



## TJERNLUND PRODUCTS, INC.

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### AUTO-DRAFT® VENT SYSTEMS FOR NATURAL GAS, LP OR OIL-FIRED HEATING APPLIANCES

### MODELS

FSAD-8  
 FSAD-10  
 FSAD-12  
 VSAD-8  
 VSAD-10  
 VSAD-12



Auto-Draft® Venters are tested and Listed to UL Standard 378 for Draft Equipment

Auto-Draft® Venters are tested and Listed to CAN3-B255-M81 for Mechanical Flue-Gas Exhausters / CAN-B140-M87 Sec. 19 for requirements for through the wall venting systems used with oil-fired appliances

**⚠** 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, 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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Tjernlund Products welcomes your comments and questions. Call us at 800-255-4208, Fax 651-426-9547, Email us at fanmail@tjfans.com or write to: Customer Service, Tjernlund Products, Inc., 1601 Ninth Street, White Bear Lake, MN 55110-6794.

### DESCRIPTION

The Tjernlund Auto-Draft® vent systems are designed to side wall or vertically vent natural gas, LP-gas and oil-fired heating systems. All models are supplied with the model PSA-1 Fan Proving Switch which will disable the burner(s) if a venting malfunction should occur. The Auto-Draft® may be used on positive or negative pressure rated chimneys because the fan creates a negative pressure throughout the entire venting system. The Auto-Draft® Venter must always be installed outdoors at the vent system termination. Refer to heating appliance manufacturer's instructions regarding specific venting requirements.

### COMPLETE AUTO-DRAFT® VENT SYSTEM SOLUTIONS

This installation manual does not contain any system design documentation. Installation and use of Tjernlund controls like the CPC-2 Constant Pressure Controller, EXP-4 Appliance Interlock Expansion boards or MAC-4 Multiple Appliance Controller are not covered by this manual. Please refer to those accessory installation manuals.

### DIMENSIONS AND SPECIFICATIONS

MODEL		FSAD-8	FSAD-10	FSAD-12	VSAD-8	VSAD-10	VSAD-12	
Fan Type		Centrifugal Impeller						
Voltage	VAC	115	115	208-230	3x208-230	3x208-230	3x208-230	
RPM		1725	1725	1725	2440	2300	2070	
Amps	A	5.0	7.2	9.3	1.5	3.4	6.2	
Power Rating	hp	1/4	1/2	1 1/2	1/3	1	2	
	kW	0.19	0.37	1.12	0.25	0.75	1.49	
Weight	lbs	47	97	138	48	101	140	
	kgs	21.32	43.99	62.59	21.77	45.80	63.49	
Dimensions	<b>A</b>	in	22	25	28 3/4	22	25	28 3/4
		mm	559	635	730	559	635	730
	<b>B</b>	in	19 3/4	23	26 1/2	19 3/4	23	26 1/2
		mm	500	585	674	500	585	674
	<b>C</b>	in	9	11 1/8	13 5/8	9	11 1/8	13 5/8
		mm	228	283	348	228	283	348
	<b>D</b>	in	7 7/8	9 7/8	11 7/8	7 7/8	9 7/8	11 7/8
		mm	200	251	302	200	251	302
	<b>E</b>	in	15	20	26 3/16	15	20	26 3/16
		mm	381	508	665	381	508	665
	<b>F</b>	in	18 3/4	24 3/4	31 3/4	18 3/4	24 3/4	31 3/4
		mm	475	629	806	475	629	806
Motor Soft Start Required		No	No	No	Yes (1)	Yes (1)	Yes (1)	
Variable Speed Motor		No	No	No	Yes with VFD	Yes with VFD	Yes with VFD	

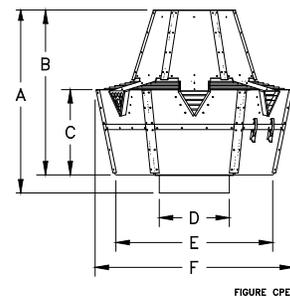
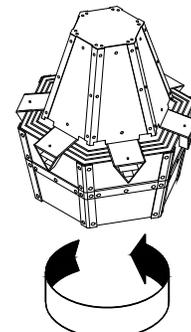


FIGURE CPE1



IMPELLER ROTATION

See "Wiring" for procedure to confirm proper VSAD rotation.

Figure Cpe3 5/2/01

(1) Must use a Tjernlund VFD which includes Soft Start.

## AUTO-DRAFT® VENTER FAN PERFORMANCE CURVES

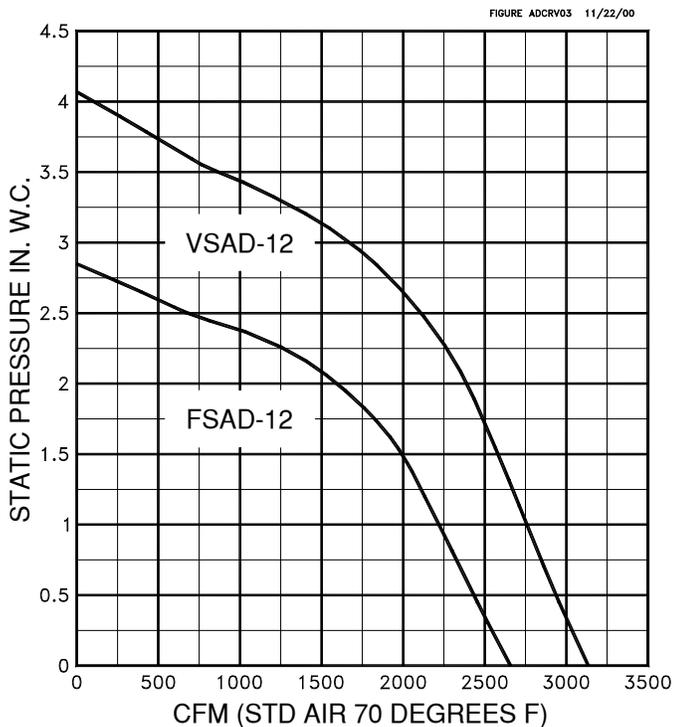
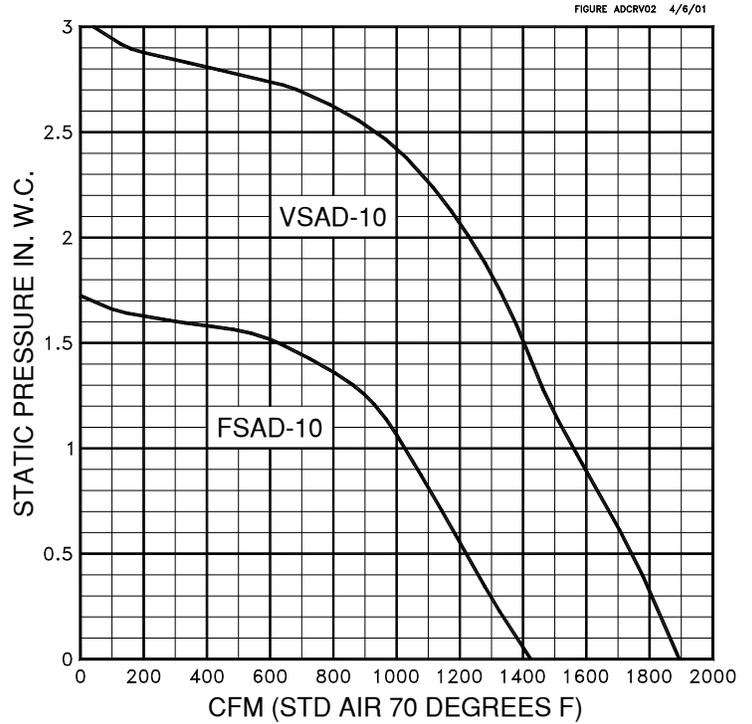
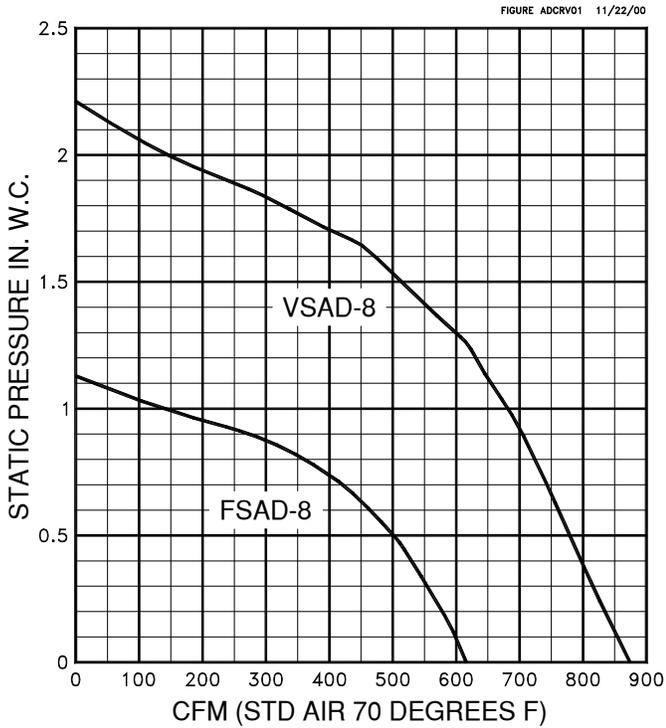
Auto-Draft® Venter performance was independently tested by an accredited AMCA certified testing facility.

Selection of an Auto-Draft® Venter involves determination of the maximum volume of gas to be handled, the density of the gas and the maximum static pressure which the fan must overcome.

Variable speed VSAD-Series Venters can operate at virtually any point to the left of the performance curve. For Side Wall applications add 0.50" W.C. to vent system resistance to accommodate the effects of wind loading.

Auto-Draft® Venter performance needs to be derated from 70°F performance curves to anticipated flue gas temperatures.

Please feel free to contact us for application and model selection assistance by calling 800-255-4208 or email us at fanmail@tjfans.com. Vent layout or other information can be faxed to 651-426-9547.



## INSTALLATION RESTRICTIONS

### WARNING

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

### WARNING

The Auto-Draft® 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 National Fuel Gas Code (NFPA 54), NFPA 211 or 31 when applicable, the latest edition of the National Electrical Code (NFPA 70) and the Occupational Safety and Health Act (OSHA) when applicable. In the absence of local codes in Canada, installations must comply with the Canadian Electrical Code (CSA Std 22.1 ), the latest edition of the Natural Gas Installation Code (CAN/CGA-B149.1), the Propane Installation Code (CAN/CGA-B149.2) and the Installation Code for Oil Burning Equipment (CSA Std B139-M91).

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.

1. The Auto-Draft® Venter may only be installed on natural gas, LP-gas or oil-fired heating appliance systems. The Auto-Draft® Venter is not suitable for use on condensing equipment in Canada.
2. The Auto-Draft® Venter was tested with exit flue gas temperatures of 575°F (300°C).
3. The Auto-Draft® Venter may not be installed on incinerators, incinerating toilets or solid-fuel burning appliances.
4. The Auto-Draft® Venter must always be installed at the vent system termination, whether terminating through the roof or side wall. It can only be mounted with motor shaft vertical or horizontal to guarantee proper operation of Tilt Switch which cuts out power to motor when Venter housing is opened.
5. The Auto-Draft® 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.
6. Auto-Draft® Venters not utilizing the Tjernlund CPC-2 Constant Pressure Control may only be installed on appliances equipped with a draft hood, draft diverter or barometric draft control.

## INSTALLER CAUTIONS

### WARNING

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

1. The model PSA-1 Fan Proving Switch provided must be interlocked with the heating appliance burner(s).
2. Plan the vent system so that the code required clearances are maintained from plumbing, wiring and combustibles.
3. Make certain the power supply is adequate for Auto-Draft® Venter motor requirements. Do not add the Auto-Draft® Venter to a circuit where the total load is unknown.
4. The installer must verify that the appliance on which the Auto-Draft® Venter will be installed is in a safe operating condition. Consult appliance manufacturer's Instructions for details.
5. The appropriate Tilt Switch, which cuts out power to motor when housing is opened, must be wired into the safety circuit depending on horizontal or vertical orientation of the Auto-Draft® Venter. Refer to wiring instructions and diagrams for details.
6. Auto-Draft® Venter housing is single wall. Standard clearances to combustibles must be maintained. Optional wall and roof mount kits which maintain clearances to combustibles are available from Tjernlund.
7. VSAD Series Venters must use appropriate Tjernlund VFD model.

