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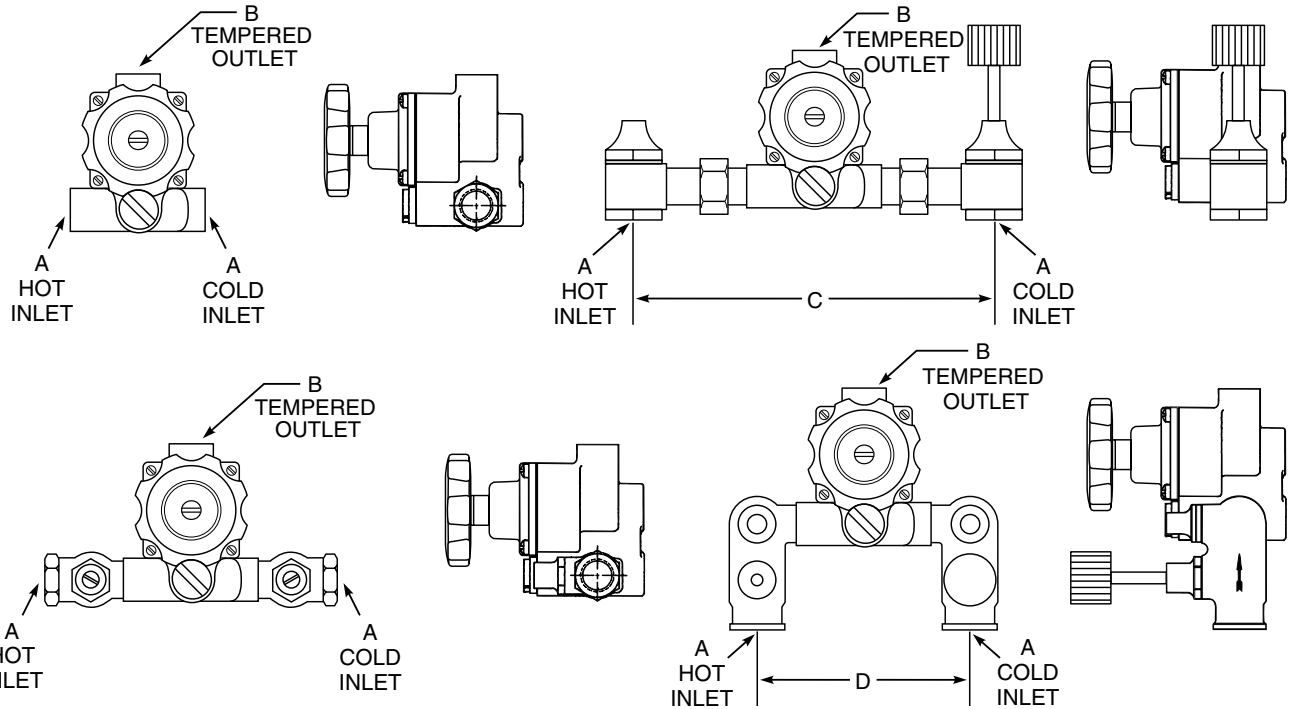
www.lawlervalve.com

Installation &
 Maintenance Manual
 M 9700 C

Series 9700

NOTICE!

No mixing valve will work satisfactory if improperly installed. We suggest, therefore, that you read these instructions carefully before making the installation and follow directions as outlined. Handle the mixing valve with extreme care and intelligence.



General Description For 1/2" and 3/4"

Mixing Valve

This valve is two valves in one it consists of the thermostatic section and pressure actuated section. The valve is carefully assembled and tested at the factory and set to deliver water at any desired temperature between all cold and 105°F.

Failure of the cold water supply will:

1. Cause the pressure balancing section to react instantly to restrict hot flow to thermostatic section.
2. Thermostatic element will react to shut off all hot water.

