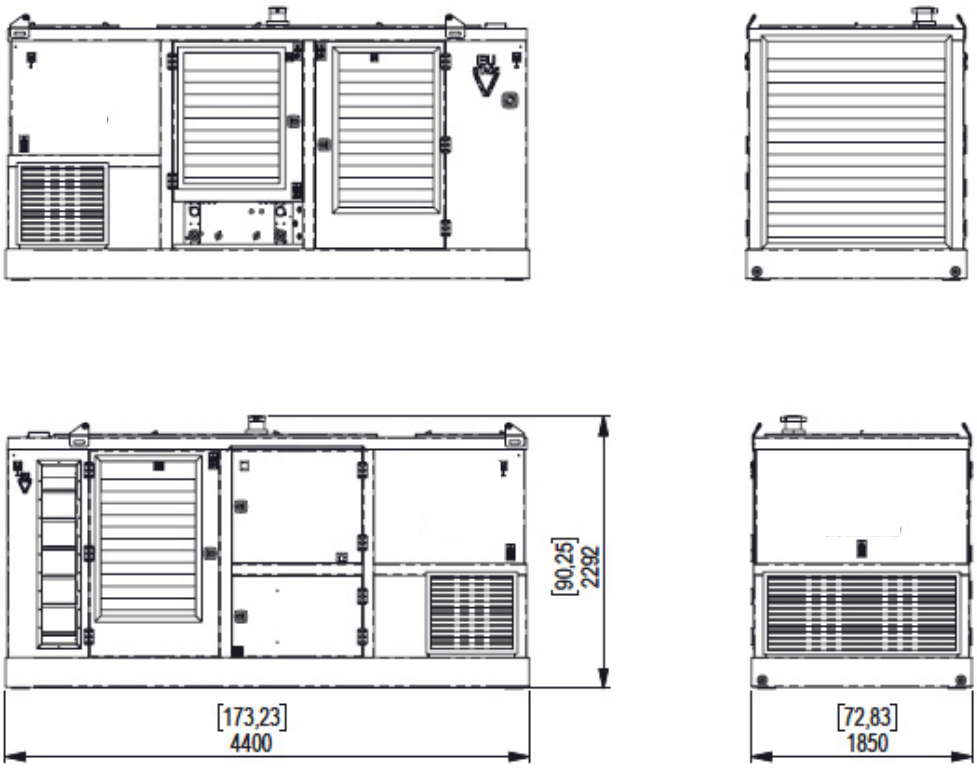
PILECO INC

P600-V-HPU Owner's Manual

Model:	P600-V
Serial number:	P600-V-HPU-065/066-0724
Year of manufacture:	2025
Revision:	-
Author:	

491 Conroe Park W. Dr.
Conroe, TX 77303
main: 936.494.4200
fax: 936.494.4517
email:sales@pileco.com

INFO P-600-V



INFO V-600-V ENG 28/06/24

Specifications

Engine:	Cat C13 D-rating 430kW Stage V			
Rpm:	1.800			
Drive Pump:	Sauer Danfoss 2x 193 cc			
Max. pressure:	350	bar	5076	psi
Oil flow:	610	l/min.	161	Gpm.
Fuel capacity:	750	litre	198	Gallon
Hydraulic capacity:	1500	litre	396	Gallon
Length:	4400	mm.	173	inch
Width:	1850	mm.	73	inch
Height:	2292	mm.	90	inch
Weight:	7600	kg.	16755	lbs

Drawn By: Blankenbroek

Subject to change without prior notice

PILECO INC.

P-600-V OWNERS MANUAL

Vigor Piling has the right to change parts of the equipment at any time without prior or direct notice to the client. The contents of this publication are subject to changes without prior notice.
This publication is to be used for the standard version of the equipment only. Vigor Piling cannot be held responsible for any damage resulting from the application of this publication to the version actually delivered to you.

For extra information as to adjustments, maintenance and repair, please contact the technical department of your supplier.

This publication has been written with great care. However, Vigor Piling cannot be held responsible, either for any errors occurring in this publication or for their consequences.

IMPORTANT:
Important safety instructions are marked as shown below:

CAUTION

The meaning of this safety warning is as follows:
Attention! Become alert! Your safety is involved.

If this situation is not avoided, it MAY result in minor or moderate injury.

WARNING

The meaning of this safety warning is as follows:
Attention! Become alert! Your safety is involved.

If this situation is not avoided, it COULD result in injury or even death.

DANGER

The meaning of this safety warning is as follows:
Attention! Become alert! Your safety is involved.

If this situation is not avoided, it WILL result in injury or even death.

PILECO INC.

P-600-V OWNERS MANUAL

1. Contents

1. Preface

This owner's manual has been written for the users of **PILECO INC.** Hydraulic Power Stations. The owner's manual explains which parts are used in the Hydraulic Power Station. If needed parts can be looked up in the parts manual for reordering.
One copy of the owner's manual will be delivered with the Hydraulic Power Station. The document should be stored in a safe place. If needed an extra copy can be ordered at your local dealer.
For ordering of parts model number, equipment serial number and part number are needed.
Please have these numbers when ordering the parts.
If problems arise which are beyond the scope of this manual, please contact your dealer. They are prepared to assist you in order to make the best use of your equipment.
Please have the following at hand:

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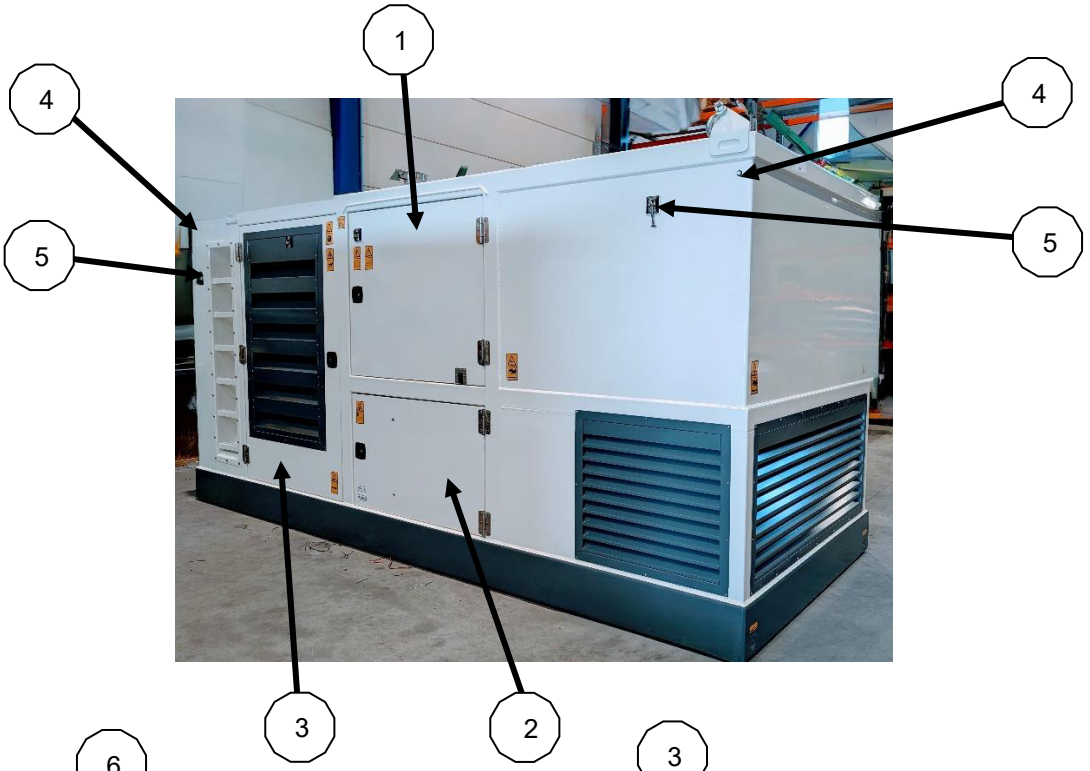
2. Exterior



1	Control panel door	5	Door holder
2	Service door fuel /ad-blue	6	Hydraulics access door
3	Engine access door	7	Hydraulics quick couplers
4	Warning lights	8	Emergency stop button

3. Safety Instructions

1. Safety precautions

Regular maintenance and skilful operation will not only lengthen the mechanical life but is essential for the safety of the user and possible bystanders.

WARNING

It is the responsibility of the user or operator to ensure that the local health and safety regulations are observed before and during the use of the equipment.

Operators:

- Only trained personnel shall be permitted to operate the machine.
- Temporary employees and trainees shall only be permitted to work with the equipment under the supervision and instruction of trained personnel.

Owner's manual:

- Everyone who works at or with the equipment should be familiar with the contents of this manual and the manuals of the machines which are driven by the Hydraulic Power Station and should follow the instructions accurately.
- One copy of the present manual should at any time be at the location where the unit is in operation.
- The management is under obligation to inform the personnel of the contents of this manual and is obliged to observe all of the regulations and directions.
- Additional manuals are available on request.

Always:

- Lead exhaust fumes outside when operating in a closed area. Continued breathing-in of exhaust fumes may be fatal.
- Pay attention to irregular or unusual noises and analyze where they come from.
- Remove all tools and electrical cords before starting the Hydraulic Power Station.
- Warn colleagues when you feel uncomfortable with the way the Hydraulic Power Station or the driven machine is functioning.

Never:

- Make adjustments or repairs while the system is under pressure.
- Make adjustments or repairs while the engine is running.
- Continue operation when service inspection is due, or when a repair is necessary.
- Continue operation when it is known that any of the safety provisions is out of order or not working properly.
- Leave the remote control unattended.
- Attempt to (dis)connect the quick-disconnect couplers when the engine is running.

Tools:

- Never use defective (maintenance) tools.
- Only use a tool for the purpose it was designed for.

Clothing and footwear:

- When working with the equipment, do NOT wear rings, watches, jewellery or any loose clothing/hair which could be caught in moving or rotating parts.
- Always wear protective goggles, a safety helmet, protective footwear and hearing protection especially suited for the work.
- Keep hands away from moving or rotating parts.
- Take appropriate measures for the ear protection if the sound level of 85 dB(A) is exceeded; always use ear protection when working close to a machine in operation.

Water and Moisture:

- Never direct a jet of water at electrical parts.
- Make sure all protective devices of the electric installation have been installed to guarantee adequate protection from moisture and water. Failure to do so can cause malfunction of safety circuits and cause harm to personnel and equipment components.

Technical specifications:

- The permissible tolerances as stated in the present manual shall NOT be exceeded.

Safeguards:

- All safeguards must be correctly installed and may only be removed for maintenance and service purposes by qualified PILECO INC. service engineers.
- The equipment should never be switched ON when the protective covering is incomplete or when the safeguards are not in place.
- All safeguards must be checked at regular intervals and repaired immediately in case of malfunction.

Safety directions and warnings:

- Any safety direction, warning or instruction fitted on the equipment shall NOT be removed, rendered illegible or covered. They shall be present and legible throughout the entire operating life of the equipment.
- Illegible, damaged or covered safety directions, warnings or instructions shall immediately be replaced or repaired.

Service and maintenance:

- The service and maintenance activities shall only be carried out by qualified PILECO INC. personnel or one of PILECO INC. appointed and certified dealers in full compliance with all safety instructions and service intervals.
- Use original PILECO INC. Parts and liquids.

Electrical system:

- Work on the electrical system or equipment may only be carried out by skilled electricians or by specially instructed personnel under the supervision of such electricians and in accordance with the applicable electrical engineering rules.

Hydraulic system:

- The hydraulic system is a high pressure, high oil flow system. Work on the hydraulic equipment shall only be carried out by persons having special knowledge and experience in high pressure hydraulic systems.
- When bleeding hoses or looking for leaks, take protective measures. Escaping oil under pressure, even a pin-hole size leak, can penetrate body tissue, causing serious injury.

Use according to purpose:

- To guarantee correct operation, the equipment should only be used in accordance with the purpose as described in this owner's manual.

Fire or explosion prevention:

- Hydraulic oil and diesel fuel are flammable. Therefore:
- Do not weld or flame-cut on pipes or tubes that contain flammable fluids. Clean them thoroughly with non-flammable solvent before welding or flame cutting on them.
- Clean and tighten all electrical connections. Check regularly for loose or frayed electrical wires. Wiring must be kept in good condition, properly routed and firmly attached. Routinely inspect wiring for wear or deterioration. Loose, unattached, or unnecessary wiring must be eliminated.

WARNING

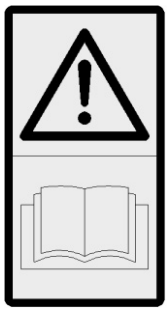
Never smoke when filling the fuel tank or use flames in the vicinity.
Never store flammable liquids near the engine.

