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COMMERCIAL COMBUSTION AIR IN-FORCER™ MODELS

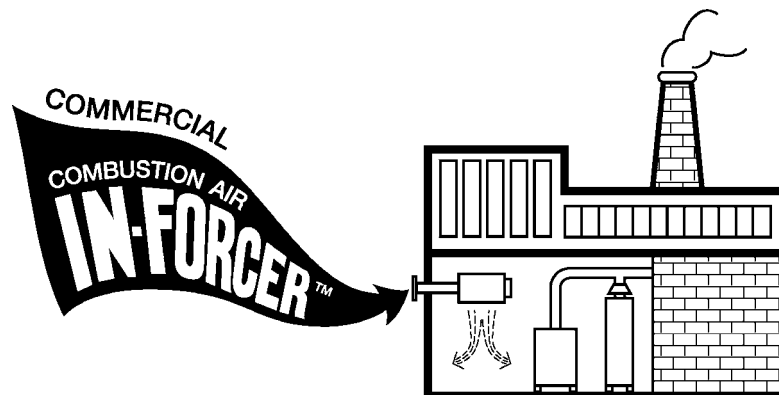
PAI-3

PAI-4

PAI-5

PAI-6

PAI-7



OWNER INSTRUCTIONS, DO NOT DESTROY

! Recognize this symbol as an indication of important Safety Information!

! WARNING

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, CARBON MONOXIDE POISONING, EXPLOSION, OR PERSONAL INJURY OR PROPERTY DAMAGE.

**PLEASE READ CAREFULLY AND KEEP ON JOB
 SITE FOR FUTURE REFERENCE.**

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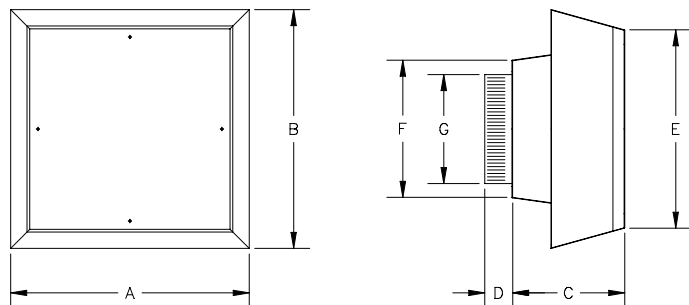
IN-FORCER™ is a trademark of Tjernlund Products, Inc. for IN-FORCER air intakes.

DESCRIPTION

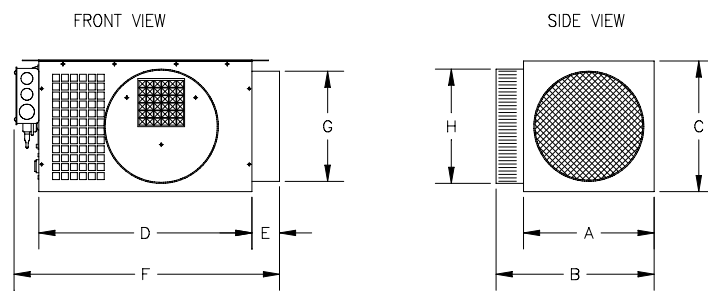
The IN-FORCER combustion air intake systems are designed and Listed for use with atmospheric or induced combustion gas and oil heating equipment. The IN-FORCER functions as the source of combustion air, eliminating the need for louvered openings. The IN-FORCER assures intake air is supplied by monitoring the air flow with a Fan Proving Switch. The main burner will be interrupted if a malfunction occurs.

DIMENSIONS & SPECIFICATIONS

INTAKE HOOD DIMENSIONS



IN-FORCER POWERED INTAKE DIMENSIONS



	A	B	C	D	E	F	G
PAI-3	14"	14"	6 1/4"	2 1/4"	12"	8"	6" DIA
PAI-4	17 1/2"	17 1/2"	8 1/2"	2 1/4"	14 1/2"	10"	8" DIA
PAI-5 & 6	23 1/2"	23 1/2"	8 1/4"	2 1/4"	20 1/4"	16 5/8"	10" DIA
PAI-7	29 1/2"	29 1/2"	8 3/8"	2 1/4"	26 1/8"	22 3/8"	12" DIA

	A	B	C	D	E	F	G	H
PAI-3	9 1/2"	11 3/4"	9 1/2"	15 1/2"	2 1/4"	19 1/2"	6" DIA	6" DIA
PAI-4	9 1/2"	11 3/4"	9 1/2"	15 1/2"	2 1/4"	19 1/2"	8" DIA	8" DIA
PAI-5 & 6	12 1/2"	13 5/8"	15 1/4"	23"	1 1/2"	24"	10" DIA	10" DIA
PAI-7	15 1/4"	17 1/4"	17 7/8"	30"	1 1/2"	30 3/4"	12" DIA	12" DIA

PAI-3 Motor: 115/1/60, 3000 RPM, 95 watts, 1.26 FLA, Thermal Protection

PAI-4 Motor: 115/1/60, 3300 RPM, 166 watts, 1.51 FLA, Thermal Protection

PAI-5 Motor: 115/1/60, 1725 RPM, 1/4 HP, 5.4 Amps, Thermal Protection

PAI-6 Motor: 115/1/60, 1725 RPM, 1/3 HP, 5.8 Amps, Thermal Protection

PAI-7 Motor: 115/208/230/1/60, 1725 RPM, 1 HP, 12.6/6.3/6.2 Amps, Thermal Protection

24-Volt Control Circuits: All models require a relay to activate the IN-FORCER motor. Tjernlund P/N 950-1040 is applicable to all models except the PAI-7. The PAI-7 requires P/N 950-1016.

115 Volt Control Circuits: IN-FORCERS may be directly wired into a heating appliance control circuit as long as the contacts of the circuit can handle the additional load of the IN-FORCER motor. For installations that require a relay, Tjernlund P/N 950-0480 is applicable to all models except the PAI-7. The PAI-7 requires P/N 950-0483.

Fan Proving Switch: Do not exceed 3 FLA or 1/10 HP through proving switch contacts. You may add one of relays listed on bottom of page 1 to isolate the proving switch contacts if the load being switched exceeds the maximum rating.

High Limit: Manual reset N/C contacts, open at $160^{\circ} \pm 8^{\circ}$ F, 14 FLA @120 VAC. The high limit switch will deactivate the IN-FORCER if temperature adjacent to high limit reaches the set point. Reset button is located on inside of cabinet on electrical box side of IN-FORCER.

GENERAL INFORMATION

1. These units have been factory tested and rated in accordance with AMCA Standard 210, test code for air moving devices.
2. Each IN-FORCER is electrically factory line tested before shipment.
3. After opening carton, inspect thoroughly for hidden damage. Fan wheel should rotate freely. If any damage is found, notify freight carrier and your distributor immediately and file a concealed damage claim.

INSTALLATION RESTRICTIONS

1. Observe proper location of Intake Hood as described on page 5.
2. If IN-FORCER outlet is mounted lower than seven feet above the utility room floor, a minimum 2 foot section of pipe must be installed on the discharge side of the IN-FORCER to prevent accidental contact with operating blower wheel.

WARNING

Improper installation, adjustment, alterations, service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the equipment supplier.

CAUTIONS

WARNING

1. Failure to install, maintain and/or operate the IN-FORCER in accordance with manufacturer's instructions may result in conditions that can produce bodily injury and property damage.

NOTE: Cold climate installations must adhere to warning #4 and #7.

2. The IN-FORCER must be installed by a qualified installer (an individual properly licensed and/or trained) in accordance with all local codes or in their absence, in accordance with the appropriate National Fire Protection Association #31, #54, #211 and the National Electric Code.
3. The IN-FORCER motor shaft must be mounted horizontally, with discharge also facing horizontally to prevent motor bearing wear and ensure proper operation of the Fan Proving Switch.
4. Do not discharge onto water pipes or other equipment which may be affected by temperature extremes.
5. Disconnect power supply when making wire connections and servicing the IN-FORCER. Failure to do so may result in personal injury and/or equipment damage.
6. Make certain the power source is adequate for the IN-FORCER requirements. Do not add the IN-FORCER to a circuit where the total electrical load is unknown.
7. To prevent potentially damaging low mechanical room temperatures, it is recommended that a low temperature limit be installed.
8. **WARNING:** To reduce the risk of fire or electric shock, do not use this fan with any solid state speed control device.
9. **WARNING:** To reduce the risk of electric shock and injury to persons, do not use in a window.
10. **WARNING:** To reduce the risk of fire, electric shock, or injury to persons, observe the following:
 - a.) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
 - b.) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), and the local code authorities.
 - c.) When cutting or drilling into wall or ceiling, do not damage electrical wiring or other hidden utilities.

WARNING

The IN-FORCER CFM outputs will assure that adequate combustion air is supplied if the appliance is functioning properly. However, in the event that there is an appliance malfunction, such as a cracked heat exchanger or clogged flue, there is no guarantee that additional combustion air will eliminate carbon monoxide spillage into the equipment room.

IN-FORCER APPLICATION AND SELECTION TABLE

Verify that the total BTU/hr input of the heating appliance(s) falls within the range specified below. Check maximum duct length and appropriate duct diameter with the IN-FORCER Selection Table below.

IN-FORCER MODEL	GAS ATMOSPHERIC BTU/HR	GAS POWER BURNER WITH BAROMETRIC BTU/HR	GAS POWER BURNER BTU/HR	OIL FLAME RETENTION WITH BAROMETRIC BTU/HR
PAI-3	UP TO 275,000	UP TO 350,000	UP TO 500,000	UP TO 450,000
PAI-4	UP TO 450,000	UP TO 600,000	UP TO 850,000	UP TO 775,000
PAI-5	UP TO 775,000	UP TO 1,000,000	UP TO 1,500,000	UP TO 1,300,000
PAI-6	UP TO 1,300,000	UP TO 1,700,000	UP TO 2,500,000	UP TO 2,300,000
PAI-7	UP TO 2,100,000	UP TO 2,900,000	UP TO 3,700,000	UP TO 3,700,000

IN-FORCER SELECTION TABLE

MAX. DUCT LENGTH IN EQUIV. FEET indicates how much duct may be used at the given diameter based on the four types of heating equipment. All duct before and after the IN-FORCER must be added. To calculate equivalent duct length, add the straight duct plus 10' for every 90° elbow and 5' for each 45° elbow. Values in the chart assume rigid metal duct. Consult flex duct manufacturer for de-rating percentage if using flex duct. The resistance for any combination of ducts and diffusers cannot exceed the maximum equivalent duct length shown in selection table.