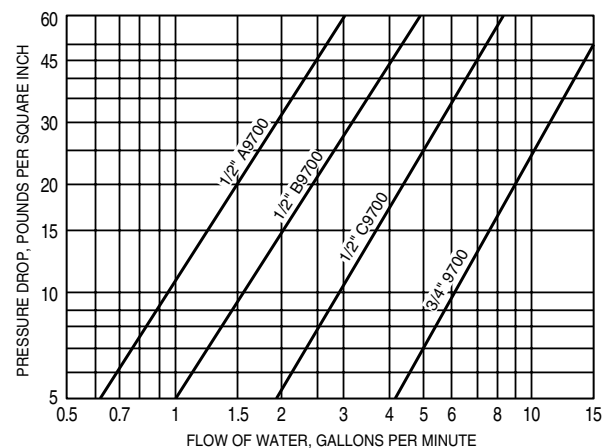
Failure of hot supply will:

1. Have equal instantaneous reactions. When unit is not being used, turn the handle clockwise unit flow stops.

DIMENSIONS:

A N.P.T.	B N.P.T.	C	D
1/2"	1/2"	8 1/2"	4 7/8"
3/4"	3/4"	9 1/2"	NA

FLOW CAPACITIES - SERIES 9700



Caution: When maintaining and adjusting the mixing valve, all fixtures should be isolated from use. Lawler Manufacturing Co., Inc. recommends that you work safely at all times and in a manner consistent with the OSHA Lock/Tagout standard, 29 CFR 1910.147 and other applicable standards.

Stop and Check Valves

Stop and Check Valves are available for this Mixing Valve.

Two turns from the closed position will open them to full capacity.

The Stop and Check Valves serve four purposes:

1. The built-in removable strainer prevents dirt from entering mixing valve.
2. They prevent the hot or cold water from by-passing.
3. They provide convenient means to shut the supplies to the mixer for cleaning or repairs.
4. The cold water stop and check has a volume control adjustment knob (see Operating Principle).

Note: Stop and checks are required whenever downstream shut off devices are used.

Operating Principle

Shut: When the handle of the valve is turned all the way clockwise in the closed position hot seat #16 is on shut off seat. The relief spring #25 is compressed about $\frac{1}{16}$ " by the pushrod, #8 on end of thermostat, preventing by-passing of the hot or cold water through the valve when it is not in use, this is an important function of the mixing valve.

Cold: When valve handle is moved counterclockwise from the closed position, first the seat #23 leaves shut off seat, allowing cold water only to flow through the valve, as the relief spring still is under compression and holds the hot seat disc #16 closed.

Warm: When the valve handle is moved further counterclockwise the hot seat disc #16 is forced off hot water seat by valve spring #18. Hot water is thus allowed to enter valve. This outward movement of the piston also partially shuts off the cold water as it enters the ports of the liner. As the warm water passes through the valve body. It flows over and along the copper tubes which are filled with a thermo-sensitive liquid. This liquid changes in volume with the temperature changes in the water. This results in a movement that is transferred to the pushrod in the center of the thermostat. Thus the pushrod moves the piston assembly to control the exact amount of hot and cold water entering the mixing chamber for the desired final temperature in accordance with the handle setting.

Balancing section, consisting of shuttle cylinder #14 and shuttle #13 maintains equal pressure to thermostatic section regardless of incoming pressure changes.

To reduce the flow of water turn the cold water control knob clockwise, and then make the proper temperature adjustment by turning the main valve handle.

Piping Instruction

Before installing the mixer blow out all pipe lines to be sure that no dirt such as pipe chips, wicking or lead can enter the mixing valve. Valve inlets are marked hot and cold. Piping must go to proper inlets.

