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# D05 Pressure Regulating Valves

## Braukmann

### INSTALLATION INSTRUCTIONS

## APPLICATION

The Honeywell Braukmann D05 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 ideally suited for new residential and light commercial construction, drip irrigation, and applications requiring highly sensitive and accurate regulation.

The wide inlet pressure range of the D05 gives flexibility without compromising reduced outlet pressure accuracy or capacity. The superior balanced single seat design maintains a constant outlet pressure over a wide range of inlet pressures. The noncorroding unitized cartridge insert contains all the working parts and is easily replaceable.

The D05 is used for water or air regulation. It is not suitable for steam.

## SPECIFICATIONS

### Model:

D05 Pressure Regulating Valves

### Construction Materials:

Body: Bronze.  
Internal Parts: Stainless steel and engineered plastic.  
Regulator Mechanism: Fabric-reinforced diaphragm.

### Inlet Pressure:

400 psi maximum.

### Reduced Pressure Range:

15 to 150 psi (1/2 in. to 1 in.).  
15 to 130 psi (1-1/4 in.).

### Outlet Pressure:

Factory set at 60 psi.

### Differential:

14 psi minimum (inlet to outlet).

### Reduced Ratio:

10:1 maximum.

### Fluid Temperature (Maximum):

Air: 158°F (70°C).  
Water: 180°F (82°C).

### Ambient Temperature:

33°F to 140°F (1°C to 60°C)

### Pipe Sizes:

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

### Connections:

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

### Strainer Screen Size:

0.032 in. (0.8 mm)

### Gauge Tap:

1/4 in. NPT (available on all models).

### Approvals:

ASSE (Std. 1003) Certified.  
IAPMO, CSA, and City of L.A. Listed.

### Dimensions:

See Fig. 1.

### Water Capacities (See Table 1):

The suitability of a given regulator size is dependent on the pressure requirements of each installation. To determine 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 (gpm), 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 12 gpm capacity is required with only 10 psi falloff allowable, a 1/2 in. D05 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 (U.S. gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (U.S. gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (U.S. gpm)	Velocity (ft/sec) <sup>a</sup>	Flow Capacity (U.S. gpm)	Velocity (ft/sec) <sup>a</sup>
1/2 inch	6	7.0	7.3	8.0	8.3	9.0	9.4	10.0	10.4
	10	10.0	10.4	11.0	11.5	12.0	12.5	13.0	13.5
	15	13.0	13.5	15.0	15.6	16.0	16.7	17.0	17.7
	20	15.5	16.0	18.0	19.5	19.0	21.0	20.0	22.0
3/4 inch	6	9.0	5.4	10.0	6.0	11.0	6.5	12.0	7.1
	10	15.0	8.9	16.0	9.5	17.0	10.0	18.0	10.7
	15	20.0	11.9	22.0	13.7	23.0	13.7	24.0	14.3
	20	23.0	13.9	26.0	17.6	27.0	16.7	28.0	17.3
1 inch	6	11.5	4.2	13.0	4.7	14.5	5.3	16.0	5.8
	10	20.0	7.2	21.5	7.8	23.0	8.3	24.5	8.9
	15	28.0	10.7	30.0	10.9	33.0	12.0	35.0	12.7
	20	32.0	14.0	37.0	13.5	40.0	15.5	41.0	15.0
1-1/4 inch	6	13.5	2.9	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 feet per second; industrial use, 7 to 15 feet per second; boiler feed, 7 to 15 feet per second.

## 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 these instructions.

### Procedure


- 1 Flush the system clear of sediment or debris.
- 2 Close the supply valve and downstream isolating valve (if used).
- 3 Install the D05 with the arrow on the body pointing in the direction of water flow. (The D05 can be mounted in any position.)

The D05 can be installed directly onto the pipe by using the female NPT threads on each end. If space limitations restrict turning the D05, install single- or double-unions.