If interlocking IN-FORCER with more than one appliance of the same type, add the BTU/HR. input of each appliance to determine IN-FORCER model and maximum equivalent duct length and diameter. If interlocking IN-FORCER with different types of equipment consult Tjernlund Technical Customer Service @ 1-800-255-4208 for further information.

MODEL	BTU/HR INPUT	GAS ATMOSPHERIC		GAS POWER BURNER WITH BAROMETRIC		OIL FLAME RETENTION WITH BAROMETRIC		GAS POWER BURNER		
		MAX DUCT LENGTH IN EQUIV.FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV.FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV.FEET	RIGID DUCT DIAMETER IN INCHES	MAX DUCT LENGTH IN EQUIV.FEET	RIGID DUCT DIAMETER IN INCHES	
PAI-3	150,000	100	6	100	6	100	6	100	6	PAI-3
	200,000	100	6	100	6	100	6	100	6	
	250,000	100	6	100	6	100	6	100	6	
	275,000	100	8	100	6	100	6	100	6	
PAI-4	300,000	100	8	100	6	100	6	100	6	PAI-3
	350,000	100	8	100	6	100	6	100	6	
	400,000	100	8	100	8	100	6	100	6	
PAI-5	450,000	52	10	100	8	100	6	100	6	PAI-4
	500,000	100	10	100	8	100	8	98	6	
	550,000	100	10	100	8	100	8	100	8	
	600,000	100	10	100	10	100	8	100	8	
	650,000	100	10	100	10	100	8	100	8	
PAI-6	700,000	100	10	100	10	100	8	100	8	PAI-4
	775,000	100	10	100	10	95	10	100	8	
	850,000	100	10	100	10	100	10	100	10	
	900,000	100	10	100	10	100	10	100	10	
	950,000	100	10	100	10	100	10	100	10	
PAI-7	1,000,000	100	10	100	10	100	10	100	10	PAI-5
	1,100,000	100	10	100	10	100	10	100	10	
	1,200,000	100	10	100	10	100	10	100	10	
	1,300,000	95	10	100	10	100	10	100	10	
PAI-7	1,400,000	100	12	100	10	100	10	100	10	PAI-5
	1,500,000	100	12	100	10	100	10	100	10	
	1,600,000	100	12	100	10	100	10	100	10	
	1,700,000	100	12	100	10	100	10	100	10	
	1,800,000	100	12	100	12	100	10	100	10	
	1,900,000	100	12	100	12	100	10	100	10	
	2,000,000	100	12	100	12	100	10	100	10	
	2,100,000	98	12	100	12	100	10	100	10	
	2,200,000			100	12	100	10	100	10	
	2,300,000			100	12	100	10	100	10	
	2,400,000			100	12	100	12	100	10	
	2,500,000			100	12	100	12	100	10	
	2,600,000			100	12	100	12	100	12	
	2,700,000			100	12	100	12	100	12	
2,800,000			100	12	100	12	100	12		
2,900,000			98	12	100	12	100	12		
3,000,000					100	12	100	12		
3,100,000					100	12	100	12		
3,200,000					100	12	100	12		
3,300,000					100	12	100	12		
3,400,000					100	12	100	12		
3,500,000					100	12	100	12		
3,600,000					100	12	100	12		
3,700,000					100	12	100	12		

SAFETY INSPECTION OF A PREVIOUSLY USED OIL APPLIANCE

(Perform prior to IN-FORCER installation)

The following procedure is intended as a guide to aid in determining that an appliance is properly installed and is in safe condition for continuing use. This procedure is based on central furnace and boiler installations and it should be recognized that generalized procedures cannot anticipate all situations. Accordingly, in some cases deviation from this procedure may be necessary to determine safe operation of the equipment.

- A. This procedure should be performed prior to any attempt at modifications of the appliance or installation of the IN-FORCER.
- B. If it is determined there is a condition which could result in unsafe operation, the appliance should be shut off and the owner advised of the unsafe condition.

The following steps should be followed in making the safety inspection:

1. Visually inspect the venting system and determine there is no blockage or restriction, leakage, corrosion or other deficiencies which could cause an unsafe condition.
2. Inspect burner and primary control for proper operation.
3. Applicable only to furnaces: Inspect heat exchanger for cracks, openings or excessive corrosion. Check both the limit control and fan control for proper operation.
4. Applicable only to boilers: Inspect for evidence of water or combustion product leaks. Determine that the water pumps are in operating condition. Test low water cutoffs, automatic feed controls, pressure and temperature limit controls and relief valves in accordance with the manufacturer's recommendations to determine that they are in operating order.

SAFETY INSPECTION OF A PREVIOUSLY USED GAS APPLIANCE

(Perform prior to IN-FORCER installation)

The following procedure is intended as a guide to aid in determining that an appliance is properly installed and is in safe condition for continuing use. This procedure is based on central furnace and boiler installations and it should be recognized that generalized procedures cannot anticipate all situations. Accordingly, in some cases deviation from this procedure may be necessary to determine safe operation of the equipment.

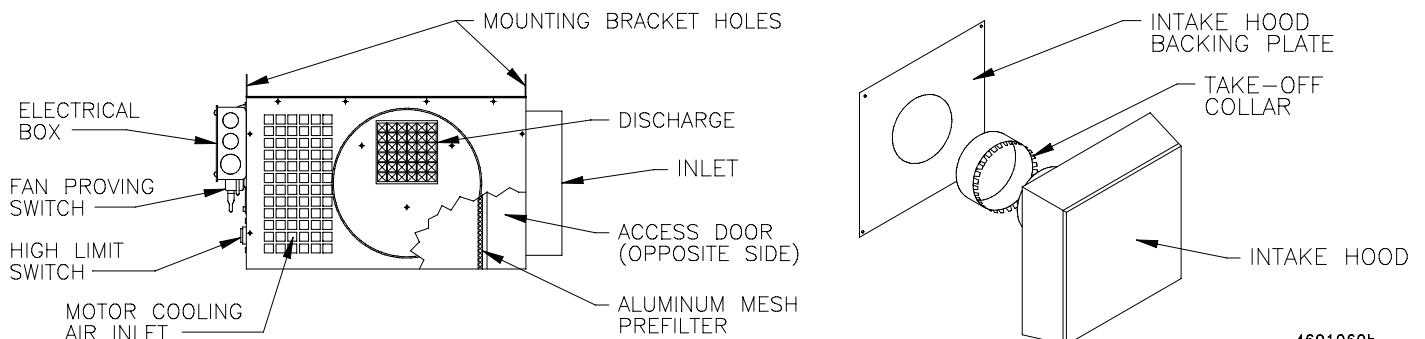
- A. This procedure should be performed prior to any attempt at modifications of the appliance or installation of the IN-FORCER.
- B. If it is determined there is a condition which could result in unsafe operation, the appliance should be shut off and the owner advised of the unsafe condition.

The following steps should be followed in making the safety inspection:

1. Conduct a gas leakage test of the appliance piping and control system downstream of the shutoff valve in the supply line to the appliance.
2. Visually inspect the venting system and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. Shut off all gas to the appliance(s).
4. Inspect burners and crossovers for blockage and corrosion.
5. Applicable only to furnaces: Inspect heat exchanger for cracks, openings or excessive corrosion. Check both the limit control and fan control for proper operation.
6. Applicable only to boilers: Inspect for evidence of water or combustion product leaks. Determine that the water pumps are in operating condition. Test low water cutoffs, automatic feed controls, pressure and temperature limit controls and relief valves in accordance with the manufacturer's recommendations to determine that they are in operating order.

* Excerpts from the National Fuel Gas Code (ANSI Z223.1/NFPA #54), Appendix H.

IN-FORCER TERMINOLOGY



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INTAKE HOOD LOCATIONS - WALL MOUNT OR ROOF MOUNT

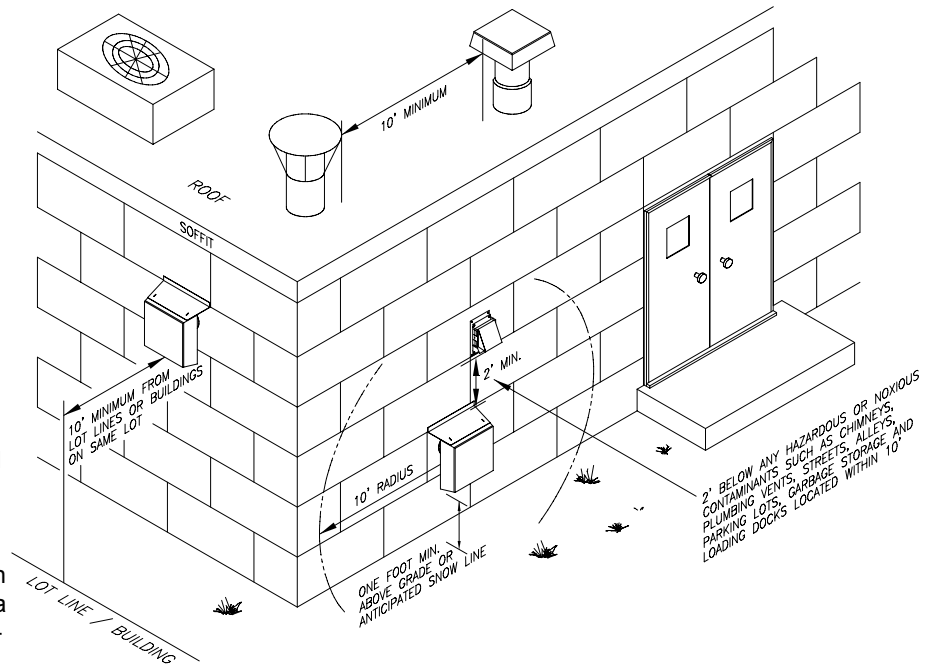
The IN-FORCER has been Listed in accordance with the 1990 BOCA National Mechanical Code, Section M-306.1 and M-306.1.1 as follows.

