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EBS-RAY PUMPS

General Installation and Operation Instructions

EBS-RAY AUSTRALIA

CAUTION

READ THESE INSTRUCTIONS FULLY PRIOR TO ANY INSTALLATION OR OPERATION OF THIS EQUIPMENT

WARNING

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO PROPERTY AND/OR INJURY TO PERSONNEL

1 GENERAL

1.1 INTRODUCTION - This publication is intended to assist those involved with the installation and operation of pumps manufactured by EBS-RAY Pumps Pty Ltd. The design, materials, and workmanship incorporated in the production of EBS-RAY pumps make them capable of reliable operation over a long working life. Correct installation is essential. Service life is enhanced by periodic inspection and careful maintenance.

1.2 CAUTION - ***Installation and servicing of this equipment should be performed by qualified competent personnel in accordance with relevant statutory regulations or codes, in conjunction with these instructions.***

1.3 When the equipment supplied utilises components other than those manufactured by EBS-RAY, e.g. couplings, speed reducers, electric motors etc. reference should be made to the original manufacturer's data before installation or operation is commenced. Failure to observe these details may void the warranty.

1.4 WARNING - ***the pump must not be operated outside the original selected design parameters of speed, temperature, pressure, product, viscosity and direction of rotation.*** SHOULD ANY CHANGE BE CONTEMPLATED, PLEASE CONFER WITH EBS-RAY IN ORDER TO VERIFY THE SUITABILITY OF SUCH A CHANGE. *Unless specified for pumping/handling water, pumps must not be hydrostatically tested, operated or flushed with water (or any other incompatible liquid at any time). If system is being flushed or leak tested using these liquids prior to commissioning, pump/s and inline bypass valve/s (if fitted) must be totally isolated during this operation.*

1.5 TRANSPORTATION AND PACKAGING - Standard domestic packing is suitable for shipment in covered transports. Ports must remain sealed to exclude the ingress of solids during transportation and handling. ***When received on site the pump should be stored in a dry covered area.***

1.6 **STORAGE** - When received on site, if storage is required for other than a short period prior to installation, special preservatives and protective wrappings will be required. Failure to take adequate precautions to prevent damage from corrosion, weathering etc. during this period may void the warranty.

1.7 **INSPECTION ON RECEIPT - SHORTAGES** - On receipt of equipment, check all items against the dispatch documents and inspect for damage. Any damage or shortage incurred during transit should be noted on both your own and the carriers copy of the consignment note and a claim should be made immediately on the transport company.
Should a shortage be evident on receipt, notify EBS-RAY immediately giving full details and packing note number.

1.8 **HANDLING** - Take care when moving pumps. A sling should be placed under or around a bare shaft pump to minimise stress on the shaft or pump flanges. Baseplate mounted pumpsets should be lifted from under the baseplate below both the pump and driver ensuring compliance with the relevant lifting codes.

2 INSTALLATION

2.1 **LOCATION** - The pumpset must be sited strictly in accordance with the predetermined system design parameters. Be sure to keep within the NPSH requirement of the pump. Floor area and headroom allotted must be sufficient for inspection and maintenance. Be sure to allow for crane or hoist access if required. Always ensure gauge tappings are in system adjacent to pump. Allow sufficient space and ventilation for motor cooling requirements. For more details on installation, contact EBS-RAY or an authorised representative.

2.2 **FOUNDATIONS** - Bareshaft pumps and baseplate mounted pumpsets must be accurately installed. When on a concrete foundation, ensure stability and rigidity.

2.3 **PUMP PIPING CONNECTIONS** - All piping should be supported independently of, and lined up accurately with the pump ports. Remove all pipe stresses.
WARNING: ***Never draw piping into place by use of force at the port connections of the pump, severe internal damage may result.***

2.4 **STRAINER PROTECTION** - The pump inlet should always be protected by an efficient suction strainer of adequate size to accommodate the liquid flow/viscosity conditions without causing excessive suction resistance e.g. cavitation.
WARNING: ***Severe internal damage will occur if solids enter the pump suction port. (except for pumps specifically designed to handle solids)***

2.5 **ALIGNMENT** - Alignment of the pump and driver is of extreme importance for trouble free mechanical operation. Baseplate mounted pumpsets are accurately aligned at the factory. To ensure this has been maintained during transit alignment *MUST BE* checked once before startup and again after the unit has been run under actual operating conditions. *For pumps designed to operate at high temperatures (in excess of 100 °C), vertical alignment should be checked at operating temperature. Allowance must be made for vertical expansion of pump during initial alignment.* NOTE: The following procedures are typical only and reference should be made to data for specific coupling types.

ANGULAR MISALIGNMENT as shown in Fig.1 should be corrected before eccentricity. Refer Fig.3, use feeler gauge reading at 90° intervals, the amount of correction necessary can be easily determined to bring shaft axes in line.

Misalignment due to ECCENTRICITY as shown in Fig.2 can now be corrected. Refer Fig.4, adjustment by use of shims under the driver or pump will effectively correct error in the vertical plane. Movement of one of the ends horizontally will correct error in the horizontal plane. NOTE: If both coupling halves are of identical diameter, concentricity may be checked with a straight edge at 90° intervals.

