



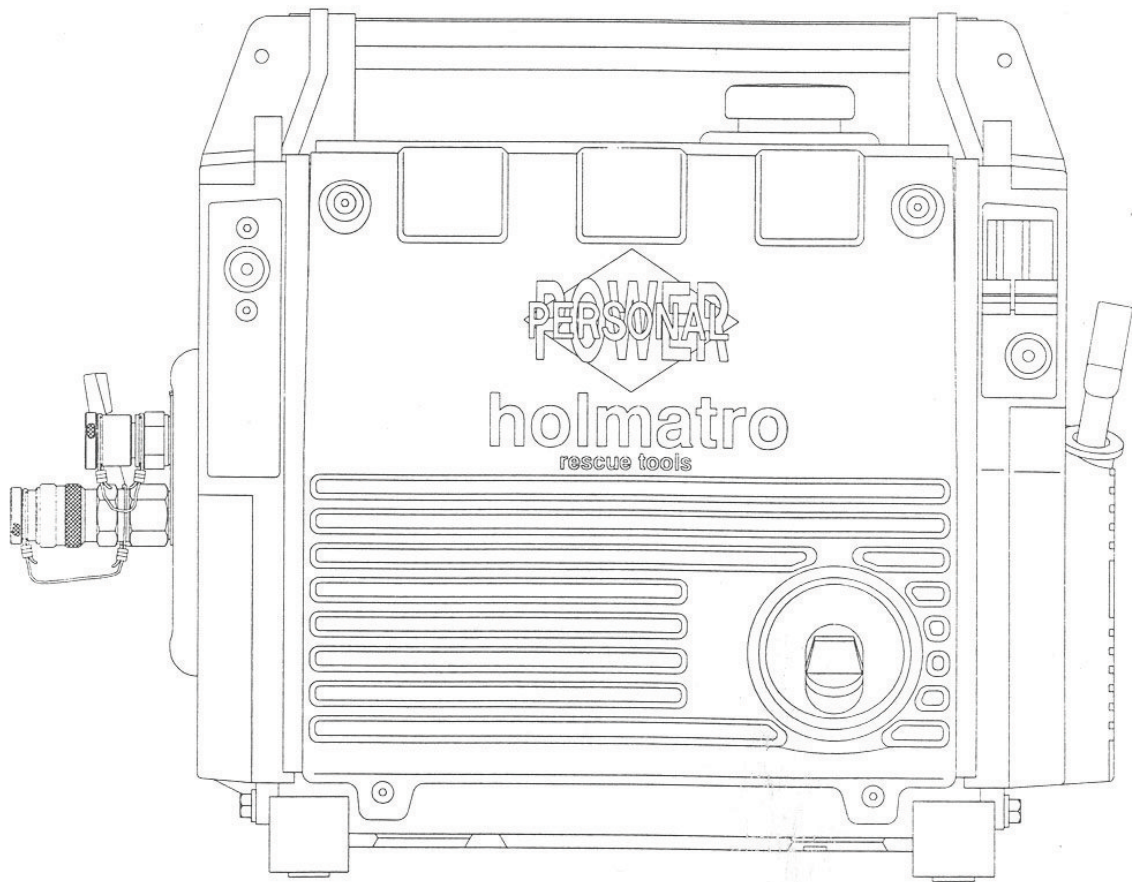
**holmatro**  
rescue equipment

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## MANUAL

### PUMP MODEL PPU-20 AND TPU-20



**INSTRUCTION MANUAL**  
**PUMP MODEL PPU-20 & TPU-20**

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# 1 General

## 1.1 Safety precautions

Please make sure you review each precaution carefully

### Surroundings

- Operate the **PPU 20/TPU 20** on a stable, level surface free of small rocks, loose gravel, etc.
- Keep the **PPU 20/TPU 20** at least 3 feet (1 meter) away from buildings or other structures.

### Fire prevention

- Be sure to stop the engine prior to refueling.
- Do not refuel while smoking or near an open flame.
- Do not overfill the fuel tank.
- If spillage does occur, wipe away spilled fuel thoroughly and wait until the fuel has dried before starting engine.
- When changing the motor or hydraulic oil, make sure that the fuel cap is secure to prevent spillage

### Exhaust precautions

- Never inhale exhaust gasses; they contain carbon monoxide, a colorless, odorless, extremely dangerous gas which can cause unconsciousness or death.
- Never operate the **PPU 20/TPU 20** indoors or in unventilated areas such as a garage or a shed.
- Exercise extreme care when operating near people and domestic animals.
- Keep exhaust pipe free of foreign objects.
- When carrying unit, be sure exhaust is facing away from your body.

### Other important points

- The PPU20 and TPU 20 are generally the same except the TPU 20 has a modified valve system. This valve allows an operator to connect two tools to the pump, but only select one tool at a time. The oil flow to the selected tool is directed to the tool through the use of the selector valve.
- Never use the **PPU 20/TPU 20** for applications other than those advised by the manufacturer. This could result in a malfunction of the **PPU 20/TPU 20** or appliance to which it is connected.
- Only use the **PPU 20/TPU 20** with rescue systems/tools with compatible hydraulic fluid and working pressure.
- If excessive noise, odor or vibration occurs, stop the engine immediately and contact your nearest service location.
- Do not alter or modify any factory settings in the pump.

