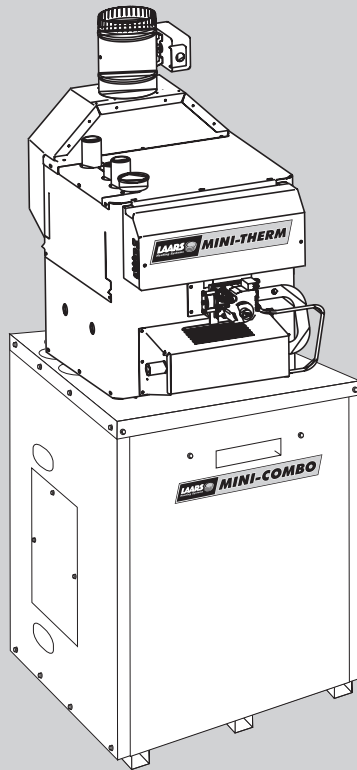




Installation and Operation Instructions for **Mini-Combo II™** (Models MCT, MCS) Residential Gas-Fired Space/Water Heater

NOTE: This manual is to be used in conjunction with Document 1025, Installation and Operation Instructions for Mini-Therm II JV boilers.

U.S. Trademark Reg. 2,094,168
China Trademark Reg. 988,311

FOR YOUR SAFETY: This product must be installed and serviced by a professional service technician, qualified in hot water boiler installation and maintenance. Improper installation and/or operation could create carbon monoxide gas in flue gases which could cause serious injury, property damage, or death. Improper installation and/or operation will void the warranty.

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a nearby phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency, or gas supplier.

⚠ AVERTISSEMENT

Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil ou de tout autre appareil.

QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:

- Ne pas tenter d'allumer d'appareils.
- Ne touchez à aucun interrupteur. Ne pas vous servir des téléphones dans le bâtiment où vous vous trouvez.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur de gaz, appelez le service des incendies.

L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

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SECTION 1.

General Information

WARNING

This manual supplies information on the application, installation and operation of the indirect water heater unit. A complete instruction manual of the operation of the hydronic boiler (Document 1025) is supplied along with this manual. Both manuals should be reviewed completely before proceeding with the installation.

- Failure to follow the instructions provided may result in personal injury, death or substantial property damage.
- Any modifications to the boiler, water tank, gas and water connections, or wiring may void warranty.
- Consult the factory or local factory representative with any questions or problems regarding this equipment.

AVERTISSEMENT

Ce manuel donne des renseignements sur l'application, l'installation et le fonctionnement du chauffe-eau indirect. Un manuel complet d'instruction sur le fonctionnement de la chaudière hydronique (Document 1025) est fourni avec ce manuel. Les deux manuels doivent être examinés attentivement avant de procéder à l'installation.

- Si les instructions ne sont pas suivies, il peut en résulter des blessures personnelles, la mort ou des dégâts matériels substantiels.
- Toute modification apportée à la chaudière, au réservoir d'eau, aux branchements de gaz et d'eau ou aux fils électriques peut invalider la garantie.
- Consultez le représentant de l'usine principale ou locale pour toute question ou problème concernant ce matériel.

1.1 Hazards and Your Safety

- Hot Water Can Scald!

The Consumer Product Safety Commission (CPSC) and some states/provinces recommend a temperature setting of 130°F (54°C) or less. The water heater thermostat is factory set to approximately 120°F (49°C). If thermostat will be set above factory setting, install an anti-scald valve at either the water heater or at each hot water faucet.

- Tempering valves are not anti-scald valves since they do not have a positive shutoff in case cold water supply fails. They are not recommended for shower/tub service. If needed, install an anti-scald valve at each shower/tub.
- Water heated to a temperature suitable for clothes washing, dish washing and other sanitizing needs can scald and cause permanent injury.

- Children and elderly, infirmed, or physically handicapped persons are more likely to be injured by hot water. Never leave them unattended in a bathtub or shower. Never allow small children to use a hot water tap or draw their own bath. If anyone using hot water in the building fits this description, or if state/province laws or local codes require certain water temperature at hot water taps, take special precautions:

Install an anti-scald valve at water heater or at each hot water faucet, bath, and shower outlet.

Use lowest practical temperature setting.

- Studies have indicated that dangerous bacteria can form in potable water distribution system if certain minimum water temperatures are not maintained. Contact local health department for more information.

SECTION 2.

Installation

This installation must conform with the instructions in this manual and, where applicable:

National Fuel Gas Code (ANSI Z223.1).

National Electric Code (NEC-NFPA 70).

Local, state, provincial, and national codes, laws, regulations and ordinances.

In Canada - Natural Gas and Propane Installation Code, CSA B149.1 and the Canadian Electric Code (CEC - Can/CSA C22.1).

Where the recommendations made in this manual differ from local or national codes, the local or national codes take precedence.

2.1 Location

This water heater/boiler unit is not intended for outdoor installation. Select a convenient location where water leakage from the tank or connections will not result in damage to areas adjacent to the appliance or to lower floors of the structure. When a safe location cannot be found, install a suitable drain pan under the appliance, and pipe it to an adequate drain.

2.2 Heater Placement

The heater must be placed to provide clearances on all sides for maintenance and inspection. Allow 4 inches (102mm) on each side for piping access. There must also be minimum distances maintained from combustible surfaces. Figure 2 shows minimum clearance from combustible surfaces. The Mini-Combo unit can be installed in a closet, as long as the minimum clearances are maintained. Special attention should be paid to the air supply opening to the closet. Refer to Table 1.

