LOW WATER CUT-OFF CONTROLS FOR OIL BURNERS

1. GENERAL

1.01 This section describes a type of control recommended to be used to stop oil burners of steam boilers before the water in the boiler drops to a dangerous level and prevents further operation of the burner until the water in the boiler is returned to a safe level. This form of control is commonly known as a low water cut-off.

1.02 This section replaces Section H34.225, Issue 1, February 1945, Low Water Shut-off Controls. It is issued to place this type of control for oil burner in a separate section. It also includes recommendations for method of installation not mentioned in the replaced section. Low water cut-off controls for gas burners and mechanical stokers will be covered in separate sections.

1.03 This section applies to both new and existing oil burner installations in steam boilers. The use of an approved automatic device for shutting down an oil burner associated with a steam boiler if low water occurs in the boiler is recommended by the National Board of Fire Underwriters in Pamphlet No. 31, Paragraph 6, Section 20.

1.04 Where local and/or state codes, rules, and regulations call for higher requirements than these indicated or implied in this section, such authority takes precedence and its requirements are followed; where those requirements are lower than these in this section, compliance with the provisions of this section is recommended.

2. RECOMMENDED TYPE

2.01 Each steam boiler is equipped with a low water cut-off which automatically stops the operation of the oil burner before the water line drops below the lowest safe water level of the boiler. It may be a separate control or in combination with an automatic water feeder on the boiler.

2.02 Each separate low water cut-off control has a sediment chamber, or if in combination with an automatic water feeder the sediment chamber on the water feeder serves the purpose. An A.S.M.E. approved blow-down valve is used at bottom of the control or water feeder, and this allows the draining of the float chamber of the control or water feeder faster than it flows in from the boiler, thus permitting a check of operation. Also, this blow-down feature provides a means for ridding the unit of sludge, rust and scale which might impair its effective operation. Self-cleaning low water cut-off devices are not recommended.

2.03 Low water cut-off controls in both the separate type and the type in combination with an automatic water feeder automatically reset when a safe water level is restored and allows the burner to start if low water has been the only cause for cutting off the burner. Each type is obtainable with an alarm feature to identify a low water shut down and with a manual reset in place of an automatic reset if either or both are desired.

3. INSTALLATION

3.01 A low water cut-off is connected electrically into the main oil burner supply circuit in such a manner as to shut off the electric power supply to the burner in the event the water level falls to 1/2 inch in the gauge glass of the boiler and restores this power supply when the water level is raised above the 1/2-inch level.

3.02 A separate low water cut-off control may be attached directly either to:

(a) The boiler or water column connections with the bottom equalizer connection of non-ferrous metal, or to

(b) The gauge glass connections using a Y with the gauge glass piping connected to the straightway tapping of the Y and the control connected to the branch of the Y with both equalizer connections of non-ferrous metal. The connecting pipe and fittings are of the size of the fittings in the device if practicable, but need not exceed 1-inch iron pipe size and in no case may they be less than 1/2-inch iron pipe size.

3.03 Regarding the installation of automatic water feeders for boilers, it is recommended that they be attached directly either to boilers, to water column connections or to gauge glass connections as prescribed in Paragraph 3.02 for a separate low water cut-off control. Under this arrangement, where the low water cut-off device is in combination with an automatic water feeder, the requirements recommended for installation of a separate low water cut-off control described in Paragraph 3.02 are fulfilled.

3.04 The blow-down valve of a separate low water cut-off control, or if in combination with an automatic water feeder the blow-down valve of a water feeder, is connected with a vertical straightway drain sized full area of valve connection. This drain is terminated so that the condition of the discharge may be observed, and end is cut at angle of 45 degrees to prevent its being fitted with a plug or cap.

4. MEANS FOR TESTING

4.01 The blow-down valve at the bottom of an individual low water cut-off control or, if in combination with an automatic water feeder, the blow-down valve of the water feeder provides a means for manual testing. By opening this valve, the float chamber of the control or water feeder can be drained of water faster than it flows into it from the boiler, thus causing a condition of low water in the boiler and permits a check on the operation of the low water cut-off mentioned in Paragraph 2.03.