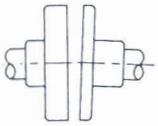

Fig.1

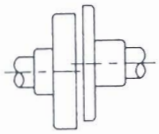

Fig.2

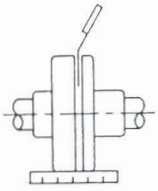

Fig.3

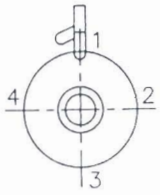

Fig.4

3 OPERATION

3.1 Where practicable, prior to coupling the pump and driver:
a) Check that pump shaft turns freely.
b) Run motor to ensure the correct direction of rotation.

WARNING: **SEVERE DAMAGE MAY OCCUR TO PUMP AND/OR SYSTEM IF THE PUMP IS OPERATED IN REVERSE. i.e. INCORRECT DIRECTION OF ROTATION.**

3.2 Check that the required direction of flow has been achieved.

3.3 Check that the couplings, if fitted have been aligned correctly.

WARNING: **THE POWER SUPPLY MUST BE LOCKED OUT WHEN CHECKING THE COUPLINGS AND PUMP FREEDOM OF ROTATION. ACCIDENTAL OPERATION COULD CAUSE SERIOUS INJURY.**

3.4 Ensure that a coupling guard which complies with all relevant statutory codes and regulations is fitted securely in position.

WARNING: **DO NOT OPERATE WITHOUT COUPLING GUARD IN POSITION.**

3.5 Open pump suction and discharge valves fully.

3.6 When pumping liquids, ensure all air/vapour has been vented from suction line and pump, and that suction line and pump are completely filled with liquid.

IMPORTANT: **DO NOT RUN PUMP DRY. FAILURE TO REMOVE AIR/VAPOUR COULD PREVENT PUMP FROM PRIMING AND RESULT IN SEVERE PUMP DAMAGE. IF IN DOUBT, CONTACT EBS-RAY.**

3.7 **FOR AIR PUMPS ONLY:** Ensure all liquids have been removed from suction line and pump.

IMPORTANT: **FAILURE TO REMOVE LIQUIDS COULD RESULT IN SEVERE PUMP DAMAGE.**

3.8 Start pump.

IMPORTANT: **DO NOT OPERATE PUMP AGAINST A CLOSED DISCHARGE VALVE AS PUMP OR SYSTEM DAMAGE COULD OCCUR.**

3.9 Check operation of bypass valve (if fitted) and ensure pressure setting is correct.

WARNING: DO NOT EXCEED SYSTEM DESIGN PRESSURE AS THIS COULD RESULT IN SERIOUS BODILY INJURY AND/OR EQUIPMENT FAILURE.

4 OPERATIONAL CHECKS

4.1 Check pump for leaks, vibration, excessive heating of bearings, unusual noises etc.

IMPORTANT: FOR PUMPS DESIGNED TO OPERATE AT HIGH TEMPERATURES (IN EXCESS OF 100 °C), VERTICAL ALIGNMENT SHOULD BE CHECKED AT OPERATING TEMPERATURE AND/OR ALLOWANCE MADE FOR VERTICAL EXPANSION OF PUMP DURING INITIAL ALIGNMENT. EXTERNALLY ACCESSIBLE FASTENINGS SHOULD BE RE-TIGHTENED AFTER THE INITIAL HEATING AND COOLING CYCLE AND THEN CHECKED AGAIN AFTER THE FIRST MONTH OF NORMAL OPERATION. (TIGHTEN COVER AND BRACKET NUTS/SETSCREWS TO PREDETERMINED TORQUE SETTINGS TO AVOID DISTORTION AND TO ENSURE PROPER SEALING)

IMPORTANT: CONTACT EBS-RAY OR AUTHORISED REPRESENTATIVE PRIOR TO ANY REMEDIAL WORK BEING CARRIED OUT ON PUMP. FAILURE TO COMPLY WITH THIS MAY VOID THE WARRANTY.

5 MAINTENANCE

PRIOR TO ANY DISASSEMBLY OR SERVICE, VERIFY THAT ALL REQUIREMENTS OF STATUTORY REGULATIONS OR CODES ARE MET AND THAT SPECIFIC SITE REQUIREMENTS ETC. ARE SATISFIED.

Refer to EBS-RAY's detailed maintenance instructions or contact EBS-RAY or authorised representative.

6 WARRANTY

Pumps manufactured by the company are warranted for a period of one year from date of shipment.
EBS-RAY Pumps will at their option repair or replace faulty parts under warranty provided that the pump has been properly installed and cared for and that the claim arises solely from faulty material and /or workmanship. all freight costs to and from our factory are to be paid for by the purchaser.
The warranty does not cover claims for third party liability, damage caused by any of the company's products or for damage or wear to the pump caused by abnormal operating conditions, vibration, abrasives, foreign objects, failure to prime, operation without flow or use for an application for which it is not recommended.
The warranty on goods not of our own manufacture is limited to that extended by the supplier.
Except to the extent that the law of a state or country applicable to a purchase shall void or prohibit the exclusion or limitation of warranties or liabilities: This warranty is in lieu of all other warranties and conditions express or supplied, written or oral, statutory or otherwise, which are hereby negated and excluded.

EBS-RAY PUMPS PTY. LIMITED
A.C.N. 000 061 003 ABN 52 000 061 003

EBS-RAY AUSTRALIA

Head Office and Works
628 Pittwater Road
Brookvale NSW 2100
Australia.
Telephone: (61 2) 9905 0234
Fax: (61 2) 9938 3825
www.ebsraypumps.com.au

Branch Office Victoria
Phone: (03) 9706 7263
Fax: (03) 9706 7312
Branch Office Queensland
Phone: (07) 3260 7411
Fax: (07) 3260 7422