

INSTALLATION INSTRUCTIONS

SUMMERAIRE

ELECTRIC

WARM AIR FURNACE

MODELS: SE10B (E) to SE27B (E)

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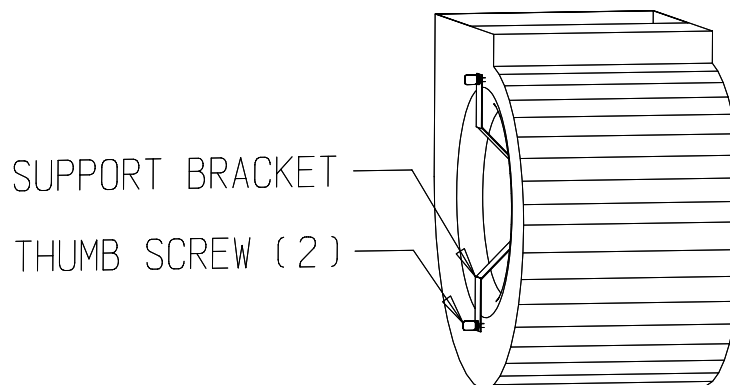
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For Service Please Call:	
INSTALLATION INFORMATION	
_____	_____
Qualified Contractor	Telephone Number
_____	_____
Unit Model Number	Unit Serial Number

Date of Installation	

WARNING

Supporting the fan motor shaft is a metal bracket, which is mounted on the left side of the furnace fan. It is secured to the fan housing by two (2) thumbscrews. This bracket must be removed after installation and prior to powering the furnace on. Failure to do so will cause damage to the motor and blower assembly.



SECTION I

GENERAL DESCRIPTION

The SUMMERAIRE Warm Air Electric Furnace is a multi-positional design permitting installation in the upflow, downflow or horizontal flow positions.

This furnace may be installed with Air Conditioning or heat pumps.

INSTALLATION OVERVIEW

Install this appliance in accordance with these instruction and all national and local building/safety codes and requirements.

Only connect this furnace to a duct system with a maximum static pressure of 0.6". Static pressures in excess will result in reduced air flow and potential elevated discharge air temperatures during heating cycles and reduced discharge air temperatures during cooling cycles.

Do not operate this furnace without both supply and return air ducts installed with air filters in place or with less than 0.20" external static pressure.

INITIAL INSPECTION

As soon as you receive this unit unpackage and inspect it thoroughly to ensure that no damage has resulted during the shipping process.

SECTION II

INSTALLATION

General

These furnaces must be properly installed in compliance with all national and local safety standard codes.

This appliance requires 240/1/60.

The supply power lead shall enter the control enclosure of the furnace through the knockout provided on the right hand or left hand side of the furnace. This will ensure the required separation between the low voltage and high voltage leads.

Knockouts are provided for 115 vac and 24 vac connections for humidifiers and electronic air cleaners on both sides of the furnace.

Low voltage thermostat connections must enter through the grommet openings provided on each side of the furnace.

Always ensure that the installation protects all electrical components from exposure to water. Particular attention must be given to the placement of A/C coils and drains.

A non-combustible base is available for counter flow installations on combustibles.

Adequate access must be provided at the front of this furnace for service.

For horizontal installations, it is recommended to use steel angle support brackets with threaded rods supporting the unit from the bottom. Refer to Fig # 1.

Due to the hazardous nature of electrical and mechanical requirements only trained and qualified personnel should install and service heating and cooling equipment.

WARNING

It is important to check airflow and make sure that the furnace does not operate above the temperatures specified in the Specifications, Fig #5 .This is particularly important if a cooling coil or a heat pump has been installed. High limit thermal protectors should never be used to engage during normal operation of the furnace. The high Limit protectors are designed to engage during the improper functioning of the blower or when the air filter has not been kept clean.

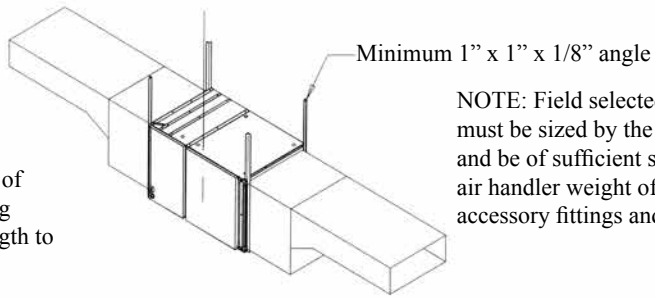
Fig 1

Horizontal Installation

NOTE: Return air opening must be cut out to knockouts provided. Minimum return air opening size, 18" X 18".

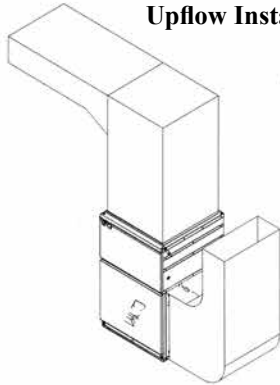
Caution: Return air openings shall not be installed in back panel.

Supply air plenum must be constructed of suitable materials and sized by installing contractor so as to be of sufficient strength to support furnace and accessory fittings and materials.

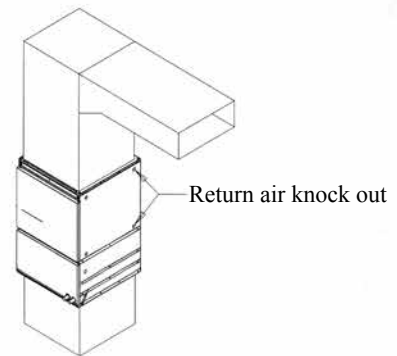


NOTE: Field selected suspension materials must be sized by the installing contractor and be of sufficient strength to support air handler weight of 100 lbs and connected accessory fittings and materials.

Upflow Installation



Counterflow Installation



Selecting a Location

This furnace shall be centrally located in relation to the outlet registers. All ductwork shall be suitably sized with external static pressure in mind to ensure satisfactory air distribution.

These furnaces are suited to vertical upflow, downflow and horizontal installations. This furnace shall not be installed on its front or back. To install this unit on its front or back would result in inadequate access for servicing.

Always ensure that when suspending this furnace that suitable structural support is available and provides adequate access to the control and fan compartments for service.

Clearances to Combustible Materials

The Furnace - The furnace is approved for zero clearance to combustible materials regardless of the heating capacity. It is recommended that 24" be provided at the front of the furnace for clear access for servicing.

Supply Air Ducts - Supply ducts for furnaces with a heating capacity up to and including 20kW may be installed with zero clearance to combustibles.

Heating ducts for furnaces with heating capacities of 23Kw and greater must have a 25MM (1") clearance to combustibles for the first .90m (36") of duct. Thereafter the clearance can be zero.

Duct Connections

Of utmost importance to ensure the satisfactory performance of this furnace is the ductwork. To reduce the transmission of noise and vibration it is recommended to use non-flammable flexible isolation collars. Correct duct sizing and installation methods will ensure proper airflow providing comfortable balanced delivered air.

All duct work should be designed, fabricated and installed in accordance with all national and/or local codes.

Air Filters.

Included with this furnace is a 20" x 20" x 1" disposable air filter and supporting filter rack. This filter rack shall be secured to the furnace casing on either side or the bottom. Do not install this filter rack on the front or back of the furnace. Doing so will result in inadequate air flows. When cutting the return air opening in the furnace, use the square knockouts in the side and bottom panels as reference. This will provide a free area opening of 18" x 18". The use of pleated filters is not recommended unless sized to suit the airflow requirements of the installation. Pleated air filters tend to increase total system static pressures. This may result in reduced airflow. As a result, the heating elements may operate at increased temperatures resulting in an overheat situation. Airflow reductions may also occur during cooling cycles resulting in unacceptably low delivered air temperatures.

SECTION III

High voltage connections

Line power 240/1/60 must be brought in to the furnace control compartment via the knockout provided on the right hand or left hand side of the furnace. The use of any other entry point may result in these high voltage leads coming into contact with low voltage circuit components resulting in potentially hazardous conditions. Power lines must be connected to the furnace main terminal block.

