Series 770/770DCDA

Double Check Valve Backflow Preventer and Double Check Detector Assembly

Sizes: 4", 6", 8"

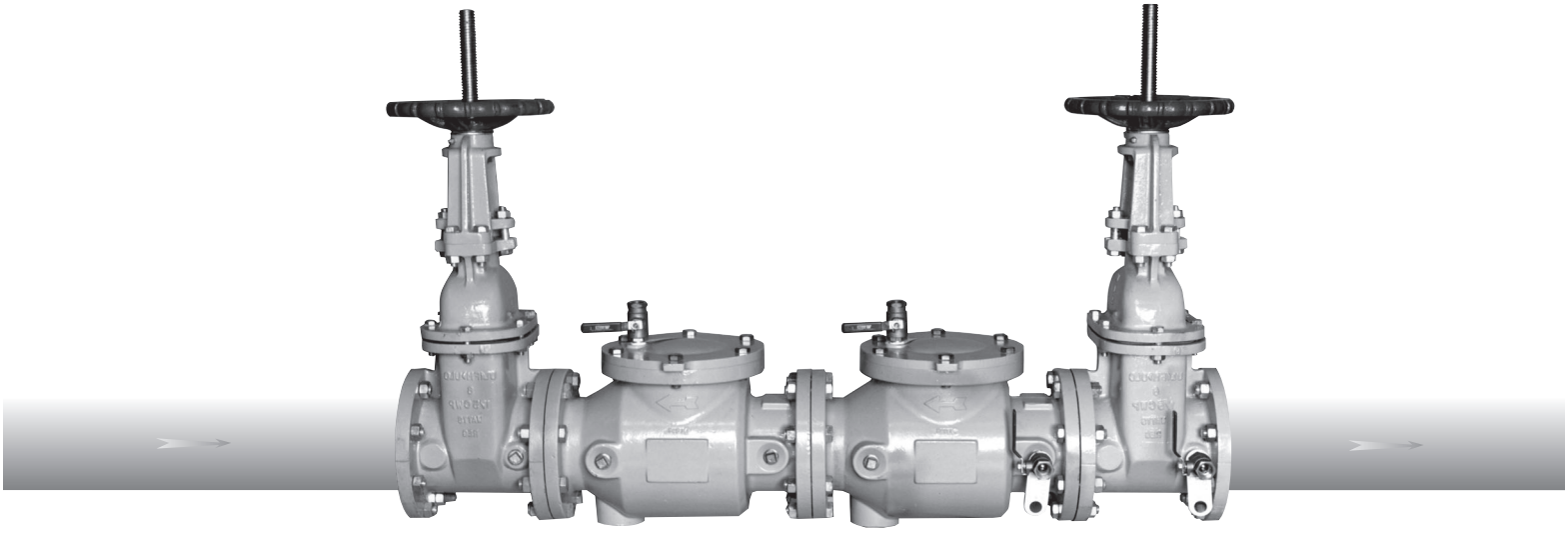
- Installation
- Service
- Repair Kits
- Maintenance

For field testing procedure, send for IS-TK-DP.

For troubleshooting guide, send for S-TSG.

For other repair kits and service parts, send for PL-RP-BPD.

For technical assistance, contact your local Watts representative. See back page.



Watts 770 shown
Toggle Linkage Patent #5176172

Attn. Installer: After installation please leave this instruction sheet for occupant's information.

Important: Inquire with governing authorities for local installation requirements.

Note: For Australia and New Zealand, line strainers should be installed between the upstream shutoff valve and the inlet of the backflow preventer.

