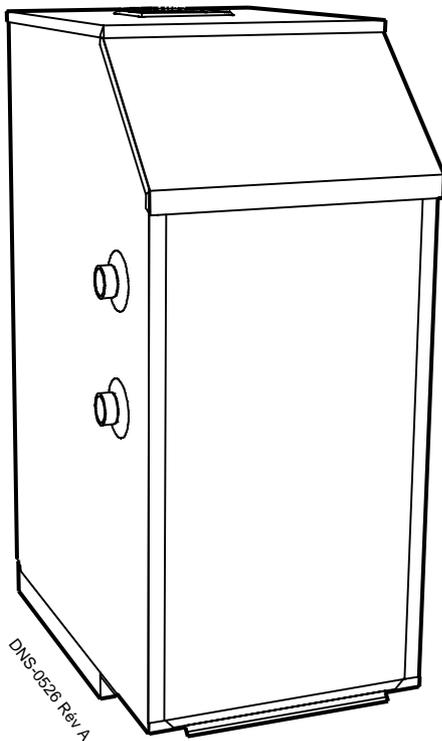


Installation Instructions and Homeowner's Manual



INDIRECT OIL FIRED SWIMMING POOL HEATER

Save these instructions for future reference

Model:

HMP-03

Manufactured by:

UTC Canada Corporation
ICP Division
3400, Industrial Boulevard
Sherbrooke, Quebec
J1L 1V8

**Caution : Do not tamper with
the unit or its controls.
Call a qualified service
technician.**

PART 1 INSTALLATION

1.1) DANGER, WARNING AND CAUTION

The signal words DANGER, WARNING and CAUTION are used to identify levels of hazard seriousness. It is important that you understand their meaning. You will find those words on the manual as followed :



DANGER

Immediate hazards which **WILL** result in death or serious damage to body and/or property.



WARNING

Hazards or unsafe practices which **CAN** result in death or damage to body and/or property.

CAUTION

Hazards or unsafe practices which **CAN** result in damage to body and/or property.

A QUALIFIED TECHNICIAN MUST INSTALL THE INDIRECT OIL - FIRED SWIMMING POOL HEATER.

IMPORTANT NOTICE

With the HMP-03 pool heater, ICP (Canada) is redefining the pool heater concept by introducing a simple and extra powerful unit. This extra power comes from the uniquely designed heat exchanger, coupled with a high efficiency oil burner. The pool water will rapidly reach its desired temperature under any climatic conditions. The HMP-03 need not be in operation if the pool is not used. We suggest that the heater be used based on need only, in order to avoid unnecessary expenses.

To fully enjoy the power of your appliance, use it only when required.

CAUTION

THE WARRANTY IS VOIDED IF CHEMICAL LEVELS ARE NOT MAINTAINED WITHIN THE ACCEPTABLE LIMITS :

CHLORINE : 3.0 ppm MAX	PH : 7.2 à 7.5
HARDNESS : 300 ppm MAX	TOTAL ALKALINITY : 80 à 120 ppm

TOO ELEVATED A HARDNESS LEVEL IN THE PRESENCE OF HIGH ALKALINITY CAN CAUSE SCALE TO FORM ON POOL WALLS AND IN THE POOL HEATER. IF THE HARDNESS LEVEL REACHES 300 ppm THE POOL SHOULD BE DRAINED AND REFILLED WITH SOFT WATER UNTIL AN ACCEPTABLE HARDNESS LEVEL IS REACHED. THE CALCIUM DOES NOT EVAPORATE AND, THEREFORE, BUILDS UP WITH EACH OF FILL-UP OF THE POOL.

1.2) DELIVERY

Check the SWIMMING POOL HEATER carefully upon delivery for any evidence of damage that may have occurred during shipping and handling. Any claims for damages or lost parts must be made with the transport company.

1.3) INSTALLATION

The unit must be installed according to regulations set out by competent authorities. Refer to the CSA B139 Installation Code and the CSA C22.10 Canadian Electrical Code.

This swimming pool heater can be installed any of the following ways:

- a) outside;
- b) inside, vented through a chimney.

1.3.1) Outside installation

1.3.2) Location

The swimming pool heater should be located where water will not accumulate at any time of the year. It should be installed on a solid, stable and level concrete base having the following minimum dimensions: 0.6 m x 0.8 m x 50.8 mm (24" x 32" x 2") thick. The consequences of the heater going off level due to frost heaving must be addressed. The installer is responsible for taking appropriate steps to prevent water from accumulating at the appliance location, at any time of the year, by means of adequate drainage and/or heightened ground level at its base location and/or any other required precaution.

1.3.3) Clearances

The following are minimum clearances and should be respected:

- a) The vent hood of the swimming pool heater shall be no less than 1.8 m (6') from any :
 - air supply inlet of any building;
 - door;
 - window;
 - gas regulator;
 - property line.
- b) The vent hood of the swimming pool heater shall be no less than 0.9 m (3') from an oil tank vent or fill inlet;
- c) The vent hood of the swimming pool heater shall not terminate underneath a veranda, porch, deck or any combustible material.

Clearances from the exterior heater cabinet	
Left side and front:	0.6 m (24")
Right side and back	228.6 mm (9")
Floor	non-combustible
From nearest swimming pool wall	3.0 m (10')
Flue pipe	228.6 mm (9")

1.3.4) Installation of the Outdoor Diffuser Kit

The HMP-03 swimming pool heater must be installed with the Outdoor Diffuser Kit model "GDK", manufactured by ICP (Canada), according to the following instructions (also see Figure 2, p.10) :

1. Remove the top flue pipe cover (part F) and the top casing panel (part G);
2. Insert the 6 inch diameter exhaust pipe in the smoke box collar, align the pre-drilled holes of the exhaust pipe with the flue collar and secure with the four screws supplied in the kit (part B);
3. Re-install the top casing panel (part G);
4. Slide the outside liner (part C) over the exhaust pipe (part A) and make sure it is well seated all around and outside the top cover collar (part G);
5. Install the diffuser (part D) on the outside liner with the eight legs on the inside and align its top hole with the exhaust pipe top disk hole;
6. With the screw supplied in the kit (part E) complete the assembly of the kit.

