



OPERATING INSTRUCTIONS MANUAL

## THC- 355DF

(Dual Fuel)

### INDUSTRIAL / COMMERCIAL DIRECTIONAL SPACE HEATER

(OPERATOR MUST RETAIN FOR FUTURE REFERENCES)



Certified to / Certifié à ANSI std Z83.7 2000

Suitable for indoor or outdoor installation / Unvented / Unattended Type



26 Benfield Drive, St.Catharines, Ontario Canada L2S 3V5  
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# **THC-355DF OPERATING INSTRUCTIONS MANUAL**

## **GENERAL HAZARD WARNING:**

**FAILURE TO COMPLY WITH THE PRECAUTIONS AND INSTRUCTIONS PROVIDED WITH THIS HEATER, CAN RESULT IN DEATH, SERIOUS BODILY INJURY AND PROPERTY LOSS OR DAMAGE FROM HAZARDS OF FIRE, EXPLOSION, BURN ASPHYXIATION, CARBON MONOXIDE POISONING, AND / OR ELECTRICAL SHOCK**

**ONLY PERSONS WHO CAN UNDERSTAND AND FOLLOW THE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATER**

**IF YOU NEED ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTIONS MANUAL, LABEL, ETC. CONTACT THE MANUFACTURER**

**WARNING: FIRE, BURN, INHALATION AND EXPLOSION HAZARD, KEEP SOLID COMBUSTIBLES, SUCH AS BUILDING MATERIALS, PAPER, OR CARDBOARD, A SAFE DISTANCE AWAY FROM THE HEATER AS RECOMMENDED BY THE INSTRUCTIONS NEVER USE THE HEATER IN SPACES WHICH DO OR MAY CONTAIN VOLATILE OR AIRBORNE COMBUSTIBLES, OR PRODUCTS SUCH AS GASOLINE SOLVENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS**

**WARNING: NOT FOR HOME OR RECREATIONAL VEHICLE USE**

# **WARNING**

This heater is designed and approved for use in accordance with **Standard ANSI**  
**CHECK WITH YOUR LOCAL FIRE SAFETY AUTHORITY IF YOU**  
**HAVE QUESTIONS ABOUT APPLICATIONS**

Other standards govern the use of fuel gases and heat producing products in specific applications. Your local authority can advise you about these.

FOR TEMPORARY HEAT ONLY  
FOR USE WITH VAPOUR PROPANE & NATURAL GAS ONLY  
DO NOT OPERATE IN A CLOSED OR CONFINED SPACE  
ALWAYS PROVIDE ADEQUATE VENTILATION. AIR SUPPLY – MUST BE FRESH  
AIR FROM OUTDOORS OR ADEQUATE INDOOR SUPPLY  
DO NOT USE OR STORE GASOLINE OR FLAMMABLE VAPOURS OR LIQUIDS IN  
THE VICINITY OF THE HEATER  
HEATER MUST BE INSTALLED ON A LEVEL SURFACE

## **INSTALLATION:**

The installation of this heater shall conform with local codes or, in the absence of codes with the National Fuel Gas Code ANSI Z223.1/NFPA 54

This heater must be installed by a qualified  
gas technician, following local codes published by the authority having jurisdiction

The installation of this heater for use with propane tank or cylinder shall conform with Local codes or, in the absence of local codes, with the Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58.

This heater must be located at least 10ft (3m) from any propane gas cylinder  
This heater shall not be directed toward any propane gas container within 20ft (6m).

## **CONNECTING TO YOUR FUEL SUPPLY**

### **PROPANE**

If cylinders are used to supply the heater, no cylinders smaller than 100lb capacity shall be used. **These cylinders must supply a vapor withdrawal only.**

1. All cylinder connections must be made using a wrench to tighten the POL fitting
2. Be sure the cylinder valve is in the closed position when connecting or disconnecting the cylinder.
3. A soap and water solution must be applied to all connections in order to leak check the system

4. The gas must be turned off at the propane supply cylinder(s) when the heater is not in use. When the heater is to be stored indoors, the connection between the propane supply cylinder(s) and the heater must be disconnected and the cylinders removed from the heater and stored in accordance with Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58.