## **CAUTION, BEFORE STARTING ENGINE (initial start up**

- Remove hydraulic oil overflow shipping plug (see page 6, section L).
- Fill engine oil until correct level

## **Periodic inspection is vital**

### **Before Every Operation**

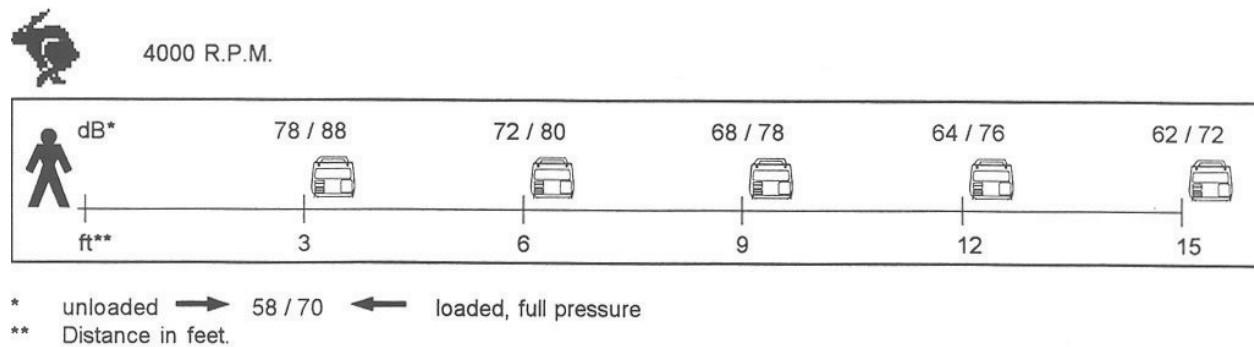
- Check engine oil and refill if necessary.
- Check fuel level and refill if necessary. Take care not to overfill tank
- Check hydraulic oil level on sight gauge. Do not overfill.
- Check area surrounding **PPU 20/TPU 20** for safe operation.
- Set the control valve handle to the release position prior to start up.
- Perform periodic maintenance as necessary.
- Do not shake the **PPU 20/TPU 20** while in operation, this might activate one of the fluid level stops.

## 1.2 Technical details

<b>Engine</b> (4000 rpm)	Type:	Honda 4-stroke gasoline 1.6 engine, 1 cyl., forced air cooled, side valve
	Displacement	4.65 cu in (76 cc)
	Fuel tank capacity	0.74 gal (2.8 liters)
	Engine oil capacity	0.37 qt (0.35 liters)
	Ignition system	Transistorized magneto
	Starting system	Recoil starter
	Fuel Consumption Rate	0.6 liters/hr (5 hrs @ max power)
<b>Pump part</b> (2-stage)	Hydraulic Oil Capacity	1.8 qts (1700 cc)
	Output at 3400 rpm, 1 <sup>st</sup> stage	140 cu. In./min – 2300cc/min
	Output at 3400 rpm, 2 <sup>nd</sup> stage	37 cu. In./min – 600cc/min
	Output at 4000 rpm, 1 <sup>st</sup> stage	165 cu. In./min – 2700cc/min
	Output at 4000 rpm, 2 <sup>nd</sup> stage	43 cu. In./min – 700cc/min
Dimensions (L x W x H)		19.5" x 10.6" x 14.8" (50x27x38 cm)
Dry weight		45 lb. (20.4 kg)
Weight (ready For use)		51.8 lb. (23.5 kg)

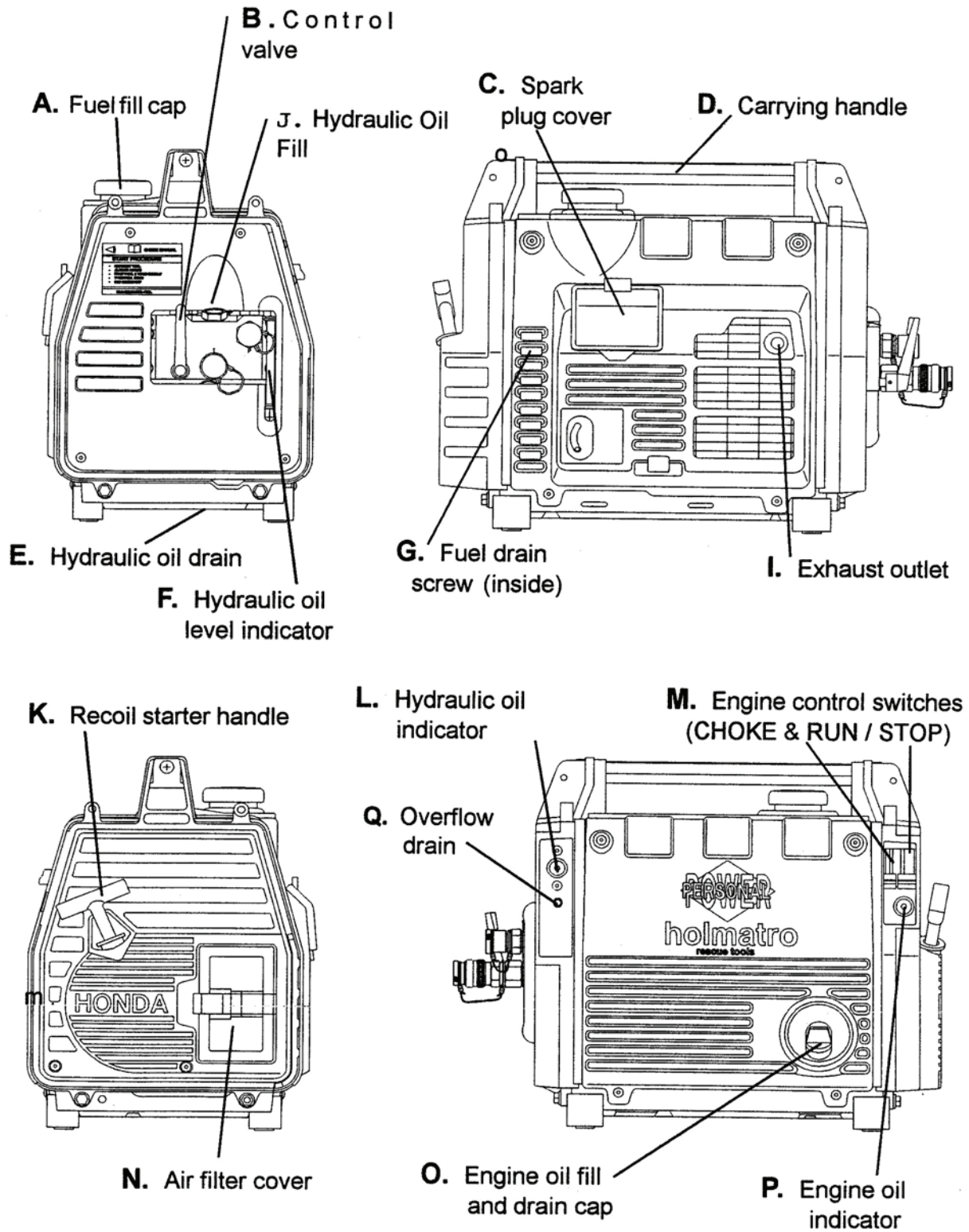
NOTE: Max working pressure 1st stage = 2,600 psi (180 bar).  
Max working pressure 2nd stage = 10,500 psi (720 bar).