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CALIFORNIA PROPOSITION 65 WARNING

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
(California law requires this warning to be given to customers in the State of California.)
For more information: www.watts.com/prop65

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Troubleshooting Guide

Backflow Preventers

Problem	Cause	Solution
A. Valve spits periodically from the vent		
	A.1 Fluctuating supply pressure.	A.1 Install a soft seated check valve immediately upstream of the device. (Watts 3/4" – 2" No. 601 bronze valve.)
	A.2 Fluctuating downstream pressure.	A.2 Install a soft seated check valve downstream of the device as close as possible to the shutoff valve. (Watts 3/4" – 2" No. 601 bronze valve.)
B. Valve drips continually from the vent		
	B.1 Fouled first check.	B.1 Flush valve. If flushing does not resolve problem, disassemble valve and clean or replace the first check.
	B.2 Damaged or fouled relief valve seat.	B.2 Clean or replace the relief valve seat.
	B.3 Relief valve piston O-ring not free to move due to pipe scale, dirt or build up of mineral deposits.	B.3 Clean, grease or replace the piston O-ring.
	B.4 Excessive back pressure, freezing, or water hammer has distorted the second check.	B.4 Eliminate source of excessive backpressure or water hammer in the system downstream of the device. Use Watts No. 601 to dampen out backpressure and No. 15 to eliminate water hammer. Replace defective second check assembly. In case of freezing; thaw, disassemble and inspect internal components. Replace as necessary.
	B.5 Electrolysis of relief valve seat or first check seats.	B.5 Replace relief valve seat or inlet cover. Install dielectric unions (Watts Series 3001 through 3006). Electrically ground the piping system and/or electrically isolate the device with plastic pipe immediately upstream and downstream of the device.
	B.6 Valve improperly reassembled.	B.6 If valve is disassembled during installation, caution must be exercised to install check springs in their proper location.
C. Valve exhibits high pressure drop.		
	C.1 Fouled strainer.	C.1 Clean strainer element or replace.
	C.2 Valve too small for flows encountered.	C.2 Install proper size device based upon flow requirements.
D. No water flows downstream of valve.		
	D.1 Valve installed backwards.	D.1 Install valve in accordance with flow direction arrow.
E. Valve does not test properly.		
	E.1 Follow manufacturer's test procedure.	E.1, E.2 Clean or replace gate valve with full port ball valves or resilient wedge shutoff valve.
	E.2 Leaky downstream gate valve.	
F. Valve quickly and repeatedly fouls following servicing.		
	F.1 Debris in pipe line is too fine to be trapped by strainer.	F.1 Install finer mesh strainer element in the strainer.
G. Winterization of backflow preventers.		G. Electric heat-tape wrap closely together around valve body. Build a small shelter around the valve with a large light bulb installed and left on at all times. If supply line is not used during the winter, removal of the complete body is the best. This would create an air gap to eliminate any possible backflow.

Basic Installation Instructions

Watts Series 770 Double Check Valve

Check with local authorities for installation requirements. Install valve in the line with arrow on valve body pointing in the direction of flow.

Valves should always be installed in an accessible location to facilitate testing and servicing.

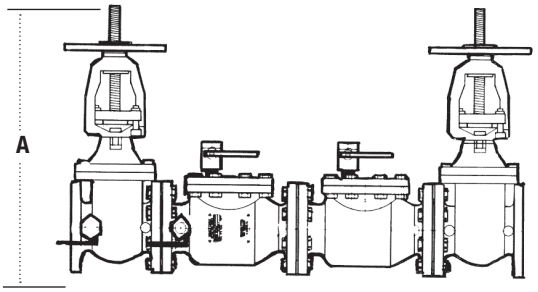
Pipe lines should be thoroughly flushed to remove foreign material before installing the unit. A strainer should be installed as shown, ahead of backflow preventers, to prevent discs from unnecessary fouling.

Caution: Do not install with strainer when backflow preventer is used on seldom used water lines which are called upon during emergencies, such as fire sprinkler line, etc.

It is important that Series 770 be tested periodicaly in compliance with local codes, but at least once a year or more often, depending upon system conditions.

