

**TJERNLUND PRODUCTS, INC.**

1601 Ninth Street • White Bear Lake, MN 55110-6794  
PHONE (800) 255-4208 • (651) 426-2993 • FAX (651) 426-9547  
Visit our web site • www.tjernlund.com



## MODEL SS1C INSTALLATION INSTRUCTIONS

 Recognize this symbol as an indication of important Safety Information!

### OWNER INSTRUCTIONS, DO NOT DESTROY

**NOTE:** FLUE GAS TEMPERATURES MUST NOT EXCEED 301°C  
575°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, OR PERSONAL INJURY OR PROPERTY DAMAGE.

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

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SideShot® is a registered trademark of Tjernlund Products, Inc. for their Model SS1C Vent System.

## DESCRIPTION

The SideShot is a mechanical vent system designed and listed for use with natural draft oil heating equipment. It is factory assembled and wired. The SideShot automatically vents the flue gases from heating equipment to the outdoors. By combining outside air with high-tech insulation, surrounding combustible materials and the Vent Hood exterior remain at safe temperatures. After each burner cycle the SideShot will continue to operate for an adjustable time period to purge the heater and vent of residual flue gases. The SideShot features a two way safety system consisting of a Fan Proving Switch and a high limit temperature control. These devices monitor the SideShot's performance and will interrupt the main burner if a venting malfunction is detected.

## APPLICATION TABLE

Verify that the total BTU/hr. input of the heating appliance(s) fall within the proper category listed below. All BTU/hr. capacity ranges are based on a maximum of 15.2 equivalent meters (50 feet). To determine equivalent meters, add the total length of straight vent pipe plus 3.1 meters (10 feet) for each 90 degree elbow and 1.5 meters (5 feet) for each 45 degree elbow. Vent runs of over 4.5 linear meters (15 linear feet) should use an approved, insulated vent connector to prevent problems related to sulfur condensation.

MODEL	FLAME RETENTION OIL BURNER	CONVENTIONAL OIL BURNER	MAX. EQUIVALENT METERS
SS1C	50,000–315,000 BTU/hr. 2.25 gal/hr.	50,000–223,000 BTU/hr. 1.59 gal/hr.	15.2 meters (50 feet)

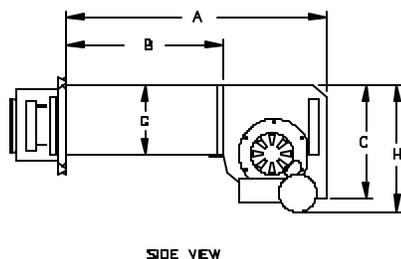
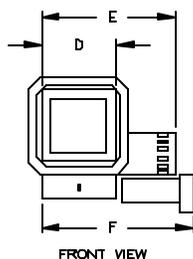
## SPECIFICATIONS

**Motor:** 115/1/60, 3300 RPM, 212 watts, 2.28 FLA

**Fan Proving Switch:** Non-adjustable set point of -.04" W.C., N/O Contacts rated for an inductive load of 6.2 FLA at 120 VAC.

**High Limit:** Manual reset N/C contacts, open at 79°C (175°F) ± 8°C (15°F), Contacts rated at 10 FLA at 120 VAC.

**Post-Purge Timer:** Adjustable from 1 to 10 minutes. Dual voltage, non-polarity sensitive input (24-120 VAC).



A	B	C	D
27 3/8"	16 1/2"	12 1/4"	8"
E	F	G	H
13 3/4"	15 1/8"	7 3/4"	14 3/4"

## GENERAL INFORMATION

These units have been factory tested and rated in accordance with the following Canadian Standards: CAN/CSA - B140.0-M87 General Requirements For Oil Burning Equipment; CAN/CSA - B139-M91 Installation Code For Oil Burning Equipment; CAN3 - B255-M81 Mechanical Flue - Gas Exhausters.

Each SideShot is electrically factory line tested before shipment.

After opening carton, inspect thoroughly for hidden damage. Wheel should rotate freely and Plenum section should be square. If any damage is found notify freight carrier and your distributor immediately and file a concealed damage claim.

## INSTALLATION RESTRICTIONS

1. The SideShot may not be installed on condensing appliances, incinerators, incinerating toilets, or solid fuel burning appliances.
2. The SideShot is Listed for Oil Fired appliances only.
3. The SideShot may only be installed on appliances equipped with a barometric draft control.
4. The SideShot shall not be installed where flue gas temperatures exceed 301°C (575°F) at its inlet.

Flue gas temperature verification:

A) Consult appliance manufacturer for temperature of gases at the appliance after dilution by draft control.

**AND**

B) Measure temperature of flue gases at the inlet to the SideShot at time of installation. Temperature should be measured after appliance and SideShot have operated for at least 15 minutes, allowing flue gas temperature to stabilize.

5. The electrical load controlled through the Fan Proving Switch must not exceed its nameplate ratings.
6. The maximum recommended wall thickness is 39cm (15").
7. Vent runs of over 4.5 linear meters (15 linear feet) should use an approved, insulated vent connector to prevent problems related to sulfur condensation.

### **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.

### **WARNING**

Do not exceed the recommended input range of the SideShot. Under no circumstances shall the minimum draft adjustment be used for the larger input range of this product. Improper adjustment may result in the dispersion of flue products into the building interior causing carbon monoxide poisoning or soot damage.

## CAUTIONS

1. Disconnect power supply from SideShot and heating equipment when making wiring connection and servicing the SideShot. Failure to do so may result in personal injury and/or equipment damage.
2. Failure to install, maintain and/or operate the SideShot in accordance with manufacturer's instructions may result in conditions which can produce bodily injury and property damage.

3. The SideShot 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 National Building Code of Canada" CSA Std B139 & "The Canadian Electrical Code" CSA Std C22.1.
4. Plan the vent layout so that the code required clearances are maintained from plumbing, wiring and combustible materials.
5. The SideShot motor shaft must be mounted horizontally to ensure proper operation of the Fan Proving Switch and prevent motor bearing wear.
6. Flue gas temperatures must not exceed 301°C (575°F) at SideShot inlet. Ambient temperature must not exceed 40°C (104°F).
7. Make certain the power source is adequate for the SideShot requirements. Do not add the SideShot to a circuit where the total electrical load is unknown.
8. "Safety Inspection of a Previously Used Appliance", must be completed when replacing a conventional chimney venting system or when SideShot is installed on used heating equipment.

### \*SAFETY INSPECTION OF A PREVIOUSLY USED OIL APPLIANCE

(Perform prior to SideShot 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.

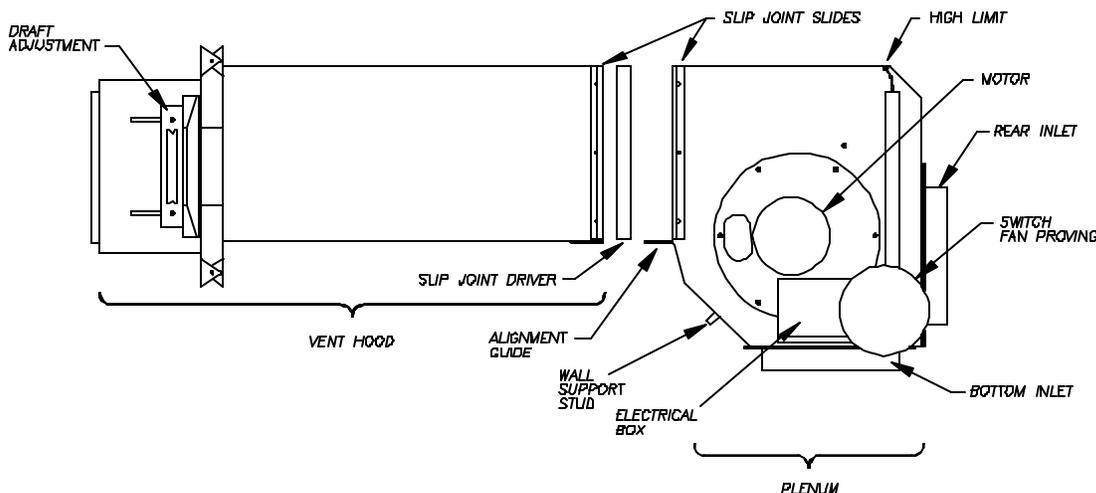
This procedure is based on central furnace and boiler installations and it should be recognized that generalized procedures cannot anticipate all situations. Accordingly, in some cases deviation from this procedure may be necessary to determine safe operation of the equipment.

- a. This procedure should be performed prior to any attempt at modifications of the appliance or installation of the SideShot.
- 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.

