TRANE 90%
CONDENSING FURNACE

MODEL NUMBER:	TUC - B - Upflow TDC - B - Downflow
BTU SIZES:	40,000, 50,000, 60,000, 80,000, 100,000, and 120,000 BTU

ACCESSIBILITY CLEARANCE

Minimum

1) 24 inches at side for servicing and cleaning.
2) 18 inches at a side where passage is required to another side requiring servicing or cleaning, or at a side requiring inspection or replacement of the flue connector.

CLEARANCE FROM COMBUSTIBLE MATERIAL

Upflow - for installation on combustible flooring, the furnace shall not be installed directly on carpeting, tile, or other combustible material other than wood flooring.

Downflow - For installation on combustible flooring use combustible floor subbase.

BACK	FRONT	TOP OF PLENUM	SIDE
0"	6"	1"	0"

COLD AIR RETURN AIR DUCTS

Do not take return air through back of furnace cabinet.

GARAGE

Standard requirements according to Good Practice Book and U.M.C.

GENERAL

NOTE: Do not exceed 125° F. fan-on setting for downflow units.

HIGH ALTITUDE INSTALLATIONS	
Deration	At elevations above 2,000 feet should be reduced 4% for each 1,000 feet above sea level.
Orifice	Change orifice
Regulator Pressure	Not less than 3.0" w.c. and not more than 3.5" w.c.
Pressure Switch	High altitude application (4,000 ft. and above elevations) of the new TUC, TDC-B Gas Furnaces necessitates a change in the air pressure differential switch which controls the ignition, to compensate for the less dense air. Due to the lower density, there would be insufficient negative pressure developed by the induced draft blower resulting in nuisance shut down. CAUTION: Pressure switches are factory calibrated and sealed. Field adjustment is not permitted. If seal is broken the product warranty is void. The use of high altitude calibrated switches in sea level application is not permitted.

MOBILE HOME
NOT approved.

VENTING MATERIAL AND REQUIREMENTS	
Vent Pipe	2" or 3" schedule 40 NSF-PW PVC 1120 ASTM D1785; or 2" or 3" schedule 40 PVC ASTM D1785 and D2665 (dual marked) 2" or 3" PVC - DWC ASTM D2665
Vent Fittings	2" or 3" schedule 40 PVC Type 1 ASTM D2466 2" or 3" PVC - DWV ASTM D2665

Refer to Page 4 - Installer's Guide

VENT CLEARANCE FROM COMBUSTIBLE MATERIAL
Schedule 40 PVC - 0" from combustibles

VENTING PROCEDURE
Where the system is routed to the outdoors through an existing masonry chimney containing flue products from another gas appliance, or where required by local codes, then 3" venting of Type 29-4C stainless steel must be used in place of PVC material.

MISCELLANEOUS INFORMATION/NOTES

Typical Hot Surface Ignition Gas Furnace

SEQUENCE OF OPERATION — TUC/TDC-B and TUD/TDD-B MODELS

White Rodgers Hot Surface Ignition System.

With the service disconnect (1) closed, line voltage is supplied, through the blower door interlock switch (2), to the primary side of the control transformer (14). The transformer secondary provides low voltage power to the room thermostat "R" terminal (15).

When the room thermostat calls for heat, power is supplied to the furnace low voltage "W" terminal. From "W", the power makes a parallel circuit. One side of the circuit contains the vent blower relay (16), which is energized immediately upon a call for heat. The vent relay contacts (4) close, supplying line voltage power to the vent motor (3).

At the same time, low volt power is supplied to the normally open contacts of the vent proving negative pressure switch (21). This switch senses lowered pressure on the inlet side of the vent blower. When combustion airflow has been established, the pressure switch will "pull" closed. When this happens, low volt power is switched through the high temperature limit switch (TCO)(20), through the fusible link (19), through the auxiliary limit (18), to the ignition control module (17) terminal "TH". The circuit is completed from the ignition control module terminal "TR" back to the common side of the control transformer.

On the first try for ignition, the high voltage portion of the ignition control (13) switches line voltage to the hot surface ignitor (12) for a 15 second heat up period. At the end of this period, the ignition control switches power to the gas valve operators (23). The gas valve remains open for four seconds while the ignitor tries to ignite the main burner flame. Flame sensing is done by a remote flame sensor (22) using the flame rectification principle. If the gas is not ignited on the first try, the sequence will occur twice more, with a little different timing.

Between tries, the ignition control allows a 60 second purge by the vent blower before beginning the heat up period. Also, the heat up time of the ignitor is extended to 25 seconds. If,after three tries, burner flame is not detected by the flame sensor, the ignition control will go into safety lockout. The vent blower will continue to run during lockout as long as the thermostat is calling for heat.

With a main burner flame established, the conditioned air blower (8) can be energized one of two ways. It can be energized by the fan switch (FST) (7) when the heat exchanger has warmed enough, or it can be energized through the time delay relay (TDR) contacts (6). The time delay relay (24) is energized at the same time as the gas valve through the parallel circuit shown in the diagram. Fifteen to forty seconds after the time delay relay is energized, its contacts will close.

When the thermostat is satisfied, low volt power to the "W" terminal is interrupted. This removes power from the vent relay and the ignition control. The gas valve closes and the vent blower stops. The conditioned air blower will stop when both the fan switch and the time delay relay contacts open. Due to residual heat in the heat exchanger, the fan switch may close again and recycle the indoor blower.

The pigtails (5) wired to the fan relay (9) and the neutral power leg are for the addition of an accessory such as an electronic air cleaner or humidifier in the duct system.

Wiring Schematic

SEQUENCE OF OPERATION — TUC/TDC-B and TUD/TDD-B MODELS

White-Rodgers Hot Surface Ignition System