Required Clearance for Opening OSYRW Shutoffs

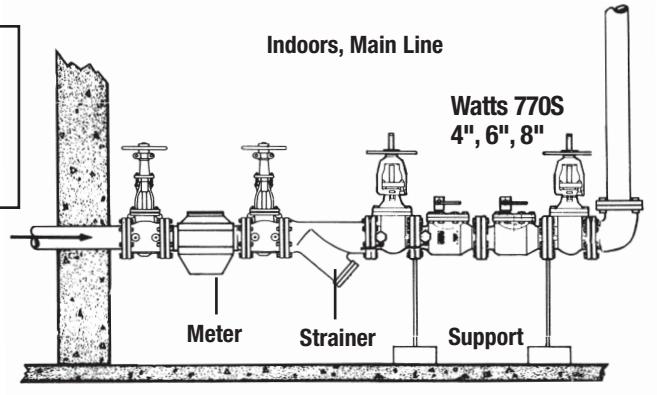
SIZE		A	
in.	mm	in.	mm
4	100	19	483
6	150	21	533
8	200	26	660



Installation - Indoors, Figure 1

For indoor installations, it is important that the assembly be easily accessible to facilitate testing and servicing.

Installation Note: The flange gasket bolts for the gate valves should be retightened during installation as the bolts may have loosened due to storage and shipping.

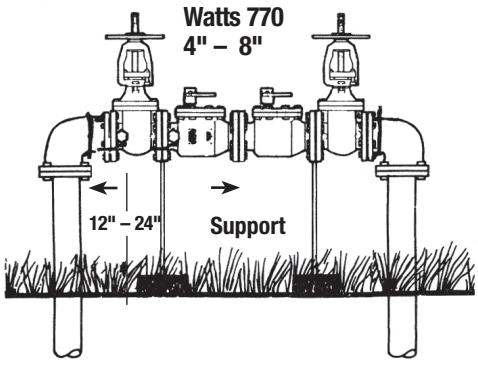


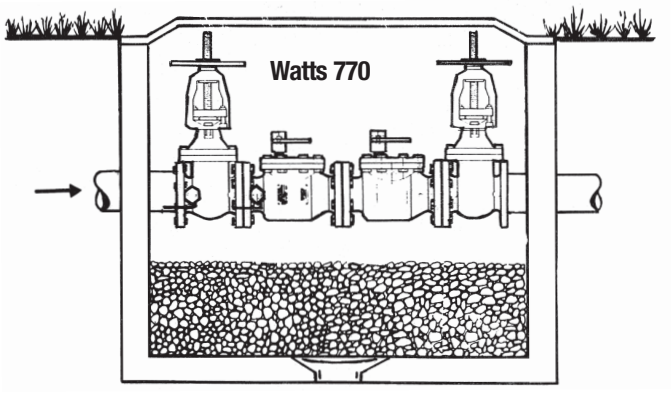
Installation - Outside Building Above Ground, Figure 2

In an area where freezing conditions do **not** occur, Series 770 can be installed outside of a building. The most satisfactory installation is above ground and should be installed in this manner whenever possible.

It is generally recommended that backflow preventers never be placed in pits unless absolutely necessary and then only when approved by local codes. In such cases, a modified pit installation is preferred.

Outside Building, Main Line

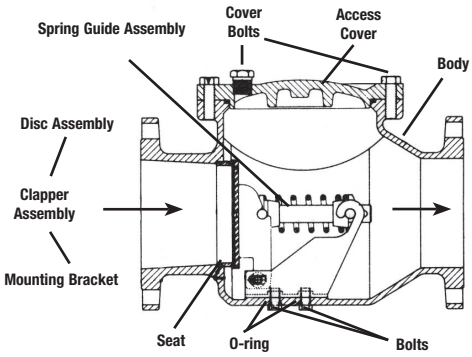




Installation - Parallel, Consult local codes for approval

Two or more Series 770 smaller size valves may be piped in parallel (where approved) to serve a larger supply pipe main. This type of installation is employed whenever it is vital to maintain a continuous supply of water where interruptions for testing and servicing would be unacceptable. It also has the advantage of providing increased capacity where needed beyond that provided by a single valve and permits testing or servicing of an individual valve without shutting down the complete line.

