



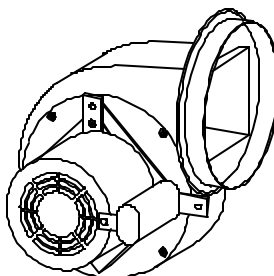
TJERNLUND PRODUCTS, INC.

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 PHONE (800) 255-4208 • (651) 426-2993 • FAX (651) 426-9547
 Visit our web site • www.tjernlund.com

side wall vent ~~systems~~

FOR NATURAL GAS OR LP

**MODEL
HS-3C**



OWNER INSTRUCTIONS, DO NOT DESTROY

 Recognize this symbol as an indication of important Safety Information!

NOTE: FLUE GAS TEMPERATURES MUST NOT EXCEED 285°C
(550°F) AT VENT SYSTEM INLET.

 **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, PERSONAL INJURY OR PROPERTY DAMAGE.

**DO NOT DESTROY. PLEASE READ CAREFULLY AND KEEP
IN A SAFE PLACE ON JOB SITE FOR FUTURE REFERENCE.**

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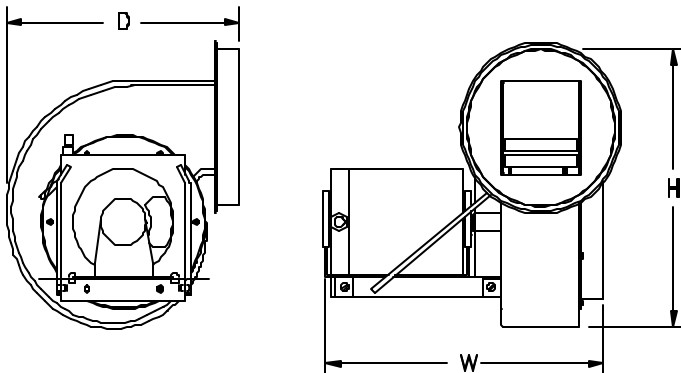
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Tjernlund Products welcomes your comments and questions. Call us at 800-255-4208, Fax 612-426-9547 or write to: Customer Service, Tjernlund Products, Inc., 1601 Ninth Street, White Bear Lake, MN 55110-6794.

DESCRIPTION

The Tjernlund Power Venter model HS-3C is designed to Side Wall or Vertically vent Natural and LP Gas appliances. The HS-3C is supplied with a Fan Proving Switch which will disable the gas valve if a venting malfunction should occur.

SPECIFICATIONS



UNIT DIMENSIONS (IN)				
MODEL	(H) HEIGHT	(W) WIDTH	(D) DEPTH	INLET/OUTLET
HS-3C	12 1/2"	13 1/4"	11"	8"

CAPACITY

The installer must verify that the Power Venter is sized properly using the capacity table to the right. The installer may reduce the vent pipe diameter to the size shown in the selection table immediately after the draft hood, draft diverter or barometric draft control. The vent pipe length shown includes all equivalent vent pipe before and after the Power Venter. To calculate the equivalent vent pipe length, add the straight vent pipe plus 10 feet for every 90 degree elbow and 5 feet for every 45 degree elbow.

If venting multiple appliances with one Power Venter, the total combined BTU/hr. input of all appliances must be added together to size the Power Venter.

HS-3C CAPACITY

MODEL NUMBER	VENT PIPE DIA.	BTU/HR INPUT	MAXIMUM PIPE LENGTH (FT) AT STACK TEMP	
			100% DILUTION, 300°F	25% DILUTION, 400°F
			GAS FIRED ATMOSPHERIC WITH DRAFT HOOD OR DRAFT DIVERTER	GAS FIRED POWER BURNER WITH BAROMETRIC DRAFT CONTROL
HS-3C	8"	450,000	100'	100'
		500,000	100'	100'
115 VAC 1/4 HP 2.5 AMP	10"	600,000	100'	100'
		700,000	7'	100'
		450,000	100'	100'
		500,000	100'	100'
		600,000	100'	100'
		700,000	21'	100'

IMPORTANT: Elbows placed directly after discharge on Power Venter may cause erratic operation of Fan Prover. If elbows are necessary on discharge, allow for a straight section of pipe 3 times the vent diameter being used before installing an elbow. For example, if using 8" diameter pipe, allow for 24" of straight pipe before using an elbow.

INSTALLATION RESTRICTIONS

WARNING

Failure to install, maintain and/or operate the Power Venter in accordance with manufacturer's instructions may result in conditions which can produce bodily injury and property damage.

WARNING

The Power Venter must be installed by a qualified installer in accordance with these instructions and all local codes or in their absence in accordance with the latest edition of The Natural Gas Installation Code (CAN/CGA-B149.1) & The Propane Installation Code (CAN/CGA-B149.2). Improper installation can create a hazardous condition such as an explosion, fire, electrical shock or carbon monoxide poisoning resulting in property damage, personal injury or death.