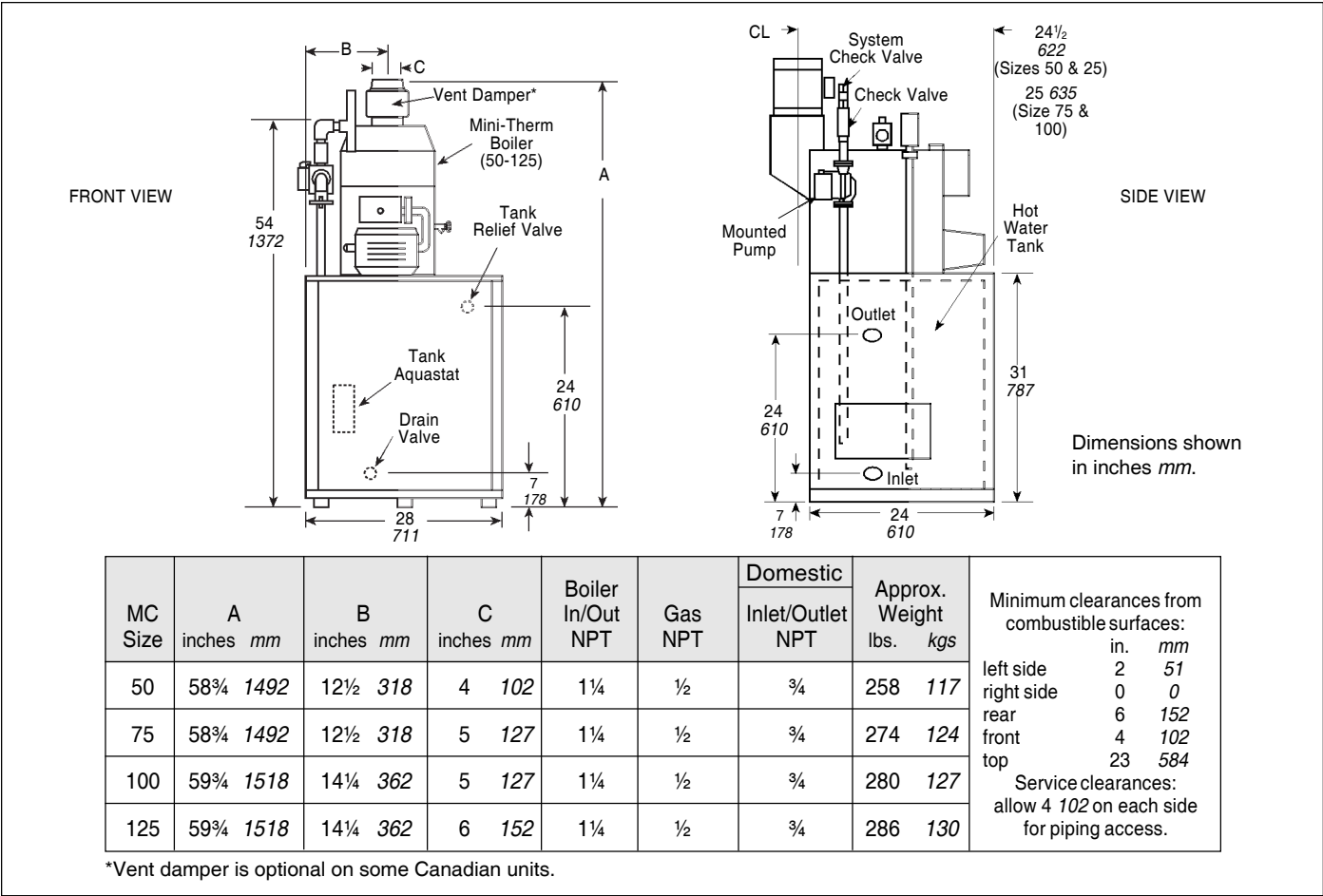


Figure 1. Dimensional Information.

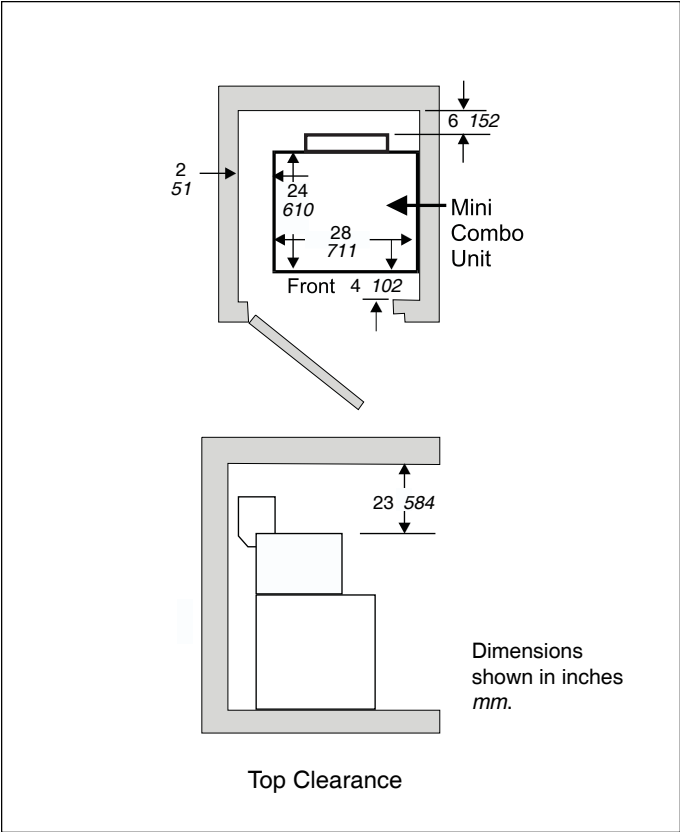


Figure 2. Closet Installation.

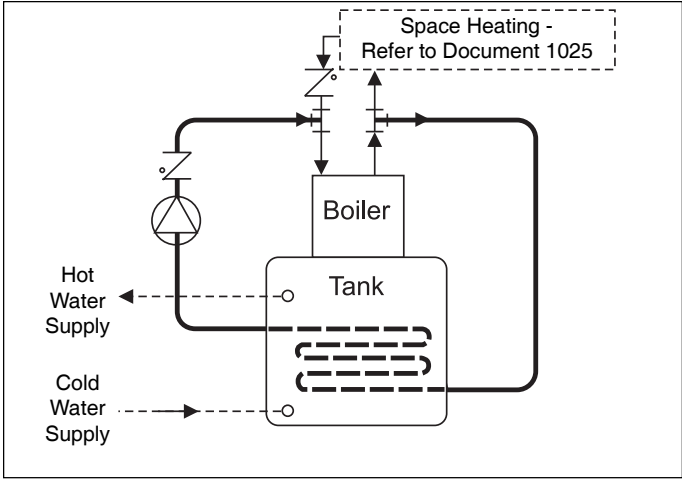


Figure 3. Piping Schematic.

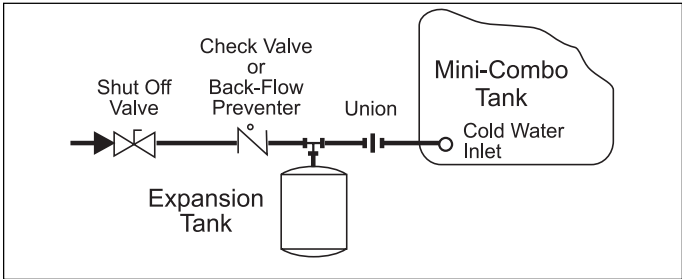


Figure 4. Typical Expansion Tank Installation.

