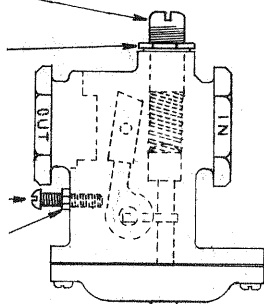


ADJUSTMENT INSTRUCTIONS

PARKER GAS FIRED STEAM BOILER WITH A-21-B STEAM PRESSURE GAS REGULATOR

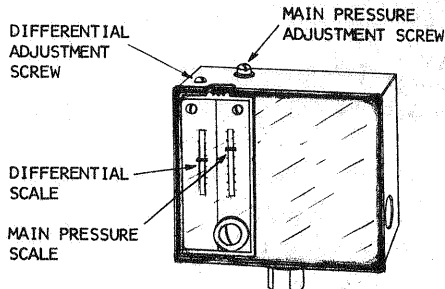
THE SUPERIOR A-21-B STEAM PRESSURE GAS REGULATOR WAS DESIGNED FOR MODULATING FIRE CONTROL OF THE BURNER ON STRAIGHT GAS FIRED STEAM BOILERS TO PROVIDE SAFER AND MORE EFFICIENT OPERATION AND TO MAINTAIN A STEADY BOILER STEAM PRESSURE. IT IS IMPORTANT THAT THE REGULATOR BE PROPERLY ADJUSTED TO PROVIDE THE DESIRED MODULATING FIRE CONTROL AND TO SHUT DOWN TO LOW FIRE WHEN REACHING THE DESIRED PRESSURE SETTING. IT IS IMPORTANT TO CAREFULLY ADJUST THE LOW FIRE FOR A MINIMUM FLAME SO THAT THE PRESSURE WILL NOT CONTINUE TO RISE AND CONSTANTLY RE-CYCLE ON THE PRESSURE CONTROL. THE PRESSURE CONTROL MUST BE ADJUSTED TO TURN OFF APPROXIMATELY 10 PSI ABOVE THE DESIRED OPERATING PRESSURE AND WITH THE PROPER LOW FIRE ADJUSTMENT SO THAT THE BURNER DOES NOT CYCLE ON THE PRESSURE CONTROL.

C.
 PRESSURE
 ADJUSTMENT
 SCREW
 LOCKNUT



B.
 LOW FIRE
 ADJUSTMENT
 SCREW
 LOCKNUT

A21-B
SUPERIOR STEAM
PRESSURE GAS REGULATOR



L404A
PRESSURETROL

ADJUSTMENT INSTRUCTIONS

ADJUST WITH VERY LIGHT LOAD OR STEAM VALVE PRACTICALLY CLOSED.

1. THE PRESSURE CONTROL SHOULD BE SET TO SHUT OFF APPROXIMATELY 10 PSI ABOVE THE DESIRED OPERATING PRESSURE BUT ALWAYS BELOW THE RELIEF VALVE SETTING. (PREFERABLY AT LEAST 10% BELOW THE PRESSURE SETTING OF THE SAFETY VALVE.) THIS MAY BE ACCOMPLISHED AS FOLLOWS:

- (1) SET THE MAIN PRESSURE SCALE APPROXIMATELY 10 PSI ABOVE THE DESIRED OPERATING PRESSURE.
- (2) SET THE DIFFERENTIAL FOR APPROXIMATELY 15 PSI.

THE ABOVE ARE RECOMMENDED SETTINGS BUT THE ACTUAL SETTINGS DEPEND UPON THE LOAD AND OPERATING CONDITIONS AND SHOULD BE ADJUSTED IN THE FIELD FOR THE BEST RESULTS TO MATCH REQUIREMENTS OF THE PARTICULAR APPLICATION. IF AN ADDITIONAL PRESSURE CONTROL IS FURNISHED IT SHOULD BE SET TO SHUT OFF APPROXIMATELY 5 PSI ABOVE THE FIRST PRESSURE CONTROL BUT ALWAYS BELOW THE PRESSURE SETTING OF THE SAFETY VALVE.

NOTE:

ON NEW MODEL PRESSURETROLS WITH THE PLASTIC COVER (1968 OR NEWER) THE DIFFERENTIAL IS SUBTRACTIVE; THE PRESSURETROL TURNS OFF WHEN THE BOILER PRESSURE REACHES THE SET PRESSURE ON THE MAIN SCALE, AND TURNS BACK ON WHEN THE BOILER PRESSURE DROPS THE AMOUNT SHOWN ON THE DIFFERENTIAL SCALE.