Checking Mixing Valve

Use the following procedure to check the Series PX-9700 Mixing Valve:

1. To test SHUTTLE ACTION and COLD SHUT OFF. Shut hot supply to mixer and open cold supply. Turn handle counterclockwise, 2 complete turns from the closed position. A very negligible cold water flow should be had. Now open hot supply, water should be luke warm and at full volume. Failure of this to occur means shuttle is not free to move.
2. To test MIXING VALVE
 - a. Turn on hot and cold supplies.
 - b. Establish flow through mixing valve.
 - c. Turn handle counterclockwise 1 complete turn from the close position. Water temperature should be almost as cold as incoming cold water supply and at full pressure.

Failure to obtain results indicates:

1. Piston #15 stuck and not moving, must be freed and cleaned.
2. Shuttle #13 is not moving freely. Stuck in downward position if lack of full pressure.
 - d. Turn handle counterclockwise to hottest position and temperature should be maximum 105°F. At full pressure slight adjusting of adjusting screw #4 can change this temperature setting up or down.

Failure to obtain results indicates:

1. Piston #15 stuck and holding hot supply off. Free and clean.
2. Shuttle #13 is stuck in upward position.
3. Thermostat has lost its charge if mixed outlet temperature climbs to that of incoming hot water temperature. Replace the thermostat.
4. Failure to obtain 105°F indicates incoming hot supply is not at least 15 degrees hotter than desired outlet temperature.
 - e. Now shut off cold supply. Flow should drop off tight.

Failure to obtain results indicates:

1. Piston #15 is stuck, remove and clean.
2. Hot seat disc #16 worn or seat scored in liner #20.
3. Thermostat lost charge, replace it.
 - f. Repeat test by opening cold supply and closing hot supply. Flow again should drop off to a trickle instantaneously.

Checking the Thermostat

If cold seat #23 on thermostat is worn or deeply indented, remove it and replace with a new one.

If there is a question as to the thermostatic being good, hold thermostat under cold water faucet and insert an eraser-capped pencil into the center of thermostat. Make a reference mark where pencil protrudes from the thermostat. Now place the entire thermostat in to hot water; approximately 125°F, for about one minute. Remove thermostat from water, examine the reference mark on pencil again. At this temperature, it should extend out from former position about $\frac{1}{8}$ ". If it does not, a new thermostat should be installed.

Caution: Extreme care should be exercised when placing thermostat in and out of hot water.

Checking Piston and Liner

Remove piston assembly #15 from valve. Check the piston assembly and liner #20 for cleanliness and excessive wear. Check hot disc #16 for wear. Replace all worn parts.

Note: Liner #20 can be removed with a:

- $\frac{9}{32}$ " hex wrench for low flow $\frac{1}{2}$ " valves,
- $\frac{3}{8}$ " hex wrench for med & high flow $\frac{1}{2}$ " valves,
- $\frac{5}{8}$ " hex wrench for $\frac{3}{4}$ " valves.

Before reassembling the valve, thoroughly flush out with water.

Note: Piston Sub Assembly consisting of parts #'s 17, 24 and 25 factory pre-set with Liner #20, as a single unit.

Temperature Adjustment

The temperature of the hot water supplying the mixing valve should be at least 15 degrees higher than maximum required valve setting. Valves are normally set at the factory for 105°F maximum outlet temperature. If it is desired to change this setting, proceed as follows:

1. Remove handle screw #1.
2. With narrow blade screwdriver, turn adjusting screw #4 clockwise to reduce maximum outlet temperature and counterclockwise to increase maximum outlet temperature. This must be done with valve handle in hot position, turned counterclockwise. Screw should not be turned more than $\frac{1}{2}$ turn at a time without testing water temperature.
3. When the temperature is correct, replace the handle screw #1.