Check Valves 4", 6" and 8"



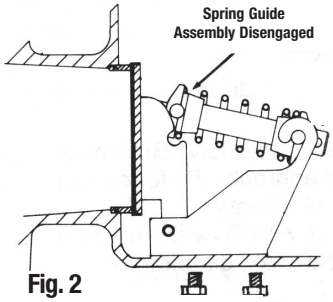


Fig. 2

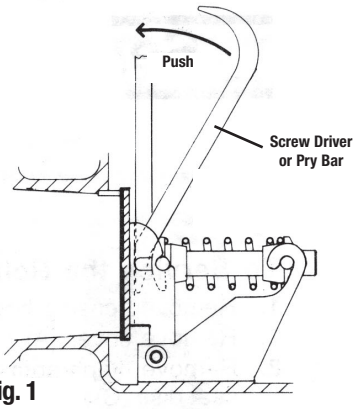


Fig. 1

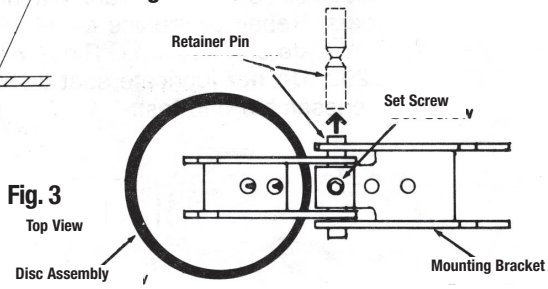


Fig. 3

Note: For seat removal tool information send for IS-SAT-07

Spring Guide Assembly Removal Instructions

1. The 770 features a captured spring in a center stem guided assembly. The spring guide assembly must be removed to clean the seat disc. As with any spring loaded mechanism, keep fingers away from pinch points. The spring guide assembly has a heavy spring pre-load and could cause injury. It is not necessary to disassemble the spring guide assembly.
2. Remove the access cover.
3. Apply leverage between the spring guide assembly and the disc assembly as shown in Fig. 1.
4. Compress the spring guide assembly slightly so it will pop free from the notches on the disc assembly and rest as shown in Fig. 2.
5. Completely remove the spring guide assembly by unhooking the two outlet end ears from the mounting bracket.

Repair Kits

Check Repair Kits - 770

ORDERING CODE	KIT NO.	SIZE in.	SIZE mm
0887070	RK 770 CK4	4	100
0887071	RK 770 CK4	6	150
0887072	RK 770 CK4	8	200

Kits consist of: Spring Assembly & Cover O-ring

Check Rubber Parts - 770

0887091	RK 770 RC4	4	100
0887092	RK 770 RC4	6	150
0887093	RK 770 RC4	8	200

Kits consist of: Cover O-ring, Bolt O-ring, Disc - for one check

Complete Repair Kits - 770

0887079	RK 770 T	4	100
0887080	RK 770 T	6	150
0887081	RK 770 T	8	200

Kits consist of: 2 Cover O-rings, 2 Bolt O-rings, 2 Discs, 2 Spring Assemblies - for both checks

Seat Kits - 770

0887085	RK 770S	4	100
0887086	RK 770S	6	150
0887087	RK 770S	8	200

Kits consist of: Seat, Seat O-ring-for one check

Disc Assembly Removal Instructions

1. Remove the access cover.
2. Remove the spring guide assembly.
3. Unfasten the two bolts on the bottom of the body opposite the access cover.
4. Reach in through the access opening and remove the entire clapper assembly. Opening the clapper assembly and laying it flat on a table (refer to Fig. 3).
5. With an allen wrench, remove the set-screw which secures the spacer to the retainer pin on the clapper assembly.
6. Slide out the retainer pin to separate the disc assembly from the mounting bracket.

Important: Each repair kit fits (1) one check module. Only order two of the same kit for complete service.