Refer to Fig # 5 to determine proper wire sizing. A ground connection is provided in this compartment. Always ensure that the ground circuit is installed to meet the requirements of all local and national codes.

Fan motor connections.

All furnaces are provided with multi speed direct drive motors or ECM motors.

Furnaces up to and including 23kW outputs are provided with 1/3 hp, 4 speed motors.

27kW furnaces are provided with 3/4hp 4 speed motors. Only 3 speeds are used. The fourth speed motor lead, low speed, is not connected.

Low Voltage Control Connections

Contained within the control enclosure is the low voltage transformer. This is 240vac primary with 24vac secondary, 40 VA class 2 transformer. It provides power to the furnace controller, thermostat, A/C condenser relay and 24vac external devices. Always ensure that the load imposed by external devices does not exceed 40 VA.

Fig 2

Low Voltage Control Connections (con't)

Terminal		Purpose
G	FAN RELAY	THERMOSTAT INPUT
W1	THERMOSTAT INPUT	STAGE 1 HEATING
W2	THERMOSTAT INPUT	STAGE 2 HEATING
R	24 vac OUTPUT TO THERMOSTAT ONLY	
Y/Y1	THERMOSTAT INPUT	STAGE 1 COOLING
Y2	THERMOSTAT INPUT	STAGE 2 COOLING
C	24 vac COMMON	OUTPUT TO THERMOSTAT

Thermostat Connections

All thermostat connections are located on the 7 point terminal block.

SECTION 1V

Panel Display, Switches and Circuit Breaker

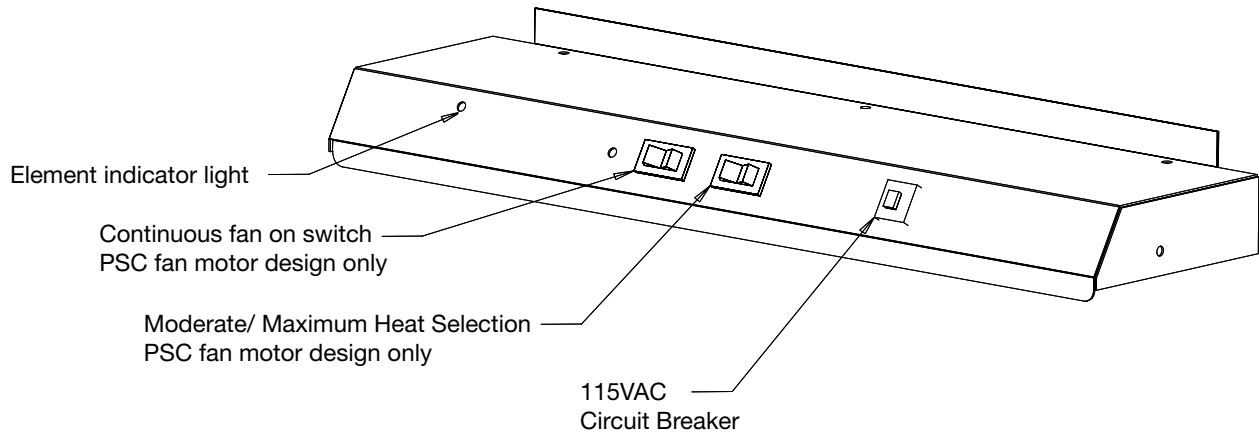
Located in the upper front left-hand corner of the furnace of the control panel containing; the indicating light (LED) for the heat cycle.

The rocker switch on the left enables continuous low speed fan operation.

The rocker switch on the right selects moderate or full heating capacity. Refer to Fig #4 for BTU Outputs.

The furnace panel mount circuit breaker provides fan motor over amp protection to 16 amps.
This circuit protection only applies to the fan motor.

Fig 3



SECTION V (ECM FAN MOTOR DESIGN ONLY)

SE10B to 23B Electric Furnace 1/3 H.P. ECM Air Flow Selectable Options on Motor Tap Select Board

Note: Tap select board is located on furnace blower.

WARNING:

WHEN MAKING ADJUSTMENTS CONSIDERATION MUST ALWAYS BE GIVEN TO DELIVERED AIR TEMPERATURE. YOU MUST ENSURE THAT THE DELIVERED AIR TEMPERATURE DURING A HEATING CYCLE DOES NOT EXCEED 93 C (200F)

HEATING TAP SWITCH POSITION			
NOTE: TURN POWER OFF BEFORE MAKING A SELECTION			
HEATING TAP BOARD SWITCHES #1 AND #2	AIR FLOW CFM		
	EXTERNAL STATIC PRESSURE *WC		
	0.2	0.5	0.7
OFF OFF	1250	1400	1400
ON OFF	1100	1200	1200
OFF ON	900	900	800
ON ON	700	550	-

COOLING TAP SWITCH POSITION			
NOTE: TURN POWER OFF BEFORE MAKING A SELECTION			
COOLING TAP BOARD SWITCHES #5 AND #6	AIR FLOW CFM		
	EXTERNAL STATIC PRESSURE *WC		
	0.2	0.5	0.7
OFF OFF	1120	1400	1400
ON OFF	980	1100	1100
OFF ON	870	890	850
ON ON	700	625	580

NOTE: CHANGES MAY BE MADE WITH POWER ON	
ADJUST TAP BOARD SWITCHES #3 AND #4	NOTE: CHANGING THE ADJUSTMENT TAP SWITCH POSITIONS AFFECTS BOTH THE HEATING AND COOLING FAN SPEEDS
OFF OFF	DOES NOT CHANGE SELECTED AIR FLOWS
ON OFF	INCREASES AIR FLOWS APPROXIMATELY 10%
OFF ON	REDUCES AIR FLOWS APPROXIMATELY 15%

All flows shown are approximate. Actual results may vary by installation.

COOLING PROFILE SWITCH POSITION						
NOTE: TURN POWER OFF BEFORE MAKING A SELECTION						
DELAY TAP BOARD SWITCHES #7 & #8	Pre Run Time Minutes	Pre Run Motor Speed %	Short Run Time Minutes	Short Run Motor Speed %	Off Delay Time Minutes	Off Delay Motor Speed %
OFF OFF	0.50	88	0.00	100	1.00	75
ON OFF	0.50	50	0.75	75	2.50	63
OFF ON	0.50	50	0.75	75	2.50	69
ON ON	0.50	50	0.75	75	4.00	69

PRE RUN AND SHORT TIMES ARE PERIODS TO FULL FAN SPEED OPERATION
 ALL FLOWS SHOWN ARE APPROXIMATE
 ACTUAL RESULTS MAY VARY BY INSTALLATION.

* **BOLD SETTINGS REPRESENT FACTORY SETTINGS.**

SECTION VI

Auto Two Stage (PSC and ECM designs)

When a thermostat calls for heat, the elements cycle on, one at a time at random.

If the moderate/ high power switch on the furnace is set to moderate, it takes priority and stage two heating will not occur. Set this rocker switch to high power to activate the full heating capacity of the furnace.

If a two stage thermostat is used, the furnace Moderate/Maximum heat switch needs to be set to Maximum, remove the W1/W2 jumper from the controller, and install the thermostat as per the manufacturer's instructions. The thermostat will now control the second heating stage.

Refer to Fig #4 for a list of outputs for each model and heating stage.

SECTION VII

Fig 4

Furnace Model	Stage 1		Stage 2		Stage 1 + 2	
	W1 BTU Output		W2 BTU Output		W1 + W2 BTU Output	
	Total Heat		Total Heat		Total Heat	
Voltage	208	240	208	240	208	240
10kW	12975	17072	-	17072	25950	34144
15kW	25950	34144	12975	17072	38925	51216
18kW	20760	27315	25950	34144	46710	61460
20kW	25950	34144	25950	34144	51890	68288
23kW	25950	34144	33734	44387	59682	78530
27kW	25950	34144	44114	58045	70064	92190

SECTION VIII

Commissioning Checklist

Ensure that

- 1) Fan motor shipping bracket is removed from left side of furnace.
- 2) Thermostat is not connected to controller
- 3) W1/W2 jumper is in place on thermostat terminal block if a 2-stage thermostat is not used.
- 4) A/C condenser is connected.
- 5) Ground is securely connected at furnace ground lug and main panel.
- 6) Incoming power lines are connected and secure at main terminal block.
- 7) Continuous fan switch is set to off
- 8) Two-stage power switch on furnace top panel is set to High Power.