NOTE: Heat from soldering can damage internal parts of the D05. Always remove the tailpiece(s) from the D05 during soldering, or disassemble the D05 prior to heating the casting.

- 4 Open the supply valve.

### Changing the Outlet Pressure (See Fig. 1)

The D05 is factory set to 60 psi. To change the outlet pressure, turn the adjusting bolt counterclockwise to reduce pressure or clockwise  to increase pressure.

To adjust the outlet pressure to a desired setting:

- 1 Close the supply shutoff valve and open a downstream faucet to relieve static pressure in the line.
- 2 Install a pressure gauge to the gauge tap on D05G models, or temporarily with a downstream hose bib on other D05 models.
- 3 Loosen the locknut by turning counterclockwise  two turns.
- 4 Turn the adjusting bolt counterclockwise several turns to make sure the setting is below the desired setting.
- 5 Close all downstream valves and/or faucets and slowly open the supply valve until fully open.
- 6 Turn the adjusting bolt clockwise  to gradually increase the pressure until the gauge indicates the desired outlet pressure (under no flow condition).
- 7 Reopen a downstream valve. During flow, there will normally be a pressure falloff of 3 to 15 psi depending upon the amount of water flow.
- 8 Tighten the locknut by turning clockwise  until tight. Do not overtighten.

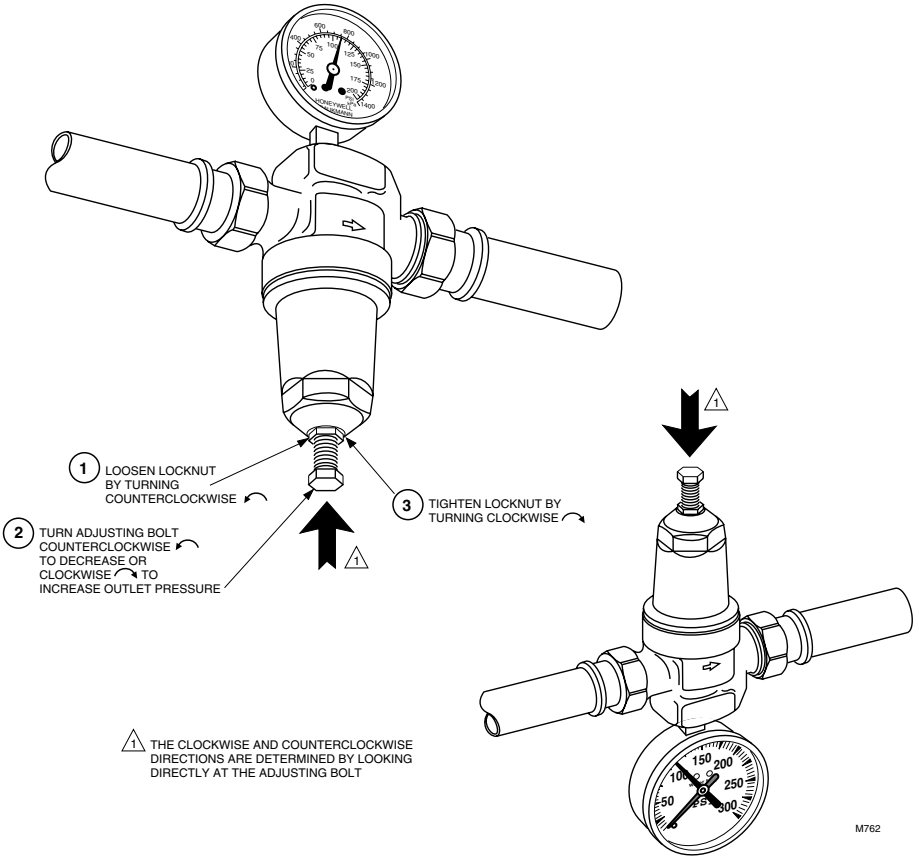


Fig. 1. Changing outlet pressure.

## Replacing the Cartridge (See Fig. 2)

The working parts of the D05, 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.

