OPERATOR'S MANUAL

Dynablast

HEATER MODULE
(MHGE700N/PSQ)

PROPANE & NATURAL GAS

GAS-FIRED
c UL us
LISTED

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IMPORTANT SAFETY INSTRUCTIONS

WARNING – When using this product, basic precautions should always be followed; including the following.

1. Read all safety and operating instructions before using the unit.
2. To reduce the risk of injury, close supervision is necessary when a product is used near children.
3. Read warnings on additive containers and review MSDS on any mandatory protective equipment that must be worn when using the additive.
4. Ventilate work area when using toxic or pungent additives to reduce your exposure to toxic fumes.
5. Use protective wear, especially for the eyes and skin.
6. Know how to stop the product and bleed pressures quickly. Be thoroughly familiar with the controls.
7. Do not operate the product when fatigued or under the influence of alcohol or drugs.
8. Be careful of slippery floors. Some additives make a normally safe area extremely slippery and dangerous.
9. Keep operating area clear of all persons.
10. Stay alert – watch what you are doing.
11. Do not point the nozzle where damage or injury could result. The water discharge from this unit is under extremely high pressure.
12. Do not point nozzle towards an electrical outlet as you risk fire, severe shock and personal injury.
13. Never run the unit in an enclosed area. Exhaust fumes are poisonous.
14. When you stop spraying, always engage the safety latch on trigger gun.
15. When changing nozzles, always turn the engine off and always relieve the pressure by triggering the gun. Always engage the safety latch on the trigger gun. Always change the nozzle with the gun and wand pointed away from you. Never point nozzle at any person or animal.
16. Do not smoke when handling fuel/gas.
17. Do not abuse the high pressure hose by driving over it. The hose may rupture and injure an unsuspecting passer-by.
18. Do not overreach or stand on unstable support. Keep good footing and balance at all times.
19. Follow the maintenance instructions specified in the manual.

WARNING – IMPROPER USE CAN RESULT IN FIRE, SEVERE SHOCK OR INJURY TO PERSONS.

SAVE THESE INSTRUCTIONS

PRE-OPERATNG & INSTALLATION INSTRUCTIONS

When unpacking the unit, if you find damage due to shipping, contact your dealer or Dynablast Equipment Immediately.

FUEL SUPPLY

For stationary installations, have the gas piping installed by a licensed gas fitter. This must be done in accordance with the gas codes:

B149.1 for Natural Gas
B149.2 for Propane Gas

CAUTION: Propane gas is heavier than air and can collect in low hollow areas in an explosive mixture. Ensure that the areas where you are operating the machines are ventilated, etc.

PROTECT FROM FREEZING – MOVING AND STORAGE

When Transporting or storing your module at temperatures below freezing, ensure the module has been properly winterized (see winterizing your pressure washer).
Even an overnight frost can split a coil or crack a pump.
When lifting the heater use lifting hook welded to the top of heater coil. Before lifting the heater, make sure heater coil is properly and securely bolted to heater frame assembly.

INDOOR INSTALLATION:

NOTE: Machines to be used indoors MUST be in accordance with local regulations and CSA Standards B139.
Make sure chimney is of suitable size. (10" minimum for MHGE700N/PSQ).
Make sure that there is enough air for combustion. (175sq.in. for MHGE700N/PSQ).
Be sure to protect against a down draft in below freezing weather. A DOWN DRAFT CAN CAUSE THE COIL TO FREEZE, RESULTING IN EXPENSIVE DAMAGE!
Exhaust gases should not be vented in to a wall, a ceiling or a confined space of a building.

CHIMNEY SIZE

All venting shall be the same size or larger than the stack opening (10" for MHGE700N/PSQ series).
Never use vent pipe smaller than the stack opening.
If total run is more than 25', use larger size chimney.
A 90 degree elbow is equivalent to a run of 20 feet.
If a horizontal run is used, make sure the flow rises at least 1/4" per foot.

PRE-OPERATNG & INSTALLATION INSTRUCTIONS

COMBUSTION AIR SUPPLY

The MHGE700N/PSQ heater is comprised with an Atmospheric burner and requires air for combustion and ventilation.

The appliance installer will know how and where to place a supply air duct. Take care that this opening will not promote drafts which could blow out the pilot light.

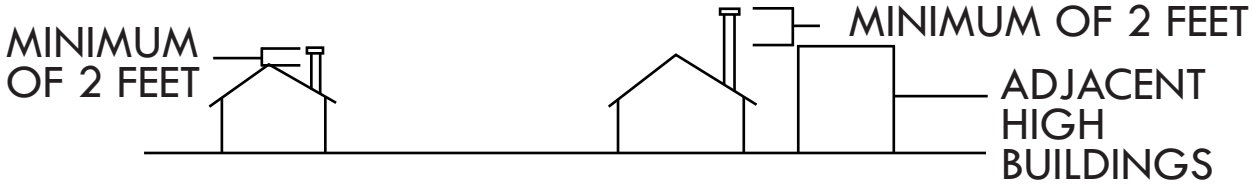
Keep the area around the machine clear so this air can get to the burner.

APPLIANCE IN CONFINED SPACE

The confined space shall have two permanent openings: one near the top of the enclosure and one near the bottom of the enclosure. Each opening shall have a free area of not less than one (1) square inch per 4000 BTU's per hour of the total input of all appliances within the enclosure. The openings shall have free access to the room interior which should have adequate infiltration from the outside.