1.4) Inside installation vented through a chimney

1.4.1) Location

The swimming pool heater must be installed in a clean area, as close as possible to the chimney.

CAUTION

Chemical products such as chlorine, bromine or any other volatile and corrosive chemical products must be stored in an area removed from the pool heater, since they can result in the oxidization of the heat exchanger, causing the warranty to become null and void.

1.5) WIRING AND REGULATORS

The installer must wire the swimming pool heater according to the appropriate electrical diagram. All wiring must be done in accordance with the CSA C22.10 standard, particularly Section #68.

CAUTION

If there is no fence or wall separating the heater from the pool, a Class A ground fault current interrupter must be installed on the power supply circuit.

1.5.1) Inside or outside installation with chimney venting

All controls, safety devices and the oil burner on the swimming pool heater are factory wired and checked. An power supply suitable for 115 volts, 60 Hertz, single phase of less than 12 Amps should be provided according to the applicable codes and regulations. For connections, follow the instruction in Figure 4 (p. 12).

1.6) OIL TANK INSTALLATION AND HOOK-UP

The oil tank must be installed in accordance with local codes and regulations and CSA Code B139. The burner can be hooked up with a one-pipe or a two pipes system. We recommend using a two pipes system when the burner level is higher than the bottom of the oil storage tank. The burner is set-up at the factory for a one-pipe system. Refer to the oil pump manufacturer instructions for a two pipe system.

Oil supply hookup must include a certified oil tank, vent, gage, fill whistle, shut-off valve and oil filter with a 10 micron removal capacity. Make sure the piping has no leaks or blockages. Never use compression fittings. Use the same diameter piping for both the suction and the return lines and set them at the same depth in the oil tank when using a two pipe system. Additional information is found in the burner and oil pump installation brochure that comes with the swimming pool heater oil burner.

At the beginning of each heating season or once annually, check the complete oil distribution system for leaks.

1.7) VENTING

The chimney draft must be strong enough to ensure the safe and reliable operation of the unit.

1.7.1) Chimney

The recommended minimum draft is 0.02" W.C. The maximum and minimum dimensions for the vent pipe (chimney or chimney liner) are respectively 5" and 7". The connecting pipe between the pool heater and the vent pipe must be 6" in diameter. (Refer to the CSA B 139 Code)

The diameter of the connecting pipe should never exceed that of the chimney. The use of a damper in the connecting pipe is strictly prohibited. If more than one pipe is to be connected to the same chimney, the sectional area of the chimney must be equal to the total of the individual sectional areas. The use of a 6" diameter draft control is compulsory with the swimming pool heater when connected to a chimney. Failure to comply with this condition constitutes grounds for voiding the warranty.

1.7.2) Outdoor diffuser kit model GDK

With the outdoor-diffuser kit no draft regulator is needed and the maximum over fire draft should be +0.045" W.C. after 5 minutes of operation.

1.8) BURNER INFORMATION

The oil burner of the swimming pool heater is factory installed and wired. The nozzle is also installed but the technician must do the final air adjustment. The burner is factory set up for a one-pipe system. Refer to section 1.6 for a two pipes system.

1.9) COMBUSTION AIR SUPPLY

Any oil-fired unit, if it is to operate properly, must have an adequate, functional air supply. If the swimming pool heater is installed in an enclosed area, two permanent air supply openings must be provided. One should be located near the ceiling, the other near the floor. Each of these openings should allow 1 square inch per 1000 BTU/h of output.

1.10) PIPING

The "HMP-03" swimming pool heater is designed so that its total flow restriction is not more than the equivalent of 10 feet of 1½" pipe. The total water flow from the swimming pool pump and filter system will pass easily into the pool heater. A bypass with a balancing valve is not needed. You must use a 1½" plastic pipe suitable for 60°C (140°F) between the swimming pool heater outlet and the pool water inlet. The water inlet and outlet connections of the heater are suitable for 1½" NPT male fittings. Refer to figure 3 (p. 11) to locate the inlet and outlet connections on the pool heater and the position of other equipment. An automatic chemical product distributor must be located between the pool heater water outlet and the pool.

We recommend the installation of a full flow valve on the inlet and outlet water piping for maintenance. Those valves are needed if the water heater is below the top of the swimming pool water level. All piping, fitting and accessories used in the installation should be corrosion protected. We recommend using two stainless steel hose clamps on each joint.

TABLE 1
Burner characteristics

Model	Input (BTU/h)	Output (BTU/h)	Input (USGPH)	Beckett Burner	Nozzle	Pressure (PSI)
HMP-03	198,000	168,000	1.42	AFG-MD-V1	1.20-60°B	140

PART 2

MAINTENANCE AND OPERATION

We recommend that a qualified technician start-up and service the swimming pool heater. Ensure that the heater and the system are always full of water and air has been bled using the air vent before starting the burner.

2.1) FUEL

Use only #2 fuel oil. Never attempt to use a heavier fuel oil, gasoline, motor oil or any other fuel for this pool heater.