### ⚠ CAUTION

To prevent injury and/or equipment damage, loosen locknut and turn adjusting screw counterclockwise ↺ to remove spring tension.

- 2 Loosen locknut and turn adjusting screw counterclockwise ↺ to remove spring tension.

- 3 Remove the bonnet and washer using an adjustable wrench, socket, or box-end wrench.
- 4 Remove the cartridge using two screwdrivers as levers.
- 5 Attach new O-rings and screen onto the new cartridge. Make sure O-rings are properly installed above and below the screen.
- 6 Insert the new cartridge. Do not scratch the sides.
- 7 Place the washer on top of the cartridge.

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

- 8 Replace the spring, spring cup, and bonnet.
- 9 Readjust the outlet pressure to the desired setting by using the procedure described in Changing the Outlet Pressure section.

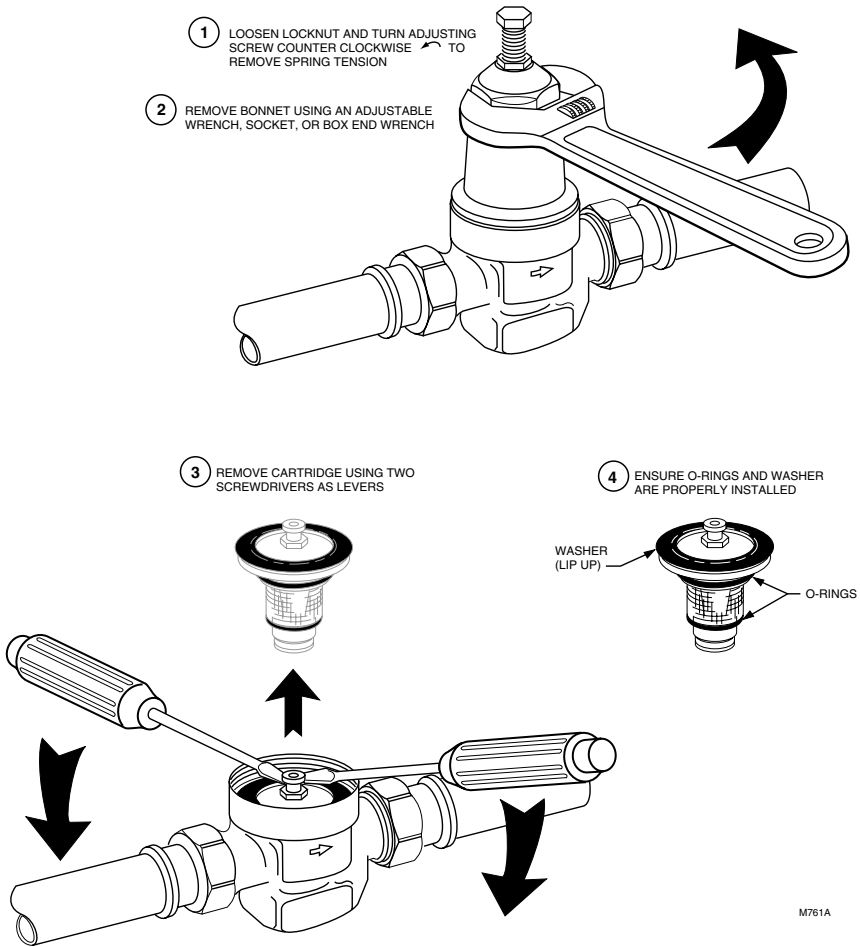


Fig. 2. Replacing D05 cartridge.