"Qualified Installer" shall mean (an individual properly trained and licensed) in accordance with local codes or, in their absence, in accordance with The National Building Code of Canada & The Canadian Electrical Code (CSA Std C22.1).

WARNING

Disconnect the power supply when making wiring connections or when working around the fan wheel and motor. Failure to do so can result in electrical shock, personal injury, death or property damage.

1. The Power Venter may only be installed on Natural Gas or LP Gas appliances.
2. The Power Venter may not be installed on incinerators, incinerating toilets, condensing-type appliances or solid-fuel burning appliances.
3. The Power Venter shall not be installed on an appliance with an automatic valve having a manual opener unless the manual opener has been rendered inoperative or the automatic valve has been replaced with a valve not equipped with a manual opener.
4. The Power Venter may only be installed on appliance equipped with a draft hood, draft diverter or barometric draft control.
5. The Power Venter shall not be installed where the flue gas temperature exceeds 285°C (550°F) at the Power Venter inlet. Flue gas temperature verification:
 - A) Consult appliance manufacturer for flue gas temperature after dilution by the draft hood, draft diverter or barometric draft control.
 - B) Measure flue gas temperature at the Power Venter inlet after installation. Temperature should be measured after appliance and Power Venter have operated for at least 15 minutes, allowing the flue gas temperature to stabilize.
6. The Power Venter must be mounted so that the shaft of the motor remains horizontal to prevent motor bearing wear.
7. Power Venter electrical box must be mounted with the Fan Proving Switch in a vertical position.
8. Ambient temperature surrounding Power Venter must not exceed 40°C (104°F).

INSTALLER CAUTIONS

1. Plan the vent system so that the code required clearances are maintained from plumbing and wiring.
2. To prevent personal injury and equipment damage, disconnect power supply when working on Power Venter.
3. Make certain the power supply is adequate for Power Venter motor requirements. Do not add the Power Venter to a circuit where the total load is unknown.
4. The installer must verify that the appliance on which the Power Venter will be installed is in a safe operating condition. Consult appliance manufacturer's Instructions for details.
5. Plan the vent system layout so that the Power Venter is as close to the point of termination as possible. Vent pipe between the Power Venter and Vent Hood is acceptable. However, all vent pipe connections after the Power Venter discharge will be under positive pressure during operation and must be sealed with high-temperature caulk or aluminum vent pipe tape to prevent flue gas leakage into the structure.

VENT HOOD LOCATION

NOTE: Termination of a Side Wall Vent System with a device other than the Tjernlund VH1 Series Vent Hood could affect system performance and result in a possible safety hazard. Consult Vent Hood instructions for complete installation details.

If possible, locate the Vent Hood on a wall that does not face the direction of prevailing winds. This will diminish the possibility of appliance interruption during periods of extreme winds.

CODE REQUIREMENTS

- A venting system shall not terminate underneath a veranda, porch, or deck, or above a paved sidewalk or a paved driveway that is located between two buildings, and that serves both buildings.
- The exit terminals of mechanical draft systems shall not be less than 2.13m (7ft) above grade when located adjacent to a paved sidewalk or driveway.
- A venting system shall not direct flue gases towards brickwork, siding, or other construction, in such a manner that may cause damage from heat or condensate from the flue gases.
- A vent system shall not direct flue gases so as to jeopardize people, overheat combustible structures, or enter buildings.

A venting system shall not terminate within 1.8 m (6ft) of the following:

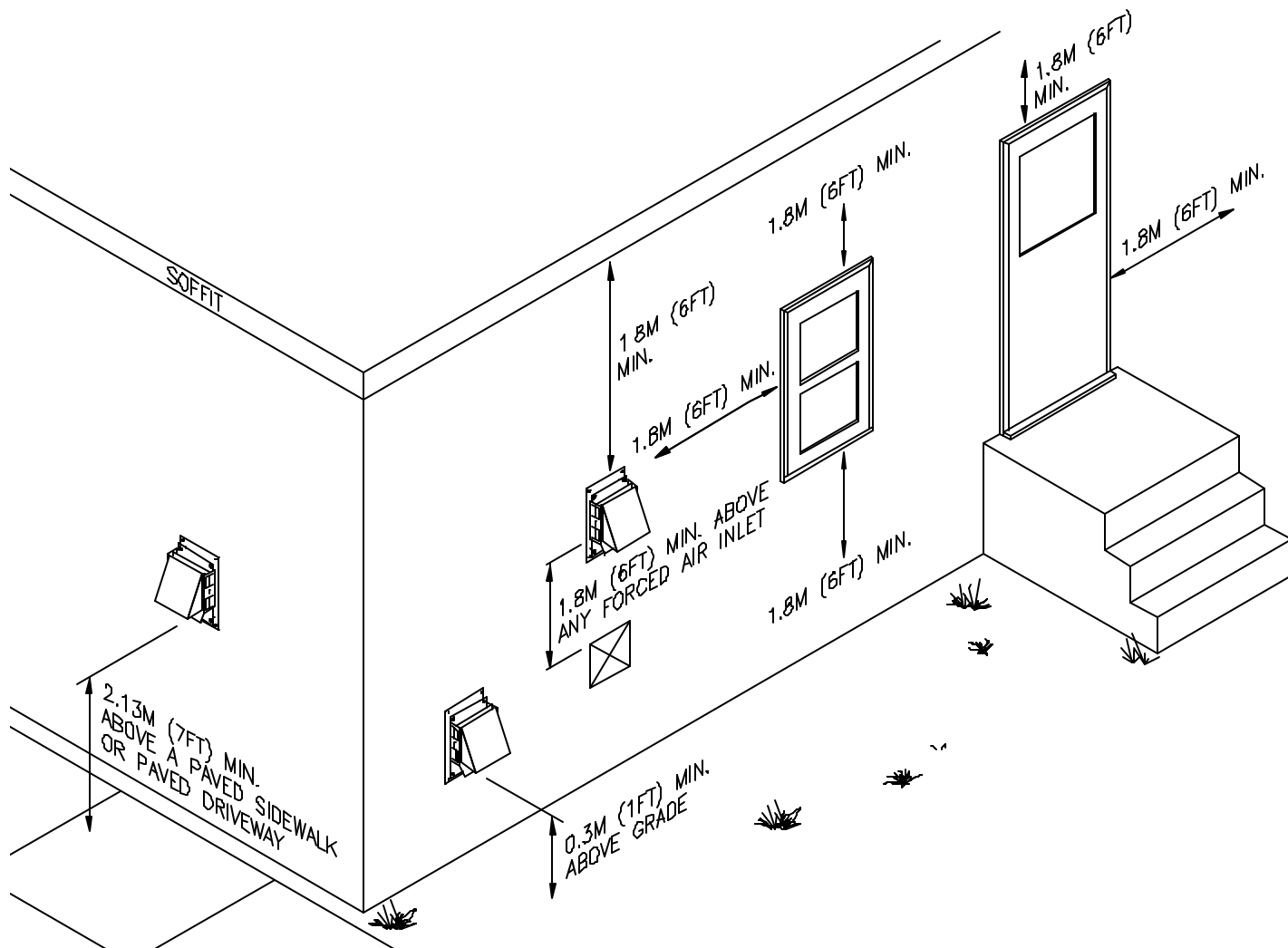
- A window, door or mechanical air supply inlet of any building, including soffit openings
- A gas service regulator vent outlet
- A combustion air inlet
- A property line
- A direction facing combustible materials or openings of surrounding buildings

A venting system shall not terminate within 1m (3ft) of the following:

- Above a gas meter/regulator assembly within 1m (3ft) horizontally of the vertical centreline of the regulator
- A oil tank or an oil tankfill inlet
- The inside corner of an L-shaped structure

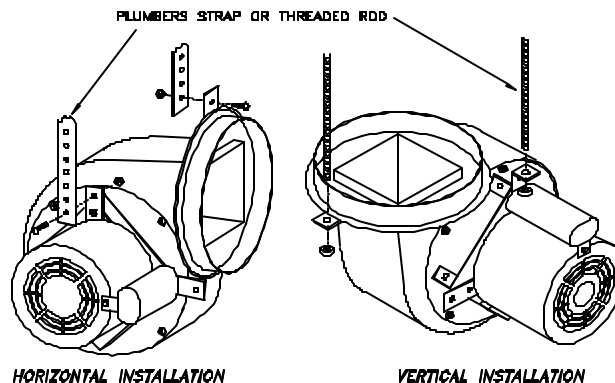
A venting system shall not terminate within .3m (1ft) of the following:

- Above grade level or any surface that may support snow, ice, or debris



POWER VENTER MOUNTING

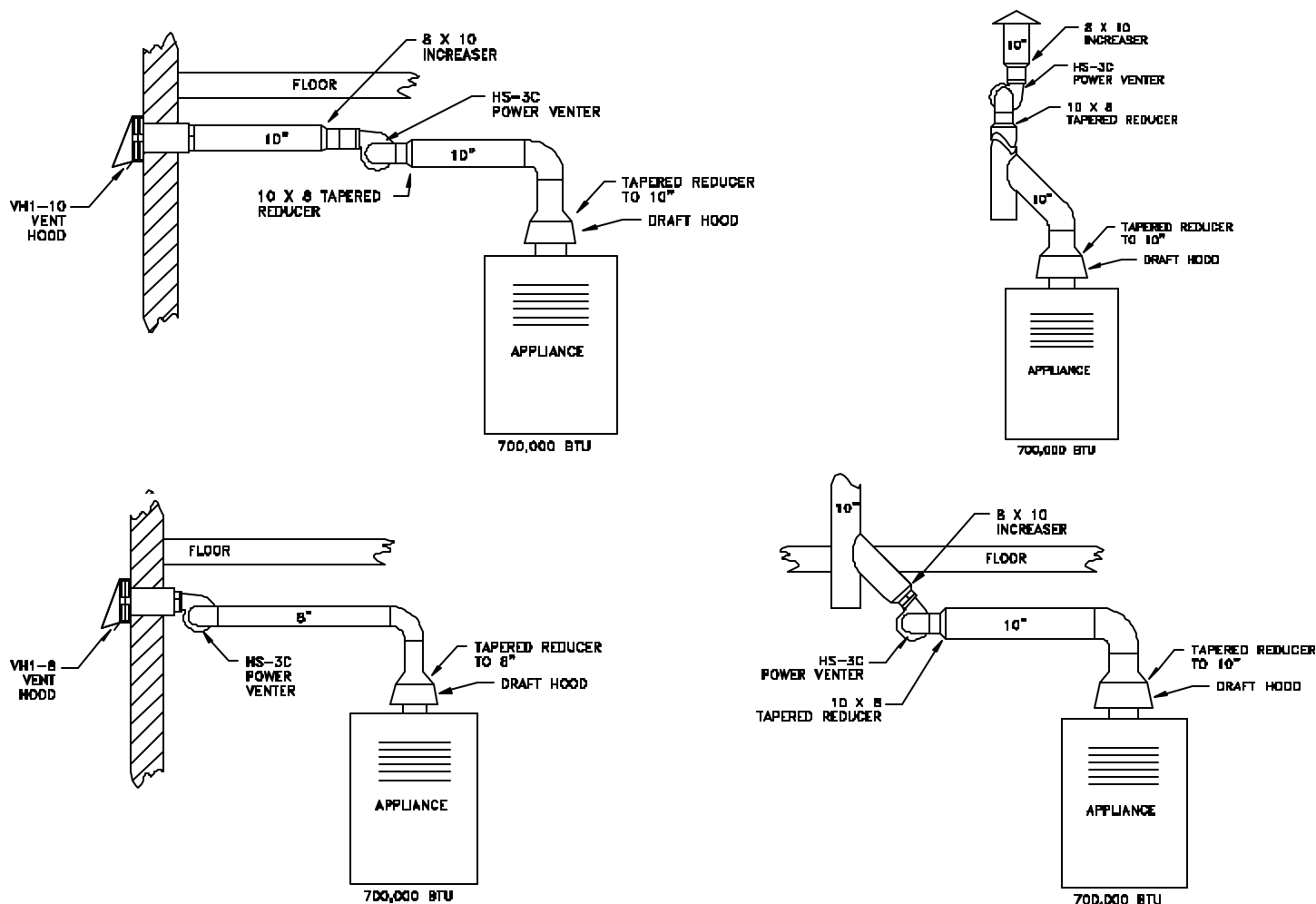
The installer must supply plumber's strap or 1/4" threaded rod with nuts and washers for mounting. The Power Venter may be mounted in any position as long as the shaft of the motor remains horizontal. The Power Venter housing is single wall, 15.2 CM (6") must be maintained from all combustible materials. It is recommended that the Power Venter be mounted as close as possible to the point of termination.



VENT PIPE INSTALLATION

If installing the Power Venter on an appliance not equipped with a draft hood or draft diverter (e.g. Power Burners, Induced Draft), a barometric draft control must be added. The barometric draft control must be the same size as the flue outlet and installed as close as possible to the appliance. After the draft hood, draft diverter or barometric draft control, a tapered reducer should be installed to reduce the flue to the size shown in the capacity table on page 1 of these instructions. After the tapered reducer, install the appropriate type of vent pipe to the inlet of the Power Venter. The vent pipe chosen must be in compliance with local codes. The Power Venter inlet and outlet are designed to accept single wall vent pipe. If using vent pipe other than single wall, the installer must supply adapters to connect to the Power Venter. While it is recommended that the Power Venter be mounted at the point of termination, it is acceptable to install vent pipe between the outlet of the Power Venter and the point of termination. The Installer must seal all vent pipe connections after the Power Venter with high-temperature caulk or aluminum vent pipe tape to prevent flue gas leakage during operation. The size of the vent pipe between the Power Venter and point of termination should be the same size shown on the selection table. Support the vent pipe as recommended by its manufacturer. Examples of proper vent pipe installation are shown below.

