

RE 51 027/10.02

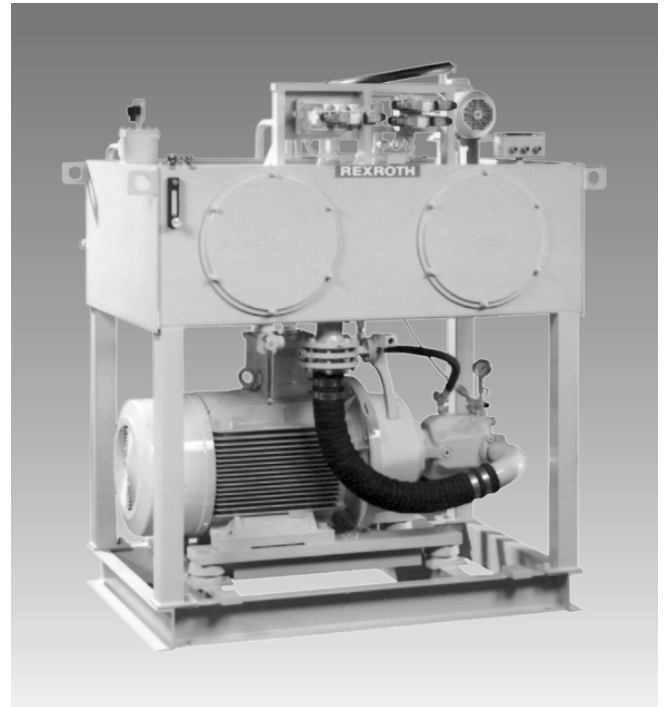
Replaces: 07.96

**Hydraulic power unit
Type ABHSG**

Nominal sizes 400 to 1000

Maximum operating pressure 315 bar

Maximum flow 260 L/min



H/A 5369/96

Type ABHSG

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Features

- Compact design, can be used in many industrial branches
- Low floor space
- Easily expandable due to their modular design
- Long service life in conjunction with low noise emissions due to the types of pump used, they are types A4VSO and A10VSO; noise damping panels can also be fitted
- The motor-pump assembly is mounted on anti-vibration mounts
- Operating pressures up to a max. of 315 bar are possible
- Flows can be selected via the control and adjustment elements
- Optimum suction conditions due to the raised oil reservoir
- Easy access to the components due to the open design
- On request a drip tray to the Water Protection Act (WHG) is available



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Ordering details

ABHSG		S	/	/	/	-W	T	H	M	-A
Power unit										A = Variant A
Reservoir volume in litres (NS)									M =	NBR seals suitable for mineral oil (HLP) to DIN 51 524, other fluids on request
Reservoir NS 400	=	0400								
Reservoir NS 630	=	0630								
Reservoir NS 800	=	0800								
Reservoir NS 1000	=	1000								
Material									H =	Heaters With heater
Steel St 37.2	=	S								
Pump type - nominal size									T =	Thermostat With thermostat
See selection table on pages 4 and 5										
Electric motor (frame size, no. of poles, power in kW)										
See selection table on pages 4 and 5										
Electronics										
With electronics	=	1								
Without electronics	=	0								
Heat exchanger										
With oil-water heat exchanger (standard)	=	W								

Ordering example:

ABHSG-0400 S/A10VSO100/225S-4-37/0-WTHM-A

Function

Operation

The power unit and associated electrical cabinet can be supplied with all interconnecting wiring fitted. The switching cabinet contains an operating field which contains all of the operating and display elements. The switching cabinet can be separately mounted. In this case all of the internal power unit wiring terminates at a terminal box, (with the exception of the electric motor).

Filtration

The power units are fitted with a return line filter. Electrical clogging indicators indicate when the filter elements have to be changed.

Operating medium

The power units are suitable for use with hydraulic oil HLP to DIN 51 524, part 2. The recommended viscosity class is ISO VG 46 to DIN 51 524 parts 1 and 2. The pressure fluid is to be filled via the filter/breather or via a suitable filter/pumping unit.

Pressure control

The high pressure pump is fitted with a manually operated pressure adjuster, on request a remote electrical adjuster can be fitted. In the second case the pressure can be set via a potentiometer fitted in the power unit control cabinet, or by using a selector switch (optional) be controlled by a higher level control centre.

The pump regulates itself to the flow required as soon as the required pressure is achieved. The response characteristics of the pressure controller with its dynamically fast control characteristic caters for the demands placed on a high performance pressure medium supply system.

For pressure safety a pressure relief valve of sandwich plate design (DBA/DBAW) is fitted directly on the pump.

Cooling


The power converted into heat within the system is dissipated via a heat exchanger (oil-water). The heat exchanger is fitted into the circulation system.

Per power unit approx. 30 % of the installed power can be dissipated. The preferred cooling medium is ammonia-free sweet water (e.g. cooling water); when using spring, stream or river water as well as brackish water a water analysis is required so that the cooler material can be defined.

The water consumption is dependent on the loading of the power unit and the inlet temperature differential.

Technical data (for applications outside these parameters, please consult us!)

