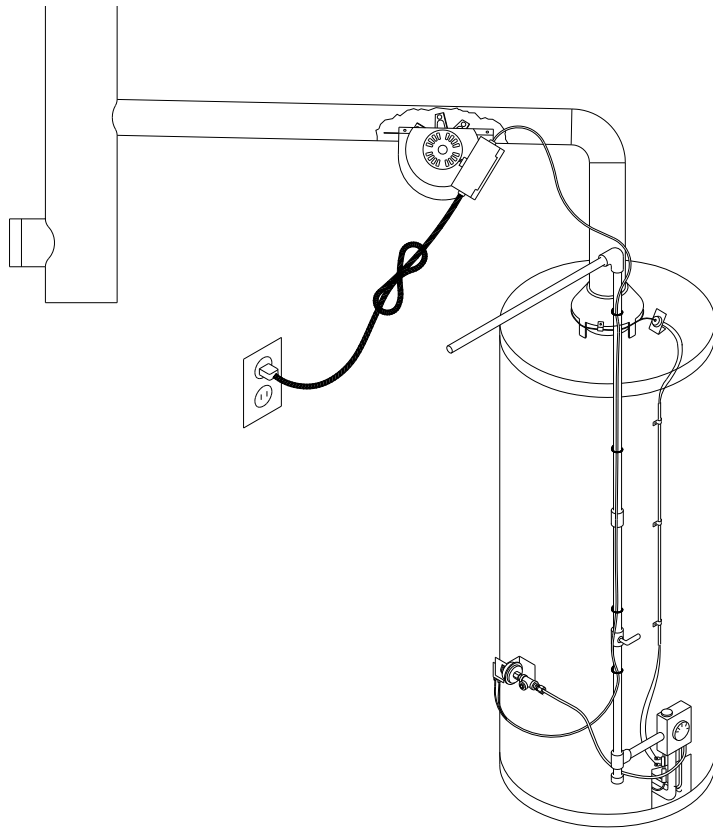




## TJERNLUND PRODUCTS, INC.

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](http://www.tjernlund.com)



### Model CSA1 Chimney Stack Assist Kit



**OWNER INSTRUCTIONS, DO NOT DESTROY.  
SHUT OFF GAS SUPPLY BEFORE INSTALLING OR SERVICING THE CSA1.  
FOR USE ON VERTICALLY TERMINATED CHIMNEYS ONLY.**

**NOTE:** FLUE GAS TEMPERATURES MUST NOT EXCEED 575°F (301°C) AT DRAFT INDUCER INLET. DRAFT INDUCERS MUST NOT BE USED FOR SIDEWALL TERMINATED VENT APPLICATIONS.

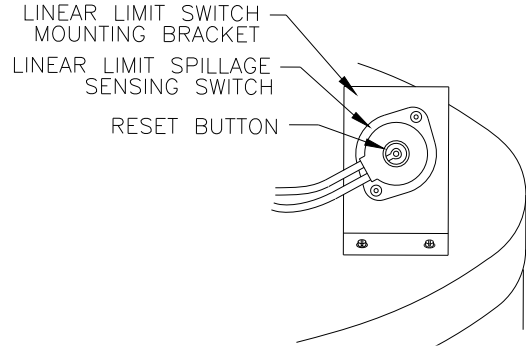
THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION,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

## DESCRIPTION

The CSA1 Inducer assures draft in orphaned water heaters, oversized chimneys or when slight negative pressures in buildings prevent proper exhaust of combustion gas. The venturi action of Tjernlund's CSA1 Inducer starts air moving smoothly. These units are easy to install and completely automatic in operation. Tjernlund's unique design and durable construction makes them maintenance free.

