Safgard™

724 Series

Low Water Cut-Off Feeder Combination

for Steam Boilers

24 VAC Operating Voltage

- No moving parts in water. No floats to hang-up or foul.
- Unique two probe design. Bouncing water line won't cause on-off burner cycling or water valve slamming noise.
- Easy installation. Quick hook-up fittings adapt control to all 8" to 14" sight glasses.
- Simple fast wiring. Can be used with any standard automatic water feeder.

⚠ WARNING

⚠ Read and understand these instructions completely before installing or servicing this control.

⚠ Save these instructions for future reference.

⚠ Disconnect power supply before beginning installation to prevent electrical shock or equipment damage.

⚠ Only qualified personnel may install or service the control in accordance with local codes and ordinances.

⚠ This low water cut-off must be installed in series with all other limit and operating controls installed on the boiler. After installation, check for proper operation of all of the limit and operating controls, before leaving the site.

⚠ We recommend that secondary (redundant) Low Water Cut-Off controls be installed on all steam boilers with heat input greater than 300,000 BTU/hour or operating above 15 psi of steam pressure. At least two controls should be connected in series with the burner control circuit to provide safety redundancy protection should the boiler experience a low water condition. Moreover, at each annual outage, the low water cut-offs should be dismantled, inspected, cleaned, and checked for proper performance.

⚠ To prevent serious personal injury from steam and hot water make sure there is a discharge line from the blow down valve to a proper place of disposal.

⚠ To prevent a fire, do not use this low water cut-off to switch currents over 7.4A, 1/3 Hp at 120 VAC or 3.7A, 1/3 Hp at 240 VAC, unless a starter or relay is used in conjunction with it.

⚠ Previous controls should never be installed on a new system. Always install new controls on a new boiler or system. Failure to follow this warning could cause property damage, personal injury or death.

CAUTION A more frequent replacement interval may be necessary based on the condition of the unit at time of inspection. Hydrolevel's warranty is two (2) years from the date of manufacture.

HYDROLEVEL COMPANY

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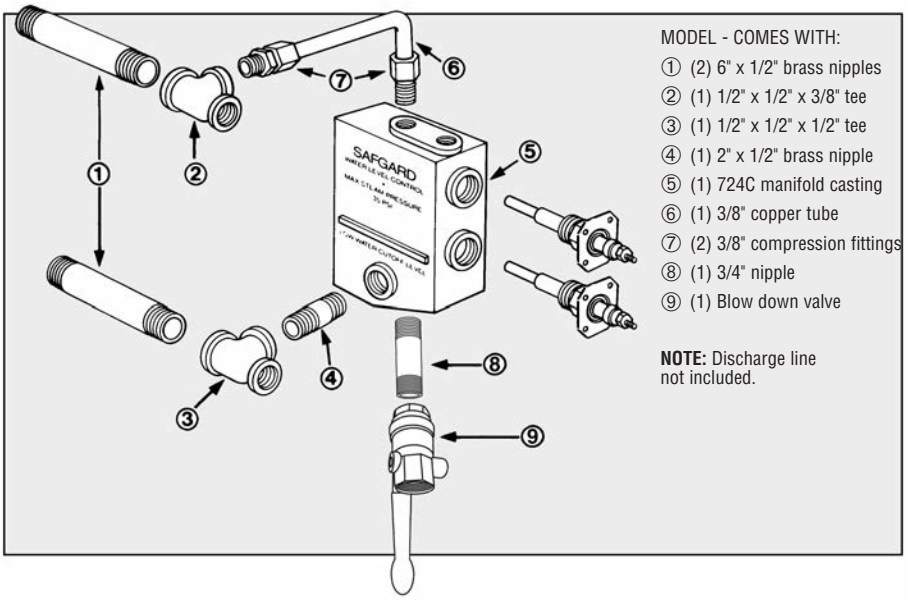
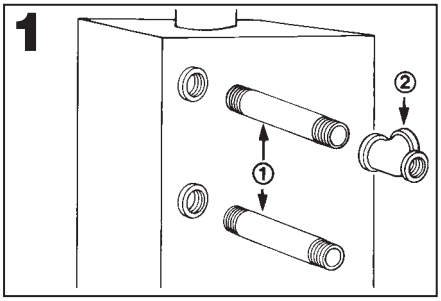
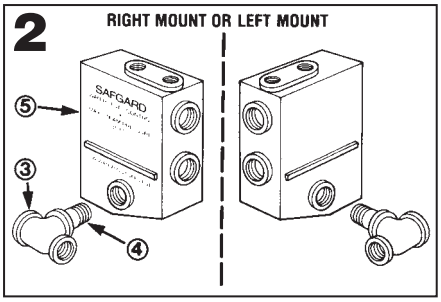
HOW TO INSTALL