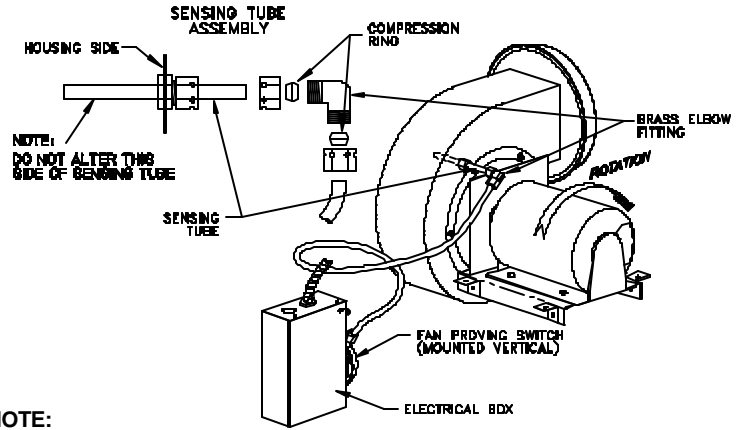
IMPORTANT: Elbows placed directly after discharge on Power Venter may cause erratic operation of Fan Prover. If elbows are necessary on discharge, allow for a straight section of pipe 3 times the vent diameter being used before installing an elbow.



FAN PROVING SWITCH INSTALLATION

NOTE: It is important that the electrical box is mounted with the Fan Proving Switch in a vertical position.

1. Mount supplied electrical box to a flat surface within 2 feet of the Power Venter with Proving Switch in a **vertical** position.
2. Connect the 1/4" aluminum tubing from the Fan Proving Switch to the Power Venter housing using supplied fittings. The factory calibrated sensing tube length and compression fittings are critical for proper operation of the Fan Proving Switch. If it is necessary to alter the sensing tube length, **ONLY** trim sensing tube portion that is on the exterior of the housing. **DO NOT** trim the sensing tube portion that will be mounted in the interior of the housing. No attempts should be made to substitute the specified materials. See Fan Proving Switch installation diagram.



NOTE:
As viewed from the opposite end of the shaft, the motor should rotate clockwise

WIRING

⚠ WARNING

All wiring from the Power Venter to the appliance must be in compliance with the local codes or in their absence, The Canadian Electrical Code (CSA Std C22.1).

All wiring from the Power Venter to the appliance must be appropriate class 1 wiring as follows: Installed in rigid metal conduit, intermediate metal conduit, rigid non-metallic conduit, electrical metallic tubing, Type MI Cable, MC cable or be otherwise suitably protected from physical damage.

ELECTRICAL SPECIFICATIONS

HS-3C MOTOR SPECIFICATIONS	
ELECTRICAL DATA	
VOLTS	115
HERTZ	60
RPM	1700
HP	1/4
AMPS	2.5
THERM. PROT.	YES
MECHANICAL DATA	
DESCRIPTION:	
PERM. SPLIT CAP	YES
OPEN	YES
INT. FAN COOLED	NO
CASING:	
DIAMETER (IN)	5.00/48 FR
NOM. LENGTH (IN)	5.00
SHAFT:	
DIAMETER (IN)	.500
NOM. LENGTH (IN)	3.5
BEARINGS:	
TYPE	SLEEVE
MATERIAL	BABBITED STEEL
COMPONENT DESCRIPTION	
MOTOR RELAY:	
COIL	46mA @ 24 VAC
CONTACTS	1/3 Hp @ 120 VAC
FAN PROVING SWITCH:	
28 VA PILOT DUTY	@ 24 VAC
FAN PROVING SWITCH ISOLATION RELAY:	
COIL	46mA @ 24 VAC
CONTACTS	278 VA PILOT DUTY @ 24 VAC