2.2) START-UP

The oil burner of the HMP-03 swimming pool heater is factory assembled (including nozzle) and wired. The pump pressure is factory adjusted to 140 psi, the air adjustment is set at 2 for the coarse air band and 8 for the fine air adjustment. The nozzle assembly is permanently set at 0. The start-up must be performed in accordance with the following steps (See figure 1, p. 8) :

1. Make sure that the tank contains fuel oil and that the fuel valve is open;
2. **Make sure that the pool water-circulating pump is ON and the water circulates through the pool heater.** Turn the pool heater electric power supply switch on;
3. Remove the front access door and adjust the pool thermostat (C) to its minimum setting. Select the ON position of the operating switch (D) located below the pool thermostat (C). If the pool heater is filled with water, the low water cut-off (F) green light (E) should be ON. If the low water cut-off red light (F) is ON it means that the swimming pool heater is not properly air bled. On the initial start-up allow 15 to 20 minutes to fill the pool heater. We recommend opening the swimming pool heater air bleeder (A) (white handle located outside the right side panel) by turning one turn counterclockwise until water comes out and turn clockwise until the water flow stops. **DO NOT OVER-TIGHTEN THE HANDLE OF THE AIR BLEEDER;**
4. Start the burner by setting the pool thermostat (C) located on the top right portion of control compartment of the heater above the pool water temperature. Air must be completely bled from oil lines through the bleed port on the oil pump. If there is no ignition and the red button of the combustion relay comes up, see section 2.3 below;
5. (INSIDE INSTALLATION ONLY). Adjust the chimney draft as specified in section 1.7 (p. 5). Take this reading midway between the draft-regulator and the flue outlet of the swimming pool heater;
6. Do a smoke test and a take a CO₂ reading after a minimum of 5 minutes of operation. The smoke test reading must be 0 and the CO₂ reading must be between a minimum of 10.0% and a maximum of 12.5%. If not, use the fine air adjustment to adjust combustion air to reach the specified smoke and CO₂ reading. **DO NOT OPERATE THE SWIMMING POOL HEATER WITH A SMOKE READING HIGHER THAN 0.**

2.3) RESTARTING AFTER IGNITION FAILURE

1. Check the fuel level in the tank;
2. Make sure the fuel valve is open;
3. Make sure the oil filter is not clogged (check the vacuum reading and make sure it is less than 6 in. hg for a one-pipe system and 12 in. hg for a two pipes system);

4. Check the electrical supply circuits (breakers);
5. Check the burner electrode adjustments (refer to the burner instruction manual);
6. Check if the pool thermostat is calling for heat;
7. Check if the low water cut-off green light is on;
8. Check for air in the oil pump suction line.

If after following these procedures and pressing the red burner reset button on the combustion relay (L), the burner (N) still does not light, call a qualified service technician. Never attempt to restart the burner if there is excess fuel oil or oil vapour in the combustion chamber.

2.4) OPERATION

The HMP-03 swimming pool heater is an indirect-fired appliance. The primary water circuit in contact with the combustion product is a pressurized closed system same as a domestic oil fired boiler with a feed water regulator and check valve, (J), expansion tank (V), operational and high limit temperature control (S), safety pressure relief valve (U), low water cut-off (G), drain valve (O), air vent (A) and thermomanometer (W). The water supply is effected by the pool water-circulating pump and limited to 15 PSI by the pressure regulator.

The secondary water circuit is a copper integrated finned tube coil, in which the pool water will circulate to be heated by the hot water of the primary circuit. It is equipped with a pool thermostat (C) to adjust the desired pool temperature with the knob located behind the front access panel. The maximum temperature setting is 40°C (105°F). The sensor of this controller is located at the inlet side of the heater to read the water temperature. This control allows for a differential of -16°C (3°F) on a continuous operating basis. A temperature safety device (B) on the HMP-03 will limit the outlet temperature to a maximum of 54°C (130°F). A difference between the temperature setting of the pool thermostat and the reading of a submerged pool thermometer is possible for the following reasons :

- a. If the unit does not operate on a continuous basis one must wait a period of time until it reaches the desired temperature;
- b. The location of the submerged pool thermometer is not representative of the temperature at the inlet of the circulating pump;
- c. The submerged thermometer is defective or it may not be properly calibrated;
- d. The submerged thermometer is too close to the heated water inlet.

The swimming pool heater can be stopped and started with the ON-OFF switch (D) located behind the front access door. A safety device built into the HMP-03 (a low water cut-off (G)) will avoid operation of the oil burner if the pool heater is not full of water. **The pool heater should be shut off 5 minutes in advance of draining, backwashing or turning off the pool water circulating pump.**

CAUTION

If the pool pump is equipped with an adjustable timer, remember that the pool heater must be turned off before the water circulating pump.

WARNING

At 60°C (140°F) hot water can produce third degree burns in 6 seconds; at 54°C (130°F) in 30 seconds. Maximum thermostat setting is 41°C (106°F).

2.4.1) Precautions against freeze-ups

To avoid damage to the swimming pool heater, pump, filter, piping and other accessories, make sure that the circulating pump is "ON" and that there is adequate circulation of water through all these components to prevent freeze-up when the outside temperature is below 0°C (32°F). If the swimming pool heater is to be turned off at temperatures below the freezing point, the water piping at the inlet and outlet of the swimming pool heater must be disconnected. Also, it must be drained by opening the drain valve at the bottom as well as the air vent, to allow the introduction of air into the primary circuit of your pool heater. Then, the feed water line must be bled by removing the 1/2" NPT plug (I) located at the bottom of the T fitting located after the water feeder and regulator device.

2.5) SHUT DOWN AT THE END OF THE SWIMMING SEASON

2.5.1) Outside installation

1. Make sure that the HMP-03 ON-OFF switch (D) and the circulating pump switch are OFF;
2. Make sure that power supply switch is OFF;
3. Disconnect the water inlet and outlet of the HMP-03 swimming pool heater;
4. Open the drain valve (O) located on the bottom of the HMP-03 unit and drain it completely;
5. Removed the 1/2" plug (I) from the T fitting located on the right end side of the water feeder & regulator device (J);
6. Leave the drain valve open during all shut down periods.