## LIMITATIONS CONCERNANT L'INSTALLATION

### WARNING

**Le fait d'installer, d'entretenir ou d'utiliser le ventilateur de tirage Auto-Draft® d'une manière non conforme aux instructions du fabricant risque de provoquer des blessures et des dégâts matériels.**

### WARNING

Le ventilateur de tirage Auto-Draft® doit être installé par un installateur qualifié, conformément à ces instructions et à tous les règlements locaux. En l'absence de règlements locaux au Canada, les installations doivent se conformer au Code canadien de l'électricité (CSA Std 22.1 ), à la dernière édition du Code d'installation du gaz naturel (CAN/CGA-B149.1), du Code d'installation du propane (CAN/CGA-B149.2) et du Code d'installation des appareils de combustion au mazout (CSA Std B139-M91).

Une installation incorrecte risque de créer une situation dangereuse, telle une explosion, un incendie, des chocs électriques ou un empoisonnement au monoxyde de carbone, entraînant des dégâts matériels et des blessures graves, voire mortelles.

1. Le ventilateur de tirage Auto-Draft® ne doit être installé qu'avec des appareils de chauffage au gaz naturel, au gaz de pétrole liquéfié ou au mazout. Le ventilateur de tirage Auto-Draft® ne doit pas être installé sur condensing equipment au Canada.

2. La température des gaz de combustion ne doit pas dépasser 575 °F (300 °C) au niveau de l'orifice d'admission du ventilateur de tirage Auto-Draft®.
3. Le ventilateur de tirage Auto-Draft® ne doit pas être installé sur des incinérateurs, des cuvettes sanitaires à incinération ou des appareils brûlant un combustible solide.
4. Le ventilateur de tirage Auto-Draft® doit toujours être installé en bout du système d'évacuation, que ce soit au niveau du toit ou d'un mur. Son montage exige que l'axe du moteur soit vertical ou horizontal pour assurer un fonctionnement correct du contacteur à basculement qui coupe l'alimentation en cas d'ouverture du boîtier du ventilateur de tirage.
5. Le ventilateur de tirage Auto-Draft® ne doit pas être installé sur un appareil équipé d'une vanne automatique avec surpassement manuel d'ouverture, sauf si ce dernier a été neutralisé ou si la vanne automatique a été remplacée par une vanne sans surpassement manuel.
6. Les ventilateurs Auto-Draft® qui n'utilisent pas le système de régulation à pression constante CPC-2 ne doivent être installés que sur les appareils équipés d'un coupe-tirage, d'une hotte de tirage ou d'un régulateur barométrique de tirage.

## PRÉCAUTIONS D'INSTALLATION

### WARNING

**Coupez l'alimentation électrique avant d'effectuer le raccordement ou lorsque vous travaillez à proximité du moteur et du ventilateur. L'inobservation de cette consigne risque d'entraîner des chocs électriques, des blessures graves, voire mortelles et des dégâts matériels.**

1. Le ou les brûleurs doivent être électriquement asservis au détecteur d'activation du ventilateur.
2. Arrangez le système d'évacuation de manière à respecter les dégagements réglementaires requis vis-à-vis des tuyauteries, des câblages électriques et des matériaux adjacents.
3. Assurez-vous que l'alimentation électrique dispose d'une puissance suffisante pour alimenter le moteur du ventilateur de tirage Auto-Draft®. Ne pas installer le ventilateur de tirage Auto-Draft® dans un circuit dont la charge totale est inconnue.
4. L'installateur doit vérifier que l'appareil sur lequel le ventilateur de tirage Auto-Draft® est installé est en bon état de fonctionnement. Consultez les instructions du fabricant de l'appareil pour plus de détails.
5. Un contacteur à basculement, qui coupe l'alimentation électrique du moteur en cas d'ouverture du boîtier, doit être raccordé au circuit de sécurité. Utilisez le contacteur correspondant à la position de montage, horizontale ou verticale, du ventilateur de tirage Auto-Draft®. Reportez-vous aux instructions et schémas de câblage pour de plus amples informations.
6. Le boîtier du ventilateur de tirage Auto-Draft® est un boîtier à simple paroi. Les dégagements standard vis-à-vis des matériaux combustibles doivent être respectés. Des ensembles optionnels de montage au toit ou au mur sont disponibles auprès de Tjernlund.
7. Vu du grillage d'échappement de l'Auto-Draft®, le ventilateur doit tourner dans le sens antihoraire, (voir schéma x).
8. Important: la charnière du boîtier doit être orientée vers le bas en cas de montage mural. Faites coïncider les goujons de la plaque de montage avec les trous dans la base du ventilateur de tirage Auto-Draft® et attachez l'Auto-Draft® à la plaque de montage à l'aide des écrous fournis, (voir schéma G).
9. Le détecteur d'activation du ventilateur PSA-1 doit être monté de sorte que son diaphragme soit vertical. Reportez-vous à la section "Installation du détecteur d'activation du ventilateur PSA-1".
10. Les ventilateurs de tirage de la gamme VSAD doivent utiliser le modèle de VFD Tjernlund approprié.

## AUTO-DRAFT® VENTER TERMINATION CLEARANCES FOR CANADIAN INSTALLATIONS

In the absence of local codes in Canada, installations must comply with the latest edition of the Natural Gas Installation Code (CAN/CGA-B149.1), the Propane Installation Code (CAN/CGA-B149.2), the Installation Code for Oil Burning Equipment (CSA Std B139-M91) or as follows, (See Diagram A).

- 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 venting 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

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

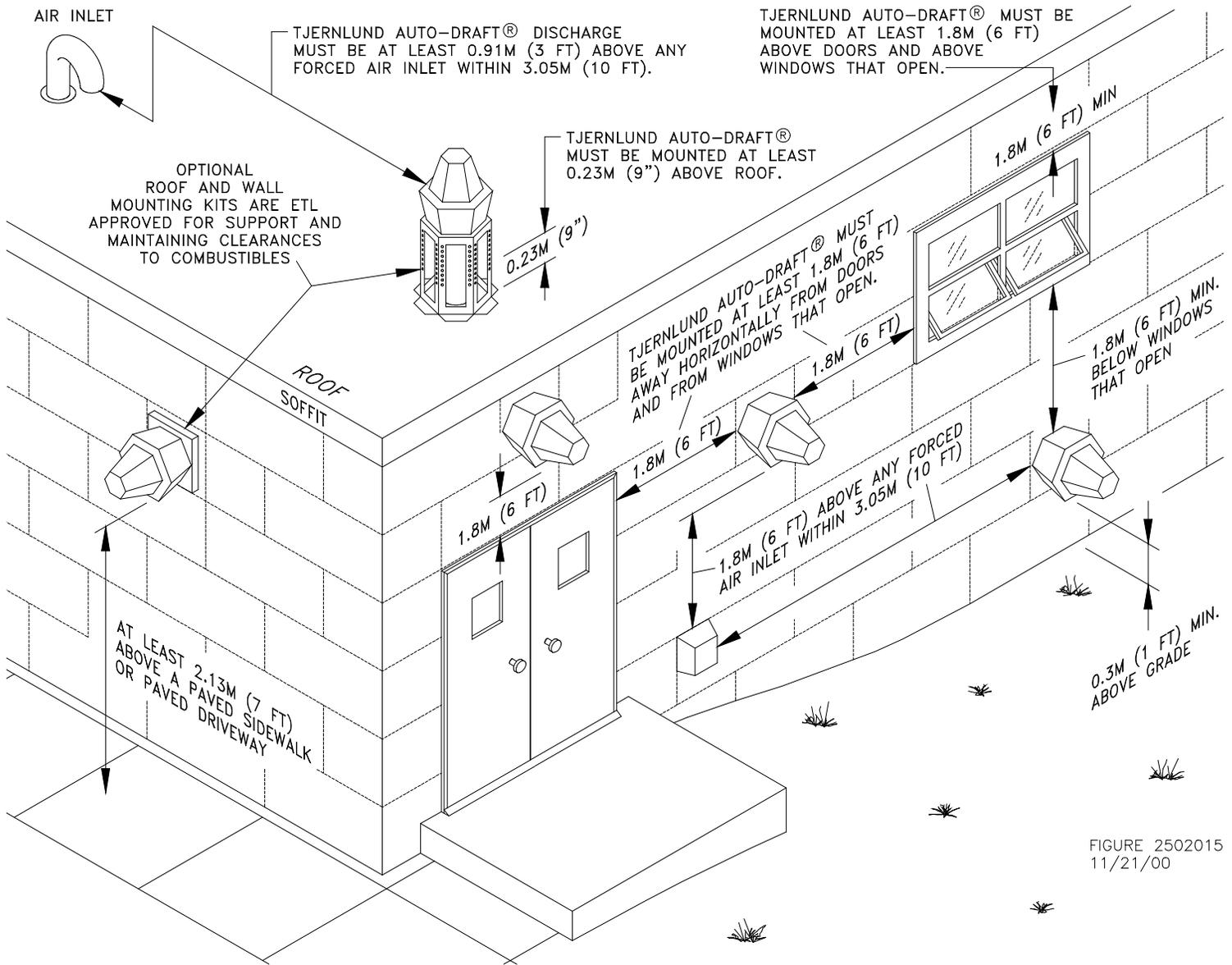


FIGURE 2502015  
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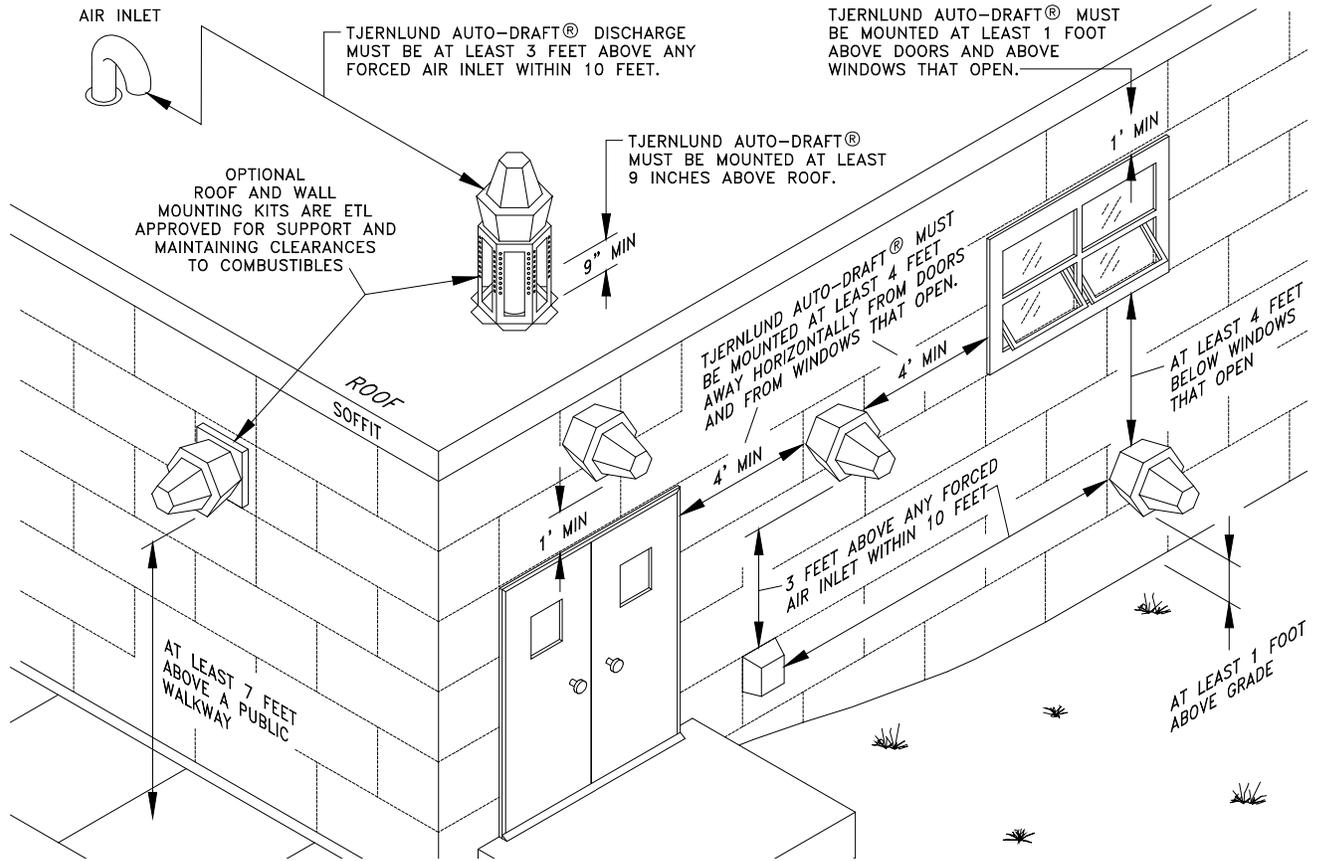
**TERMINATION CLEARANCES FOR U.S. INSTALLATIONS**

The Auto-Draft® Venter base must be a minimum of 9" above a roof. Optional roof and wall mounting kits are available from Tjernlund.

