

PREFERRED INSTRUMENTS

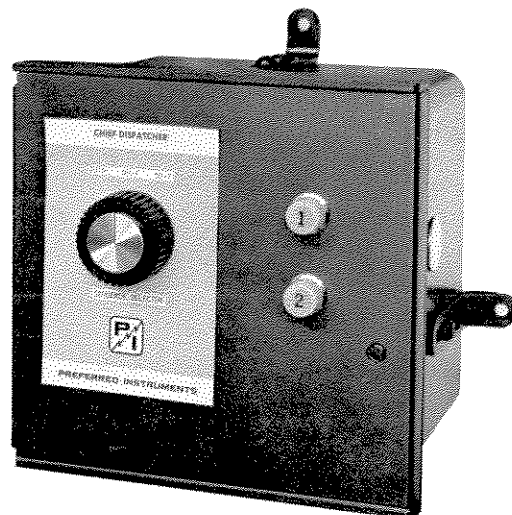


"CHIEF DISPATCHER"
Lead-Lag Programming Control
JC-CDDF-2(A)
ALTERNATING MODEL

FUNCTION

Preferred Instruments "Alternating Chief Dispatcher" brings a totally new concept of operating logic to the two boiler installation. The control not only provides a fully co-ordinated lead-lag system of operation to automatically sequence fire the boilers in balance with changing load conditions, --- with the turn of a switch, the "Alternating Chief Dispatcher" initiates a program that will alternate the lead boiler with each call for operation! The unit is suitable for new or existing steam or hot water installations, irrespective of type of fuel or firing rate controller.

INSTRUCTIONS



OPERATION

"Alternating Chief Dispatcher" type JC-CDDF-2 automatically programs the individual boilers in or out of operation in response to predetermined pressure or temperature variations. A Sequence Selector switch enables the installation to be programmed either for lead boiler alternation or lead-lag operation with lead boiler selection. A signal light is provided for each boiler to indicate a call for operation.

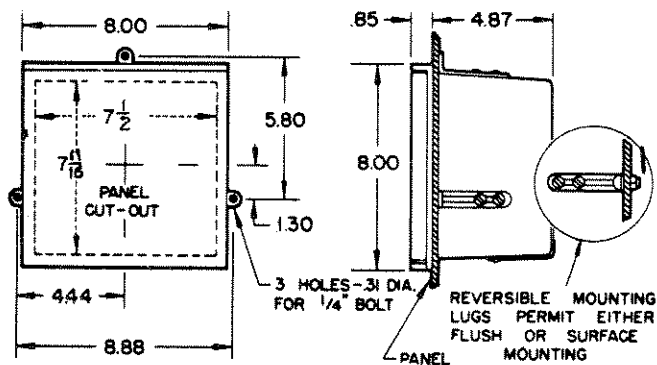
SELECTOR SWITCH POSITIONS "AUTO" "NO. 1" "NO. 2"

POSITION "AUTO" - The lead boiler is automatically alternated with each call for operation. For example, on the first call No. 1 will fire as lead boiler. On the next call, No. 2 will fire as lead boiler, etc. Should the boiler called as the lead boiler fail or be incapable of carrying the load, the standby (lag) boiler will automatically be fired; both boilers will then operate in unison. With both boilers firing, as the total fuel input approaches load satisfaction, the lag boiler will shut down; the lead boiler will continue in operation. When the demand is fully satisfied, the lead boiler will shut down.

POSITION "NO. 1" - Boilers do not alternate. No. 1 boiler becomes the lead boiler. No. 2 boiler, as the lag boiler, will be fired if No. 1 fails, or incapable of carrying the load.

POSITION "NO. 2" - Boilers do not alternate, No. 2 boiler becomes the lead boiler.

PROGRAM CONTROL - Flush or surface mount in a readily accessible location. All wires enter the control from the bottom. All connections to the control are electrical; capillary tubes or pressure connections are not required.





INSTALLATION CONTINUED

LEAD AND LAG OPERATING CONTROLS - are mounted in the common header to sense pressure or temperature of all boilers. One direct acting, on-off pressure or temperature control is required per boiler. Controls should be similar to those manufactured by Mercoïd, Honeywell, etc. (Controls are not supplied; order separately).