2.5.2) Inside installation

3. For inside installations protected from freezing, we suggest you follow the same procedure than article 2.5.1 at the exception that you can leave it full of water for the winter shutdown period. This apply only for an installation protect against cool temperature.

→ 2.5.3) Prolonged non-use or winterization of the oil burner

When the oil burner will not be used for an extended period of time OR the appliance is not used altogether, follow this procedure:

- 1) Close the valve located at the bottom of the oil tank that feeds the burner;
- 2) Raise the thermostat to call for heat and cause the oil burner to start;
- 3) Let the burner fire until there is no longer a flame and combustion is cut by the safety (usually 30 to 45 seconds after the flame extinguishes)
- 4) Depress the red Re-start Button; the burner should start. If there is still a flame, repeat the procedure until there is no more flame.
- 5) When you have assured yourself that steps 3) and 4) are completed, shut-off the electrical power to the unit.

2.6) START-UP AT THE BEGINNING OF THE SWIMMING SEASON

Have the chimney and the connecting pipes swept (INSIDE INSTALLATION ONLY).

Have all heating surfaces cleaned if deemed necessary after a visual check. To clean the tubes of the heat exchanger, remove the smoke box and the flue baffles.

CAUTION

The HMP-03 being equipped with a sound trap, make sure not to damage the acoustical material when cleaning the boiler. The use of a flexible cleaning brush is strongly recommended.

1. To clean the combustion chamber removes the burner;
2. Replace the oil filter and nozzle;
3. Have the burner electrodes cleaned along with the burner retention head;
4. Close the drain valve (O), install the 1/2" plug (I) to the T fitting and install the inlet and outlet water pipes as showed in figure 3;
5. Make sure that oil valve is open;
6. The power supply interrupter should be "ON";
7. Start the filter pump and wait until the air is completely bled through the HMP-03 unit;
8. Select the "ON" position on the HMP-03 switch located on the front panel;
9. Refer to section 2.2 for the burner start up.

2.6.1) Regular maintenance during the heating season

2.6.2) Nozzle

3. A dirty or clogged nozzle can prevent ignition or cause odors and smoke. It must be replaced.

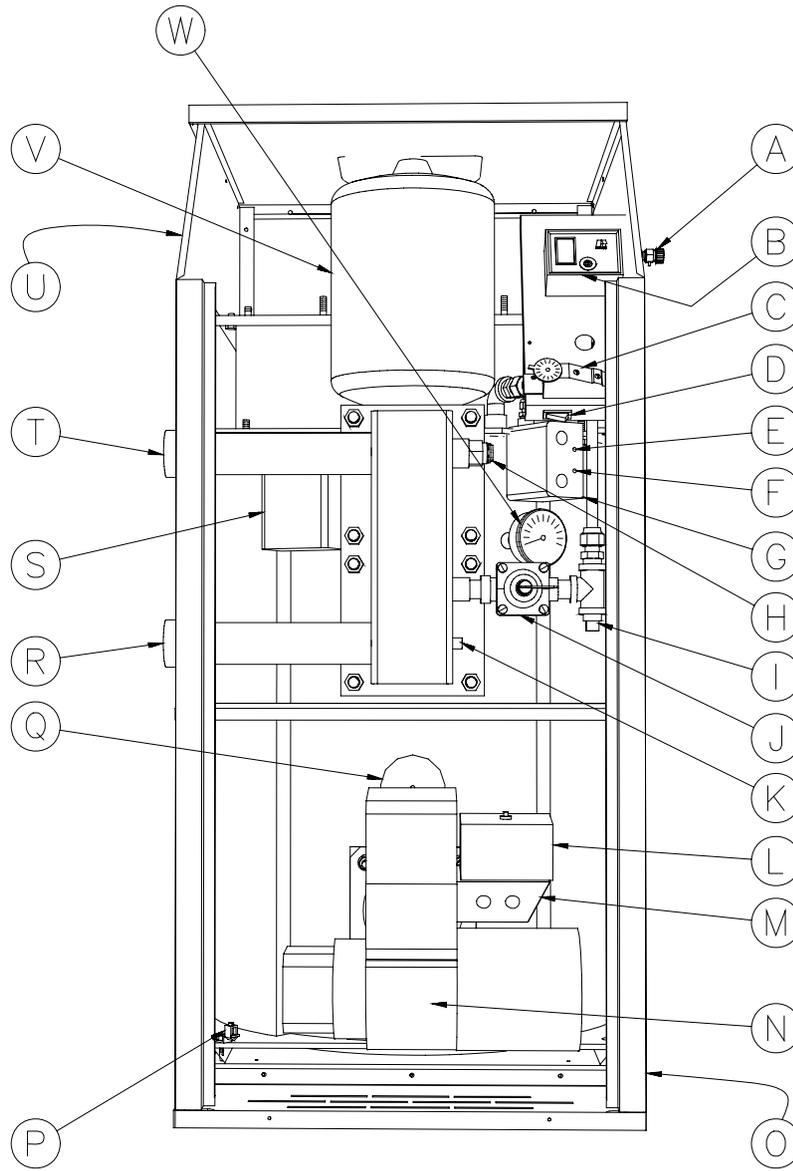
2.6.3) Fuel tank

Regularly check the level tank. Should it run dry, the lines will have to be bled before restarting the burner.

2.7) PRECAUTIONS

Never use your swimming pool heater as an incinerator. Never pile or store paper or garbage near it.