Sequence.

- 1)a) Place a jumper across thermostat terminals R and W1 on terminal strip. Heating cycle starts and fan turns on. Fan speed increases at different intervals as elements turn on.
 - b) Allow this cycle to turn on all elements.
 - c) Remove jumper. All elements turn off.
- 2) Place a jumper across R, Y and G. Fan turns on.
- 3) Remove R, Y and G jumper and voltage output at Y1 and Y2 ceases.
- 4) Power furnace down, connect thermostat, turn power to furnace on.

SECTION IX

Fig 5
Electric Furnace
SPECIFICATIONS

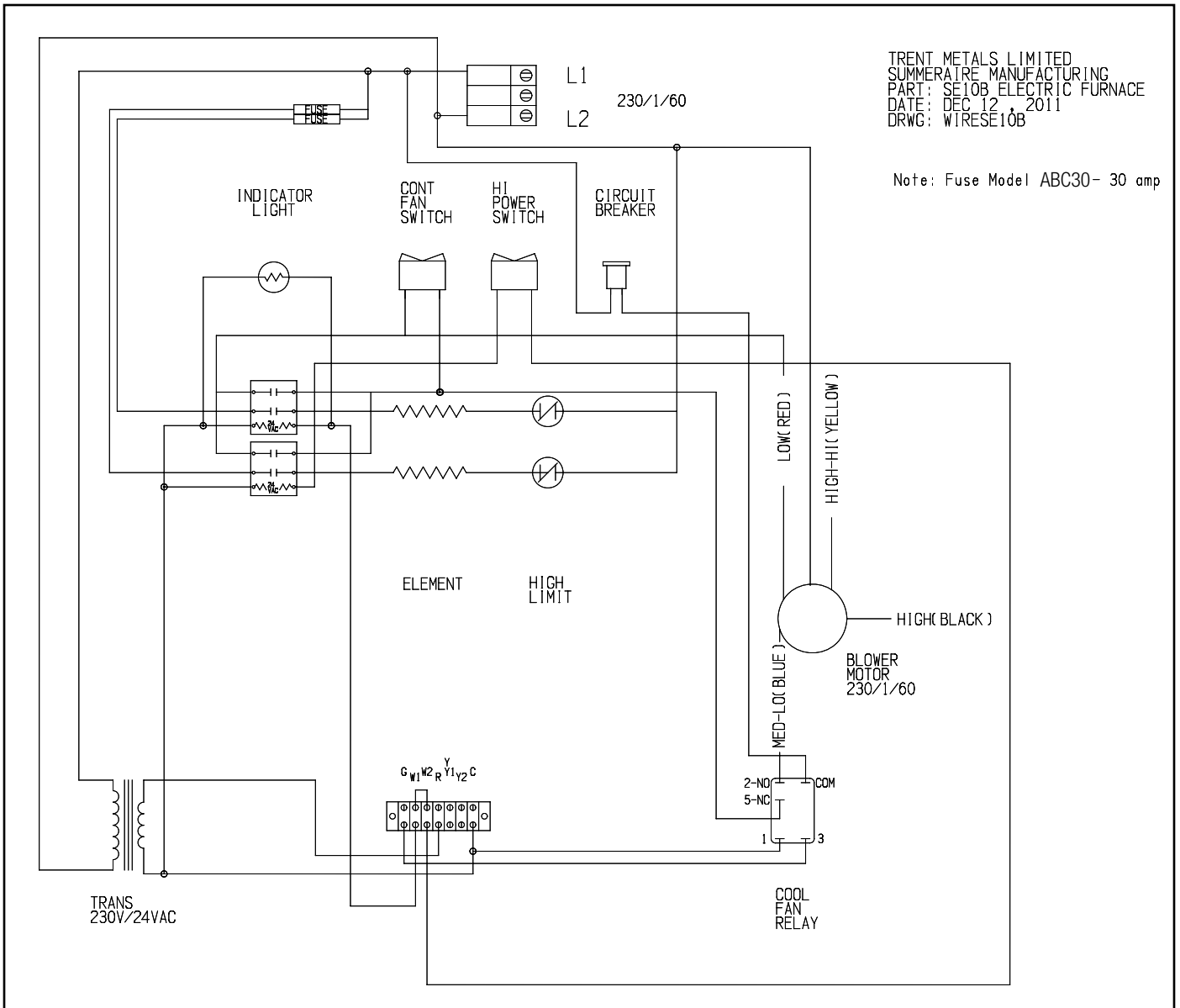
	SEB SERIES					
RATINGS - kw	10	15	18	20	23	27
OUTPUT - B.T.U.H.	34144	51216	61460	68288	78530	92190
TEMPERATURE RISE - RANGE °F	40-50	45-60	55-75	55-75	60-80	60-80
TEMPERATURE RISE - RANGE °C	4-10	7-15	12-23	12-23	15-26	15-26
ELECTRICAL						
VOLTS / HZ / PHASE 230 / 60 / 1						
ELEMENT NO. 1 (kW)	5	5	5	5	4	5
ELEMENT NO, 2 (kW)	5	5	4	5	5	5
ELEMENT NO. 3 (kW)	-	5	5	5	4	5
ELEMENT NO. 4 (kW)	-	-	4	5	5	4
ELEMENT NO. 5 (kW)	-	-	-	-	5	4
ELEMENT NO. 6 (kW)	-	-	-	-	-	4
MOTOR AMPS @ 230 VAC PSC	2.2	2.2	2.2	2.2	2.2	5.8
HEATING ELEMENT AMPS	40	60	80	89	92	108
TOTAL AMPS	43	63	83	92	95	114
MINIMUM CIRCUIT AMPS	60	85	100	110	125	150
BREAKER SIZE -AMPS	60	90	100	125	125	150
WIRE SIZE (AWG)	6	4	3	3	2	1
BLOWER DATA PSC Fan motor design only (HEATING)						
BLOWER SPEED @ 0.50 “ E.S.P.	MED - LOW	MED - LOW	MED - HIGH	MED - HIGH	MED - HIGH	MED - HIGH
BLOWER SPEED @ 0.20 “ E.S.P.	MED - LOW	MED - LOW	MED - HIGH	MED - HIGH	MED - HIGH	MED - HIGH
MOTOR H.P. -SPEEDS PSC (230V)	1/3 HP 4-SPEED					3/4 HP 4-SPEED
ECM (230V)	1/3 HP					3/4 HP
BLOWER	G10-8					GT12-10
GENERAL INFORMATION						
DIMENSIONS WIDTH X DEPTH X HEIGHT	20 “W X 21 “ D “ X 36 “ H					
WARM AIR PLENUM	15 “ X 18 “					
RETURN AIR PLENUM	18 1/2 “ X 18 1/2 “					
AIR FILTER – 1 SUPPLIED	20 “ X 20 “ X 1 “					
SHIPPING WEIGHT	48 KG (105 lbs.)					
AIR CONDITIONING	up to 3 TONS					up to 5 TONS

Note; One fan speed tap is parked.