M-306.1 LOCATION:

Outside air exhaust and intake openings shall be located a minimum of 10 feet (3048mm) from lot lines or buildings on the same lot. When openings front on a street or public way, the distance shall be measured to the center-line of the street or public way.

M-306.1.1 INTAKE OPENINGS:

Outside air intake openings shall be located a minimum of 10 feet (3048mm) from any hazard or noxious contaminant such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks. When a source contaminant is located within 10 feet (3048mm) of an intake opening, such opening shall be located a minimum of 2 feet (610mm) below the contaminant source.



IN ADDITION TO THESE CODES THE MANUFACTURER RECOMMENDS THAT:

The Intake Hood should be a minimum of 1 foot above grade or anticipated snow line.

On wall installations, if possible, terminate the IN-FORCER on a wall that does not face the direction of prevailing winds. This will diminish the possibility of wind infiltration.

INSTALLATION (TOOLS REQUIRED)

- Reciprocating saw
- 1/4", 5/16", 3/8" nut runner or socket
- Wire cutter/stripper
- Drill and 1/4" bit
- Blade screwdriver
- Masonry chisel

INSTALLATION OF INTAKE HOOD

Note: Before cutting opening through wall or roof, figure layout of pipe runs. Consult selection table on page 3 and Intake Hood location above.

The Intake Hood is designed so relatively large amounts of outdoor air can be pulled in through a small wall or roof opening. If properly installed, rain and snow will not be pulled in with the outdoor air. Systems installed without the PAI-Series Intake Hood may be susceptible to the entry of rain or snow and CFM values can not be guaranteed.

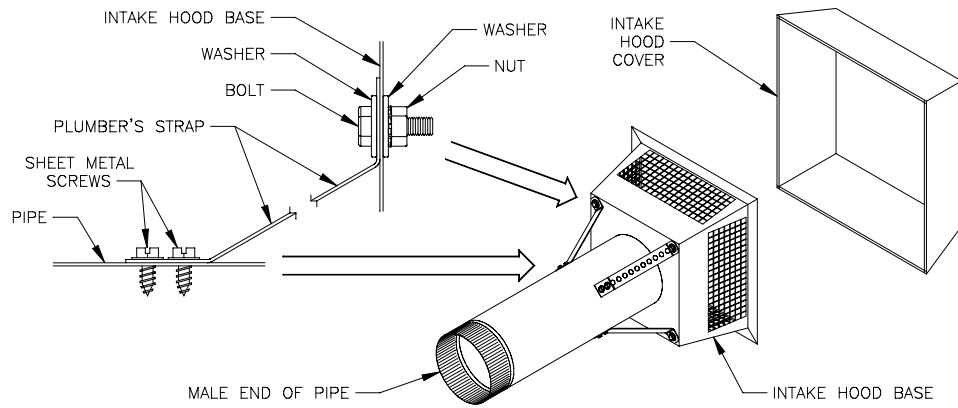
The Intake Hood may be primed and painted to blend in with the building exterior.

The Intake Hood can be mounted on an outside wall or roof.

ROOF MOUNT INSTALLATION OF INTAKE HOOD

1. Attach take-off collar to the Intake Hood Base by bending over the tabs of the collar. Screw galvanized pipe to take-off collar on Intake Hood Hood base.
2. Verify that roof penetration will not come in contact with concealed wiring or plumbing. Cut a circular hole through the roof. (PAI-3 Rough-In: 6 1/2", PAI-4 Rough-In: 8 1/2", PAI-5/6 Rough-In: 10 1/2", PAI-7 Rough-In: 12 1/2")
3. Install 4 pieces of plumber's strap from the Intake Hood Base to the pipe. Use the provided 1/4" bolts, washers, and nuts to attach the straps to the hood. Use 2 sheet metal screws per strap to attach the straps to the pipe, (See Diagram A).
4. Secure Intake Hood cover to base with #8 x 3/8" sheet metal screws, PAI-3/4 (4), PAI-5/6 (8), PAI-7 (20), (See Diagram A).
5. Install roof flashing and storm collar. Clamp storm collar around galvanized pipe penetrating through to the interior. Intake Hood should be at least 2 feet above the roof.
6. Install Intake Hood backing plate on ceiling if desired with #10 x 1 1/4" screws provided, PAI-3/4 (4), PAI-5/6/7 (8).

DIAGRAM A



WALL MOUNT INSTALLATION OF INTAKE HOOD

1. Attach take-off collar to Intake Hood base by bending over the tabs of the collar.
2. Verify that wall penetration will not come in contact with concealed wiring or plumbing. Cut a circular or square opening through the wall. (PAI-3 Rough-In: 6 1/2", PAI-4 Rough-In: 8 1/2" , PAI-5/6 Rough-In: 10 1/2", PAI-7 Rough-In: 12 1/2")
3. Secure section of galvanized pipe to Intake Hood collar with sheet metal screws.
4. Insert Intake Hood with pipe attached through opening and mark location of mounting holes, PAI-3/4 (4), PAI-5/6/7 (8), (See Diagram B). Drill 1/4" diameter holes at marked locations, insert plastic wall anchors (for masonry wall).
5. Apply a bead of caulk around perimeter of Intake Hood Base, (See Diagram C). Insert Intake Hood through opening, align mounting holes and secure to wall with #10 x 1 1/4" screws provided, PAI-3/4 (4), PAI-5/6/7 (8).
6. Secure Intake Hood Cover using #8 x 3/8" sheet metal screws, PAI-3/4 (4), PAI-5/6 (8), PAI-7 (20), (See Diagram D).
7. Apply a bead of caulk to the rear flange of the Rain Shield and position Rain Shield on the Intake Hood making sure it is adjusted flush against the wall. Use adjustment slot and pierce through hood dimples with (2) #8 x 3/8" sheet metal screws, (See Diagram E).

MODEL PAI-7 ONLY

When installing PAI-7 Hood apply Rain Shield with caulking over middle adjustment slot of rain shield. Install leak proofing tab between Rain Shield and Intake Hood, (See Diagram D).

8. Install Intake Hood backing plate on interior wall with provided #10 x 1 1/4" screws and wall anchors, PAI-3/4 (4), PAI-5/6/7 (8).

DIAGRAM B

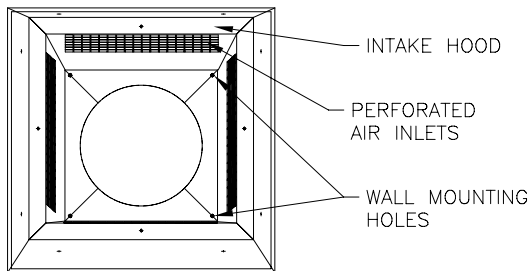


DIAGRAM C

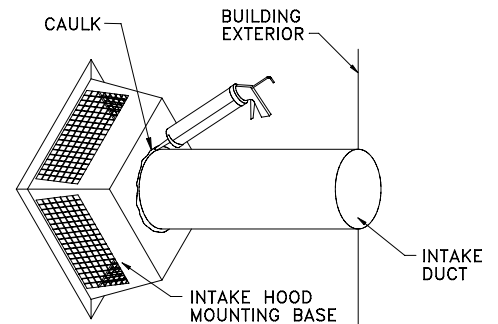


DIAGRAM D

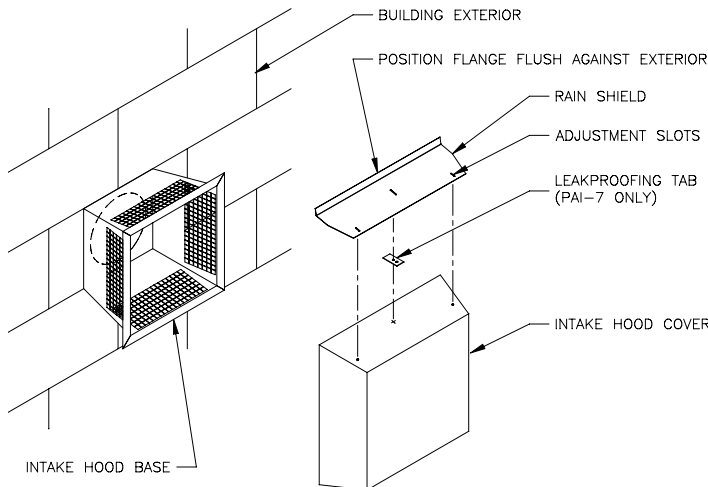
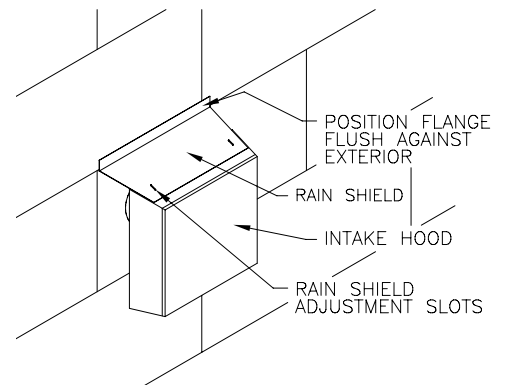


DIAGRAM E



INSTALLER NOTE

1. For easier wiring and servicing maintain 18" clearance from the rear and control sides and 12" from the top of the IN-FORCER.
2. For easier electrical interlock plan for sufficient duct so that the IN-FORCER can be suspended adjacent to the heating equipment that it serves.