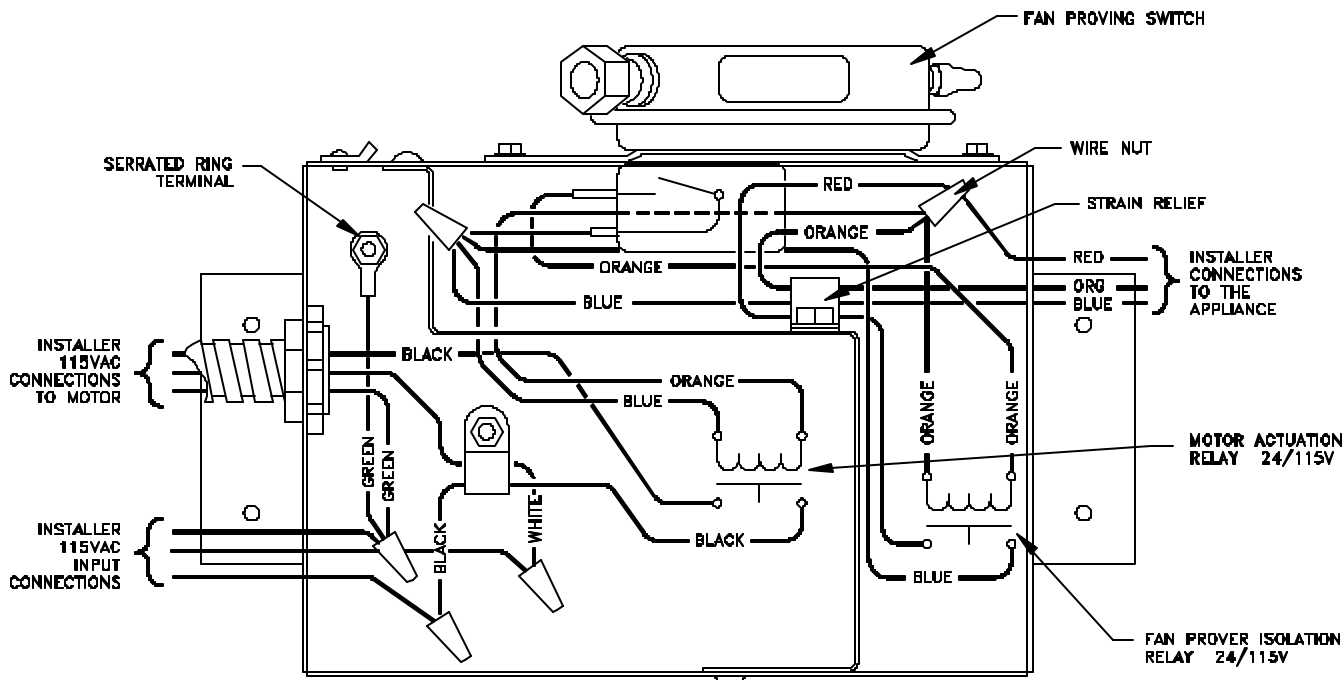
MODEL HS-3C WIRING WITH SINGLE APPLIANCE

The HS-3C Power Venter is equipped with 2 relays. One is used to activate the Power Venter while the other is used to isolate the Fan Proving Switch from the load of the appliance. The relays and Fan Proving Switch are factory wired for easy installation. The installer needs to complete 3 steps to wire the Power Venter as noted below:

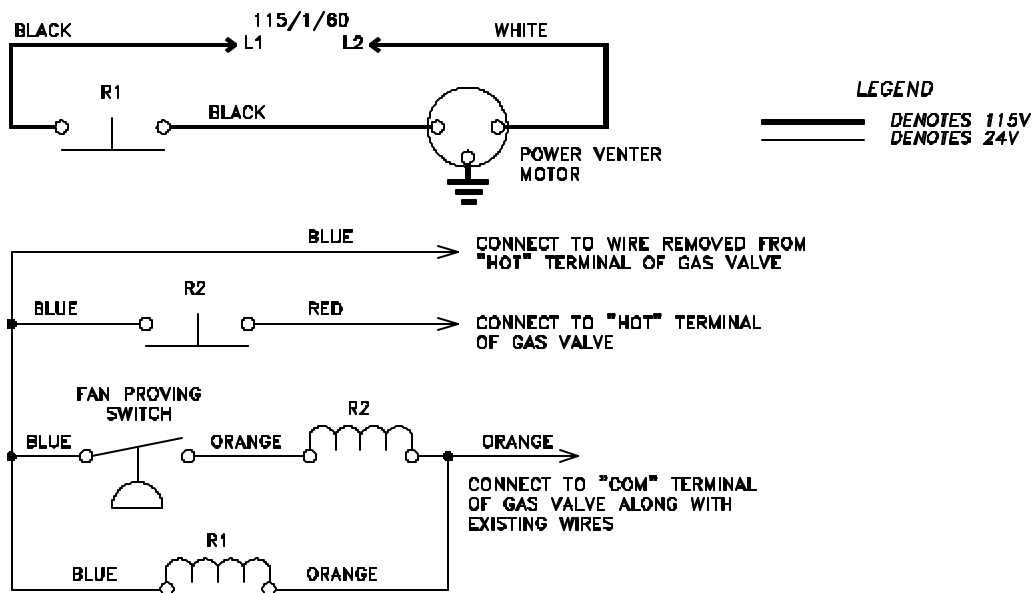
1. Route the metal conduit from the electrical box to the Power Venter motor and connect the Black, White and Ground wires to the motor.
2. Connect the Red, Blue and Orange wires in the electrical box to the appliance.
3. Supply 115 VAC to the input wires in the electrical box.

