

## Machinery and equipment technology

### Please bring the following items to the competition

- Work clothes
- Safety shoes (S3)
- Mechanic's gloves (gloves without fingers or with holes may not be used)
- Safety helmets are provided (you may use your own helmet)

### Description

Two pumps are installed in a container. The team's task is to lift one of the two pumps out of the container using a chain hoist, transport it to the worktable and carry out maintenance work. In addition, the guide tubes of the removed pump must be checked. After maintenance work, the pump must be reinstalled.

To do this, the system must be electrically disconnected and secured against being switched back on.

The task is divided into work preparation and work execution.

### Preparation

The team has 5 minutes to prepare.

The team captain can interrupt the preparation time at any time in the event of disruptions by lodging an objection with the chief referee. In the event of an objection, all activities by the team must be stopped immediately. The preparation time is interrupted until the disruption has been remedied and the preparation time is restarted by the team captain's command.

The following must be observed during the preparation time. All rule violations will result in points being deducted.

- The assembly instructions and maintenance log may be read.
- The tools and materials may be viewed.
- The required torques should be set on the torque wrenches.
- No questions will be answered during the preparation time.
- Before the end of the preparation period, the tools must be returned to the bag and the team must be in the designated starting area.

### Execution of work

Time is measured using two independent stopwatches. The team captain may interrupt the competition at any time in the event of disruptions by lodging an objection with the chief referee. In this case, one of the stopwatches is stopped while the other continues to run. After the disruption has been resolved and the team captain has given the command to restart, the second stopwatch will be restarted. If the protest is unfounded, the elapsed time will be recorded as a result. In the case of justified protests, the corrected time will be recorded as the result. The chief referee will decide on the protest.

The following must be observed during the execution. All rule violations will result in points being deducted.

## 1. General

The task must be performed in accordance with the task description.

Running during the competition is prohibited.

All work must be carried out with work gloves (except for written work).

Tools, components and parts of personal protective equipment must not be dropped on the floor.

All tools and aids must be returned to their original position at the end.

## 2. Electrical work

The power supply to the system must be disconnected using the main switch and secured with a lock. To do this, open the cabinet door.

The completed warning sign must be attached to the switch box.

## 3. Removing the pump

After closing the shut-off valve, lift the pump out of the tank using the chain hoist and place it on the workbench.

## 4. Check the guide tubes in accordance with the installation instructions

Loosen the fastenings of the guide tubes, remove the guide tubes and inspect them for damage. After inspection, reinstall the guide tubes.

## 5. Perform maintenance work on the pump in accordance with the installation instructions

To do this, loosen the clamping band, remove the spiral housing, impeller, shaft disc, oil chamber cover and shaft seal. After inspecting all parts for defects or damage, reassemble the pump according to the installation instructions. The chain hoist remains attached to the pump during work. The maintenance log must be completed.

## 6. Installation of the pump

The pump must be transported to the tank using a chain hoist, hooked onto the guide pipes and lowered using the chain hoist. The pump remains hooked onto the chain hoist. The shut-off valve must be opened fully.

## 7. Electrical work

Remove and clean the warning sign, remove the lock, close the switch box and switch on the main switch.

## Assessment of the task

The discipline is assessed on a points basis. A maximum of 24.5 points can be achieved. Points are awarded for each correctly performed step; the execution time is evaluated with a maximum of 1 point. In the event of a tie, the time decides.

## Equipment used

- Lightweight crane, standard model (Feltes)
- Kito chain hoist
- Grundfos SL1.80.80.75.4.51D.C pump



**Literature / Notes**

<http://www.feltes-gmbh.de>

<http://www.grundfos.com>

[Video of the task](#)