

## GENERAL CIRCULAR

**09/2020**

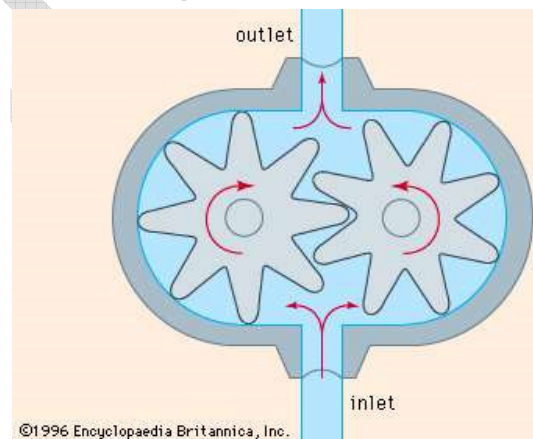
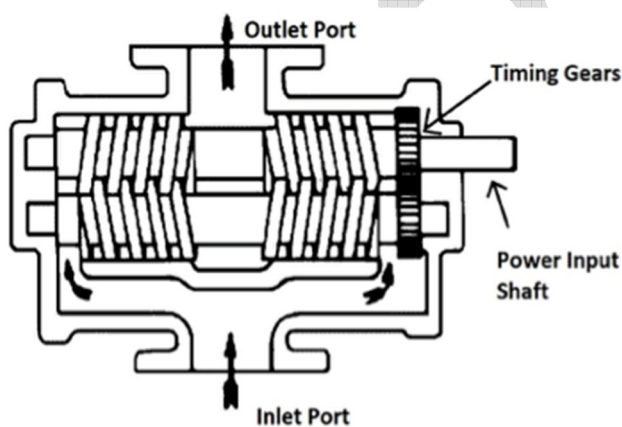
**Date: 13<sup>th</sup> July 2020**

**To: Fleet**

### **Subject: Twin Screw Pumps for Bitumen Cargo**

As there is a likelihood that some of you may only have had experience working on tanker vessels carrying 'light or clean' products, you may not be fully familiar with the operation and maintenance of Screw Pumps which are used for Bitumen Cargo. Irrespective, the intention of this General Circular, is to caution you when operating Screw Pumps.

Clean / light product cargoes are in most instances, loaded and discharged using CENTRIFUGAL PUMPS, both onshore and onboard. Whereas Bitumen Cargo is loaded and discharged using POSITIVE DISPLACEMENT PUMPS (SCREW or GEAR PUMPS). Our vessels are installed with the **TWIN SCREW CARGO PUMPS** as shown in the sketch below.



### **OPERATION**

Difference between the 2 types of pumps:

\* **CENTRIFUGAL PUMPS** are NORMALLY started with the DISCHARGE VALVE / 's CLOSED and then gradually opened to slowly raise the load on the prime mover. There is rarely a possibility of over-pressurizing the valves and piping system beyond the pumps design characteristics. That is why you normally do not find either pressure relief valves or safety valves installed on such systems.



# Maritec Tanker Management Pvt Ltd

5<sup>th</sup> Floor, G Wing, Unit No 501, Lotus Corporate Park,  
185/ A, Graham Firth Compound, Goregaon (East), Mumbai – 400063. India.  
Phone- +91-22-6863 1800; Email: [qhse@maritectankers.com](mailto:qhse@maritectankers.com)

\* **POSTIVE DISPLACEMENT PUMPS**, on the other hand MUST ONLY BE STARTED ONCE ALL THE RELATED VALVES on the DISCHARGE SIDE OF THE PUMP are OPEN. (Some pumps are designed with a re-circulation system – in which case the Pump Discharge Valve can remain closed so long as the RECIRCULATION Valve is 100% OPEN and Pump is on 'SLOW SPEED').

There are however pumps which can only be operated on a Single Speed. In such cases, the operator must be even 'doubly' careful in ensuring that all the valves on the discharge side of the pump are CORRECTLY lined up and OPEN.

Even a MOMENTARY Failure to strictly follow the above, can lead to an overpressure or pressure surge which can result in catastrophic consequences by way of injury / pollution / fire, from fracture of valves & pipes or even from the pump casing and leaking flanges etc.

To further minimize the risk, as All POSITIVE DISPLACEMENT PUMPS have a pressure relief valve, these must be ascertained are working properly and set not to exceed the designed pressure.

It is additionally important to ensure that a Screw Pump is never allowed to run 'dry' for reasons that it is the cargo which provides the lubrication to the Twin Screws and hence in its absence the screws will start to wear out and eventually get damaged.

It is for the same reason that Cargo Pumps which cannot be operated on Slow Speed SHOULD NOT be used for stripping cargo tanks.

Prior to starting the Cargo Pump, the operator MUST OPEN the 'tracer heating' to the jacketed pump casing to ensure that hard cargo residue inside the pump has melted sufficiently to safely start the pump. Failure to do so, can result in burning out of the Electrical Starter Panel or Electrical Motor or / and breakage of the shaft coupling. This 'tracer heating' must be kept open throughout the period of the cargo pump operation.

All TWIN SCREW Pumps are fitted with 'timing gears' and on Bitumen Cargo Pumps, these gears are operating inside a lubrication (oil grade to be as per Pump Manufacturer's guidance) oil bath (chamber). The level of oil inside the chamber MUST be checked via the sight glass or dip stick, prior to starting the pump

## **MAINTENANCE OF SCREW PUMPS**

The onboard maintenance of the Cargo Pumps, although limited in so far as the ships crew can undertake, there are parts of the pump which must be checked as per the maintenance schedule.

The parts in particular are:

- Lubricating Oil for the Timing Gears must be replaced at regular intervals. The drained oil should be checked for the presence of any metallic particles.
- Leaking shaft seals must be replaced. (Note: use only the seals supplied by the pump manufacturer. Incorrect seal material can damage the shaft)
- The drive shaft flexible gear couplings must be visually checked for any damage. (Many types of flexible gear couplings are of the type filled with either oil or grease. (please refer to the instruction manual applicable to your vessel).



# Maritec Tanker Management Pvt Ltd

5<sup>th</sup> Floor, G Wing, Unit No 501, Lotus Corporate Park,

185/ A, Graham Firth Compound, Goregaon (East), Mumbai – 400063. India.

Phone- +91-22-6863 1800; Email: [qhse@maritectankers.com](mailto:qhse@maritectankers.com)

- The alignment between the Pump shaft and the intermediate or driving shaft must be checked (based on the arrangement onboard your vessel).
- All Pressure and Temperature Gauges / Sensors must be checked for accuracy.
- The Pump suction filter should be opened and cleaned. (Before starting pump the filter must be purged of all air , until liquid starts to flow)
- Pump foundation bolts to be checked for security.
- The Pump Relief Valve to be tested for proper operation.
- Any undue / abnormal vibration must be investigated.

Thank You,

**Maritec Tanker Management Pvt Ltd**

MARITEC