HIGH LIMIT AND SAFETY CONTROLS - are installed on the individual boilers as specified by the boiler manufacturer.

FIRING RATE CONTROLLERS - are installed on the individual boilers as specified by the boiler manufacturer. Because the firing rate is independently controlled, "Alternating Chief Dispatcher" may be used on modulating, high-low, or on-off systems.

WIRING

WIRING - All wiring should be in accordance with local electrical codes.

Follow wiring diagram furnished for the specific installation. Fundamentally the circuit connections are:

Terminals 6B - 1A in series with limit controls on No. 1 boiler, 7B - 7A in series with limit controls on No. 2 boiler.

Terminal L1 - 1 Lead boiler operating control; L1 - 2 Lag boiler operating control.

Terminal L1 is hot leg of 120V. service. Terminal L2 is common (ground) leg.

Terminals 1B and 14 are connected to neutral line from boilers 1 and 2 respectively.

If a single neutral is common for the entire control system, jumper 14-1B-L2.

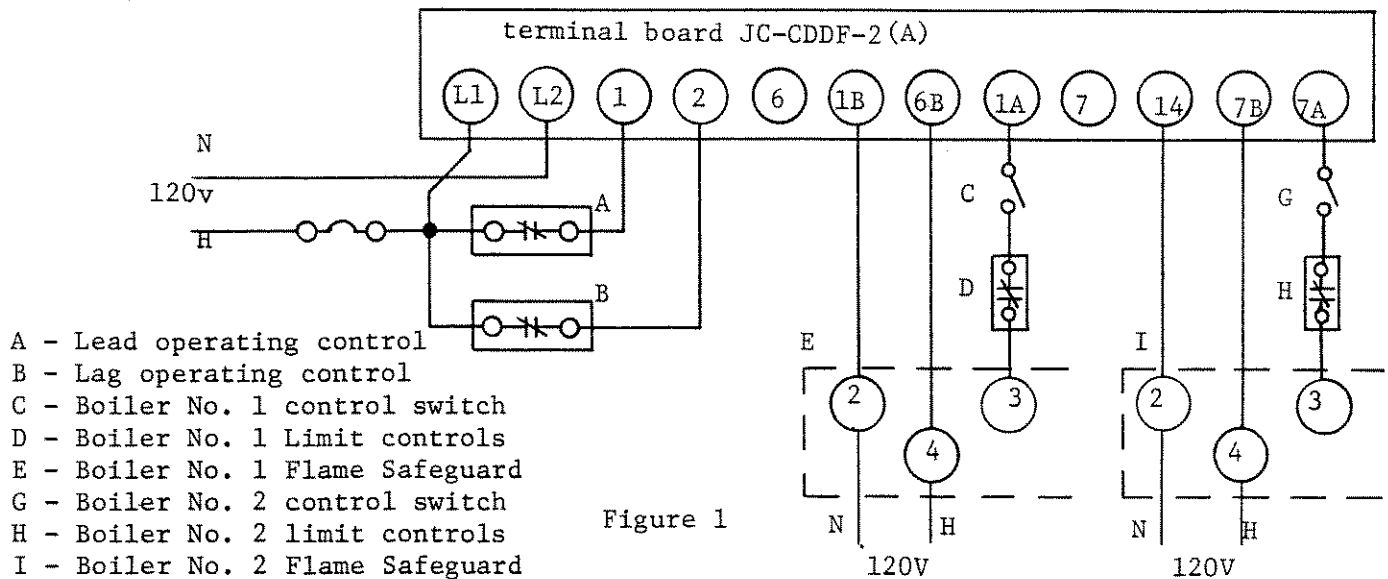
VOLTAGE - 120V 60/50. 240V control available on special order.

Load - 5 amp. maximum per boiler at 120V.