**CODE REQUIREMENTS**

Terminate the Auto-Draft® Venter so that proper minimum clearances are maintained as cited in the latest edition of the National Fuel Gas Code (NFPA 54), NFPA 211 or 31 when applicable, (See Diagram B):

- Not be less than 7 feet above grade when located adjacent to public walk ways.
- At least 3 feet above any forced air inlet located within 10 feet.
- At least 4 feet below, 4 feet horizontally from or 1 foot above any door, window or gravity air inlet into any building.
- At least 1 foot above grade.
- So that the flue gases are not directed so as to jeopardize people, overheat combustible structures or enter buildings, and
- Not less than 2 feet from an adjacent building.



**INSTALLATION OF THE AUTO-DRAFT® VENTER**

The Auto-Draft® Venter is designed to fit any type of nominal 8", 10" or 12" diameter vent pipe. Vent pipe must be installed and supported according to manufacturer's instructions and/or in accordance with NFPA 211, "Chimneys and Vents". Factory insulated vent pipe may reduce clearances to combustibles when penetrating a combustible roof or wall. Refer to vent pipe manufacturer's instructions for details.

The Auto-Draft® Venter can only be mounted with motor shaft vertical or horizontal to guarantee proper operation of Tilt Switch, which cuts out power to motor when Venter housing is opened.

Tjernlund's optional ETL approved RMK-8,10,12 roof mounting kits are available when connecting the Auto-Draft® to metal vent pipe. The mount kits are adjustable in height, support the weight of the Auto-Draft® Venter independent of the vent pipe connection and maintain Venter clearance to combustibles.

**VERTICAL INSTALLATION ON METAL VENT PIPE**

**⚠ WARNING**

**Auto-Draft® motor side is heavy. Housing hinge pin should be removed for easier installation. Support Venter base when removing hinge pin. When removing motor side, use extreme caution so internal parts such as the impeller are not damaged.**

1. Insert the Inlet Collar through the Mounting Plate and slide the Inlet Collar with Mounting Plate into vent pipe, (See Diagram C).
2. Secure the Inlet Collar to vent pipe with self tapping stainless steel screws, installer supplied. Make sure screws are long enough to adequately secure Inlet Collar and Mounting Plate to vent pipe. Make sure vent pipe is adequately installed and supported for weight of Auto-Draft® if not using an RMK Series roof mounting kit.
3. Lay a bead of hi-temp silicone close to the outer edge of Auto-Draft® Venter base. **Do not** block the (6) corner drain holes, (See Diagram D).
4. Align Mounting Plate studs with holes in Auto-Draft® Venter base and secure the Auto-Draft® to the Mounting Plate with (6) provided nuts, ( See Diagram C).

DIAGRAM C

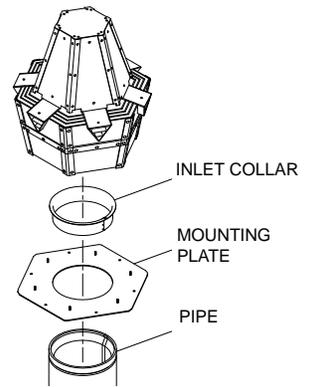
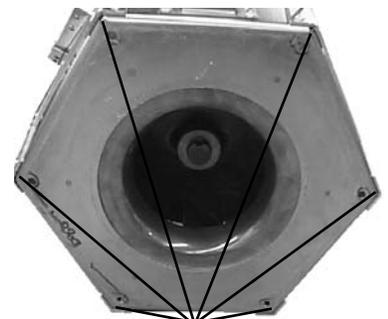


DIAGRAM D



DO NOT BLOCK (6) DRAIN HOLES WHEN TERMINATING AUTO-DRAFT® VERTICALLY. DRAIN HOLES MAY BE CAULKED WHEN TERMINATED HORIZONTALLY.

- Seal around the venter base and the Mounting Plate with hi-temp silicone. Make sure it is watertight and no water can slip in between the venter base and Mounting Plate. **Do not** block the (6) corner drain holes, (See Diagram D).

## INSTALLATION ON ROOF CURB OR MASONRY CHIMNEY

### ⚠ WARNING

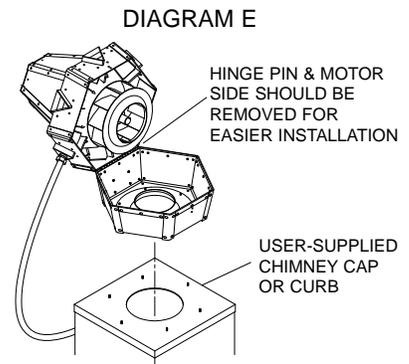
**Auto-Draft® motor side is heavy. Housing hinge pin should be removed for easier installation. Support Venter base when removing hinge pin. When removing motor side, use extreme caution so internal parts such as the impeller are not damaged.**

#### IF USING AUTO-DRAFT® MOUNTING PLATE FOR ROOF CURB / MASONRY CHIMNEY INSTALLATION:

- Lay a bead of hi-temp silicone on the Auto-Draft® Venter Mounting Plate side without mounting studs.
- Secure the Mounting Plate to the roof curb making sure that opening in the Mounting Plate aligns up with opening in roof curb.
- Lay a bead of hi-temp silicone close to the outer edge of Venter base. **Do not** block the (6) corner drain holes, (See Diagram D).
- Align Mounting Plate studs with holes in Venter base and secure the Auto-Draft® to the Mounting Plate with (6) provided nuts.
- Seal around the Venter base and the Mounting Plate with hi-temp silicone. Make sure it is watertight and no water can slip in between the Venter base and Mounting Plate. **Do not** block the (6) corner drain holes, (See Diagram D).

#### IF MOUNTING TO ROOF CURB / MASONRY CHIMNEY WITHOUT AUTO-DRAFT® MOUNTING PLATE:

- Use Auto-Draft® Venter base as a template to mark six spots for bolting to roof curb. Drill (6) holes for 5/16-18 stainless steel bolts, installer supplied.
- Lay a bead of hi-temp silicone close to the outer edge of Auto-Draft® Venter base. **Do not** block the (6) corner drain holes, (See Diagram D).
- Bolt Auto-Draft® Venter base with stainless steel fasteners to curb, (See Diagram E).
- Seal around the Venter base and the Mounting Plate with hi-temp silicone. Make sure it is watertight so water cant slip in between the Venter base and curb or chimney cap. **Do not** block the (6) corner drain holes, (See Diagram D).



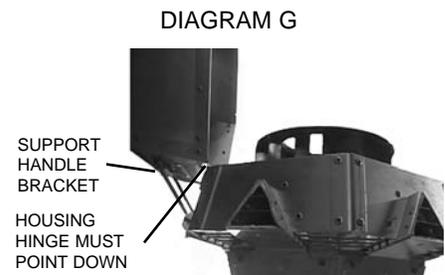
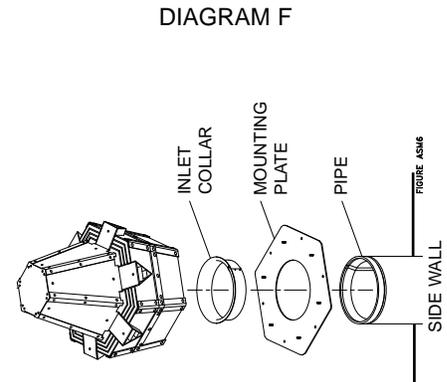
## INSTALLATION ON SIDE WALL

### ⚠ WARNING

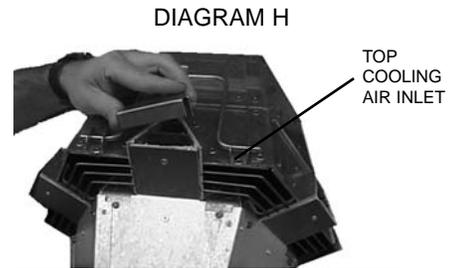
**Auto-Draft® motor side is heavy. Housing hinge pin should be removed for easier installation. Support Venter base when removing hinge pin. When removing motor side, use extreme caution so internal parts such as the impeller are not damaged.**

Tjernlund's Optional ETL approved WMK-8,10,12 kits may be utilized to maintain clearances to combustibles.

- Vent pipe should extend far enough through exterior wall to attach Inlet collar.
- Insert the Inlet Collar through the Mounting Plate and slide the Inlet Collar with Mounting Plate into vent pipe, (See Diagram F).
- Secure the Inlet Collar to vent pipe with self tapping stainless steel screws, installer supplied. Make sure the screws are long enough to adequately secure Inlet Collar and Auto-Draft® to vent pipe.
- Push Mounting Plate against wall with flat side pointing down. Make sure flat side is level and mark (6) mounting holes on wall using Mounting Plate as a template. Drill out and tap holes as necessary for appropriate stainless steel lag bolts.
- Place a bead of hi-temp silicone on the Mounting Plate back side and firmly push against wall. Secure Mounting Plate to wall with appropriate lag bolts, installer supplied, considering Auto-Draft® Venter weight. Adequately support and secure vent pipe.
- Lay a bead of hi-temp silicone close to the outer edge of Auto-Draft® Venter base.
- IMPORTANT:** Housing hinge **must** face down when mounting on a side wall. Align Mounting Plate studs with holes in Auto-Draft® Venter base and secure the Auto-Draft® to the Mounting Plate with provided nuts, (See Diagram G).



- Seal around the Venter base and the Mounting Plate with hi-temp silicone. Make sure it is watertight and no water can slip in between the Venter base and Mounting Plate. Drain holes on (6) corners of Venter base can be sealed to prevent staining of the building, (See Diagram D).
- Apply a bead of hi-temp silicone on the cooling air inlet on top of Auto-Draft® and firmly adhere triangle shaped cooling air inlet cover to cooling air inlet, (See Diagram H). This procedure will prevent rain and/or snow from entering Venter.



### PSA-1 FAN PROVING SWITCH INSTALLATION

- Install Fan Proving Switch sampling tube in the vent connector 2-3 pipe diameters after the elbow or "T" that turns the vent from vertical to horizontal. For multiple appliances venting into a common manifold, install after appliance closest to Auto-Draft® Venter. If the vent run is completely vertical, install after draft hood or barometric, (See Diagram I).
- Drill 1/4" hole for Fan Proving Switch sampling tube. Secure sampling tube bracket to pipe with sampling hole centered.
- Insert stainless steel sampling tube through 1/4" hole enough to just penetrate interior of vent pipe and lock in place with compression nut, (See Diagram J). With the Auto-Draft Venter on, a reading with a draft gauge can be used to determine when interior of pipe has been penetrated.
- Fan Proving Switch diaphragm **must be** mounted in a vertical position within six feet of the sensing location. Firmly insert flexible tubing on sampling tube and Fan Proving Switch nipple marked (LOW). Leave other Fan Proving Switch port open to room atmosphere. Make sure there are no sharp bends or kinks in flexible tubing, (See Diagram K).

DIAGRAM I

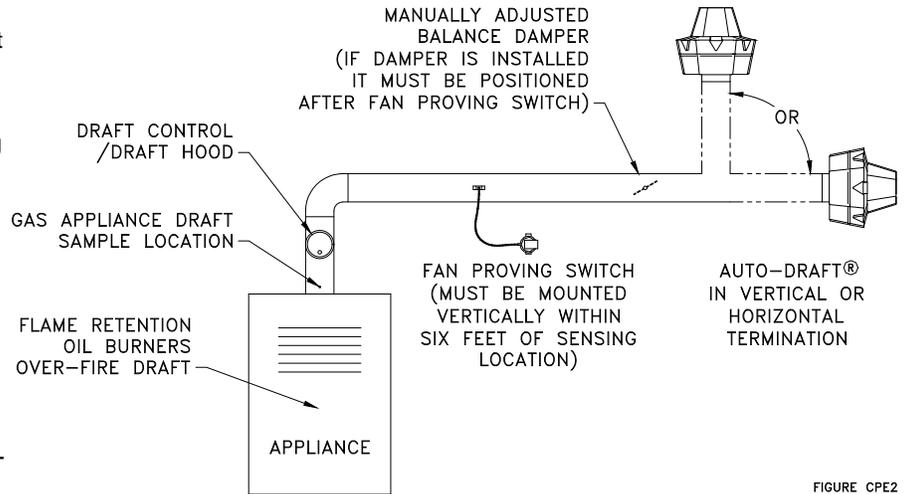


FIGURE CPE2

DIAGRAM J

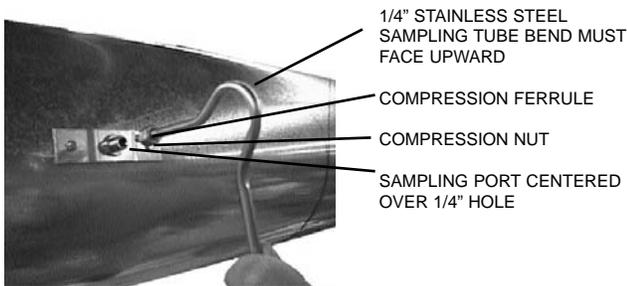
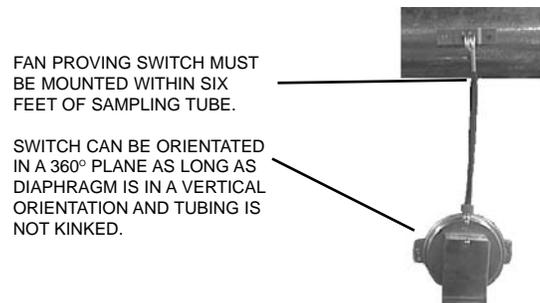


DIAGRAM K



### WIRING

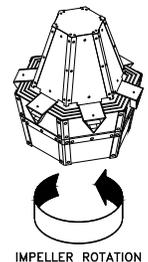
#### ⚠ WARNING

All wiring from the Auto-Draft® Venter to the appliance must be in compliance with the local codes or in their absence, the National Electric Code (NFPA 70).