OUTDOOR ROOF STACK SPACING REQUIREMENTS

Must conform to local standards. Below drawing is a guide

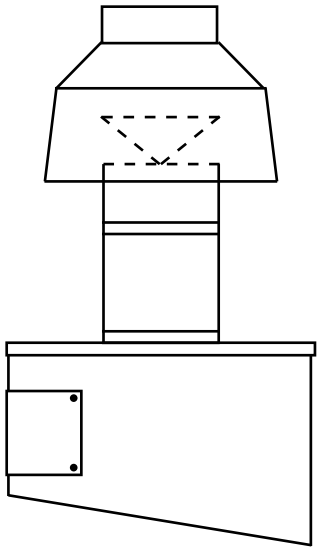


INSTALLING SUPPLIED DRAFT HOOD

Place draft hood on top of 10" stack.

Min. 1" overlap.

Fasten and secure with 4 sheet metal self-tapping screws.



CAUTIONS & **WARNINGS**

WARNING: IF YOU SMELL GAS, SHUT OFF THE GAS SUPPY TO THE APPLIANCE. EXTINGUISH ANY OPEN FLAME AND TEST ALL JOINTS WITH A SOAP SOLUTION. IF THE ODOUR PERSISTS, CALL YOUR GAS SUPPLIER IMMEDIATELY

WARNING: RISK OF INJECTION OR SEVERE INJURY. KEEP CLEAR OF NOZZLE. DO NOT DIRECT DISCHARGE STREAM AT PERSONS. THIS EQUIPMENT IS TO BE USED ONLY BY TRAINED OPERATORS.

CAUTION: THE MACHINE MUST BE ELECTRICALLY GROUNDED

THIS MACHINE MUST BE ATTENDED DURING OPERATION

SUITABLE FOR CONNECTION TO TYPE A GAS VENT WHEN USED WITH THE PROVIDED DRAFT HOOD

A DRAFT HOOD SHALL BE INSTALLED

CONNECTING & OPERATING INSTRUCTIONS

1. Make sure all switches are in the “OFF” Position.

2. Connect installed transformer to its rated power supply. The primary side of the control transformer must be fused in accordance to the Canadian Electrical code. For power cord use rigid metal cable or armoured cable.

3. Join the inlet of the heater module to the high pressure outlet of the cold water pressure washer or pumping system.

4. Connect high pressure hot water hose to the outlet of the heater module.

OUTLET
1/2” QC (FP)
(HOT WATER)

INLET
1/2” QC (MP)
(COLD WATER)

NOTE: Prior to turning on Heater Module, spray a soap solution on all fittings and check for leaks. Ball valves must be in an open position in order to check for leaks.

5. PILOT IGNITION SEQUENCE | *GAS IS FIRST CONNECTED OR INTERRUPTED* |

A. Open Ball Valve supplying Gas Valve and close the Ball Valve after the Gas Valve.

B. Open ball valve supplying gas to the Pilot Valve.

C. Turn on the Pilot valve switch to ignite the Pilot. The ignition sequence times out after 15 to 90 seconds (depending on BTU rating). It is possible that the Pilot switch will have to be turned "ON" and "OFF" several times before enough gas flows to ignite the pilot. Once Pilot is ignited leave the Pilot switch in the "ON" position.

6. FIRING SEQUENCE | *LOW & HIGH* |

A. Open ball Valve after Gas Valve.

B. Turn on Switch labeled “LOW” to initiate the LOW FIRING RATE.

C. When additional heat is required turn on Switch labeled “HIGH”.

D. To initiate the “HIGH” firing rate turn the thermostat to the desired temperature.

E. To cycle Heater “OFF”, turn thermostat to off position and then turn off “HIGH” firing switch. Then Turn off “LOW” firing switch to completely cycle off. After above stage Pilot will only be on. To turn off Pilot, switch off Pilot Valve Switch. When Heater Module is not in operation, close all ball valves.

SAFETY COMPONENTS

FLOW SWITCH
The flow switch prevents the burner from being turned on if there is insufficient water. Proper water flow causes the magnetic core to be pushed up, closing the reed contact. This contact is interlocked with the fuel control.

SAFETY RELIEF VALVES
The Relief Valve prevents the machine from being subjected to abnormally high pressures. If this situation occurs, the valve will blow off relieving the pressure in the coil. This valve may also operate if the unloader is adjusted too high.

HOT WATER SETTING (3800-4200psi)
STEAM SETTING (550-700psi)

THERMOSTAT
The built-in thermostat stops the unit from overheating. Maximum temperature of the unit is 305°F (150°C) for steam and 220°F (105°C) for hot water. Above this temperature, the burner stops automatically.

THERMOSTAT (MC7211)
This is an adjustable dial thermostat which Is limited by the high limit switches. This thermostat is used on the 3007 DI and 3009 DI.

HIGH LIMIT SWITCH (STEAM)
The High Limit Switch is a thermostat which operates at a higher temperature than the built-in thermostat, about 320°F (160°C). This switch is not adjustable and will only operate when other controls fail to keep the water temperature within the normal operating range. This switch cuts the power to the burner.

HIGH LIMIT SWITCH (HOT WATER)
The High Limit Switch is a thermostat which operates at a higher temperature than the built-in thermostat, about 230°F (110°C). This switch is not adjustable and will only operate when other controls fail to keep the water temperature within the normal operating range. This switch cuts the power to the burner.