## **NATURAL GAS**

The regulator should only be used if the supply pressure to the heater is above 14" WC

Connect the regulator to the natural gas supply line.

Gas supply pressure to the heater must be a minimum of 8.5" WC

### **PIPING:**

This heater must be installed by a qualified gas technician following local codes published by the authority having jurisdiction. Sizing of supply piping must be determined using the length of pipe run, as well as total btuh rating of the appliance(s). Appropriate piping tables must be used to determine size of supply piping, dependant on the length of run from source.

### **PRESSURES:**

	<b>MIN.</b>	<b>MAX.</b>
LP INLET PRESSURE:	11 IN. WC	14 IN. WC
NG INLET PRESSURE:	8.5 IN. WC	14 IN. WC

This heater must be supplied by pressures indicated on the approval label. Over pressure may cause controls to fail

### **FUEL:**

This heater will operate on Propane & Natural Gas only.

The manifold pressure is listed on the approval label.

Any replacement parts must be purchased from the manufacturer or authorized distributor.

### **HOSES:**

All hoses used to connect this heater of fuel supply must be Type 1 approved propane / natural gas hose assemblies

**ELECTRICAL:**

**WARNING**

**Electrical Grounding Instructions**

This appliance is equipped with a Power Supply Indicator & three-prong (grounding) plug for your protection against shock hazard, and should be plugged directly into a properly grounded three-prong receptacle 120v supply must be available. Please note that the motor on this unit requires 15 amps. Ensure appropriate gauge extension cord is used.

**CLEARANCE TO COMBUSTIBLES:**

**TOP: 5 ft**

**FRONT: 2 ft**

**SIDES: 1 ft**

**REAR: 2 ft**

**MAINTENANCE**

- 1** Every heater should be inspected before each use, and at least annually, by a qualified service person
- 2** The hose assembly shall be visually inspected prior to each use, of the heater. If it is evident there is excessive abrasion or wear, or the hose is cut, it must be replaced prior to the heater being put into operation. The replacement hose assembly shall be that specified by the manufacturer.
- 3** The appliance must be kept clear and free from combustible materials, gasoline and other flammable vapors and liquids.
- 4** The flow of combustion and ventilation air must not be obstructed. Be sure to check the fan assembly and ensure the motor and blade are operating properly.
- 5** Compressed air may be used to keep components free of dust and dirt build up.

**Note: Do not use the compressed air inside any piping or regulator components**

## **START UP INSTRUCTIONS**

- 1 For LP - Connect the POL inlet on the regulator of the heater to the propane cylinder.  
  
For NG - Ensure the Heater is provided with a gas supply of 8.5" WC
- 2 Ensure fuel selector valve on heater is in the proper position (Propane or Natural Gas).
- 3 Turn on fuel supply.
- 4 Depress the fan switch to the "ON" position. The fan motor will start and air will be pushed through the outlet of the heater.
- 5 Depress the heat switch to the "ON" position. The burner should ignite and hot air will be pushed through the outlet of the heater.
- 6 Set the thermostat (if provided) to desired temperature.
- 7 Visually watch the Power Supply Indicator light. (**see heater label if power is acceptable**)
- 8 If heater fails to ignite after 3 attempts, call your supplier for service.

## **TO SHUT DOWN**

- 1 Close fuel supply.
- 2 Move "Burner" switch to "OFF" position.
- 3 Wait 2-3 minutes and move "FAN" switches to the "OFF" position.
- 4 Disconnect heater from fuel supply.

### **Important Note**

When heater is to be stored indoors, the connection between the propane supply cylinder(s) and the heater must be disconnected and the cylinder(s) removed from the heater and stored in accordance with Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58.