Work area:

- Place the Hydraulic Power Station in a safe place.
- Position the Hydraulic Power Station in such a matter that eye contact with the Hydraulic Power Station is assured.
- Keep the work area clean. Keep the equipment accessible and make sure that the area surrounding of the equipment is kept clean.
- Always be extremely careful when using a carbon tetrachloride fire extinguisher in a closed area, as it may produce toxic vapors and/or deplete the area from oxygen.

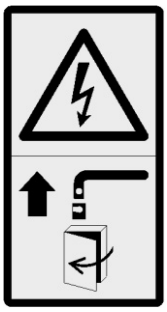
2. Safety instructions

HAZARD DESCRIPTION



Safety sign

Read the operation manual

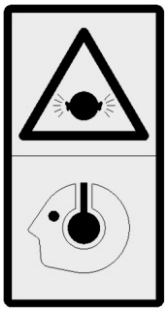


Risk for short circuit

Disconnect power source before opening dashboard

Make sure the machine is in good condition

Read the maintenance instructions in the owner's manual for proper service procedures



High noise level

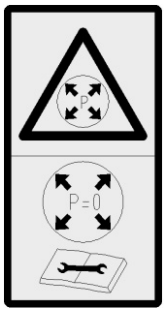
Use ear protection

Surface can be hot

Do not touch, allow the surface to cool down

Fire risk

Keep machine clear of oil rests, be careful when handling fuel and hydraulic oil



Component is pressurized

Depressurise before maintenance

Risk of burns resulting from dangerous liquids or chemicals

Wear protective gloves

	HAZARD DESCRIPTION
	Risk for imbalance Slippery surface Use adequate climbing device

4. Description

The V-400V Hydraulic Power Station is designed to drive Fixed moment vibratory hammers and augers.

1. Description of the Hydraulic Power Station

The Hydraulic Power Stations are powered by a diesel engine. The engine is mounted on a tubular sub-base which serves as a fuel tank. The power unit and the driven machine are operated from the control panel or remote-control pendant.

Hydraulic oil is stored in the reservoir. Oil cooling is accomplished by an air-to-oil temperature exchanger. All the above components are contained in a sheet metal enclosure with lockable doors and air vents.

2. Hydraulic system

* (for the circuit, refer to the hydraulic diagram *HD-V-400V-1000668-31-05-22*)

The hydraulic circuit of the PILECO INC. power station is a so-called open-loop system. This means that the oil is taken from a reservoir.
The pressure in the return line is low. Each power pack is equipped with several hydraulic pumps.
The main pump(s) are variable displacement pumps and drive the connected equipment.

The Main pump:

When the diesel engine is running and the start button is activated, hydraulic fluid is taken from the reservoir by the drive pump and is pumped to the drive manifold.
The oil is directed through the hoses to the driven machine. It flows back to the power pack through the return line.
The circuit is protected by means of a pressure relief valve and is provided with a return line filter.

The hydraulic hoses can be disconnected at the power pack directly behind the manifold.

The Reservoir:

The hydraulic oil is stored in the hydraulic reservoir. The oil flows into the reservoir via the return filter. The reservoir can be closed with a butterfly valve.

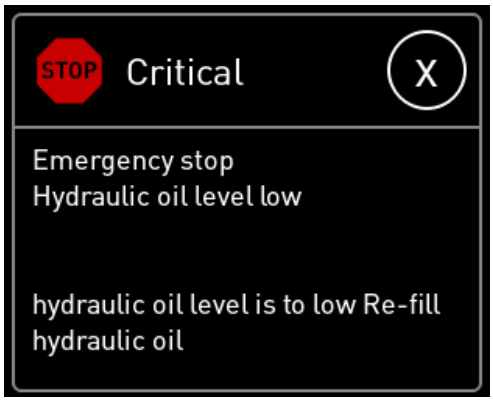
3. Electrical system

*(for the circuitry, refer to the "Electrical diagram")

The power pack contains a 24V DC electrical installation. All main functions are electrically controlled either from the remote control or from the main control panel.

The power pack is equipped with a control module, which will warn the operator in the following cases:

- Hydraulic oil temperature too high, 70°C. The oil flow to the equipment will stop and the engine will run at fixed speed until the oil temperature is 60°C.
- Hydraulic oil level too low.
- All engine faults are shown on the display.
- Emergency stop, this will cut off all power to the diesel engine.
- Limit switch on the main intake valve. If the switch is not activated the engine will not start.



Error indication

When the error is solved the display warning can be closed by pressing the "X" button on the display warning.

If there appears any fault on the display, lights on the outside of the power pack housing will flash indicating a system warning.

5. Assembly and installation

1. Moving the equipment

The power packs are equipped with four lifting eyes. All four lifts must be used for lifting the power station.

WARNING

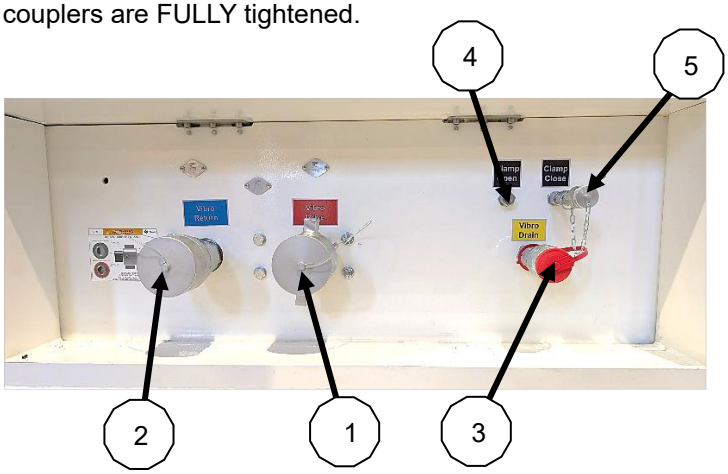
Always lift the power station by its own 4 lifting eyes. Use certified slings and place the power station on a horizontal and stable surface.

2. Connecting the hydraulic hoses

CAUTION

Never connect or disconnect the hoses while the diesel engine is running.

- Make sure the Quick couplers are not pressurized.
- Clean the Quick couplers before connecting.
- Check the (Quick)couplers and hoses for any damage prior to operation.
- Make sure the couplers are FULLY tightened.



1	Vibro Pressure Quick coupler
2	Vibro Return Quick coupler
3	Vibro Drain Quick coupler
4	Vibro Clamp Open coupler
5	Vibro Clamp Close coupler

3. Connecting the remote control

Connect the cable plug to the control panel of the Hydraulic Power Station (see picture below, item A).

When the pendant / wireless control cable is:

Connected: The hammer can only be operated by means of the remote control.

Disconnected: The hammer can only be operated by means of the Local operating device at the control panel.