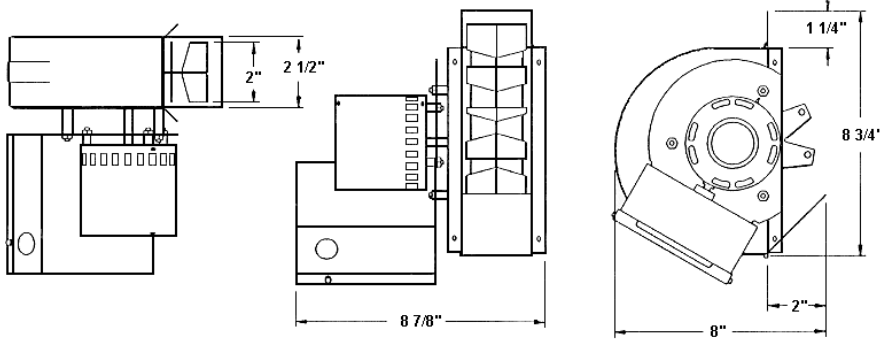
## IN THE EVENT OF PILOT OUTAGE

1. Push the reset button in the center of the Linear Limit Spillage Switch located near the draft hood on the top of the water heater.
2. Follow water heater manufacturer's re-lighting instructions attached to water heater or located in water heater owner's manual.
3. Turn the gas pilot knob at the top of water heater gas valve to "OFF" position.  
**WARNING: Gas pilot knob MUST REMAIN IN "OFF" POSITION FOR FIVE MINUTES BEFORE PILOT IS RE-LIT.** Perform steps 4 & 5 while waiting.
4. Visually verify that there is 115 volt power established to the CSA1.  
Check fuse or circuit breaker, wall plug and electrical connections.
5. Visually verify that all electrical connections of control cord circuit are intact.



**NOTE:** Since the CSA1 cannot operate during a power outage, the safety interlock controls are designed to prohibit gas flow to the water heater in the event of prolonged flue gas spillage. Follow the above procedures and water heater manufacturer's instructions for relighting the pilot when power has been restored.

## SPECIFICATIONS



### MOTOR SPECIFICATIONS

#### ELECTRICAL DATA

Volts	115
Hertz	60
RPM	1550
Watts	35
Amps	.43
Therm. Prot.	Imp. Prot.

**Maximum BTU/hr. input rating of equipment: 65,000.**

\* **NOTE:** 3" 90 Degree elbows are equivalent to 3 feet.  
4" 90 Degree elbows are equivalent to 4 feet.

Pipe Diameter	Water Heater Capacity	Max. Equivalent* Horizontal Vent Connector Length
3"	Up to 45,000 BTU/hr	15 feet
4"	Up to 65,000 BTU/hr	20 feet

## TOOLS NEEDED

1/4" Nut Runner	11/32" Nut Runner	Tin Snips	Drill
Gas Pipe Tape	High Temp Silicone	1/4" Tube/Pipe Cutter	Drill Bit Set
7/16" Open End Wrench	3/8" Open End Wrench	1/2" Open End Wrench	

## SEQUENCE OF OPERATION

1. Water heater thermostat calls for heat.
2. CSA1 activates and the burner fires simultaneously.
3. Burner & CSA1 shut down simultaneously when thermostat is satisfied.