FIGURE 1



DNS-0527 Rev. B

A	Automatic air vent
B	Outlet water temperature control (setting, max. = 130° F, diff = 10° F)
C	Pool thermostat
D	ON-OFF switch
E	Green light, correct water level
F	Red light, low water level
G	Low water cut-off
H	Pool thermostat sensor location
I	1/2" NPT drain plug
J	Feed water regulator and check valve device
K	Outlet water temperature sensor location
L	Burner combustion relay

M	Junction electrical box
N	Oil burner
O	Drain valve (at the back of the appliance)
P	Ground terminal
Q	Observation door
R	Pool heater water outlet
S	Operation and Hi-limit control (HI = 180-160° F, LOW = 170-150° F)
T	Pool heater water inlet
U	Safety valve (at the back of the appliance)
V	Expansion tank
W	Thermomanometre

**PART 3
INFORMATION**

Date of installation of the HMP-03: _____ Serial number: _____
Service telephone - Day: _____ Night: _____
Dealer name and address: _____

START-UP TEST RESULTS

Nozzle: _____ Pressure: _____ lb/psi
Burner adjustments: Primary air _____
 Fine air _____
 Draw Assembly _____
CO₂: _____ % Smoke scale: _____ (Bacharach)
Gross stack temperature: _____ °F
Ambient temperature: _____ °F
Chimney draft: _____ "W.C.
Overfire draft: _____ "W.C.
Test performed by: _____