Maximum discharge air temperature - 93 C (200 F)

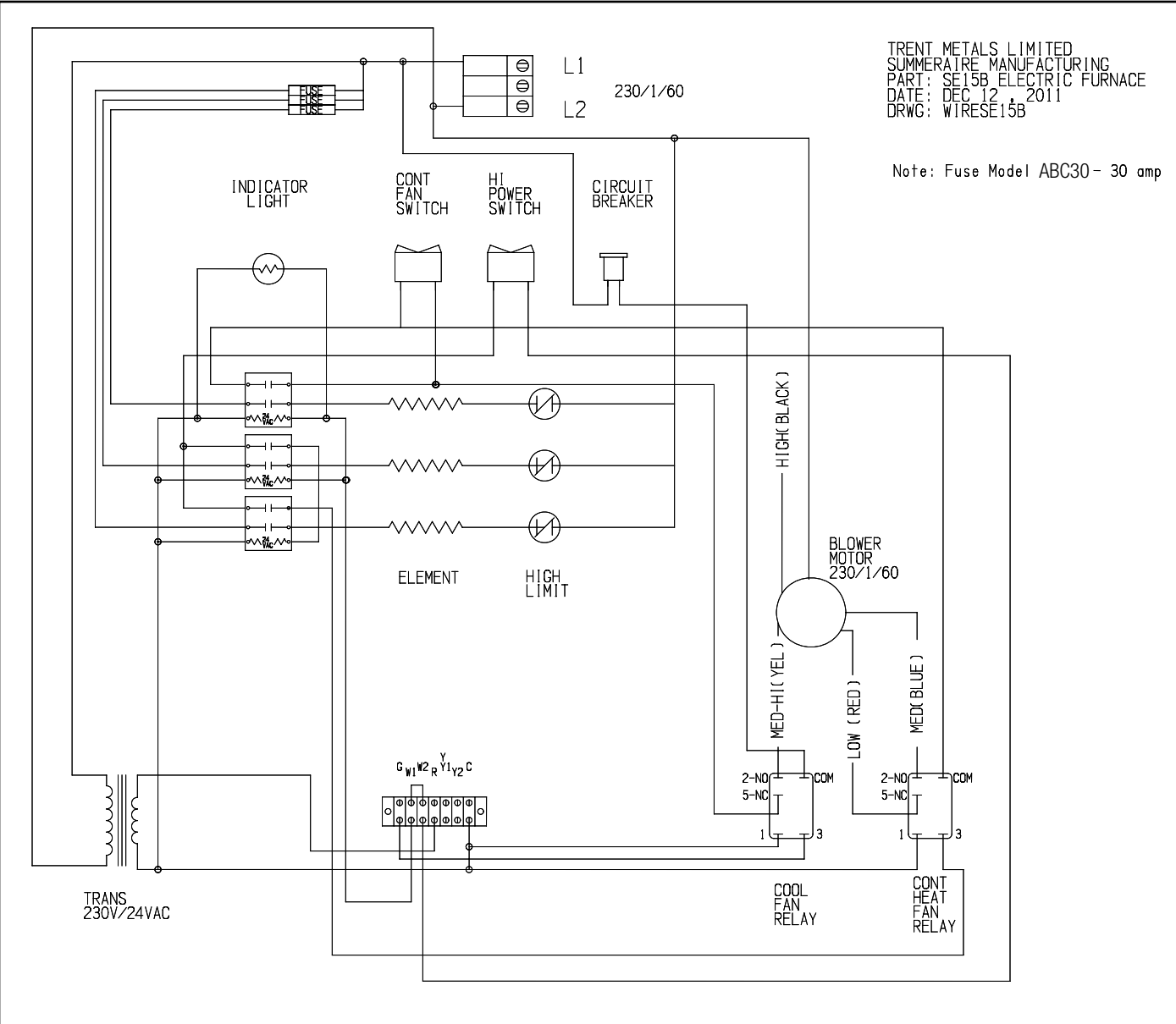
TRENT METALS LIMITED
 SUMMERAITRE MANUFACTURING
 PART: SE10B ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE10B

Note: Fuse Model ABC30- 30 amp



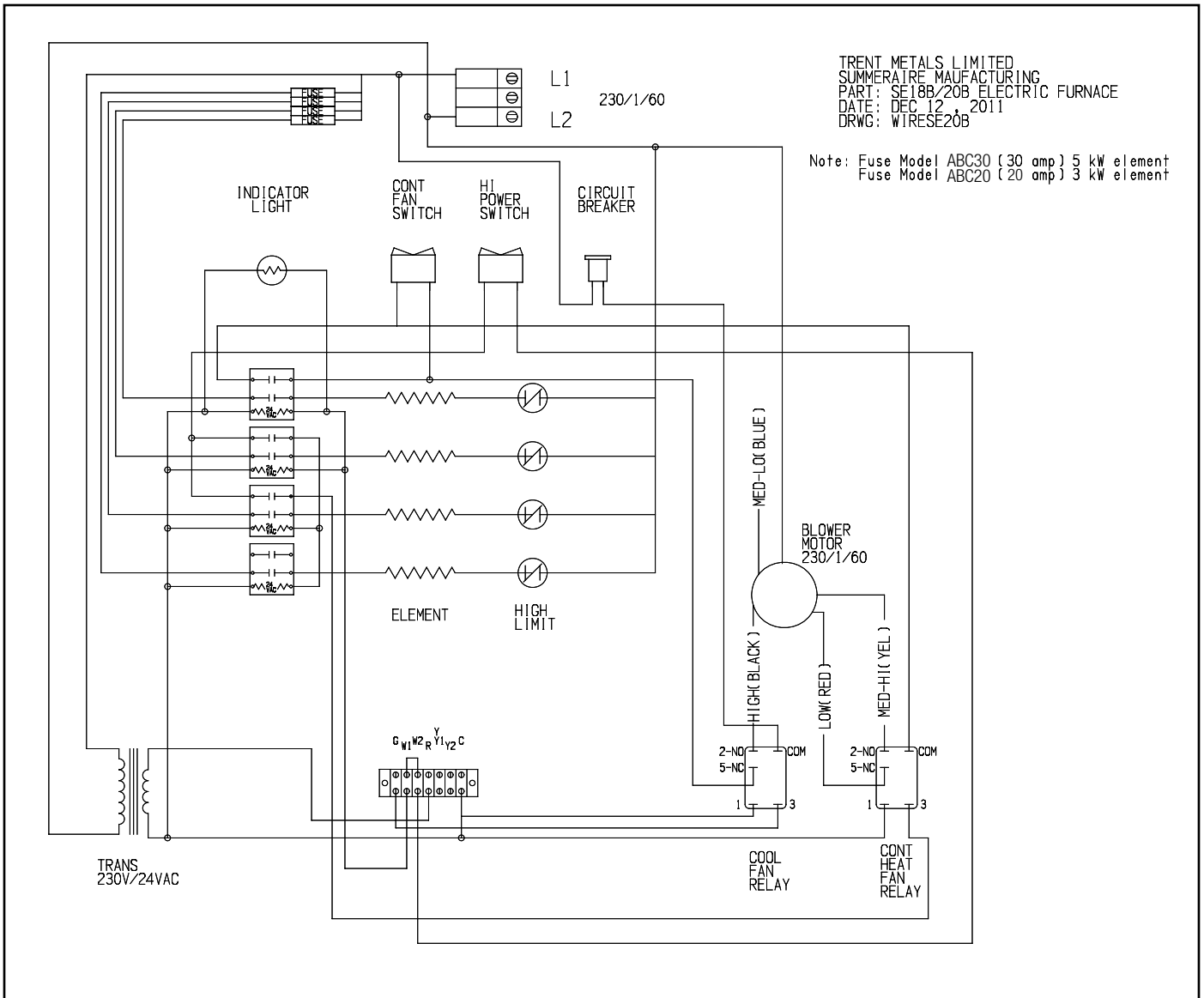
TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 PART: SE15B ELECTRIC FURNACE
 DATE: DEC 12 2011
 DRWG: WIRESE15B