### 1.2.1 Sound level

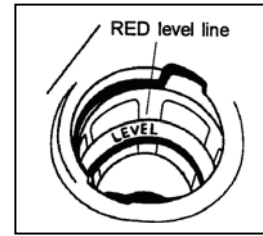


(levels are measured in the field at the starter cord side.)

### 1.3 Product identification PPU 20



**A. Fuel fill cap:** The **PPU 20/TPU 20** is provided with a one-twist fuel fill cap. Never overfill the fuel tank or attempt to refill it while in operation. If any fuel is spilled, make sure the area is dry before trying to start the engine. Always refill in a well ventilated area. Use unleaded gasoline with an octane rating of 86 or higher.



**B. Control valve:** With the handle in the release mode, the operator can connect or disconnect tools or hoses while the engine is running. This also allows the operators to release any pressure that could accidentally build-up in the hoses/couplers. Always start the **PPU 20/TPU 20** with the control valve in the release position.

**C. Spark plug cover:** This rubber cover conceals the spark plug. Pull the top tab gently until the top is free of the side panel. Rotate the cover until it is below the spark plug access port. Tug gently at the spark plug wire cap to expose the top of spark plug. The spark plug may be removed with a proper spark plug wrench. See instructions.

**D. Carrying handle:** The carrying handle is designed to lift the **PPU 20/TPU 20** by hand. Do not lift it with chains or cables. The hollow handle contains the breather line for the fuel tank.

**E. Hydraulic oil drain:** The hydraulic oil can be drained through this outlet (see maintenance).

**F. Hydraulic oil level indicator:** The transparent tube indicates the fluid level in the reservoir. The gap in the cover shows the correct level (see maintenance).

**G. Fuel drain screw:** This screw is internal to the unit and is visible through the unit side panel venting. Remove the gas cap first and then the 4 side panel screws and gently rotate the side panel upwards, to allow access to the drain screw. If the **PPU 20/TPU 20** is stored for more than 1 month, any remaining fuel should be drained to prevent problems when the unit is used again. Do not attempt to drain the fuel while the unit is in operation or the engine is still hot (see storage).

**H. Tool selector valve:** The tool selector valve allows the operator to direct the flow to the hydraulic rescue tool they are using at that moment. Only one tool can be used at a time. **This valve must never be left in the middle position.**

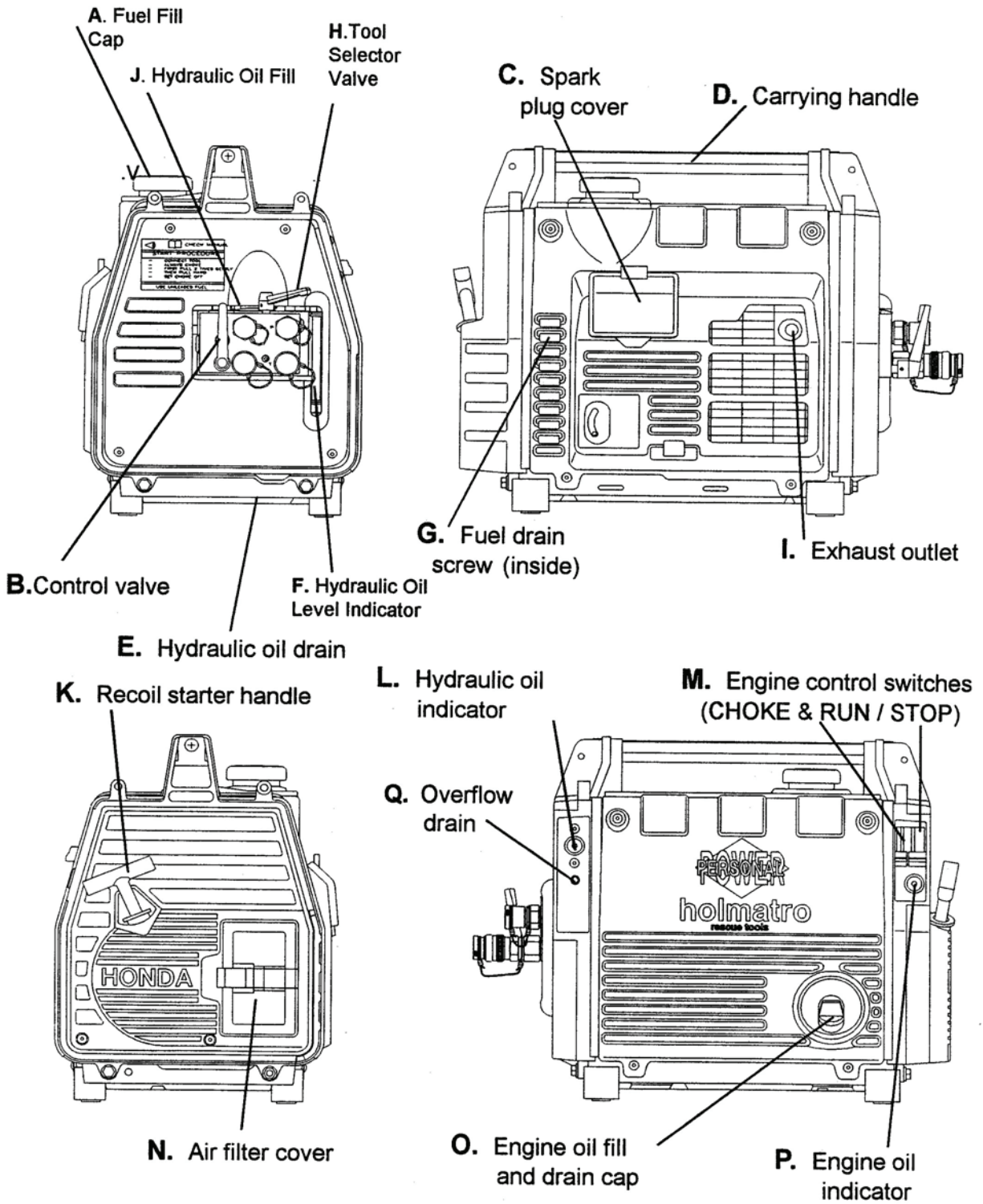
**I. Exhaust outlet:** The exhaust muffler is fully enclosed inside the unit case and is equipped with integral spark arrester.