Net Free Area - square inches sq. mm		
Model	Inside Air	Outside Air
MC50	100 645	15 97
MC75	100 645	20 129
MC100	100 645	25 161
MC125	125 807	32 207

Area indicated is for one of two openings: One at floor level and one at the ceiling, so the total free area would be double the figures indicated. Refer to Document 1025 for more information

Table 1. Minimum Recommended Air Supply.

2.3 Piping

- To Prevent damage to the unit, all soldering is to be done prior to assembling the cold and hot water, and any other connections to the tank.
- Use suitable pipe dope or tape.
- Before piping the boiler to the heating system, be sure to install the system check valve (provided with the unit) onto the inlet (return) tee of the boiler with arrow pointed downward (see Figure 3).
- If anti-freeze is used in boiler system, local codes may require a backflow preventer on cold supply line. Use anti-freeze specifically intended for hydronic heating system. Inhibited propylene glycol is recommended.

WARNING

Do not use automotive or ethylene glycol anti-freeze, or any undiluted anti-freeze. This can cause severe personal injury, death or substantial property damage.

AVERTISSEMENT

N'utilisez pas d'antigel de moteur ou à base d'éthylène glycol ou toute sorte d'antigel dilué. Il peut en résulter des blessures personnelles, la mort ou des dégâts matériels substantiels.

If a backflow preventer, pressure reducing valve or check valve is in cold water supply, install an expansion tank on cold water supply line (Figure 4) to prevent normal thermal expansion from repeatedly forcing open the Temperature and Pressure (T&P) relief valve.

T&P relief valves discharge piping must be directed so that hot water flows away from all persons. Attach run-off tube to T&P valve and run tube within 6" (152mm) from floor. No reducing couplings, valves, or any other type of restriction is to be installed in this line. This run-off tube must be installed to allow free and complete drainage of both valve and run-off tube.

Filling Storage Water Tank

- Open hot water faucet in house to allow air in the tank and in piping to escape.

- Open shut-off valve(s) in cold water supply line.
- Open shut-off valve(s) in hot water supply line.
- When water discharges from the faucet, close it. Check for system leaks and repair if necessary.

Filling and connecting boiler pipes:

Consult the JV boiler manual, Document 1025.

CAUTION

Never use water heater/boiler unless it is completely filled with water.

ATTENTION

N'utilisez jamais le chauffe-eau/chaudière s'il n'est pas complètement rempli d'eau.

2.4 Wiring

Priority System: Under this wiring the storage tank will be supplied before space heating. This will insure that it gets adequate hot water flow from the boiler to maintain a fully rated delivery of domestic hot water.

CAUTION

In this priority mode, any demand for space heating is postponed until the storage water tank has reached set temperature. This delay in supplying the space heating zones is usually not noticed by the inhabitants of the living spaces. However, in the event of certain storage water tank malfunctions, space heating could be delayed indefinitely. If undetected and uncorrected, freezing damage to piping could result.

ATTENTION

Dans ce mode de priorité, toute demande de chauffage est retardée jusqu'à ce que le réservoir à eau ait atteint la température pré-réglée. Ce retard n'est normalement pas ressenti par les habitants des zones habitables. Cependant, dans le cas d'un mauvais fonctionnement du réservoir d'eau, le chauffage pourrait être retardé indéfiniment. Si ce problème n'est pas détecté et corrigé, la tuyauterie pourrait geler.

WARNING

Electrical shock can cause severe personal injury or death. Disconnect power supply to the boiler before doing any electrical work.

AVERTISSEMENT

Les chocs électriques peuvent causer des blessures corporelles graves voire la mort. Débranchez la chaudière avant de commencer les travaux d'électricité.

Electrical Connection: (See Figure 5, 6 and 7)

1. Remove the two screws attaching the front cover of the control box.
2. There are five wires coiled in the area on the right side of the control box, supplied with wire nuts: 2 black wires twisted together, 2 white wires twisted together, and a brown wire.
3. Follow Figures 5, 6 and 7. Remove the wire nut from the two black wires, and connect the hot lead from a 115 volt power supply to both wires. Secure the three wires with the wire nut.
4. The two white, neutral wires should be joined to the other neutral lead coming from the 115 volt power supply, and the neutral lead coming from the pump (space heating).
5. The brown wire attaches to the hot side of the space heating pump.
6. There is a molex connector located on the left side of the control panel. Connect the vent damper harness to the molex connector and the other end to the vent damper receptacle.

NOTE: The connection in step 6 should remain intact at all times, otherwise the boiler will not fire.

Some Canadian units are supplied with vent damper jumper plug. Do not remove jumper unless vent damper is to be installed.