FUSES
1 AMP fuse protecting the 24VAC Secondary side of Transformer (safety controls side).

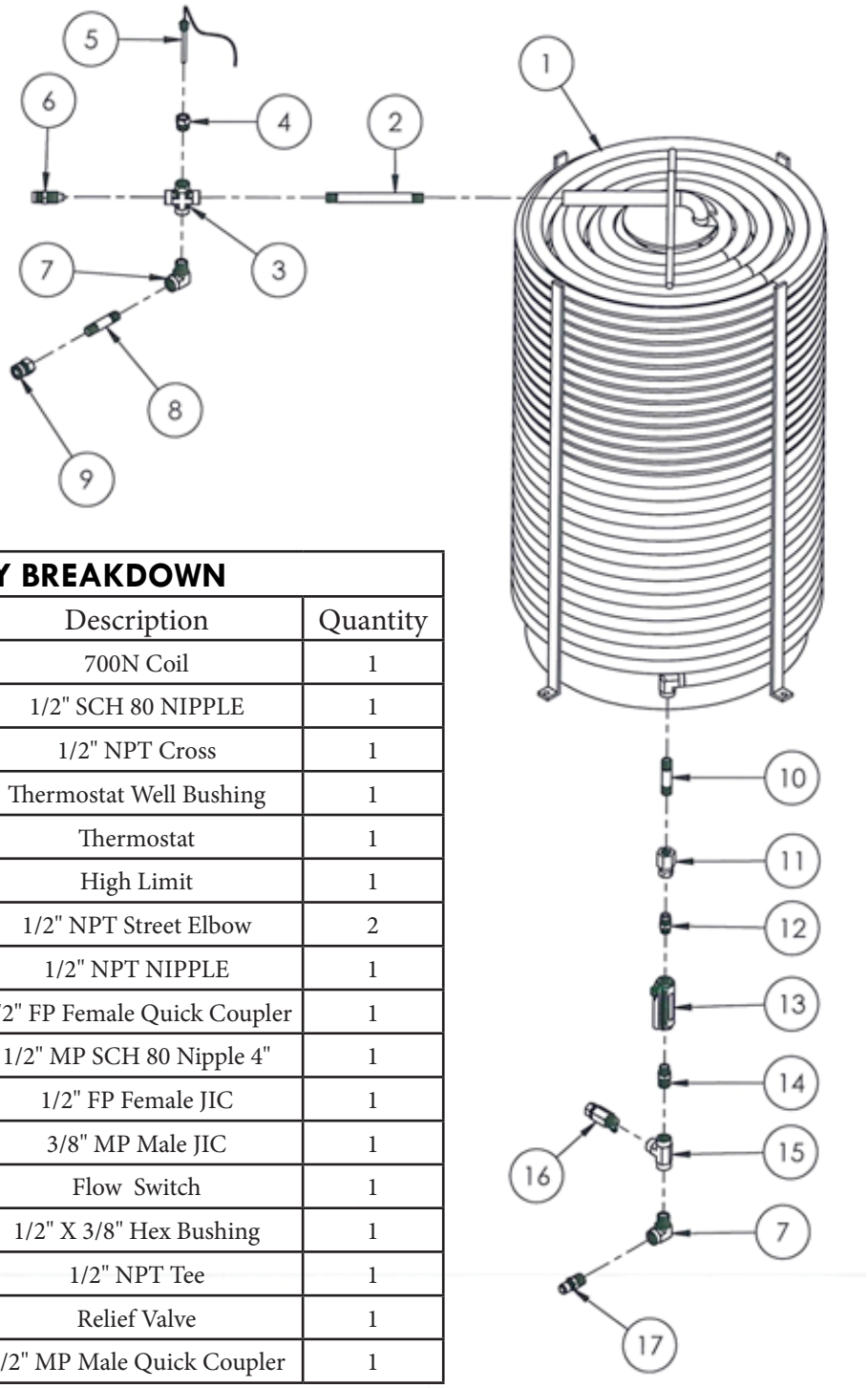
WARNING – DO NOT TAMPER WITH THESE DEVICES

SPECIFICATIONS, FEATURES & OPTIONS

MODEL		MHGE700N/ PSQ	MHGE700N/ PSQ-160
HEATER MODULE	PRESSURE PSI	3500	5000
	BTU'S: HIGH ALTITUDE - SEA LEVEL	479,000 - 525,000	479,000 - 525,000
	GAS	PROPANE/ NATURAL GAS	PROPANE/ NATURAL GAS
	POWER SUPPLY VOLTAGE	120V/230V 50/60Hz	120V/230V 50/60Hz
SPECIFICATIONS	INPUT PRESSURE	15 INCHES	15 INCHES
	MANIFOLD PRESSURE (WC-INCHES)	1.00-3.75/	1.00-3.75/
	ORIFICE SIZE	#55/69	#55/69
SAFETY COMPONENTS	THERMOSTAT	YES	YES
	FLOW SWITCH	YES	YES
	HIGH TEMP LIMIT PROTECTOR	YES	YES
	HIGH PRESSURE RELIEF VALVE	YES	YES
	FINISH	Polyester Powder	
	DIMENSIONS (LxWxH)	24x24x58	
	DRAFT HOOD SIZE (DIAMETER)	10"	10"
	WEIGHT (POUNDS)	900	1020
PIPE	COIL - PIPE SCHEDULE	SCH 80 ¾"	SCH 160 ¾"

