Gauge Glass Cut-offs

No. N89S Single Switch Assembly (See Page 4)
(Replaces former No. 89S and No. 89A)

No. N89D "DUAL" (two) Switch Assembly (See Page 3)
(Replaces former No. 89D and No. DT89A)

Instructions for Installing

Maximum Steam Pressure 15 lbs.

No. N89S, N89D - Low water cut-off.

Note: Install carefully and line up so that the top of switch box is reasonably level.

1. Remove gauge glass and cocks from boiler.
2. Install the ½" tee, with long and short nipples, on the float chamber by inserting the short nipple in the float chamber tapping, in the end opposite the switch, and screwing up tight with the long nipple pointing in the correct direction, depending on the location of the boiler. Fig. 1 and 2.
3. Insert long nipple into lower gauge glass tapping in boiler. Swing the entire float chamber until the nipple is made up tight. The cut-off must be level. Fig. 3.
4. Screw the nipple which is in the tee carrying the tubing connector into the upper gauge glass tipping and pull up tight. Install compression coupling in top float chamber tapping. Fig. 4.
5. Hold tube bend in position, Fig. 5, and mark tube on level with top of hex on compression coupling. Cut off tube at this mark.
6. Slide ring and nut over end of tube. Slide end of tube into compression coupling in float chamber. Tighten both couplings.
7. Install drain valve in bottom float chamber tapping. Fig. 6.
8. Re-install gauge cocks in the end of the tees and replace the gauge glass. Fig 6.

NOTE: Open the drain valve at least once every month or more often during boiler operation to flush out sediment from the float chamber. This must be done to insure FULL boiler PROTECTION.

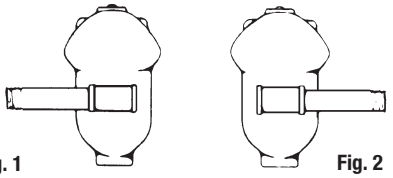


Fig. 1 Fig. 2

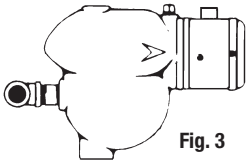


Fig. 3

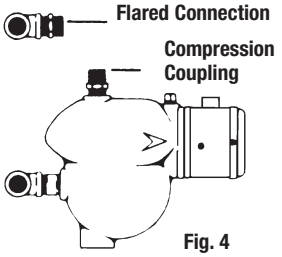


Fig. 4

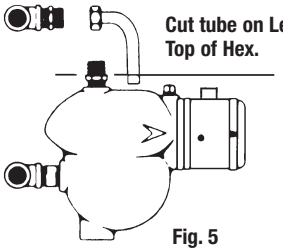


Fig. 5

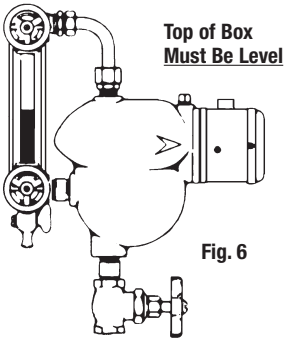


Fig. 6

Standard switch entirely suitable for millivolt service on self-energized control circuits of gas fired heating installations.

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

WATTS®

Built-in Cut-offs

No. N93S, N193S, N101S with Single Switch Assembly. (See Page 4)

No. N93D, N193, N101D with "DUAL" (Two) Switch Assembly. (See Page 3)

This line of cut-offs was designed for boilers where a 2½" pipe tapping is provided for the low water cut-off and where space is limited by the boiler jacket. For boilers that do not have this tapping, use WATTS No. N89S, N89D which is made for gauge glass connection.

Special Notice

Before leaving the job, it is recommended that the installation of the cut-off be checked under actual working conditions; this will reveal any installation irregularities. **To check, turn on switch to burner and if water in boiler is at or above the water line, the cut-off will allow the burner to start. Now lower the water line by draining off water from the boiler; if the cut-off is wired and installed correctly, the burner will shut off when the water level drops to approximately ⅜" below the normal water line.**

Float chamber should be flushed at least once every month or more often to remove any accumulated sediment by opening drain valve where installed or removing drain plug.

Instructions for Installing

No. N93S, N193S, N93D, N193D

Attach cut-off to the boiler by screwing into the 2½" tapping provided, make up tight with the "TOP" marking uppermost and the adjacent flat edge of the square flange is exactly level. Before installing No. N93S, N93D, be sure that there is a minimum distance of 2¼" between the inside of the boiler shell and any wall or other protrusion inside the boiler. (See Figure 1.) Maximum Steam Pressure 15 lbs.