Check Repair Kits - 770DCDA

ORDERING CODE	KIT NO.	SIZE in.	SIZE mm
0887073	RK 770DCDA CK1	4	100
0887074	RK 770DCDA CK1	6	150
0887075	RK 770DCDA CK1	8	200
0887076	RK 770DCDA CK2	4	100
0887077	RK 770DCDA CK2	6	150
0887078	RK 770DCDA CK2	8	200

Kits consist of: Spring Assembly & Cover O-ring

Check Rubber Parts - 770DCDA

0887082	RK 770 DCDA RC4	4	100
0887083	RK 770 DCDA RC4	6	150
0887084	RK 770 DCDA RC4	8	200

Kits consist of: Cover O-ring, Bolt O-ring, Disc - for one check

Complete Repair Kit - 770DCDA

0887088	RK 770 DCDA T	4	100
0887089	RK 770 DCDA T	6	150
0887090	RK 770 DCDA T	8	200

Kits consist of: 2 Cover O-rings, 2 Bolt O-rings, 2 Discs, 2 Spring Assemblies - for both checks

Seat Kits - 770DCDA

0887094	RK 770DCDA S	4	100
0887095	RK 770DCDA S	6	150
0887096	RK 770DCDA S	8	200

Kits consist of: Seat, Seat O-ring - for one check

Test Procedure for Double Check Valve Assemblies

The following Test Procedure is one of several that is recognized throughout the United States for verification of the functioning of Backflow preventers.

The following procedure is not a specific recommendation. The Watts series of test kits are capable of performing any of the recognized Backflow test procedures.

A. Flush all test cocks.

B. Turn tester on (before connecting hoses). Tester must read all zeroes. Close VA and VB.

Test No. 1 - Test No. 1 Check Valve

1. Install highside hose between TC #2 and tester connection A.
2. Install lowside hose between TC #3 and tester connection B.
3. Open TC #2, then VA, bleed hose, then close VA.
4. Open TC #3, then VB, bleed hose, then close VB.
5. Install a bypass hose between VB and TC #1. Open TC #1 and bleed by loosening hose connection at VB. Tighten hose connection, fully open VB.
   Push - Print Head (wait) then Push - Start Test
6. Close shutoff valve #2, then #1.
7. Slowly open VA and lower highside pressure about -2 psid below the lowside pressure (differential reading about -2.0 psid). Close VA. If reading is maintained, record as “tight”. If reading returns to 0 and the pressure A increases to pressure B, the check is recorded as leaking. If the reading returns to + psid, No. 2 shutoff valve is leaking excessively and must be replaced to test the valve.
8. Close all test cocks, remove hoses from TC #2 and TC #3 and TC #1. Reopen shutoff valve #1. Proceed to Test No. 2.
   Push - Stop Test.

Test No. 2 - Test No. 2 Check Valve

1. Install highside hose between TC #3 and tester connection A.
2. Install lowside hose between TC #4 and tester connection B.
3. Open TC #3, then VA, bleed hose, then close VA.
4. Open TC #4, then VB, bleed hose, then close VB.
5. Install a bypass hose between VB and TC #1. Open TC #1 and bleed by loosening hose connection at VB. Tighten hose connection, fully open VB.
   Push - Start Test.
6. Close shutoff valve #1.
7. Slowly open VA and lower highside pressure about -2 psid below the lowside pressure (differential reading about -2.0 psid). Close VA. If reading is maintained, record as “tight”. If reading returns to 0 and the pressure A increases to pressure B, the check is recorded as leaking. If the reading returns to + psid, No. 2 shutoff valve is leaking excessively and must be replaced to test the Valve.
   Push - Stop Test.