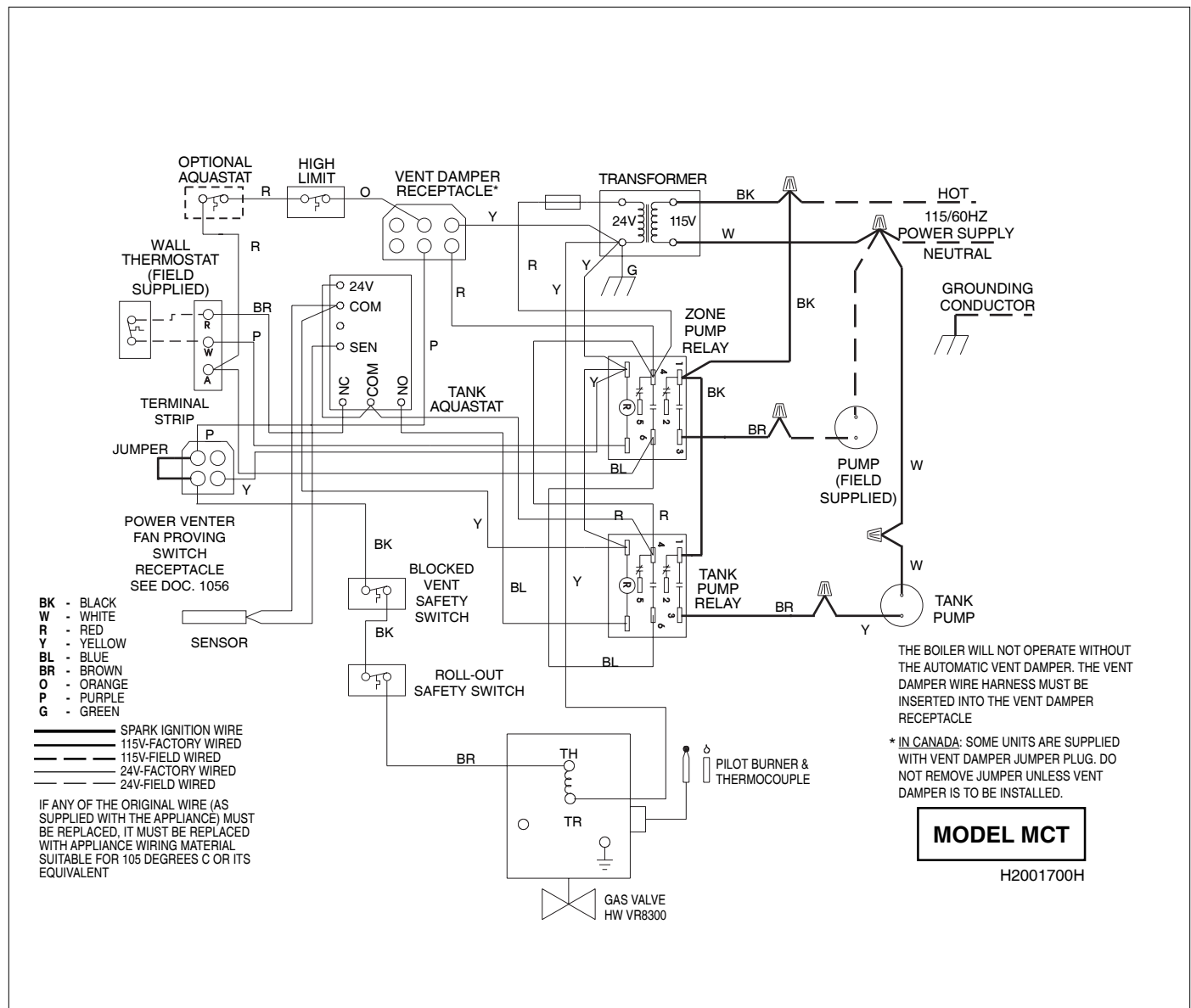


Figure 5. Wiring Diagram, Model MCT.

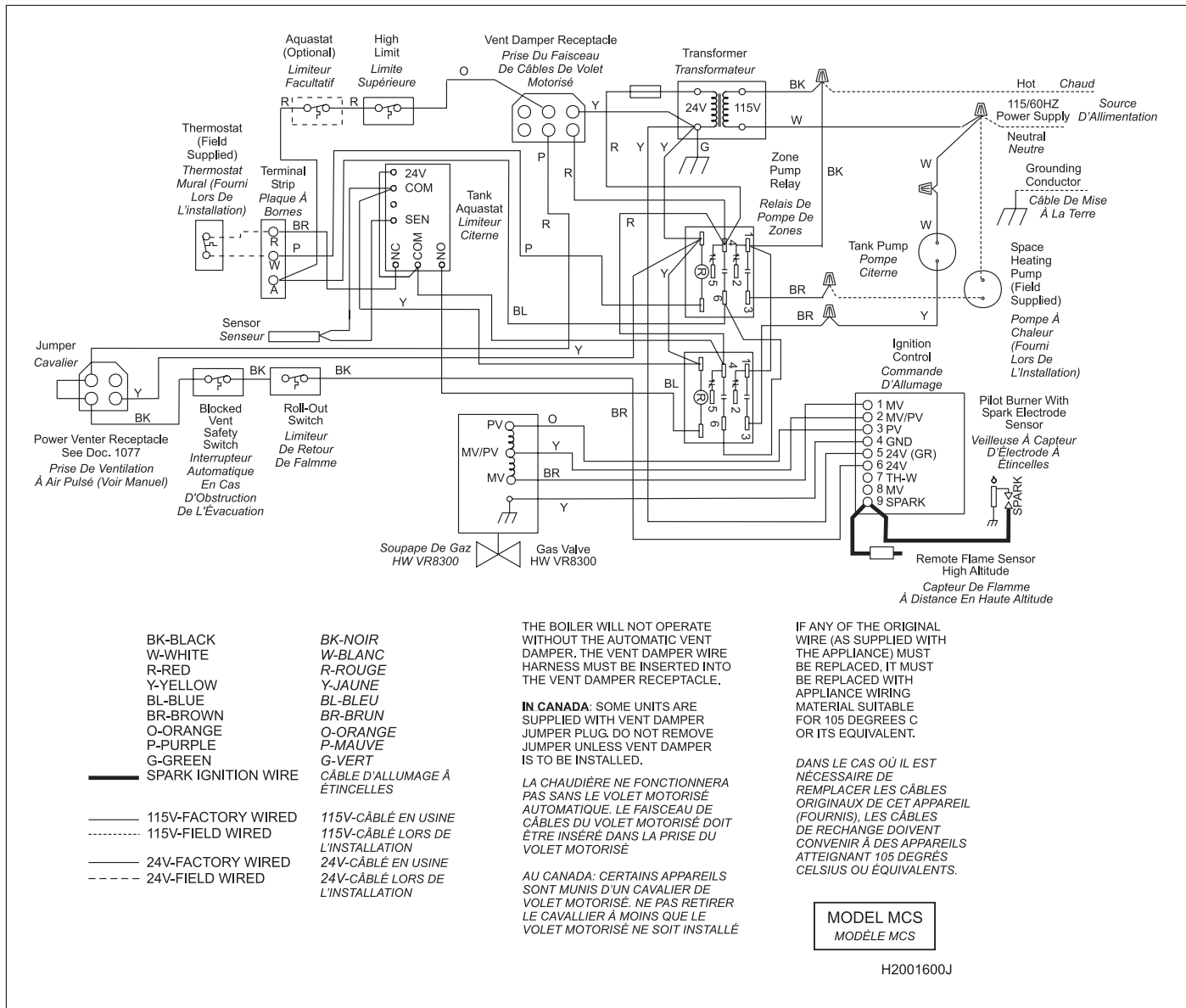


Figure 6. Wiring Diagram, Model MCS, Sizes 50-75.