All wiring from the Auto-Draft® 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 or be otherwise suitably protected from physical damage.

All wiring with a VFD or CPC-2 control must be in metal conduit or shielded VFD rated cable.

This installation manual does not contain any system design documentation. Installation and use of Tjernlund controls like the CPC-2 Constant Pressure Controller, EXP-4 Appliance Interlock Expansion boards or MAC-4 Multiple Appliance Controller are not covered by this manual. Please refer to those accessory installation manuals.



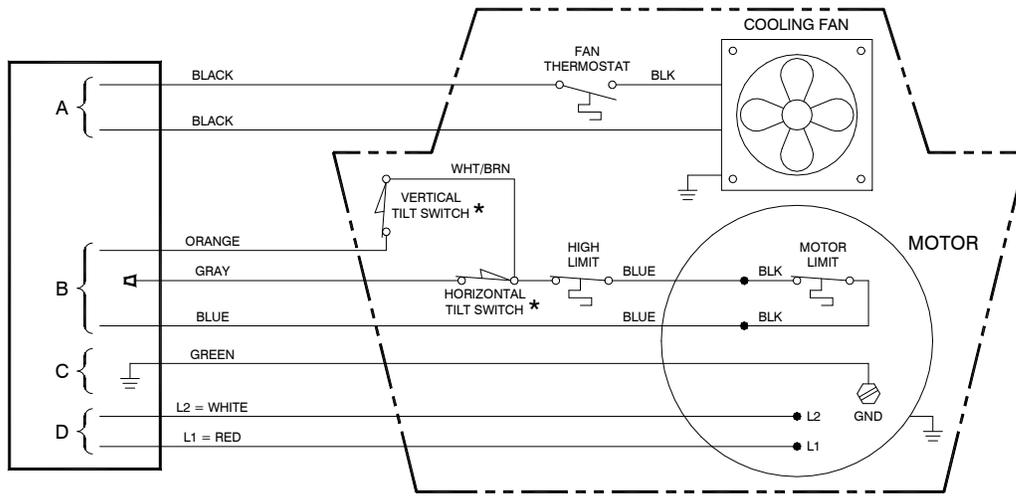
**IMPORTANT:** Impeller must rotate counter-clockwise. Follow rotation confirmation procedure for VSAD-Series.

**IMPORTANT: CONFIRM PROPER IMPELLER ROTATION (VSAD-SERIES ONLY)**

All Auto-Draft® VSAD-Series Venters must use a Variable Frequency Drive (VFD) supplied by Tjernlund which is factory programmed specifically for the VSAD model being installed. **IMPORTANT:** Impeller must rotate counter-clockwise as viewed through Auto-Draft® discharge grille. Auto-Draft® may appear to be operating properly but if it is only able to produce marginal draft the impeller may be rotating backwards. Excessive amp draw from the motor may be a sign that the impeller is rotating backwards. Inspect impeller for proper rotation and follow amp draw procedure below.

1. Depress DSPL key on the VFD until "IOUT" is lit.
2. Adjust speed adjustment knob on VFD clockwise to maximum Venter speed. VFD may trip out on overload (OL1) shown in drive display. Amp draw at maximum speed should not exceed amp ratings in "Specifications" on page 1.
3. While running at full speed, if amp draw is excessive or VFD trips out on overload (OL1), disrupt power to the VFD and switch any two leads to the M1, M2 or M3 terminal. Reestablish power to the VFD and repeat steps 1 and 2 and confirm proper rotation of impeller and proper amp draw at maximum Venter speed.

**INTERNAL FACTORY WIRING OF FSAD-8/10**



A = COOLING FAN POWER, 110-120VAC/60HZ/0.25 AMPS

B = SAFETY/PROTECTION CIRCUIT THROUGH TILT SWITCHES, 10VA MAX LOAD

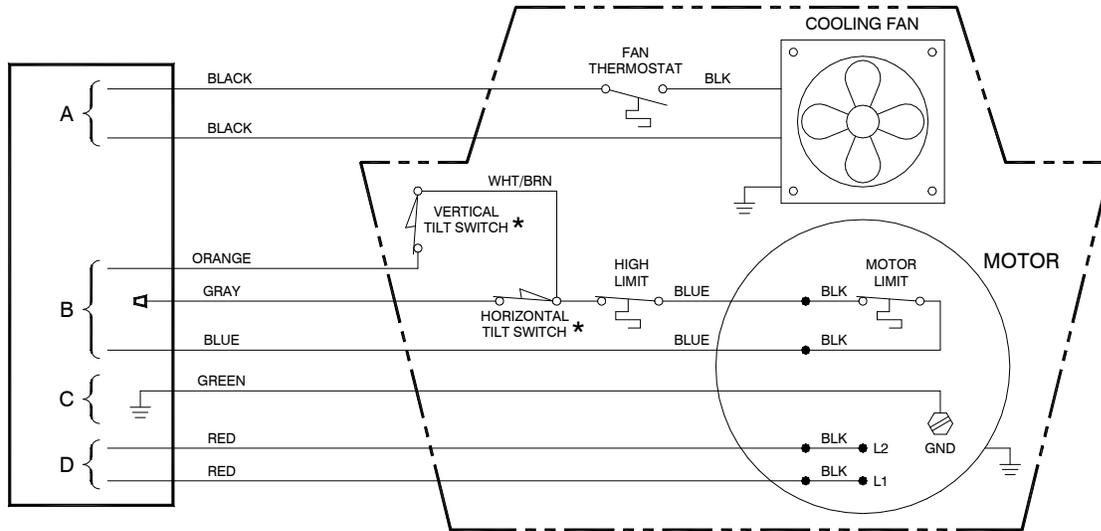
\* For vertical termination of the Auto-Draft®, connect to orange wire and cap off gray wire as shown.

\* For horizontal termination of the Auto-Draft®, connect to gray wire and cap off orange wire.

C = GROUND CIRCUIT

D = MOTOR POWER - SWITCHED LOAD WITH APPLIANCE CALL, 110-120VAC/60HZ

**INTERNAL FACTORY WIRING OF FSAD-12**



A = COOLING FAN POWER, 208-240VAC/60HZ/0.13 AMPS

B = SAFETY/PROTECTION CIRCUIT THROUGH TILT SWITCHES, 10VA MAX LOAD

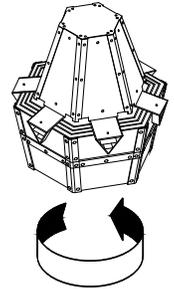
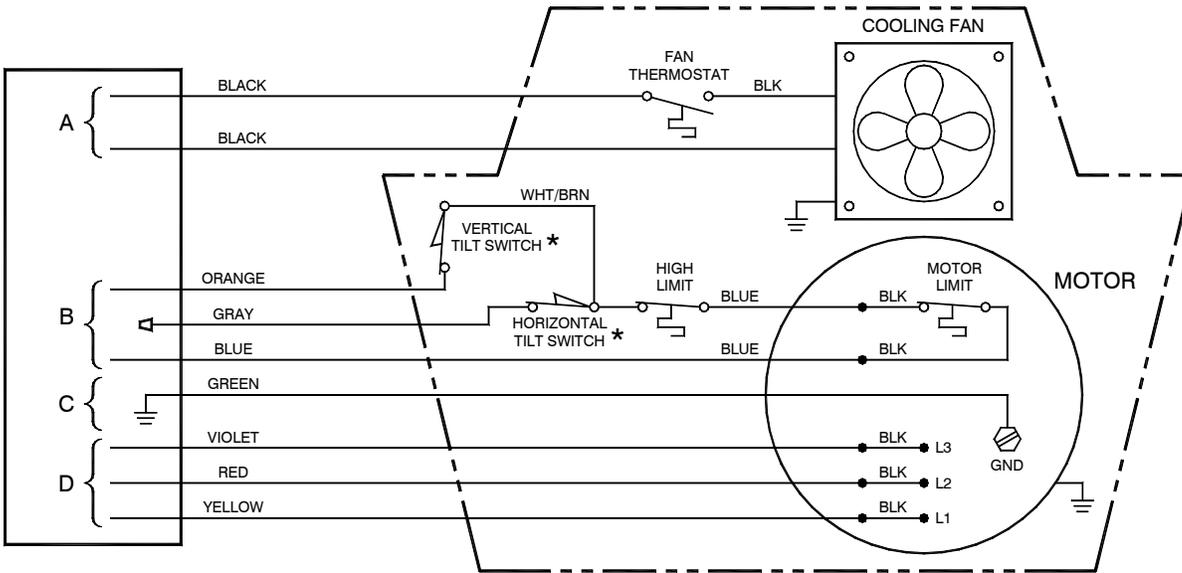
\* For vertical termination of the Auto-Draft®, connect to orange wire and cap off gray wire as shown.

\* For horizontal termination of the Auto-Draft®, connect to gray wire and cap off orange wire.

C = GROUND CIRCUIT

D = MOTOR POWER - SWITCHED LOAD WITH APPLIANCE CALL, 208-240VAC/60HZ

**INTERNAL FACTORY WIRING OF VSAD-8/10/12**



IMPELLER ROTATION

A = COOLING FAN POWER, 208-240VAC/50-60HZ/0.13 AMPS

B = SAFETY/PROTECTION CIRCUIT THROUGH TILT SWITCHES, 10VA MAX LOAD

\* For vertical termination of the Auto-Draft<sup>®</sup>, connect to orange wire and cap off gray wire as shown.

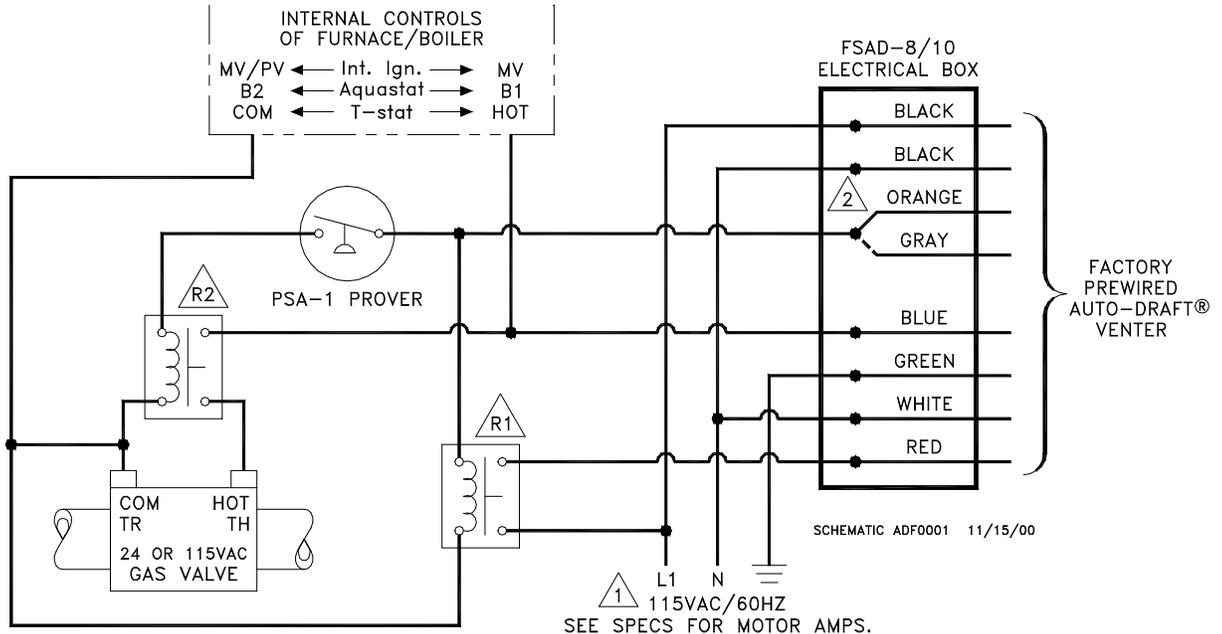
\* For horizontal termination of the Auto-Draft<sup>®</sup>, connect to gray wire and cap off orange wire.