Note: Fuse Model ABC30 - 30 amp



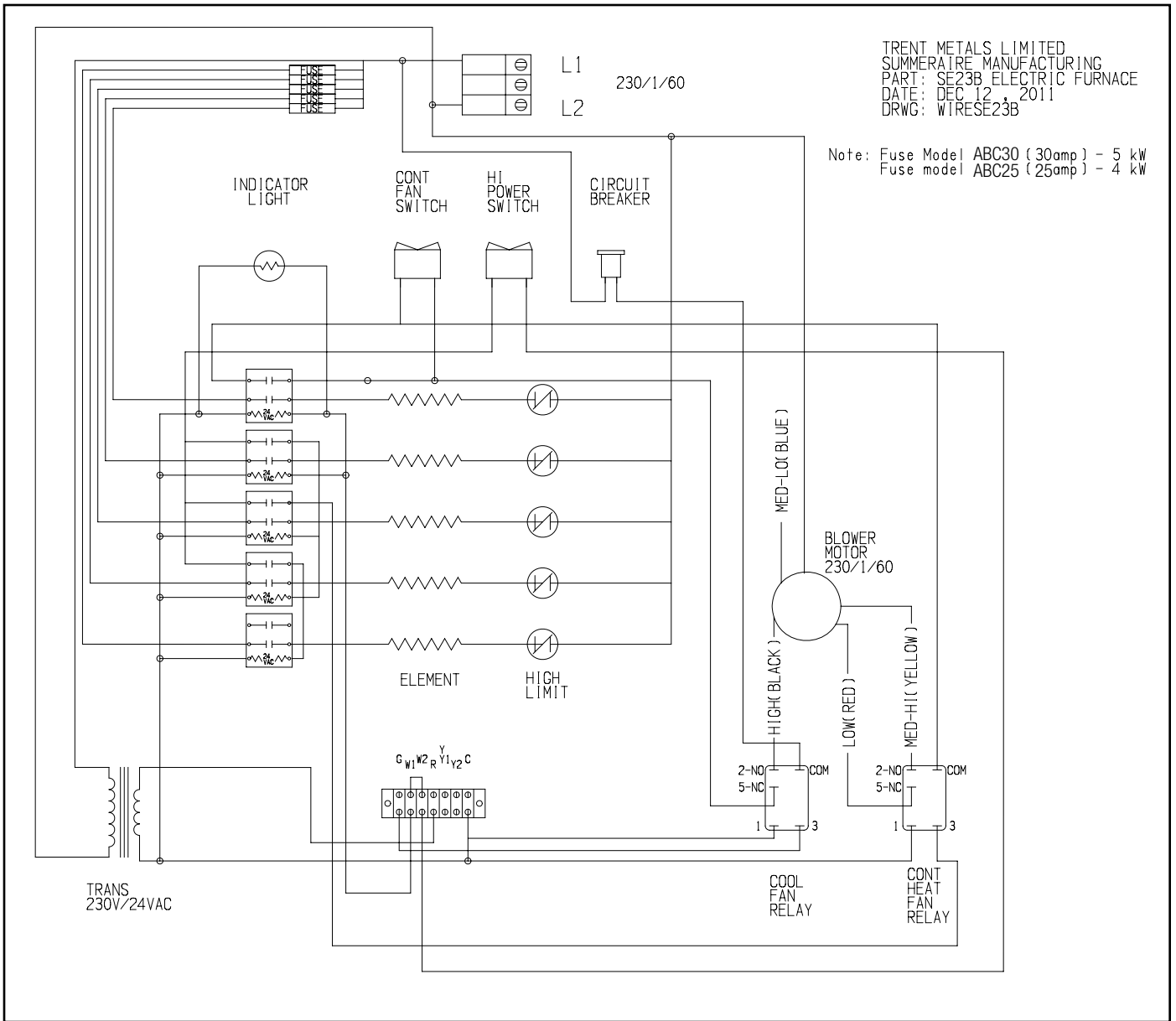
TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 PART: SE18B/20B ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE20B

Note: Fuse Model ABC30 (30 amp) 5 kW element
 Fuse Model ABC20 (20 amp) 3 kW element



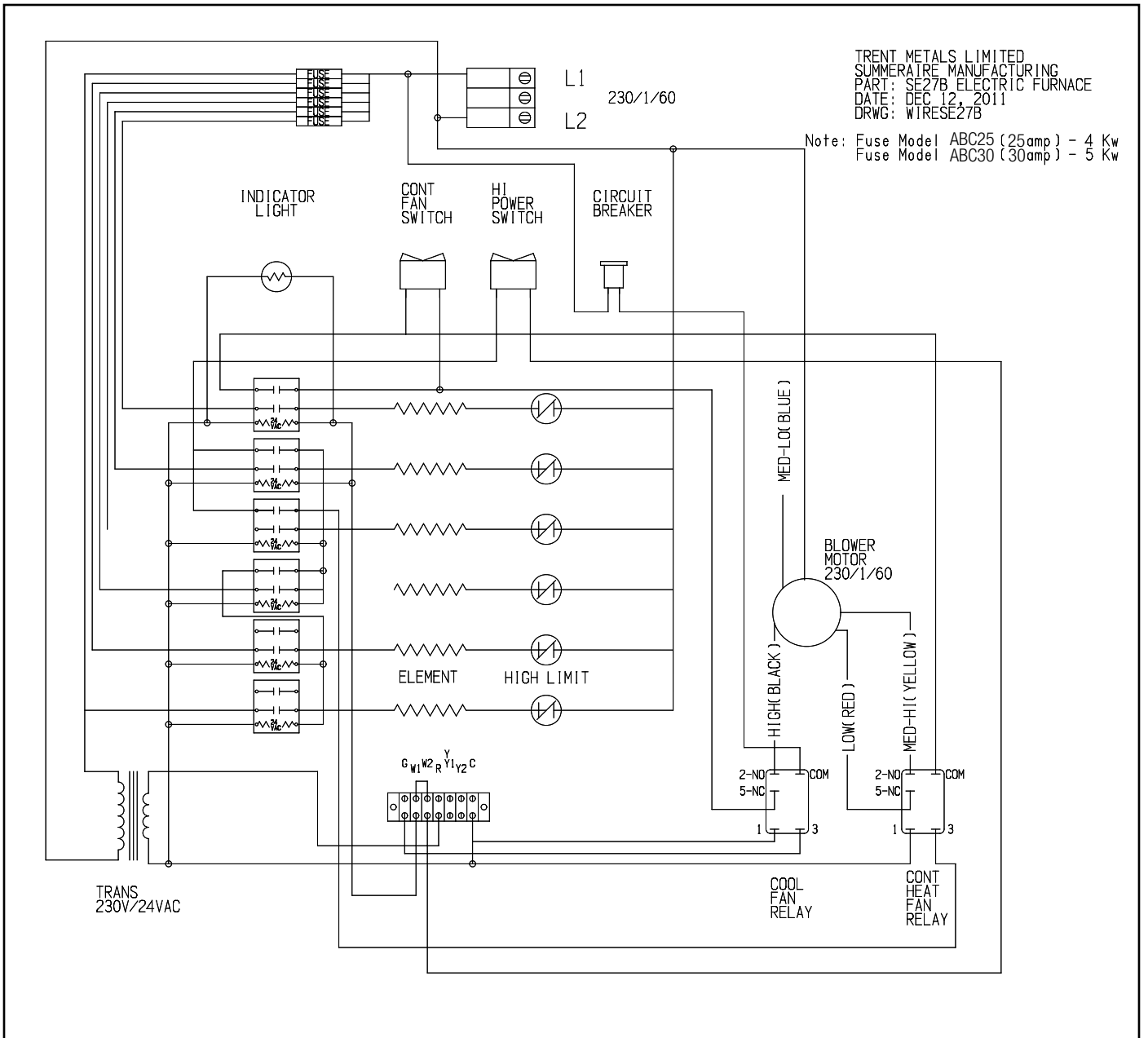
TRENT METALS LIMITED
 SUMMERATRE MANUFACTURING
 PART: SE23B ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WTRSE23B