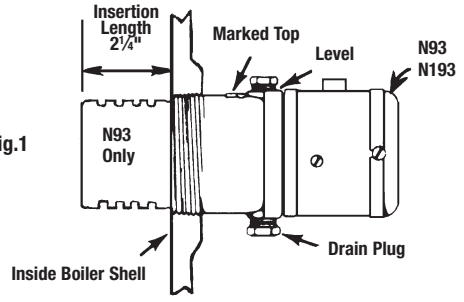


Fig.1

No. N101S, N101D

Attach cut-off to boiler as in Fig. 2 using a 2½" close or space nipple to suit installation requirements. Make up tight with float chamber levelled in position shown. Attach drain valve. Maximum Steam Pressure 15 lbs.

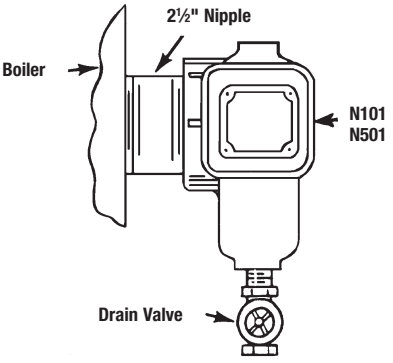


Fig. 2

No. N50S, N50D, N501S, N501D

Watts Series N50 and N501 are designed with a heavier float and bellows construction for protection of hot water space heating boilers against emergency low water conditions. Float chamber has 1" female top and bottom connections, for equalizing pipe connection. (See Figure 3). Maximum Boiler Pressure 50 lbs. @ 250°F.

For installation of N501, see Figure 2.

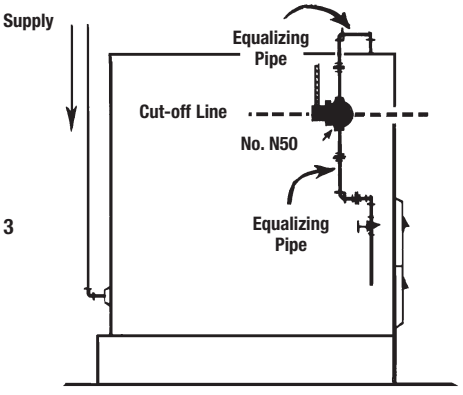
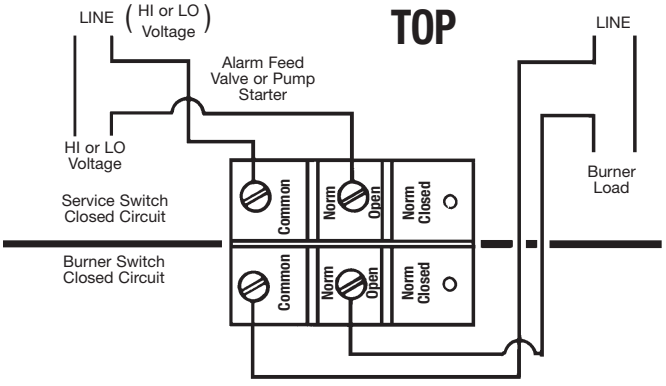


Fig. 3

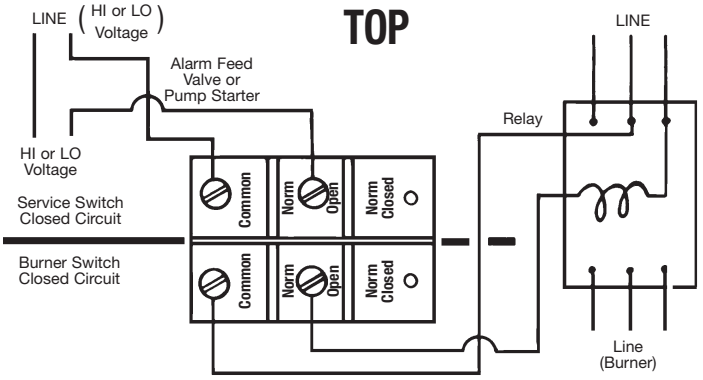
Wiring Diagrams For
Low Water Cut-offs
No. N89D, N101D, N93D, N193D, N50D, N501D
with "Dual" (Two) Switch Assembly

For independent line voltage burner service and for low (or high) voltage alarm, feed valve or pump starter service. Alarm, feed valve or pump starter switch actuates just before the burner switch cuts the firing.

When Used For BURNER SWITCH and ACCESSORY CIRCUITS



When Used For PILOT DUTY



For loads in excess of ratings or when a 3-phase burner motor is used, use either switch as pilot to operate a relay or magnetic starter as shown under "Pilot Duty" above for burner switch.

Incoming leads must be suitable for temperature rise of 90°C (194°F).