**J. Hydraulic Oil Fill:** The hydraulic oil fill is located on the control valve block. The cap is hand tightened only.

**K. Recoil Starter:** Always pull the handle firmly but gently. Do not pull while the engine is running. Do not release pull cord when extended. Return to original position with the handle in your hand.



## 1.4 Product identification TPU 20





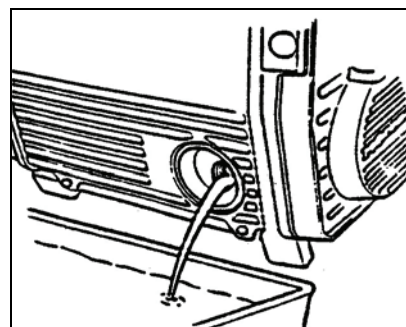
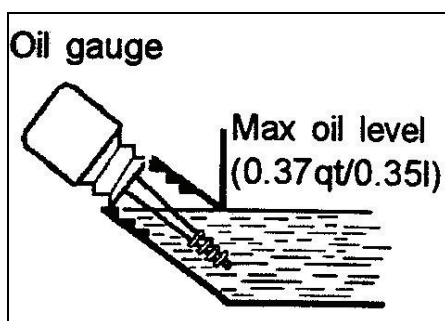
**L / P. Hydraulic / Engine oil level stop indicator:** The oil level will automatically stop the engine when one of the oil levels is too low. The indicator light will glow when you attempt to restart. Check the oil reservoirs and refill if necessary. The oil level indicator stops can also be activated when the **PPU 20/TPU 20** is operated on an incline of 20° or more. Place the unit in a more horizontal position and restart. Overflow drain is used to prevent damage to pump if too much oil is allowed back in tank. Remove rubber shipping plug before starting engine and keep plug in a safe place in case pump needs to be shipped for service.

**M. Engine control switches:** The fuel control valve and the choke valve are integrated into this 2 lever system. The left lever is the choke switch and the right is the engine switch. The choke lever provides a variable fuel mixture when starting and running a cold engine. Move the lever to the closed (up) position to enrich the mixture. The right lever is the engine control switch. Move the lever to the up position to run the engine, move it down to stop the engine, this will close the fuel control valve.

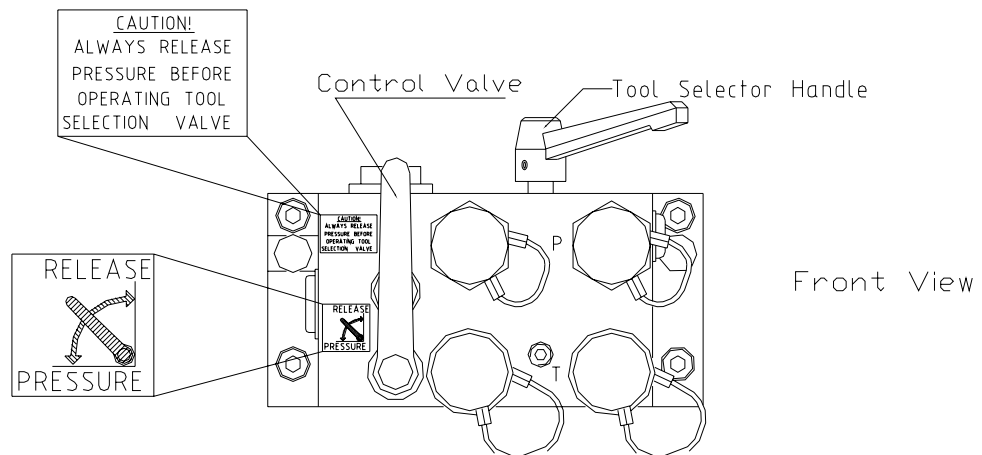
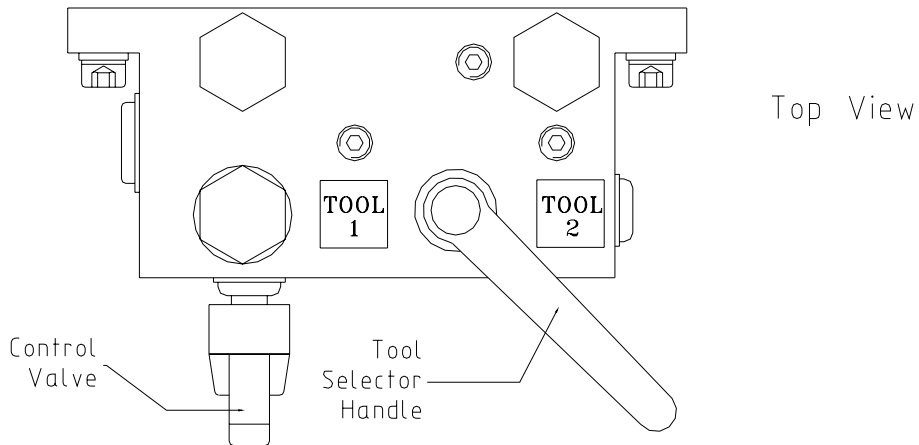
**N. Air filter cover:** The **PPU 20/TPU 20** is provided with a re-usable filter element. Make sure to clean it regularly with nonflammable liquid or soapy water. Never run the unit without the filter element (see maintenance).