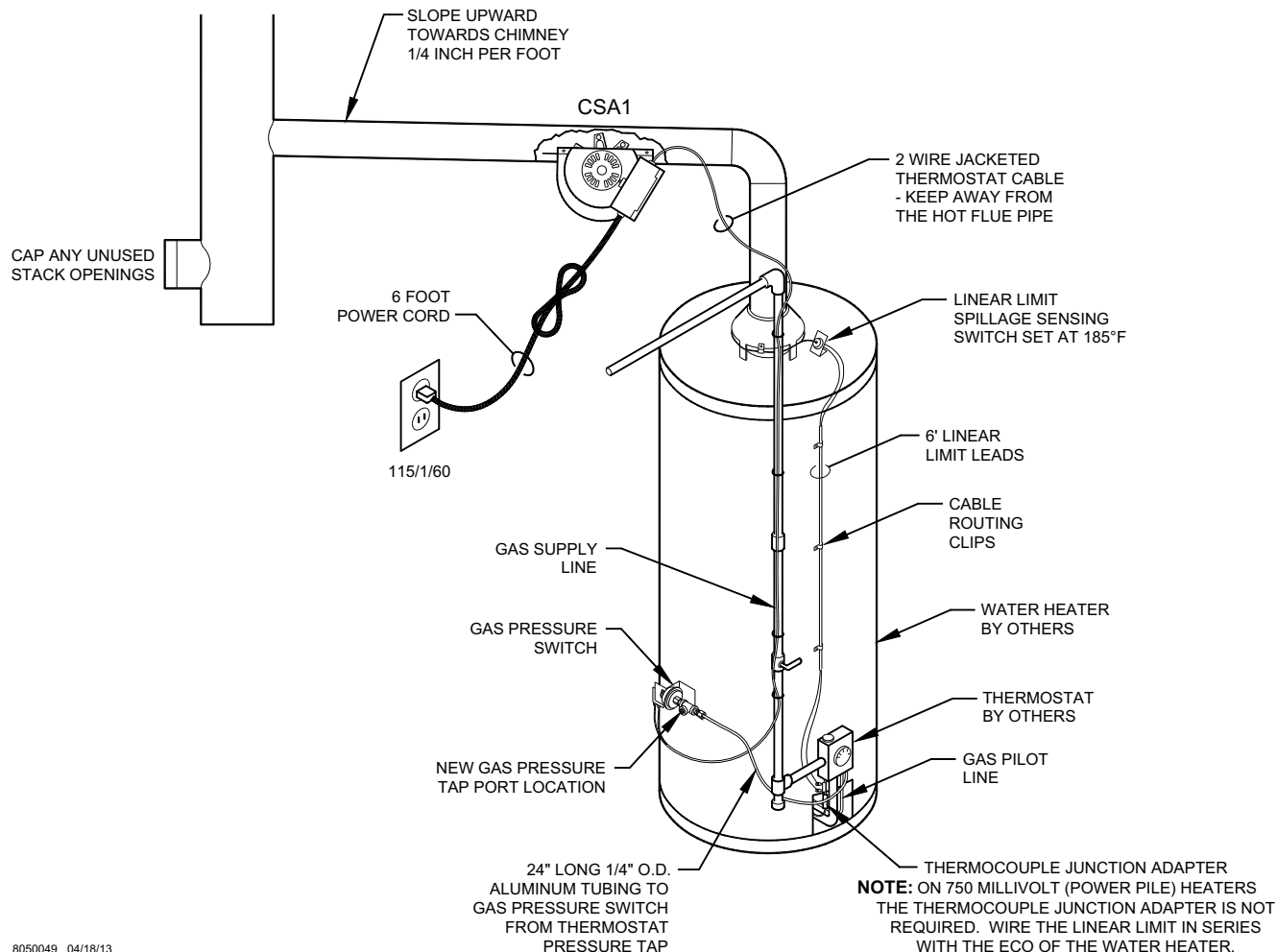
If sustained flue gas spillage is detected by the Linear Limit Spillage Switch the Water Heater Safety Circuit is opened and pilot light is extinguished. The Linear Limit spillage switch must be reset and the pilot relit to reestablish burner operation.

**WARNING**

Failure to install, maintain and/or operate the CSA1 in accordance with manufacturer's instructions may result in conditions which can produce bodily injury and property damage.

The CSA1 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 editions of The National Fuel Gas Code (NFPA #54), Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances (NFPA 211), and the Occupational Safety and Health Act (OSHA) when applicable. 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 CSA1 shall not be used on condensing heating equipment.
2. Gas-fired units without a draft hood / diverter must include a barometric draft regulator.
3. The CSA1 motor shaft must be mounted horizontally to prevent motor bearing wear.
4. The CSA1 shall not be installed where flue gas temperatures exceed 575°F (301°C) at the CSA1 inlet. Ambient room temperatures must not exceed 104° F (40° C).
5. The installer must affix the wiring diagram label included with these instructions to the water heater casing adjacent to its rating plate.
6. The water heater may only be installed on the suction side of CSA1.
7. The installer must verify that the pilot safety controls on the water heater are in good operating condition before installation of the water heater vent package.
8. The CSA1 must not be installed into any portion of a vent system which serves appliances other than the one vented by the CSA1.
9. Make certain the power source is adequate for the fan motor requirements. Do not add the CSA1 to a circuit where the total load is unknown.
10. The installer must verify that the BTU/hr input of the water heater does not exceed the maximum input rating of the CSA1 (65,000 BTU/hr).
11. A safety inspection of the water heater must be performed before installation of the CSA1 as outlined in the International Fuel Gas Code, (IFGC) Appendix D.



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

Remove the hardware packet and Safety Controls.

