

# Operating Instructions

## Immersion pumps of the series TL142

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### 1 General

These operating instructions apply to the pumps of the series TL142 with different depths of immersion. The immersion pumps are suitable for handling contaminated coolants and extremely inflated fluids.

These operating instructions contain basic information and instructions which must be observed when the pump is being installed, operated or repaired. Therefore it is important that these operating instructions are read by the fitter, the operator and relevant technical personnel before installation and start-up, and they are available at all times at the place where the unit/system is being operated.

### Specifications

Type	Max. del. pressure bar / spec. weight 1	Max. del. volume l/min	Depth of immer- sion mm	Weight kg	Power kW
TL142 / 330 610	2,7	170	330 610	18 21	1,1

Mediums

Water, coolant, cooling- and cutting-oils

Kinetic viscosity of the medium

1 .... 90 mm<sup>2</sup>/s

Temperature of medium

0 .... 80 °C

### 2 Safety

See appendix A.

### 3 Transport and storage

Protect the pump against damage during transportation.

Store pump in dry and protected areas and protect it against penetration of foreign bodies.

### 4 Description of the product and accessories

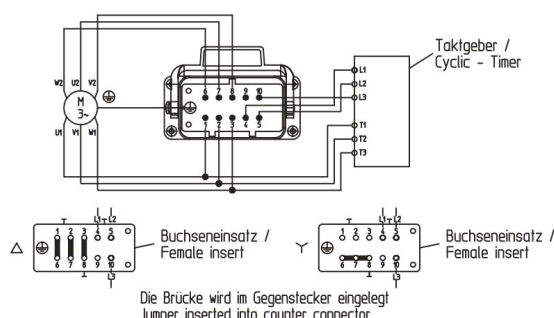
Pumps of the series TL142 are two-stage rotary pumps. The impellers are fixed on the driving shaft extension. Pump and motor form a compact and space-saving unit. Pumps of this type are designed with semi-open impellers and a suction screw.

The motor is surface cooled and complies with the DIN IEC 34 resp. EN 60034 (IP 55).

Tension voltage and frequency must correspond with the shown specification on the nameplate. The terminal links of the motor are delivered in star connection from the plant. A circuit breaker or overload trip must be provided and the tripping current must be adjusted to correspond with the motor rated current.



Check the terminal links according to the following wiring diagram.



#### Delta connection

Δ 200-240V, 50Hz

Δ 200-277V, 60Hz

#### Star connection

Y 346-420V, 50Hz

Y 346-480V, 60Hz



Work on the electrical equipment must only be carried out by a qualified electrician.

The motor must be isolated before any work is carried out.

## 5 Installation

The pumps are mounted on the top of the coolant tank with the pump body being immersed in the coolant. Pumps must be mounted securely. The pipework must be installed so that no distortion of the pump can occur.

According to the drawing shown on the right, the maximum liquid level must stay about 30 mm below the mounting flange. Also ensure that the suction hole of the pump body is covered with liquid (min. liquid level) before starting up the motor.

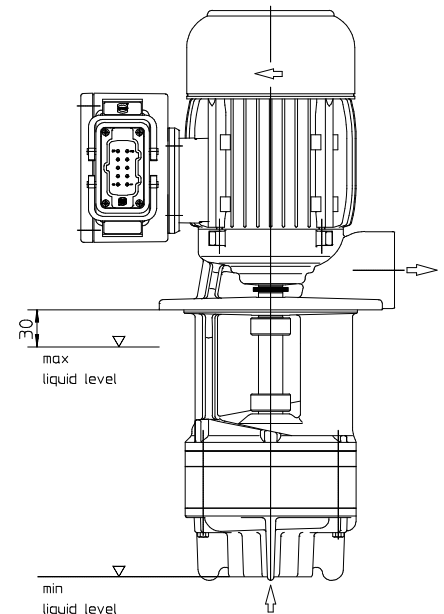
The inlet is at the bottom of the immersed pump body. The distance between the inlet and the tank bottom must be so large that the inlet can not be blocked by deposits during longer shutdowns.

To obtain the full flow rate it is recommended to choose for the pipework the nominal bore diameter of the pump's cross section for connection. Therefore pipe bends should be used, not pipe angles!

The pipework must be qualified for occurring hydraulic pressure!



**The pump must be mounted in such a way that rotating parts under the cover of the coolant tank can not be touched!**



## 6 Start up / Shut down

### Start up

Switch off at the main fuse.

After connection of the terminals close the terminal box.