INSTALLER CAUTION

1. Do not directly discharge onto water piping or objects that may be affected by temperature extremes.
2. In areas with low temperature extremes it is advisable to insulate ducts or use insulated duct.
3. Do not exceed equivalent duct lengths listed in IN-FORCER Selection Table on Page 3.

The IN-FORCER is designed to be hung from an overhead support. The discharge must remain horizontal.

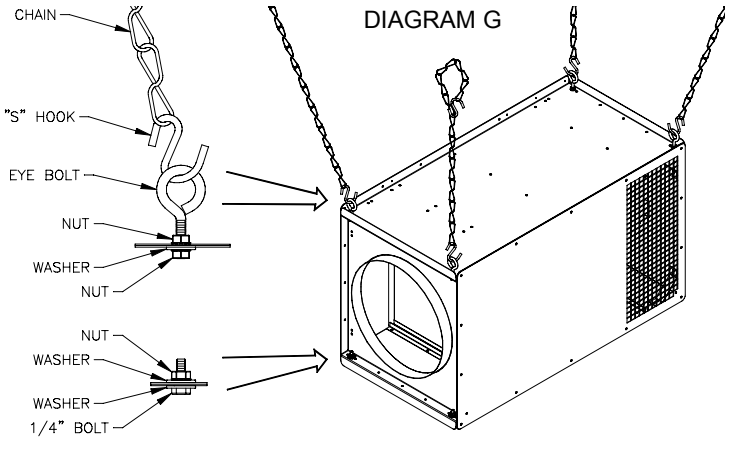
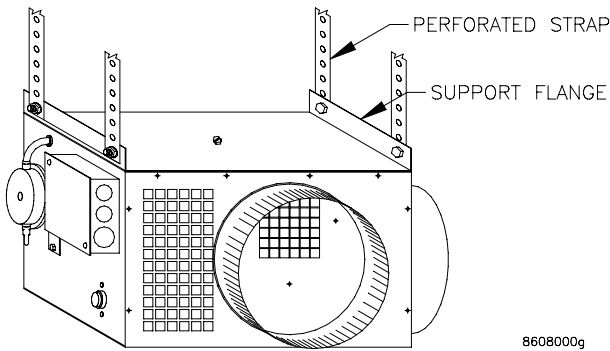
MODELS PAI-3 & PAI-4 (DIAGRAM F)

Verify that overhead support has sufficient strength to hold weight of IN-FORCER. Bend mounting support flanges to the angle best suited to the specific installation. Use perforated strap (installer supplied) and the provided 1/4"-20 x 3/4" hex head bolts and kep nuts to secure strap to the holes in the mounting flanges, (See Diagram F).

MODELS PAI-5, PAI-6, PAI-7 (DIAGRAM G)

Verify that overhead support has sufficient strength to hold weight of IN-FORCER. Suspend from included eyebolts and chain. The eyebolts may be secured to either the top or bottom of the IN-FORCER casing. Attaching the eyebolts to the bottom allows the IN-FORCER inlet to be positioned to the opposite side, giving the option of a right hand or left-hand inlet pipe connection. Secure eye bolt to IN-FORCER with nuts and washer as shown. On bottom of cabinet install 1/4"-20 x 3/4" hex head bolts, washers and nuts, (See Diagram G).

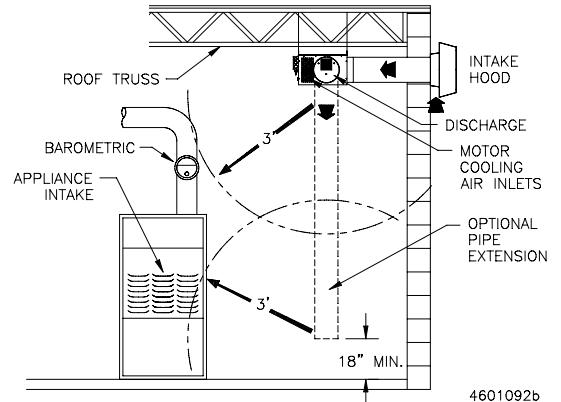
DIAGRAM F



2. Connect crimped end of intake duct to the IN-FORCER inlet collar with sheet metal screws. Tape connection to inlet collar and all joints of intake duct to prevent the entry of indoor air.

3. The discharge should terminate no closer than 3 feet from a barometric draft control or intake grille of an appliance. If this is not possible terminate on sides or opposite side of appliance intake. Never terminate within 3 feet from the front or intake side of appliance. Discharge duct should also terminate a minimum of 18 inches above floor or other obstructions if perpendicular to them, (See Diag. H). These clearances are necessary to prevent pilot outages and ensure proper draft control operation.

DIAGRAM H

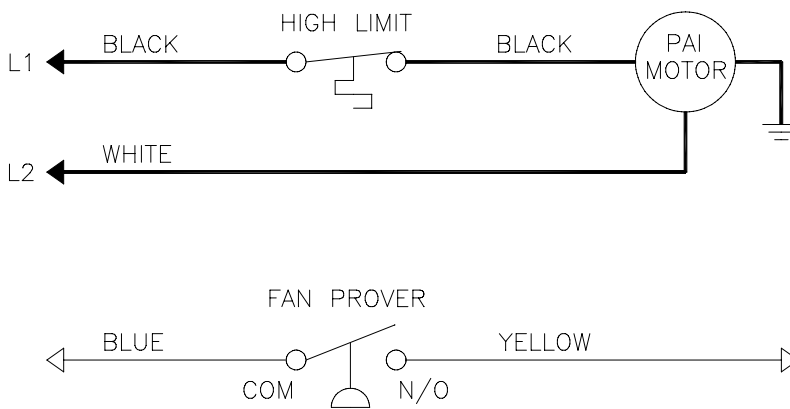


⚠ WARNING

All wiring from the IN-FORCER to the appliance must be appropriate Class 1 wiring as follows: installed in rigid metal conduit, intermediate conduit, rigid non-metallic conduit, electrical metallic tubing, Type MI Cable, Type MC Cable or be otherwise suitably protected from physical damage.

The IN-FORCER has a high temperature limit switch to deactivate the system in the event of a mechanical room fire. It also has a fan proving switch to prove operation prior to burner ignition.

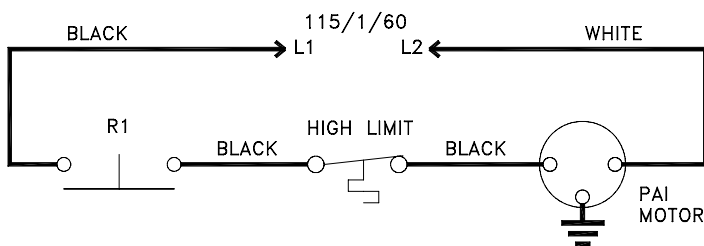
IN-FORCER INTERNAL WIRING SCHEMATIC



LEGEND:

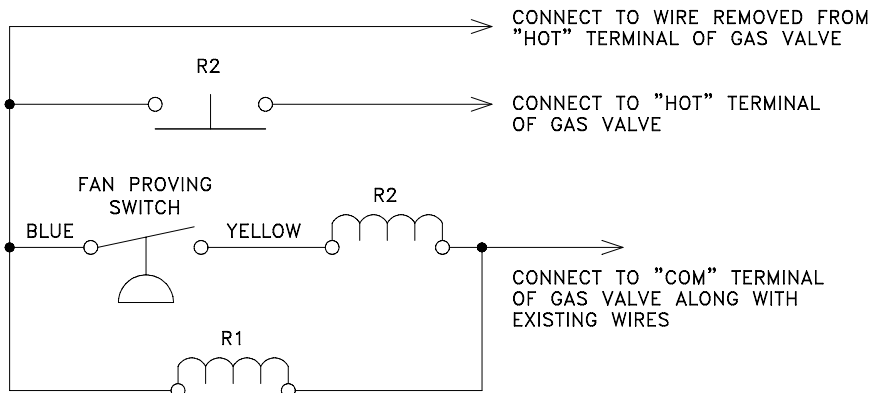
- DENOTES 115 V
- CIRCUIT VOLTAGE MAY BE EITHER 24 OR 115 VAC DEPENDENT ON VOLTAGE OF BURNER CONTROL.

IN-FORCER WIRED WITH FAN PROVER AND MOTOR ISOLATION RELAYS



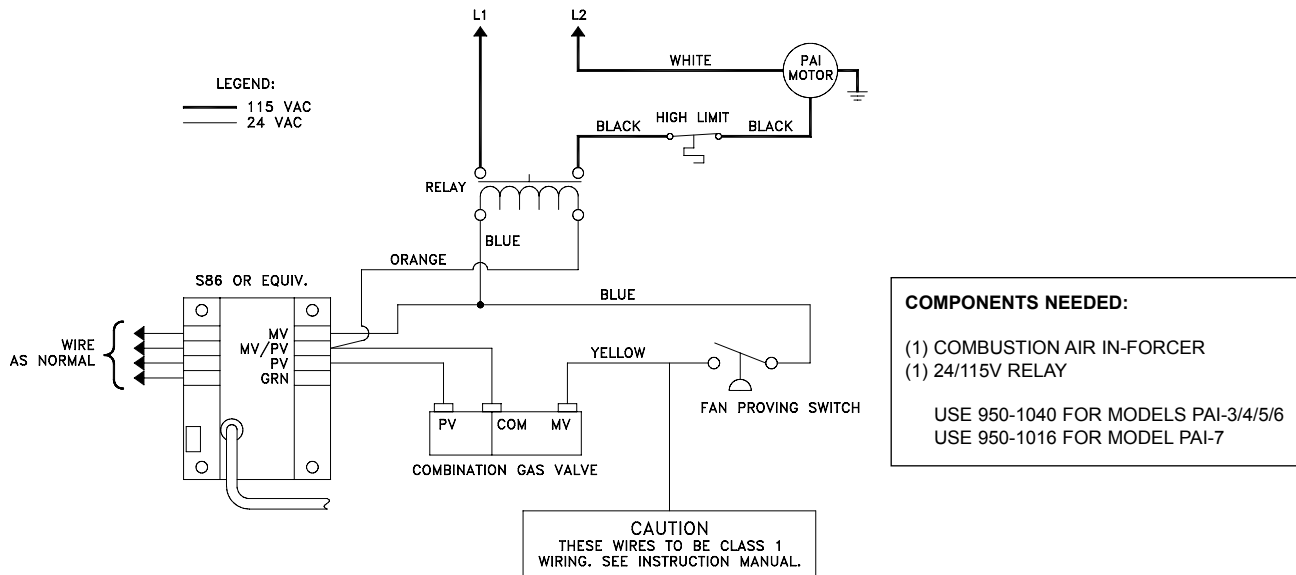
LEGEND

- DENOTES 115V
- CIRCUIT VOLTAGE MAY BE EITHER 24 OR 115 VAC DEPENDENT ON VOLTAGE OF BURNER CONTROL.