Remote control connector 10 pin for future options

Remote control connector 16 pin

CAUTION

The EMERGENCY STOP on the remote control is only operational when the remote control is connected.

6. Operation

1. Emergency stop

CAUTION

Always restart the hydraulic power station after the emergency stop is re-set.
Not re-starting can cause damage to the diesel engine.

The Hydraulic Power Station is equipped with several emergency stop buttons, activating the emergency stop will shut down the diesel engine and cut the main oil-flow.

Do not use the emergency stop buttons for any other use than an emergency stop.

Before operation check that all emergency stop buttons are in operating position, turn the emergency stop button counter clockwise to release.

Emergency stop indication will show on the control panel main display.

If any of the emergency buttons are energized, make sure to restart the hydraulic power station and shut it down in the correct way.

2. Filling the hoses

When the Driven Equipment is delivered the system is usually filled with oil and may be used immediately.
However, if any hoses need to be replaced or connected on site it can be necessary to bleed the hoses prior to operation.

- Start and warm up the engine (read chapter Starting/Stopping).
- Run the HPU at idle for 5 minutes
- Stop the diesel engine.
- Check the oil level in the hydraulic oil tank. Refill if necessary.

3. Control Panel

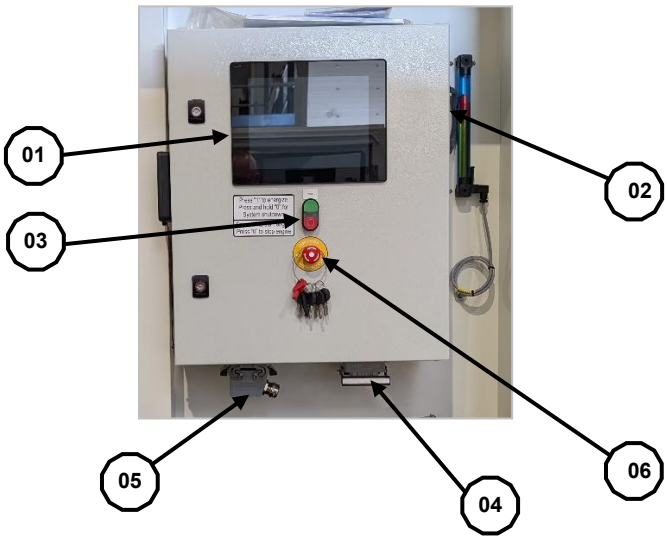
The control panel contains a control module by which the operator can control the Hydraulic Power Station.

CAUTION

Make sure the operator has a clear view on the connected machine(s) and the working area, when operating via the control panel.

IMPORTANT:

The operation / maintenance / safety instructions inside the control panel door serve as quick reference. They are not complete and therefore not intended as a substitute for a thorough understanding of the present manual.

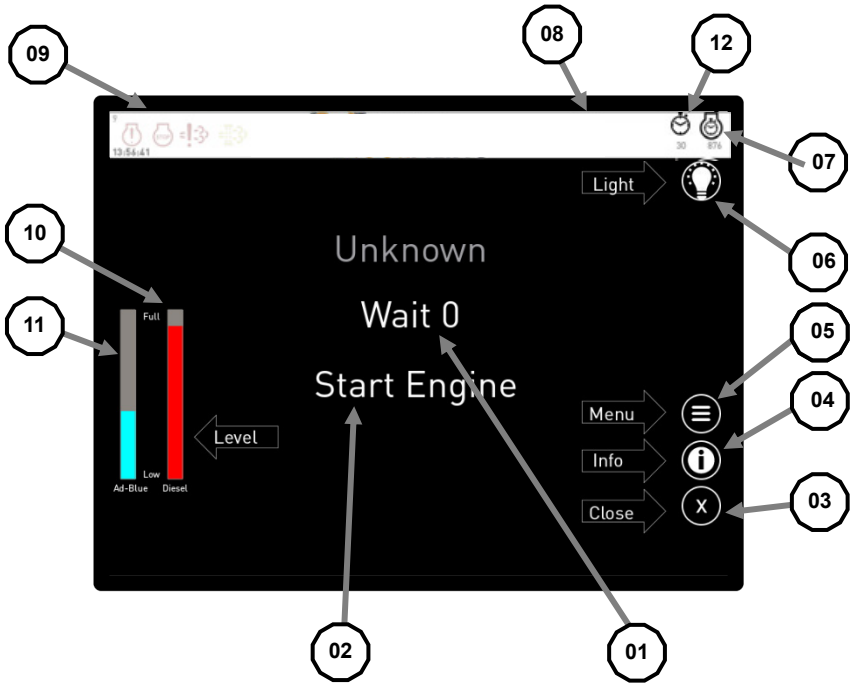


Control panel layout			
01	Main Display	04	Remote control connector 16 pin
02	Bluetooth Modem	05	Remote control connector 10 pin
03	Start/Stop button	06	Emergency stop button

HMI-Display

This Hydraulic Power Station is driven by a Parker IQAN system, all settings and value read-out can be accessed from the touch screen HMI Display.

Start-up display



Control panel buttons			
01	Countdown timer	07	Diesel engine shutdown timer
02	Text shows wait or start	08	Current display page
03	Close Page button	09	Engine status lights
04	Info Button / shows info page	10	Diesel Fuel Level
05	Menu button / show settings menu	11	AdBlue Level
06	Button Panel Light	12	Power station shutdown timer

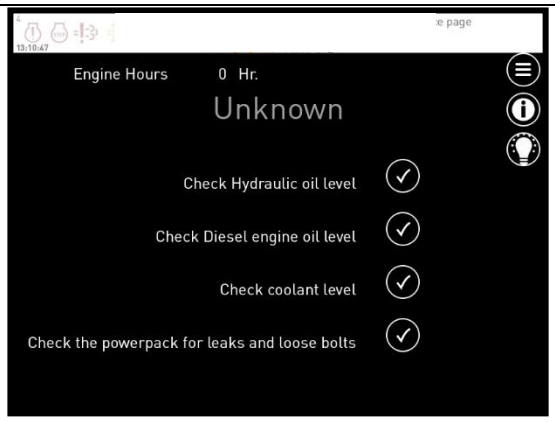
Engine status lights

Engine status lights			
01	Engine failure	03	Preheat (wait to start) Not installed
02	Stop by engine active	04	Emission system error
05	Exhaust regeneration active		