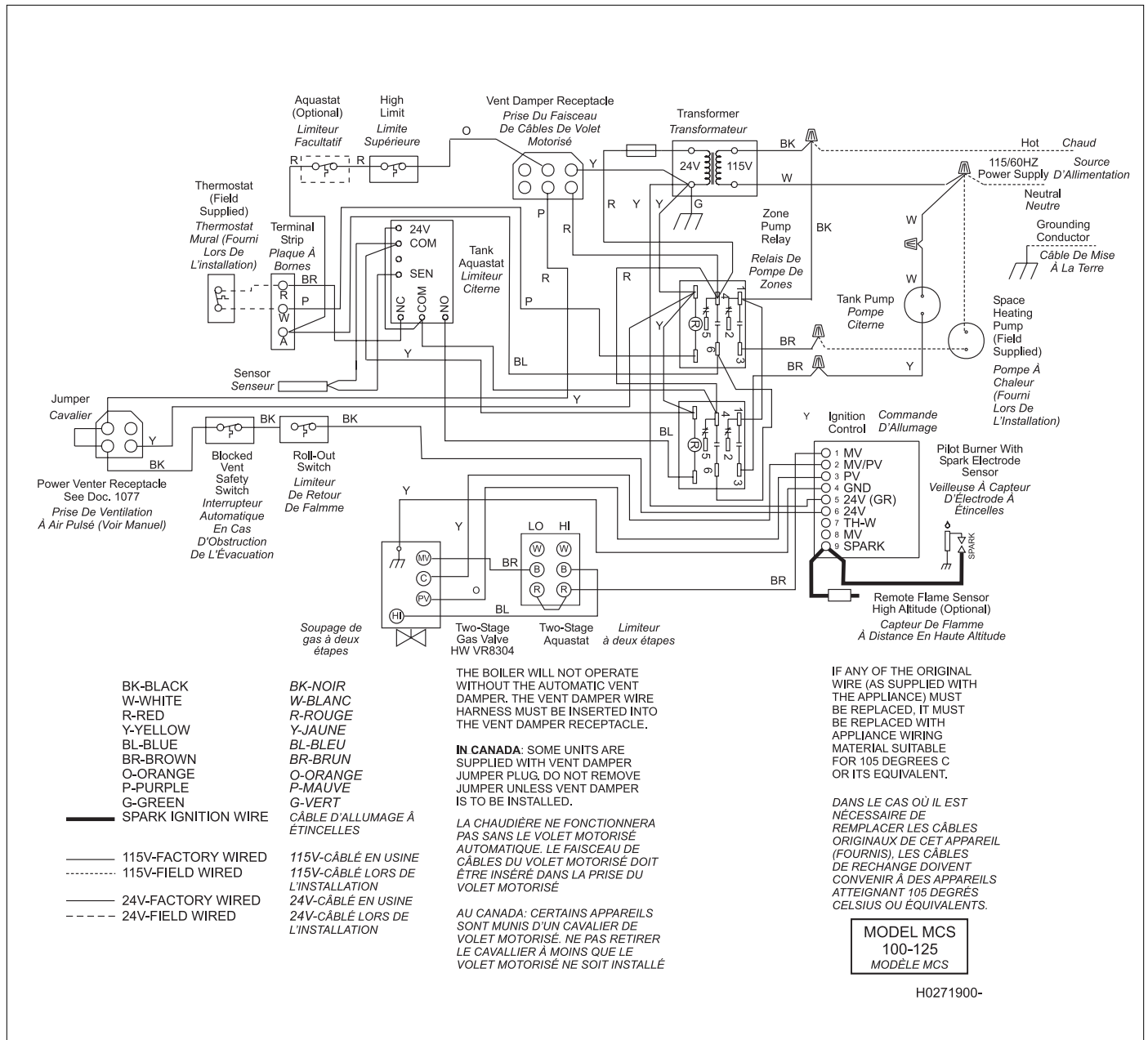
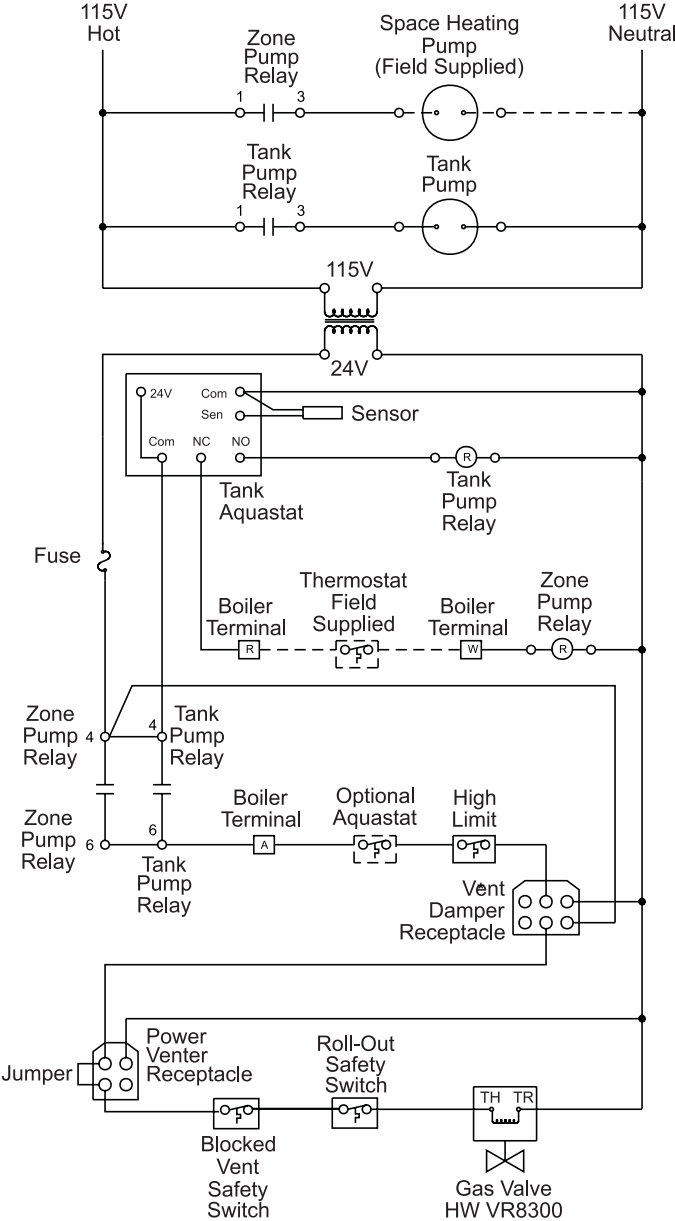


Figure 7. Wiring Diagram, Model MCS, Sizes 100-125.