**O. Oil fill cap:** Engine oil is a major factor in the proper operation and service life of your unit. Use a 4-stroke oil that meets or exceeds US automobile manufacturers requirements for Service Classification SE or SF. SAE 10W-30 is recommended for general, all temperature use. Non-detergent and 2-stroke engine oils are not recommended as they will damage the engine.

SAE 5W-30 may be used if the ambient temperature is below freezing or SAE 30 if above 50°F. To check the unit's engine oil, place the unit on a firm, flat surface, unscrew the fill cap, clean the cap, reinsert the cap without rescrewing. Remove the cap and visually inspect the cap stem for oil residue. Add oil directly to the fill hole. To change the engine oil, make sure the gas and hydraulic fluid portals are closed, tilt the unit to allow the oil to run out of the fill hole. Refill oil to the top of the filler neck.



**Control valve (B):** Always start the **PPU20/TPU20** with the control valve in the release position. The selector handle allows the operation of one tool only at any time. To switch between tools or to add/remove a tool you must release the pressure by putting the control valve in the release position.

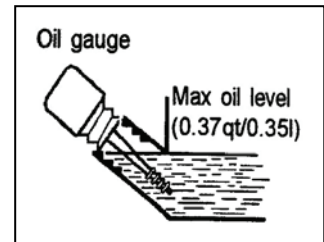


## 2 Operation procedures

### 2.1 Pre-operation procedure (necessary inspections/checks)

#### Checking engine oil level

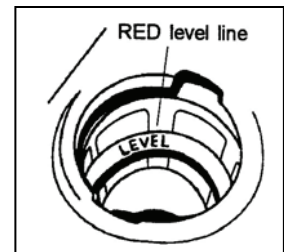
- Remove oil gauge and check oil level:
- If level is low, fill to the edge of the oil filler neck:
- Change oil if contaminated and/or scheduled maintenance.  
(See previous page)



**Caution: Oil level checking and refilling should be performed on a level surface with the engine stopped.**

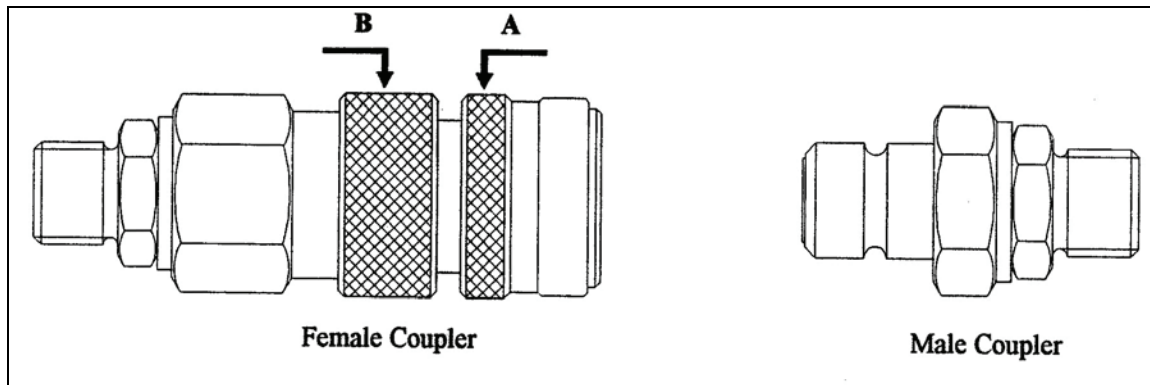
#### Checking fuel level

- Stop engine and open cap. Check to see if the fuel level meets the red plastic full level mark
- Use unleaded gasoline
- Refill to top of the red level mark. **DO NOT OVERFILL!** The tank holds 0.74 gallons (2.8 liters) of gasoline



### 2.2 Connecting the hoses and rescue tools

The high pressure hoses and the valve block of the pump are provided with two different quick couplers, also-called the “male” and “female” couplers

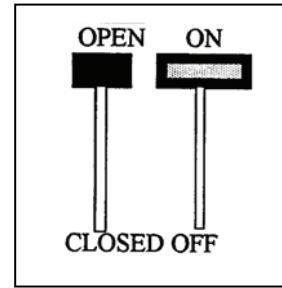


Connect the high pressure hoses in the following manner: Remove the dustcaps. Pull back ring A on the female coupler and insert the male coupler. As soon as ring A is released, the couplers are fixed. In order to prevent the couplers from separating during operation, screw lock ring B against ring A. This locking type coupler is not included with the pumps. Snap the dustcaps together to protect them against dust and dirt. Connect all couplers the same way.