Briefly start the motor and check the rotation according to the arrow on the top of the motor. **Looking through the fan cover of the motor, the fan has to turn clockwise.**

If the direction is incorrect change over two of the power leads.

### Shut down

Switch off at the main fuse.

Open terminal box and disconnect the power leads

Empty out the pump.



**The temperature of the medium is not allowed to be higher than 80 °C!**

**The pumps are not suitable for continuous running against a closed sliding valve ( plan bypass ).**

**The particle-size in the medium is not allowed to be bigger than 2,5 mm!**

### **ATTENTION**

**Switching-on frequency: Motors less 3 kW max. 200 times per hour.**

## 7 Servicing and Maintenance

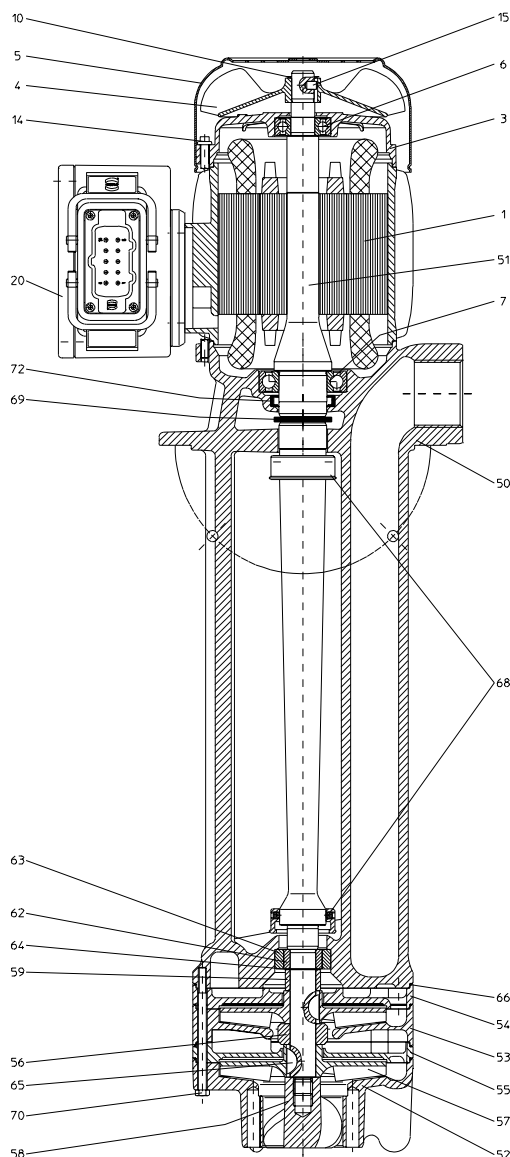
The surface of the motor must be kept free of dirt.

The motor shaft runs in permanently greased ball bearings and does not need any special service.

## 8 Trouble shooter's guide

Fault	Cause	Remedy
Motor does not start, no motor noise	At least two of the power supply leads have failed	Check fuses, terminals and supply leads
Motor does not start, humming noise	One of the supply leads has failed Impeller faulty Motor bearing faulty	See above Replace impeller Replace bearing
Pump does not pump	liquid level too low Pump mechanism faulty Pipe blocked	Fill up liquid Replace pump mechanism Clean pipe
Insufficient flow and pressure	Wrong direction of rotation of impeller Pump mechanism silted up Worn pump mechanism	Switch two power supply leads Clean pump mechanism Replace pump mechanism
Power consumption is too high	Wrong direction of rotation of impeller Lime or other deposits Mechanical friction	See above See above Repair pump

## 9 Spare part list for the immersion pumps of the series TL142



Item	Description	
1	Stator with integrated motor drive (Item Nr. 8300316)	
3	End shield	
4	Fan	
5	Fan cover	
6	Ball bearing	DIN 625
7	Ball bearing	DIN 625
10	Retaining ring	
14	Stud bolt with bond	
15	Parallel pin	DIN 7
20	Motor drive unit (Item Nr. 8300317)	
50	Pump body	
51	Motor shaft with rotor	
52	Intake cover	
53	Pump plate	
54	Intermediate Cover	
55	Intermediate Cover	
56	Distance liner	
57	Impeller	
58	Suction screw	
59	Distance liner	
62	Running sleeve	
63	Bearing bush	
64	Distance plate	
65	Woodruff key	DIN 6888
66	O-ring	
68	Splash ring	
69	Splash ring	
70	Hexagon head screw	DIN 931
72	Shaft seal	

### Tightening torques for screwed connections

Thread - Ø	M4	M5		M6
Strength classes	4.8	4.8	8.8	8.8
Tightening torque in Nm	1 Nm	3 Nm Item 14	4.5 Nm Item 70	4.5 Nm