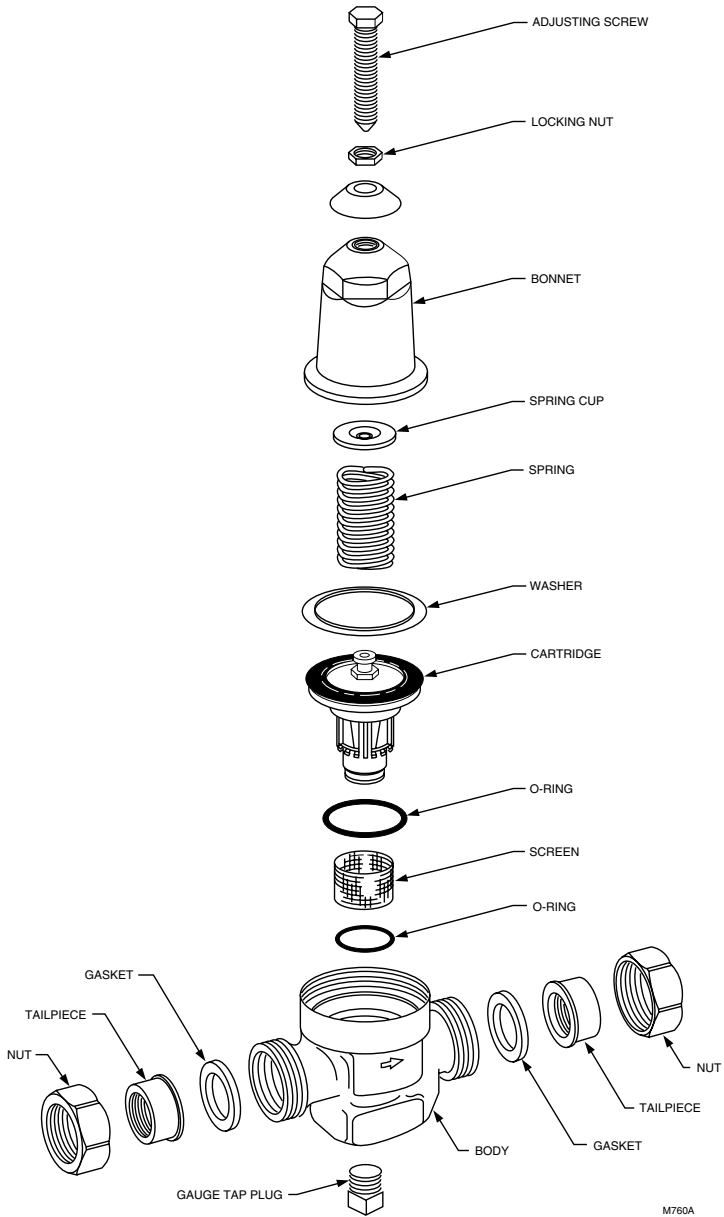


Fig. 3. D05 exploded view.


## 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 locknut and turn adjusting screw counterclockwise  to remove spring tension.

- 2 Loosen locknut and turn adjusting screw counterclockwise  to remove spring tension.
- 3 Remove the bonnet and washer using an adjustable wrench, socket, or box-end wrench.
- 4 Remove the cartridge using two screwdrivers as levers as shown in Fig. 3.
- 5 Remove and clean the cartridge screen.

NOTE: D05G models can be cleaned partially by removing the gauge tap plug and using an air hose to blow air into the unit.


- 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, spring cup and bonnet (see Fig. 3).
- 11 Readjust the outlet pressure to the desired setting by using the procedure described in Changing the Outlet Pressure section.

## OPERATION

The Honeywell Braukmann D05 is a balanced, direct acting pressure regulating valve. The D05 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 screw 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.

Once the outlet pressure is set, the D05 regulates to maintain that pressure downstream. See Fig. 4 for the internal construction of the D05.

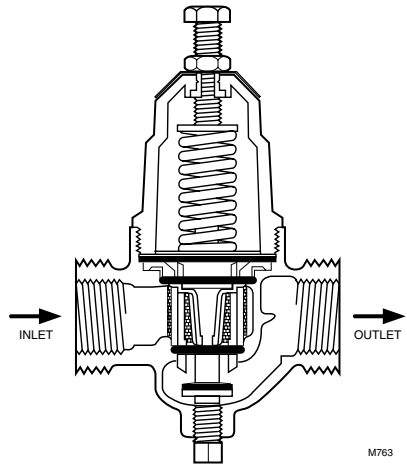


Fig. 4. Internal construction of the D05.