*Some Canadian units are supplied with vent damper jumper plug. Do not remove jumper unless vent damper is to be installed.

Figure 8. MCT Schematic.

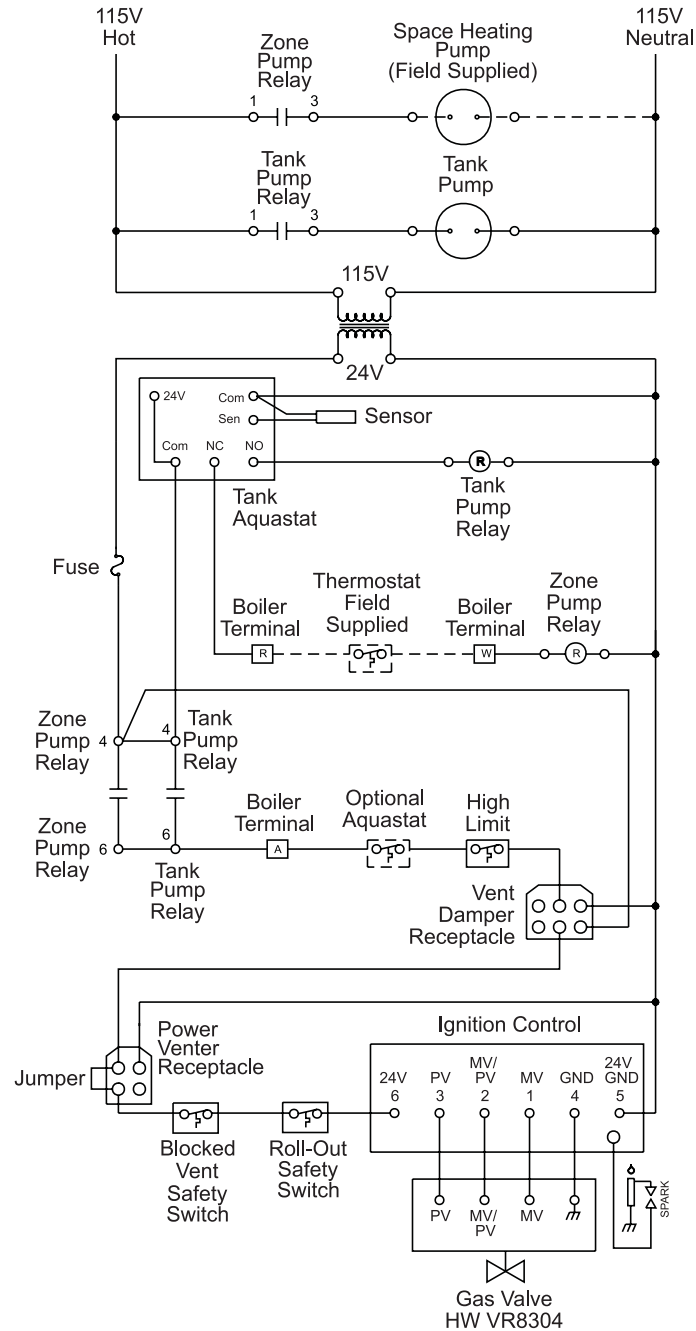
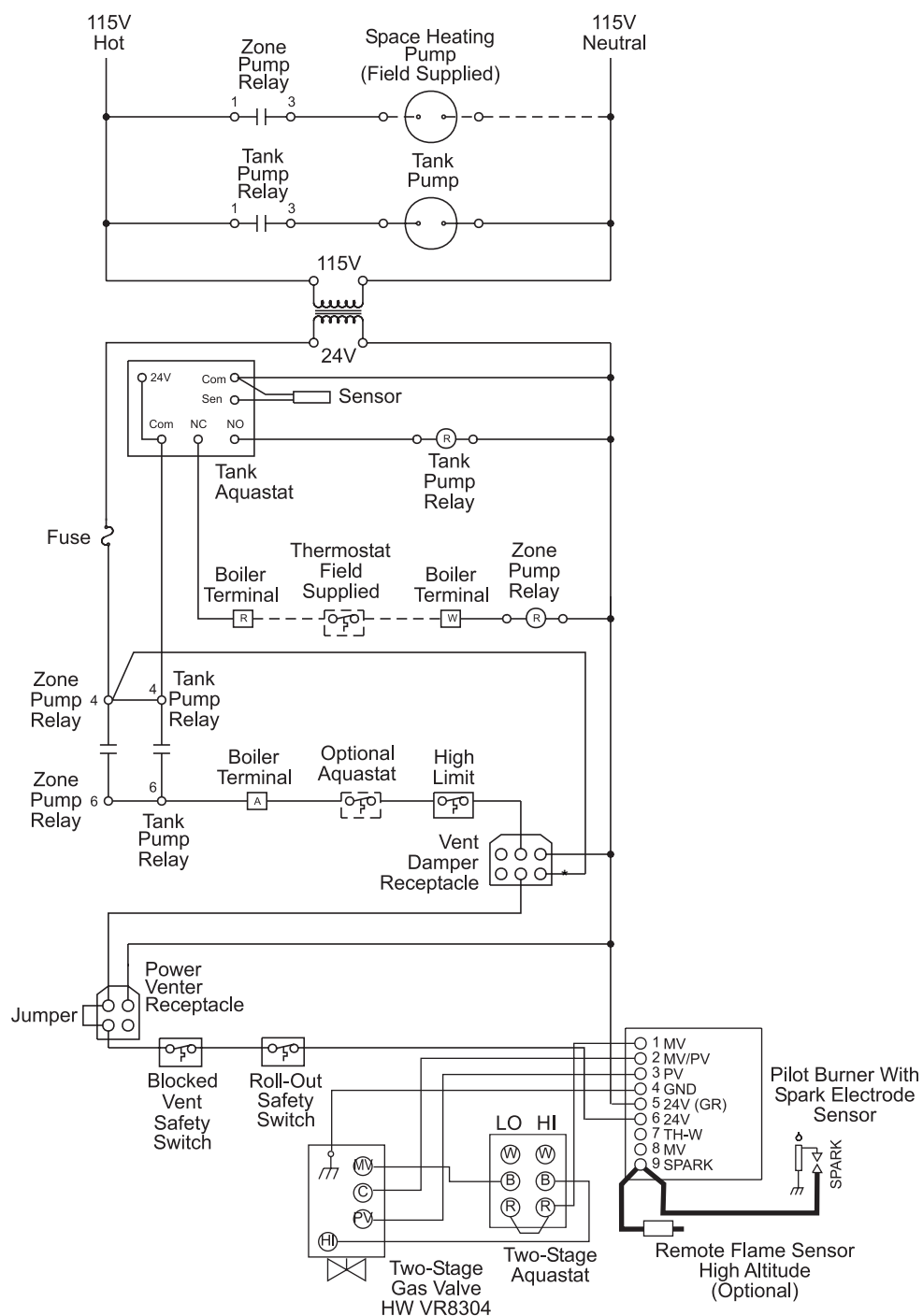


Figure 9. MCS Schematic, Sizes 50-75.