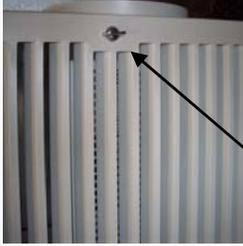
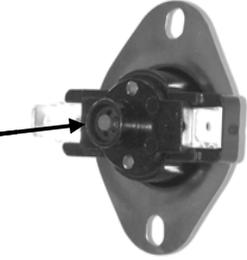


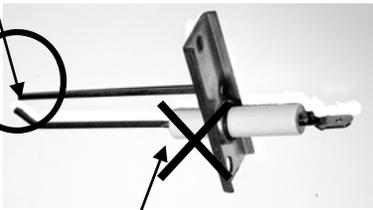
## THC-355DF - HEATER SPECIFICATIONS

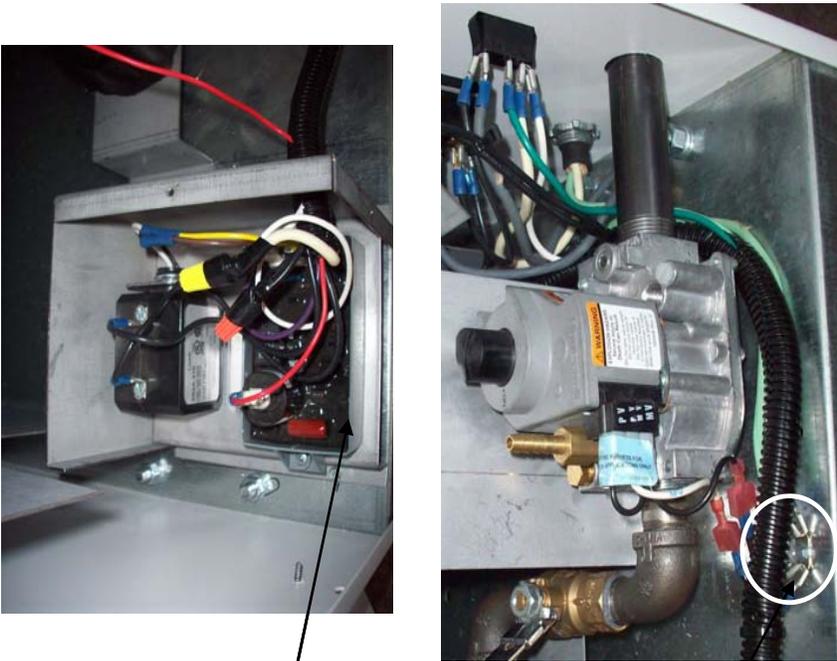
MODEL	THC-355DF	
FUEL TYPE (dual fuel)	PROPANE	NATURAL GAS
MAXIMUM INPUT (btu/hr)	350,000 btu	350,000 btu
INLET PRESSURE	Min. 11"WC/Max. 14"WC	Min. 8.5" WC/Max. 14"WC
BURNER MANIFOLD PRESSURE	9" WC	6" WC
FUEL CONSUMPTION PER HR.	16.2 LBS.	350 CFH
TEMPERATURE RISE <small>(above ambient)</small>	190 (F)	170 (F)
AMP DRAW	STARTING	21 AMPS
	CONTINUOUS	9 AMPS
OUTLET SIZE <small>(Designed for 18" Dia. Ducting)</small>	12.5" X 10.75"	
DIMENSIONS <small>H X L X W (IN.)</small>	42" X 46" X 32.5"	
WEIGHT	317 LBS. (Unboxed)	
IGNITION	Direct Spark Ignition Thermostat Control	
AIR CIRCULATION	2600 CFM	
APPROVED	WHus listed	

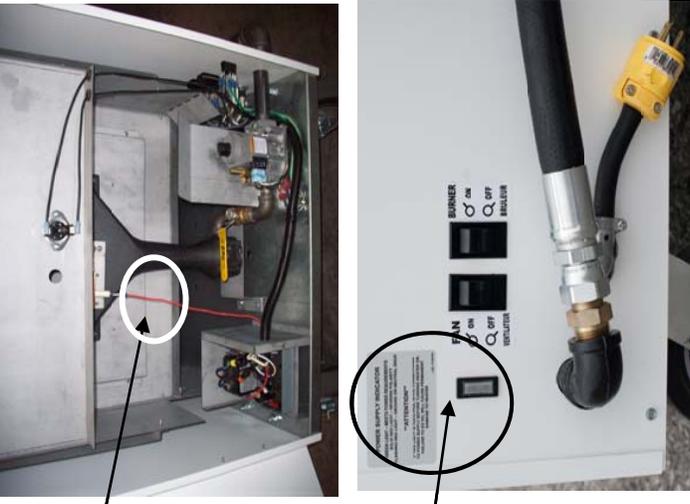
## THC SERIES TROUBLESHOOTING ANALYSIS

**PLEASE NOTE:** In order to facilitate trouble shooting, unit panels have been removed in some of these pictures for ease of identification only.  
 All panels and fasteners must be in place as provided by the manufacturer to ensure the safe and efficient operation of this gas fuelled appliance.