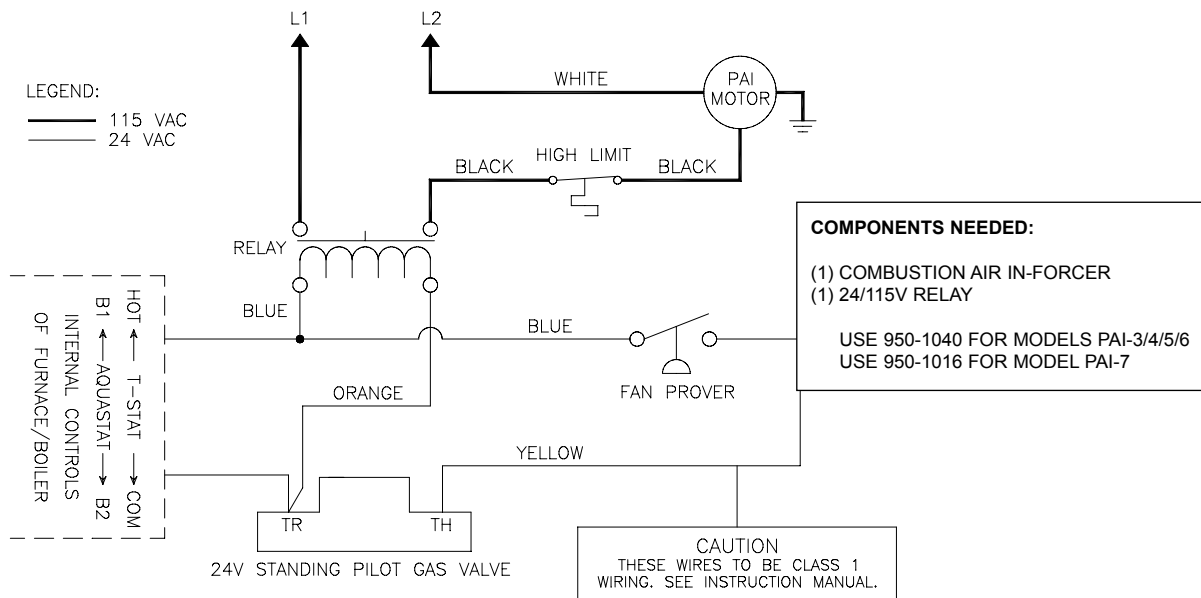


ACCESSORY RELAYS FOR ISOLATION	
24/115 Volt 1/2 H.P. Relay	950-1040
24/115 Volt 1 1/2 H.P. Relay	950-1016
115/115 Volt 1/2 H.P. Relay	950-0480
115/115 Volt 1 1/2 H.P. Relay	950-0483

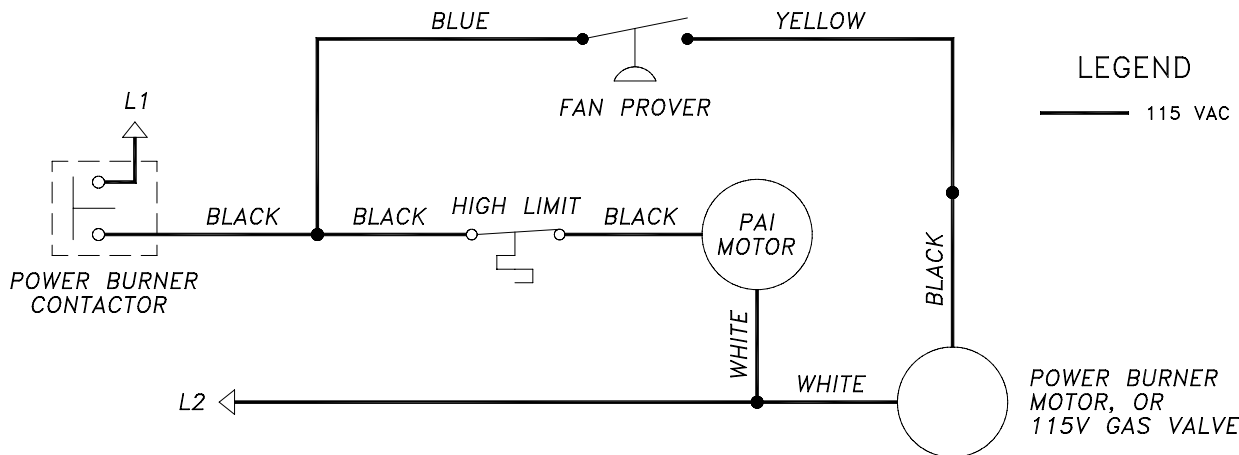
IN-FORCER CONNECTED TO A SINGLE 24 VAC APPLIANCE WITH INTERMITTENT IGNITION



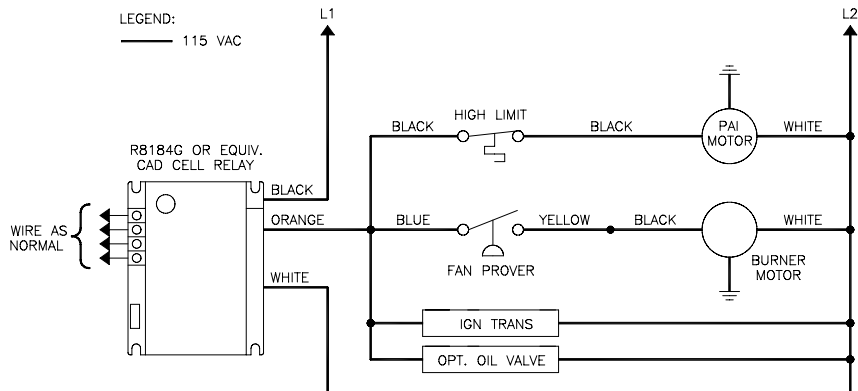
IN-FORCER CONNECTED TO A SINGLE 24 VAC APPLIANCE WITH STANDING PILOT



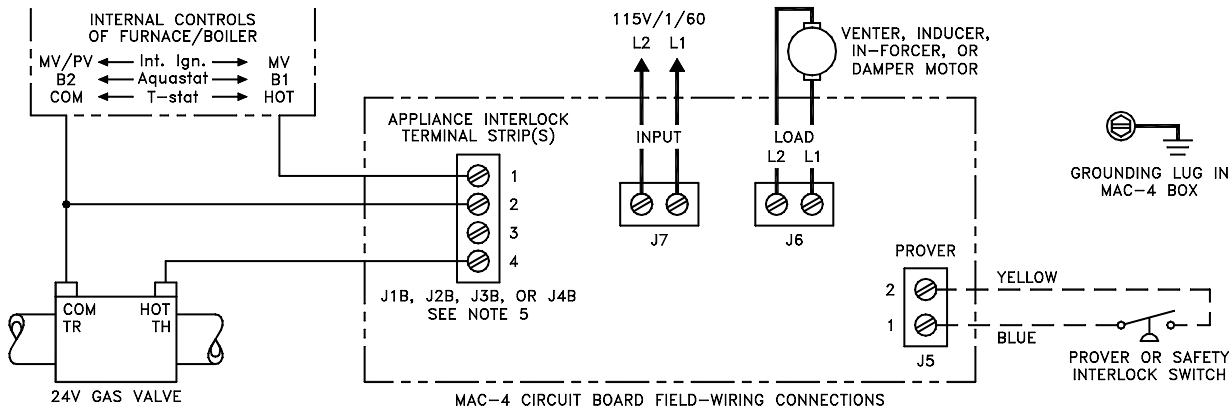
IN-FORCER CONNECTED TO A SINGLE 115 VAC APPLIANCE



IN-FORCER CONNECTED WITH AN R8184G OIL PRIMARY CONTROL

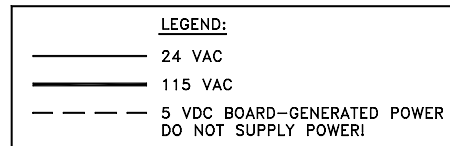


IN-FORCER CONNECTED WITH UP TO 4 24V GAS APPLIANCES & THE OPTIONAL MAC-4



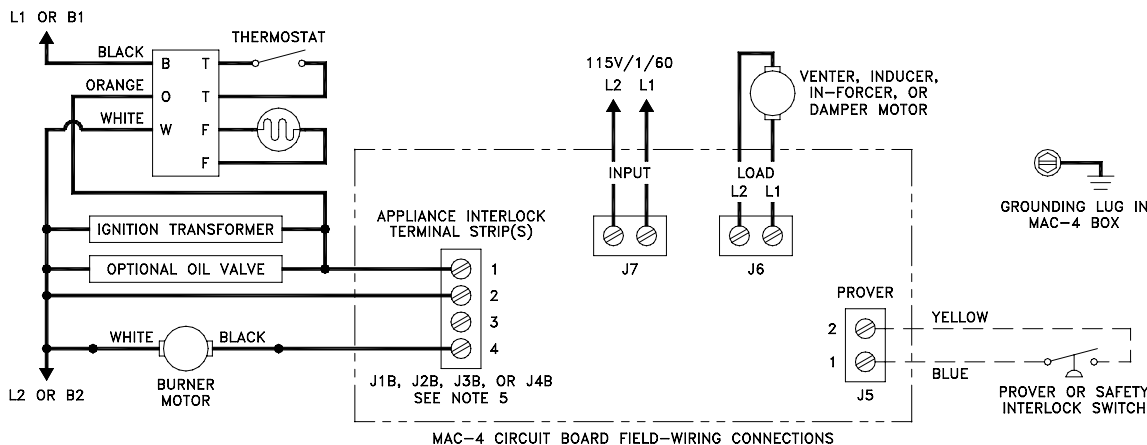
NOTES:

1. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
2. 1 H.P. MAX LOAD TO (J6) LOAD TERMINALS.
3. 115 VAC INPUT L1 & L2 (J7) MUST BE GREATER THAN OR EQUAL TO "LOAD" (J6) PLUS 1/10 AMP.
4. DO NOT SUPPLY POWER TO PROVER (J5) OR MAC-4 WILL BE DAMAGED.
5. APPLIANCE 3 AND 4 (J3B & J4B) TERMINAL POSITIONS 1-4 ARE IN REVERSE ORDER FROM APPLIANCE 1 AND 2 (J1B & J2B) TERMINAL POSITIONS.
6. 1 H.P. MAX LOAD TO APPLIANCE TERMINALS 3 AND 4 (J1B, J2B, J3B, J4B).



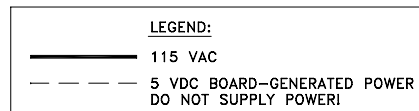
SCHEMATIC 4842101

IN-FORCER CONNECTED WITH UP TO 4 OIL APPLIANCES & THE OPTIONAL MAC-4



NOTES:

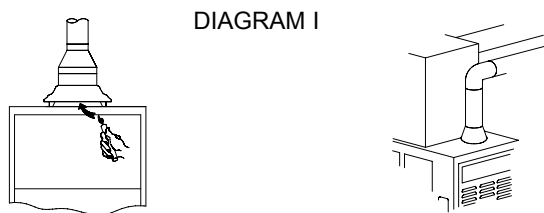
1. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
2. 1 H.P. MAX LOAD TO (J6) LOAD TERMINALS.
3. 115 VAC INPUT L1 & L2 (J7) MUST BE GREATER THAN OR EQUAL TO "LOAD" (J6) PLUS 1/10 AMP.
4. DO NOT SUPPLY POWER TO PROVER (J5) OR MAC-4 WILL BE DAMAGED.
5. APPLIANCE 3 AND 4 (J3B & J4B) TERMINAL POSITIONS 1-4 ARE IN REVERSE ORDER FROM APPLIANCE 1 AND 2 (J1B & J2B) TERMINAL POSITIONS.
6. 1 H.P. MAX LOAD TO APPLIANCE TERMINALS 3 AND 4 (J1B, J2B, J3B, J4B).



SCHEMATIC 4842107

SYSTEM OPERATION CHECK-OUT

1. Adjust thermostat or appliance to call for heat.
2. Verify that IN-FORCER operates first, prior to burner ignition.
Allow heating equipment and IN-FORCER to operate continuously while performing steps 3-6.
3. Close all interior doors, windows and openings of the mechanical room.
4. Turn on any equipment in the mechanical room that exhausts indoor air during its operation.
5. Allow IN-FORCER and equipment to operate for at least five minutes.
6. Place a smoke source a couple of inches from draft hood or draft diverter and verify that appliance is pulling in smoke, (See Diagram I).



If appliance is venting properly, smoke source will be pulled in. If smoke is not pulled in, a blocked flue or negative pressure exists. If problem can't be determined contact Tjernlund for further assistance.

MAINTENANCE

Disconnect power supply to the IN-FORCER when servicing. The IN-FORCER should be inspected every 6 months. Points of inspection are:

Motor:

For optimum performance, oil motor annually with SAE 10 oil (Model PAI-3 has a permanently lubricated motor). Motor assembly may be partially slid out of housing by removing screws located on the center of the top and bottom panels on the models PAI-3/4. The models PAI-5/6/7 have two screws on the front panel under the outlet collar and four 1/4" motor mount bolts if motor removal is necessary.

Wheel:

Wheel must be clean of any foreign material such as leaves, lint or other items. Remove all foreign material from blower assembly before operation, (See Diagram J).

Intake Hood:

Intake Hood screen should be clear of any foreign material such as leaves, lint or other items. Remove Intake Hood cover and check perforated air inlet screens for foreign material. Remove all foreign material from Intake Hood screens before operation, (See Diagram K).

Aluminum Mesh Prefilter:

The prefilter and interior of the housing should be cleaned annually, or as needed in dirty atmospheres. The filter is accessed by removing the rear access door on the models PAI-3/4, or by removing the filter rack panel on the models PAI- 5/6/7.

DIAGRAM J

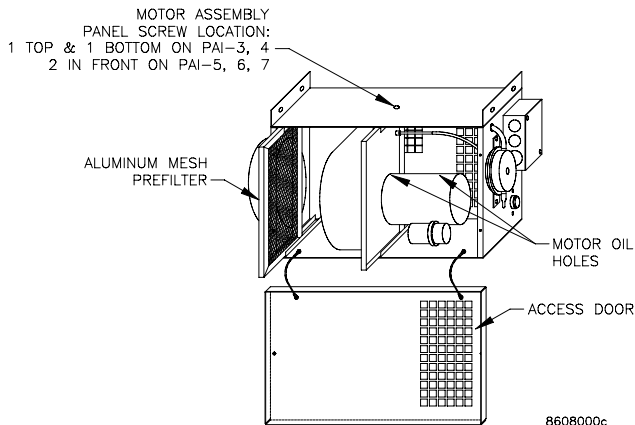
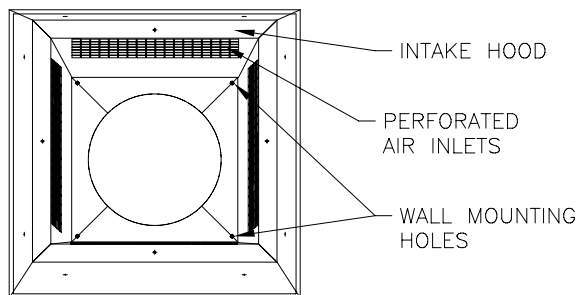