4. Display pages

Display buttons

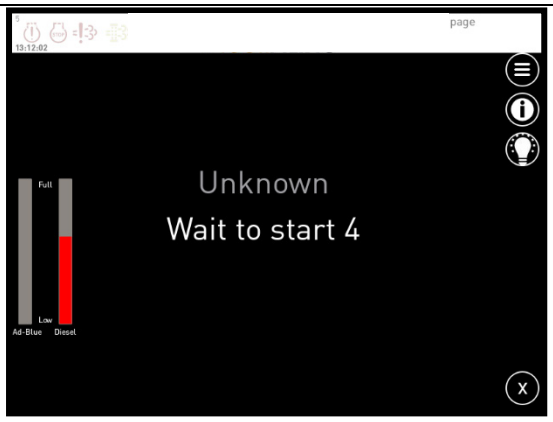
	Menu button		Diesel RPM Lower
	Info button		Diesel RPM Raise
	Panel light button		Open clamp button
	Close page button		Close clamp button
	Back button		Stop hydraulic operation
	Diesel engine info button		Start hydraulic operation
	Hydraulic info button		Auger CCW rotation
			Auger CW rotation



Service checklist

This is the start-up page after power-on

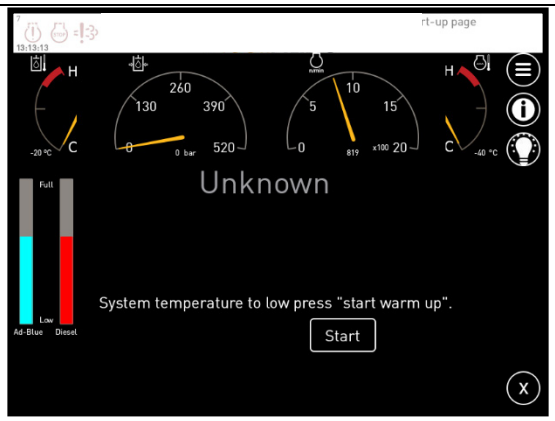
The checkmarks can be tapt with you finger to confirm the check has been done



Countdown

This page shows after the checklist has been done wait for the counter to reach 0 and the display to show start engine

Main pages



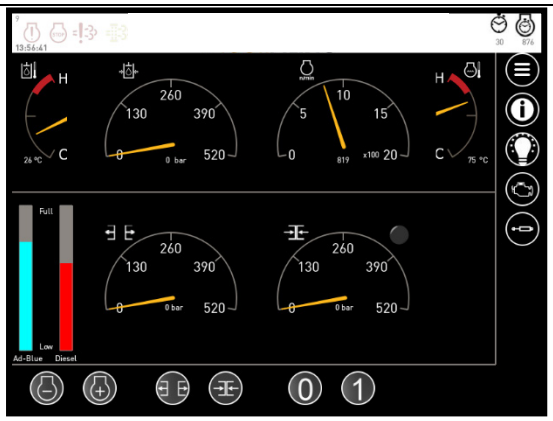
Warm-up

If the hydraulic temperature is below -10°C (14°F) the display will show that the temperature is too low, and warm-up is necessary.

Press "Start" to begin the warm-up procedure.

The power station will rev-up to a fixed speed and start to deliver pressure.

This will not influence the vibratory hammer

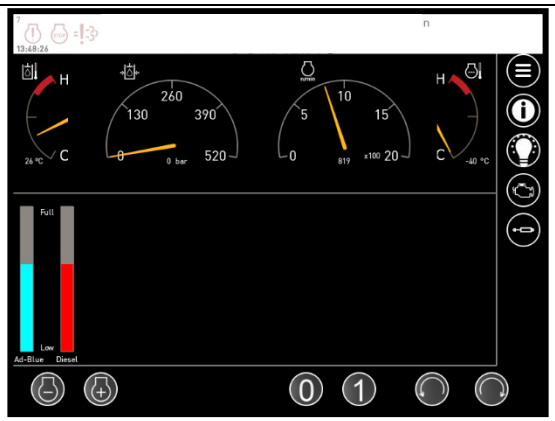


Main display (local operation vibro)

If the Hydraulic power station is ready for operation it will show the main display.

In this display the engine speed pressures and temperatures are shown.

If any of the remote controls are connected, the buttons on the bottom off the screen will be hidden.

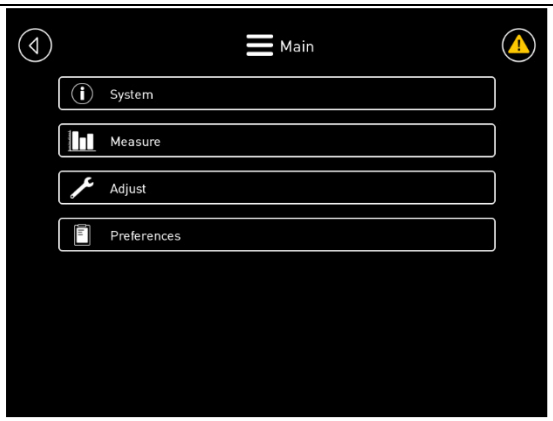


Main display (local operation auger)

If the Hydraulic power station is ready for operation it will show the main display.

In this display the engine speed pressures and temperatures are shown.

If any of the remote controls are connected, the buttons on the bottom off the screen will be hidden.

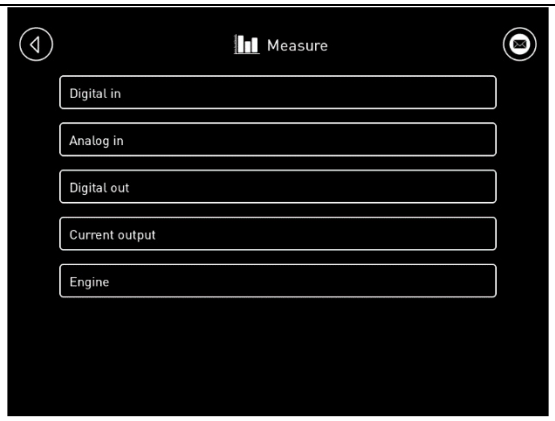


Main menu

This pages is an selection menu

The system menu is for checking system information, module status and log files

Close page, Page back one level

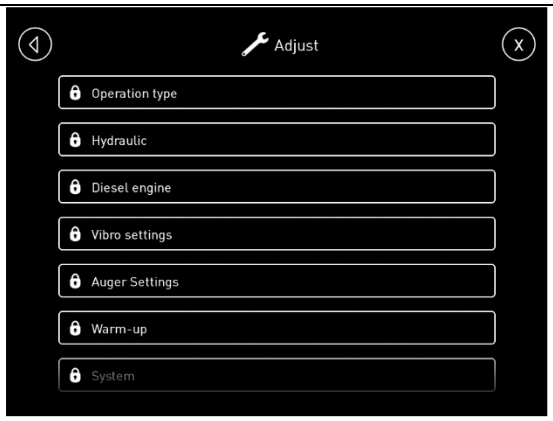


Measure menu

This page is used for fault finding.