FIGURE 2
GDK-24 Installation

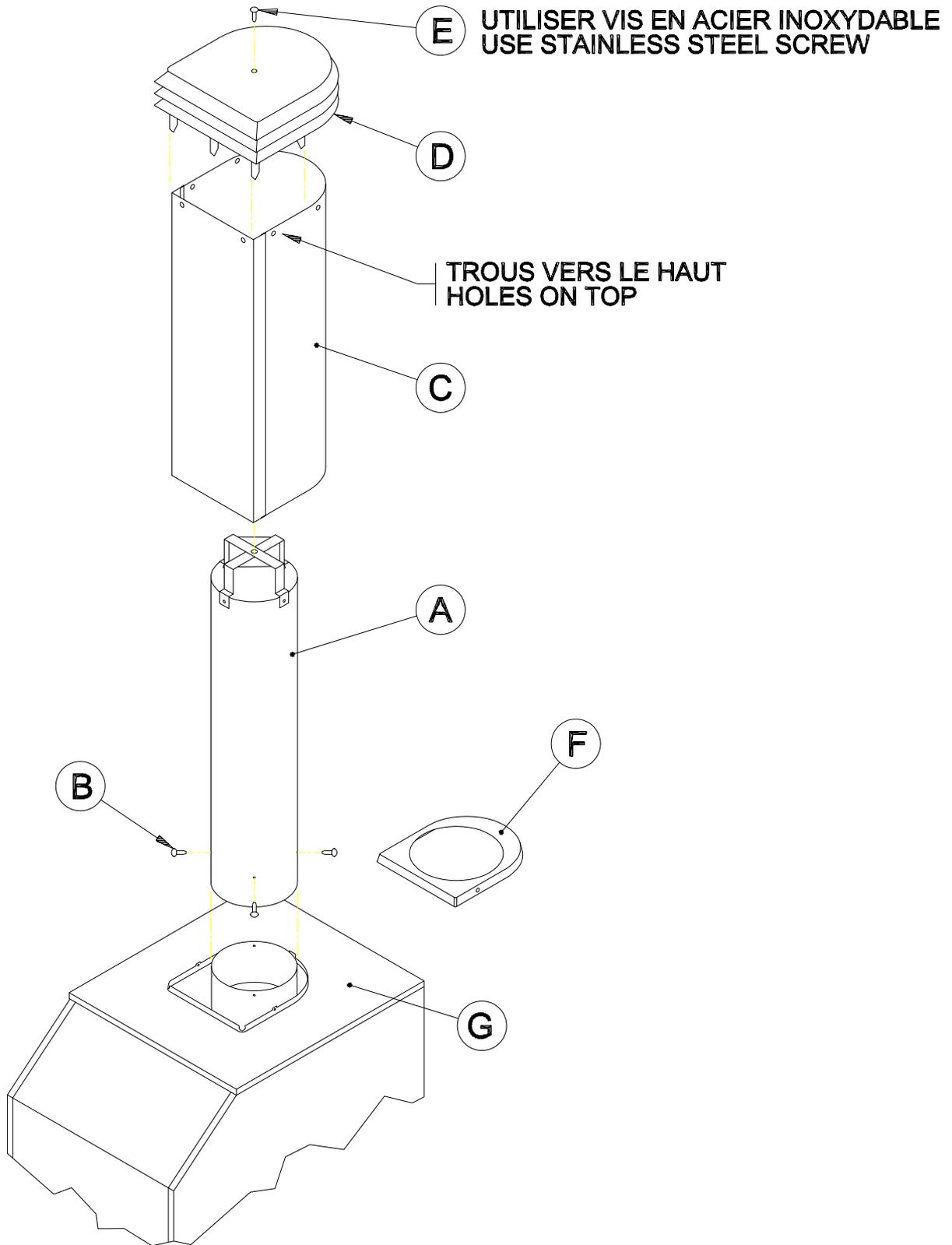


FIGURE 3
Typical Piping Arrangement