*Note: Never connect any hoses while the pump control is in pressure position, the control valve must be in the release position*

## 2.3 Starting the PPU 20/TPU 20

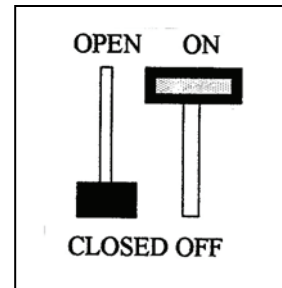
- Check the oil and fuel levels.
- Make sure the control valve is set to the release position
- Slide the choke to the "OPEN" position.  
(If the engine is warm or the ambient temperature is high, start engine with the choke at the "CLOSED" position.)
- Slide the engine switch to the "ON" position.
- Pull the recoil starter handle slowly until passing the compression point (resistance will be felt), then return the handle to its original position and pull swiftly
- After starting, allow the starter handle to return to its original position with the handle still in your hand
- After 20 to 30 seconds of unloaded operation (or when the engine begins to sputter), slide the choke switch to the "CLOSED" position.



**Note: If engine fails to start after several attempts, repeat the starting procedure mentioned above with the choke switch placed at the "CLOSED" position.**

## 2.4 Operating the PPU 20

- After the choke switch is set to the "CLOSED" position then set the engine switch in the "ON" position, turn the pump control valve handle to the "PRESSURE" position. This will allow the oil to pass through the outlet (P) into the hose/tool, and return to the pump through the return hose (T), and dump into the hydraulic oil tank.
- The deadmans handle of the tool can now be activated.



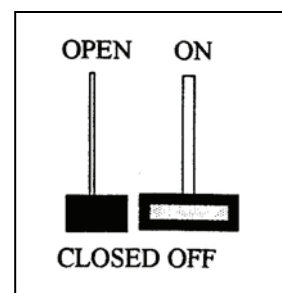
### 2.4.1 Operating the TPU 20

After the choke switch is set to the "CLOSED" position turn the selector valve (see 1.3, item H) to the left or right to use respective tool.

NOTE: Selector valve MUST NOT be set in the middle. Turn the pump control valve handle (see 1.3, item B) to the pressure position. This will allow oil to pass through the selected outlet into the desired hose/tool, return to the pump through the return hose, and flow into the hydraulic oil tank. The deadman's handle of the selected tool can now be activated. NOTE: At no time during operation of the pump should the selector handle be set in the middle. It must be set to either TOOL 1 or TOOL 2. Pressure is only completely removed by using the control handle, item B, Fig. 1.3

## 2.5 Stopping the PPU 20/TPU 20

- Slide engine switch to the "OFF" position.
- Turn the control valve handle to the release position.



### 3 Control Valve

The pump is provided with a built in pressure system through the control valve. While the engine is running, the pump will provide oil to the system. With the lever in “RELEASE” position, the valve opens, releasing the oil back to the tank. If the control valve is in the “PRESSURE” position, the oil can only flow back through the connected tools.

**Note: Only put control valve in "PRESSURE" after connecting the tool.**

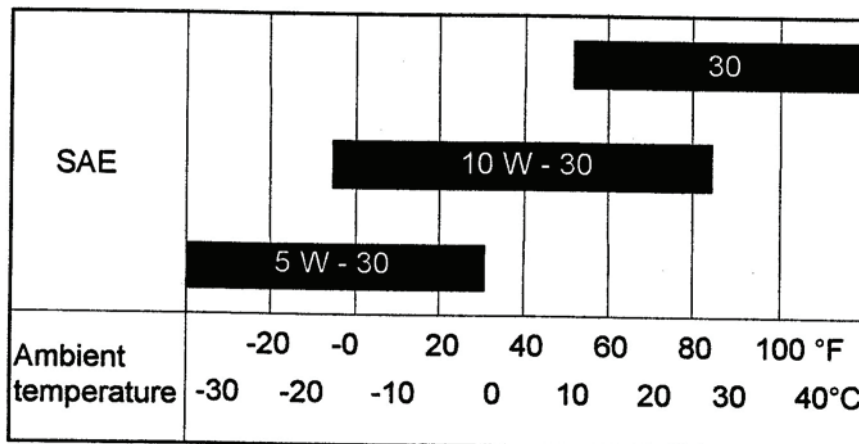
### 4 Optional hour meter, tachometer

This battery powered electronic device shows the rpm of the engine while running or the hours of operation while the engine is stopped. Equipped with a battery with an 8 year life cycle in normal operation. Available as optional part, it mounts easily to the rear panel of the **PPU 20/TPU 20**.

### 5 Maintenance

#### Maintenance schedule (do-it-yourself)

<u>Interval</u>	<u>Job to do</u>
After 20 hours: (new units only)	<ol style="list-style-type: none"> <li>1. Drain the engine oil and refill with new, proper type oil</li> <li>2. Check the hydraulic oil level. Check the level tube visually. Refill if low. Only use oil specified by supplier. This must be done while the unit is on a flat level surface and any connected tool is in a closed position</li> </ol>
Every 50 hours:	<ol style="list-style-type: none"> <li>1. Clean the air filter</li> <li>2. Clean the spark plug</li> <li>3. Clean the spark arrester</li> </ol>



- Every 100 hours:
1. Change the engine oil
  2. Change the hydraulic oil
  3. Change the spark plug

*Note: (50 operation hours: is approx. equivalent to 6 months)*

### **Air filter cleaning**

- Unsnap the air filter cover spring, remove the cover and air filter element
- Wash the filter in a solution of household detergent and warm water, rinse thoroughly and allow to dry
- After cleaning, soak element in a clean engine oil, then squeeze out excess oil and reinstall

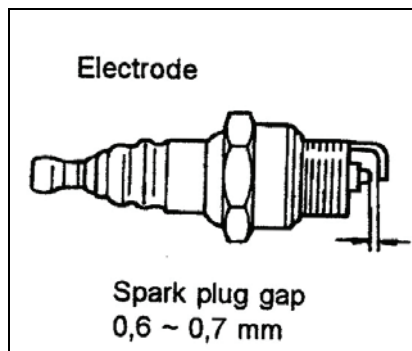
**NOTE: If the air filter element is clogged, erratic engine operation and/or excessive fuel consumption may result. Be sure to clean the air filter periodically, every 50 hours. Clean it more frequently (every 10 hours ) in extremely dusty conditions.**

### **Engine oil change procedure:**

- Remove oil filler cap and tilt **PPU 20/TPU 20** body to assure rapid and complete draining. For more rapid and complete draining, perform while engine is still warm.
- With **PPU 20/TPU 20** placed on a level surface, refill with clean oil to level indicated at the top of filler neck as described previously.
- Tighten oil filler cap securely.

