

# Hydraulic Power Unit Type HV450

- **Designed for rugged operation**
- **Customized hydraulic system for each application**
- **Serves multiple control valves**
- **2 independent pressurizing pumps**
- **Self-contained filter system**



## Application

The hydraulic power unit supplies the necessary pressurized hydraulic fluid for the actuators. The HV450 unit is designed for use in large hydraulic systems.

## Design

### Accumulators

The hydraulic power unit is equipped with minimum 2 and maximum 4 accumulators, placed near the actuators, to cover peak requirements.

### Motor-pump units

Because of the accumulator, the pump is designed for mean consumption only. However, there are two motor-pump units (each with an accumulator charging valve), of which one is in operation while the other one is standby.

### Tank

The tank has sufficient capacity to allow for complete drainage of the accumulator, pipes and actuators into the tank.

## Filter

An off-line filter unit with cooler is installed on top of the tank. It is self-contained and comprises of a pump with an electric motor, a cooler with a fan and a filter. The unit can also be used to fill and empty the tank by switching over a multi-way valve. Due to its self-contained design, the filter element can be changed during operation of the hydraulic power unit.

## Oil Heater

If required, the power unit can be fitted with a heater.

## Hydraulic Power Unit Controller

A control box on the top of the power unit contains controller, power switches and display elements necessary for operation.

The Power Unit is ready for operation after the connection to the electric power supply.

## Function

### Hydraulic Power Unit

The internal gear pump draws the hydraulic fluid from the tank and pumps it into the accumulator. As soon as the pressure in the accumulator has risen to 24 MPa, the accumulator charging valve switches the pump over to circulation, i. e. the pump discharges back into the tank through the accumulator charging valve at practically no pressure.

A non-return valve prevents the hydraulic fluid from flowing back out of the accumulator. If the pressure in the accumulator drops by 10%, the charging valve switches over and the accumulator are charged again. A pressure reducing valve, downstream of the accumulator, supplies oil to the actuators at a constant, controlled system pressure.

If a fast-stroking unit with accumulator is fitted, a connection is provided to charge the additional accumulator. The required supply pressure can be adjusted.

In case of excessive temperature rise a fan starts, and switches off as soon as the temperature decreases by approximately 5°C.

Should the hydraulic fluid overheat or the hydraulic fluid level in the tank be too low, both motor-pump units are switched off.

If the power unit is equipped with a heating system, the control system switches the latter on or off, depending on the temperature of the hydraulic fluid.

If the pump fails to charge the accumulator the other pump automatically starts and switches off as soon as the pressure is normal.

If there is an abnormality, the system is automatically switched over to the other motor-pump unit and a corresponding alarm is given.

If the accumulator pressure drops too low, an alarm indicates hydraulic power unit failure. Accumulator and pump are protected by a pressure relief valve. A second pressure relief valve protects the system pressure.

### Control System

The control system covers the following functions:

- switching of the accumulator charging valve
- starting of the stand-by pump
- change of the operating pump
- start of the cooling fan
- stop of the heater
- generating alarm and message signals

***The customer has only to connect electric supply and I/O signals.***

The regeneration unit used for Fyrquel is powered and fused through the control cabinet. The supply cable of the regeneration unit has to be connected to the control cabinet.

### Signalisation

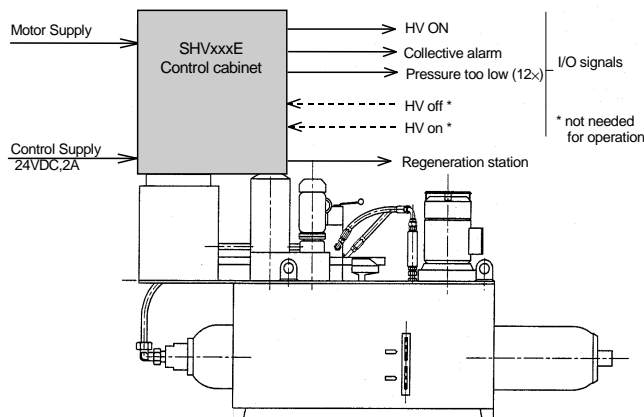
Operational conditions and malfunctions are displayed on the display elements in the cabinet door. Malfunction-messages are always stored.

When malfunction-messages occur, they are displayed on the cabinet door and the collective malfunction-signal is given.

When the malfunction is cleared, the pumps and fan will start automatically. The malfunction message will be kept stored until the operator has checked the HPU locally and reset the malfunction message with the reset button (S21, Reset).