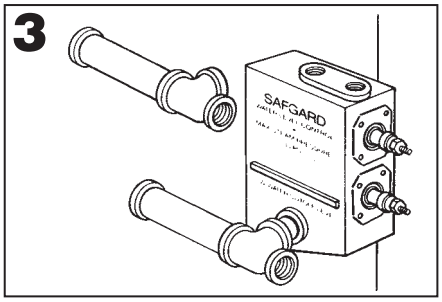




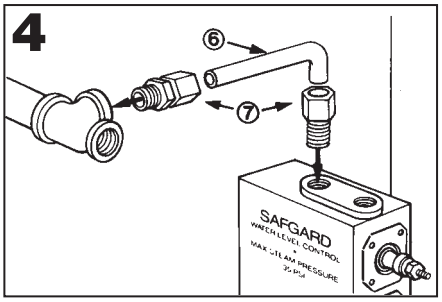
Remove gauge glass assembly and nipples replacing nipples with two 6" brass nipples provided ①. Install 1/2" x 1/2" x 3/8" tee ② on top nipple.



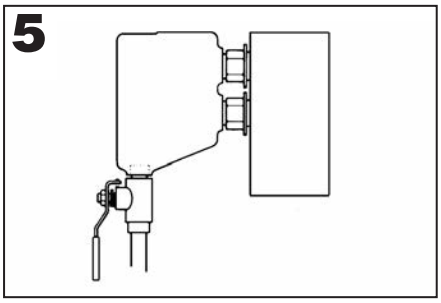
Install 1/2" x 2" brass nipple ④ and 1/2" x 1/2" x 1/2" tee ③ to 1/2" threaded hole in casting ⑤. Note: Casting is designed for either left or right mounting on gauge glass. Be sure to plug hole on opposite side.



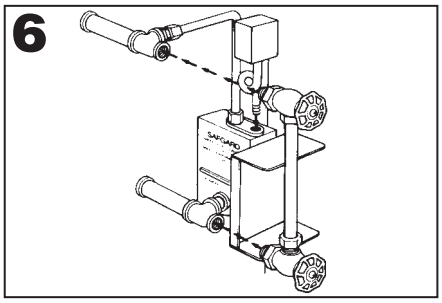
Thread tee attached to casting into bottom 6" nipple. Tighten until casting is vertical.



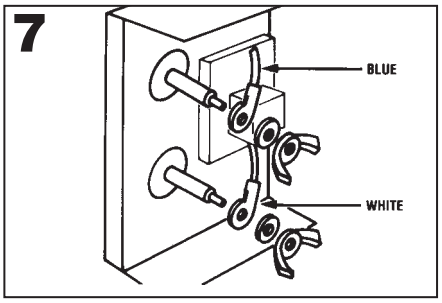
Install compression fittings ⑦ into casting and top tee. Size copper tubing ⑥ and tighten between the two compression fittings.



Attach control to probes using No. 8-32 self tapping screws provided. Install nipple and blow down valve (with discharge line) in bottom 3/4" tapped hole.



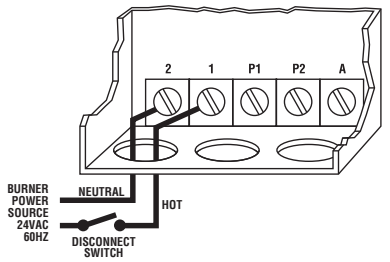
Reattach gauge glass cocks and gauge glass into end of 1/2" tees. Pressure-trol can be threaded into 1/8" threaded hole on top of casting. If pressure-trol is not used, plug 1/8" hole on top of casting.