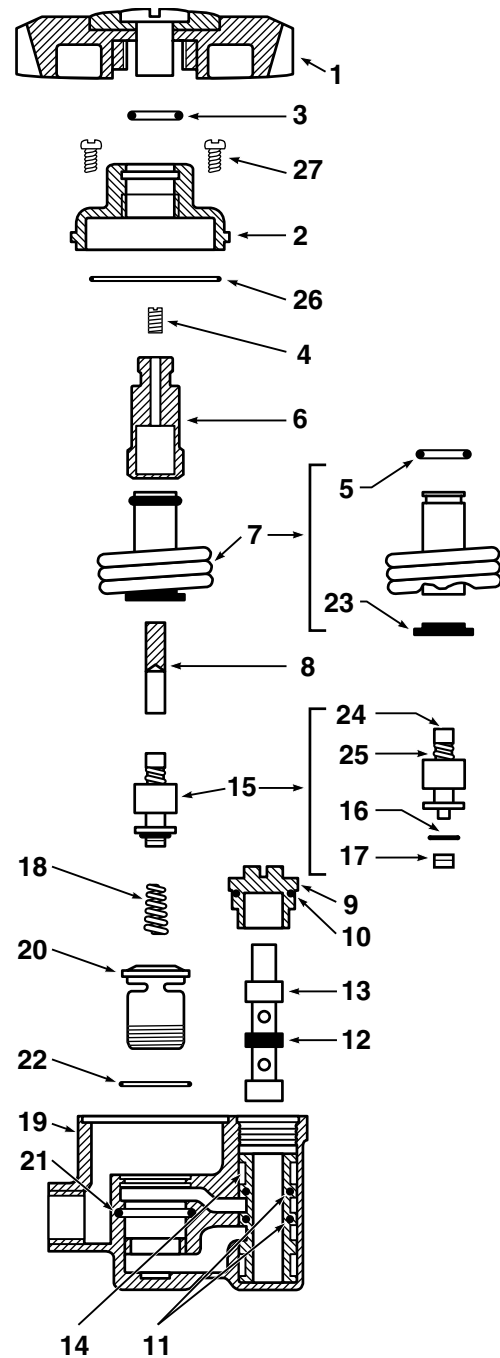
Note: Adjusting screw #4 may not be turned counterclockwise more than 1 $\frac{1}{2}$ turns.

Warning: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

(Installer: California law requires that this warning be given to the consumer.)

For more information: www.oehha.org/prop65

Series 9700 cut away



Repair Kits and Assemblies

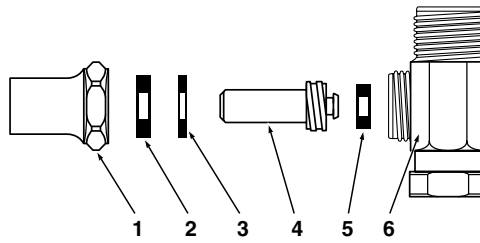
Item	Description	Contains	$\frac{1}{2}$ " Part No.	$\frac{3}{4}$ " Part No.
A	Complete Repair Kit (4-7 GPM)	7-8-18-B-C-D	79807-03	79807-04
B	O-Ring and Gasket Kit	3-5-10-11-12-16-21-22-23-26	79959-30	79960-30
C	Piston and Liner Assy.	15-20-22	72014-31	72014-35
D	Shuttle and Cylinder Assy.	11-12-13-14	71823-30	71824-30
E	Spindle and Cover Assy.	2-3-4-6	72005-02 (brass)	72006-02
			72005-03 (chrome plated)	72006-03
F	Shut Off	23	5410-00	71845-30
G	Thermostat Assy.	7-26	71870-32	71036-32

Note: Must specify capacity and finish of valve. Parts shown under $\frac{1}{2}$ " are for 4-7 GPM. All parts shown are for plain Bronze finish.

