe.
K06U1218	1-1/4	DN32	Female NPT	1-1/4 in. Jumper Kit- 2 Threaded Unions, Gaskets and Stand-in Pipe.
PRV202-039	3/4	DN20	Male NPT	3/4 in. Stand-in Pipe.
PRV202-040	1	DN25	Male NPT	1 in. PRV Stand-in Pipe.
PRV203-034	1-1/4	DN32	Male NPT	1-1/4 in. PRV Stand-in Pipe.

Product Number	Description
272838	Bonnet for 1/2 in. and 3/4 in.
272839	Bonnet for 1 in. and 1-1/4 in.
272840	Union Gaskets for 1/2 in.
272841	Union Gaskets for 3/4 in.
272842	Union Gasket for 1 in.
272843	Union Gasket for 1-1/4 in.
K05A1009	Repair Kit for 1/2 and 3/4 in.
K05A1017	Repair Kit for 1 and 1-1/4 in. (DS05C)
K05A1025	Repair Kit for DS05C/D05T 1/2 in, 3/4 in. & 1 in.
K05B1007	Repair Kit for 1/2 in. and 3/4 in.
K05B1015	Repair Kit for 1 in.

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