PARTS **BREAKDOWN**

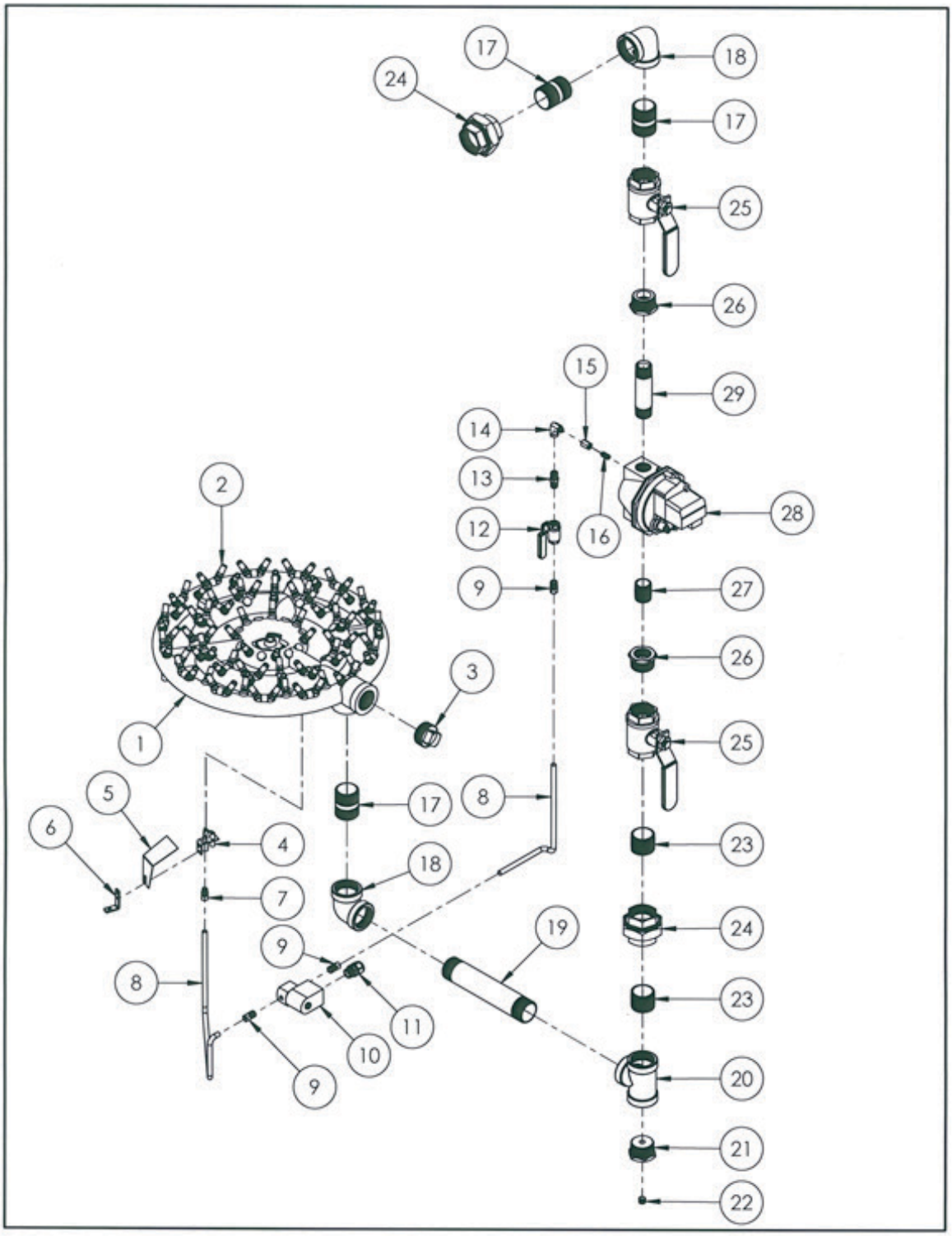
COIL ASSEMBLY BREAKDOWN (3007 GAS FIRED)



COIL ASSEMBLY BREAKDOWN			
Number	Part Number	Description	Quantity
1		700N Coil	1
2	FIMP113-D4 1/2H	1/2" SCH 80 NIPPLE	1
3	FIS1002-D	1/2" NPT Cross	1
4	EP40096	Thermostat Well Bushing	1
5	ELTR86	Thermostat	1
6	ELT44110	High Limit	1
7	FIS1015-D	1/2" NPT Street Elbow	2
8	FIS1022-D	1/2" NPT NIPPLE	1
9	EP22208 FP	1/2" FP Female Quick Coupler	1
10	FIMP113-D4H	1/2" MP SCH 80 Nipple 4"	1
11	FIS3526-8D	1/2" FP Female JIC	1
12	FI48-6D	3/8" MP Male JIC	1
13	PUST5/PUST6/PUTMT/	Flow Switch	1
14	FIS1022-DC	1/2" X 3/8" Hex Bushing	1
15	FIS1001-D	1/2" NPT Tee	1
16	PUGP100884	Relief Valve	1
17	EP22217 MP	1/2" MP Male Quick Coupler	1

PARTS **BREAKDOWN**

(GAS ASSEMBLY)