Digital and analogue values can be monitored in raw and scaled value

Close page, Page back one level



Adjust menu

The adjustment operation type is free to use in this menu you can make the selection between vibro and auger use (only for local operation)

And the pre-set flow selection pin code "2022"

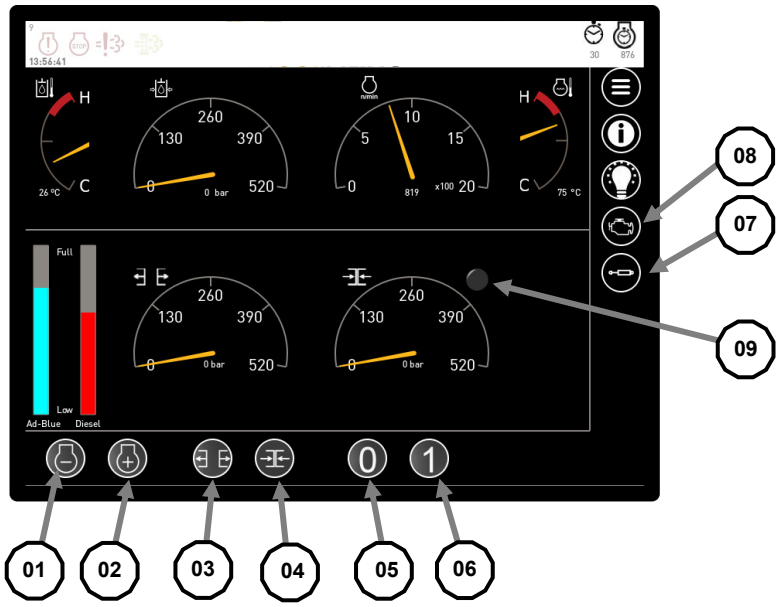
All other menu's are locked for Vigor piling use only.

Close page, Page back one level

After starting the diesel engine, the HMI-display switches over to the main display or warm-up if the system temperature is too low.

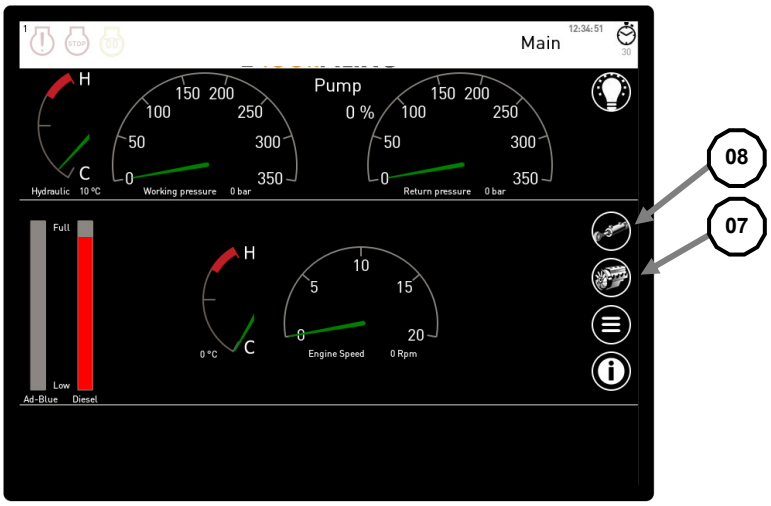
Main display

(Local vibro operation - without remote control connected)



Control panel buttons			
01	Diesel RPM Lower	05	Stop hydraulic operation
02	Diesel RPM Raise	06	Start hydraulic operation
03	Open clamp button	07	Hydraulic info button
04	Close clamp button	08	Diesel engine info button
		09	Clamp closed indicator light

(Remote control operation - with remote control connected)



Control panel buttons			
07	Show display page Diesel engine	08	Show display page hydraulics

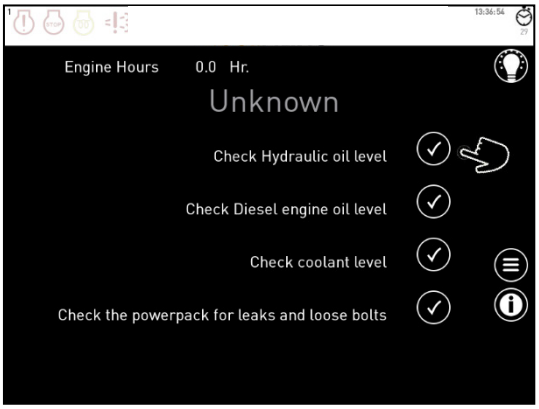
5. Starting/Stopping Procedure

CAUTION

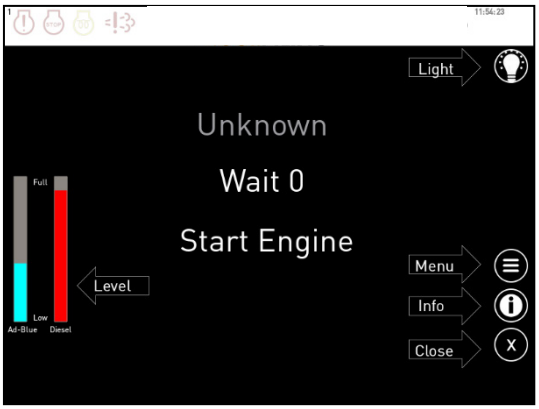
To prevent severe damage to the attached equipment, make sure that the right flow is set for equipment you are using. If you are not sure please contact your local dealer.

Start Procedure

- Press the green start button to energize the Hydraulic Power Station 



- Follow the checklist and confirm the checkmarks after checks.
- Wait for the "wait to start countdown" to reach 0 and the display shows "start engine"



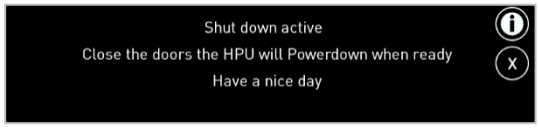
- Press the green button to start the diesel engine 
- Close the Bypass valve to enable max drive pressure.