### **Checking and adjusting the spark plug**

- Open spark plug cover.
- Remove plug cap and using a plug wrench, remove the spark plug.
- Using a plug cleaner or a wire brush, clean the plug electrode of burnt or deposited carbon.
- If necessary, adjust the plug gap to 0,6 to 0,7mm by bending the side of electrode.
- Recommended replacement plug type:  
BMR4A (make: NGK)  
RCJ8 (make: CHAMPION)



### **Spark arrester cleaning**

- Inspect the spark arrester every 100 hours for carbon deposits or damage.
- Make sure that the muffler is cool before working.
- Remove the 4 screws on the side cover panel.
- Unscrew the muffler.
- Carefully remove the spark arrester screen and inspect.
- Clean with a brush or replace if necessary.

### **Hydraulic Oil change procedure**

- Locate oil level indicator and filler cap.
- Position **PPU 20/TPU 20** so that the drain tube end of the base plate is the lower end and above a fluid catch container.
- Loosen drain plug on the bottom of the unit and completely drain it. For a more rapid draining, remove filler cap. Do not let the power unit sit for a long period of time after you have drained the hydraulic oil. Refill immediately. Tighten drain screw and refill oil tank with 1.74 qts.(1650 cc), with the unit on a level surface. Only use recommended hydraulic fluid or equivalent (DRYDENE 22AW).
- Do not overfill. The max. oil level is indicated on the side of the valve body.

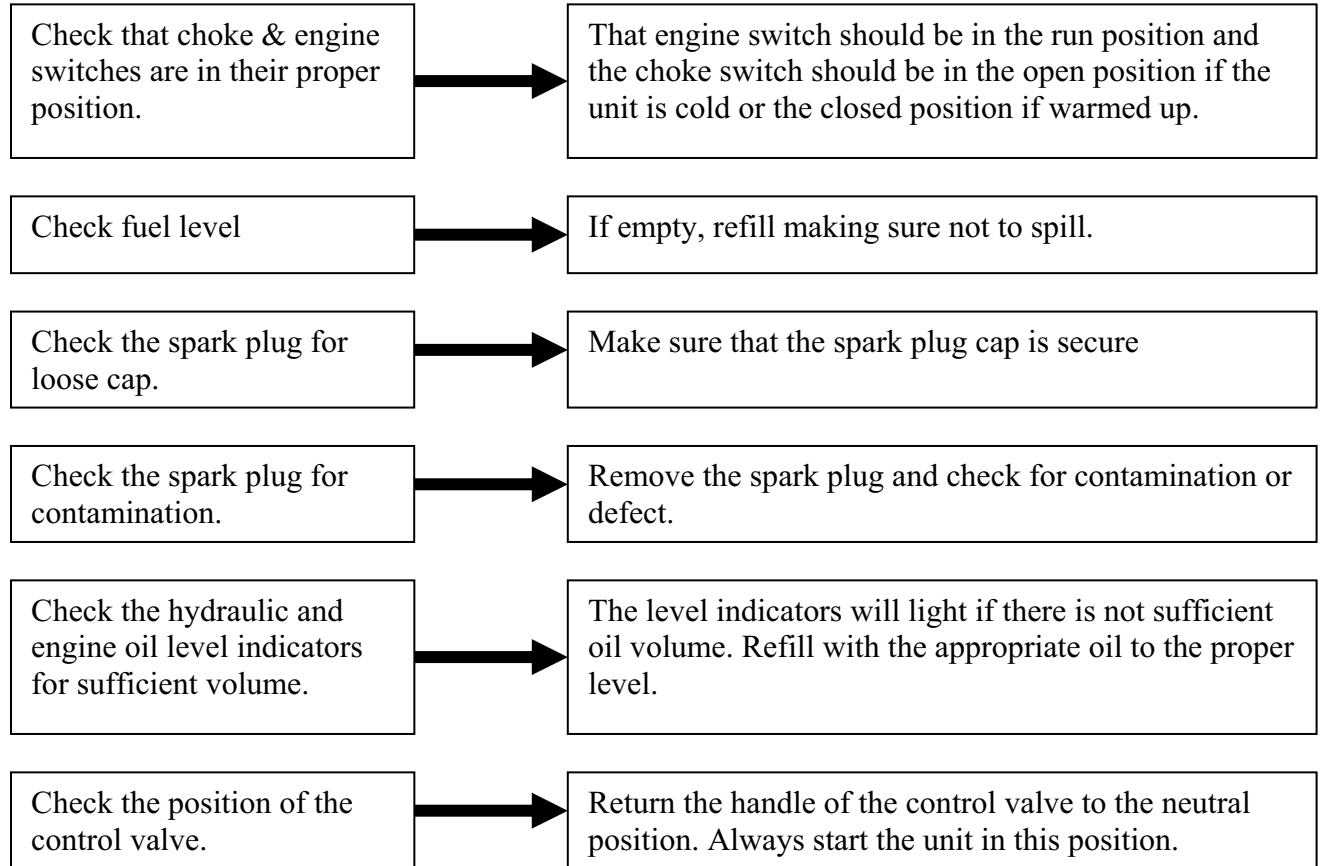
## **6 Preparation for long term storage**

- Use following procedure prior to storing the **PPU 20/TPU 20** for periods more than 1 month:
  - Drain fuel tank carefully. Gasoline left in the fuel tank will eventually deteriorate making engine-starting difficult.
  - Drain carburetor of gasoline, also.
  - To drain fuel from carburetor and fuel tank, turn fuel drain screw counterclockwise. Turn the control switch to "RUN. Do not remove drain screw. After draining fuel, retighten fuel drain screw and turn the control switch to "STOP. Some gasoline will remain in the fuel hose.
  - Change engine oil.
  - Check for loose bolts and screws, tightening them if necessary.
  - Clean **PPU 20/TPU 20** thoroughly (including air cleaner) with a fuel/oil mixture.
  - Check to make sure engine switch is in "STOP" position.
  - Pull starter handle until resistance is felt, leaving handle in that position.
  - Store the **PPU 20/TPU 20** in a well ventilated, low humidity area.