**GAS PRESSURE SWITCH INSTALLATION**

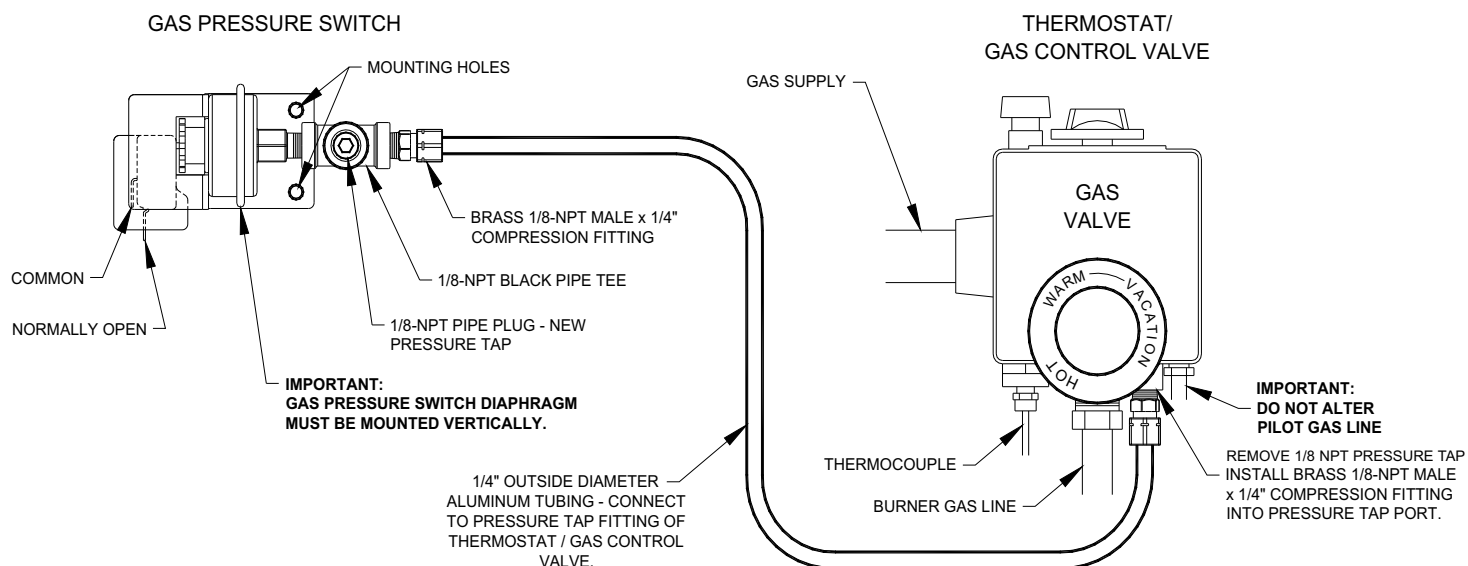
**IMPORTANT: Mount gas pressure switch so that diaphragm is in a VERTICAL position, (See Diagram A).**

The gas pressure switch is mounted on the casing of the water heater adjacent to the heater's thermostat/gas control valve. It should be mounted close enough so that the supplied 1/4" tubing will reach from the gas pressure switch fitting to the thermostat/gas valve pressure gauge port. The two provided screws are self-tapping and drilling. The screws do not require the use of a drill and their 1/2" length assures that the inner tank will not be penetrated.

1. Adjust thermostat to "Off" and shut off gas to the water heater.
2. Mount the gas pressure switch by securing it to the heater casing with a screw in each of the two mounting holes.  
**IMPORTANT: Mount gas pressure switch so that diaphragm is in a VERTICAL position, (See Diagram A).**
3. Install the 1/8-NPT black pipe tee to the gas pressure switch, (See Diagram A). Use thread sealant, do not over tighten. **CAUTION:** Utilize the hex nut on the gas pressure switch when attaching the black pipe tee.
4. Install the supplied Brass 1/8-NPT male x 1/4" compression fitting to the 1/8-NPT black pipe tee, (See Diagram A). Use thread sealant, do not over tighten.
5. Remove the PRESSURE TAP plug from the underside of the thermostat/gas control valve and install the supplied Brass 1/8-NPT male x 1/4" compression fitting, (See Diagram A). Use thread sealant, do not over tighten.  
**IMPORTANT: DO NOT alter the heater's PILOT GAS LINE, (See Diagram A).**
6. Use plug removed in step 5 and plug new pressure tap port in tee. Use thread sealant, do not over tighten.
7. Using a tube cutter, cut the appropriate length of the supplied 1/4" tubing to reach from the gas pressure switch fitting to the PRESSURE TAP fitting of the thermostat/gas control valve. Make sure each end of the tubing is not pinched closed.
8. Use the 1/4" tubing to connect gas pressure switch fitting to the PRESSURE TAP PORT fitting on the thermostat/gas control valve.
9. Conduct a gas leakage test of all connections as outlined in the latest edition of NFPA 54, ANSI Z223.1, part 4 or local codes.