Attach blue probe lead wire to upper probe and white probe lead wire to bottom probe with wing nuts and lock washers provided.

WIRING METHOD A: SAME POWER SOURCE FOR CONTROL AND BURNER CIRCUIT.

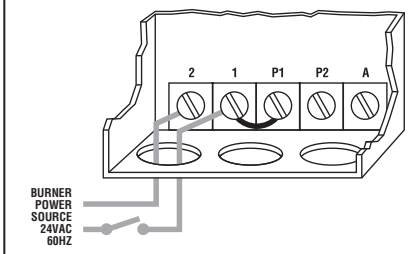
A1



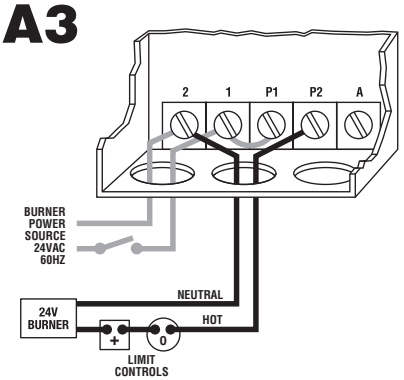
A1 Connect input voltage (24 VAC, 60HZ) to terminals 2 and 1. 24 VAC, 60HZ must be supplied to terminals 2 and 1 for internal operation of the control.

Install a jumper between terminal 1 and terminal P1. Power from terminal P1 is supplied to terminal P2 when water reaches the upper probe. Power to terminal P2 is removed when water falls below the bottom probe. **A2**

A2



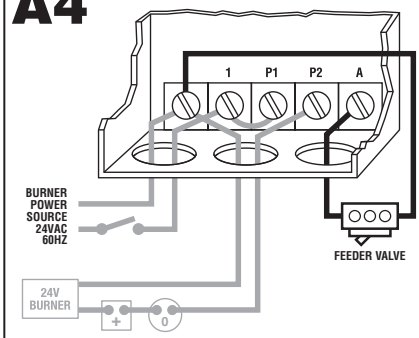
A3



A3 Connect terminal 2 to burner circuit neutral. Connect terminal P2 to burner circuit in series with other limit controls. Consult boiler manufacturer's instructions for proper terminal connections. NOTE: Control is wired in series with and before other limits.

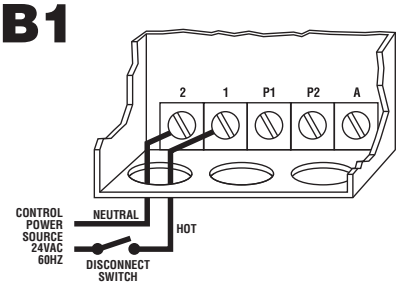
Feeder Connection: Connect feeder common to terminal 2. Connect feeder hot to terminal A. Whenever water falls below the lower probe, power is supplied to the feeder terminal A. When water reaches the upper probe, power to the feeder is removed. **A4**

A4



WIRING METHOD B: SEPARATE POWER SOURCE FOR CONTROL AND BURNER CIRCUIT.

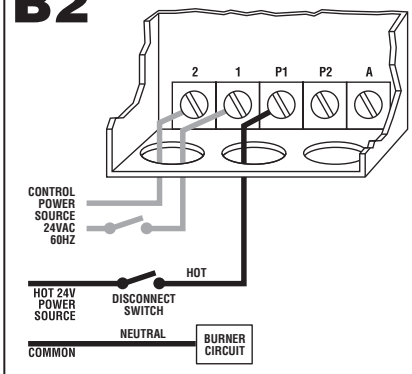
B1



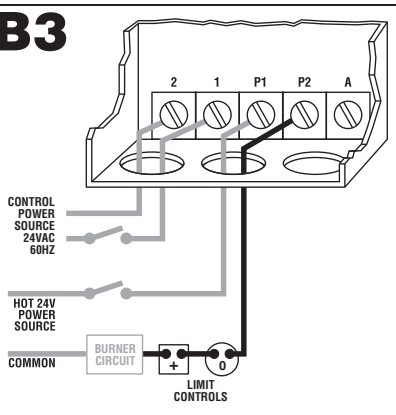
B1 Connect input voltage (24 VAC, 60HZ) to terminals 2 and 1. 24 VAC, 60HZ must be supplied to terminals 2 and 1 for internal operation of the control.