DIAGRAM K

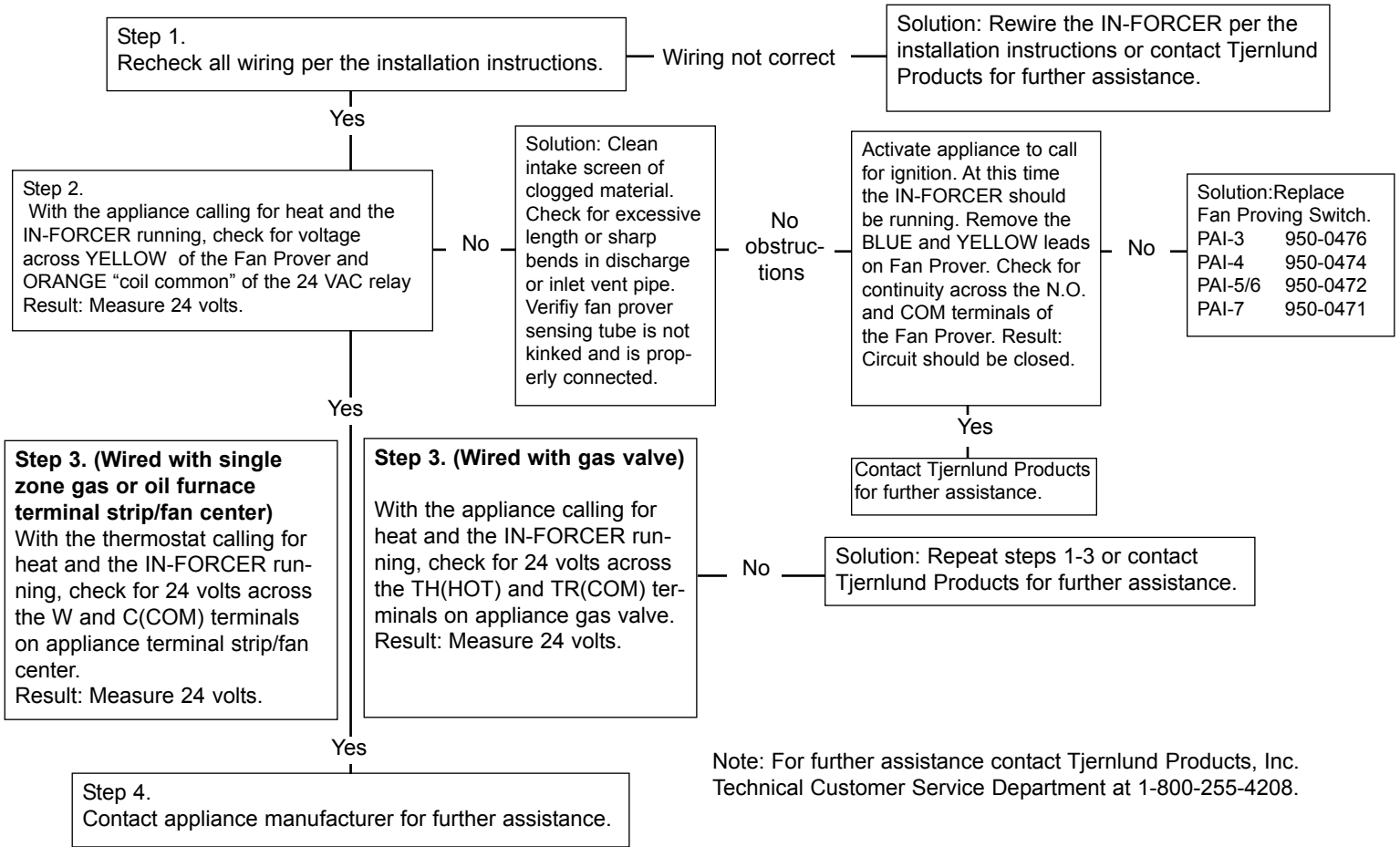


TROUBLE SHOOTING

⚠ WARNING

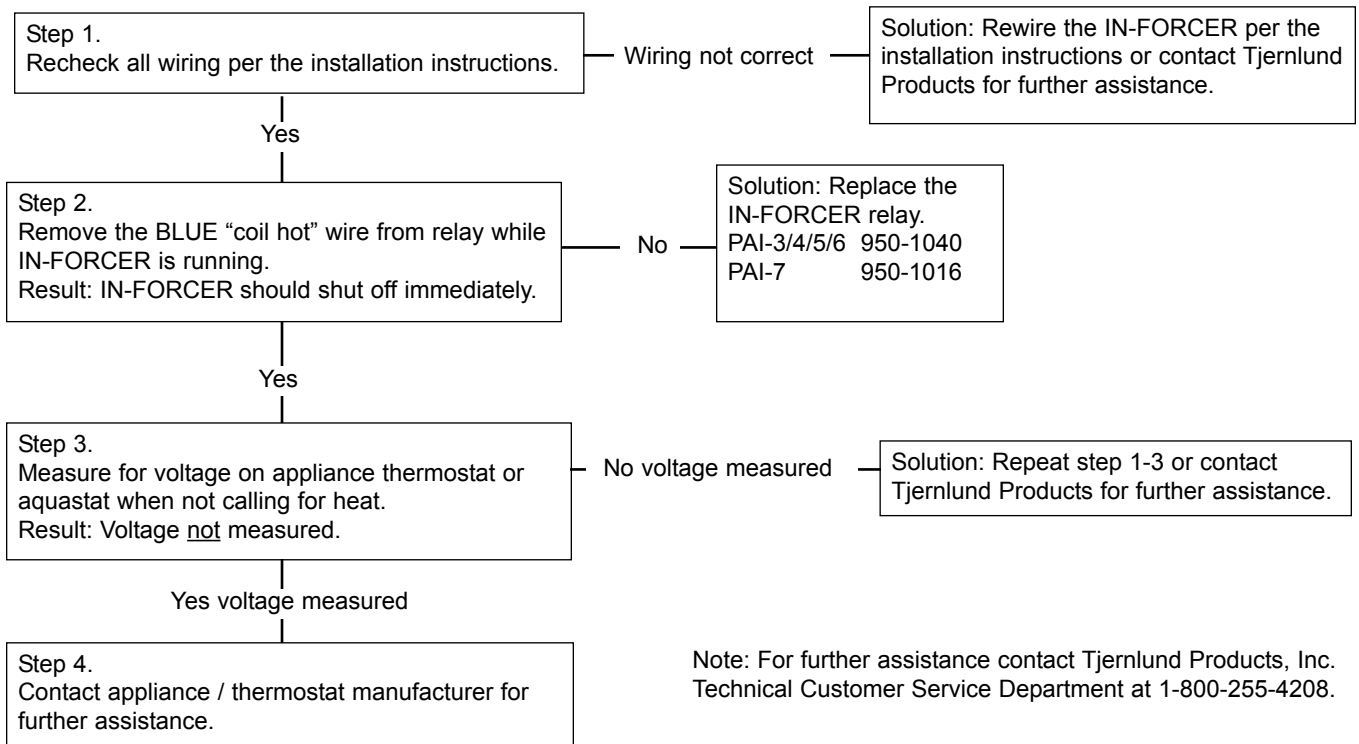
The following guide is intended to be used if a problem occurs during the use of the IN-FORCER. At several steps throughout the guide you will come in close contact with 115 Volts. **Extreme caution must be exercised to prevent injury.** If you are unable to determine the defective part with the use of this guide, call your Tjernlund distributor or Tjernlund Products direct at 1-800-255-4208 for further assistance.

SYMPTOM 1: IN-FORCER RUNS BUT BURNER WILL NOT FIRE (24 VAC CONTROL CIRCUIT)



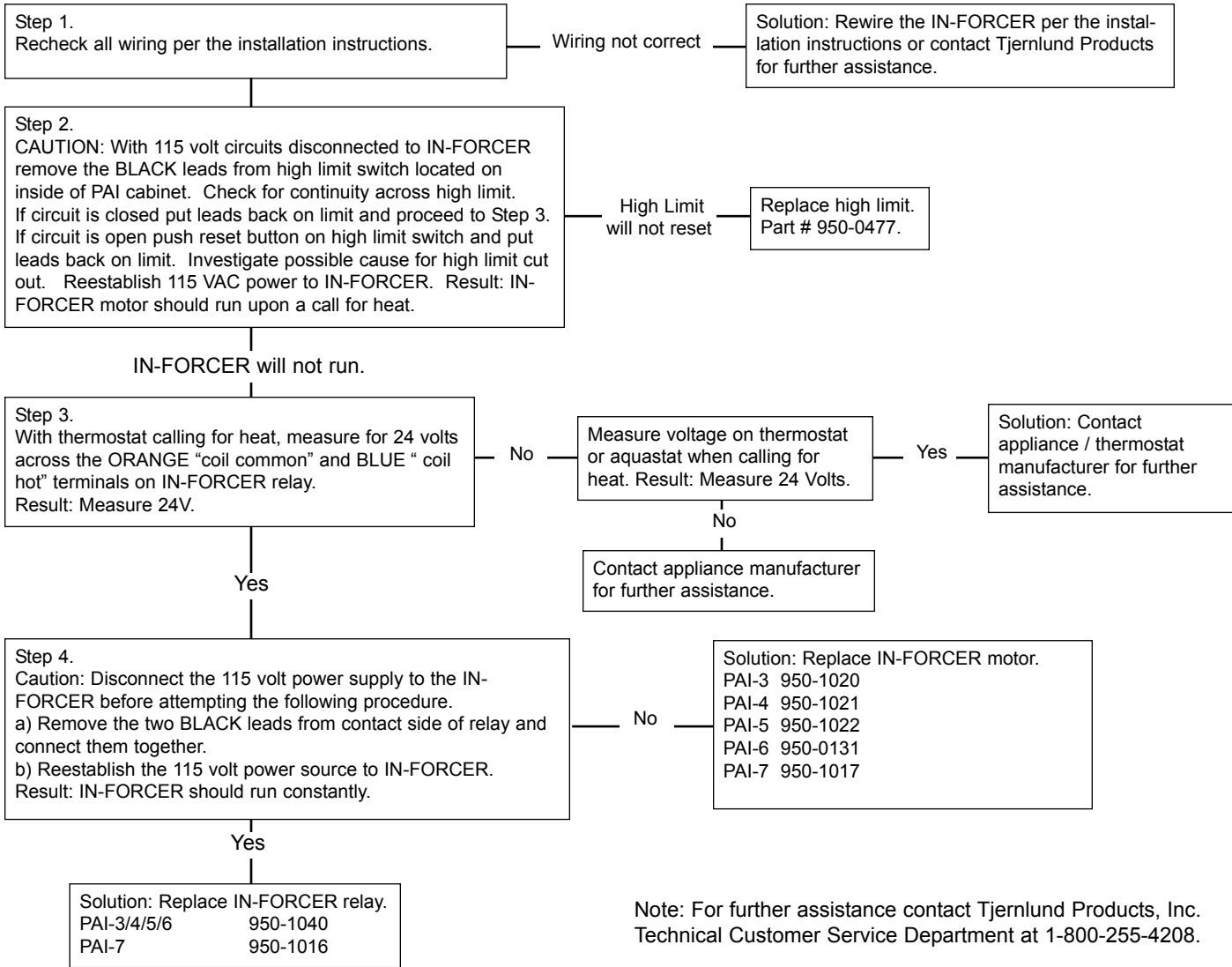
Note: For further assistance contact Tjernlund Products, Inc. Technical Customer Service Department at 1-800-255-4208.

SYMPTOM 2: IN-FORCER RUNS CONSTANTLY (24 VAC CONTROL CIRCUIT)



Note: For further assistance contact Tjernlund Products, Inc. Technical Customer Service Department at 1-800-255-4208.

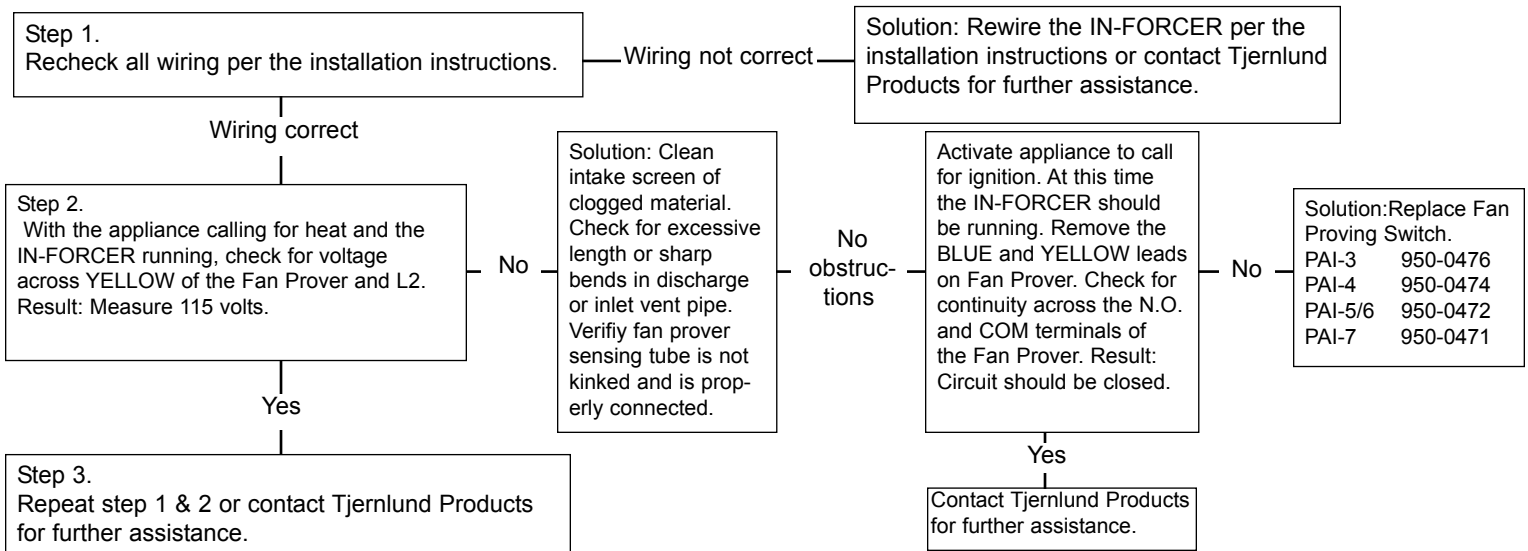
SYMPTOM 3: IN-FORCER WILL NOT RUN ON CALL FOR HEAT (24 VAC CONTROL CIRCUIT)



Note: For further assistance contact Tjernlund Products, Inc. Technical Customer Service Department at 1-800-255-4208.