ON OLD MODEL PRESSURETROLS WITH THE STEEL COVER (1967 OR OLDER) THE DIFFERENTIAL IS ADDITIVE; THE PRESSURETROL TURNS OFF WHEN THE BOILER PRESSURE REACHES THE SUM OF THE MAIN INDICATOR SETTING PLUS THE DIFFERENTIAL SETTING, AND TURNS BACK ON WHEN THE BOILER PRESSURE DROPS TO THE SET PRESSURE ON THE MAIN INDICATOR SCALE. WHEN ADJUSTING AN OLD MODEL PRESSURETROL TO ACCOMPLISH THE SAME OPERATION AS ABOVE, SET THE MAIN INDICATOR 5 PSI BELOW THE DESIRED OPERATING PRESSURE AND DIFFERENTIAL FOR 15 PSI.

II. ADJUST THE LOW FIRE SETTING OF THE SUPERIOR REGULATOR

WHEN INITIALLY STARTING A BOILER, IT IS EASIER TO SET THE LOW FIRE ADJUSTMENT WHILE PRESSURE IS BUILDING UP IN THE BOILER. LOOSEN LOCKNUT AND BACK OUT ADJUSTING SCREW "C" SO THAT THE REGULATOR REDUCES TO LOW FIRE AT APPROXIMATELY 1/2 THE DESIRED OPERATING PRESSURE. SET LOW FIRE ADJUSTMENT:

- (1) THE LOW FIRE ADJUSTING SCREW "B" IS FOR THE PURPOSE OF CONTROLLING THE AMOUNT OF GAS THAT BY-PASSES TO THE BURNER WHEN PRESSURE SETTING IS REACHED. LOOSEN LOCKNUT AND ADJUST THIS FOR A MINIMUM FLAME SO THAT ALL BURNERS STAY SAFELY ON WHEN THE PRESSURE SETTING IS REACHED. PRECAUTION SHOULD BE TAKEN TO ADJUST THIS FOR A PROPER SAFE MINIMUM FLAME.
- (2) IF THIS ADJUSTMENT IS TOO LOW, PROBLEMS WILL BE EXPERIENCED WITH ROUGH LIGHTING AND IMPROPER COMBUSTION. NEVER SET THE LOW FIRE BELOW 1" W.C. PRESSURE AT THE BURNER.
- (3) IF THIS ADJUSTMENT IS TOO HIGH, THE BOILER PRESSURE WILL CONTINUE TO RISE AND THE BOILER WILL CYCLE REPEATEDLY ON THE PRESSURE CONTROL.
- (4) AFTER MAKING THE LOW FIRE ADJUSTMENT, TIGHTEN LOCKNUT. WHEN TIGHTENING LOCKNUT, ALWAYS HOLD THE ADJUSTING SCREW IN PLACE WITH A SCREWDRIVER SO THAT IT CANNOT TURN OUT OF PROPER ADJUSTMENT.
- (5) TO CHECK OPERATION ON LOW FIRE, SCREW IN ON "C" AND ALLOW PRESSURE TO BUILD UP SO REGULATOR REDUCES BURNER TO LOW FIRE.
- (6) **CAUTION:** THE LOW FIRE ADJUSTMENT IS CRITICAL AS A QUARTER OF ONE TURN WILL CHANGE THE FIRE RATE EXCESSIVELY. BE SURE THAT THE LOW FIRE SETTING IS ACCURATELY ADJUSTED FOR A MINIMUM SAFE FLAME AND SO THE PRESSURE WILL NOT CONTINUE TO CLIMB. ALWAYS SET THE LOCKNUT SO THE ADJUSTMENT WILL NOT CHANGE.

III. ADJUST THE PRESSURE SETTING OF THE SUPERIOR REGULATOR

- (1) THE LARGER PRESSURE ADJUSTMENT SCREW "C" SHOULD BE SET SO THAT THE MODULATING FIRING CUTS DOWN TO THE LOW FIRE SETTING WHEN THE STEAM PRESSURE REACHES THE DESIRED SETTING. THIS WILL PERMIT THE BURNER TO MODULATE WITH THE STEAM LOAD AND TO CUT DOWN TO LOW FIRE ONLY UPON REACHING THE DESIRED PRESSURE SETTING.
- (2) INCREASE PRESSURE SETTING BY SCREWING "C" DOWN, DECREASE BY SCREWING UP. PRESSURE IS RAISED OR LOWERED AT THE RATE OF ABOUT 5 PSI PER QUARTER TURN OF ADJUSTING SCREW "C".
- (3) AFTER OBTAINING THE DESIRED ADJUSTMENT, TIGHTEN LOCKNUT. WHEN TIGHTENING LOCKNUT, ALWAYS HOLD THE ADJUSTING SCREW IN PLACE WITH A SCREWDRIVER SO THAT IT CAN NOT TURN OUT OF PROPER ADJUSTMENT.