Stop Procedure

- Allow the diesel engine to run at low idle for at least 5 minutes
- Press the red button to stop the diesel engine 
- Hold the red button to shut down the Hydraulic Power Station 

When the stop button is pressed and the engine is shutdown, the display will show

the display will count down to 0 and then shows the following



You can now close the power station, it will shut down completely when the diesel engine is finished with flushing the Ad-Blue system.

6. Vibro Operation

Start vibro operation

- Slightly raise the diesel RPM +- 1000 Rpm
- Close the Clamp wait for the clamp closed indicator light to come on
- Raise the engine speed to required speed
- Press start hydraulic operation

Stop vibro operation

- Press the stop hydraulic operation button
- Vibro braking sequence starts
- Wait for the engine speed to return to idle
- Open the Clamp

The Hydraulic power station has an smart start/stop system, after opening the clamp the diesel engine will run for a pre-set time and then shuts down.
After pressing the clamp close button the diesel engine will restart and the PowerStation is ready for use.

7. Troubleshooting

Most breakdowns and/or malfunctions can be prevented by proper periodic inspection, lubrication and maintenance.
If the malfunction cannot be corrected, contact your local PILECO service location.
For malfunctions of the impact hammer or other equipment, we refer to the relating owner's manuals.

Engine does not start

Make sure the emergency stop is deactivated. Check if the IQAN PLC display shows any messages. Solve the cause if necessary.
If the engine does not turn over, check the battery and check if the connectors of the battery are fully tightened.
If the engine turns over, check the fuel supply and the fuel filter.
Consult the Caterpillar Operation & Maintenance Manual.
Contact your local Caterpillar dealer.

Make sure all engine compartment doors are closed, open doors will stop the engine and prevent it from starting.

Engine does not stop

If there is an emergency, push the emergency stop button.
Check the electrical components and connections.

7. Maintenance

CAUTION

All maintenance work is strictly only for qualified and authorized personnel. Except for visual inspections, all maintenance work must be carried out when the diesel engine is stopped. Make sure that the main power switch is in the OFF position and take off the battery cables.
Install a DO NOT OPERATE or similar warning label to the main control panel.

1. General

Preventive maintenance includes normal servicing that keeps the power station in good operating condition and prevents unnecessary breakdown.

Lubrication is essential for the system, determining to a great extent the lifespan of the Hydraulic Power Station.
Therefore, it is important that the instructions regarding types of oils and exchange intervals are closely adhered to.

- Prevent dirt from entering lubricants and the hydraulic system.
- Thoroughly clean all lubrication fittings, caps, filter plugs and level plugs and their surrounding surfaces before servicing.

CAUTION

Regular maintenance increases the lifespan and the output of the power pack and is essential for the safety of the user and possible bystanders. Before starting maintenance, make sure the machine has cooled down, the working area is safe and clean, and the system is depressurized. Install a DO NOT OPERATE or similar warning label to the ignition switch. Turn off the mass switch prior to maintenance work on the electrical system.

New or stored Hydraulic Power Stations

For new or stored power packs, refer to the diesel engine Operations Manual (section "Preparation for Starting Engine, First Time").

2. Service intervals

Every 500 running hours, the **MAINTENANCE WARNING SIGN** will appear on the display.

- Contact your nearest PILECO INC. dealer for a service appointment or more information.
- For more detailed information regarding the engine, refer to the "Operation and maintenance manual" (M0102230-2) of the engine.

3. Daily maintenance

The daily instructions apply to routine or daily starting of a Hydraulic Power Station.

Quick guide available in the dashboard of the hydraulic PowerStation

Before start-up:

- Check the coolant level in the radiator *(engine should be cooled down)*.
- Check the air filter service indicator.
- Check the engine oil level.
- Inspect the water separator of the Fuel filter. Drain if necessary.
- Check for leaks and loose connections.
- Check the fuel level.
- Check the hydraulic oil level.
- Clean the bottom plate of the power pack
- Inspect hydraulic system for leaks.
- Visually check all couplers and hoses for signs of damage or cuts.
- Make sure all hydraulic connections are fully tightened, especially the quick-disconnect couplers.

CAUTION

Damaged hoses and couplings must be replaced immediately.
Never attempt to repair hoses or coupling yourself, repairs may only be carried out by certified personnel.

After start-up:

- Check hoses for leaks.
- Check all hydraulic components for leaks.

4. Inspection and replacement intervals

Filter back pressure warnings appear on the main display.
Replace filters when warnings appear or on interval schedule.

REPLACE INTERVALS BASED ON OPERATING HOURS POWER PACKS					
	Normal conditions		Heavy conditions		Min.
	First	Interval	First	Interval	
Engine	According engine service manual				Yearly
Hydraulic return filter	500	500	500	500	Every 6 months
Hydraulic oil	Sample yearly		Sample every 6 months		Sample Yearly
Hoses	Exchange when first layer is damaged				Every 5 years

5. Remaining service intervals

Engine:

- Refer to the diesel engine "operation and maintenance manual".

Other components:

- Have the hydraulic fluid analyzed by a local hydraulic service center. Replace fluid if required.
- Have the hydraulic system inspected by PILECO INC. (authorized) service personnel.

Severe conditions:

The intervals are based on normal operation. Perform these services more often in operation under heavy or severe circumstances.

The specified intervals are based on normal operating conditions. Operating under severe or unusual conditions will require some adjustments in service intervals.

In the following circumstances, the service intervals should be reduced by one-half of those specified.

- when the average ambient temperature is above 35°C (95°F) or below -23°C (-10°F)
- when operating in the presence of dust or sand
- when operating more than twelve hours per day

When operating in air with high salt or moisture, the service intervals do not need to be changed. However, the unit should be inspected weekly to determine if additional servicing is required. Also, the hydraulic oil must be tested quarterly.

For extended inactive periods, the engine should be started at least once a week and run until thoroughly warm. Service intervals may be extended from those specified. For stored power stations, refer to the diesel engine Operation's Manual (section "Preparation for Starting Engine").