115 VAC CONTROL CIRCUIT

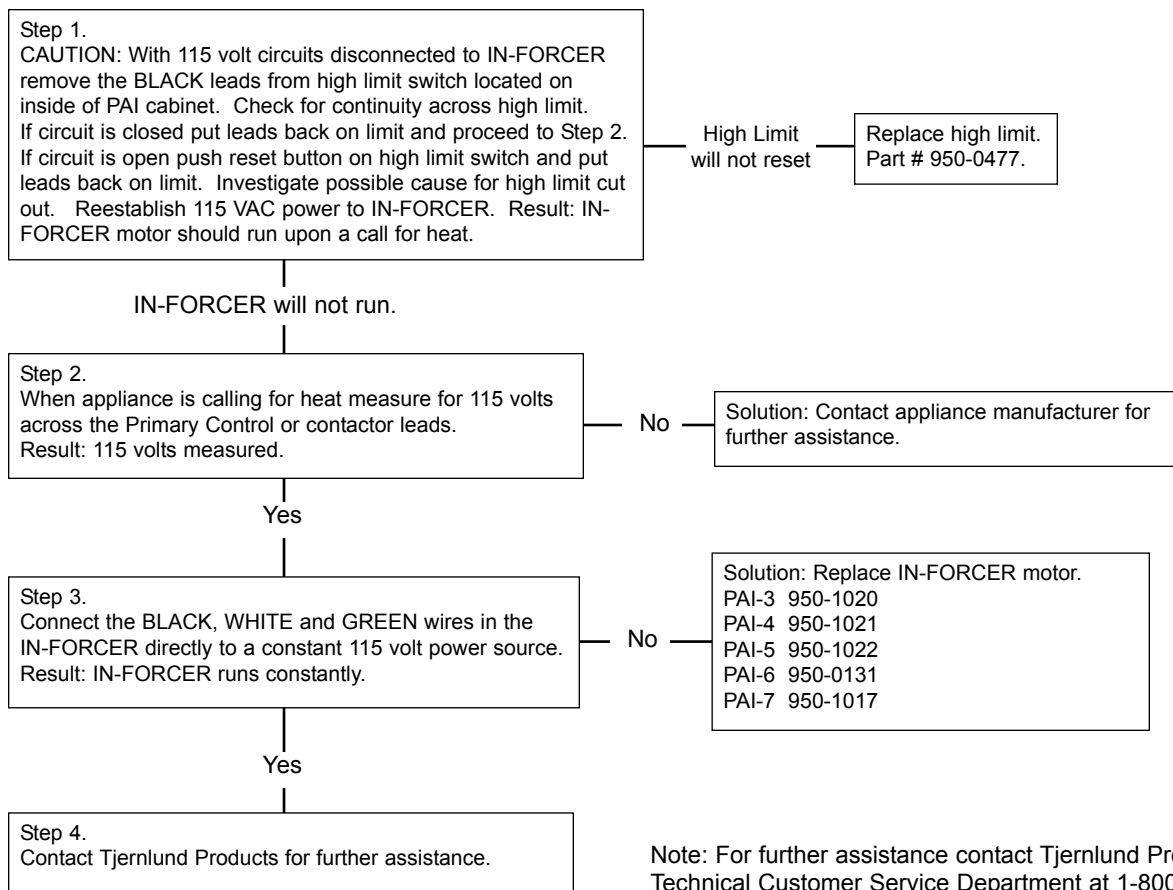
SYMPTOM 1: IN-FORCER RUNS BUT BURNER DOES NOT FIRE (115 VAC CONTROL CIRCUIT)



Note: For further assistance contact Tjernlund Products, Inc. Technical Customer Service Department at 1-800-255-4208.

I15 VAC CONTROL CIRCUIT

SYMPTOM 2: IN-FORCER WILL NOT RUN ON CALL FOR HEAT (115 VAC CONTROL CIRCUIT)



HOW TO OBTAIN SERVICE ASSISTANCE

1. If you have any questions about your IN-FORCER or if it requires adjustment, repair or routine maintenance, we suggest that you contact your installer, contractor or service agency.
2. If you require technical information contact Tjernlund Products, Inc. at 1-800-255-4208.

When contacting Tjernlund Products, Inc., please have the following information available:

1. Model name of the IN-FORCER as shown on the label attached to IN-FORCER.
2. Name and address of installer and any service agency who performed work on Power Venter.
3. Date of original installation and dates any service work was performed.
4. Details of the problem as you can best describe them.

LIMITED PARTS WARRANTY AND CLAIM PROCEDURE

Tjernlund Products, Inc. warrants the components of its products for one year from date of installation. This warranty covers defects in material and workmanship. This warranty does not cover normal maintenance, transportation or installation charges for replacement parts or any other service calls or repairs. Products that are tampered with, damaged, or defective due to malfunctioning appliances are not covered under this warranty. This warranty DOES NOT cover the complete IN-FORCER if it is operative, except for the defective part.

Tjernlund Products, Inc. will issue credit or provide a free part to replace one that becomes defective during the one year warranty period. If the part is over 18 months old, proof of date of the installation in the form of the contractor sales/installation receipt is necessary to prove the unit has been in service for under one year. All receipts should include the date code of the IN-FORCER to ensure that the defective component corresponds with the complete unit. This will help preclude possible credit refusal.

- 1.) Follow troubleshooting guide to determine defective component. If unable to determine faulty component, contact your Tjernlund distributor or Tjernlund Products Technical Customer Service Department at 1-800-255-4208 for troubleshooting assistance.
- 2.) After the faulty component is determined, return it to your Tjernlund distributor for replacement. Please include IN-FORCER date code component was taken from. If IN-FORCER date code is older than 18 months you will need to provide a copy of the original installation receipt to your distributor. Credit or replacement will only be issued to a Tjernlund distributor after the defective part has been returned prepaid to Tjernlund.

REPLACEMENT PARTS COVERED BY WARRANTY

DESCRIPTION	PART NUMBER	DESCRIPTION	PART NUMBER
PAI-3 Motor	950-1020	PAI-3/4 Prefilter	950-0482
PAI-4 Motor W/Wheel	950-1021	PAI-5/6 Prefilter	950-0488
PAI-5 Motor	950-4020	PAI-7 Prefilter	950-0485
PAI-6 Motor	950-0131	PAI-3/4/5/6/7 High Limit	950-0477
PAI-7 Motor	950-1017		
PAI-3 Wheel	950-1011	ACCESSORY CONTROLS	
PAI-4 Wheel 3/8" Bore	950-1012	MAC-4 Multiple Appliance Controller	MAC-4
PAI-5 Wheel	950-0486	24/115 Volt 1/2 H.P. Relay	950-1040
PAI-6 Wheel	950-0487	24/115 Volt 1 1/2 H.P. Relay	950-1016
PAI-7 Wheel	950-1015	115/115 Volt 1 1/2 H.P. Relay	950-0483
PAI-3 Fan Prover	950-0476		
PAI-4 Fan Prover	950-0474		
PAI-5/6 Fan Prover	950-0472		
PAI-7 Fan Prover	950-0471		

WHAT IS NOT COVERED

- Product installed contrary to our installation instructions
- Product that has been altered, neglected or misused
- Product that has been wired incorrectly
- Any freight charges related to the return of the defective part
- Any labor charges related to evaluating and replacing the defective part

TJERNLUND LIMITED ONE YEAR WARRANTY

Tjernlund Products, Inc. warrants to the original purchaser of this product that the product will be free from defects due to faulty material or workmanship for a period of (1) year from the date of original purchase or delivery to the original purchaser, whichever is earlier. Remedies under this warranty are limited to repairing or replacing, at our option, any product which shall, within the above stated warranty period, be returned to Tjernlund Products, Inc. at the address listed below, postage prepaid. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND TJERNLUND PRODUCTS, INC. EXPRESSLY DISCLAIMS LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF THIS PRODUCT. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND NO AGENT IS AUTHORIZED TO ASSUME FOR US ANY LIABILITY ADDITIONAL TO THOSE SET FORTH IN THIS LIMITED WARRANTY. IMPLIED WARRANTIES ARE LIMITED TO THE STATED DURATION OF THIS LIMITED WARRANTY. Some states do not allow limitation on how long an implied warranty lasts, so that limitation may not apply to you. In addition, some states do not allow the exclusion or limitation of incidental or consequential damages, so that above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Send all inquires or products requiring warranty work to Tjernlund Products, Inc. 1601 9th Street, White Bear Lake, MN. 55110-6794 (651) 426-2993.

IN-FORCER FAN CURVES