SINCE THE REGULATOR WILL START MODULATING OR REDUCING THE BURNER RATE 5 TO 8 PSI BEFORE REACHING ITS PRESSURE SETTING, THE BURNER WILL NOT COME ON FULLY UNTIL PRESSURE DROPS THIS AMOUNT. ON HEAVY LOADS WHEN THE STEAM PRESSURE IS DROPPING BELOW THE DESIRED PRESSURE BEFORE THE BURNER COMES ON FULLY, IT IS RECOMMENDED TO INCREASE THE PRESSURE SETTING 2.5 PSI OR MORE TO PROVIDE STEADY PRESSURE.

SPECIAL ADJUSTMENT INSTRUCTIONS FOR DUAL BOILER INSTALLATIONS

BEFORE ADJUSTING THE BOILERS FOR PROPER MODULATION, CHECK TO BE CERTAIN THAT THE BOILERS ARE PROPERLY INSTALLED. EACH BOILER'S INDIVIDUAL STEAM LINE SHOULD HAVE AN ORIFICE, STEAM VALVE AND CHECK VALVE INSTALLED IN THAT ORDER COMING FROM THE BOILER. THE STEAM LINE SHOULD NOT BE TIED TOGETHER UNLESS THESE ITEMS ARE INSTALLED.

1. START WITH BOILER #1 AND SET THE HIGH LIMIT CONTROL, LOW FIRE, AND THE MODULATING PRESSURE IN ACCORDANCE WITH THE INSTRUCTIONS ON THE FRONT SIDE OF THIS SHEET.
2. FOLLOW THE SAME PROCEDURE WITH BOILER #2.
3. WITH STEAM LOAD ON, START BOTH BOILERS AND OPEN STEAM VALVES.
4. OBSERVE OPERATION AND CHECK THE FOLLOWING:
 - (A). BOTH BOILERS SHOULD BEGIN TO MODULATE AT APPROXIMATELY THE SAME PRESSURE.
 - (B). BOTH BOILERS MUST REDUCE TO LOW FIRE AT THE SAME DESIRED PRESSURE. ADJUST BOILERS SEPARATELY UNTIL THEY REDUCE TO LOW FIRE AT AS CLOSE TO THE SAME PRESSURE AS POSSIBLE.
 - (C). THE LOW FIRE SETTING SHOULD BE AS CLOSE TO THE SAME SETTING AS POSSIBLE FOR EACH BOILER. THE ONLY METHOD OF SETTING BOTH LOW FIRE ADJUSTMENTS THE SAME, IS TO SET EACH FOR THE SAME GAS PRESSURE USING AN ACCURATE GAS GAUGE. ADJUST BOILERS SEPARATELY UNTIL LOW FIRE FLAME IS THE SAME.
 - (D). THE HIGH LIMIT CONTROL ON EACH BOILER SHOULD TURN EACH BOILER OFF AT ALMOST THE SAME PRESSURE AND THE BOILERS SHOULD BOTH TURN BACK ON AGAIN AT ALMOST THE SAME POINT. ADJUST SEPARATELY UNTIL THIS IS ACCOMPLISHED.

THE BOILERS SHOULD BE ADJUSTED TO OPERATE IN UNISON SO THAT ONE BOILER DOES NOT CARRY MOST OF THE LOAD. MATCHING THE LOAD EQUALLY BETWEEN THE BOILERS WILL RESULT IN FAR MORE SATISFACTORY OPERATION AND LONG LIFE SERVICE FROM EACH BOILER. IT SHOULD BE POINTED OUT THAT IT IS ALMOST IMPOSSIBLE TO MATCH THE BOILERS EXACTLY SO THERE WILL ALWAYS BE A SLIGHT DIFFERENCE BETWEEN THE TWO BUT THIS SHOULD BE KEPT TO A MINIMUM.