Additional inspections:

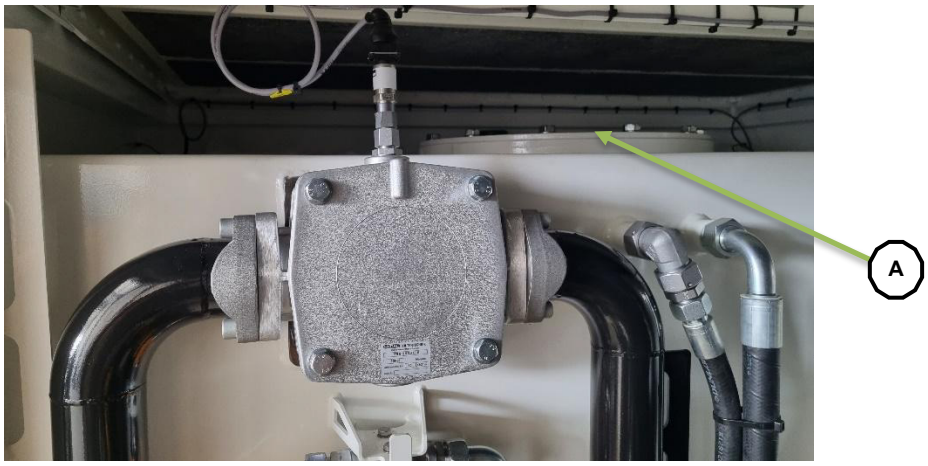
Additional inspections			
1	long inactive period		Inspection before operation
2	Environment with high salt and/ or moisture content		Weekly inspection
3	Heavy driving conditions		Inspection of the engine filters every 250 hours

High temperature or offshore conditions can decrease the lifetime of the hydraulic hoses.

Visually inspect the hydraulic hoses for damage or cracks in the rubber outer layer. Replace the hose when the outer layer is damaged.

Draining and filling the hydraulic reservoir

The hydraulic reservoir is drained by removing the manhole cover(A) and removing the roof plate above the hydraulic reservoir. If you open the reservoir, make sure you clean fully before closing it again. The hydraulic reservoir is filled by connecting a pump the drain coupling. All oil is pumped to the reservoir through the return filter.



The diesel engine can be drained by opening the drain valve (C) on the engine pan, the manual pump on the frame can be used to drain the oil sump.

Refill volumes

The refill volumes of the engine oil, diesel oil & hydraulic oil can be found in the parts manual of the power pack.

Hydraulic reservoir refill capacity is 1200 Liter.

6. Recommended fluids

	Normal ambient	High ambient		
	-10°C / 55°C	T > 55°C		
HYDRAULIC OIL	Kennoco Hydra 46	Kennoco Hydra 32		
BIO OIL				
ENGINE OIL	CAT DEO ULS engine oil (ultra-low sulphur) - 25 l			
COOLANT	Cat-Ready mix 60 L			

Severe circumstances:

- Engine: refer to the "Operation and maintenance manual" engine.
- Hydraulic system: contact your local specialist

7. Welding

DANGER

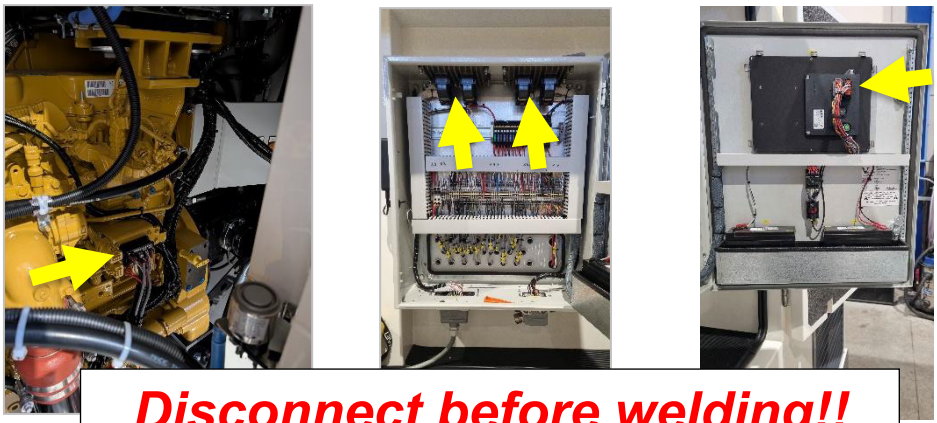
The Hydraulic Power Station is filled with flammable liquids, make sure the power station is clean before welding and make sure that the parts that need to be welded are free of flammable liquid

WARNING

Do not weld or flame-cut on pipes or tubes that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or flame cutting on them. Proper welding procedures are necessary in order to avoid damage to the engine's computer, sensors and associated components. When possible, remove the component from the unit and then weld the component. If this is not possible, follow the instructions below:

8. Before welding:

- Stop the engine.
- Turn the main power off.
- Disconnect the negative battery cable from the battery.
- ***Always disconnect the connector from the Engine Control Module that goes to the dashboard. Move the harness to a position that will not allow the harness to accidentally move back and make contact with any of the ECM pins.***
- ***Always disconnect the connectors from the IQAN modules in the control panel.***
- Connect the welding ground cable directly to the part that needs to be welded. Place the ground cable as close as possible to the weld.
- Protect the wiring harness from welding debris and spatter.
- Use standard welding practices to weld the materials.
- Make sure to have the correct fire extinguisher within reach



Disconnect before welding!!

8. Ordering parts

1. Procedure

When ordering parts, be sure to include the model and serial number of the unit or component. Confirm all telephone and/or e-mail orders immediately to avoid duplicating shipment.

2. Original equipment

Where serial numbers are given, these numbers only apply to equipment and components originally furnished with the unit. Where equipment has been changed or added to, these numbers may not necessarily apply.
Replace broken parts only with PILECO Original replacement parts.

3. Shipment

State to whom shipment is to be made and method of shipment desired, otherwise our own judgment will be made.

4. Shortages

Claims for shortages or errors shall be made immediately on receipt of parts. No responsibility will be assumed for delay, damage or loss of material while in transit. Broken, damaged or loss of material shall be refused or a full description made of damage or loss to the carrier agent on the freight or express bill.

5. Return of parts

If for any reason you desire to return parts to the factory or to any distributor from whom these parts were obtained, first ask permission to return the parts. Shipping instructions will be given along with this permission.

6. Screws and bolts

Almost all connections on the unit are made with metrical threads. These screws are available at most industrial supply houses.
Some screws or bolts require a specific torque when replacing. For identification of these bolts and a more thorough understanding of torque look in the operating manual of the engine or from the impact hammer.

Abbreviations used			
BHCS	Button Head Cap Screw	HSSS	Hex. Socket Set Screw
FHCS	Flat Head Cap Screw	PHMS	Philips Head Machine Screw
FLCS	Flanged head Cap Screw	RHMS	Round Head Machine Screw
HC	High Collar	SHCS	Socket Head Cap Screw
HHCS	Hex. Head Cap Screw	SHPP	Socket Head Pipe Plug
HHPP	Hex. Head Pipe Plug	SHSS	Socket Head Shaller Screw

7. Hoses

For the right hoses see the parts manual from the Hydraulic Power Station or call PILECO for the right hose.