## TROUBLESHOOTING

Table 2 provides a troubleshooting guide for the D05 Pressure Regulating Valves.

**Table 2. Troubleshooting D05 Pressure Regulating Valves.**

<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 disappears.</li> </ul>
Will not hold pressure.	<ul style="list-style-type: none"> <li>Clean the filter cartridge as shown on page 2.</li> <li>Open the guage tap and blow out any dirt (D05G only).</li> </ul>
Chatters.	<ul style="list-style-type: none"> <li>Replace the screen and O-rings.</li> <li>Replace the cartridge as shown on page 2.</li> </ul>
Freezes up.	<ul style="list-style-type: none"> <li>Replace bonnet or cartridge if damaged.</li> <li>To avoid future freeze-up:               <ul style="list-style-type: none"> <li>Temporarily (slightly) open a downstream faucet if the D05 is going to be exposed to temperatures below 32°F (0°C). The slight water flow will eliminate freeze-up.</li> <li>Move the D05 to a location with an ambient temperature above 32°F (0°C) if it is currently exposed to prolonged temperatures 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>D05 is functioning properly. No action is necessary. The pressure decrease is characteristic of all direct acting pressure regulating valves and is referred to as fall-off.</li> </ul>

## D05 Parts and Accessories

### Order Number Description

#### Replacement Parts

203223	Bonnet Assembly for 1/2 and 3/4 in. Valves.
203224	Bonnet Assembly for 1 and 1-1/4 in. Valves.
272840	Gasket for 1/2 in. D05/DS05 (quantity 24).
272841	Gasket or 3/4 in. D05/DS05 (quantity 24).
272842	Gasket for 1 in. D05/DS05 (quantity 24).
272843	Gasket for 1-1/4 in. D05/DS05 (quantity 24).
K05A1009	Replacement Cartridge, Screen and O-ring for 1/2 and 3/4 in. Valves.
K05A1017	Replacement Cartridge, Screen and O-ring for 1 and 1-1/4 in. Valves.
K05B1007	Replacement Screen and O-ring for 1/2 and 3/4 in. Valves.
K05B1015	Replacement Screen and O-ring for 1 and 1-1/4 in. Valves.

#### Union Kits

K06U1069	Union Kit — 1/2 in., includes nut, female NPT threaded tailpiece and gasket.
K06U1077	Union Kit — 3/4 in., includes nut, female NPT threaded tailpiece and gasket.
K06U1085	Union Kit — 1 in., includes nut, female NPT threaded tailpiece and gasket.
K06U1135	Union Kit — 1-1/4 in. for D05/D505, includes nut, female NPT threaded tailpiece and gasket.
K06U1093	Union Kit — 1/2 in., includes nut, sweat tailpiece and gasket.
K06U1101	Union Kit — 3/4 in., includes nut, sweat tailpiece and gasket.
K06U1119	Union Kit — 1 in., includes nut, sweat tailpiece and gasket.
K06U1143	Union Kit — 1-1/4 in. for D05/D505, includes nut, sweat tailpiece and gasket.

#### Accessories

202868	Filter Washer, 3/4 in., for use with U06P1045 Plastic Stand-in Pipe.
202869	Filter Washer, 1 in., for use with U06P1052 Plastic Stand-in Pipe.
U06P1045	Plastic Stand-in Pipe (spacer) for use with D05 Double-union Pressure Regulating Valves, 3/4 in.
U06P1052	Plastic Stand-in Pipe (spacer) for use with D05 Double-union Pressure Regulating Valves, 1 in.

#### Pressure Gauges

M39A1032	Pressure Gauge with Bottom Inlet; 0 to 160 psi.
MT194A1006	Water Pressure Test and Recording Gauge with Hose Bib Connection; 0 to 300 psi.

## **Honeywell Braukmann**

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