Note: Fuse Model ABC30 (30amp) - 5 kW
 Fuse model ABC25 (25amp) - 4 kW



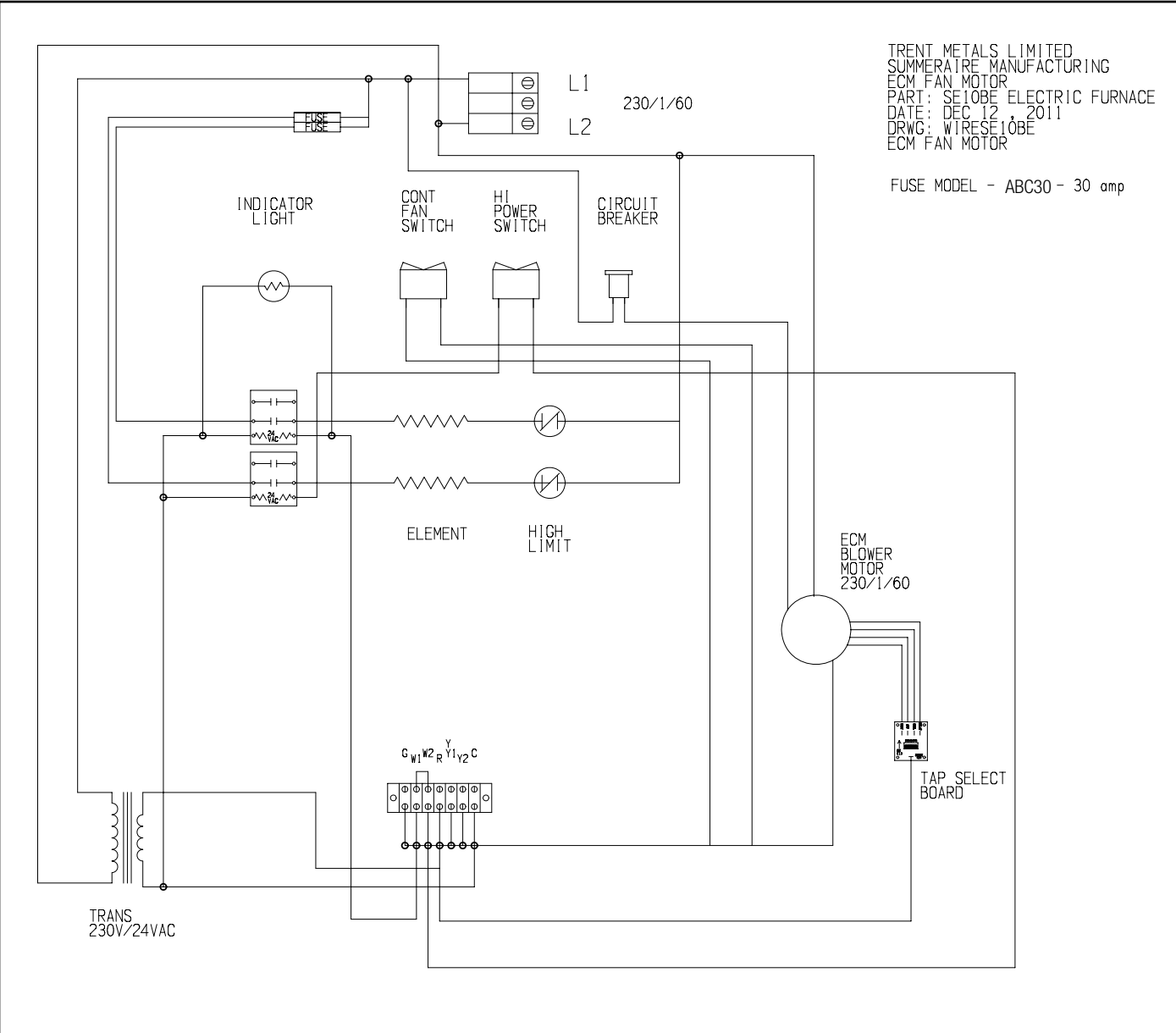
TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 PART: SE27B ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE27B

Note: Fuse Model ABC25 (25amp) - 4 Kw
 Fuse Model ABC30 (30amp) - 5 Kw



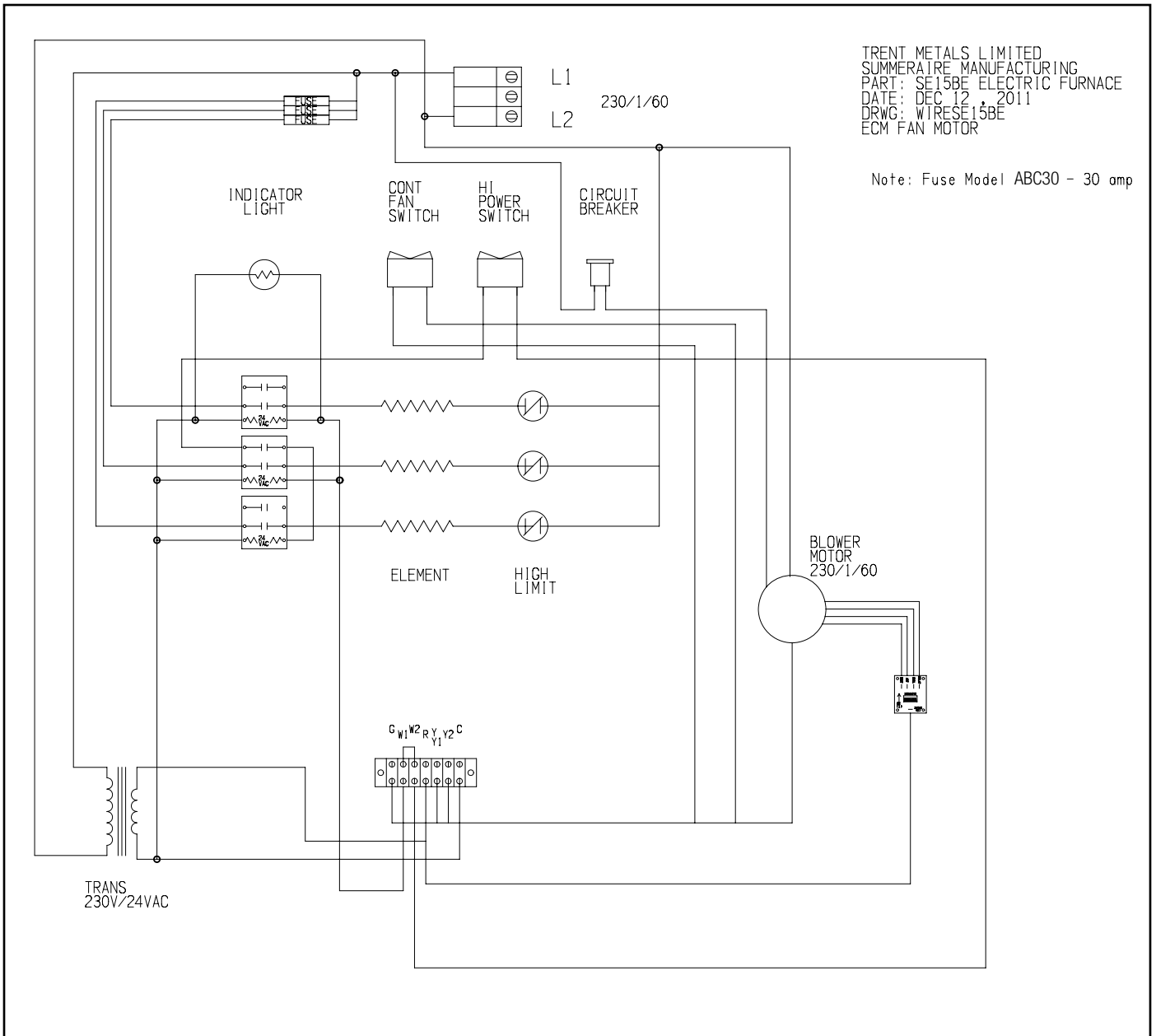
TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 ECM FAN MOTOR
 PART: SE10BE ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WTRSE10BE
 ECM FAN MOTOR