### SIDESHOT TERMINOLOGY





## INSTALLATION

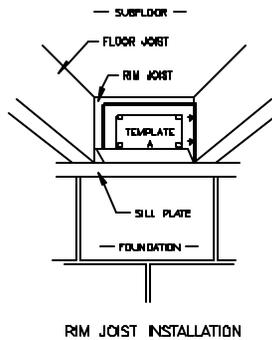
Tools required:

- Reciprocating Saw
- Drill and 1/8", 1/4", 1/2" Bits
- Blade Screwdriver
- Wire Cutter/Stripper
- Tube Cutter
- 1/2", 7/16", 5/8" Wrench
- 1/4" Masonry Drill Bit
- 1/4", 5/16", 11/32" Nut Runner or Socket
- Hammer

## INSTALLING VENT HOOD TERMINUS

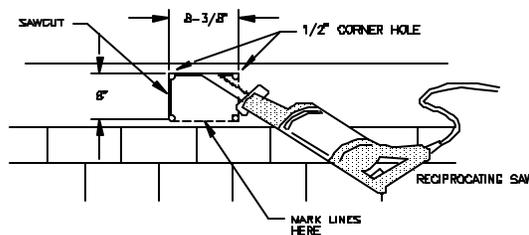
1. a) Fold template A (Page 21) along dashed line and attach in between the floor joists ensuring that it is snug against the sill plate and right hand floor joist. Follow same procedure if floor trusses are used, (See Diagram B).  
b) If the SideShot is not being installed between floor joists, attach the template to the wall it will be exiting ensuring it is level.

DIAGRAM B



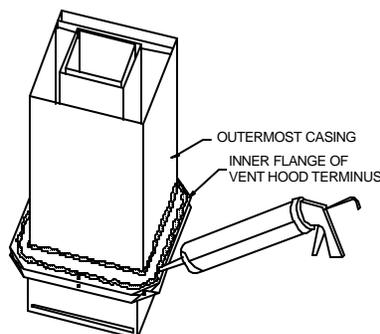
2. Using 1/2" bit, drill pilot holes noted on each side of the template from inside through rim-joist, wall board, siding, etc., keeping drill bit perpendicular to the wall. 1/2" bit must be long enough to penetrate through exterior.
3. Remove template from rim-joist and attach to building exterior, aligning pilot hole markings on template with holes previously created in Step #2.
4. Drill the four corner holes noted on the template through the building exterior. Remove the template and mark lines from the **outside** edge of the holes drilled, forming a rectangle.
5. Using reciprocating saw and appropriate blade, cut a rectangular opening through the rim joist, wall board, siding, etc., on the lines marked in step 4. The rectangular opening should be no larger than 8-3/8" in width by 8" in height, (See Diagram C).

DIAGRAM C

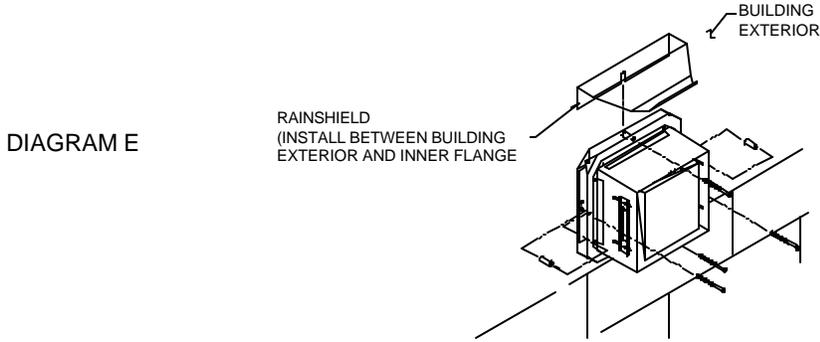


6. Knock out block material exposing rectangular opening through the wall.
7. Apply two beads of exterior rated caulk approximately 3/8" in width at the seam of the outermost casing of the Vent Hood and the inner flange of the Vent Hood Terminus, (See Diagram D).

DIAGRAM D

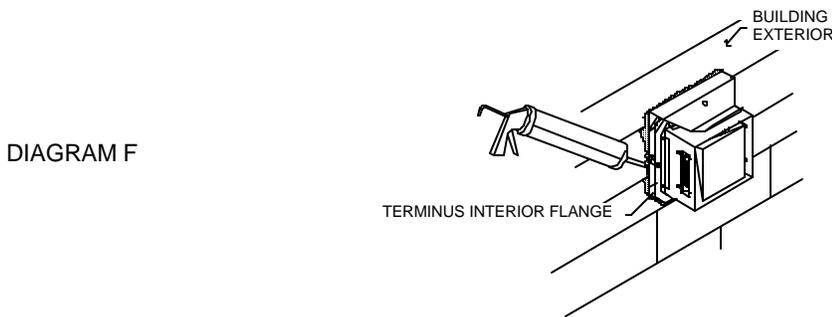


8. Slide the Vent Hood through the wall while taking care installing the rain shield as shown, (See Diagram E). The nuts located on the Vent Hood outermost casing should be facing up when sliding it through the wall. Mount Vent Hood to the exterior using four #8 x 3" wood screws and spacers provided, (See Diagram E). Wall anchors are provided for installation into masonry wall.



9. Connect the Plenum to the Vent Hood of the SideShot following the steps on pages 6, 7 and 8.

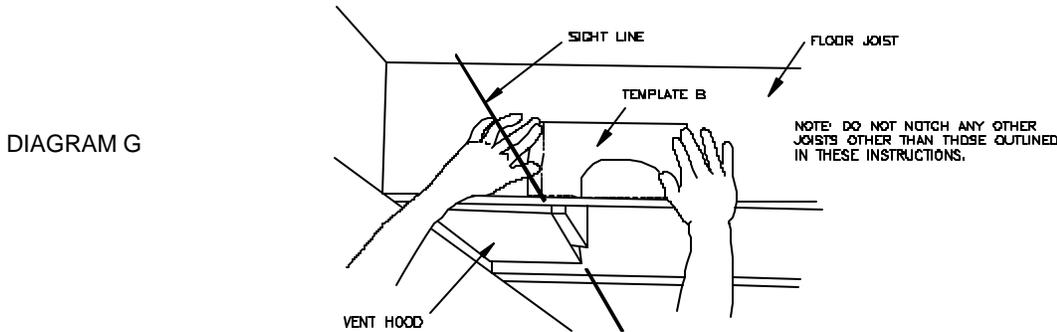
10. After the SideShot is completely installed, apply a bead of exterior rated caulk between the Vent Hood Terminus inner flange and the exterior of the building, (See Diagram F).



**INSTALLING PLENUM**

Depending on building construction, it may be necessary to notch out a section of the floor joist to provide proper clearance for the SideShot motor.

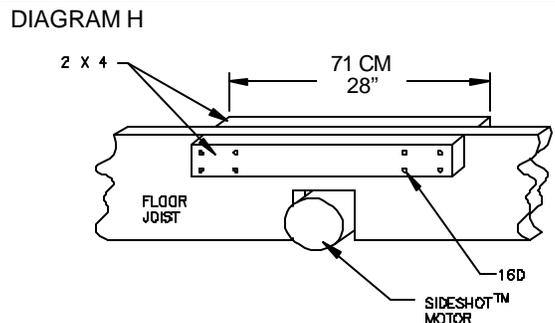
1. Attach Template B (Page 20) to the floor joist that is to be notched, aligning the sight line noted on the template with the end or the outside casing of the vent hood.
2. Cut out notch on line shown on the template.



**NOTCH BRACING**

It is recommended and local codes may dictate that the joist be reinforced as outlined below. Bracing of the rim joist is not necessary.

1. Cut two 2 x 4 pieces of wood 71 cm (28 inches) in length.
2. Center both pieces on each side of the floor joist above the notch and drive 8 16D or larger nails into each piece, (See Diag. H)



## CONNECTING THE PLENUM TO THE VENT HOOD

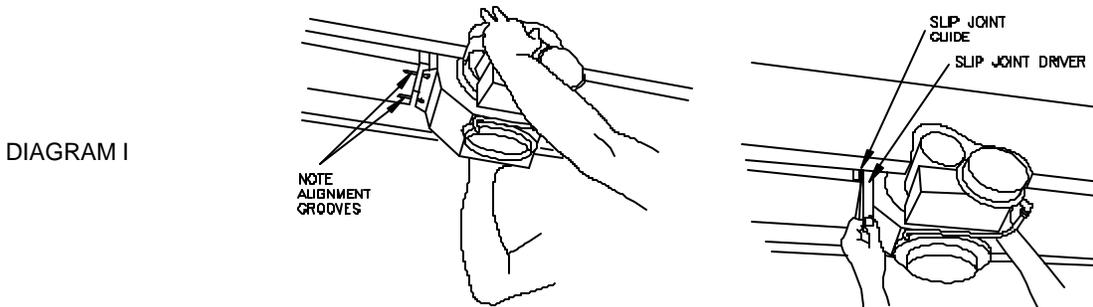
NOTES: Cut any nails which are protruding downward from the subfloor that may come in contact with the SideShot. Place both slip joint drivers in your pocket before continuing.

### **WARNING**

Minimum clearances from the Plenum to any combustible materials must be maintained as listed on page 4.