C = GROUND CIRCUIT - USE GROUND RATED CONDUIT

D = MOTOR POWER - MUST ORIGINATE FROM A TJERNLUND VFD

**IMPORTANT:** Impeller must rotate counter-clockwise. Follow VSAD impeller rotation confirmation in "Wiring" section of these instructions.

**FSAD-8/10 WIRED WITH A SINGLE GAS APPLIANCE AND NO VENTER POST-PURGE**



**NOTES:**

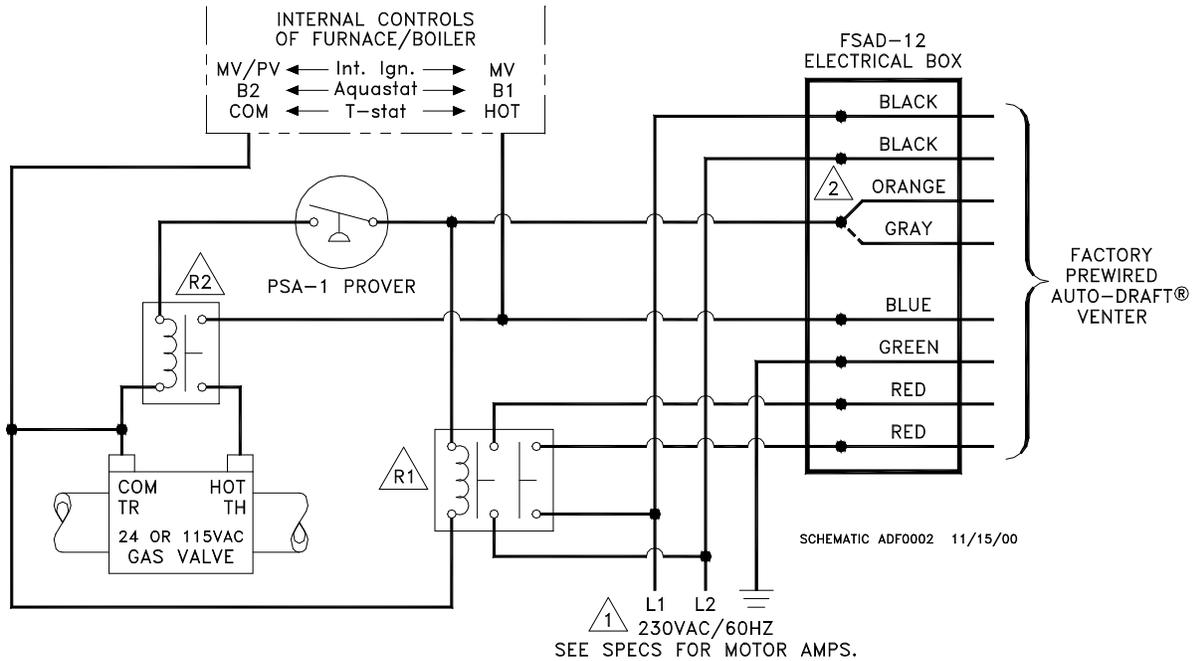
1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.

2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.

R1 RELAY CONTACTS: 1/2 HP @ 115VAC  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)

R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)

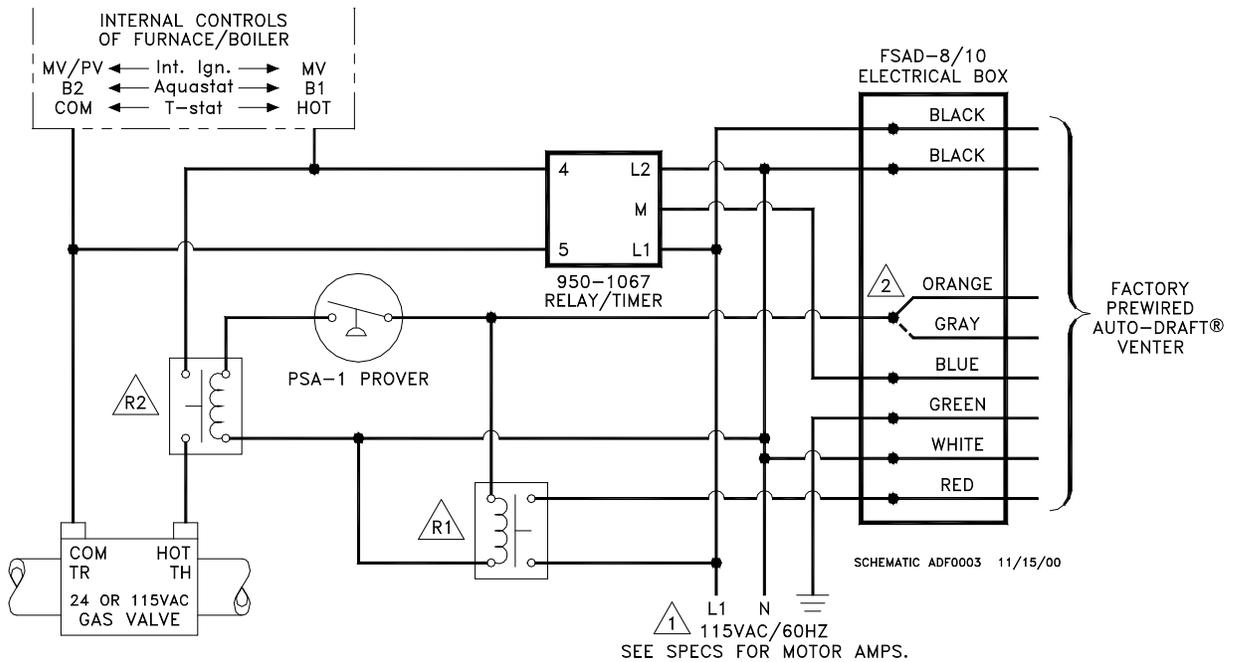
## FSAD-12 WIRED WITH A SINGLE GAS APPLIANCE AND NO VENTER POST-PURGE



### NOTES:

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE.  
FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- R1 RELAY CONTACTS: 1 1/2 HP @ 230VAC  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)
- R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)

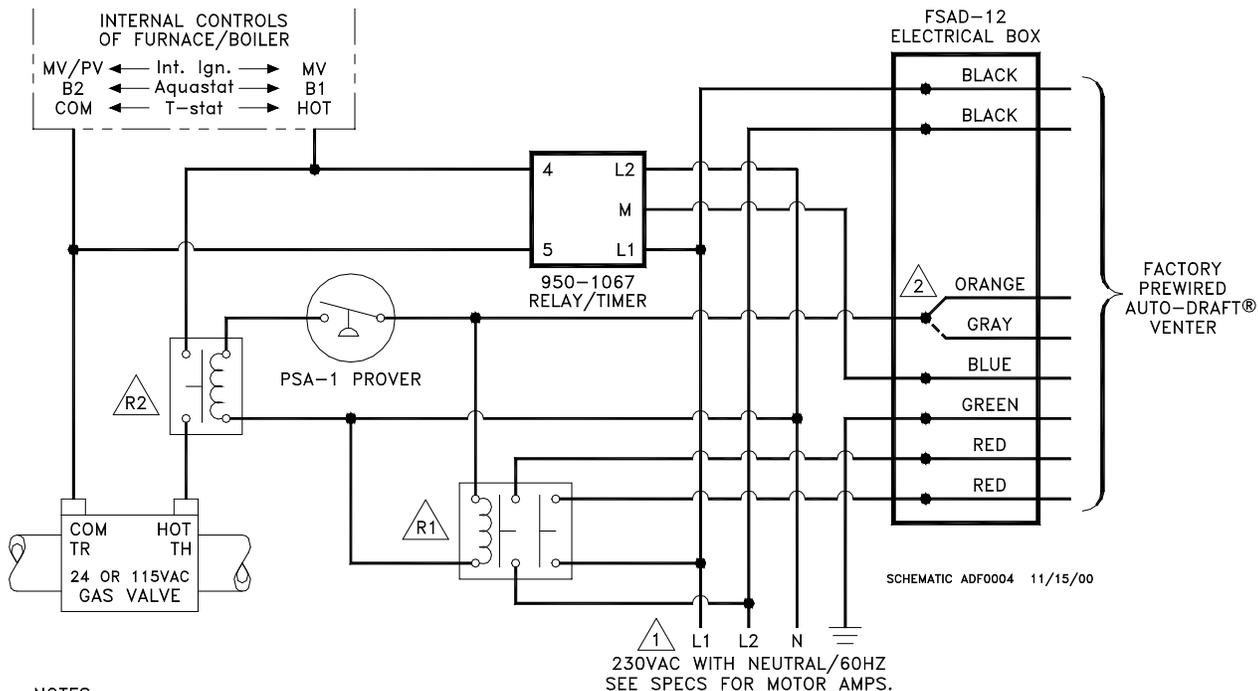
## FSAD-8/10 WIRED WITH A SINGLE GAS APPLIANCE AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER



### NOTES:

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE.  
FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- R1 RELAY CONTACTS: 1/2 HP @ 115VAC  
RELAY COIL: 115VAC
- R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: 115VAC

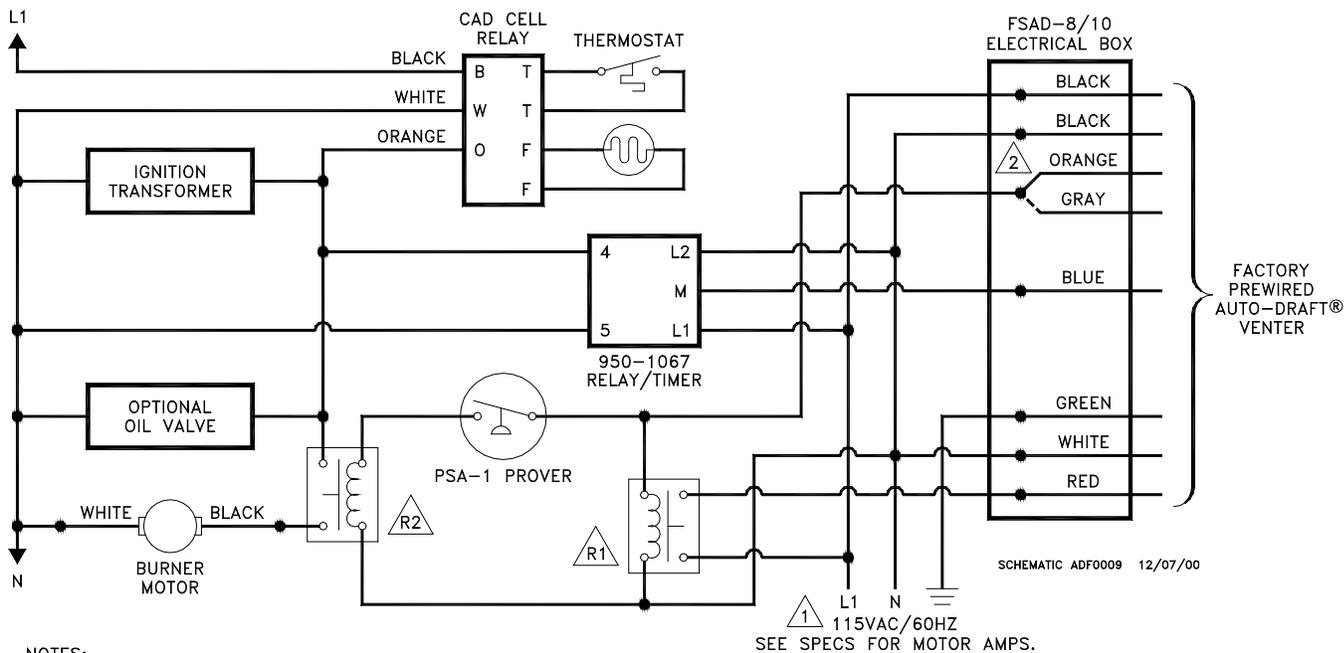
**FSAD-12 WIRED WITH A SINGLE GAS APPLIANCE AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER**



