

# INSTALLATION INSTRUCTIONS

Required NPSH refers to water (specific weight 1kg/dm<sup>3</sup>, viscosity 1cst) at 460 rpm.

## Operation and Maintenance

Check oil level prior to starting and ensure trouble-free water supply.

**Oil:** Use only 1.8 gallons (7.0 litres) of ISO VG 220 (e.g. Aral Degol BG220) or SAE 90 gear oil or Giant p/n 01154. We recommend ISO VG 68 (SAE80) gear oil for low ambient temperatures (+5°C and less).

Initial change after 50 operating hours and then every 1000 operating hours, or after 1 year if used less.

**IMPORTANT!** Should condensate (frothy oil) occur in the gear box or when operating in damp places or with high temperature fluctuations, oil must be changed immediately.

### Keep NPSH under control.

Maximum input pressure 145 PSI (10 bar), maximum suction head -4.35 PSI (-0.3 bar). Make sure that suction pulsation is sufficiently dampened – water column resonance must be avoided.

### Safety Rules

A safety valve is to be installed in accordance with the guidelines for liquid spraying units so that the admissible operating pressure cannot be exceeded by more than 10%. Pump operation without a safety valve as well as any excess in temperature or speed limits automatically voids the warranty.

When the pump is in operation, the open shaft end must be covered by shaft protector (21), the driven shaft side and coupling by a protective cover.

Pressure in discharge line and in pump must be at zero before any maintenance to the pump takes place. Close up suction line. Disconnect fuses to ensure that the driving motor cannot get switched on accidentally.

Make sure that all parts on the pressure side of the unit are vented and refilled, with pressure at zero, before starting the pump.

In order to prevent air, or an air/water-mixture being absorbed and to avoid cavitation occurring, the pump-npshr, positive suction head and water temperature must be kept under control.

**Cavitation and/or compression of gases lead to uncontrollable pressure-kicks which can ruin pump and unit parts and also be dangerous to the operator or anyone standing nearby.**

Giant Plunger Pumps are suitable for pumping clean water and other non-aggressive or abrasive media with a specific weight similar to water.

**Before pumping other liquids - especially inflammable, explosive and toxic media - the pump manufacturer must be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacture and/or operator to ensure that all pertinent safety regulations are adhered to.**

### Supplementary Information

The Giant GP7155-4000HTC has been specially constructed for pumping hot water, to steam boilers, for example. The plunger seals (42) on the water side are made of a high temperature-resistant material. To further increase seal life, there are also rinsing chambers behind the high pressure seals through which cold water flows. The cold water connections (68) are suited to 6mm Ermeto

pipe diameter. The operator can fit hose nipples instead, if wished; the threads in the seal sleeves for this purpose are 1/8" BSP.

The cold water (68 °F - 104 °F) (20°C - 40°C) can be guided into the pump from either side and flows out on the opposite side, into a drain, for example. The cold water flow rate should be at least 16.7 ounces/min (0.5 litre/min) and must be drawn in as soon as the pump is started. If the cold water does not start flowing immediately the pump is put into operation, the ceramic plunger (36B) in particular could crack under the cold shock.

**IMPORTANT!** The cooling water must be delimed to avoid lime formation due to warming.

**IMPORTANT!** If the location of the pump does not allow for cooling, on no account are the connections in the seal sleeves (35) to be closed because this is where water from the high pressure seals has to drip out.

The U-pipes (73) should be removed in this case. To ensure the seals are properly greased, the openings in the screw-in joints (68) should be used to fill the rinsing chambers with high-temperature-resistant grease by means of a grease gun.

In the case of water temperature above 194 °F (90°C), we strongly recommend the cold-water rinse.

### Plant Lay-Out

For perfect functioning of the pump, the following points must be adhered to:

#### a) Pressure in Suction Side

The stipulated NPSHR is the minimum required pressure above the vapour pressure of the medium and is never to fall short of this figure. Temperature and vapour pressure of the medium, the geodetic height of the location, the flow rate and loss of friction in the suction line, must all be taken into consideration. It may be necessary to install a booster pump (centrifugal pump) in the suction line.

#### b) Pulsation

suction and discharge lines. Suction pulsation in particular must be damped in order to prevent resonance in the suction line which in turn causes cavitation. Therefore the pump is never to be connected to a rigid pipe, but instead to a flexible hose (not reinforced by steel), and if possible 1.5 to 2 times wider than the suction connection. If a booster pump is used, the hose is to be attached between the booster pump and the high pressure pump.

If several pumps are used, each pump must have its own suction line. If this cannot be done, a suction air chamber or a suction flow stabilizer must be installed in front of each pump. The bladder in the stabilizer is to be pretensioned on location.

Depending on the lay-out of the plant, a pressure accumulator may be necessary on the discharge side. This pressure accumulator must be installed directly in front of the discharge outlet of the high pressure pump. We recommend the use of only one pressure accumulator respectively in the discharge line in order to avoid irritation which could be caused by different pre-tension levels in the accumulators.

Gas tension in both the suction flow stabilizer/s and in the pressure accumulator/s should be checked regularly.