**Note:** Blower - Motor/Wheel assembly can be removed to make Plenum section lighter & easier to install. Refer to Removal and Replacement of Motor/Wheel Assembly, Page 18.

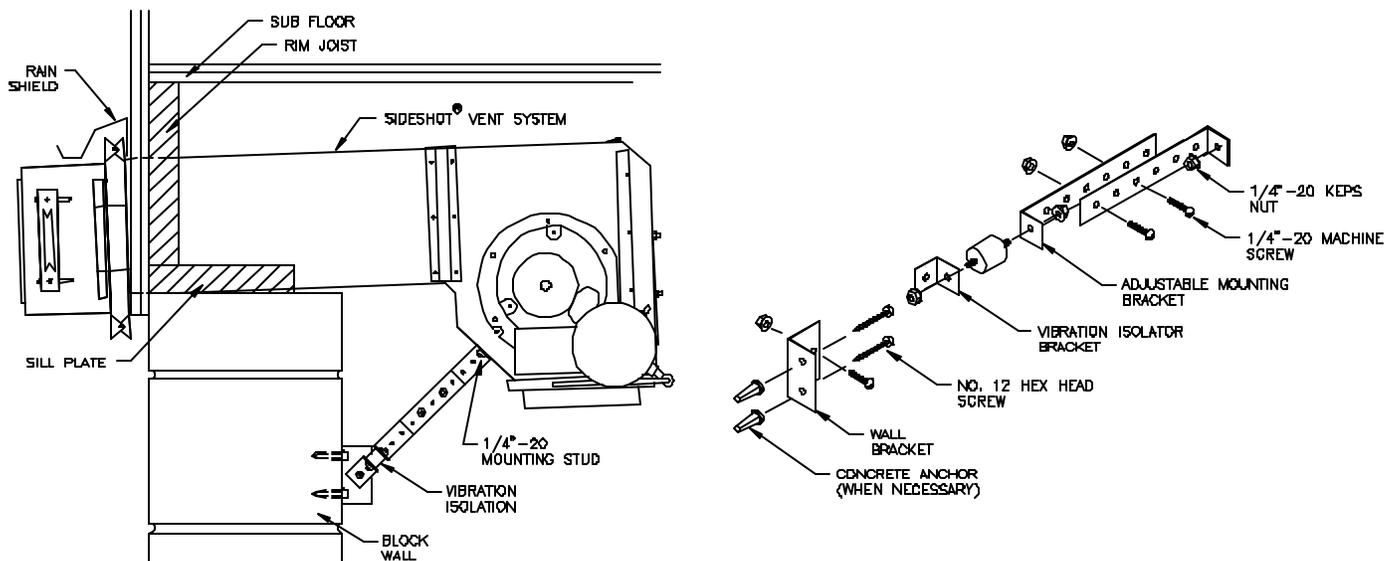
1. Connect the Plenum to the Vent Hood by aligning both grooves on the bottom of Plenum with both grooves on the bottom of the Vent Hood. The Plenum is designed to slide into the Vent Hood, (See Diagram I).
2. Gently slide the Plenum into the Vent Hood until the slip joint guides located on each side of the Plenum are in contact with each other.
3. Slide the slip joint drivers from the bottom upward over the slip joint guides as far as possible by hand. A hammer may be used to tap the slip joint drivers to their final position. Start the slip joint drivers on the slip joint guides with the embossed end facing down. Do not force slip joint drivers past embossing.



## INSTALLATION OF WALL SUPPORT BRACKET

1. To prevent damage to the SideShot, temporarily support the bottom of the plenum (prop on ladder) while assembling the wall support bracket. Assemble the wall support bracket as shown, (See Diagram J).
2. Using the prepunched holes, adjust the wall support bracket so that a slight pitch is maintained for water drainage, (See Diagram J).

DIAGRAM J



3. Use the prepunched holes on the wall bracket as a template to mark holes to be drilled into the side wall for mounting screws.
4. a) If installing the bracket into a wood wall, drill 2 pilot holes at each point established in step 3 with a 1/8" drill bit approximately 1" deep and install the screws provided to secure the bracket to the wall.

- b) If installing the bracket into a masonry wall, drill 2 holes at each point established in step 3 with a 1/4" masonry drill bit approximately 1" deep. Tap the masonry anchors into the holes drilled in step 4. Screw the wall bracket onto the wall.

5. Connect the other end of wall support bracket to the stud on the plenum using the supplied 1/4"-20 keps nut. (See Diagram J).

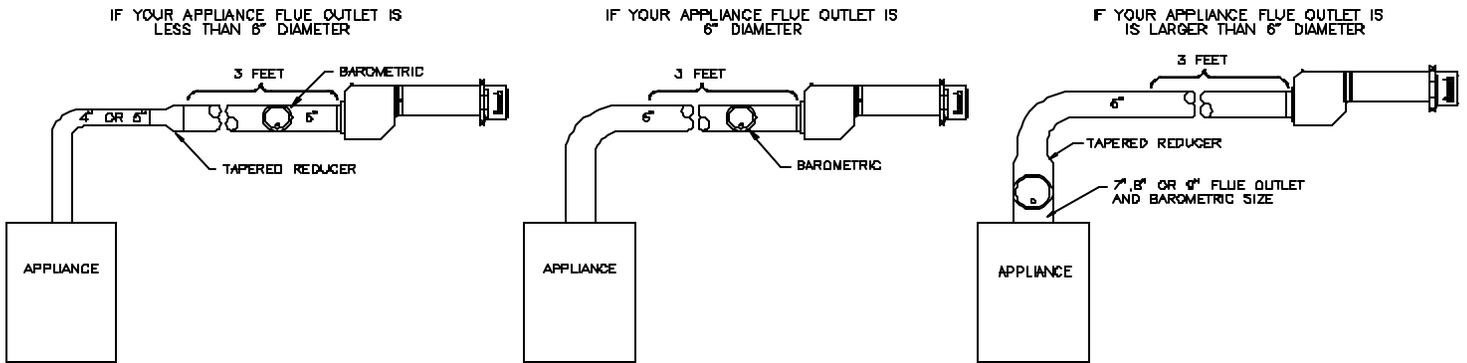
**INSTALLATION OF VENT PIPE**

A barometric draft control must be used for the SideShot installation. Install the barometric draft control as shown, (See Diagram K). The SideShot Vent System is designed to accept all brands of 6" single wall, Class "A" or Type "L" vent pipe. **Type "B" is not suitable for the SideShot.** The vent pipe used must be in compliance with local codes and the listing of the vent pipe manufacturer. When necessary, install tapered reducers and increasers as shown below.

Determine which inlet of the SideShot Vent System will allow for the least amount of elbows to the appliance. **DO NOT USE BOTH INLETS.** Calculate the equivalent vent pipe meters (feet) from the appliance to the SideShot Vent System by adding the straight vent pipe length and the equivalent elbow lengths together. Each 90 degree elbow is equal to 3.1 meters (10 feet) of straight vent pipe, each 45 degree elbow is equal to 1.5 meters (5 feet) of straight pipe. The equivalent vent pipe length must not exceed 15.2 meters (50 feet) from the appliance to the SideShot Vent System. Vent runs of over 4.5 linear meters (15 linear feet) should use an approved, insulated vent connector to prevent problems related to sulfur condensation. It is not necessary to maintain a 1/4" rise per every .30 meter (1 foot) of horizontal when Side Wall Venting.

The SideShot Vent System is shipped from the factory with the plug connected to the rear and the vent pipe inlet collar connected to the bottom. If using the bottom inlet, skip to the section entitled "Vent Pipe Clamp Assembly". If your installation requires the use of the rear inlet, follow the steps in the section entitled "Vent Pipe Inlet Collar Conversion" to move the vent pipe inlet collar from the bottom to the rear.

DIAGRAM K



**VENT PIPE INLET COLLAR CONVERSION**

1. Remove the plug from rear inlet port by unfastening the 6 nuts that secure it to the Plenum. Keep the plug & nuts for later use.
2. Remove the sensing tube from the Fan Proving Switch by loosening the plastic compression fitting.
3. Remove the vent pipe inlet collar from the bottom port by unfastening the 6 nuts. Keep the nuts for later use.
4. Using a tube cutter, cut the sensing tube 2" from the elbow directed at the vent pipe inlet collar, (See Diagram L). Discard the cut off section of metal tube.