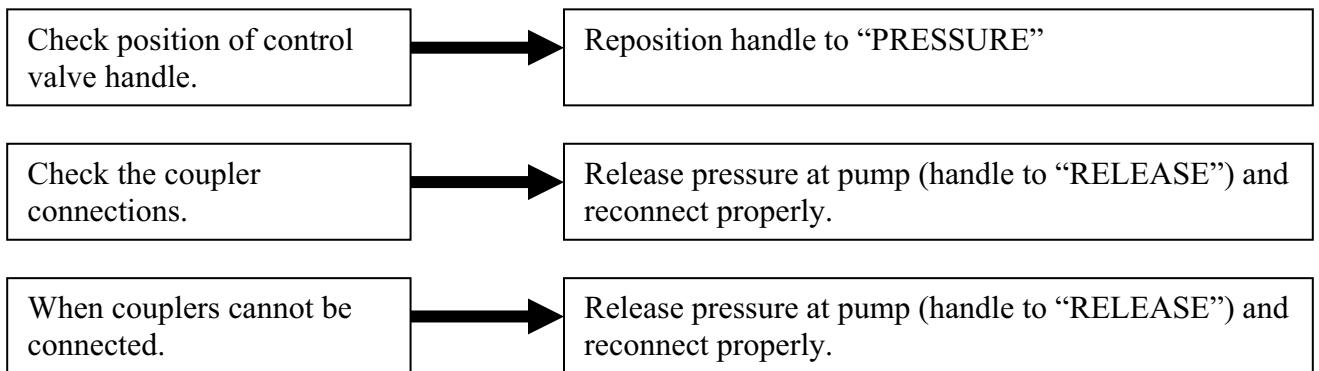


## 7 Trouble shooting

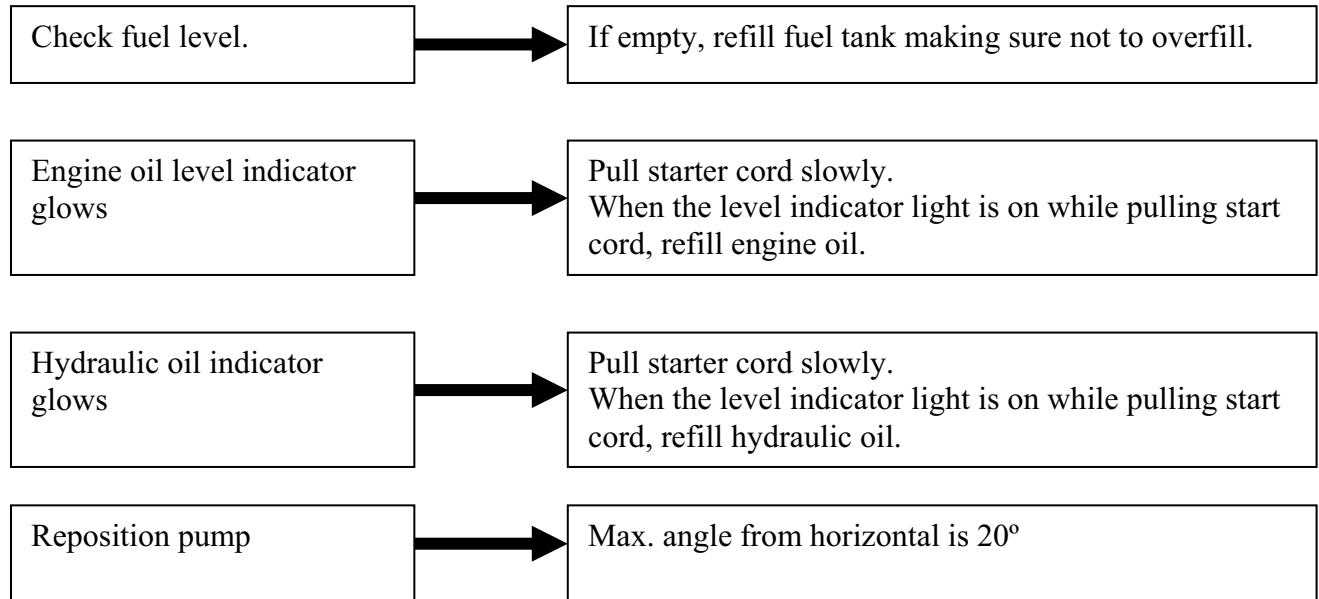
### 7.1 When engine fails to start:



### 7.2 When pump fails to power tool:



### 7.3 When the engine suddenly stops:



For other malfunctions please check with your nearest authorized Holmatro service center.

## 8 Warranty conditions

Repairs may only be made by qualified persons authorized by Holmatro. **Sealed parts are to be serviced only by an active and presently authorized Holmatro dealer.** A broken seal will void the warranty. If other problems occur, please contact your local dealer for further advice. In the event you are unable to contact your dealer, write or call Holmatro at...

Holmatro, Inc  
505 McCormick Drive  
Glen Burnie, Maryland 21061

In the event backup equipment is unavailable and an extreme emergency occurs, phone Holmatro at (410) 768-9662 (FAX: 410-768-4878) from 8:30 am to 5:00 pm EST. Inquiries should be directed to the customer service department