Connect hot lead from burner control circuit to terminal P1. This terminal supplies power to terminal P2 in normal operating conditions when water is at the probe. Connect neutral to burner circuit. NOTE: Consult boiler manufacturer's instructions for proper terminal connections. **B2**

B2



B3

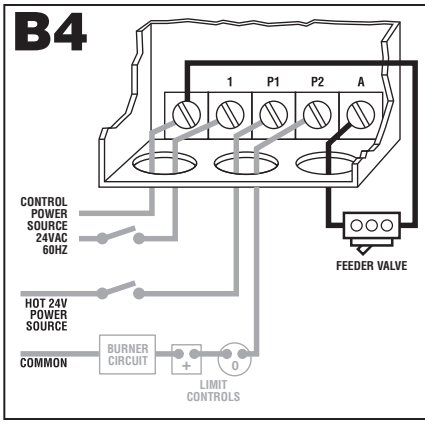


B3 Connect terminal P2 to burner circuit in series with other limit controls. Consult boiler manufacturer's instructions for proper terminal connections. NOTE: Control is wired in series with and before other limits.

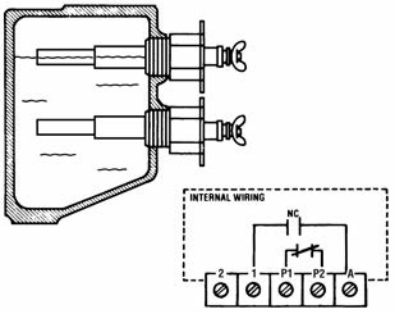
Feeder Connection: Connect feeder common to terminal 2. Connect feeder hot to terminal A. Whenever water falls below the lower probe, power is supplied to the feeder terminal A. When water reaches the upper probe, power to the feeder is removed. **B4**

NOTE: All schematic diagrams show all systems in the off position. No power applied.

B4



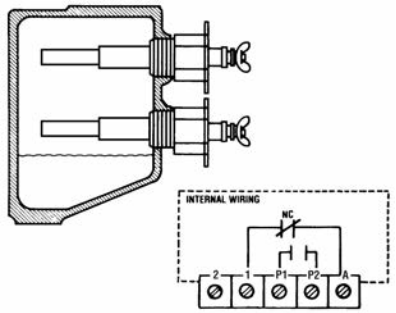
PRINCIPLE OF OPERATION



Hydrolevel controls are electronically operated. Water is used as an electrical conductor to complete a circuit from the probe to the control unit. The control unit provides switching contacts to operate the burner circuit and optional water feeder.

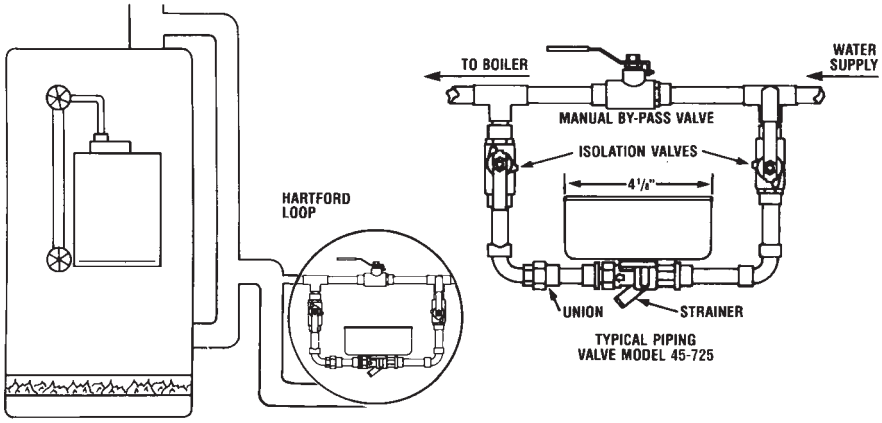
The 724 Series low water cut-off is designed to maintain a safe operating water level in the boiler. When water is in contact with the upper probe, the control enables the burner to fire (switch contacts P1 - P2 are closed). When the water level falls below the lower probe, the control will de-energize the burner circuit. The control will not re-energize the burner until the water level is restored to the upper probe level.