PROBLEM	POSSIBLE CAUSES	REMEDY	COMPONENT
<p>No heat, fan running</p>	<p>Rear of heater blocked</p> <p>If the rear of the heater is obstructed, the 3/4" snap disc manual reset limit may trip and must be reset manually before the burner can operate.</p>	<p>Ensure rear of heater is unobstructed and proper rear clearances are maintained (see for specifications).</p> <p>The high temperature switch reset button is found behind the louvers on the rear of the heater DISCONNECT THE POWER TO THE HEATER. Reach around the protective screen; and push the "red" button to reset on the switch make certain to close the panel before operating the appliance</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>rear of appliance</p> </div> <div style="text-align: center;">  <p>Carefully open the panel</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p>Red button</p> </div> <div style="text-align: center; margin-top: 20px;">  </div> <div style="text-align: center; margin-top: 20px;">  </div> <p>Rear of appliance exposing 3/4" snap disc manual reset limit switch.</p> <p>(3/4" snap disc manual reset limit switch shown for clarity.)</p>

PROBLEM	POSSIBLE CAUSES	REMEDY	COMPONENT
	Faulty On-Off Burner Switch	Replace the switch	
Heater will not Light	<p>Gas Supply</p> <p>Gas Valve/Solenoid</p> <p>Igniter/Flame sensor</p>	<p>Ensure required gas supply pressures are available to the heater (see approval label for specs).</p> <p>Ensure solenoid is energized (use volt meter to measure).</p> <p>Ensure plunger in solenoid is being activated (use manometer at the test point after solenoid).</p> <p>Ensure the gap between the igniter and sensor is approx. 1/8" - 3/16". DO NOT adjust the porcelain side of the igniter or permanent damage may result.</p> <p>Check igniter wire connections.</p> <p>Ensure igniter spark is strong.</p> <p>Replace igniter if necessary.</p>	 <p>Adjust this side only</p>  <p>Note location of igniter sensor</p>

PROBLEM	POSSIBLE CAUSES	REMEDY	COMPONENTS
	Igniton Board	<p>Ensure electrical signals for igniter and gas valve/solenoid are present.</p> <p>Typical igniton board.</p> <p>Ensure ignition board is properly grounded.</p>	
	Thermostat	<p>Ensure that the thermostat is calling for heat (if it is, the fan will start). Please note that as a safety measure, the thermostat is equipped with a 10 - second delay.</p>	
	Optional Thermostat	<p>If your appliance is equipped with an optional external thermostat, check that connections are secure and restart the appliance. If the appliance fails to restart, remove the optional line thermostat and restart the appliance to confirm its operational status. If the unit starts, then replace the thermostat.</p>	

PROBLEM	POSSIBLE CAUSES	REMEDY	COMPONENTS
<p>Heater will not remain lit after start up</p>	<p>Faulty igniter wire</p> <p>Faulty igniter/flame sensor</p> <p>Ignition board</p> <p>Thermostat</p>	<p>Check igniter wire for any damage replace if necessary.</p> <p>Ensure connections are secure</p> <p>Replace igniter/flame sensor if necessary.</p> <p>Check ground wire for proper connection.</p> <p>Visually check the Power Supply Indicator <b>(see sticker on heater)</b></p> <p>Green light - Meets Power Req. Solid Red Light - Reverse Polarity Flashing Red Light- Ground or Neutral Missing</p> <p>Ensure thermostat is calling for heat NOTE: if the thermostat is not calling for heat, the appliance will not operate.</p>	
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<p>Electrical</p> <p>Piping</p>	<p>All Components</p> <p>All pipe fittings</p>	<p>Before replacing any components, all connections must be checked to ensure electrical circuit is complete (Use volt meter and enclosed wiring diagram)</p> <p>When loosened, tightened or replaced, the complete fitting should be removed and approved pipe dope applied all male threads before reconnection.</p> <p>After a heater is serviced, the valve train should be checked for leaks with a soap and water solution or approved leak detector solution.</p>	