**NOTE:** A "gauge pressure tap port" can be accessed by removing the 1/8-NPT pipe plug that is on the 1/8-NPT black pipe tee (attached to the gas pressure switch).

**DIAGRAM A**



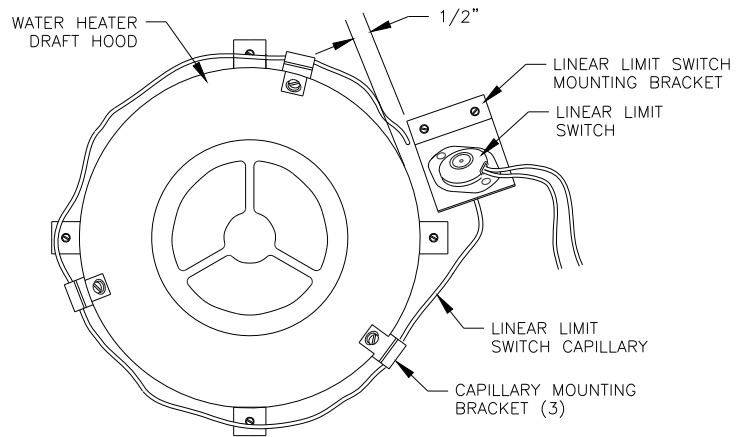
## LINEAR LIMIT SPILLAGES SENSING SWITCH INSTALLATION

**PURPOSE:** To provide a means for appliance shut-down in the event of flue blockage or CSA1 failure.

**OPERATION:** When concentrated spillage of the products of combustion occurs from the draft hood, the Linear Limit Spillage Switch circuit will open preventing burner operation.

1. Attach the Linear Limit sensing switch mounting bracket to the top of the water heater using the 1/2" sheet metal screws provided. The Linear Limit bracket should be approximately 1/2" from the draft hood.
2. Attach the three Linear Limit capillary mounting brackets around the draft hood, equally spaced. Uses 3/8" screws.
3. Insert the Linear Limit spillage sensing switch capillary into the "U" of the Linear Limit brackets outlining the perimeter of the draft hood. The Linear Limit capillary may be overlapped, if necessary, (See Diagram B). **IMPORTANT: DO NOT CUT THE CAPILLARY**, it will be destroyed and water heater will be disabled.
4. Route the Linear Limit spillage sensing switch cable down the water heater casing locating the end near the Thermocouple or E.C.O. of water heater. Secure it with the cable clamps and self drilling screws provided.

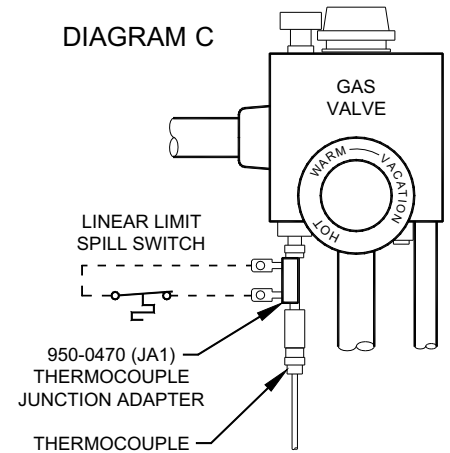
DIAGRAM B



## THERMOCOUPLE INSTALLATION

Unscrew the thermocouple from gas valve and screw in the Thermocouple Junction Adapter. Screw the thermocouple into the Thermocouple Junction Adapter. Connect the Linear Limit cables to the spade connections on the Thermocouple Junction Adapter, (See Diagram C). **NOTE:** On 750 Millivolt (power pile) heaters, wire the Linear Limit Spill Switch in series with the high limit (E.C.O.) of heater, see Thermopile installation below.

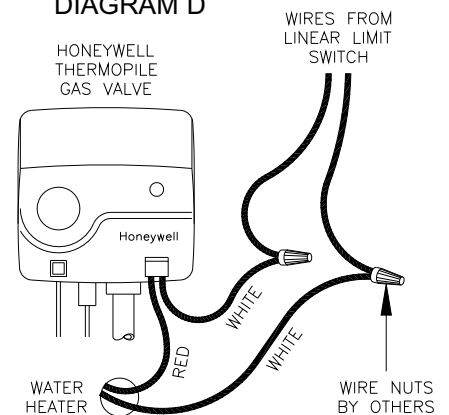
DIAGRAM C



## THERMOPILE INSTALLATION

Cut white wire from the thermopile gas valve and wire nut both ends with Linear Limit wires (See Diagram D). Thermocouple Junction Adapter is not required for Thermopile installations.

