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Installation, Operation and Maintenance Instructions for the Multi-Pump Booster Sets Complete with Hydrovar Inverter Control and FP Specification Panel

Please fulfil all listed requirements prior to and during installation and operation of all equipment to prevent invalidation of any warranty given.





General Installation

Site Location

During off loading and positioning of the unit, care must be taken not to lift the pipework or any electrical equipment.

The unit location should be undercover, dry and freely ventilated. Protection from frost must be ensured.

Reasonable access to all parts of the set and adequate service work space must be provided.

The site base should be firm and level.

All system pipework should be aligned and self supporting preventing any strain on the unit.

On units without isolating valves, these together with unions should be fitted to enable the removal of the pump should a replacement be necessary. We always recommend a union or flange between our manifolds and site system pipework.

Water Supply

The stored water should be clean and free from any foreign materials. There should be nothing suspended or dissolved to block or wear the pump internal components.

The water storage tank should provide the pump with a fully flooded suction (with the exception of self priming units) at all times irrespective of water level within the tank.

All self priming sets should be fitted at the water source with a good quality foot valve complete with a stainless steel strainer and all suction pipework runs should be sited to avoid any air pockets. Pipe sizing should be to suit the length of suction run and the pump net positive suction head requirements.

Electrical

Note to Electrician

DO NOT PUT POWER TO THESE UNITS UNTIL THEY HAVE BEEN FILLED WITH WATER AND PRIMED. The pumps will start automatically on power being applied.

The supply should be brought to the set with suitable trunking or armoured cable, terminating in the final metre in a flexible conduit or flex to avoid any stress or fatigue.

All supply cables should be sized to accommodate any long run voltage drop, when checked at the unit the voltage should match that on the specification sheet or motor plate.

A neutral supply is required for all 240 volt sets.

It is recommended that a fused isolator is fitted locally to the unit (if not fitted to unit).

Supply fuses should be rated to accommodate the pump motor.

Where MCB units are fitted, these provide cable protection to the minivar units. The invertors provide motor protection via over temp, over current / voltage protection.

All equipment should be earthed.

All electrical work should be performed by a competent electrician.





Control Panel

The control panel mounted on the unit (or loose on some units) acts a 1) The power source for the hydrovar inverters which in turn power the pump motors, and 2) receive the signals back from the inverters to indicate the units status.

On the panel door there are the following items:

- A) Door interlocked isolator, this turns on the power to the panel and prevents the door being opened unless the isolator is in the off position, use the supplied key to open the door if required.
- B) Pump selector switches (one per pump) these are used to turn on the power to each individual hydrovar/pump motor. The switch has two positions; off which de-powers the pump and auto which applies the pump with power, both switches should be in the auto position in normal circumstances.
- C) Lamps. There is a single power on lamp which shows when the panel is turned on. There is a tripped/isolated lamp for each pump, these indicate if 1) the pump has been electrically isolated by the selector switch or 2) the unit has tripped due to a fault. There is a single low water level lamp which indicates if there is insufficient water for the booster set.

Please refer to the wiring diagram supplied for terminal details and volt free contacts when installing the equipment.

Start Up

Priming

After flooding the suction line the pumps should be primed and vented. On vertical multistage type pumps these should have the individual vent plugs loosened to allow air purging and water flow to each priming point, this may have to be repeated if poor pump performance is experienced due to trapped air pockets.

On certain horizontal end suction pumps these too may have a vent plug, but if not fitted air should be allowed to evacuate via a suitable point of the discharge pipework, e.g. a drain cock, tap etc.

NEVER RUN ANY PUMPS EVEN TO CHECK ROTATION BEFORE COMPLETE PRIMING IS ACHIEVED.

Check all valves with the exception of the final discharge are open. Switch on the local isolating switch. Briefly run the pump to check rotation to correspond with the pump casing arrows. If incorrect the electrical supply phases to the pump should be changed according on 240 volt units, these use 240 volt, 3 phase, 50Hz pumps.

If after powering up the unit the pump/s do not run, press the up arrow on the Hydrovar.

Note: If the system has been back filled and the pressure is above the booster requested pressure the pumps will not run.

On correct rotation continue to run the unit, the final discharge valve should be opened slightly to vent any pipework air and then closed again allowing the pump to fill the accumulator, finally switching off the pump via the hydrovar controller. Open the main valve slowly filling the system taking care not to overload the pump at this point and as the system pressure rises open the valve fully to leave the system operational.

Hydrovar Controller

The hydrovar inverter takes a signal from the pipework transducer and varies the motor hertz output to vary speed and flow to suit demand.

On multiple pump units the hydrovars will operate the pumps as either duty standby or duty assist as required, in either case the hydrovars will alternate the lead pump on a timed basis (adjustable) this is usually set at 12 hours changeover periods.





Full details of the hydrovar control can be obtained in separate maintenance manual enclosed.

All units are wet tested and set before despatch.

Extra Controls

On units fitted with low level float switches (or float switches supplied loose) these should be wired to low water connections as shown in the wiring diagram. On multiple pump units this should be wired in parallel to protect all pumps.

If requested at order we, the supplier, will provide float switch connections located within a termination box.

Should a low level condition occur this will stop all pumps until the water level resets the switch.

Maintenance

Booster sets require very little general maintenance, listed below are quarterly and yearly check schedules.

Quarterly

The hydraulic accumulator should have its internal air charge checked and adjusted to the correct pressure using a foot pump or oil free compressor. See vessel label for pressure required. It must be stressed that this is only performed after switching off the unit and releasing all the pressure from the set.

Failure to successfully reinflate the air charge, or if water is found to be present at the Schrader valve would point to a ruptured vessel membrane, this would require immediate replacement.

The whole unit should be observed for any leaks, particularly the pump shaft seals and the valve glands. If found please contact our service department for assistance.

The pump should be noted for any deviations to the smooth running and performance, again please contact our service department for any assistance required.

If the unit has not been operational for a long period the pump should be vented as described in the start up information. If not in use during the winter period and there is any chance of freezing, drain the pump and pipework and cover with suitable frost protection covering. Ensure full venting before start up.

Yearly

All quarterly checks are to be performed.

The pump should have a full load current, and windings test to ascertain pump motor condition.

The hydrovar should be checked and adjustable is required.

The non-return valve should have a visual and audible inspection for general wear and sealing.

All electrical cables are to be checked for cuts or chaffing and to be replaced as necessary (After unit isolation).

It is recommended that all yearly checks are carried out by our engineers and service contracts are available on request.