The 724WF includes a feed valve designed to automatically restore the water level in the event of a low water condition. When water falls below the lower probe, the 724 will energize the feed valve (switch contact 1 - A make). When the boiler water level is restored to the upper probe, the 724 will de-energize the feed valve and restore burner operation. The 724CF does not include a feed valve, but does provide contacts for operation of a steam boiler water feeder.



INSTALLATION & OPERATION OF FEEDER

A feed valve is supplied standard with control model 724WF. It is recommended that a shut-off valve and union be installed on either side of the water feed valve and a by-pass valve and piping be installed to permit removal of the water feed valve should service be required. During normal operation, by-pass valve should be closed and isolation valves should remain open.



Feed Valve Maintenance (WF Models Only)

WARNING **Water Damage Potential:** Failure to maintain the feed valve can result in excess mineral deposits collecting in the valve. If left unchecked, these deposits can impede valve operation with the potential for overfilling the heating system and allowing water to escape radiators into the living space.

The following maintenance must be performed by a qualified service technician:

Annually

- Remove and clean the strainer located on the valve body. **IMPORTANT:** If the strainer shows signs of mineral deposits collecting on the screen, install a Hydrolevel Feed Valve Service Kit (Part No. 45-725).

Every 3 Years

Install Hydrolevel Feed Valve Service Kit (Part No. 45-345). **Note:** If hardened calcium deposits have formed on the brass surface inside the valve, replace the valve (Part no. 45-725).

12 Years

Replace the Feed Valve Assembly after 12 years of service.

OPERATING INSTRUCTIONS

NOTE: Hydrolevel recommends that the boiler manufacturer's procedures for skimming the boiler be performed prior to placing the control into operation.

1 After installation, raise the boiler water level until water is in contact with the upper probe. Turn on power and set the thermostat to call for heat. The burner should fire immediately.

2 Using the boiler drain, slowly lower the water level to a point below the lower probe. The burner should shut down immediately upon a low water condition.
NOTE: The water should not be lowered beyond a visible point on the gauge glass.

IMPORTANT: If the burner does not shut down in a low water condition, turn off power immediately and refer to troubleshooting instructions below.

TROUBLESHOOTING

1 If the burner does not shut down upon water falling below the lower probe: Remove power to the burner and check installation. Check wiring and make sure that burner is connected to the fourth terminal from left on terminal (P2). If wiring is correct, check to make sure the probes are not falsely grounded. Voltage between the probes and chassis ground should be 120-140 VAC with water beneath both probes. A lower reading may indicate a shorted probe. Remove probes and check for contamination.

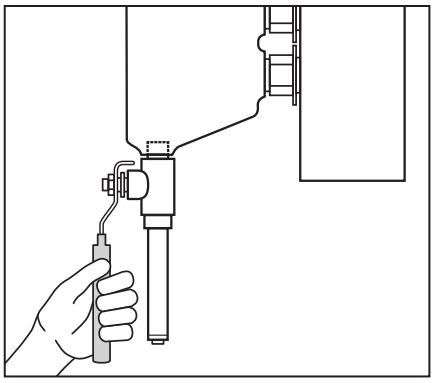
2 If the burner will not fire with water at the top probe: With a voltmeter and power applied at terminals 2 and 1: Check the voltage between the upper probe and chassis ground. Reading should be 0-10 VAC with water at the upper probe. A higher reading may be the result of poorly conductive water or probe contamination. Remove probes and check for contamination. If the burner will still not fire after cleaning probes, contact factory for assistance.

SERVICE / MAINTENANCE

WARNING **REGULAR MAINTENANCE REQUIRED.** Failure to properly maintain the control can lead to severe damage to the boiler, other property, personal injury, or death.

WARNING To prevent serious personal injury from steam and hot water, make sure there is a discharge line from the blowdown valve to a proper place of disposal. Failure to follow this caution could result in personal injury.

The 724 Series Control requires regular maintenance to ensure continued, safe operation. During normal boiler function, sediment may accumulate in the low water cut-off's probe housing. If left unchecked, this sediment can build up, trap water in the probe housing, and prevent the control from detecting a low water condition in the boiler.



