

LSMC-rev0 Installdoc

## **LSMC MARINE LOAD BANKS**

### **INSTALLATION INSTRUCTIONS**

The product supplied has been factory tested however, correct installation and setting of the control system is imperative for the system to operate correctly and to ensure trouble free operation.

### **IMPORTANT**

In the design and assembly, care has been taken to minimise the potential for galvanic action through electrolysis.

### **OBSERVE THE FOLLOWING TO AVOID BREACHING THE LIMITED PRODUCT WARRANTY:**

- Do not remove the rubber electrical ground and vibration isolators from the vessel mounting legs.
- Only use the Hump Hose connections supplied for the seawater inlet and outlet.
- Connect the drain line onto the ½" Nylon adapter supplied .Do not replace with a metal fitting.
- Do not mount or add any uninsulated braces, brackets or fixtures to the insulated assembly.
- Do not remove or alter the pressure switch, flow control or the air bleed valve or other factory set devices.

### **GROUND LEAKAGE PROTECTION DEVICES**

The load bank is fitted with minerally insulated type resistors. Sensitive ground leakage breakers are not recommended for use with this type of equipment.

## LSMC Installation Instructions Cont.

### MOUNTING

Locate the Load bank in a suitable position in accordance with the hydraulic, pumping and electrical requirements set out in this manual.

Refer to the "Hydraulic General Arrangement", the "Pump Installation Guide Lines" and the "Electrical Schematic Arrangement"

Bolt down the base of the assembly using the 4 mounting holes provided.

**NOTE:** If it is necessary to remove the base and/or to mount the system, vessel or pump separately, ensure that complete electrical ground isolation is maintained.

***When connecting plumbing by use of wrenches, it is critical not to strain or load the connections on the carbon vessel or it's associated fittings and rubber mounting points. Alignment of the connecting inlet and discharge pipe-work with the vessel connections is important, so stress to the composite vessel does not occur.***

- Do not remove the rubber mounting feet as they are critical for galvanic and vibration insulation.
- The Hump Hose connection must always be used.
- Take care not to strain the carbon vessel in this process.
- If disconnecting the plumbing it will be necessary to heat the connection with a hot air gun to soften the pipe sealant before attempting to undo. Heat to approx 60°C (150°F). Always hold the adaptor fitting on the vessel with a wrench. This will prevent turning in the body and subsequent gasket damage.
- Do not damage or scratch the surface of the carbon vessel. If this occurs, touching-up with resin to repair the surface is recommended.

Recommended pipe sealant: Loctite 577

Resin: Use

Touch up any damaged paint work after installation.

### PLUMBING

The plumbing arrangement of the unit is extremely important to the system's operation and life expectancy. Pipe size nominated for the discharge must not be reduced and the system must be free of back pressure.

**INLET:** Only use the Hump Hose coupling supplied and ensure a gap is present in the connection between the pipes.  
Connect a MINIMUM 32mm (1 ¼") FILTERED supply line from the sea chest.  
Note: The coupling allows for the incoming pipe to be rotated to suit.

**STRAINER:** The inlet pipe line, if not connected to the sea chest, should be fitted with a strainer with an inlet area six times the pipe diameter to prevent solids from entering the system.

**OUTLET:** Only use the Hump Hose coupling supplied and ensure a gap is present in the connection between the pipes.  
Connect a MINIMUM 32mm (1 ¼") discharge line to overboard.

## LSMC Installation Instructions Cont.

DRAIN: Connect a suitable drain line from the vessel to the bilge tank.  
Note: Use only the ½" Nylon adapter supplied to make the connection.  
Recommended size 13mm ( ½")

### PUMP

#### Never run the pump dry

The system is supplied with a self priming centrifugal pump. Care should be taken to ensure that the discharge port has approximately 300mm (12') of head to ensure the system remains flooded at all times.

### SUCTION PIPING

#### Above water line installation

The suction line must be airtight. The line should be installed so it rises to the pump or run horizontally. The line should not peak and fall into the pump, creating air pockets.

#### Below water line installation

The suction line must be airtight. Ensure that the line installed has minimum bends without rise and falls.

### DISCHARGE PIPING

The discharge should not have a CHECK VALVE. Check or one way valves prevent the pump from purging air, preventing self-priming. Gate valves in the line must be open at all times during operation.

### START-UP

- Check that the pump is rotating in the correct direction by switching on for a few seconds. Refer to arrow on pump motor. Change any two phases at the control box terminals to correct.
- Prior to commissioning, fill the system with water through the filler cap provided on the pipe work.  
Self-priming pumps must be filled with water at start-up, thereafter they remain primed.
- Remove the plastic cap at the top of the pump to check if the priming chamber is full. Fill as necessary; replace plug prior to starting.
- Ensure supply and discharge valves are open prior to start-up.

The length of time to fully prime depends on the vertical suction lift and the length of the pipe from the source. eg. a vertical lift of 4 metres (12 ft) may take up to 3 minutes depending on air in the system.

### ELECTRICAL CONNECTIONS

The Smartload Bank is pre-wired ready for connection of the CT/s and the generator supply cables.

Current Transformers (CT/s) are not supplied with the system. Choose CT/s to suit the cable or busbar size in the switchboard.

## LSMC Installation Instructions Cont.

CT value must be of the full value of the alternator kW output. The secondary of the CT must be 5 AMPS.

- Install the C.T/s on the middle phase of the alternator output, located before the vessel load and the Smartload® load bank connection. Use 1.5mm or 18# cable.
- Connect wires to terminals 1 and 2 for CT1, terminals 3 and 4 CT2 (if supplied with optional multiple CT input feature). Polarity of the CT's is critical when using two CT's.
- Terminals 9 & 11 are for the enable/disable signal of the load bank. Install a voltage- free contact off the generator main circuit breaker, relay or external source to signal the SmartLoad® bank to start or to shutdown when required.
- Terminals 13 and 14 are remote fault indication connection.
- Terminals 15 and 16 are voltage free input signal, to activate the optional 2<sup>nd</sup> menu operation. This can be for a second or third genset where the genset size is larger than set in menu 1. If two genset's and the Smartload® are all in parallel on a common busbar this is not required. Consult the factory for advice and refer to "Typical CT locations" arrangement drawings.
- Connect the Smartload® bank in parallel with the vessel load. This connection should be after the C.T. The C.T. must read the total current of the load bank and the vessel load. Connect appropriate size supply cables (refer CABLE CHART) to the A, B, and C terminals on the Smartload® bank.

### Electrical Installation Technician

Please install in accordance with the instruction manual provided.

- On power-up, the controller unit will default to a pump cool-down period for five minutes. This will occur during any power loss to the control panel. The pump will also run for a further five minutes when the last load step is removed or the signal to the control panel is disabled. This is referred to as "Load Cool Down".
- The controller may have factory settings for testing purposes only. Please check the settings and adjust accordingly to suit the application. Refer "LSMC800D Control Instructions"
- CT location.  
Location of the CT must be at the alternator output. The CT must pick up both the load bank load and the vessel load.
- Check your plumbing arrangement and flow requirements in accordance with the installation drawing in the operating manual. Check pump motor direction before use.
- If the fault lamp illuminates, check screen message for fault diagnostic.