	Motor Duty		
AC	½ H.P.	1 Phase	110-120 volts
	1 H.P.	1 Phase	220-240 volts
	Pilot Duty		
AC	15 Amps.		120, 240 volts
DC	½ Amps.		120 volts

	Motor Duty		
AC	½ H.P.	1 Phase	100-120 volts
	1 H.P.	1 Phase	220-240 volts
	Pilot Duty		
AC	472 V.A.		120 volts
	768 V.A.		240 volts
	Alarm Circuit		
AC	15 Amps.		120, 240 volts
DC	½ Amps.		120 volts

WARNING: DO NOT CONNECT TO AN ELECTRICAL LOAD IN EXCESS OF THE RATED CAPACITY OF THE SWITCH.

Switch cuts off burner or stoker when water line drops approximately ⅜" below center line. Switch alarm circuit when used is closed just before burner cuts off.

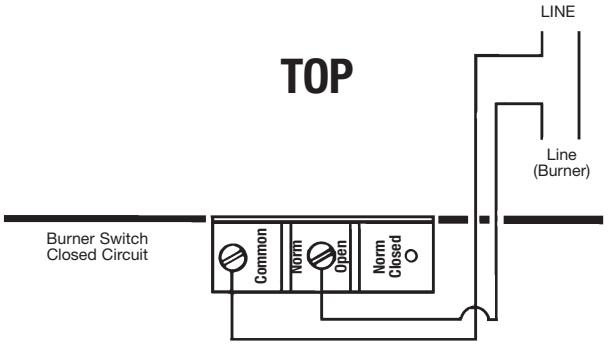
CAUTION: "This switch mechanism is factory set for optimum performance, alteration may cause the valve to malfunction and will invalidate the warranty.

ALWAYS CHECK THE CUT-OFF LEVEL BEFORE LEAVING THE JOB.

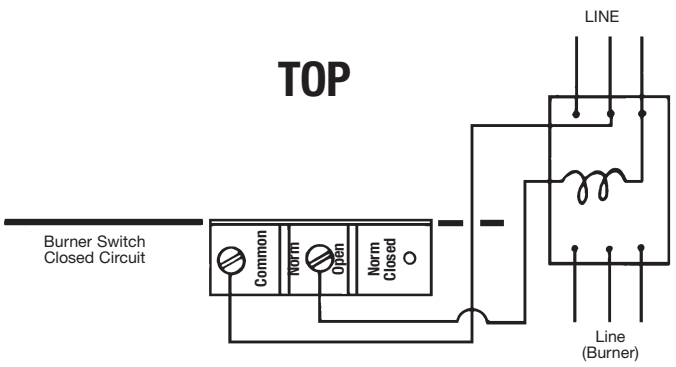
Wiring Diagrams

No. N89S, N101S, N93S, N193S, N50S, N501S with Single Switch Assembly For Burner Service with Single Pole, Single Throw Switch

When Used For BURNER SWITCH



When Used For PILOT DUTY



For loads in excess of ratings or when a 3-phase burner motor is used, use switch as pilot to operate a relay or magnetic starter as shown under "Pilot Duty" above for burner switch. Incoming leads must be suitable for a temperature rise of 90°C (194°F).

		Motor Duty	
AC	½ H.P.	1 Phase	110-120 volts
	1 H.P.	1 Phase	220-240 volts

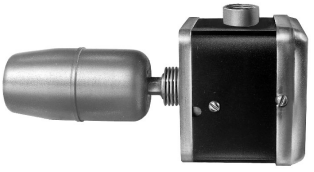
		Motor Duty	
AC	½ H.P.	1 Phase	110-120 volts
	1 H.P.	1 Phase	220-240 volts
		Pilot Duty	
AC	472 V.A.		120 volts
	768 V.A.		240 volts

Float and Switch Assemblies Interchangeable in Low Water Cut-offs

Watts float and switch assemblies are furnished to provide a complete new low water cut-off, less the float chamber, and are recommended for field servicing of such units. They can be quickly installed without changing existing piping and eliminate the possibility of disturbing factory adjustments. The complete one piece unit not only facilitates installation but also assures the user of receiving latest, up to date construction.

SAN89D - Complete assembly facilitates maintenance and inventory, by being interchangeable in all previous Series 89, 101, 93 and 193. Maximum Steam Pressure 15 lbs.

SAN89S - Same as above, but furnished with single switch assembly.

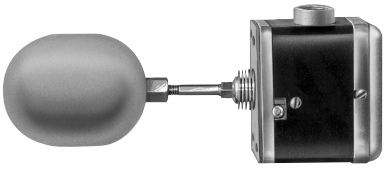


SAN89D or SAN89S

SAN50D - Complete assembly facilitates servicing by being interchangeable in all previous Series 50 and 501. Maximum Boiler Pressure 50 lbs.

SAN50S - Same as above, but furnished with single switch assembly. Standardly furnished with "Dual" switch assembly unless single switch assembly type number is specified.

When required for manual reset models, specify SAN50SM.



SAN50D or SAN50S

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