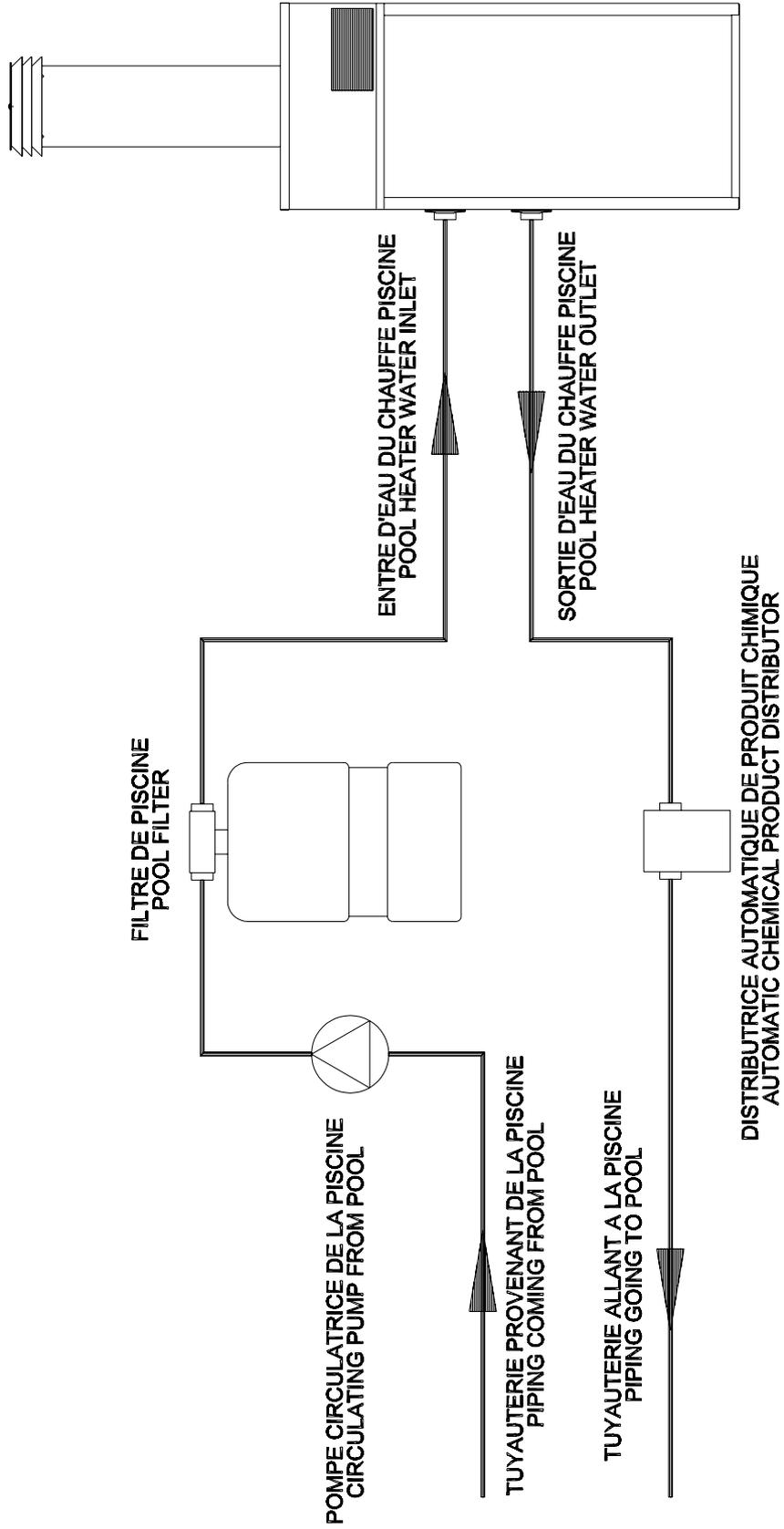
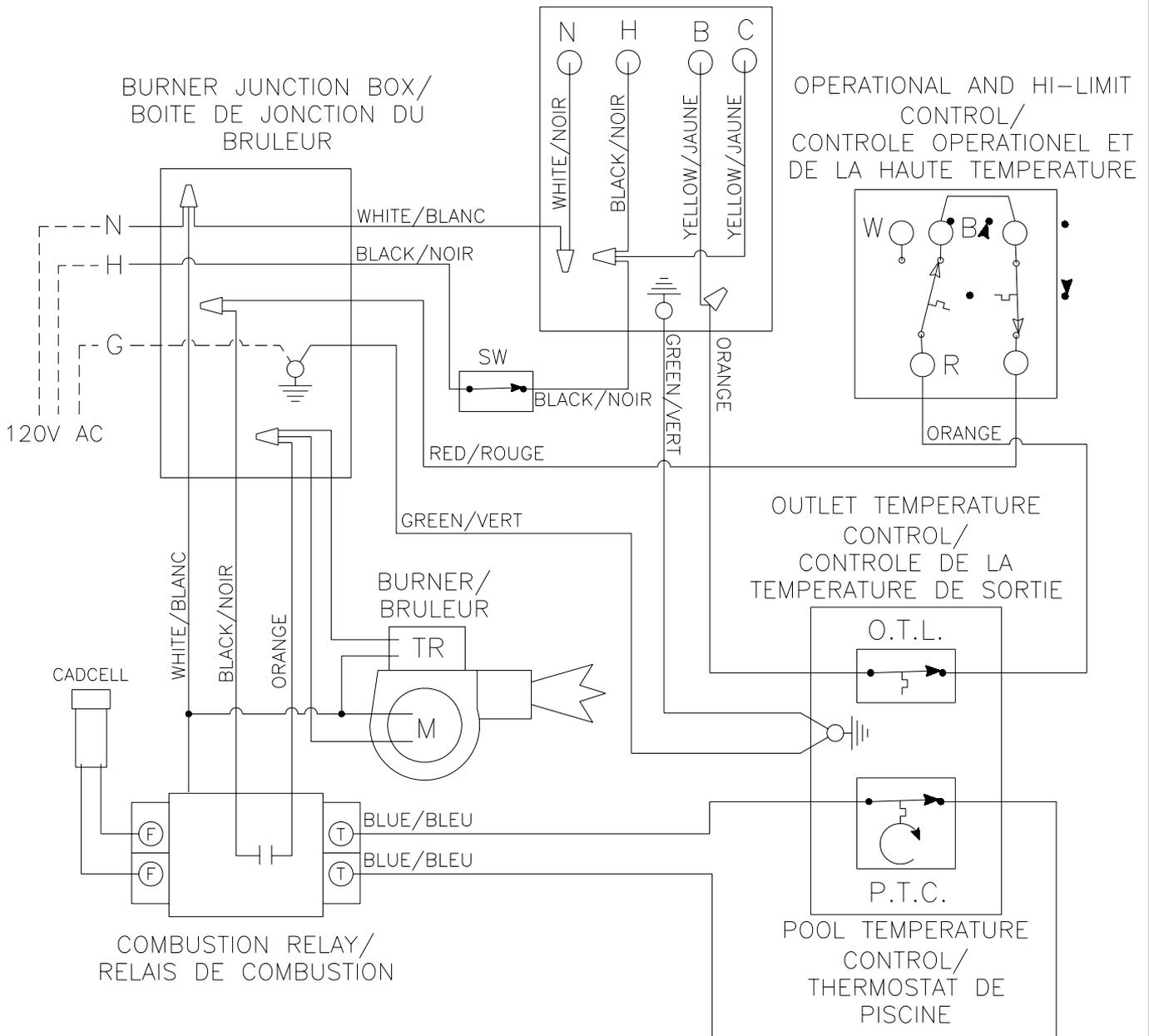
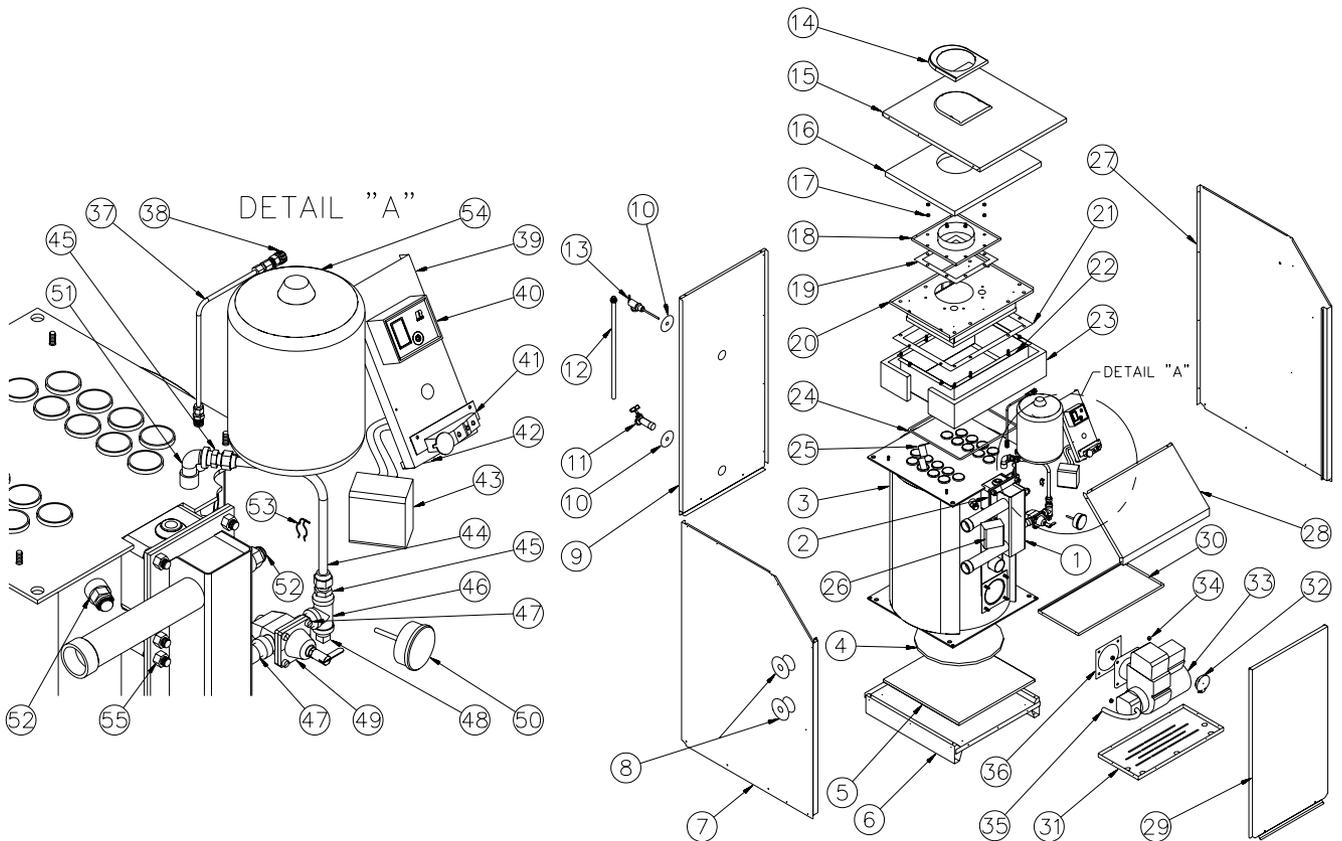