Following signals are available as contact:

- HV ON (SPDT contact)
- Collective malfunction (SPDT contact)
- Pressure too low (Relay de-energizes if a malfunction occurs; 12 normally-open contacts for blocking the connected hydraulic actuators)



## Technical Specification

Available system pressure	max. 160 bar
Hydraulic fluid	Mineral oil DIN51525 Fire retardant fluid (Phosphate ester type)
Tank capacity	710 liter
Ambient temperature range	-10...50 °C Designed for outdoor installation, sun protection recommended
Sound pressure level	< 75dBA @ 1m
<b>Pumps</b>	
Discharge rate	21.5 l/min
Type	Internal gear pump
<b>Motors</b>	
Power supply	3 x 380...420 V, 50Hz or 3 x 440...480 V, 60 Hz (other voltages upon request)
Pump motors	2 x 11 kW / 50 Hz or 12.7 kW / 60 Hz
Filter motor	1 x 0.37 kW / 50 Hz or 0.42 kW / 60 Hz
Fan motor	1 x 0.18 kW / 50 Hz or 0.20 kW / 60 Hz
Design according to	IEC 34-1
Protection class	IP 55
Isolation class	F
Lubrication (motor)	For life, lithium based grease
Bearing	Ball bearing, pre-charged
Humidity protection	100% (Tropical)
<b>Accumulator</b>	
	Gas bladder type, mounted near the actuators
Nominal capacity	2..4 x 50 liter
Max. permissible pressure	330 bar
Approval	CE (others upon request)
Gas	Nitrogen
<b>Filter</b>	
	Standard, self contained type (electric motor, pump, filter, clogging indicator)
	Filtration degree $\beta_{10} > 200 \mu\text{m}$
	Air breathing filter on tank
<b>Sensors</b>	
	Level
	Pressure
	Temperature
<b>Oil cooler</b>	
	Standard
<b>Control and Monitoring unit</b>	
	SHV
Interference immunity	CE-conform
Protection level	IP65
Wiring	Completely wired Power supply for regeneration unit (when operated with fire retardant oil)

## Optional scope of supply

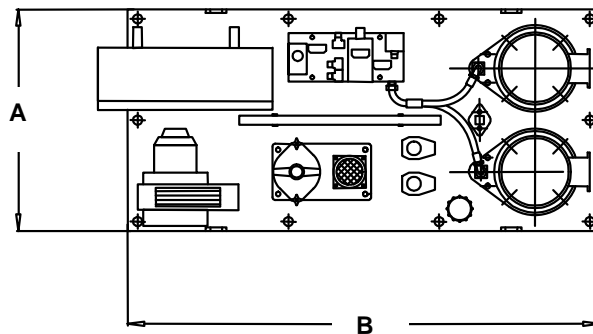
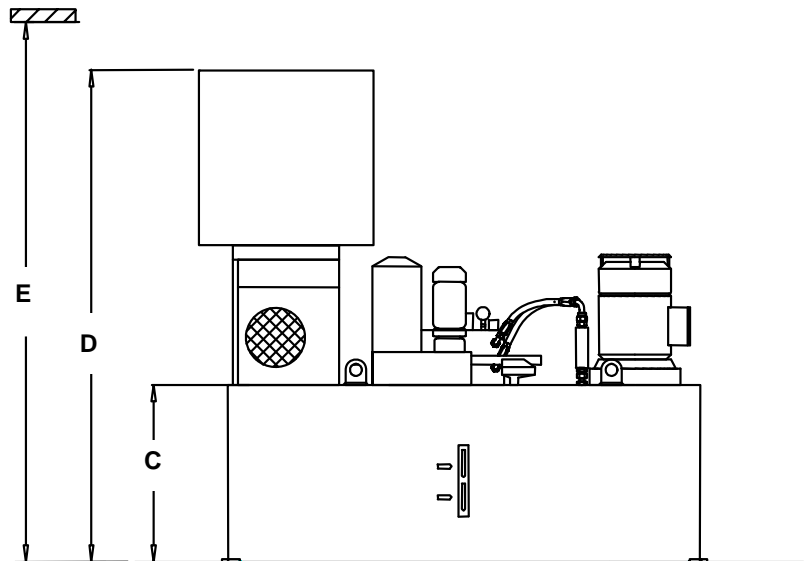
Oil heater

Oil drip tray

Regeneration unit (when operated with Phosphate ester fluid)

## Dimensional Information

Outline Dimensions	mm
A	1050
B	1600
C	600
D	1860
E	2400
Weight	995 kg



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