DIAGRAM L

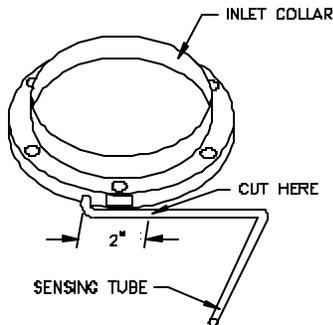
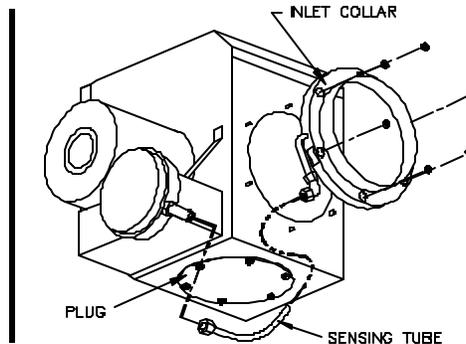


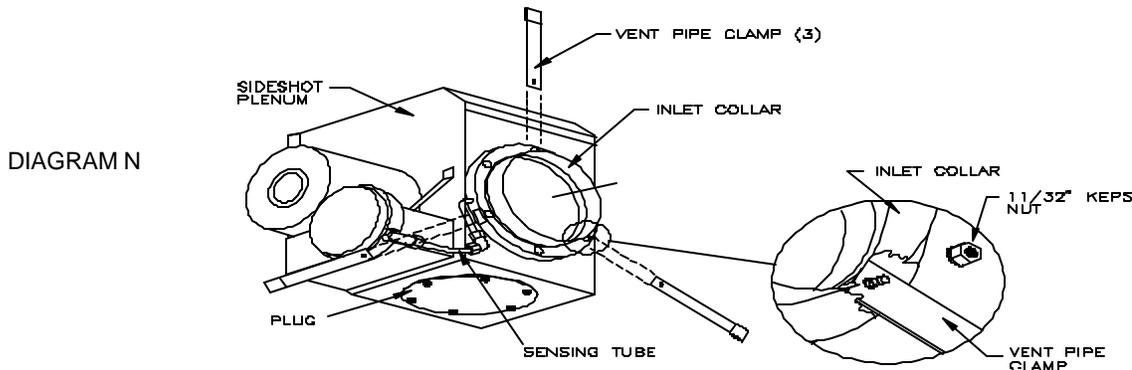
DIAGRAM M



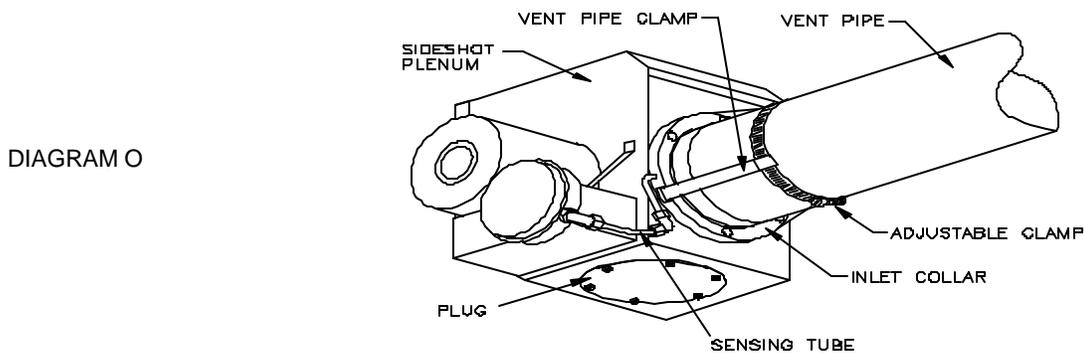
- Attach the vent pipe inlet collar to the rear inlet port making sure that the sensing tube is orientated as shown, (See Diagram M, Page 8). NOTE: Alignment marks on the inlet collar and plenum casing must match.
- Attach 90° compression fitting to the short tube on the inlet collar.
- Using the "soft" aluminum tubing, connect the Fan Proving Switch to the inlet collar. Take care not to crimp the tubing.
- Install the plug removed in step 1 over the bottom inlet port, tightening securely.

### VENT PIPE CLAMP ASSEMBLY

- Attach the three vent pipe clamps to the inlet collar, (See Diagram N).  
NOTE: The following diagrams show the use of the rear inlet. The same steps will apply if using the bottom inlet.



- Bend each vent pipe clamp so it conforms to the outside diameter of the vent pipe being used, (See Diagram O)
- Route the adjustable clamp through the openings at the opposite end of the legs.
- Slide the vent pipe over the inlet collar of the SideShot.
- Tighten the adjustable clamp around the vent pipe, (See Diagram O).



### ELECTRICAL WIRING OIL

#### **WARNING**

The electrical supply to the SideShot shall be supplied from the appliance. All wiring from the SideShot 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, Type MC Cable, or be otherwise suitably protected from physical damage.

The electrical contact ratings for the diaphragm Fan Proving Switch and High Limit are as follows:

#### **FAN PROVING SWITCH**

6.2 Amps (full load) at 120 VAC  
36 Amps (locked rotor) at 120 VAC

#### **HIGH LIMIT**

10 Amps (full load) at 120 VAC  
60 Amps (locked rotor) at 120 VAC

The Fan Proving Switch and High Limit are not suitable for loads which exceed the above limits.

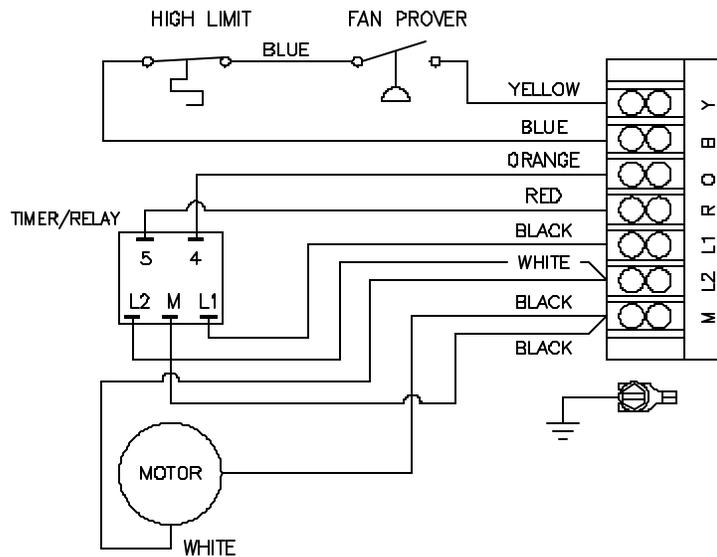
**SEQUENCE OF OPERATION WITH SIDESHOT INSTALLED ON OIL FIRED APPLIANCES:**

As the thermostat/aquastat senses a need for heat, the internal switch of the thermostat/aquastat will close. The switch closure sends current through the internal controls of appliance (e.g. high limit, low limit and all other safety controls the appliance is equipped with) and continues through the R8184G primary control. Current will then flow out of the orange of the R8184G to the SideShot Relay/Timer and safety circuit. When the Relay/Timer receives current, the SideShot motor is energized. After draft is established within the SideShot, the Fan Proving Switch closes completing the circuit to the burner motor. It is important to remember that the electrical interlock of the SideShot is always done at the final signal which would normally start the burner motor. All thermostats, zones, limits and circulators are to be wired as normally done on a chimney vented appliance.

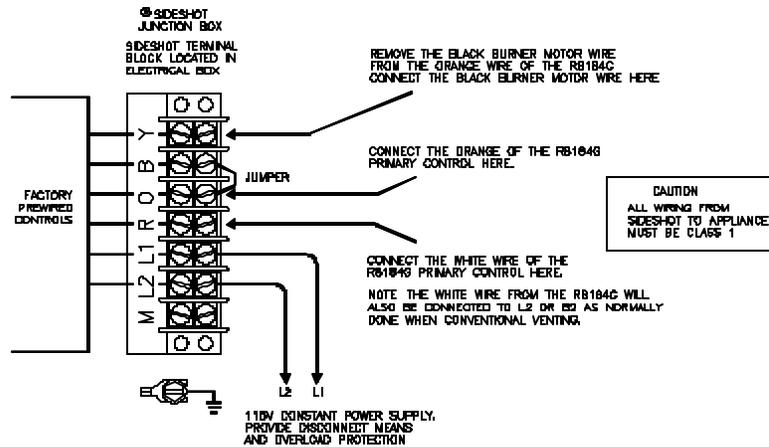
All diagrams in this section show the same electrical connections. Follow the diagram which is most appropriate for your installation.

If your appliance is not equipped with an R8184G as outlined in these diagrams, locate the wire from the primary control which is connected to the black burner motor wire and follow the steps outlined on Page 11.