**NOTES:**

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- R1 RELAY CONTACTS: 1 1/2 HP @ 230VAC  
RELAY COIL: 115VAC
- R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: 115VAC

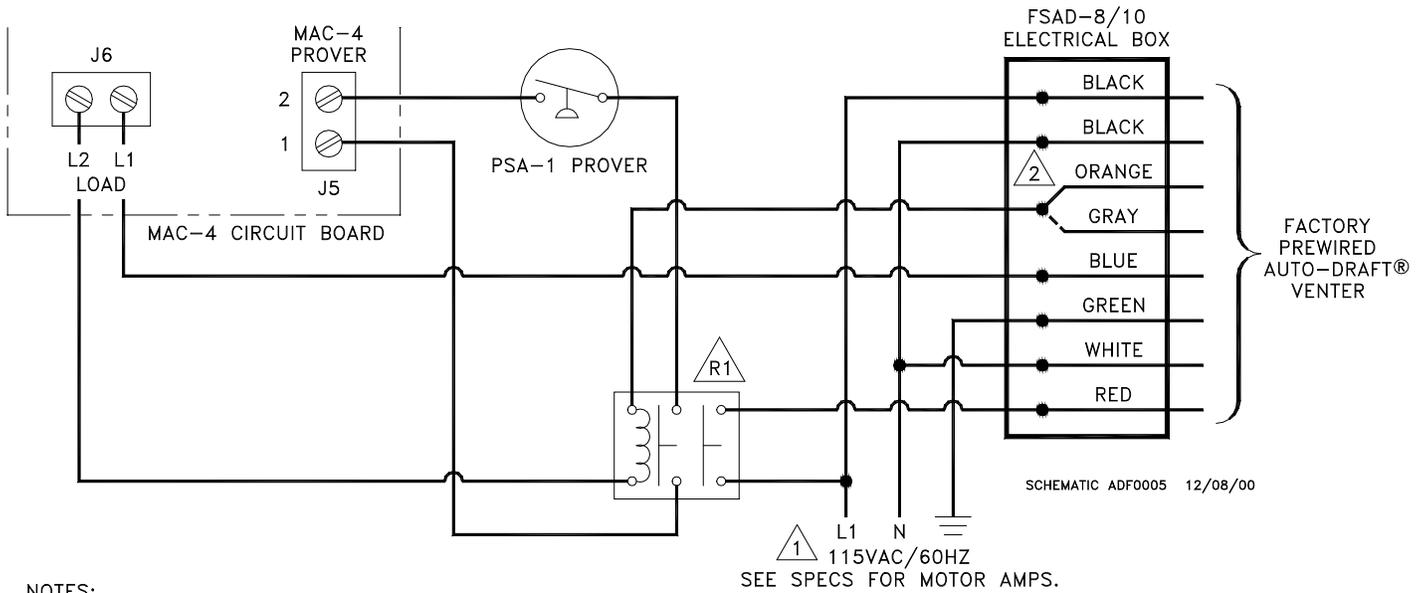
**FSAD-8/10 WIRED WITH A SINGLE OIL BURNER AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER**



**NOTES:**

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- R1 RELAY CONTACTS: 1/2 HP @ 115VAC  
RELAY COIL: 115VAC
- R2 RELAY CONTACTS: RATED FOR BURNER MOTOR LOAD  
RELAY COIL: 115VAC

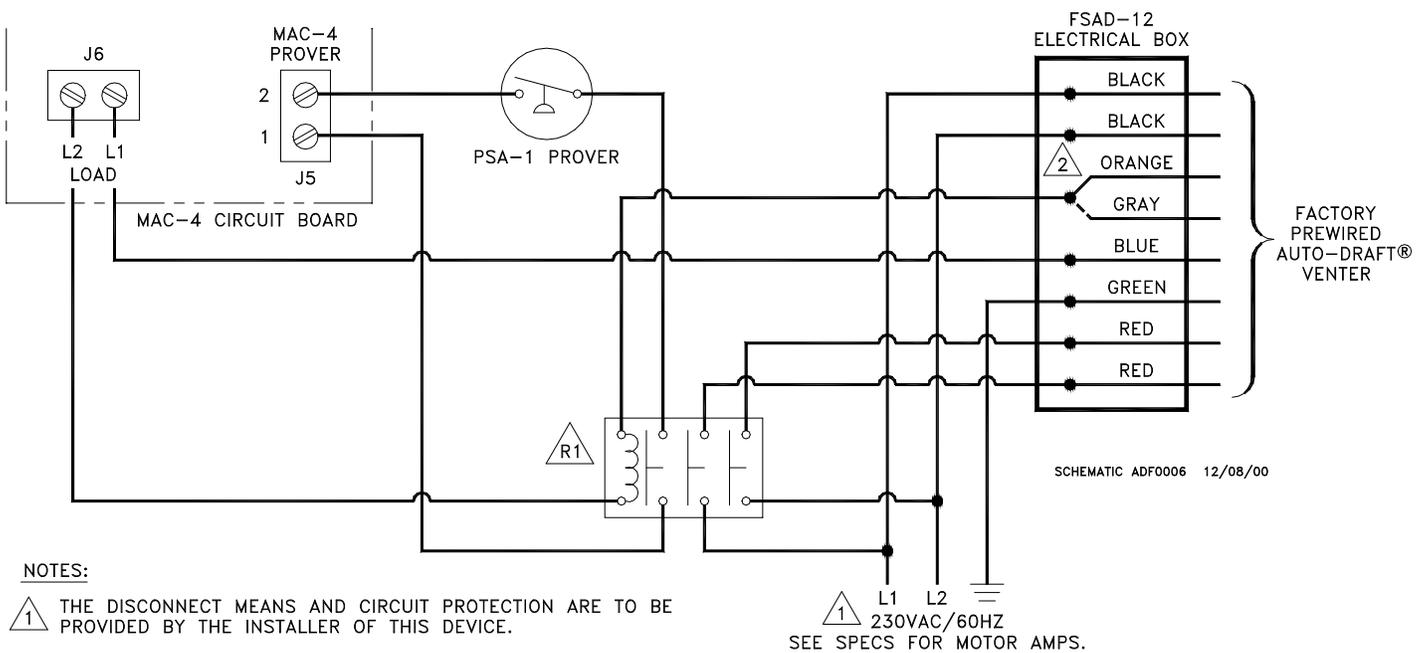
**FSAD-8/10 WIRED WITH MULTIPLE GAS OR OIL APPLIANCES AND MAC-4 MULTIPLE APPLIANCE CONTROL**



**NOTES:**

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE.  
FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- 3 REFER TO MAC-4 INSTRUCTIONS FOR APPLIANCE INTERLOCK.
- R1 RELAY CONTACTS: 1/2 HP @ 115VAC  
RELAY COIL: 115VAC

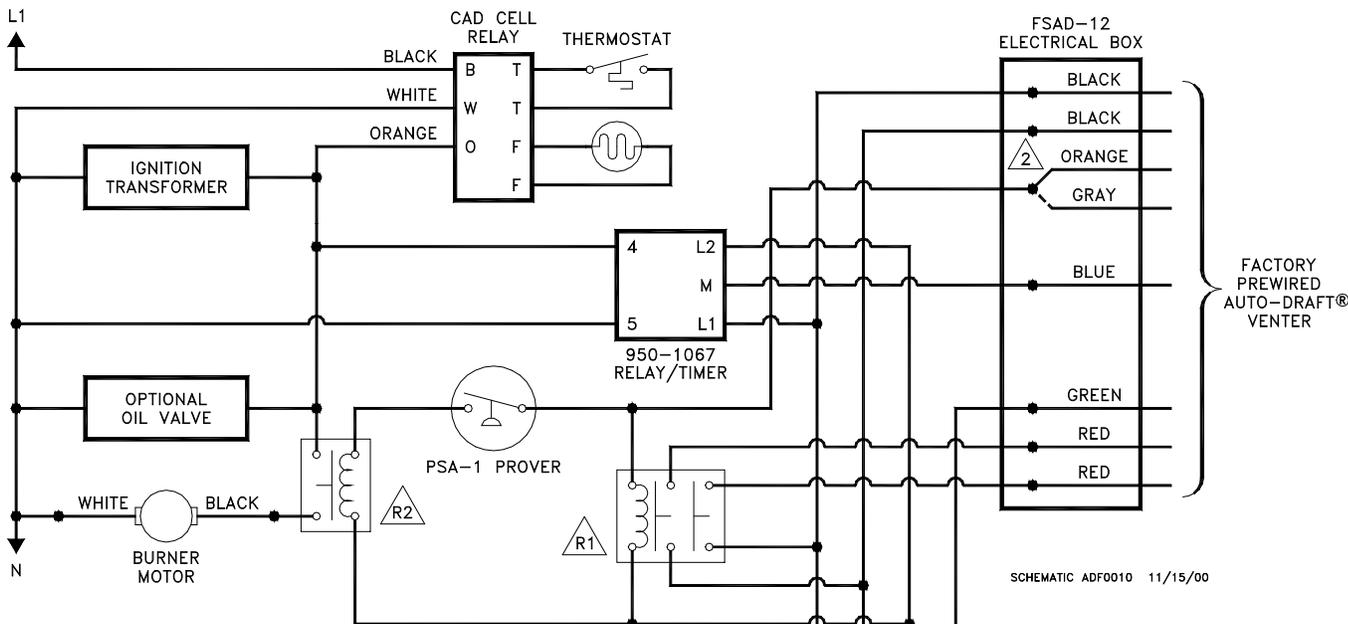
**FSAD-12 WIRED WITH MULTIPLE GAS OR OIL APPLIANCES AND MAC-4 MULTIPLE APPLIANCE CONTROL**



**NOTES:**

- 1 THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE.  
FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- 3 REFER TO MAC-4 INSTRUCTIONS FOR APPLIANCE INTERLOCK.
- R1 RELAY CONTACTS: 1 1/2 HP @ 230VAC  
RELAY COIL: 115VAC

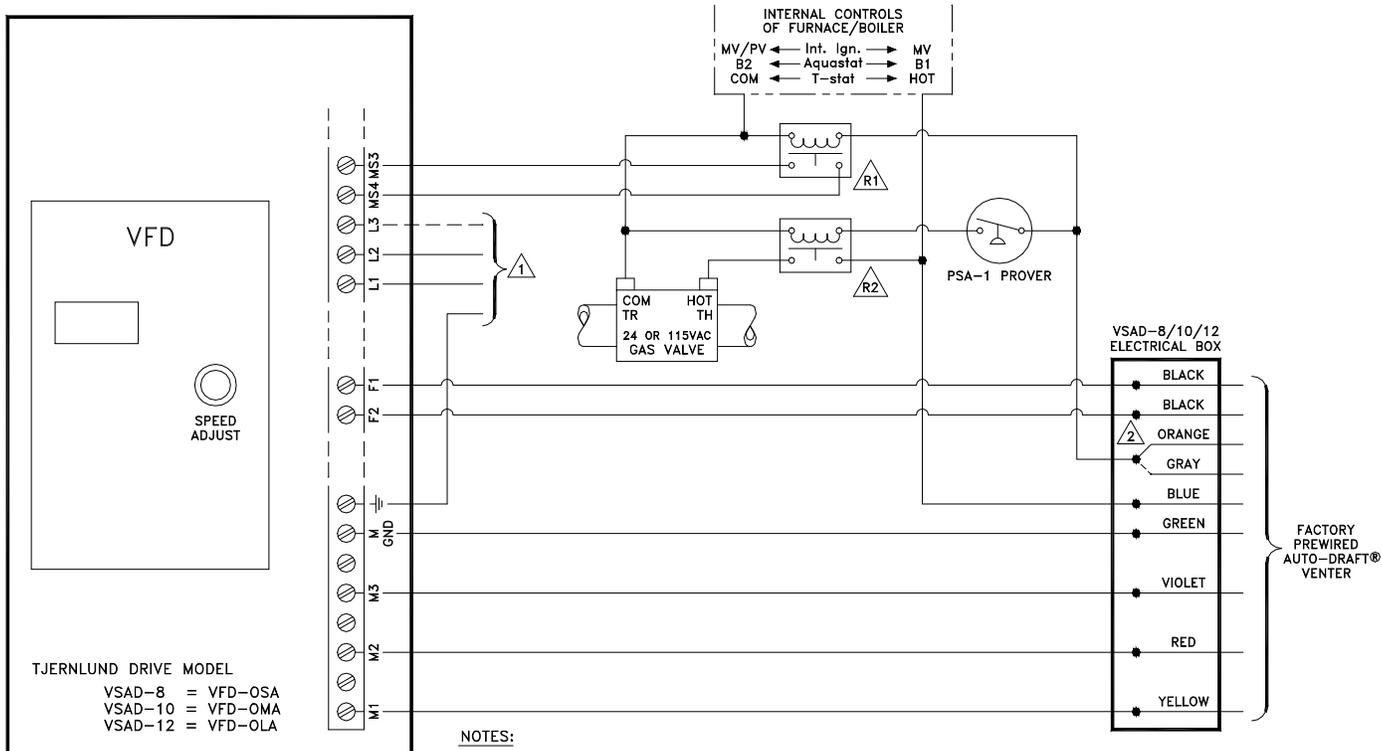
**FSAD-12 WIRED WITH A SINGLE OIL BURNER AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER**