07 Seat Removal Tool

for Watts Series:

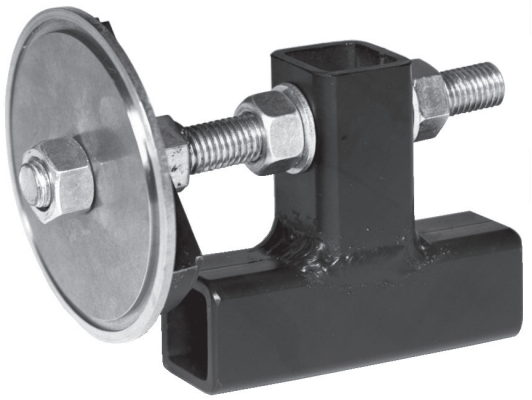
07F

770/770DCDA

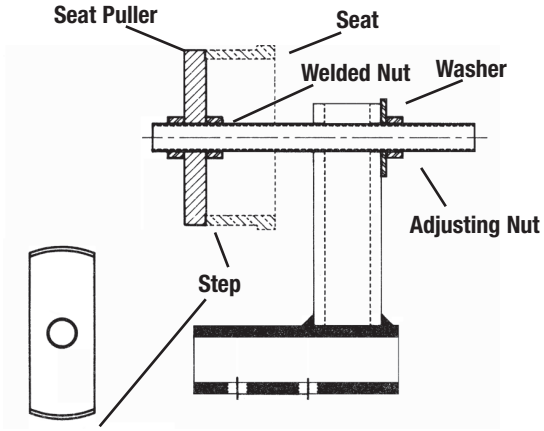
772/772DCDA

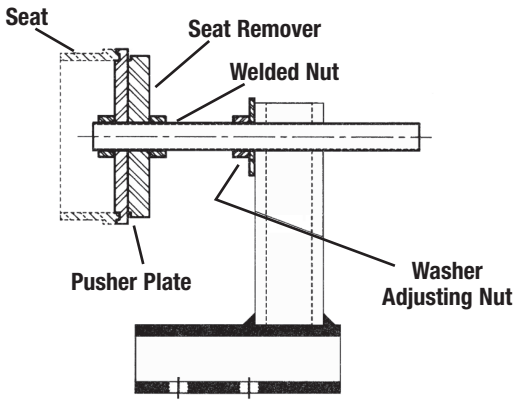
990/990RPDA

992/992RPDA



PART NO.	ORDERING CODE	SIZE	
		in.	mm
SAT 07J153	0834030	4	100
SAT 07K153	0834031	6	150
SAT 07L153	0834032	8	200





Seat Removal Instructions

1. Assemble removal tool as shown with adjusting nut opposite puller side of mounting bracket.
2. Place assembled removal tool into valve through top access port.
3. Bolt into place with two (2) bolts.
4. Place seat puller behind seat in valve body as shown in diagram.
5. Center tool inside seat so that the steps on the puller are on the I.D. of the seat. Take up slack on nut to hold into place.
6. To remove seat, turn adjusting nut in direction of pulling out seat. The seat may stick at first but after a few turns you will feel the seat move, keep turning nut until seat falls out of the body bore.

Annual inspection of all water system safety and control valves is required as necessary. Regular inspection, testing and cleaning assures maximum life and proper product function.

Seat Installation Instructions

1. Assemble installation tool as shown with adjusting nut on seat side of mounting bracket.
2. Place assembled installation tool into valve through top access port.
3. Bolt into place with two (2) bolts.
4. Place new seat onto installation disc as shown.
5. Center seat into bore as you turn adjusting nut pushing seat into bore.
6. Turn adjusting nut until you have pushed seat into bore about $^{3}/_{4}$" (19mm).
7. **Note:** Seat ridge will not bottom out on body casting; there will be about A.06 between body casting and seat ridge.
8. Back off on adjusting nut and remove bolt from bottom of tool and remove tool from check valve.
9. Reassemble check valve. **Note:** If the installation or removal of seat is not properly done, seat may get damaged.

NOTES

For additional information, visit our web site at: www.watts.com

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Backflow Prevention Products

ISO 9001-2000 CERTIFIED

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Canada: 5435 North Service Rd., Burlington, ONT. L7L 5H7; www.wattscanada.ca

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