DIAGRAM D



## FAN MOUNTING

**WARNING: The CSA1 must not be used in side wall vent terminated applications. Side wall venting requires the use of a Tjernlund Side wall Power Venter (Model VP-2F or VP-3F). CSA1 housing is single wall material. Six inch clearance must be maintained to combustible materials.**

1. The CSA1 may be mounted on vertical, horizontal, or inclined vent connectors. If used on a horizontal or inclined vent connector, mount CSA1 on bottom of pipe, not on top, to avoid creating a heat trap in the inducer which could overheat the motor. The motor shaft must be level and horizontal to avoid excessive bearing wear.
2. Select a position between the draft hood, draft diverter or barometric damper and the chimney or stack where there is at least 2 pipe diameters distance from either end of the fan and elbows or tees.
3. Cut a rectangular slot in the pipe using the template provided. Fasten the CSA1 in place with the provided speed clips and screws.
4. The front flange of the fan fits inside the vent pipe cut out and should point toward the chimney. Seal any opening around the CSA1 and vent pipe cutout with RTV high temperature silicone sealant.

## ELECTRICAL

Route the control cable supplied with the CSA1 back to the water heater controls along the ceiling joists, taking care not to come closer than 6" to the vent pipe or any other potentially hot surface. In most cases, the gas supply line may be used as a routing path from the ceiling to the Gas Pressure Switch, the supplied nylon straps may be used to secure the cable.

**NOTE:** If the distance between the CSA1 and the Gas Pressure Switch is greater than the length of the cable supplied, splice a section of 2 conductor PVC sheathed, 105 degree C thermostat cable to the supplied cable. An NEC approved accessible junction box must be used to contain the splice. Splices shall be made mechanically secure and insulated with tape or fixture type splicing connectors may be employed. Strain relief hardware contained within the NEC approved junction box shall be utilized.

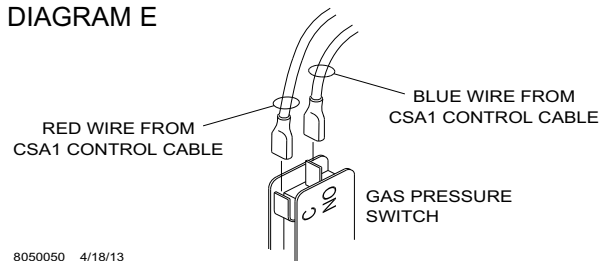
The CSA1 operates on 115 VAC, therefore a grounded outlet must be within reach of the six foot power cord supplied with CSA1. The flexible power cord supplied with the unit may only be used where local codes permit. If local codes do not permit the use of flexible power cord, follow steps below.

1. Remove the CSA1 electrical box cover, flexible cord and strain relief from the junction box.
2. Make "D" shaped hole CSA1 cord was removed from to a 7/8" diameter hole in CSA1 junction box.
3. Install suitable conduit fitting in enclosure and splice field wiring into existing wiring using code authorized method (wire nuts, etc.).
4. Replace electrical box cover.

## ACTUATING AND SAFETY CONTROL CIRCUIT CONNECTIONS

1. If not previously completed, push both leads from the Linear Limit Spill Switch onto Thermocouple Junction Adapter terminal, (See Diagram C, Page 4). **NOTE:** On 750 Millivolt (power pile) heaters, wire Linear Limit Spill Switch in series with high limit (E.C.O.) of heater, (See Diagram D, Page 4).
2. Push the Red lead from CSA1 control cable onto the common on the Gas Pressure Switch, (See Diagram E)
3. Push the Blue lead from the CSA1 control cable onto the normally open terminal on the Gas Pressure Switch, (See Diag. E).
4. Plug the power cord from the CSA1 into a grounded 115 VAC outlet. Verify that the outlet is powered through a 15 amp circuit breaker.

DIAGRAM E



**NOTE: The installer must ensure that all electrical connections are tight.**

## OPERATION CIRCUIT CHECK

1. Light the pilot following water heater manufacturer's instructions and adjust appliance thermostat to call for heat.
2. The CSA1 fan should start and the water heater burner should ignite.
3. Adjust the appliance thermostat so that no heat is required. At this point the CSA1 and burner should shut off. The Thermocouple Circuit has been verified.

