

STACK UNIT FOR TWO-UNIT SAFETY COMBUSTION CONTROLS

APPLICATION

Penn Two-Unit Stack Controls consist of a relay unit and a separate stack unit. Type 681A, 684A or 687A burner mounted relay unit used with Type 673B stack unit for *continuous ignition* oil burners. Type 683A or 685A burner mounted relay unit used with Type 673B stack unit for *intermittent ignition* oil burners. The relay units and stack units are mechanically independent of each other, being connected electrically with low voltage cable. Penn Two-Unit Stack Controls are designed for use with heat anticipating thermostats (.4 amp. thermostat circuit) or any two-wire, snap acting thermostat.

They provide:

1. Low voltage wiring to thermostat (24 volts).
2. Positive ignition safety . . . shuts down should voltage on line drop below point where ignition may fail (normally 65 volts on 115 volt service).
3. Ignition contacts, on intermittent ignition controls, to open ignition circuit after flame has been established.

LOCATION

1. Locate stack unit in the stack near the boiler or furnace or in the smokehood if an opening is available, where the temperature rise is at least 100° F. in one minute from normal start.
2. At least 14 inches away from pipes or walls to allow for removal for cleaning helix.
3. Between the boiler or furnace and automatic draft adjuster. At least 18 inches away from adjuster, insuring that cold air will not be drawn in against helix.

STACK UNIT MOUNTING

1. Cut a 1 $\frac{3}{8}$ " diameter hole in the side of the smokepipe on the center line. Using the flange as a guide, mark the smokepipe for the sheet metal screws. Drill or punch these two holes and mount the flange.
2. Mount stack unit in flange . . . may be mounted in any position.

AIR INTAKE ADJUSTMENT

1. *Normal Installations with Average Stack Temperatures:* Completely close air intake slot in helix tube with stack flange collar (see Fig. 2).
2. *Installations with Slow Cooling Stacks:* Adjust air intake slot in either a partly or fully opened position (see Fig. 3). This reduces the stack temperature surrounding the helix sufficiently during the "OFF" period to provide proper stack temperature difference between starting and running temperatures. This gives a faster helix response on the next operating cycle, preventing an unnecessary lockout.

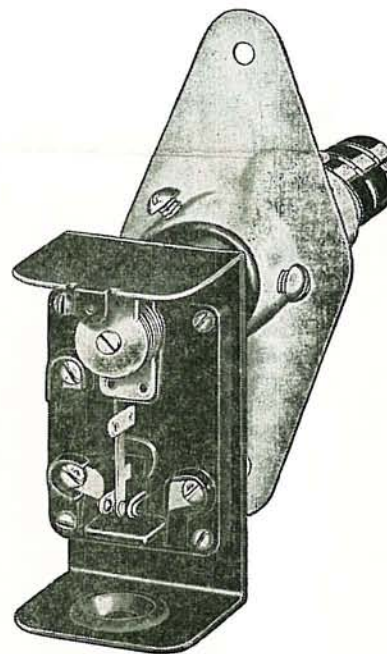


Fig. 1—Interior view of Type 673B Stack Unit.

NOTE: Lockout may occur during long burner operation such as morning pickup if limit switch differential setting is too close. Such a condition can exist if limit switch opens and again closes with stack temperature still near maximum (stack temperature not lowered enough to provide proper difference between starting and running temperatures). This sometimes can be remedied by adjusting the air intake slot (see paragraph 2), but usually requires widening the differential of limit switch.

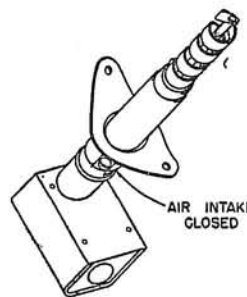


Fig. 2.

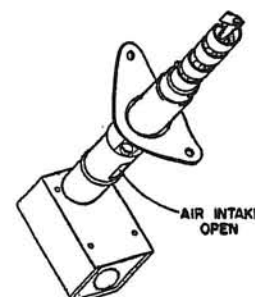


Fig. 3.

WIRING

1. All wiring should be in accordance with National Electrical Code and local codes.
2. Caution: Number 7 terminal on Type 673B is not always used. See wiring diagram supplied by equipment manufacturer or shown in instruction sheet supplied with relay unit.
3. Be sure wiring does not interfere with action of leaf or bakelite arm.

TWO-UNIT SAFETY COMBUSTION CONTROLS

ADJUSTMENT AND OPERATION

1. This stack switch was properly adjusted when shipped from the factory. Do NOT TAMPER WITH ANY PART OF THE MECHANISM.

2. Stack unit must be in cold or starting position before starting burner. Insert screwdriver in slot in end of clutch shaft (see Fig. 4). Turn clockwise in direction of arrow approximately $\frac{1}{4}$ turn and release slowly, making sure that leaf contacts are made firmly in cold or starting position.

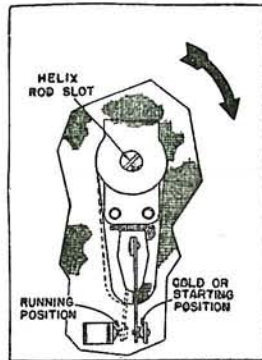


Fig. 4—Sectional view of clutch contact assembly, guard removed.

3. Test for power failure with stack unit completely installed in stack and burner running. Open master line switch, stopping burner. Then close switch. Properly installed, burner will not re-start until the helix has cooled and returned the combustion leaf contacts to the starting position, insuring ignition and all safety control features on the next start.

REPAIRS: We do not recommend field repairs. Stack switches requiring attention should be returned to the factory or nearest PENN Authorized Service Station, for inspection and service.

PENN CONTROLS, Inc.
GOSHEN, IND.

Printed in U.S.A.