*Some Canadian units are supplied with vent damper jumper plug. Do not remove jumper unless vent damper is to be installed.

Figure 10. MCS Schematic, Sizes 100-125.

2.5 Sequence of Operation

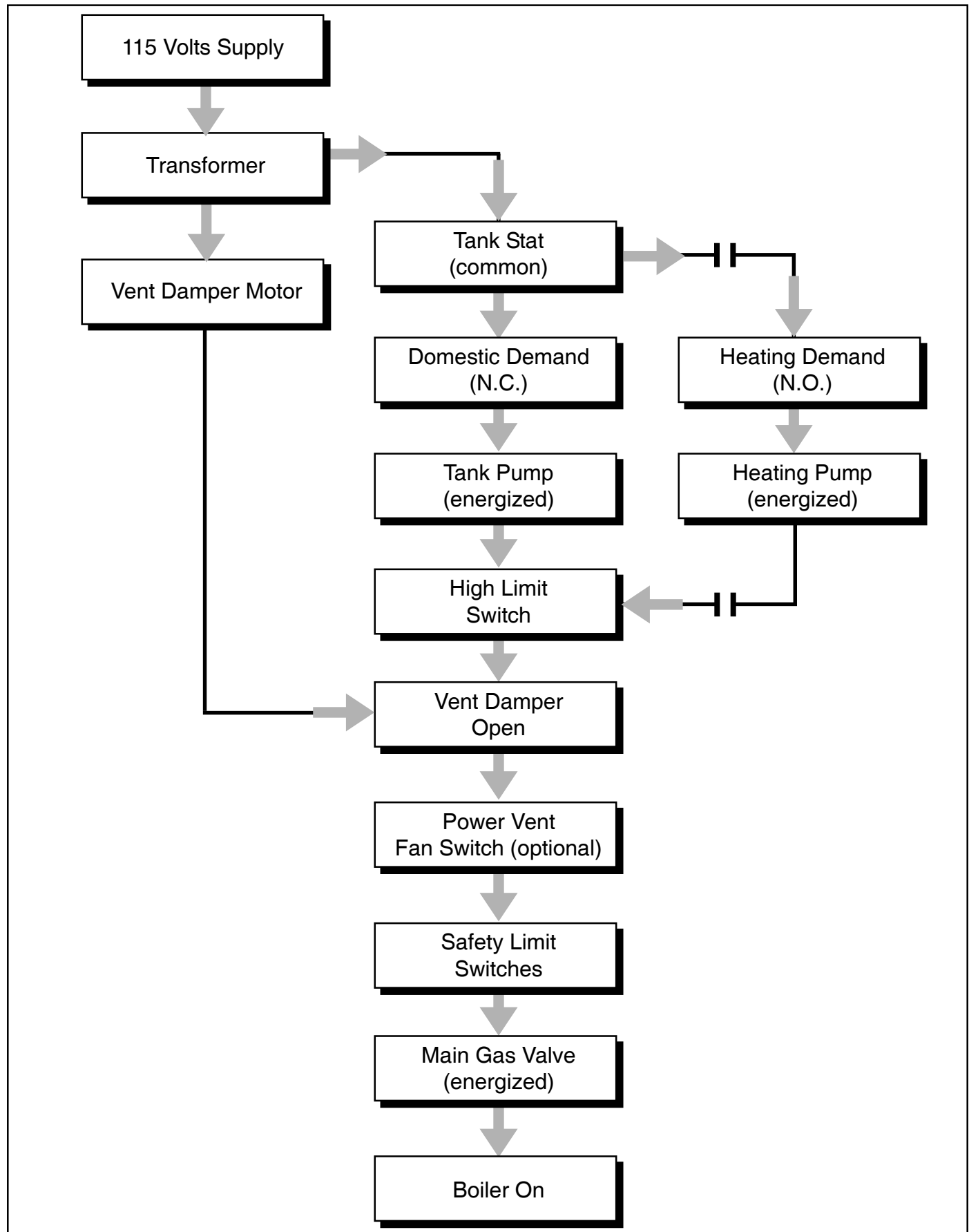
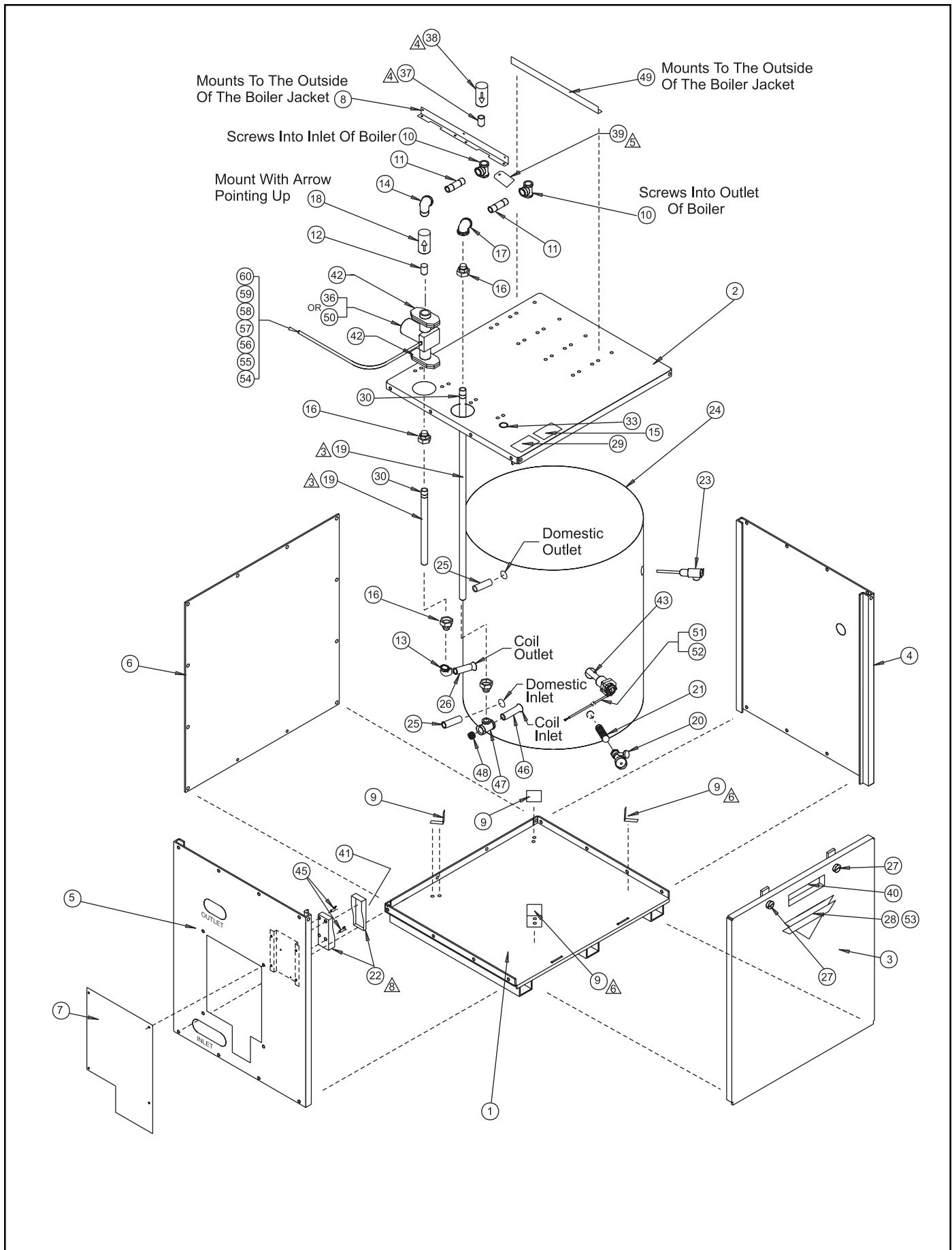