FUSE MODEL - ABC30 - 30 amp



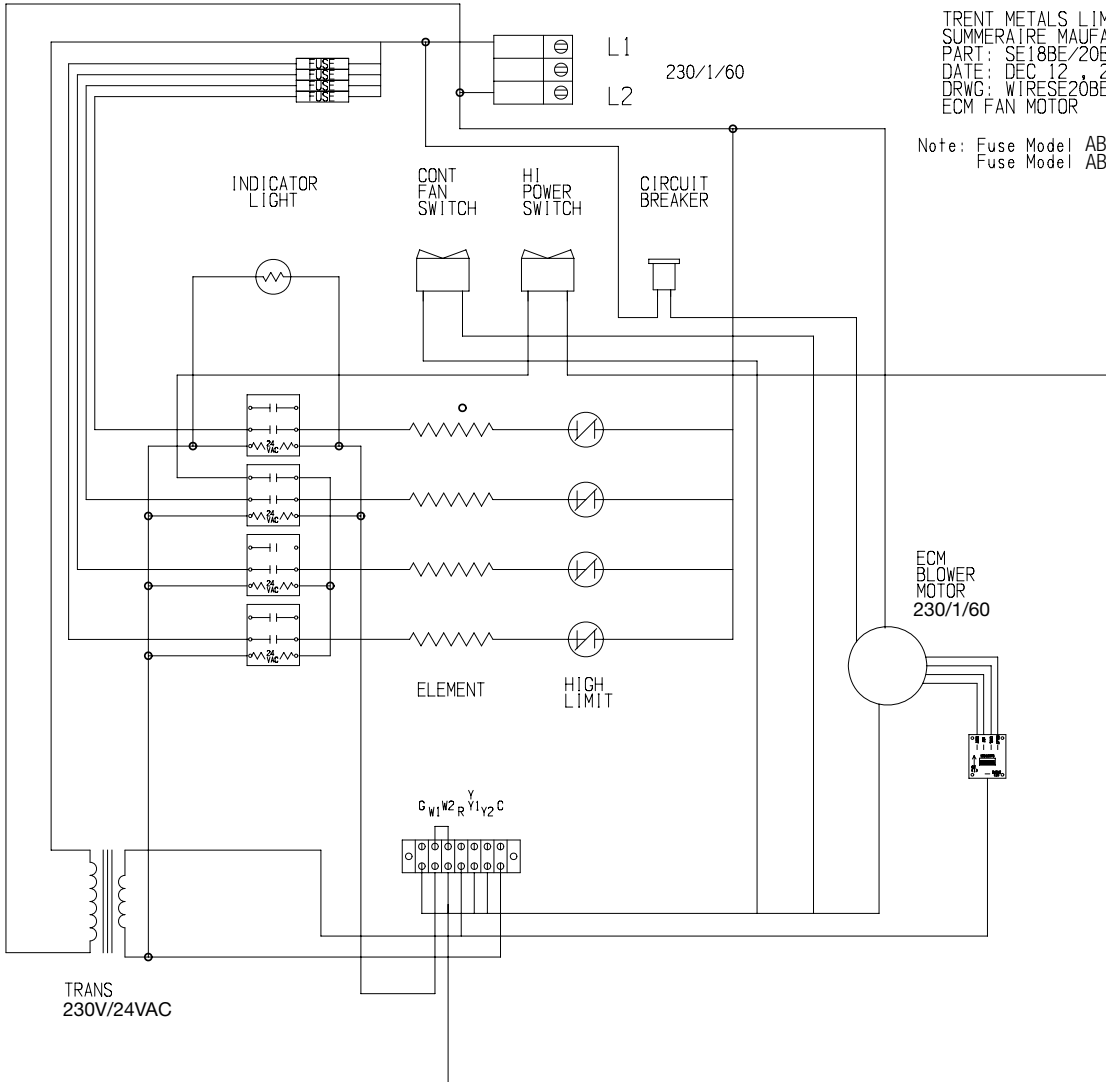
TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 PART: SE15BE ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE15BE
 ECM FAN MOTOR

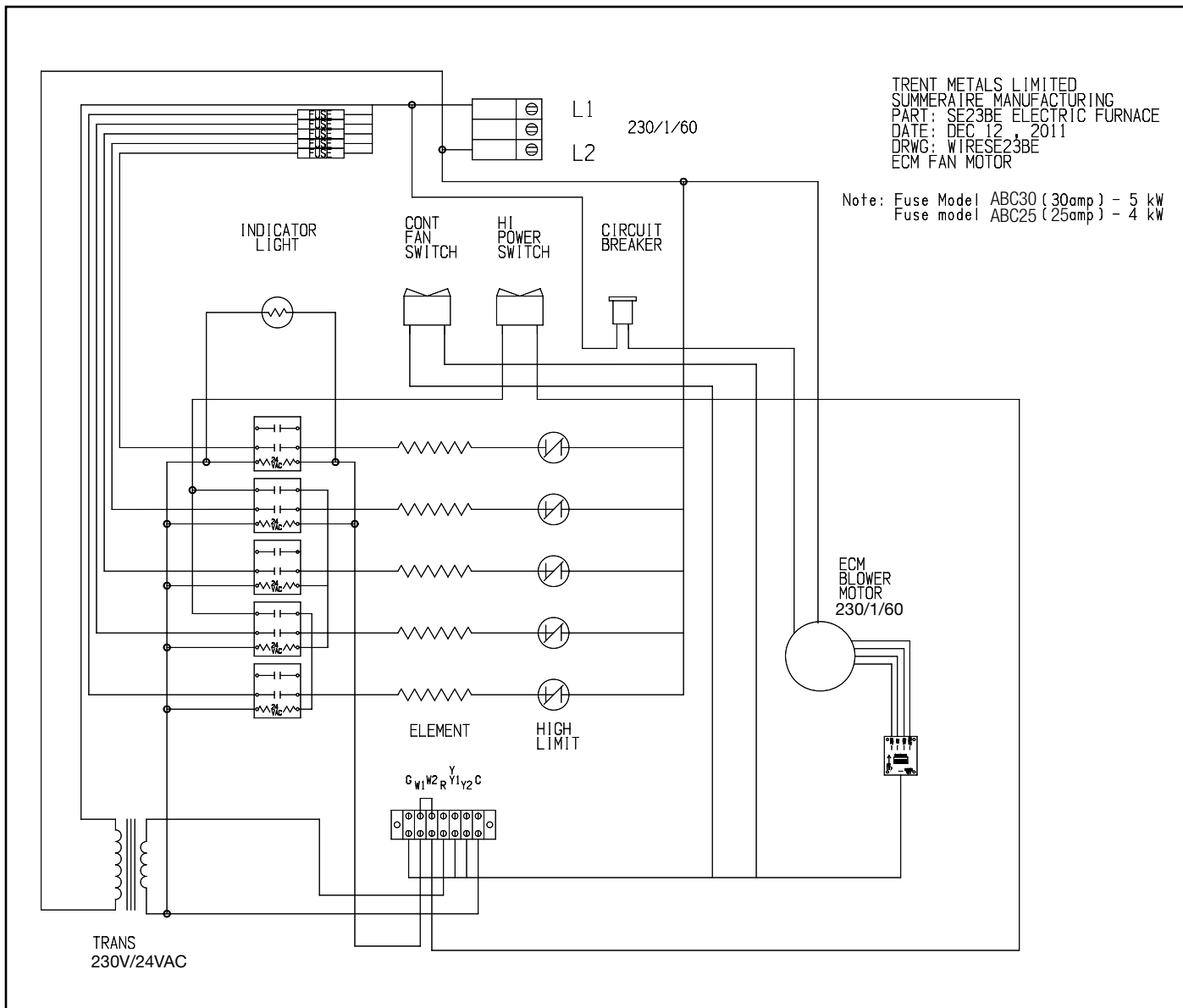
Note: Fuse Model ABC30 - 30 amp



TRENT METALS LIMITED
 SUMMERAITRE MANUFACTURING
 PART: SE18BE/20BE ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE20BE
 ECM FAN MOTOR

Note: Fuse Model ABC30 (30 amp) 5 kW element
 Fuse Model ABC20 (20 amp) 3 kW element





TRENT METALS LIMITED
 SUMMERAIRE MANUFACTURING
 PART: SE27BE ELECTRIC FURNACE
 DATE: DEC 12, 2011
 DRWG: WIRESE27BE
 ECM FAN MOTOR