**SIDESHOT FACTORY WIRING**

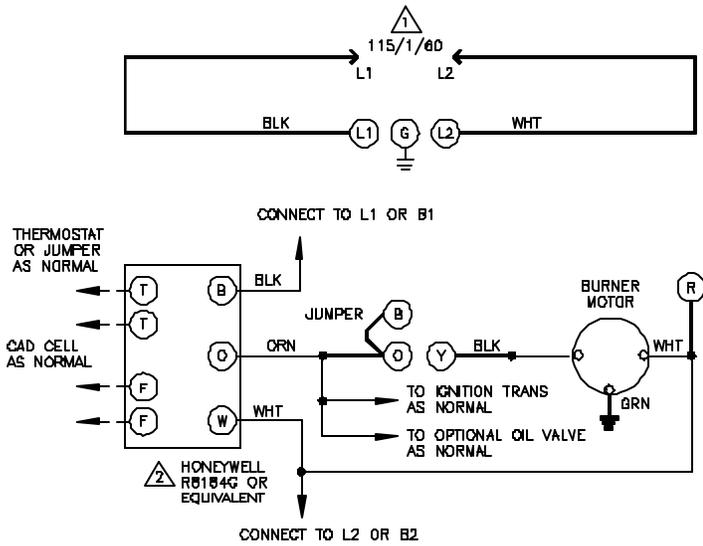


**TYPICAL OIL FIELD WIRING**

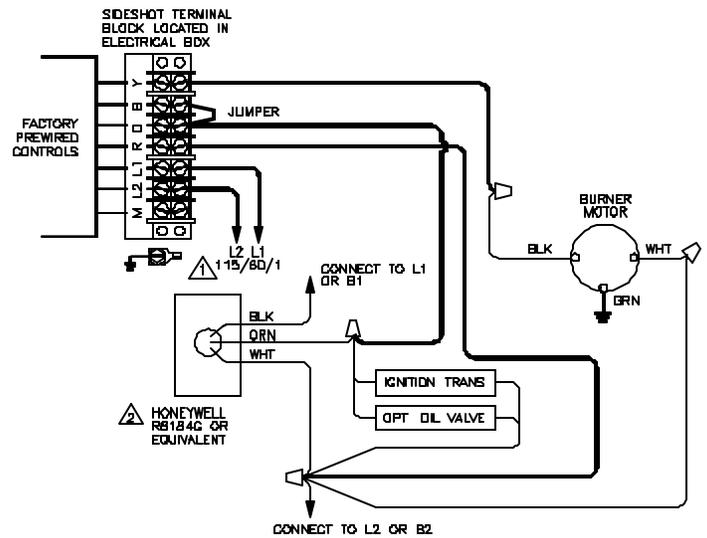


## SIDESHOT CONNECTED TO AN R8184G WITH THE APPLIANCE BURNER MOTOR LESS THAN 6.2 AMPS @ 120 VAC

LADDER DIAGRAM



CONNECTION DIAGRAM



**LEGEND**

- DENOTES TERMINAL CONNECTION
- DENOTES WIRE CONNECTION
- DENOTES LOW VOLTAGE BY APPLIANCE MANUFACTURER
- DENOTES LINE VOLTAGE BY APPLIANCE MANUFACTURER
- DENOTES LINE VOLTAGE FIELD
- DENOTES LINE VOLTAGE BY T.JERNLUND

**NOTES**

- POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION.
- SUPPLIED BY APPLIANCE MANUFACTURER

**LEGEND**

- DENOTES WIRE NUT
- DENOTES LINE VOLTAGE BY APPLIANCE MANUF
- DENOTES LINE VOLTAGE BY T.JERNLUND
- DENOTES LINE VOLTAGE FIELD

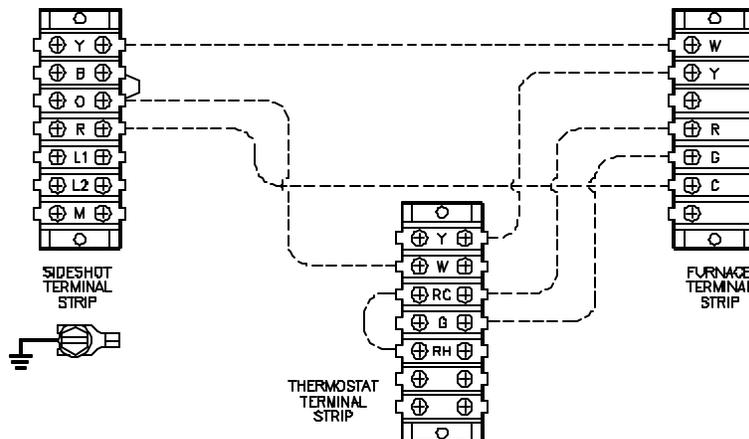
**NOTES**

- POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION.
- SUPPLIED BY APPLIANCE MANUFACTURER

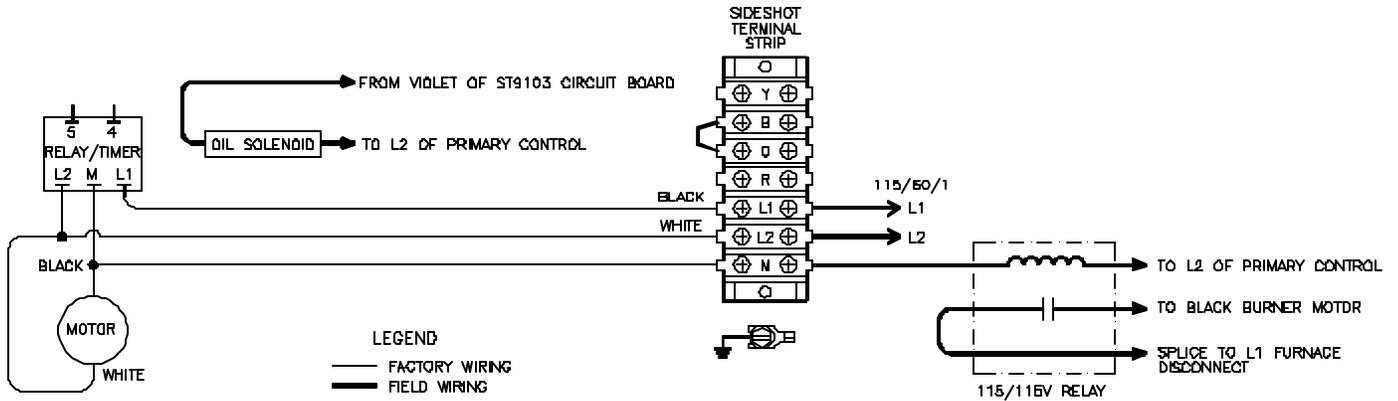
NOTES: The SideShot is always interlocked with the primary control of the appliance. Wire all other furnace/boiler controls as normally done when conventional venting before continuing. Disconnect power from the appliance before attempting to interlock the SideShot.

1. Separate the black burner motor wire from the Orange wire of the R8184G. NOTE: Do not separate ignition transformer wire or the optional oil valve wire from the Orange.
2. Connect the Black burner motor wire to terminal Y on the SideShot terminal strip.
3. Connect the Orange wire of the R8184G to the O terminal on the SideShot terminal strip.
4. Connect the White wire of the R8184G to the R terminal of the SideShot terminal strip.  
NOTE: The White wire from the R8184G will also be connected to L2 or B2 as normally done when conventional venting.
5. Connect L1 terminal of the SideShot terminal strip to L1.
6. Connect the L2 terminal of the SideShot terminal strip to L2.
7. Connect the Ground to grounding screw in SideShot junction box.

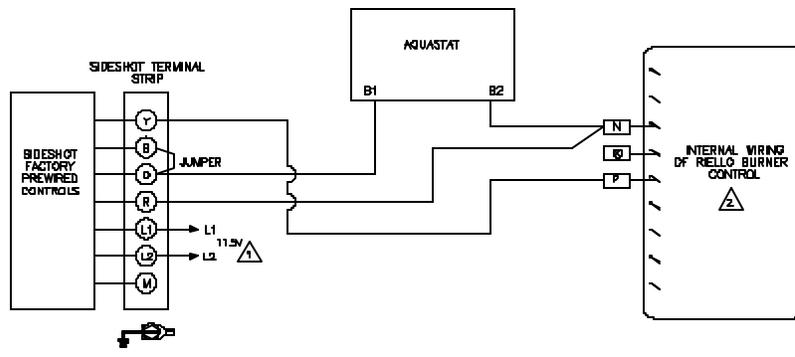
**STANDARD HONEYWELL ST9103 WIRING**



## HONEYWELL ST9103 WIRING WITH BURNER MOTOR POST PURGE

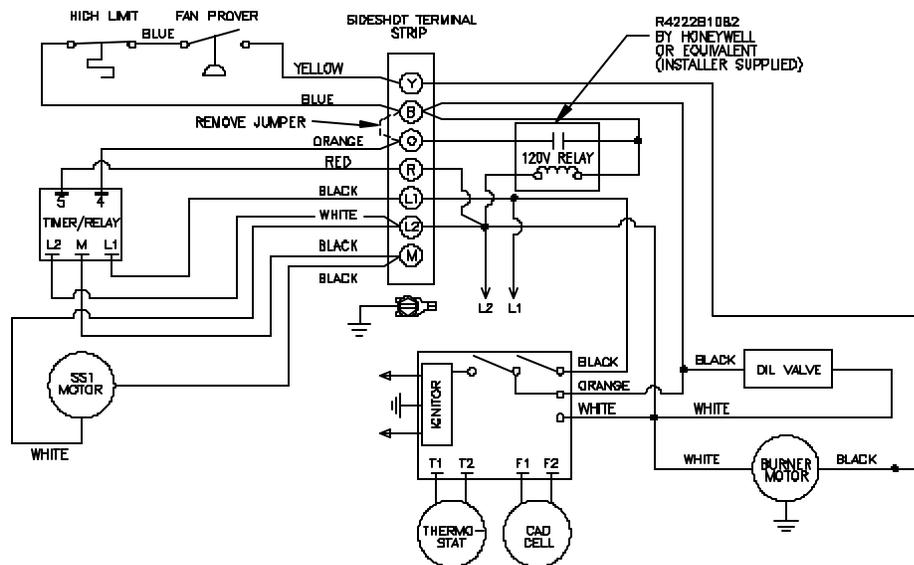


### SIDESHOT CONNECTED TO A RIELLO BURNER



**NOTES**  
 ⚠️ POWER SUPPLY PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION

### SIDESHOT CONNECTED TO A PHELON CONTROL



**NOTES**  
 ⚠️ POWER SUPPLY PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION.  
 ⚠️ SUPPLIED BY APPLIANCE MANUFACTURER.