PARTS **BREAKDOWN**

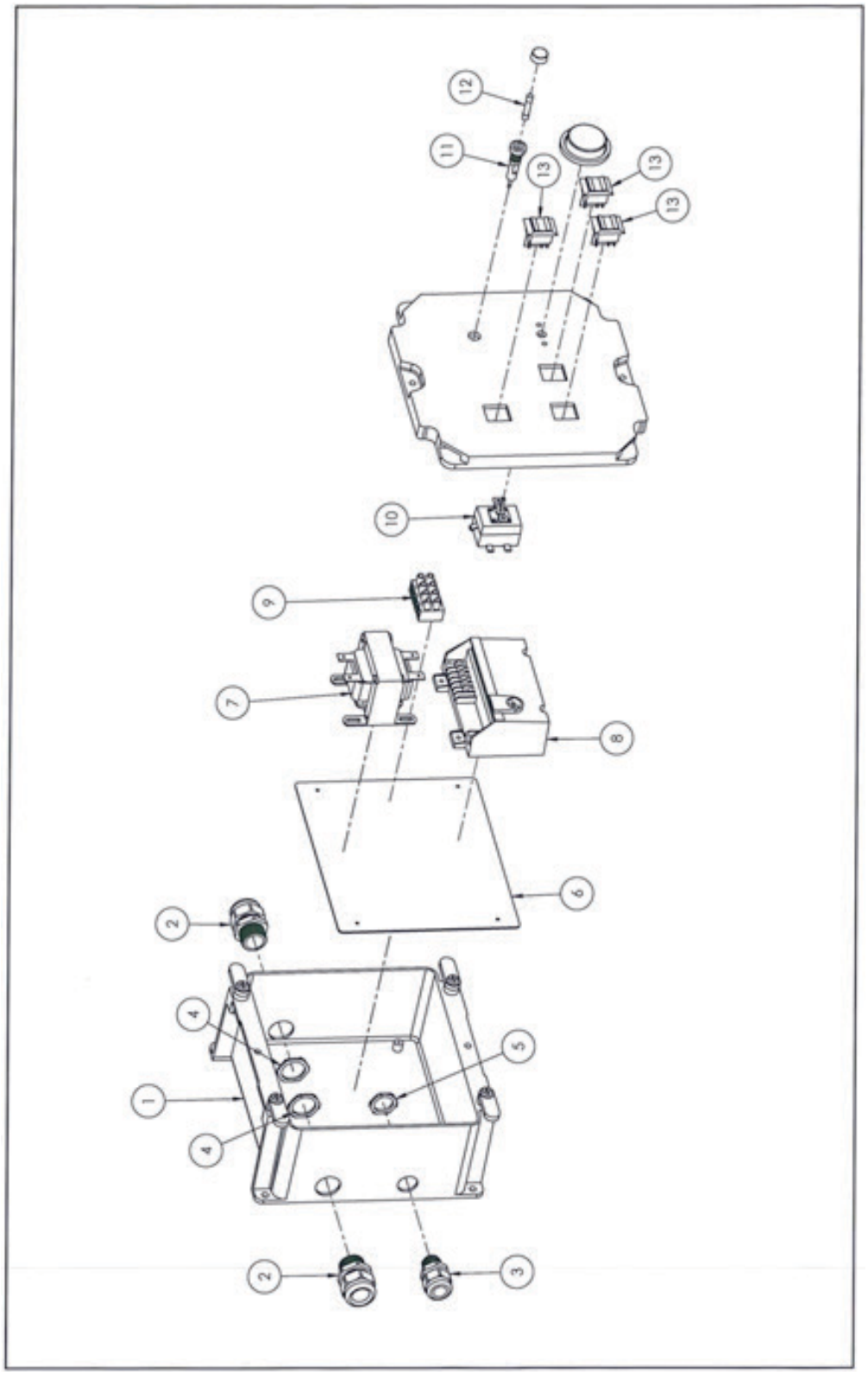
(GAS ASSEMBLY)

GAS ASSEMBLY			
Number	Part Number	Description	Quantity
1	HEX88	X88 Burner Ring	1
2	N/A	Burner Spud	88
3	N/A	1 1/2" MP Square Plug	1
4	HEQ3451	Standing Pilot	1
5	EP24617	Stainless Steel Shield	1
6	EP24831	Standing Pilot Bracket	1
7	N/A	1/8" MP x 1/4" Tube Compression Fitting	1
8	N/A	1/4" Tube	2
9	N/A	1/4" MP x 1/4" Tube Compression Fitting	3
10	HEV8046C	Solenoid Valve	1
11	EL3200	1/2" MP Strain Relief	1
12	FIBV2103-B-CGA	1/4" FP Brass Ball Valve	1
13	FIS1022-B	1/4" FP Hex Nipple	1
14	FIS1015-BA	1/8" MP x 1/4" FP Elbow	1
15	FI103-A	1/8" FP Hex Coupler	1
16	FI112-A	1/8" MP Hex Nipple	1
17	FIMP113-H3	1 1/2" MP x 3" Pipe	3
18	FIMP100-H	1 1/2" FP Elbow	2
19	FIMP113-H9	1 1/2" MP x 9" Pipe	1
20	FIMP101-H	1 1/2" FP Tee	1
21	FIMP110-HB	1 1/2" x 1/4" Hex Bushing	1
22	FI118-B	1/4" MP Brass Plug	1
23	FIMP113-H2	1 1/2" MP x 2" Pipe	2
24	FIMP104-H	1 1/2" Union Joint	2
25	FIBV2103-K-CGA	1 1/2" FP Brass Ball Valve	2
26	FIMP110-HF	1 1/2" x 1" Hex Bushing	2
27	FIMP113-F1 1/2	1" MP x 1 1/2" Pipe	1
28	HEV8944B1019/ HEV8944C1017	Gas Control Valve (Natural Gas/Propane)	1
29	FIMP113-F5	1" MP x 5" Pipe	1