**WARNING: DO NOT OPERATE THE WATER HEATER WITHOUT THE LINEAR LIMIT WIRED INTO THE THERMOCOUPLE JUNCTION ADAPTOR OR THERMOPILE ECO WATER HEATER SAFETY CIRCUIT.**

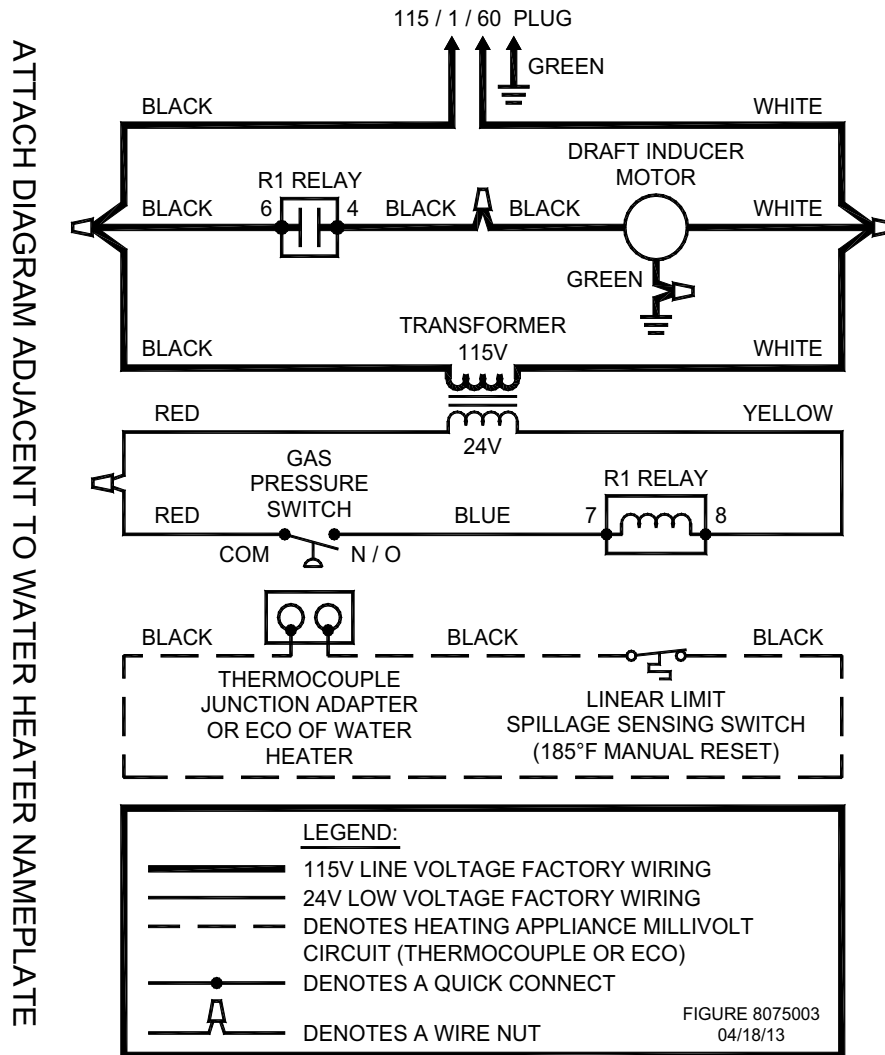
## SAFETY INTERLOCK TEST

**IMPORTANT:**

The Linear Limit Spillage Switch must disable the heater in the event of a venting malfunction. The following procedure is necessary to confirm that the heater is disabled in the event of a venting malfunction that would cause the Linear Limit to trip and open its circuit.

1. Remove a Linear Limit Switch lead (black wire) from Thermocouple Junction Adapter or Thermopile ECO and verify the heater pilot is extinguished.
2. Reconnect Linear Limit Switch lead removed in step 1 and re-light pilot following the water heater manufacturer's instructions.