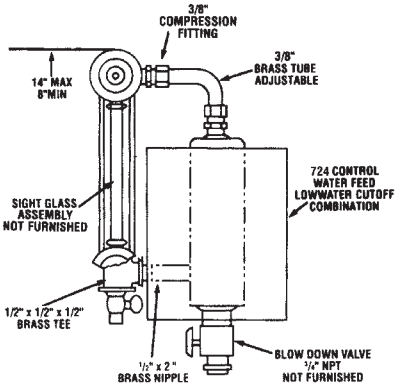
A regular blow down of the control is required for proper operation.

To flush the sediment from the chamber, the control must be blown down throughout the heating season in accordance with the following schedule:

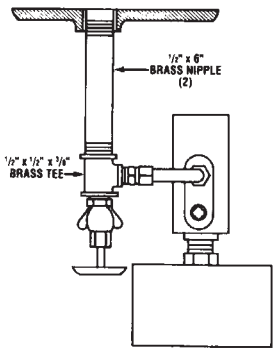
- Daily for first week following control installation
- Prior to heating season startup in the fall
- Once per week during the heating season

Instructions: Confirm water is visible in the gauge glass. If not visible, shut the burner off, allow the boiler to fully cool, then add water until visible in the gauge glass. Once water is visible, bring your boiler back up to temperature. With the boiler running, place a heat resistant pail directly beneath the control casting blow down valve. Open the valve and allow the sediment and water to drain into the pail. Continue to drain the water until it runs clean (One to two gallons is generally sufficient). Close the valve when completed. Replenish the water in the boiler if needed.

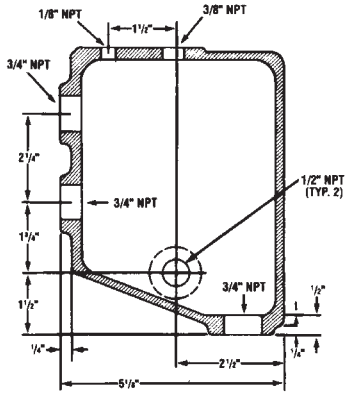
DIMENSIONS



FRONT VIEW



TOP VIEW



CASTING

SPECIFICATIONS

MAXIMUM PRESSURE:	15 PSI
INPUT VOLTAGE:	24 VAC, 60 HZ
SWITCH RATINGS:	5.8 FLA, 34.8 LRA
SWITCH CONTACTS:	SPDT
ALARM CIRCUIT:	50 VA @ 24VAC Pilot Duty

UL LISTED

OPTIONS

The VXT water feeder (available separately) can be used with Hydrolevel or other low water cut-offs to automatically replenish boiler water in the event of a low water condition. The VXT offers programmable feed amount and feed delay settings. These can easily be set to ensure the proper feed amount and to provide adequate time for condensate to return to the boiler before starting a feed cycle. The VXT's digital feed counter tracks the amount of water added to the boiler exposing system leaks, which can significantly shorten the life of a cast iron boiler. Additional features including a manual feed button underfeed and flood protection, make the VXT an ideal choice for safety and convenience.

⚠ WARNING **Frozen pipes/water damage.** Central heating systems are prone to shut down as a result of power or fuel outages, safety related fault conditions or equipment failure. Installation of freeze protection monitoring or other precautions is recommended for unattended dwellings in climates subject to sustained below-freezing temperatures.

LIMITED MANUFACTURER'S WARRANTY

We warrant products manufactured by Hydrolevel Company to be free from defects in material and workmanship for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first. In the event of any claim under this warranty or otherwise with respect to our products which is made within such period, we will, at our option, repair or replace such products or refund the purchase price paid to us by you for such products. In no event shall Hydrolevel Company be liable for any other loss or damage, whether direct, indirect, incidental or consequential. This warranty is your EXCLUSIVE remedy and shall be IN PLACE OF any other warranty or guarantee, express or implied, including, without limitation, any warranty of MERCHANTABILITY or fitness for a particular purpose. This warranty may not be assigned or transferred and any unauthorized transfer or assignment thereof shall be void and of no force or effect.

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