## DRAFT ADJUSTMENT OIL

The SideShot Vent system will properly vent a wide range of BTU/hr. input capacities. To compensate for different burner capacities, vent connector lengths and wind conditions it features a draft adjustment located on the outside of the Vent Hood. In general, positioning the draft adjustment **inward** will cause the SideShot to operate at lowest capacity. Positioning the draft adjustment **outward** will cause the SideShot to operate at highest capacity.

### IMPORTANT:

The following paragraph describes the initial draft adjustment. It may be necessary to make a slight readjustment to compensate for various conditions: wind, vent connector resistance, negative building pressure and multiple appliances.

ASHRAE lists the average design factor for wind loads in North America at 15 MPH. Refer to the Draft Adjustment Chart on Page 14. We recommend that the 25 MPH category be used to allow for excursions beyond the 15 MPH average. It is not recommended for the SideShot to be terminated on a wall that faces the direction of prevailing winds. Backdrafts by severe winds can cause oil odors to remain in the structure and/or interrupt heating equipment operation. If the SideShot is terminated in a direction prone to higher winds, or if higher winds are common in your geographic area, use the 40 MPH category to determine the proper draft adjustment setting. If the draft adjustment is set at the 25 MPH category and sustained winds exceeding 25 MPH are present, the Fan Proving Switch will disrupt the burner until the wind load drops below 25 MPH. Wind loads referenced are based on straight line winds directed against the Vent Hood.

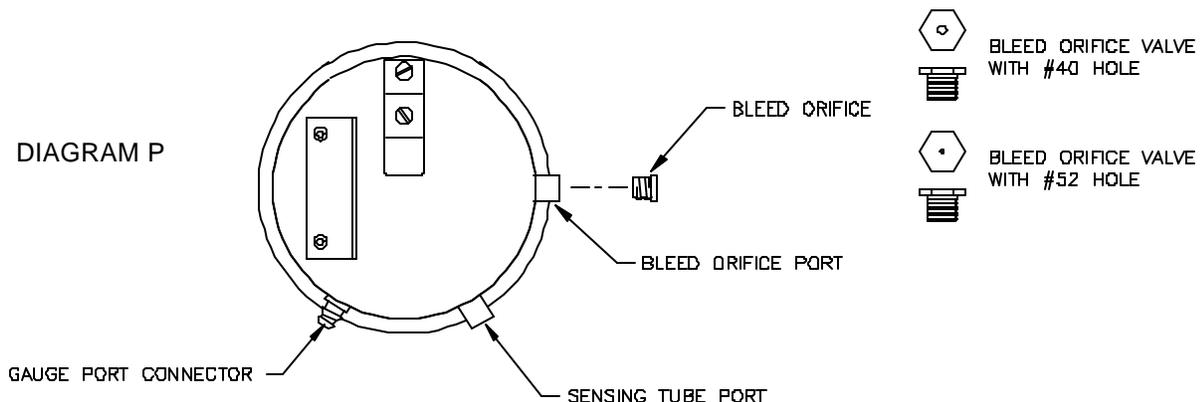
### DRAFT ADJUSTMENT PROCEDURE:

- 1) Set the draft adjustment to the appropriate setting based on the above instructions and the Draft Adjustment Chart. Adjustment is accomplished by loosening both nuts on each side of the Vent Hood and centering **both** indicators to the desired setting. The four nuts should be finger tight plus 1/2 turn.
- 2) Place the appliance and SideShot in operation. Measure the over-fire draft. Make necessary adjustments to the primary air intake and barometric draft control to comply with the over-fire draft requirements of the appliance. In most cases, the over-fire draft should be in a range of  $-.02''$  to  $-.04''$  W.C. If adjustments to the primary air intake and barometric draft control do not provide the required over-fire draft, the SideShot draft adjustment must be repositioned, accordingly. Measure over-fire draft after repositioning SideShot draft adjustment.

## SELECTION OF PRESSURE SWITCH BLEED ORIFICE

In order for the SideShot pressure switch to function properly for the intended application, the proper bleed orifice has to be selected as determined below.

1. Upon installation, if the vent connector length is less than 3.1 equivalent meters (10 feet), then the **smaller** opening #52 bleed orifice should be used.
2. Upon installation, if the vent connector length is greater than 3.1 equivalent meter (10 feet), then the **larger** opening #40 bleed orifice should be used .
3. Once proper bleed orifice has been determined, install into the Bleed Orifice port as indicated.



## DRAFT ADJUSTMENT OIL

### DRAFT ADJUSTMENT CHART

BTU/HR INPUT	GAL/HR INPUT	FLAME RETENTION OIL BURNER		CONVENTIONAL OIL BURNER	
		25 mph	40 mph	25 mph	40 mph
50,000	.36	1	1	1	2
60,000	.43	1	1	1	2
70,000	.50	1	2	2	3
80,000	.57	1	2	2	3
90,000	.64	1	2	3	4
100,000	.71	1	2	3	4
110,000	.79	2	3	3	4
120,000	.86	2	3	4	5
130,000	.93	2	3	4	5
140,000	1.00	2	3	4	5
150,000	1.07	3	4	5	6
160,000	1.14	3	4	5	6
170,000	1.21	3	4	5	6
180,000	1.29	3	4	6	7
190,000	1.36	4	5	6	7
200,000	1.43	4	5	6	7
210,000	1.50	4	5	7	8
220,000	1.57	4	5	7	8
230,000	1.64	5	6	—	—
240,000	1.71	5	6	—	—
250,000	1.79	5	6	—	—
260,000	1.86	5	6	—	—
270,000	1.93	6	7	—	—
280,000	2.00	6	7	—	—
290,000	2.07	6	7	—	—
300,000	2.14	7	8	—	—
310,000	2.21	7	8	—	—
320,000	2.29	7	8	—	—

NOTES: All draft adjustments are approximate. This chart is to be used for initial draft adjustment only. Subsequent draft adjustments may be required to compensate for various field conditions: wind, vent pipe resistance, building pressure, multiple appliances, etc.

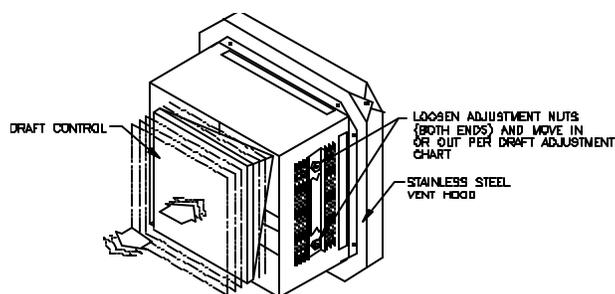
BTU/HR input ratings assume 30% or less excess air for flame retention burners and 50% to 100% excess air for conventional oil burners.

### WARNING

Do not exceed the recommended BTU/HR input range of the SideShot.

Under no circumstances shall the minimum draft adjustment be used for the larger input range of this product.

Improper draft adjustment may result in the dispersion of flue products /carbon monoxide into the building interior.



## COMBUSTION AIR

Adequate combustion air is vital for proper combustion and for safe venting. Likewise, for proper SideShot performance, adequate combustion air must be available to the appliance. Many installers assume adequate combustion air is present, especially in older homes. In some cases this is a false assumption, because many older homes have been made "tight" due to weatherization. Size the combustion air opening(s) into the appliance room as outlined in local or national codes. When installing a SideShot, it is not necessary to supply any more combustion air than normally required when conventional venting. Common symptoms of inadequate combustion air include: Fan Proving Switch short cycling, odor present at the end of burner cycle, outside air enters the structure through the SideShot Vent System on SideShot/Appliance off cycle.