FIGURE 4
Wiring Diagram

LOW WATER CUT OFF CONTROL/
CONTROL DE BAS NIVEAU



PARTS LIST
Model : HMP-03

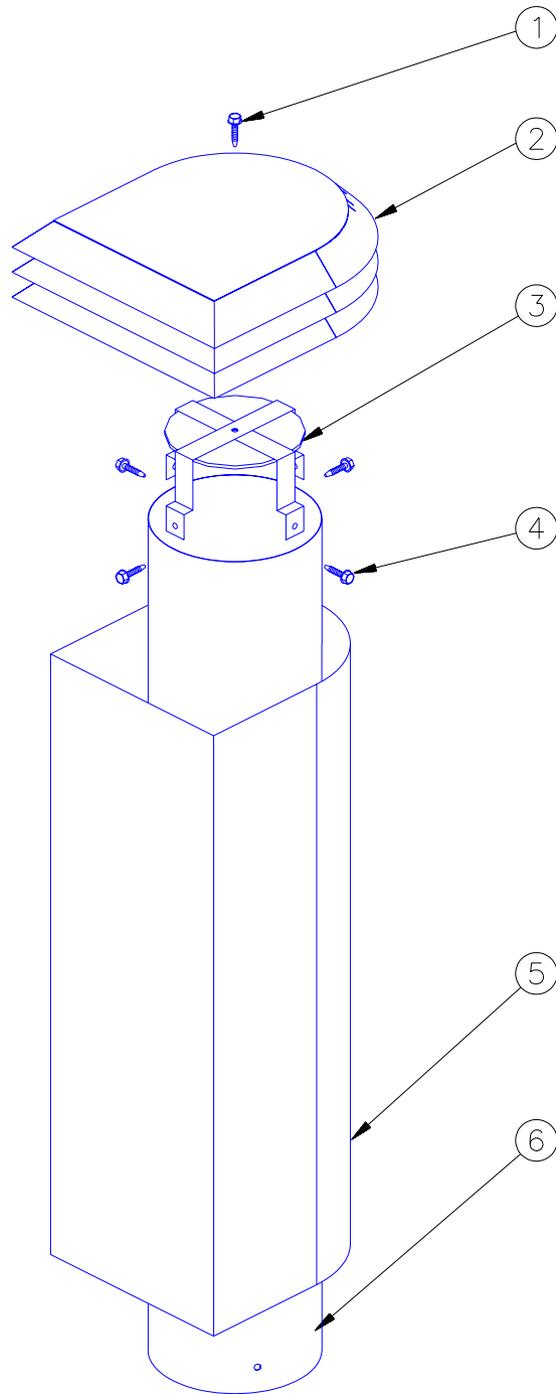


DNS-0540 Rev. B

ITEM	DESCRIPTION	NUMBER
1	Tankless coil ass'y	B02125
2	Gasket, tankless coil	B02113
3	Heat exchanger ass'y	B02131
4	Combustion chamber bottom insulation	B00618-04
5	Floor insulation	B00619-03
6	Floor	B02115
7	Left side panel ass'y	B02147-02
8	Gasket, outside inlet/outlet	B01520-01
9	Rear panel	B02132
10	Gasket, outside inlet/outlet	B01520-02
11	3/4" NPT x 2 3/4" drain faucet	G11Z025
12	Overflow tube 3/4" x 18"	B02159
13	Relief valve 30 Lbs	G11F012
14	6" pipe adapter	B01508
15	Top cabinet cover	B02133
16	Top insulation	B02160
17	Flange hex nut 3/8-16NC brass	F07O001
18	Smoke outlet ass'y	B01747
19	Gasket, outlet cover	B00205
20	Sound trap ass'y	B02144
21	Gasket, sound trap	B02112
22	Sound trap box ass'y	B02142
23	Sound trap box side insulation	B01526-74
24	Gasket, extruded 1/2" x 1/8"	J06L001
25	Flue baffle	B00864-02
26	Aquastat, operation & hi-limit	R02H004
27	Right side panel	B02135-01
28A	Top front panel ass'y (HMP-03-D only)	B02148-01

ITEM	DESCRIPTION	NUMBER
28B	Top front panel ass'y (HMP-03-T only)	B02148-02
29	Front door ass'y	B02151
30	Water leak pan	B02117
31	Front underneath covert	B02116
32	Observation door ass'y	B01842
33	AFG-V1 burner ass'y	B01532-01
34	Hex nut 3/8-16NC zinc	F07F011
35	Oil inlet tube	B01467
36	Gasket, fixed flange	N04Z026
37	Drain line ass'y	B02146
38	Automatic air vent	G99Z027
39	Controle support	B02136
40	Aquastat, water outlet temperature limit	R02F012
41	Thermostat, pool water	R02P020
42	SPST rocker switch	L07F003
43	Low water cut-off	R99H005
44	Boiler inlet tube ass'y	B02145
45	1/2" flare x 1/2" NPT brass fitting	G07F007
46	1/2" NPT galvanized tee	G05J001
47	1/2" NPT x 1 1/2" NPT stainless std nipple	G02I001
48	1/2" NPT galvanized square head plug	G06K001
49	Water pressure regulator 1/2"NPT	R99F025
50	Tridicator 0-60 PSI	R02L001
51	1/2" NPT galvanized male-female 90 elbow	G04M001
52	Well 3/4" NPT	R02J003
53	Capillary clip	R02J009
54	Expansion tank	G13F001-3
55	Hex nut 1/2-13NC zinc	F07F019

PARTS LIST
Model : GDK-24



DNS-0557 Rev. A

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Hex washer head self-drilling screw #1/4-14 x 1"	F03G010	Stainless steel
2	Diffuser ass'y	B01504	
3	Diffuser bracket ass'y	B01506	
4	Hex washer head self-drilling screw #8-18 x 1/2"	F03G009	Quantity: 4, stainless steel
5	Flue pipe casing	B01486	
6	Stainless steel flue pipe	B02118	