## CSA1 WATER HEATER STACK ASSIST KIT LADDER WIRING DIAGRAM



## DRAFT AND COMBUSTION AIR TEST

**WARNING:**

The Linear Limit Spillage Switch is designed to alert the user to a potentially hazardous condition. It is not designed to and cannot replace regular vent system inspection, appliance servicing and combustion testing. **DO NOT USE IT AS A SUBSTITUTE FOR PROFESSIONAL APPLIANCE MAINTENANCE.**

1. Close all doors and windows of the building. If the appliance is installed in a utility room or closet, close the entrance door. Close fire place dampers.
2. Turn on clothes dryer. Turn on all exhaust fans, such as range hoods, bathroom exhaust and whole house fans to maximum speeds.
3. Following the water heater manufacturer's instructions, place the appliance in operation, set thermostat for continuous operation.
4. Allow fans and appliance to operate for 5 minutes.

- Tripping of the Linear Limit Spillage Switch during the 5 minutes indicates an unsafe operating condition. Turn off fuel supply to appliance and **DO NOT OPERATE UNTIL UNSAFE VENTING CONDITION IS INVESTIGATED BY A PROFESSIONAL CONTRACTOR OR UTILITY SERVICE PERSONNEL.**

**NOTE:**

In rare cases the Linear Limit may trip the control circuit on this vent system due to excessive negative pressure in the dwelling, down drafts, excessive water heater heat loss, etc. In these cases it may be necessary to add a Post Purge Timer Relay. This device will operate the CSA1 after the water heater has shut off and purge the vent system of residual flue gases. Contact Tjernlund if a Post Purge Timer Relay is desired.

- Return all windows, doors and fans to their previous conditions of use.
- Sign and date these instructions to verify that the combustion air and safety interlock test have been completed. These instructions must remain on premises. Sign: \_\_\_\_\_ Date: \_\_\_\_\_

**HOW TO OBTAIN SERVICE ASSISTANCE**

- If you have any questions about the CSA1 or if it requires adjustment, repair or routine maintenance, we suggest that you contact your installer, plumbing contractor or service agency.
- 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:

- Model number: CSA1
- Name and address of installer and service agency
- Date of original installation and dates any service work was performed
- Details of the problem

**LIMITED PARTS WARRANTY AND CLAIM PROCEDURE**

Tjernlund Products, Inc. warrants the components of its products for one year from date of installation. This warranty covers defects in material and workmanship. This warranty does not cover normal maintenance, transportation or installation charges for replacement parts or any other service calls or repairs. Products that are tampered with, damaged, installed improperly, wired incorrectly or defective due to malfunctioning appliances are not covered under this warranty. This warranty DOES NOT cover the complete CSA1 if it is operable; only the defective part.

- 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.
- After the faulty component is determined, return it to your Tjernlund distributor for replacement. Please include the job code component was taken from. The job code is located on the Electrical Box coverplate. If the date code is older than 1 year, 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 and verified defective.

**REPLACEMENT PARTS LIST**

ITEM	PART NUMBER	ITEM	PART NUMBER
Gas Pressure Switch	950-2080	Motor Kit	950-3020
24V Transformer	950-2030	Linear Limit Spill Switch	950-2064
Wheel Kit	950-3010	Thermocouple Junction Adapter	950-0470
Relay Kit	950-1040	Housing Kit	950-3000

**TJERNLUND LIMITED ONE YEAR WARRANTY**

Tjernlund Products, Inc. warrants to the original purchaser of this product that the product will be free from defects due to faulty material or workmanship for a period of (1) year from the date of original purchase or delivery to the original purchaser, whichever is earlier. Remedies under this warranty are limited to repairing or replacing, at our option, any product which shall, within the above stated warranty period, be returned to Tjernlund Products, Inc. at the address listed below, postage prepaid. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND TJERNLUND PRODUCTS, INC. EXPRESSLY DISCLAIMS LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF THIS PRODUCT. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND NO AGENT IS AUTHORIZED TO ASSUME FOR US ANY LIABILITY ADDITIONAL TO THOSE SET FORTH IN THIS LIMITED WARRANTY. IMPLIED WARRANTIES ARE LIMITED TO THE STATED DURATION OF THIS LIMITED WARRANTY. Some states do not allow limitation on how long an implied warranty lasts, so that limitation may not apply to you. In addition, some states do not allow the exclusion or limitation of incidental or consequential damages, so that above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from State to State. Send all inquiries regarding warranty work to Tjernlund Products, Inc. 1601 9th Street, White Bear Lake, MN 55110-6794. Phone (651) 426-2993 • (800) 255-4208 • Fax (651) 426-9547 • Email: fanmail@tjfans.com