N/A – NOT AVAILABLE

PARTS **BREAKDOWN**

(ELECTRICAL BOX ASSEMBLY)



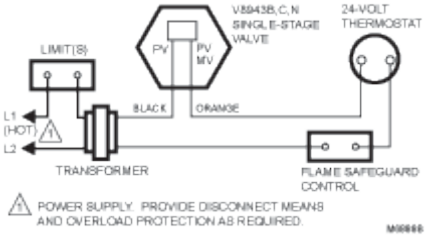
PARTS **BREAKDOWN**

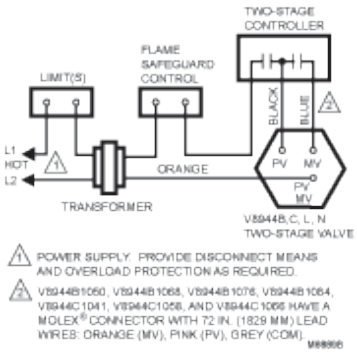
(ELECTRICAL BOX ASSEMBLY)

ELECTRICAL BOX ASSEMBLY			
Number	Part Number	Description	Quantity
1	ELJBX884	8" X 8" Electrical Box	1
2	EL3234	3/4" NPT 3/4" Strain Relief	2
3	EL3200	1/2" NPT 1/2" Strain Relief	1
4	EL1706	3/4" NPT Conduit Locknut	2
5	EL1704	1/2" NPT Conduit Locknut	1
6	NOT AVAILABLE	9 1/4" X 8" Electrical Panel	1
7	ELMH100MG	Transformer	1
8	HES8610U1003	Electronic Ignition SPECIFY BASO (50Hz) OR HONEYWELL (60Hz) WHEN ORDERING	1
9	ELUNPA44-12	Terminal Strip	4
10	ELTR86	Thermostat	1
11	EL345603	Fuse Holder	1
12	ELGGC1	1 Amp Glass Fuse	1
13	EL2504-11E	Selector Switch	3
28	HEV8944B1019/ HEV8944C1017	Gas Control Valve (Natural Gas/Propane)	1
29	FIMP113-F5	1" MP x 5" Pipe	1