**NOTES:**

- ⚠️ THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- ⚠️ FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- ⚠️ R1 RELAY CONTACTS: 1 1/2 HP @ 230VAC  
RELAY COIL: 115VAC
- ⚠️ R2 RELAY CONTACTS: RATED FOR BURNER MOTOR LOAD  
RELAY COIL: 115VAC

**VSAD-8/10/12 WIRED WITH A SINGLE GAS APPLIANCE AND NO VENTER POST-PURGE**

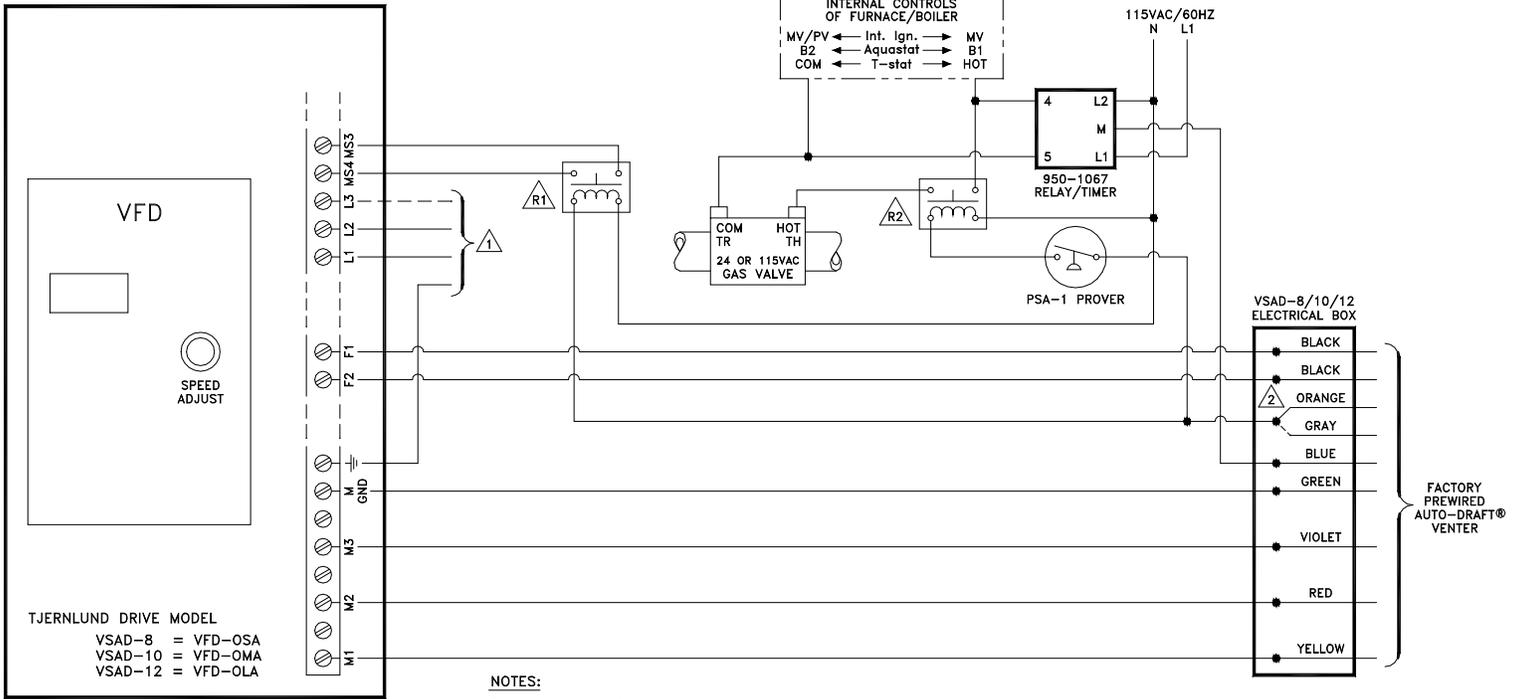


**NOTES:**

- ⚠️ 208-230VAC/60HZ 1 $\phi$  OR 3 $\phi$  POWER. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
- ⚠️ FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
- ⚠️ R1 RELAY CONTACTS: 0.5 AMP @ 24VDC  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)
- ⚠️ R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: SAME VOLTAGE AS APPLIANCE CONTROL CIRCUIT (24 OR 115VAC)

**IMPORTANT:** Impeller must rotate counter-clockwise. Follow VSAD impeller rotation confirmation in "Wiring" section of these instructions.

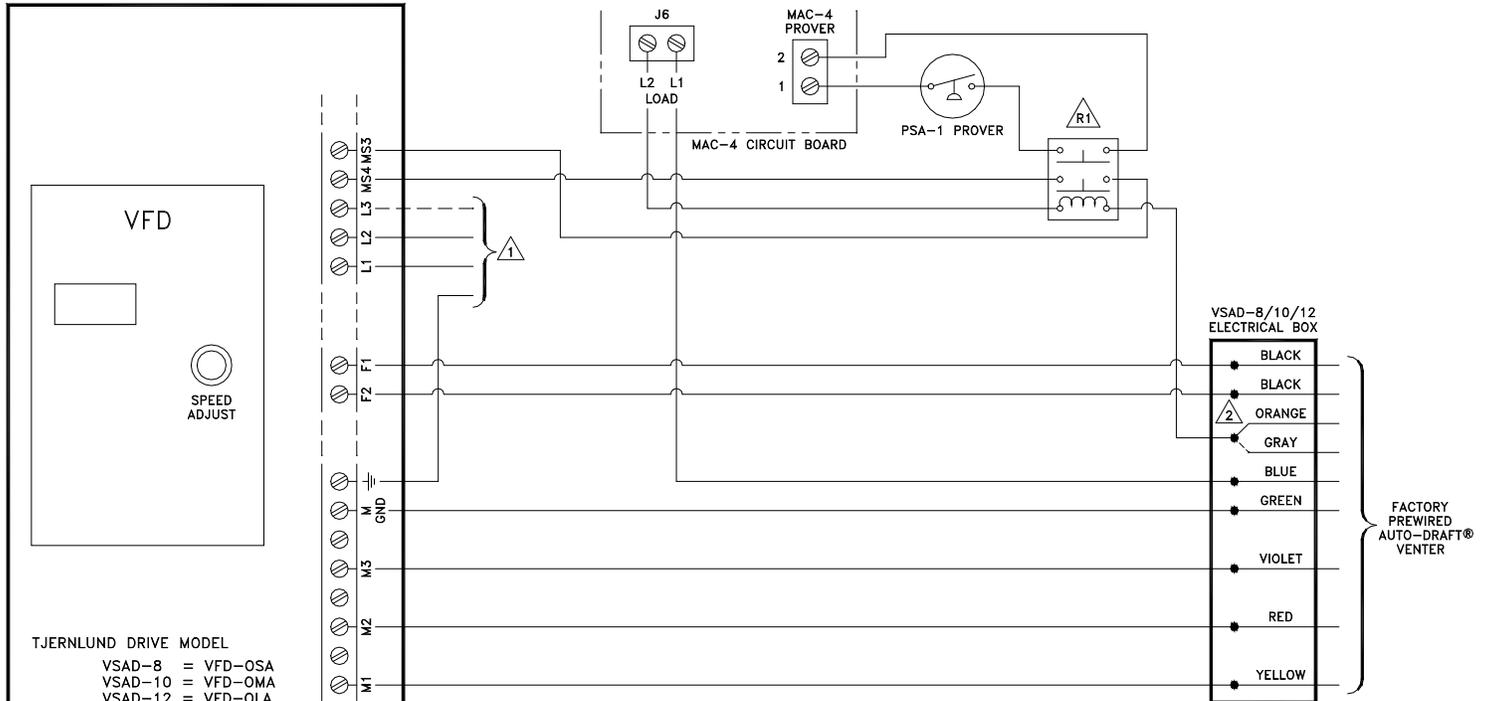
**VSAD-8/10/12 WIRED WITH A SINGLE GAS APPLIANCE AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER**



**IMPORTANT:** Impeller must rotate counter-clockwise. See "Wiring section of these instructions to confirm proper rotation on VSAD-Series.

- NOTES:**
- ⚠ 208-230VAC/60HZ 1 $\phi$  OR 3 $\phi$  POWER. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
  - ⚠ FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
  - R1 RELAY CONTACTS: 0.5 AMP @ 24VDC  
RELAY COIL: 115VAC
  - R2 RELAY CONTACTS: RATED FOR GAS VALVE LOAD  
RELAY COIL: 115VAC

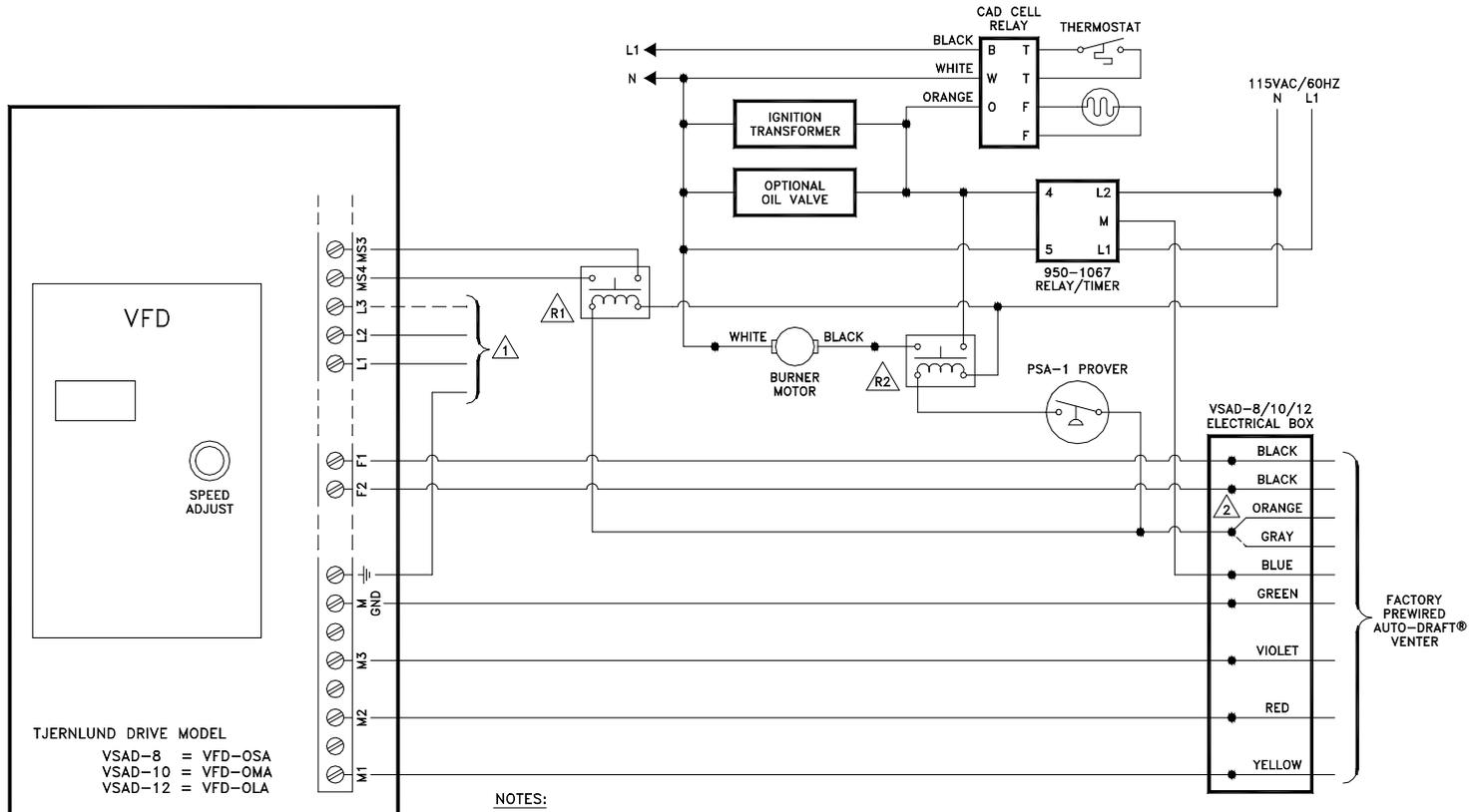
**VSAD-8/10/12 WIRED WITH MULTIPLE GAS OR OIL APPLIANCES AND MAC-4 MULTIPLE APPLIANCE CONTROL**



**IMPORTANT:** Impeller must rotate counter-clockwise. See "Wiring section of these instructions to confirm proper rotation on VSAD-Series.