Repair Kits for Inlet Stop & Checks

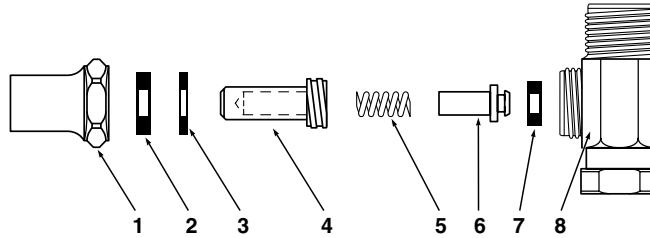
1/2" Stop

Part No. 7038-31
Repair Kit 79905-32



Item	Description
* 1	Bonnet
2	Packer
3	Washer
4	Stem Nose
5	Washer
* 6	Body

Item	Description
* 1	Bonnet
2	Packer
3	Washer
4	Stem
5	Spring
6	Nose
7	Washer
* 8	Body

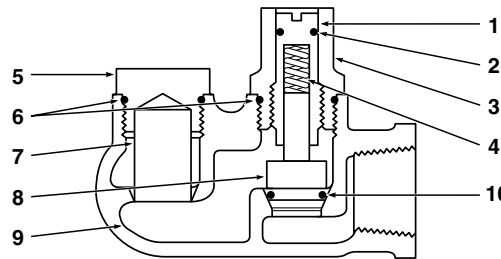


1/2" Stop & Check

Part No. 6839-31
Repair Kit 79905-32

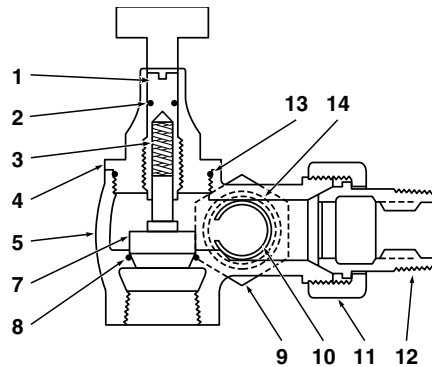
1/2" Angled Stop & Check with Strainer

Part No. 70484-00
Repair Kit 79922-32



Item	Description
1	Adjustment Stem
2	O-Ring Seal
* 3	Bonnet
4	Spring
* 5	Strainer Plug
6	O-Ring Gasket
7	Strainer
8	Strainer Disc Holder
* 9A	Body (Right Hand)
* 9B	Body (Left Hand)
10	O-Ring Disc

Item	Description
1	Adjustment Stem
2	O-Ring Seal
3	Spring
* 4	Bonnet
* 5	Body
7	O-Ring Disc Holder
8	O-Ring
* 9	Not Available
10	Strainer
* 11	Union Nut
* 12	Union Tailpiece
13	Bonnet O-Ring
14	Strainer Plug O-Ring



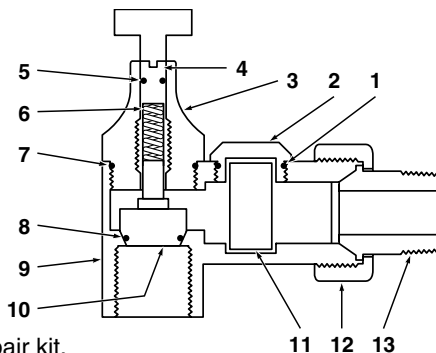
1/2" Union Angled Stop & Check with Strainer

Part No. 72661-10
Repair Kit 79902-11 A.F.

Item	Description
1	Plug O-Ring
2	Not Available
* 3	Bonnet
4	Spindle
5	O-Ring
6	Spring
7	Bonnet O-Ring
8	O-Ring
* 9	Body
10	O-Ring Disc Holder
11	Strainer
* 12	Union Nut
* 13	Union Tailpiece

3/4" Union Angled Stop & Check with Strainer

Part No. 72661-30
Repair Kit 79894-32



NOTE: * Components are not included in repair kit.

GUARANTEE

We guarantee the Lawler Mixing Valve to be free from defects in workmanship and material, and for a period of one year from date of purchase, will replace any parts found by us to be defective. We will not be

held responsible, however, for any labor incidental to, or for any damages caused by defective material. Each mixing valve is thoroughly inspected and tested under actual conditions at our factory.