Note: Fuse Model ABC25 (25amp) - 4 Kw
 Fuse Model ABC30 (30amp) - 5 Kw

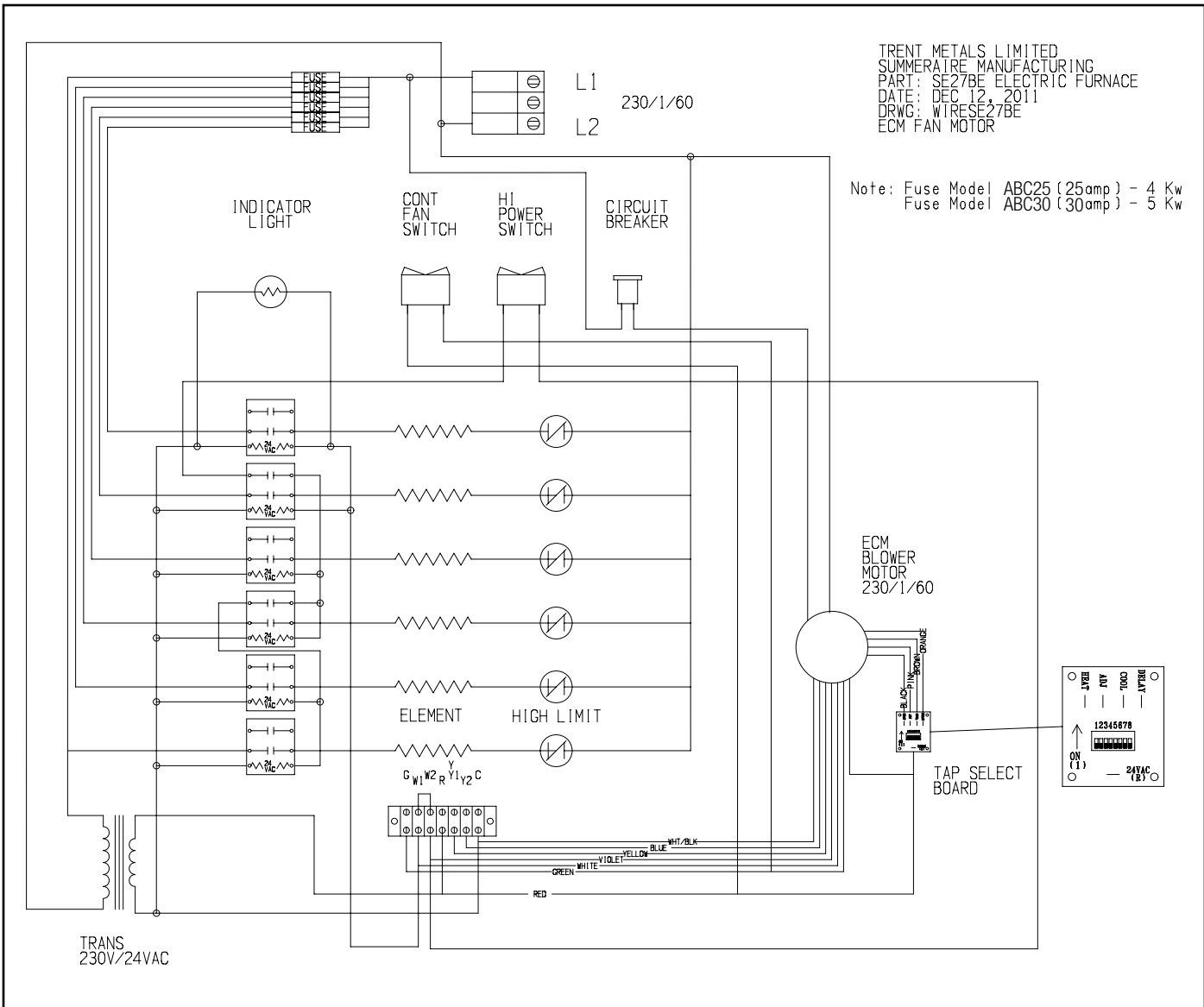


Fig. 6

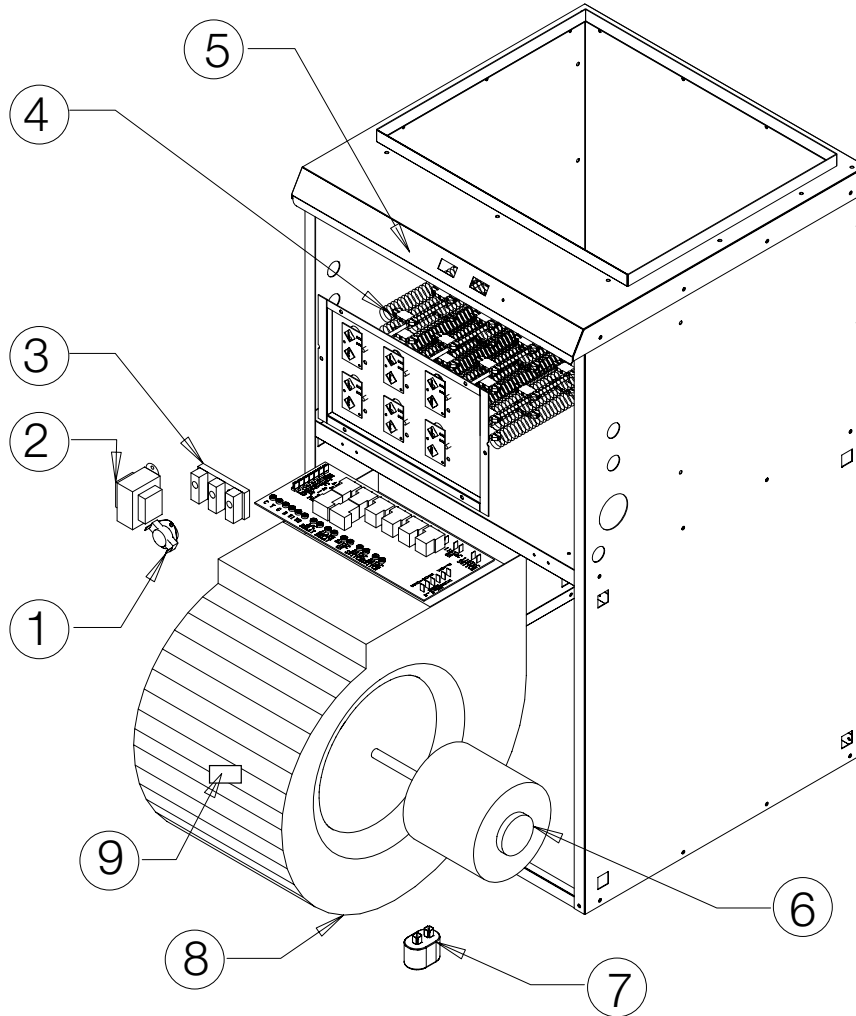


Fig. 7

- | | |
|--|---|
| 1) ELEMENT LIMIT CONTROL | 2.LIMCONT120100 |
| 2) TRANSFORMER | 2.TRANSSEB |
| 3) MAIN TERMINAL BLOCK | 2.TBMAIN |
| 4) ELEMENT | 2.ELMT3K240, 2.ELMT4K240, 2.ELMT5K240 |
| 5) SELECTOR SWITCH | 2.SWITCHRCKR |
| 6) FAN MOTOR | 2.MTR5836 (1/3HP), 2.MTRDD5845A(3/4HP) |
| 7) MOTOR CAPACITOR | 2.CAP6MF (1/3HP), 8.CAP370V75MF(1/3HP),2.CAP15UF(3/4HP) |
| 8) BLOWER | 2.BLWRG108DD, 2..BLOWERGT1210 |
| 9) Replacement Tap Select Board | 2.BOARDTAP |
| CIRCUIT BREAKER(not shown) | 2.BRKR16A |
| SEQUENCER | 2.SEQUENCER22, 2.SEQUENCER23 |
| CARTRIDGE FUSE | 2.FUSE15A, 2.FUSE20A, 2.FUSE30A |
| ECM Blower assy, just put model # in space | 2.BLWRASSYSE__E |
| ECM Motor, just put model # in space | 2.MTRSE__ECM |



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