- NOTES:**
- ⚠ 208-230VAC/60HZ 1 $\phi$  OR 3 $\phi$  POWER. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
  - ⚠ FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
  - 3 REFER TO MAC-4 INSTRUCTIONS FOR APPLIANCE INTERLOCK.
  - R1 RELAY CONTACTS: 0.5 AMP @ 24VDC  
RELAY COIL: 115VAC

**VSAD-8/10/12 WIRED WITH A SINGLE OIL BURNER AND 950-1067 1-10 MINUTE ADJUSTABLE POST-PURGE RELAY/TIMER**



**IMPORTANT:** Impeller must rotate counter-clockwise. See "Wiring section of these instructions to confirm proper rotation on VSAD-Series.

- NOTES:**
- ⚠️ 208-230VAC/60HZ 1Ø OR 3Ø POWER. THE DISCONNECT MEANS AND CIRCUIT PROTECTION ARE TO BE PROVIDED BY THE INSTALLER OF THIS DEVICE.
  - ⚠️ 2 FOR VERTICAL TERMINATION, USE ORANGE WIRE. CAP GRAY WIRE. FOR HORIZONTAL TERMINATION, USE GRAY WIRE. CAP ORANGE WIRE.
  - ⚠️ R1 RELAY CONTACTS: 0.5 AMP @ 24VDC  
RELAY COIL: 115VAC
  - ⚠️ R2 RELAY CONTACTS: RATED FOR BURNER MOTOR LOAD  
RELAY COIL: 115VAC

**PSA-1 FAN PROVER SAFETY INTERLOCK AND DRAFT ADJUSTMENT SET-UP PROCEDURE**

The following Safety interlock procedure is only suitable when using a FSAD-Series fixed speed venter or a VSAD-Series Venter adjusted to a fixed speed using a Tjernlund supplied Variable Frequency Drive (VFD). This procedure is not applicable when utilizing the CPC-2 Constant Pressure Controller.

Close all access doors and openings to the mechanical room that would typically be closed during heating equipment operation. Fire all other heating equipment not connected to this vent system and operate exhaust fans or air consuming devices within the facility that could affect the air pressure of the mechanical room.

1. Drill an appliance draft sampling hole in the vent riser after each draft diverter or between the flue outlet and the draft hood / barometric draft control of each appliance. For most oil burners sample over-fire draft. Connect draft gauge to sampling hole, (See Diagram I, Page 8).
2. For installations with a barometric draft control: Adjust weight on draft control to minimum or most responsive position (Less Draft).
3. **WARNING: This step requires that the wires connected to the PSA-1 Fan Prover terminals be temporarily removed and jumpered together. Disconnect power before jumpering wires.** Remove power source to Attach a continuity tester to the common and normally open terminals of the PSA-1 Switch. Turn the PSA-1 adjustment screw counter clockwise until it seats against the stop. **The PSA-1 must be reconnected to the interlocked appliance(s) per the appropriate wiring diagram after completing these procedures. Failure to do so may result in a hazardous condition such as an explosion, fire or carbon monoxide poisoning resulting in property damage, personal injury or death.**
4. Activate Auto-Draft® Venter and adjust common manifold manual damper or VFD so that (-0.08" W.C. or -20 Pa) is read at the appliance draft sampling position(s) referenced in Step 1. The PSA-1 switch contacts should close. If switch contacts do not close move pressure sampling probe closer to the Auto-Draft®. **Do not** move sampling probe between manual damper and Venter inlet. Doing so may render the PSA-1 incapable of sensing flue gas spillage at the appliance.

5. Activate burner(s) at full capacity. Gradually adjust common manifold manual damper or VFD to maintain a slight negative draft (-0.02" W.C. or -5 Pa) at draft sampling location(s). Allow vent temperatures to reach steady state by referencing breaching flue gas temperatures.
6. Once flue gas temperatures have stabilized, verify that common manifold manual damper or VFD are adjusted so that a slight negative draft (-0.02" W.C. or -5 Pa) is measured at draft sampling location(s). Individual appliance vent connections may require balancing dampers to evenly regulate draft.
7. Adjust common manifold manual damper or VFD so that a slight positive draft (neutral to +0.01" W.C. or +2.5 Pa) is measured at the appliance draft sampling location. Flue gases should just start to spill from the draft hood/draft diverter or barometric draft control.
8. Turn the PSA-1 Fan Prover Switch adjustment screw clockwise in 1/6-turn increments, waiting 2-3 seconds after each adjustment until the micro-switch opens and no continuity is read.
9. Readjust the common manifold manual damper or VFD so that a negative draft (-0.02 to -0.05" W.C. or -5 to -12.5 Pa ) is once again measured at the appliance draft sampling location. This readjustment must be enough to cause the PSA-1 Fan Prover Switch to close. The PSA-1 may take a few moments to close after each adjustment.
10. Confirm Fan Prover Switch set point by adjusting common manifold manual damper or VFD so that a slight positive draft (neutral to +0.01" W.C. or +2.5 Pa) is measured at the appliance draft sampling location. Flue gases should just start to spill from the draft hood/draft diverter or barometric draft control and the Fan Prover Switch should open. Readjust the common manifold manual damper or VFD so that a negative draft (-0.02 to -0.05" W.C. or -5 to -12.5 Pa) is once again measured at the appliance draft sampling location. Verify that the PSA-1 Fan Prover Switch closes.
11. Interlock Fan Prover Switch with burner circuit per diagram(s) in wiring instructions and run entire heating/vent system through 3 cycles to verify proper burner light off and operation. Verify that each appliance lights off properly with all other appliances not firing.

**VERTICAL TERMINATIONS:** If barometric draft control(s) are excessively open, adjust weight so the draft control damper opens less and repeat process starting with step # 3.

**SIDEWALL TERMINATIONS:** It is normal for the draft control damper to be close to wide open. This will allow the Auto-Draft® Venter to respond to high wind loads.

#### WARNING

**The PSA-1 must be reconnected to the interlocked appliance(s) after completing these procedures. Failure to do so may result in a hazardous condition such as an explosion, fire or carbon monoxide poisoning resulting in property damage, personal injury or death.**

#### SAFETY INTERLOCK TEST

1. Adjust the appliance thermostat(s) or aquastat(s) to call for heat.
2. Determine that the Auto-Draft® Venter operates before the gas valve or burner becomes energized.
3. With the appliance(s) and Auto-Draft® Venter operating, disrupt power to the Auto-Draft® Venter and determine that the appliance gas valve(s) or burner motor(s) shut off.

#### WARNING

**Do not operate an appliance that does not shut off with the Auto-Draft® Venter disabled.**

#### COMBUSTION AIR

Adequate combustion air is vital for proper combustion and for safe venting. Likewise, for proper venter performance, adequate combustion air must be available to the appliance. Many installers assume adequate combustion air is present, especially in older structures. In some cases this is a false assumption, because many structures have been made "tight" due to weatherization. Size the combustion air opening(s) into the equipment room as outlined in NFPA 31, 54 & 211. Tjernlund's IN-FORCER™ combustion air intake systems provide a convenient, automated way to supply combustion air to the equipment room. When installing the Auto-Draft® Venter it is not necessary to supply any more combustion air than normally required when conventional venting.

#### MAINTENANCE

#### WARNING

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

The Tjernlund Auto-Draft® Venter is designed for continuous use. The motor is equipped with permanently lubricated sealed ball bearings which do not require oiling.

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 must also be performed.

For gas applications no regular maintenance is required. For oil applications inspect impeller after (3) months and set up a periodic inspection and cleaning routine as necessary.

## CLEANING

### WARNING

**Disconnect the power supply when making wiring connections or when working around the fan impeller and motor. Do not open motor side housing until weight can be adequately supported.**

1. Unfasten latches on Auto-Draft® Venter housing. **Do not** open Venter until weight can be adequately supported. Auto-Draft® motor side can be propped open by inserting handle in the handle support bracket, (See Diagram G). Make sure the handle is properly inserted in the support bracket to prevent damage to hinge and housing.
2. If necessary, use scraper and/or brush to clean the impeller and inside venter base.

## TROUBLESHOOTING

### **Problem:**

The Venter is not operating.

### **Solution:**

Confirm that Venter housing is closed and latched down. Make sure that proper Tilt Switch is wired into electrical circuit based on horizontal or vertical termination. See "WIRING" section for proper Tilt Switch wiring.

Confirm that the Venter is properly wired. Check power supply wires in junction box and check circuit breaker.

### **Problem:**

Suspect impeller is rotating backwards on VSAD-Series Venter. VSAD Venter is only able to overcome marginal pressure.

### **Solution:**

As viewed through the Auto-Draft® discharge grille the impeller should rotate counter-clockwise. Follow procedure under "Wiring" section of these instructions to verify proper rotation of impeller on VSAD-Series Venters.

### **Problem:**

The motor compartment High Limit is tripping.

### **Solution:**

Check to confirm that Cooling Fan is operational by supplying direct voltage to Cooling Fan. Supply 115 VAC to FSAD-8, 10 and Supply 230 VAC to FSAD-12 and all VSAD-Series. Make sure that Auto-Draft® cooling air inlets are not blocked. Verify flue gas temperatures are suitable for the Auto-Draft®.

## HOW TO OBTAIN SERVICE ASSISTANCE

1. If you have any questions about your Auto-Draft® Venter or if it requires adjustment, repair or routine maintenance, we suggest that you initially 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 and Lot # of the Auto-Draft® 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. offers a two year mechanical and a ten year corrosion (Venter housing and components must be compromised, adversely affecting normal operation due to corrosion) warranty on the Auto-Draft®. 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 or misapplication are not covered under this warranty. This warranty DOES NOT cover the complete Auto-Draft® Venter if it is operative, except for the defective part.

Tjernlund Products, Inc. will issue credit to your Auto-Draft® provider or provide a free part to replace one that becomes defective during the two year warranty period. All receipts should include the Lot # of the Auto-Draft® 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 Auto-Draft® provider 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 Auto-Draft® provider for replacement. Please include Auto-Draft® Venter Lot # component was taken from. The Lot # is located on the Auto-Draft® nameplate on the Venter housing. Credit or replacement will only be issued to your Auto-Draft® provider after the defective part has been returned prepaid to Tjernlund.

#### REPLACEMENT PARTS COVERED BY WARRANTY

##### MOTOR KIT

FSAD-8 MOTOR KIT	950-8100
FSAD-10 MOTOR KIT	950-8101
FSAD-12 MOTOR KIT	950-8102
VSAD-8 MOTOR KIT	950-8103
VSAD-10 MOTOR KIT	950-8104
VSAD-12 MOTOR KIT	950-8105

##### MOTOR SHAFT EXTENSION KIT

ALL FSAD & VSAD MODELS	950-8200
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##### 115 VAC COOLING FAN KIT

FSAD-8 & FSAD-10 MODELS	950-0020
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##### 230 VAC COOLING FAN KIT

FSAD-12 & VSAD-8,10,12 MODELS	950-8300
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##### COOLING FAN T-STAT

ALL FSAD & VSAD MODELS	950-8301
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##### IMPELLER KIT

IMPELLER KIT FSAD-8 & VSAD-8	950-8400
IMPELLER KIT FSAD-10 & VSAD-10	950-8401
IMPELLER KIT FSAD-12 & VSAD-12	950-8402

##### MOTOR COMPARTMENT HIGH LIMIT

ALL FSAD & VSAD MODELS	950-8450
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##### HOUSING ACCESS TILT SWITCH

ALL FSAD & VSAD MODELS	950-8001
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##### FAN PROVER KIT

ALL FSAD & VSAD MODELS	950-8470
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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 TWO YEAR MECHANICAL AND TEN YEAR CORROSION\* WARRANTY

Tjernlund Products, Inc. warrants to the original purchaser of this product that the product will be free from mechanical defects due to faulty material or workmanship for a period of (2) years and corrosion\* resistant for a period of (10) years 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 (651) 426-2993 • (800) 255-4208 • Fax (651) 426-9547 or email us at fanmail@tjfans.com. \*Venter housing and components must be compromised, adversely affecting normal operation due to corrosion.