CONNECTIONS - Typical connections to "Alternating Chief Dispatcher" JC-CDDF-2; when used with Fireye FP-2 are shown in Fig. 1. When used with any flame safeguard, or Preferred Instruments draft-program control system, Terminals 6B and 1A are wired in series with the No. 1 boiler limit controls; Terminals 7B and 7A in series with the No. 2 boiler limit controls.

All remaining flame safeguard wiring remains unchanged from the manufacturers specifications.

TYPICAL "ALTERNATING CHIEF DISPATCHER" WIRING



- A - Lead operating control
- B - Lag operating control
- C - Boiler No. 1 control switch
- D - Boiler No. 1 Limit controls
- E - Boiler No. 1 Flame Safeguard
- G - Boiler No. 2 control switch
- H - Boiler No. 2 limit controls
- I - Boiler No. 2 Flame Safeguard



ADJUSTMENT

LEAD-LAG OPERATING CONTROL SET-POINTS - The Lead pressure (or temperature) control is set for desired system operating pressure (temperature). The lag pressure (temperature) control is set slightly under the Lead set-point.

For example: Desired system pressure is 15 P.S.I. with 3 P.S.I. differential on a two boiler system. Pressure controls may be set as follows:

LEAD CONTROL		LAG CONTROL
CUT OUT	15 p.s.i.	14 p.s.i.
CUT IN	13 p.s.i.	12 p.s.i.

Pressure control manufacturing tolerances may require slight set-point readjustment during initial set-up to accomplish desired result.

Once the set points have been made, it is never necessary to change them; all selections are made at the "Alternating Chief Dispatcher."

STARTING PROCEDURE

After "Alternating Chief Dispatcher" is mounted and wired and the lead and lag operating controls installed and set, the system should operate as follows:

With boiler pressure (temperature) below lead and lag operating controls set points.

Place Selector switch "Auto" - Close all manual switches. With boiler pressure (temperature) below lead and lag operating control set points, both lights will come on and both boilers will fire. As system approaches set point, No. 2 light will go out and No. 2 Boiler will shut down; No. 1 boiler will continue in operation. As load is satisfied, No. 1 boiler will shut down, No. 1 light will go out. On the next call for operation by the lead operating control, No. 2 light will come on, and No. 2 boiler will fire. The lead boiler will be alternated with each subsequent call for operation. Should the boiler selected to lead fail or be incapable of sustaining the load, the lag boiler will fire.

Place Selector switch in "No. 1" position - No. 1 boiler will become the lead boiler and will be cycled on and off by the lead operating control. No. 2 boiler will be the lag boiler, and will be fired if the lead boiler cannot carry the load.

Place Selector switch in "NO. 2" position - No. 2 boiler will become the lead boiler and will be cycled on and off by the lead operating control. No. 1 boiler will be the lag boiler, and will be fired if the lead boiler cannot carry the load.

NOTICE: "Alternating Chief Dispatcher" signal lights represent the boiler that is being called to fire. Signal light No. 1 comes on when No. 1 boiler should fire; etc. If light is on and burner is not firing, look for open high limit, low water cut-off, or flame failure lockout, etc.



SEQUENCE OF OPERATION

When boilers are equipped with fully modulating firing rate pressure controllers--

1. When a reduction in pressure is sensed by the header mounted, Lead Boiler operating control, the control simultaneously powers the proper "Alternating Chief Dispatcher" signal light and the Lead-Boiler Flame Safeguard Control through the boiler limit and safety controls.
2. After low fire start and all other interlocks are proven, the lead boiler is programmed "on" under the supervision of it's flame safeguard control.
3. The boiler-mounted, modulating controller will vary the firing rate to sustain the load. Should the lead boiler, at high fire input, be unable to sustain the load, the Lag pressure control will sense the pressure reduction and call on the Lag Boiler.
4. In accordance with recommended boiler operating practice, short cycling of the Lag-Boiler is avoided by automatically dividing the load; both boilers will modulate in unison.
5. Should boiler input exceed the load requirement, both boilers will modulate to low fire. If low fire is still excessive, the Lag-Boiler will shut down; the lead boiler will now modulate to carry the load.
6. If for any reason a boiler is shut down or fails to fire, the Lag-Boiler will be automatically programmed on to carry the load



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