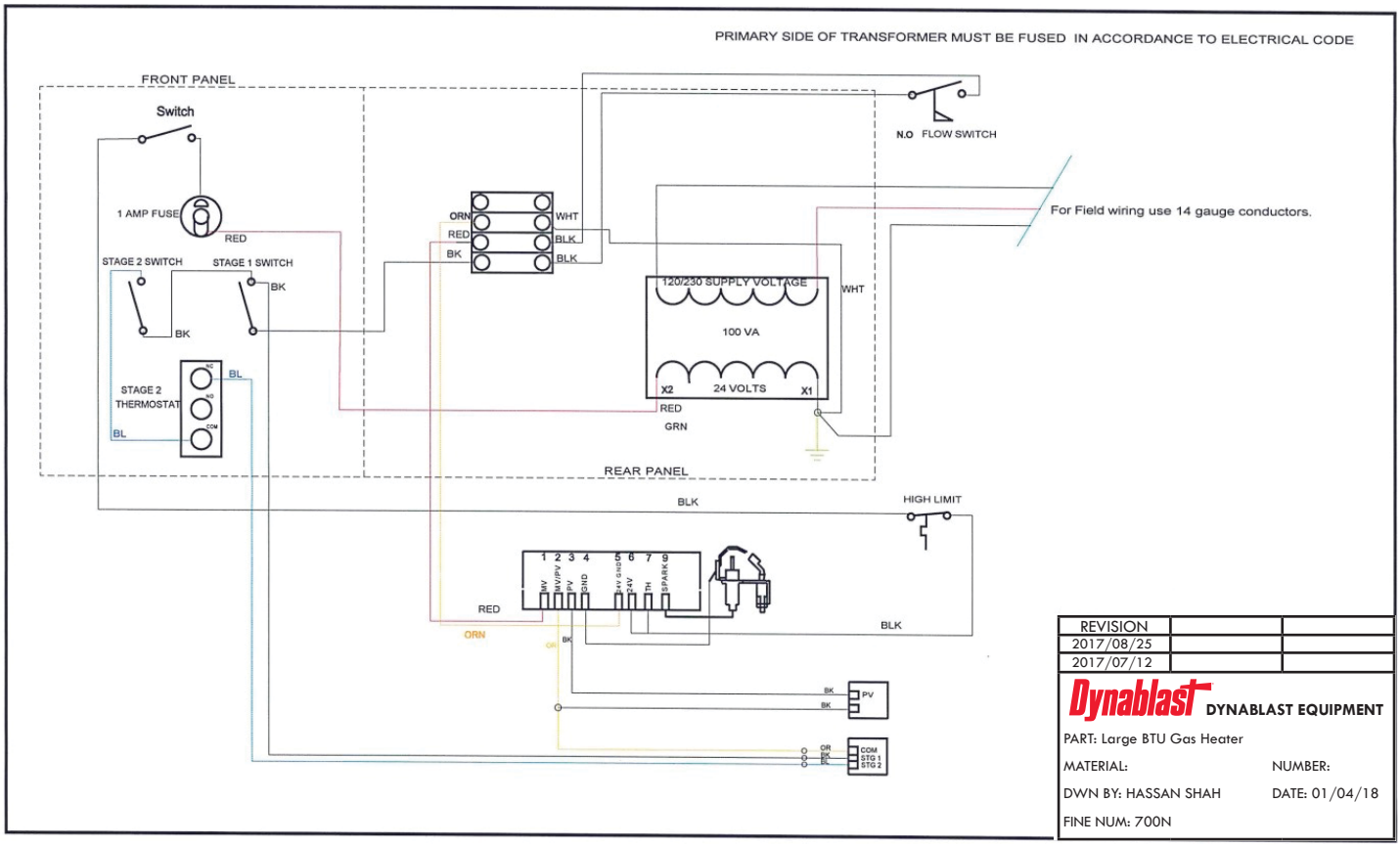
WIRING DIAGRAMS

GAS VALVE WIRING(700N)



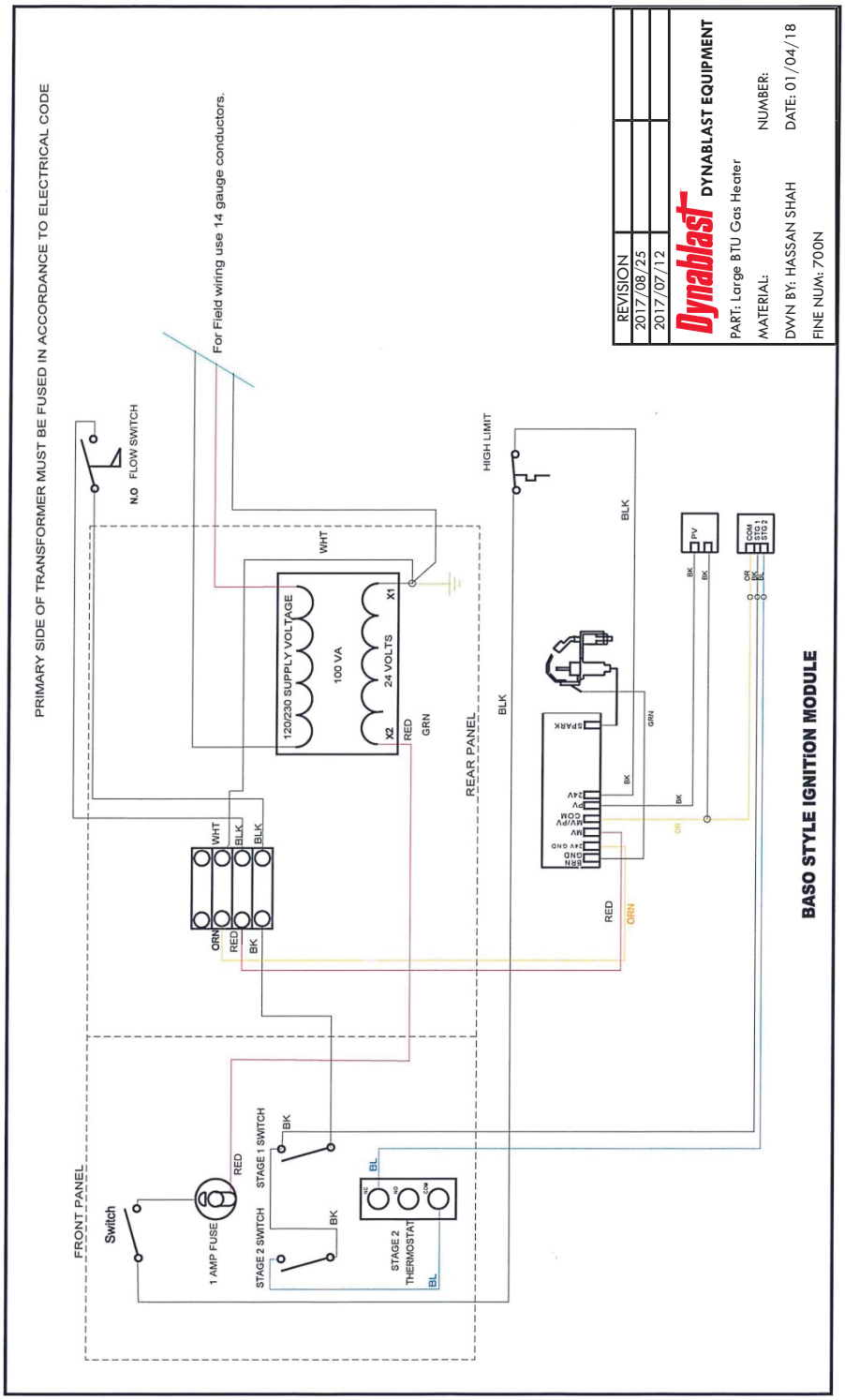


700N (HONEYWELL ELECTRONIC IGNITION)



WIRING DIAGRAMS

700N (BASO ELECTRONIC IGNITION)



WINTERIZING
YOUR HEATER MODULE

(This is also good practice if the heater module is to remain unused for more than 3 - 4 weeks or transporting/ storing in freezing temperatures.)