## SYSTEM OPERATION CHECK-OUT

1. Adjust thermostat or appliance controls to call for heat.
2. Verify that the SideShot operates first, prior to burner ignition.  
Allow heating equipment and SideShot to operate continuously while performing steps 3-5.
3. Close all doors and windows of the building. If heating equipment is installed in utility room or closet, close the entrance door to this room. Close fireplace dampers.
4. Turn on all appliances in the structure that exhaust indoor air during their operation, e.g. turn on clothes dryer, exhaust fans, such as range hoods, bathroom exhaust and whole house fans.
5. Allow SideShot and equipment to operate for at least five minutes. Tripping of the burner circuit by the Fan Prover Switch during the five minute operation indicates an unsafe operating condition. Turn fuel supply off to appliance and **DO NOT OPERATE UNTIL UNSAFE VENTING CONDITION IS INVESTIGATED BY QUALIFIED SERVICE PERSONNEL.**
6. Turn thermostat or equipment controls to the "off" position. Verify that the post-purge timer operates the SideShot for several minutes while burner is not firing before the SideShot turns off. Post-purge adjustment is made by turning the small slotted screw. Counter clockwise will increase delay, clockwise will decrease delay. Overturning adjustment screw will damage timer.
7. Return all windows, doors and exhaust fans to their original conditions of use.

## TROUBLESHOOTING OIL ODORS

Many problems can be eliminated quite easily by having the equipment properly set up by a professional oil-heat service contractor. The sophistication of today's heating equipment and instrumentation needed for efficient operation requires proper training. There is no substitute for the work of a qualified oil-heat service professional. All trouble shooting recommendations that follow assume the equipment is installed and maintained by a qualified service person.

**Timer/Relay:** The factory installed Timer/Relay provides the post purge cycle for the venting system. Just as a chimney continues to draft after the burner has shut-down, the Timer/Relay operates the SideShot to clear the vent system of residual gases. The duration of the post-purge cycle is adjustable from 1 to 10 minutes. Turn the adjustment on the Timer/Relay counter-clockwise to accomplish a longer post purge. Over turning adjustment screw will damage timer.

**Draft Adjustment:** The SideShot Draft Adjustment, located outdoors on the Vent Hood, has two functions: A) It allows the installer to fine-tune the amount of draft that the SideShot must develop to vent the specific appliance, and B) It prevents air infiltration caused by strong winds and gusts. Air infiltration back through the vent system will bring with it the odors from the flue gas residue on the inside of the vent pipe. When the Draft Adjustment is at an inward setting (lower number) the Vent Hood will deflect a greater volume of wind than at a higher setting.

(**REMINDER :** The most significant preventer of wind-induced air infiltration is choosing a proper termination location of the SideShot before installation, see requirements on page 4, under "Vent Hood Termination Clearances.")

Verify that the Draft Adjustment is appropriate for the BTU/hr input, as shown on the "Draft Adjustment Chart," page 14 . If necessary, change setting by loosening both nuts on each side of the Vent Hood and center both indicators to the desired setting. Tighten the four nuts to secure new Draft Adjustment.

**CAUTION:**

Any adjustment to the draft setting must be followed by an over-fire draft measurement and necessary adjustments to the primary air intake on the burner and barometric draft control. See Draft Adjustment Procedure, pages 13 and 14.

**Burner Adjustment:** Verify that the over-fire draft matches that recommended by the heating equipment manufacturer. Adjust the combustion efficiency and smoke characteristics to optimum levels of performance.

**Combustion Air:** Modern construction methods and materials have reduced natural air infiltration rates to extremely low levels. Even older homes can lack adequate air for combustion, when insulation upgrades and other weatherization methods have been installed.

It is recommended that fuel burning appliances have dedicated sources of outside air for combustion. This may be simply accomplished by running a properly sized duct from outdoors and terminating it near the burner air intake. Accessory air intakes are available that connect to the burner motor, using it to pull in the outdoor air. The Tjernlund IN-FORCER™ Combustion Air Intake tempers the raw outdoor air as it is delivered to the burner. Without a source of outdoor air for combustion, a tight home's negative pressures will draw odors back through the venting system during the appliance off cycle.

**Chronic Oil Odor Conditions:** Certain features of the specific appliance and installation, e.g. high heat-retention combustion chamber; low-mass, dry-base; piping system design; oil impurities; air in lines, can all contribute to an increased production of oil odor and cannot always be anticipated. For extreme cases of oil odor nuisance Tjernlund recommends the practice of post-purging the burner during the vent system post-purge. A burner post-purge cycle can eliminate any shortcomings of compatibility between the specific installation and the SideShot. Burner post-purge kits, such as, Tjernlund's P/N 950-2043, are available from most oil equipment distributors. Burner post-purge kits should be used on installations where the combustion air is being adequately supplied, yet oil odors continue.

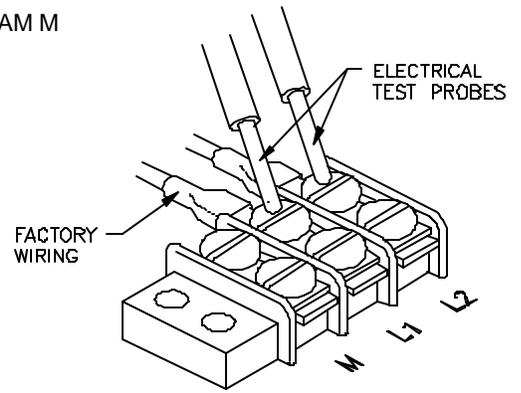
## TROUBLESHOOTING ELECTRICAL PROBLEMS

### ⚠️ WARNING

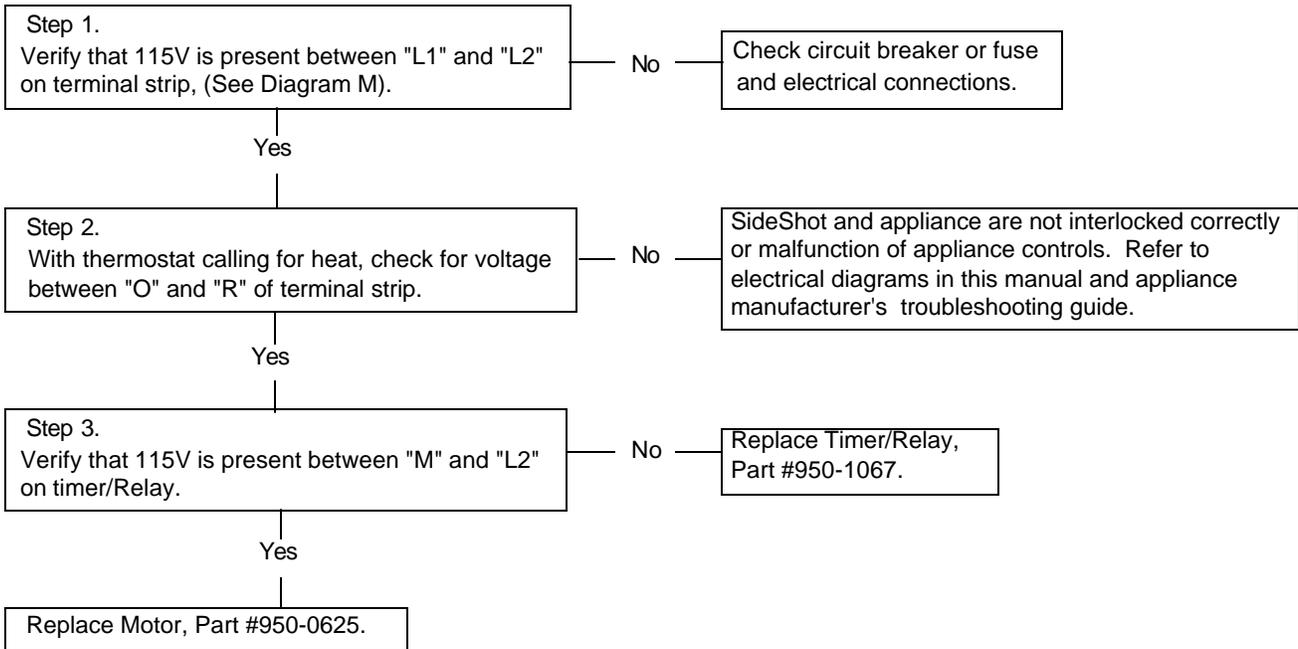
The following guide is intended to be used if a problem occurs during the use of the SideShot side wall vent system. At several steps throughout the guide you will be required to measure 115 Volts with a voltmeter, (See Diagram M).