NOTE: The HS-3C as viewed from the opposite end of the shaft should rotate clockwise.

FACTORY WIRING OF HS-3C ELECTRICAL BOX



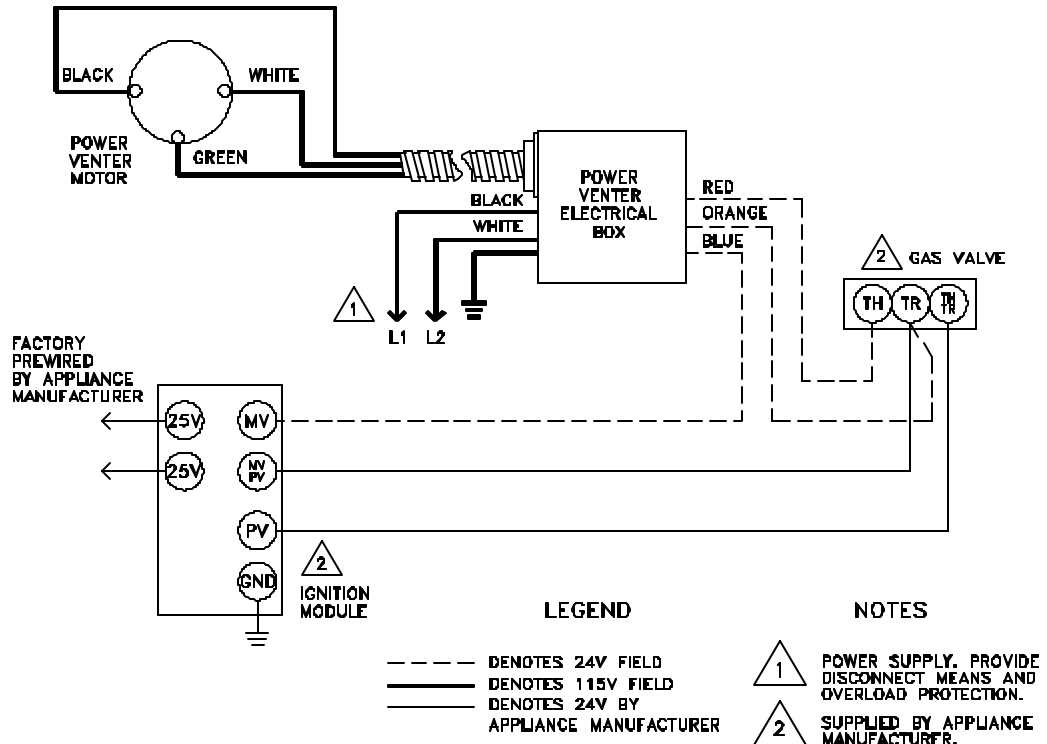
LADDER DIAGRAM OF HS-3C



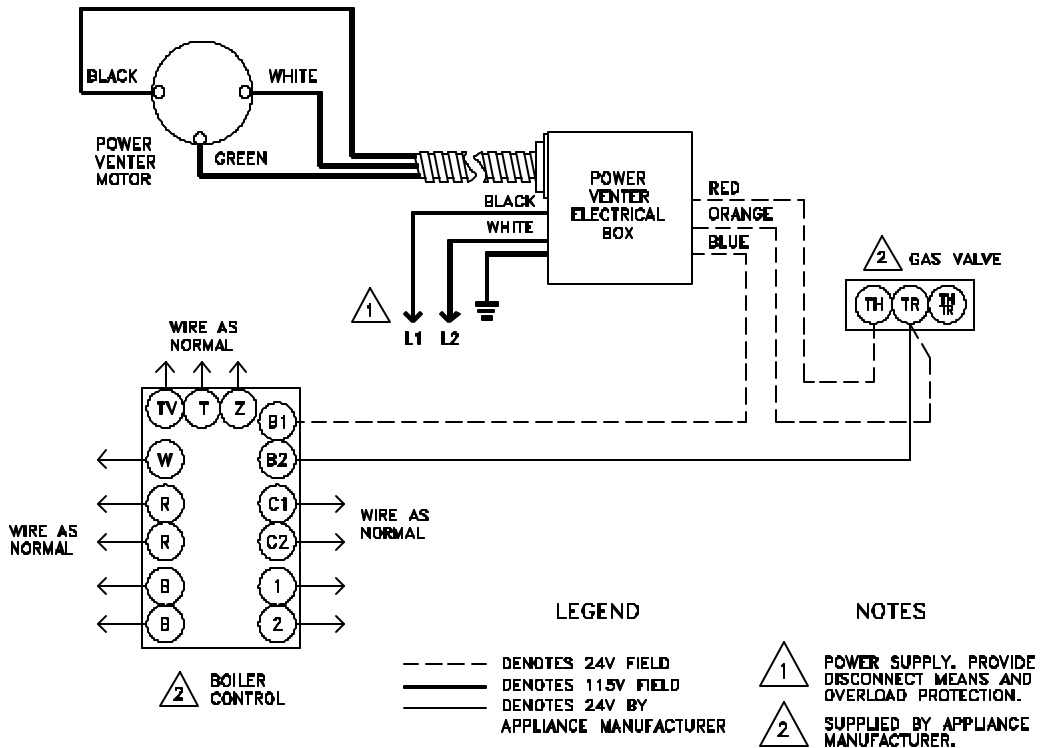
MODELS HS-3C CONNECTION DIAGRAMS WITH SINGLE APPLIANCE

