

## Hydroment-3 control box

The Hydroment-3 control box presents itself as an up-to-date version of already existing controlled hydraulic systems, with the system giving due consideration to new safety aspects and to the modern technology it is equipped with.

The dimensions of the housing have been adapted to the space available in the fittings cabinets of modern cryo tank trailers which gets smaller and smaller. Stainless steel has been chosen as material for the housing in view of the conditions in such fittings cabinets. Great importance has been attached to make intuitive operations possible, when the user interface was designed. The experience gained in practice shows that this has been successful.



The housing is made of stainless steel with brushed finish. The housing's dimensions are 300 x 300 x 150 mm (W x H x D), its degree of protection is IP66 (dust-proof and protected against strong water jets). All cable inlets are located at the underside, the door lock at the right side wall. All control elements can be operated with gloves, so that the operator can still wear the necessary means of hand protection.

The following control elements are located at the front side of the control box:

- emergency-OFF button
- on/off button, with indicator light
- diesel/NA start/stop button, with indicator light
- start/stop button, with indicator light
- plus/minus button, with indicator light
- dead man's button, with indicator light (optional)

In addition to that, two wired variants of external dead man's buttons are available to complement the system, with the cable having a length of approx. 10 m in each case.

All function and status reports will appear on an installed graphic color display that is suitable for mobile operations. The control functions within the control are performed by an SPS which is also suitable for mobile operations. The control components have been specifically selected for this field of application and satisfy the requirements with regard to the temperature range and vibration strength.

### Software / Functionality

The controller installed in the SPS adjusts the quantity of oil required by the hydraulic pump in the semi-trailer truck to the performance level that has been pre-set in the display. The performance itself and all system parameters are determined and monitored at every point in time. The controller can be set and adjusted to the different media (oxygen, nitrogen, argon etc.) on the basis of various sets of parameters, with four different maximum speed, performance and torque values being stored for each performance level and the medium selected. The medium can be changed at a password-protected service level via the display in the control box.

Should one of the important and necessary sensors (pressure sensor or speed sensor) fail, the control will change into the emergency operation mode, which means that the performance is reduced. The emergency operation mode allows only a reduced quantity of oil being supplied to the hydraulic pump, so that the admissible maximum system parameters cannot be exceeded. The system will recognize when the defective sensor has been repaired and automatically cancel the emergency operation mode after a pre-defined pumping time. Additionally, the emergency operation mode can also be canceled manually by entering a code.

All sensors and safety devices are permanently monitored and evaluated during pumping operations. Apart from the sensors mentioned above (pressure and speed sensors), the inputs for monitoring leaks at the hydro motor, for ensuring the pressure of the hydro motor and, as an option, for a position feedback of the main valve are also integrated.

Non-plausible sensor values or switching conditions will stop the tank emptying process. If an error occurs, the display will automatically switch into the diagnosis screen, where the most recent errors are documented by way of a two-digit code. A detailed error description is also stored for each error code that will make the error diagnosis for the workshop easier.

Messages from the drive units are added to the possible fault messages from the trailer, which is something the Hydroment-3 control box takes already into account. It is therefore possible to also display the fault messages from the semi-trailer truck on the screen, provided the semi-trailer truck is equipped accordingly. In addition to that, the operating comfort has been increased, since semi-trailer trucks with new drive systems make it possible to start and stop their diesel engine by pressing a key on the control box. It is also possible to engage and disengage the power take-off in this way.

If an unexpected fault occurs during operations, the system can be safely switched off with the help of the emergency-OFF button. Apart from deactivating the semi-trailer truck, further measures will be immediately taken, so that no more oil can be pumped.

The cold running monitoring system integrated into the cryo pump will prevent the pump from being started, before the temperature required by the cryo pump has been reached. The temperatures can be adjusted for each medium in the control's setup. All this will prevent the improper use of the pump and reduce the wear and tear of its sealing.

The mechanisms of the pump's dry-run protection and for cavitation detection have been further enhanced. In both cases, the system will switch off the cryo pump with the relevant messages, when the pre-defined limits are exceeded.

Optional: Cable-connected man-down button



Variant 1

Variant 2

Optional: wireless RC-man-down button



Please get in touch with us for further information!

Wehn Fahrzeugtechnik GmbH