**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.

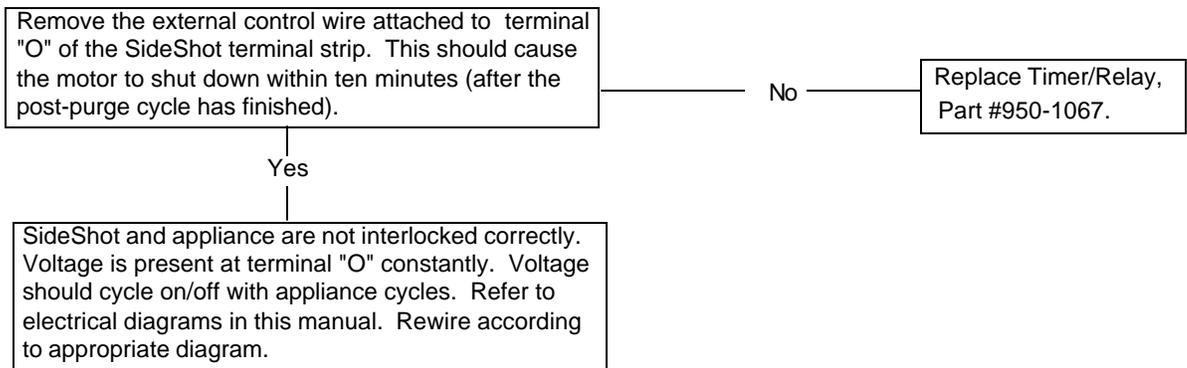
DIAGRAM M



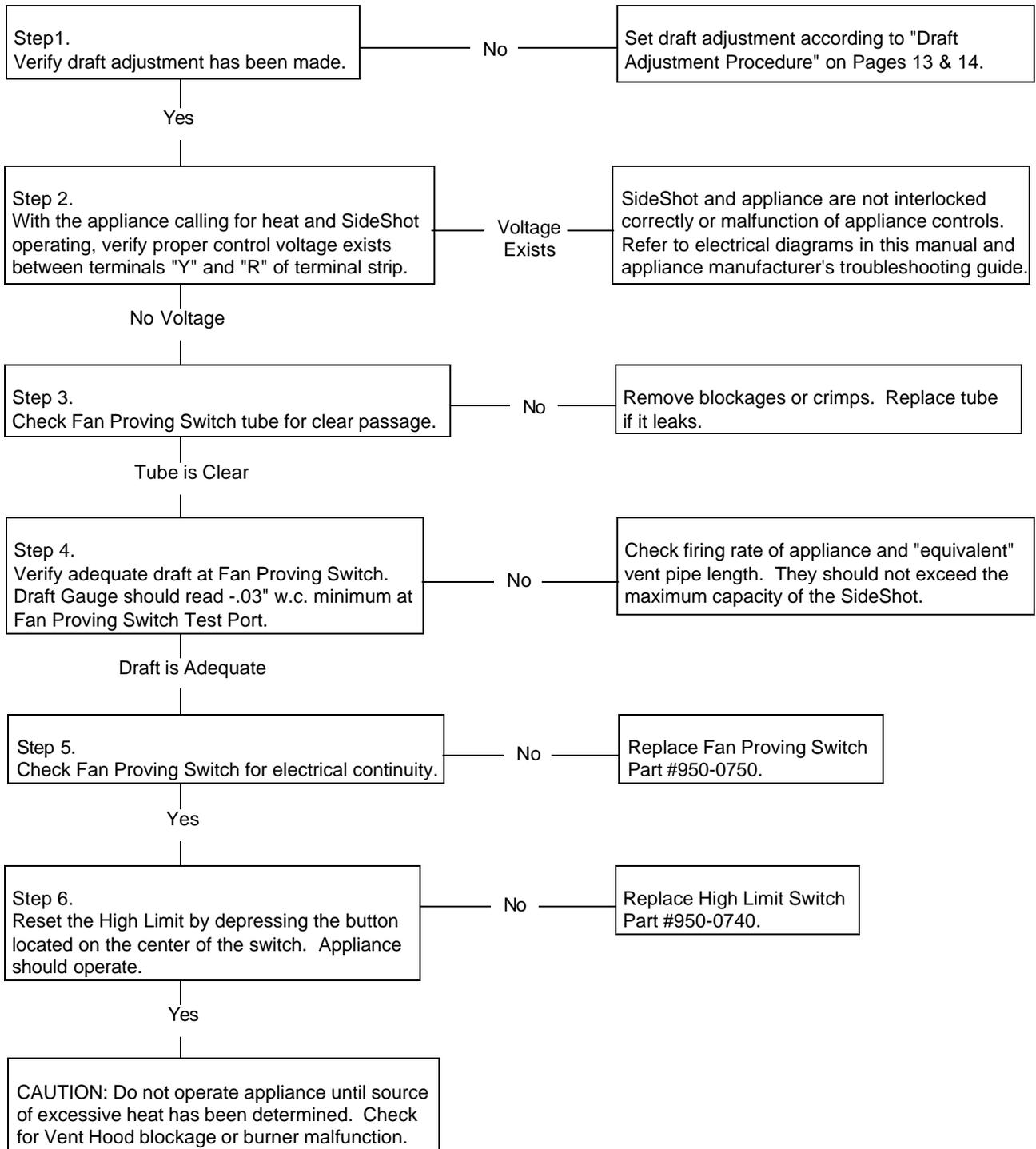
### SYMPTOM 1: SIDESHOT MOTOR WILL NOT OPERATE



### SYMPTOM 2: SIDESHOT MOTOR RUNS CONTINUOUSLY



**SYMPTOM 3: APPLIANCE WILL NOT OPERATE, BUT SIDESHOT DOES**



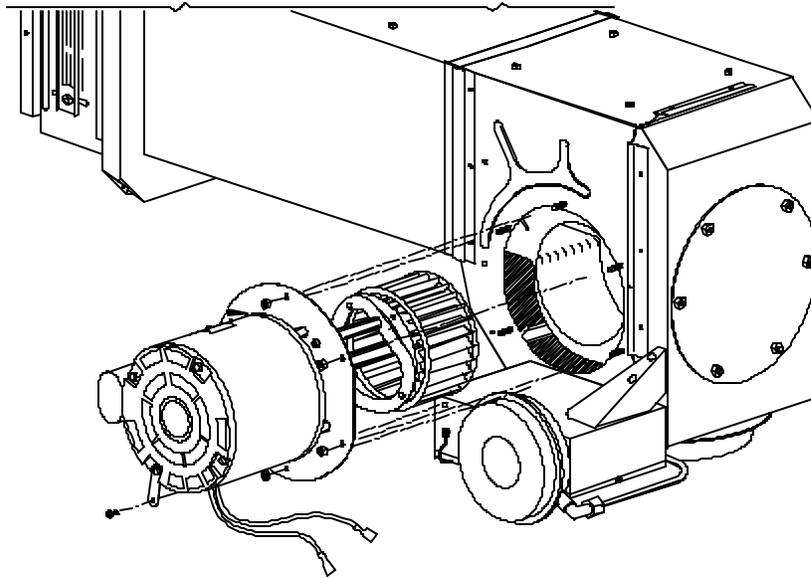


DIAGRAM N

### WHEEL INSPECTION (DIAGRAM N)

1. The SideShot blower wheel **must** be inspected annually. Particulates, such as soot, oil impurities and sheet rock dust, can prevent proper venting and will cause noise and vibration. Follow instructions, below for motor/wheel assembly removal.
2. Clean all particulate from wheel with a soft metal wire brush and soot cleaner. Clean the pocket of each blade, as well as the rest of the wheel.
3. A wheel that exhibits large amounts of particulate or appears to be out of round should be replaced with a new wheel. Instructions for wheel replacement are listed below.

### REMOVAL AND REPLACEMENT OF MOTOR/WHEEL ASSEMBLY (DIAGRAM N)

#### **▲ WARNING**

Disconnect power supply to the SideShot and heating equipment when servicing the SideShot. Failure to do so may result in personal injury and/or equipment damage.

1. Remove electrical box cover.
2. Disconnect the two motor leads from the terminal strip.
3. Remove motor bracket screw from electrical box.
4. Holding the motor, apply firm pressure towards the plenum of the SideShot and remove the six motor mount nuts. **Note: Hold the assembly firmly; failure to do so could damage internal parts.**
5. Slide motor/wheel assembly from Plenum. Grasp only the motor casing; do not damage wheel, shaft or other components on Plenum. Do not rest assembly on wheel.

### WHEEL REPLACEMENT (DIAGRAM N)

1. Loosen set screw from wheel hub by using a 5/32" allen wrench.
2. Twist wheel to loosen and pull off of motor shaft. **Do not pull too hard; wheel may bend.** Wheels "fused" to shaft may require penetrating oil and/or a wheel puller to facilitate removal.
3. Slide new wheel on to flat of shaft and firmly tighten set screw.

### MOTOR OILING (DIAGRAM N)

The SideShot motor is permanently lubricated and requires no oiling.

## LIMITED PARTS AND WARRANTY CLAIM PROCEDURE

Tjernlund Products, Inc. warrants the components of the SideShot for two years 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. This warranty DOES NOT cover the complete SideShot 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 two year warranty period. If the part is over 30 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 two years. All receipts should include the date code of the SideShot 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 SideShot date code component was taken from. The date code is located on the Electrical Box coverplate. If the date code is older than 30 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

<u>Component</u>	<u>Part Number</u>
Motor	950-0625
Proving Switch	950-0750
Timer/Relay	950-1067
Wheel	950-0635
High Limit Switch	950-0740

## 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 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 (2) 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