The diagrams below represent common ways in which the HS-3C Power Venter is interlocked to 24V controlled appliances. Variations of these diagrams are acceptable as long as the Fan Proving Switch isolation circuit is wired to disable the gas valve if a venting malfunction should occur.

HS-3C CONNECTED TO APPLIANCE WITH SPARK IGNITION



HS-3C CONNECTED TO A BOILER



SEQUENCE OF OPERATION FOR HS-3C ON A SINGLE APPLIANCE

The following sequence of operation gives guidance as to how the Power Venter should operate with the appliance.

1. The call for heat will be routed through the Motor Relay and to one side of the Fan Proving Switch. The Power Venter motor is energized.
2. When the Power Venter has achieved full RPM and maximum draft has been established, the Fan Proving Switch will close allowing the 24V signal to energize the Isolation Relay coil.
3. When the Isolation Relay contacts close, the 24V signal will then be allowed to reach the gas valve.

DRAFT ADJUSTMENT

DRAFT ADJUSTMENT FOR GAS APPLIANCES EQUIPPED WITH A DRAFT HOOD OR DRAFT DIVERTER

1. With the appliance(s) and Power Venter operating for at least 15 minutes, hold a taper, cigarette or other smoke producing device at the draft hood or draft diverter.
2. Determine that the smoke is being drawn into the vent system.
3. If the draft appears to be excessive, the damper on the Power Venter may be adjusted to reduce the Power Venter's performance as long as the smoke is still being drawn into the draft hood after damper adjustment.

DRAFT ADJUSTMENT FOR GAS APPLIANCES EQUIPPED WITH A BAROMETRIC DRAFT CONTROL

1. With the appliance(s) and Power Venter operating for at least 15 minutes, insert a draft gauge into the vent pipe between the barometric draft control and the appliance flue outlet.
2. Make necessary draft adjustments with the barometric draft control, appliance burner air intake and the damper located on the outlet of the Power Venter until the appliance manufacturer's recommended draft is present.

SAFETY INTERLOCK TEST

1. Adjust the appliance thermostat(s) or aquastat(s) to call for heat.
2. Determine that the Power Venter operates before the gas valve becomes energized.
3. With the appliance(s) and Power Venter operating, disrupt power to the Power Venter and determine that the appliance gas valve shuts off.

WARNING

DO NOT OPERATE AN APPLIANCE THAT DOES NOT SHUT OFF WITH THE VENTER DISABLED.

MAINTENANCE

1. Oil every six months with 2 drops of S.A.E. #20. The oil ports are located at both ends of the motor.
2. A vent pipe inspection must be performed annually. The inspection should include checking all vent pipe and connections for blockage and leaks. A safety interlock test should also be performed.

HOW TO OBTAIN SERVICE ASSISTANCE

1. If you have any questions about your Power Venter 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 number of the Power Venter
2. Name and address of installer and service agency
3. Date of original installation and dates any service work was performed
4. Details of the problem

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 Power Venter if it is operative, except for the defective part.

Tjernlund Products, Inc. will issue credit to the original distributor 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 Power Venter to ensure that the defective component corresponds with the complete unit. This will help preclude possible credit refusal.

- 1.) 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 Power Venter date code component was taken from. The date code is located on the Electrical Box cover plate. If Power Venter 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.

COVERED PARTS

Motor	Proving Switch	Relays	Wheel	Housing
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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
Product that has been damaged by a malfunctioning or mistuned burner
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 inquiries regarding warranty work to Tjernlund Products, Inc. 1601 9th Street, White Bear Lake, MN 55110-6794. Phone (612) 426-2993 • (800) 255-4208 • Fax (612) 426-9547.

REPLACEMENT PARTS

MODEL HS-3C

MOTOR KIT	950-1022
WHEEL KIT	950-1013
FAN PROVER KIT	950-1032
HOUSING	950-1014
ISOLATION OR MOTOR RELAY	950-1040