# PARTS LIST FOR THC-355DF

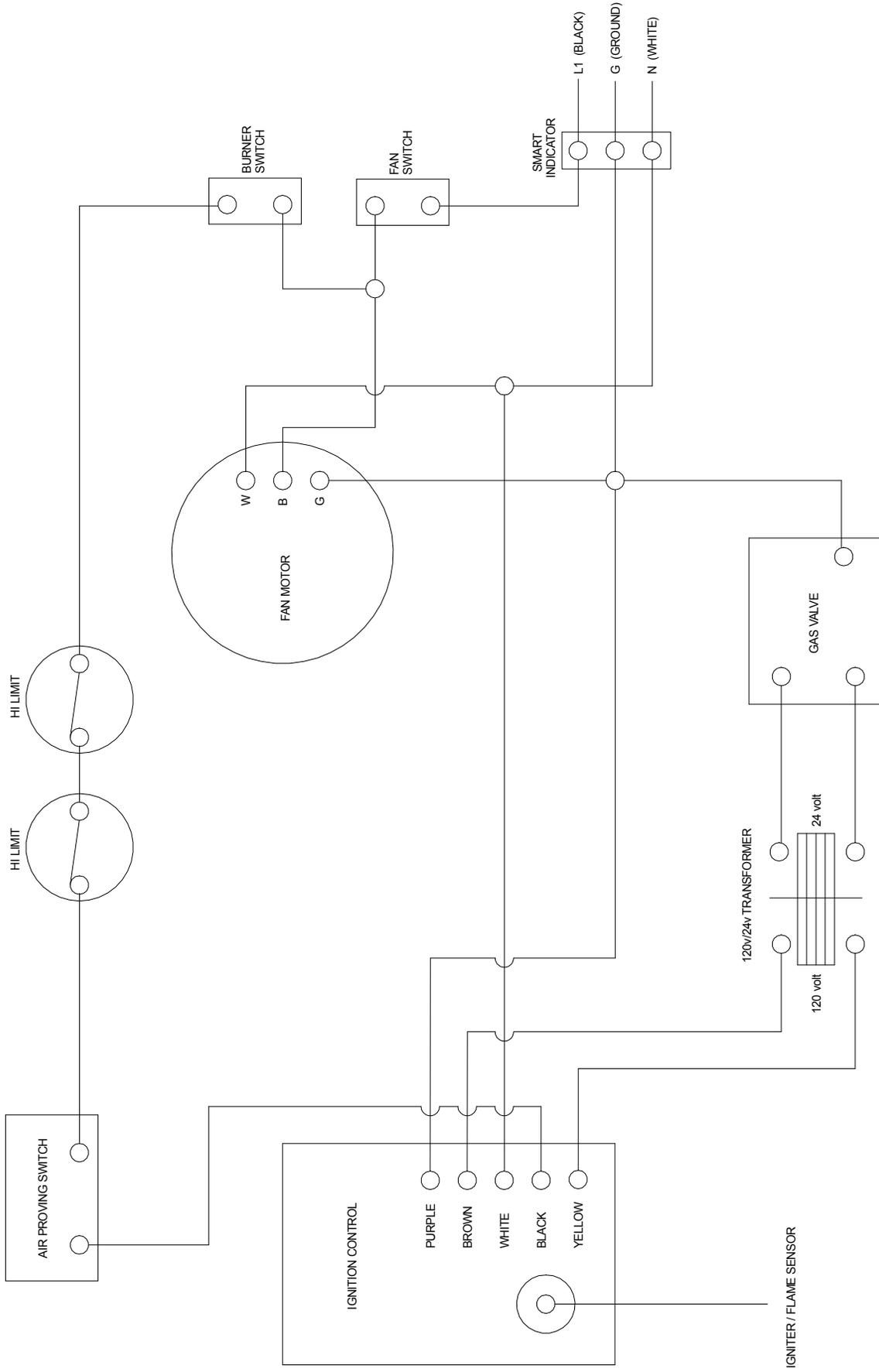
<b>Part Number</b>	<b>Part Description</b>
THCP-101	CAST IRON BURNER
THCP-102	IGNITER/ FLAME SENSOR ASSEMBLY
THCP-103	IGNITER WIRE
THCP-104	120/24 VOLT TRANSFORMER
THCP-105A	GAS VALVE / SOLENOID - 24V (THC-355DF ONLY)
THCP-106A	IGNITION CONTROL - 120V
THCP-107A	WIRING HARNESS FOR THCP-106A
THCP-108B	HIGH TEMPERATURE LIMIT (OUTLET) 250F - (THC-355DF ONLY)
THCP-109	HIGH TEMPERATURE LIMIT (BURNER)
THCP-110	AIR PROVING SAIL SWITCH
THCP-111	MAIN BURNER OR FAN SWITCH
THCP-113A	3/4 HP MOTOR - THC-355DF
THCP-114B	FAN BLADE - THC-355DF
THCP-115A	ORIFICE FOR THC-355DF
THCP-119A	ORIFICE HOLDER FOR THC-355DF
THCP-121A	POWER CORD FOR THC-355DF
THCP-122	SIDE HANDLES (EACH) TWO REQUIRED
THCP-124A	WHEELS - 12" (EACH) TWO REQUIRED
THCP-124B	6" LOCKABLE CASTERS (EACH) TWO REQUIRED
THCP-125LB	WHEEL SHAFT - THC-355DF
THCP-131	TENT HEATER DOOR LATCH (EACH) TWO REQUIRED
THCP-132	DOOR HINGE (EACH) FOUR REQUIRED
THCP-146	BELT TENSOR
THCP-147	BELT TENSOR PULLEY
THCP-148	BELT TENSOR PULLEY BUSHING
THCP-149	MOTOR PULLEY
THCP-150	SHAFT PULLEY
THCP-151	PILLOW BLOCK (TWO REQUIRED)
THCP-152	3/4" X 16" PULLEY SHAFT
THCP-153	DRIVE BELT