Figure 11. Sequence of Operation.

**Figure 12. Parts Identification.**

SECTION 3.

Replacement Parts

3.1 Ordering Information

To order or purchase parts for the Laars products, contact your nearest Laars dealer or distributor. If they cannot supply you with what you need, contact Laars Customer Service at the address shown on the back cover of this manual.

Visit our website at www.laars.com for Service Center listings

3.2 Parts List

#	Qty	Part #	Description	#	Qty	Part #	Description
1	1	20085700	Weldment, Panel, Base	30	2	H0090700	Label, Hot
2	1	20085600	Weldment, Panel, Top	31		not shown	part not sold
3	1	20086300	Weldment, Panel, Door	32	56	F0024300	Screw, 10-16 x 5/8" LG
4	1	20086400	Panel, Side, Right	33	1	S0064900	Bushing, Nylon, Univ, 7/8" Dia.
5	1	20127900	Weldment, Panel, Side, Left	36	1	A0066500	Pump, circulator, 1/25 HP
6	1	20085900	Panel, Rear	37	1	P0017100	Nipple, Close, Blk, 1 1/4" NPT
7	1	20086500	Panel, Access	38	1	A2086600	Valve, Check, 1 1/4" NPT
8	1	20084000	Bracket, Mounting, Left	39	1	H2017100	Tag, Important, Check Valve
9	4	20085400	Bracket, Support, Tank	40	1	A2087600	Handle, Door
10	2	P2015400	Tee, Blk, 1 1/4" x 1 1/4" x 3/4" NPT	41	1	H2017800	Label, Caution, Setting, Temp
11	2	P0014400	Nipple, Black, 3/4" NPT x 2.5" LG	42	2	A2086700	Flange, Pump, 3/4" NPT
12	1	P0014100	Nipple, Close, 3/4" NPT	43	1		Vendor Supplied Well, Immersion, 3/4" NPT
13	1	P2016900	Elbow, Blk, 90°, 3/4" x 1" NPT	45	2	F0035900	Screw, #6-32 x 5/8" LG,
14	1	P0009300	Elbow, Street, Blk, 3/4" NPT				Phillips, Rnd Hd
15	1	H2078100	Label, Attention, Toxicity	46	1		Vendor Supplied Nipple, Brass 1" NPT x 2" Long
16	4	P2014800	Fitting, Compress, 7/8" OD x 3/4" NPT	47	1	P0095000	Tee, 1" x 1" x 3/4", Black Iron
17	1	P0008300	Elbow, Blk, 90°, 3/4" NPT	48	1	P0071400	Plug, 1" Stainless Steel w/Vibro Seal
18	1	A2085600	Valve, Check, 3/4" NPT	49	1	20084001	Bracket, Mounting, Right
19	6 ft.	P2015000	Tubing, Copper, Type "L" 7/8" OD	50	1	A2001500	Pump, Taco, 220V
20	1	A2085700	Valve, Drain, Tank, 3/4" NPT	51	1	E2103100	Sensor, Temperature
21	1	P0025300	Nipple, Brass, 3/4" NPT x 2" LG	52	1	Q0068400	Tubing, Aluminum, 5"
22	1	E0205000	Temperature Control, Electronic	53	2	F0035600	Nut, Speed, Push On
23	1	A2085400	Valve, Relief, Temp & Pressure	54	4 1/4 ft	E0020900	Conduit, Flex, 3/8"
24	1	A2085300	30 Gal Water Tank, Single Wall HX	55	2	E0008300	Nut, Conduit, Lock
	1	A2085301	30 Gal Water Tank, Double Wall HX	56	2	E0008100	Conduit Connector, 3/8"
25	2		Field Supplied Nipple, Brass 3/4" NPT x 4" LG	57	5	E0007700	Wire Nut, 2 #4 Wires
26	1		Field Supplied Nipple, Brass 1" NPT x 3" LG	58	4 1/2 ft	E0052500	Wire, #18 AWG 3/64", Yellow
27	2	20087300	Door Latch Assembly	59	4 1/2 ft	E0051900	Wire, #18 AWG 3/64", White
28	1	H2020600	Logo, Mini-Como II	60	2	E0036100	Bushing
29	1	H2016800	Label, Warning, Installation	61	1	E0088400	Relay
				62	1	E0097700	Relay, Case and Cover