WITH A FLOAT BOX

- Shut off the water supply, and disconnect hose.
- Remove cover from Float Box.
- Run the pressure cleaner until the level of the water in the Float Box is just above the outlet screen.
- Turn off the cleaner.
- Fill the Float Box to about 3/4 with windshield washer or antifreeze.
- Turn on the cleaner and open gun until liquid comes out of nozzle "foamy" or "soapy". *CAUTION: If your hose is longer than 35 feet, the float box may empty before the liquid from the nozzle gets foamy. If this happens, refill the float box with antifreeze and continue.*
- Put gun in OFF position for five seconds to allow antifreeze into bypass line.
- Shut off motor - unit is now winterized.

WITHOUT A FLOAT BOX

- Shut off the water supply and disconnect hose.
- You need a short (') length of hose with a male garden hose fitting on one end.
- Connect the short hose to the inlet of the machine.
- Put the other end of the hose into a container of windshield washer or antifreeze.
- Turn on cleaner and open gun until liquid comes out of nozzle "foamy' or "soapy".
- Put gun in OFF position for 5 seconds to get antifreeze into bypass line. Shut off motor

Unit is now winterized.

THINGS TO CHECK REGULARLY

1. Check for System leaks. Leaks in the pressure side of the system can cause premature wear (even failure) of the pump. The warning signals for these kinds of leaks are frequent cycling of the unloader at least more than once in 2 minutes.
2. After you use chemical additives thoroughly FLUSH the system with clean water.
3. Inspect the POWER CORD regularly. Also check for POWER OUTLET SOCKET. For safety, replace worn or damaged parts immediately.
4. Never run the heater module without water. TURN WATER ON FIRST.
5. PROTECT FROM FREEZING! When transporting your heater module in temperatures below 2°F/0°C WINTERIZE the heater coil, pump, hose and gun.
6. Check gas fittings for leaks.
7. Inspect all hoses for leaks and cracks, replace when hoses are damaged or worn.

COIL SERVICE

CLEAN HEATING COIL

Remove burner from coil by removing the four flange mount nuts. Inspect inside of combustion chamber and if it is heavily sooted so that air passage could be a serious problem, clean the air passage with a heavy duty vacuum. Run machine at full pressure and check the inside coil for leaks.

COIL MAINTENANCE

Liming of the coils is caused by mineral deposits from the water and occurs in hard water areas. The deliming procedure requires special caution and tools to perform. We recommend that you call your local service person if problems arise.

CHECKING FOR SCALE OR LIMING IN THE COIL

1. Remove outlet orifice and check for any liming. Clean the orifice if needed.
2. Remove outlet gun and hose.
3. Install a pressure gauge between the unloader and coil inlet.
4. Turn on the pump without the water outlet gun or outlet orifice. If the pressure reading is above 50 psi, have your machine descaled. Else, reassemble the machine.

DESCALING

If pressure drop in the coil is over 50 psi - descaling is recommended. Descaling requires that use of highly corrosive chemicals. It also requires the use of goggles and special protective clothing.

1. This procedure requires a 20L pail of descaling chemical.
2. Plumb the pump suction into the pail of descaling compound with a screen on the end of the suction line.
3. Plumb a hose from the machine outlet back in the pail of descaling compound.
4. Turn the pump on and circulate the compound through the machine for about 20 minutes.
5. After that time the chemical being pumped out of the coil should be running thin and dirty rather than foaming heavily.
6. Remove the extra plumbing and reconnect machine together and run clean cold water through the machine for five minutes.

DYNABLAST **WARRANTY**

HOT WATER HEATER MODULE

This product is warranted to be free from defects in materials and workmanship under normal use and service, for a period of (1) one year from the date of purchase, unless stated otherwise below, when operated and maintained in accordance with the Maintenance and Operation Instructions supplied with the unit. The warranty does not cover misuse or negligence.

This warranty is extended only to the original purchaser. Hoses, spray guns, wands, nozzles and other accessories are warranted for 90 days. Warranty is void if repairs are attempted by anyone other than an Authorized Service Centre.

If a difficulty develops with the product, you should contact the nearest Authorized Repair Centre or Dynablast office. Only these locations are authorized to make repairs to the product or replacement of defective parts, which will be done at no charge within a reasonable time after receipt of the product. Units or parts should be returned at the customer's expense to the nearest Dynablast location or Authorized Service Centre. Pack unit in a strong carton and pad tightly to avoid damage. Damage in transit is not covered by warranty. Include original purchase receipt with any claim (but keep a copy for your files).

Dynablast's liability for special, incidental or consequential damage is expressly disclaimed. In no event shall Dynablast's liability exceed the purchase price of the product in question. Warranty is limited to repair of the product and/or replacement and is the discretion of Dynablast. There are no expressed warranties other than those specified herein.

SPECIAL WARRANTIES	WARRANTY PERIOD
Fabricated Components (Frame, Coil Skin, Coil Cap)	1 Year Parts | 1 Year Labour
Burner, Transformer, Control Switch, Safety Switch Pressure	1 Year Parts | 1 Year Labour
Schedule 80, 160 Heating Coil Limited Warranty *(See Below)*	3 Year Parts | 1 Year Labour

We must receive the coil serial number section of the coil to substantiate the warranty claim

We will not replace coil under warranty if the coild have been subjected to misuse such as:
1. Freezing | 2. Lime Deposit | 3. Other Foreign Material Deposit | 4. Shock or Vibration