Spare parts are available from the supplier.  
Standard commercially available parts are to be purchased in accordance with the model type.  
The ordering of spare parts should contain the following details:

- Pumptype**  
e.g. STE145 / 370
- Pump No.**  
e.g. 04042540  
The date of the construction year is a component of the pump's type number.
- Voltage, Frequency and Power**  
Take item 1, 2 and 3 from the nameplate
- Spare part with item No.**  
e.g. Intake cover item No. 52

**MAYFRAN INTERNATIONAL**  
**MAYFRAN Limburg B.V**  
 Edisonstraat 7  
**P.O. Box 31032**  
**NL-6370 AA Landgraaf**  
 Telf : +31 - 45-5329292  
 Fax : +31 - 45-5329300  
 info@mayfran-europe.com  
 Order - No.: BE2540 ENGLISH

Subject to change without prior notice.

# Safety instructions

## 2.0 General

This operating manual gives basic instructions which are to be observed during installation, operation and maintenance of the pump. It is therefore imperative that this manual be read by the responsible personnel and operator prior to assembly and commissioning. It is always to be kept available at the installation site.

It is only the general safety instructions contained under this main heading safety that are to be observed but also the specific information provided under the other main headings.

### 2.1 Identification of safety instructions in the operating manual

Safety instructions given in this manual non-compliance with which would affect **safety** are identified by the following symbol:



Safety sign according with ISO 3864 –B.3.1

or where **electrical safety** is involved, with:



Safety sign according with ISO 3864 –B.3.6

Where non-compliance with the safety instructions may cause a risk to the machine and its function the word

**ATTENTION**

is inserted.

It is imperative that signs affixed to the machine, e.g.:

- arrow indicating the direction of rotation
  - symbols indicating fluid connections
- be observed and kept legible.

### 2.2 Qualification and training of operating personnel

The personnel responsible for operation, maintenance, inspection and assembly must be adequately qualified. Scope of responsibility and supervision of the personnel must be exactly defined by the plant operator. If the staff does not have the necessary knowledge, they must be trained and instructed, which may be performed by the machine manufacturer or supplier on behalf of the plant operator. Moreover, the plant operator is to make sure that the contents of the operating manual are fully understood by the personnel.

### 2.3 Hazards in the event of non-compliance with the safety instructions

Non-compliance with the safety instructions may produce a risk to the personnel as well as to the environment and the machine and results in a loss of any right to claim damages.

For example, non-compliance may involve the following hazards:-

- Failure of important functions of the machines/plant
- Failure of specified procedures of maintenance and repair
- Exposure of people to electrical, mechanical and chemical hazards
- Endangering the environment owing to hazardous substances being released.

## 2.4 Compliance with regulations pertaining to safety at work

When operating the pump, the safety instructions contained in this manual, the relevant national accident prevention regulations and any other service and safety instructions issued by the plant operator are to be observed.

### 2.5 Safety instructions relevant for operation

- If hot or cold machine components involve hazards, they must be guarded against accidental contact.
- Guards for moving parts (e.g. coupling) must not be removed from the machine while in operation.
- Any leakage of hazardous (e.g. explosive, toxic, hot) fluids (e.g. from the shaft seal) must be drained away so as to prevent any risk to persons or the environment. Statutory regulations are to be complied with.
- Hazards resulting from electricity are to be prevented (see for example, the VDE Specifications and the bye-laws of the local power supply utilities).

### 2.6 Safety instructions relevant for maintenance, inspection and assembly work

It shall be the plant operator's responsibility to ensure that all maintenance, inspection and assembly work is performed by authorised and qualified personnel who have adequately familiarised themselves with the subject matter by studying this manual in detail.

Any work on the machine shall only be performed when it is at a standstill, it being imperative that the procedure for shutting down the machine described in this manual be followed.

Pumps and pump units which convey hazardous media must be decontaminated.

On completion of work all safety and protective facilities must be re-installed and made operative again.

Prior to restarting the machine, the instructions listed under "Start up" are to be observed.

### 2.7 Unauthorised alterations and production of spare parts

Any modification may be made to the machine only after consultation with the manufacturer. Using spare parts and accessories authorised by the manufacturer is in the interest of safety. Use of other parts may exempt the manufacturer from any liability.

### 2.8 Unauthorised modes of operation

The reliability of the machine delivered will be only guaranteed if it is used in the manner intended, in accordance with clause 1 of this manual. The limit values specified in the data sheet must under no circumstances be exceeded.