

33 Limit Trip and 13 Lockout on New Installations

- Measure Gas pressure with a Manometer and adjusted per the Installation Manual?
- Clock the Gas Meter to verify the BTU input to the furnace in High Fire?
- Measure the Temperature Rise in BOTH High and Low Fire and compare reading to the range on the sticker.
- Measure the Total External Static Pressure across the Furnace.
- Verify all supply and return registers and their dampers are open. Verify duct liner or flex has collapsed. Ensure registers and grilles are unobstructed.
- Review Duct Transitions of the supply and return that may be causing excess turbulence. Square elbows, sharp transitions, Dead-Head Tees can cause Turbulence that will cause loss of airflow with little added static.
- Ensure air is not short circuiting from the supply to the return. If the Return Air Temperature approaches 80° the system will go off on limit even with correct Temperature Rise. Bypass Humidifiers without a throttling damper, High returns, Zone Barometric relief ducts can all cause high return air temperatures.
- If the system is zones make sure the smallest zone can handle the CFM requirement of the furnace. It may be necessary to take static and temperature readings by individual zone to determine where the issue is.
- Make sure the insulation behind the limit switch(s) has not been separated from the front panel of the Heat Exchanger. If you find it loose or expanded use strips of foil tape through the hole to secure to the cell panel.

For Existing Installations without Prior Limit Trip Issues

- Verify all system components are clean. Filters, Blower Wheel, Blower Motor, Secondary Heat Exchanger, Evaporator Coil. Supply and Return Grilles open and unobstructed.
- Observe and inquire about any recent changes that may have been made. IE; Addition or change of AC or Humidifier, Construction/Renovation, Duct Modifications, Filter Type, Changed registers or grilles
- Older Furnaces may require the use of a combustion analyzer to diagnose issues other than airflow related limit trips.
- Furnaces may experience limit trip issues related to improper installation or setup within a few years. Whereas older furnaces tend to be more maintenance related issues. After ALL the maintenance items have been checked, and combustion analysis rules out other issues complete the form below. If the data recorded is within nameplate parameters and you need further assistance send this form to CNE.TechService@CarrierEnterprise.com along with the Model and Serial number of all attached equipment so we can assist you in analyzing the data, you collected.

13 Limit Lockout: 1 Fast 3 Slow flash

Limit or rollout switch open longer than 3 minutes or consecutive times in one cycle.

33 Limit Fault: 3 Fast 3 Slow Flash

A switch has opened in the Maim Limit circuit

Limit switch's open when Leaving Air Temperature has exceeded the design maximum. Measure supply (diagram 2 D) and return air (diagram 2 C) in several locations in the duct for an average temperature. The difference is the temperature rise (TD). Example RAT 70° SAT 125° =55° temp rise. Compare this to the air temperature rise of the furnace Nameplate (Not all models and sizes are the same) and adjust gas pressure **and or** airflow to achieve a rise in the middle of the range. See Diagram 1

Check in both High and Low Fire (if equipped) and record it.

Measure System Static pressure to determine Airflow. Measure Return Static between furnace and filter. (diagram 2 A) Measure Supply Static between Furnace and Coil (diagram 2 B) Consult Furnace manual for Blower CFM at measured T.E.S.P.

HIGH FIRE: RAT____ SAT____ TD____ GP____ RAS____ SAS____ TESP____

LOW FIRE: RAT____ SAT____ TD____ GP____ RAS____ SAS____ TESP____

If the TD is near or above the max air temp rise limit will occur. Lower gas pressure if permissible. If Air Flow is adjusted ensure it is within rated TESP of the furnace. If TESP is higher than the rated pressure, duct modifications may be required for proper airflow.

CENTRAL FURNACE		MAX. UNIT AMPS AMPS MAX.	
AURI CERTIFIED™ www.auridirectory.org		115 VOLTS / 60 HZ / 1 PHASE	
		HI	LO
INPUT ENTREE	See Note Below Voir la note ci-dessous	BTUHR BTU PAR HRE	80,000 52,000
OUTPUT SORTIE	See Note Below Voir la note ci-dessous	BTUHR BTU PAR HRE	78,000 50,000
AIR TEMPERATURE RISE AUGMENTATION DE LA TEMPERATURE DE L'AIR	DEG. F	40-70	30-60
DESIGN MAX. OUTLET AIR TEMPERATURE CONÇU POUR UNE TEMPÉRATURE MAX. D'AIR DE SORTIE DE	DEG. C	165	165
(FOR PURPOSE OF INPUT ADJUSTMENT) (POUR L'ADJUSTEMENT D'ENTREE)			
ALTITUDE 0 - 4,500 FT. 0 - 1372 m	MANIFOLD PRESSURE / PRESSION TUBULURE IN. W.C. / P.O.C.E.	3.2-3.8 1.4-1.8	
4,500 - 10,000 FT. 1372 - 3050 m	REFER TO INSTALLATION MANUAL RESPECTER LES INSTRUCTIONS D'INSTALLATION		
MAX. HEATING EXTERNAL STATIC PRESSURE PRESSION STATIQUE EXTERIEURE MAXIMALE EN MODE DE CHAUFFAGE		.2	
MAX. INLET GAS PRESSURE PRESS. MAX. D'ADMISSION DE GAZ		13.6	
MIN. INLET GAS PRESSURE PRESS. MIN. D'ADMISSION DE GAZ		4.5	
For installation in alcove or closet at Min. clearance from combustible material as shown here.			
INCHES (POUNCES)		TOP DESSUS	SIDES COTES
mm		BACK ARRIERE	FRONT FRONT
		VENT VENT	FRONT SERVICE FRONT SERVICE
		1 0 0	1 0 24
		25 0 0	25 0 610
DOWNFLOW W/O COIL USE SUB-BASE DEBIT DESCENDANT SANS SERPENTIN, UTILISER LA BASE			

Diagram 1 Note: example information only
please refer to actual unit tag for your application

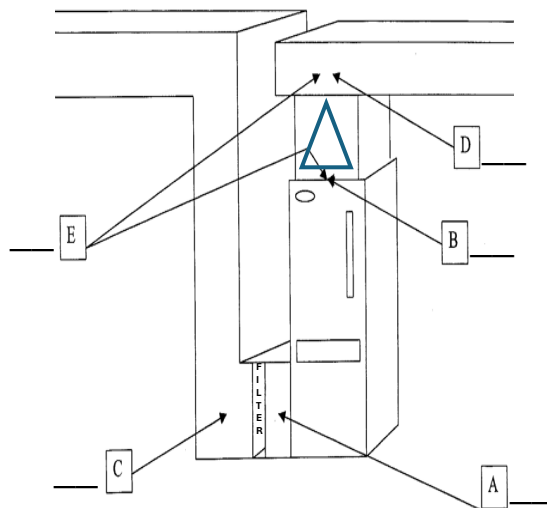


Diagram 2 A= Return Air -Static, B = Supply Air +Static
C = Return Duct -Static, D = Supply Duct +Static
E = B-D Coil Static Drop, A-C= Filter Pressure Drop
A+B= Total External Static Pressure

RAT Return Air Temp **SAT** Supply Air Temp **TD** Temperature Differential **GP** Gas Pressure
RAS Return Air Static **SAS** Supply Air Static **CFM** Cubic Feet/Minute **TESP** Total External Static Pressure