THCP-154	POWER SUPPLY INDICATOR
THCP-155	LOCKABLE FUEL SELECTOR VALVE
THCP-156	INLET RING - THC-355DF
THCP-157	FRONT DOOR - THC-355DF
THCP-158	REAR DOOR - THC-355DF
THCP-159	TOP PANEL - THC-355DF
THCP-160	SIDE BODY PANEL (OULET) - THC-355DF
THCP-161	SIDE BODY PANEL (FUEL SUPPLY) - THC-355DF
40-100-12	3/4" 90 DEGREE ELBOW
40-113E5	3/4" X 5" NIPPLE
40-113D1.5	1/2" X 1 1/2" NIPPLE
40-116-8	1/2" 90 DEGREE STREET ELBOW (EACH) TWO REQUIRED
40-120-12-8	3/4" X 1/2" REDUCING BUSHING
S60180-12	3/4 ID MP X JICFFL 15-FT HOSE ASS'Y
348-12E	3/4 MP X 3/4 M.JIC STEEL ADAPTER
THCP-162	3/4" LARGE TWIN STAGE REGULATOR inc. POL
2003-T	POL FITTING

## **ACCESSORIES**

<b>Part Number</b>	<b>Part Description</b>
THCP-GD18	18" X 12FT DUCTING
THCP-DA18	DUCT ADAPTER FOR 18" DUCTING
THCP-DD18	DUCT DIFFUSER FOR 18" DUCTING
B42R0.75	3/4" SECOND STAGE REGULATOR

# THC SERIES WIRING DIAGRAM 2010



<b>DATE:</b> 07/19/10	<b>DRAWN BY:</b> IBW
<b>SCALE:</b>	<b>CHECKED BY:</b>
<b>TITLE:</b> THC Series - Wiring Diagram (SI)	
<b>DWG. NO.:</b> THC-001SI	