Reservoir capacity	L	400; 630; 800; 1000
Pressure fluid		Mineral oil (HLP) to DIN 51 524, part 2; e.g. at an operating temperature of 50 °C ISO VG46 DIN 51 519, other pressure fluids on request Please take into account our standards stated in catalogue sheet RE 07 075!
Pump types		A10VSO to catalogue sheet RE 92 711 A4VSO to catalogue sheet RE 92 050
Filter-cooler circuit		ABUKG to catalogue sheet RE 50 120
Operating pressure, absolute		A10VSO
		A4VSO
Inlet	$\rho_{\min-\max}$	bar
		0.8 to 30
Outlet	ρ_{nom}	bar
		280
Peak pressure	ρ_{max}	bar
		350
Drain connection	ρ	bar
		2, absolute
Pressure fluid temperature range	°C	- 20 ... + 90 The power units optimum operating temperature range using mineral oil HLP to DIN 51 524 lies between 40 °C and 50 °C. The operating temperature for continuous operation should not exceed 70 °C!
Degree of contamination		Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We therefore recommend a filter with a minimum retention rate of $\beta_{10} \geq 100$.
Pressure safety		Pump safety block type DBA..., series 2X to catalogue sheet RE 25 890 for the A10VSO variable displacement pump.
Viscosity range	mm ² /s	16 ... 36 (also see RE 92 711, RE 92 712 and RE 92 050)
Motor type		Three phase - asynchronous motor
No. of poles		4
Voltage	V	230 / 400 at 50 Hz 460 at 60 Hz to IEC 38
RPM	min ⁻¹	1500 at 50 Hz 1800 at 60 Hz
Protection		IP55
Direction of rotation		Anti-clockwise (viewed on the motor shaft)
Frame type		B35
Filter rating	Air/breather	µm
	Return filter	µm
		10
		10
Surface finish		Under coat, Epoxy resin RAL 5009 (RN 123.01)
Type of pipe work		Fittings to DIN 2353, light/heavy series, type Walform

 **Note:** Please take the details stated within catalogue sheet RE 07 900 into account for the assembly, commissioning and maintenance of hydraulic systems!
The unit was designed and manufactured to conform with the harmonised EN standards / specifications.

Noise values for standard power units

Pressure in bar	Flow in L/min	Noise pressure level in dB(A)						
		Pump type A10VSO / NS				Pump type A4VSO / NS		
		45	71	100	140	71	125	180
100	q_{Vmin}	74	76	77	79	77	79	81
	q_{Vmax}	77	79	80	82	79	83	84
200	q_{Vmin}	77	79	81	82	79	82	84
	q_{Vmax}	79	81	83	86	81	84	86
300	q_{Vmin}	79	81	83	85	82	84	85
	q_{Vmax}	81	83	85	88	84	87	88

Noise pressure level

To DIN 45 635 parts 1 und 41, measured at $n = 1450 \text{ min}^{-1}$, $v = 41 \text{ mm}^2/\text{s}$ and $\vartheta = 50 \text{ }^\circ\text{C}$.

Measurement distance, noise measurement device – power unit: 1 m
Pressure fluid: mineral oil HLP to DIN 51 524 part 2

By using noise damping walls the noise pressure level is reduced by approx. 10 to 15 dB(A).

Please note!

Noise reflections at the installation site can lead to increased noise pressure levels.

Float switch settings

A float switch with 2 contacts is provided for „low level“ and „EMERGENCY OFF“.

The switching points are factory pre-set, they can however, be altered on the unit without having to change the installed length.

Reservoir nominal size	Residual volume at the upper switching point in litres	Residual volume at the lower switching point in litres
400	277	190
630	475	365
800	600	460
1000	610	610

Connection sizes: pump P1/P2 and return T

Reservoir NS	Pump type	Pump connection		Return line connection
		SAE 3000 PSI Pipe connection	SAE 6000 PSI Pipe connection	
400	A10VSO 45	Ø 25	–	G 1 1/4
	A10VSO 71	–	Ø 30	
	A4VSO 71	–	Ø 30	
630	A10VSO 100	–	Ø 38	SAE 3-3000 PSI
800	A10VSO 140	–	Ø 38	
	A4VSO 125	–	Ø 38	
1000	A4VSO 180	–	Ø 38	

Replacement filter elements

Reservoir NS	Filter element type for hydr. system	Material No.
400	ABZFE-R0140-10-1X-A	00229747
630	ABZFE-R0450-10-1X-A	00229749
800		
1000		

Selection table – Power units

The material no. can be obtained after selecting the reservoir size and the pump pressure. Contained within the material no. are all of the components stated in the hydraulic circuit diagram.

Reservoir volume 400 litres

Pump type	q_{Vmax} in L/min	p_{max} in bar	Power in kW	E-motor frame size	Material No. ¹⁾	Material No. ²⁾	Weight in kg ³⁾
A10VSO 45	63	60	7,5	132M	00550232	00557959	370
		85	11	160M	00551419	00557956	400
		120	15	160L	00551421	00557955	420
		145	18,5	180M	00551422	00557954	500
		170	22	180L	00551423	00557953	515
		235	30	200L	00551424	00557952	575
A10VSO 71	100	75	15	160L	00551425	00557950	435
		90	18,5	180M	00551426	00557949	515
		110	22	180L	00551427	00557948	530
		150	30	200L	00551428	00557946	590
		185	37	225S	00551429	00557945	650
		225	45	225M	00551434	00557944	680
A4VSO 71	100	75	15	160L	00551439	00557938	455
		90	18,5	180M	00551440	00557937	535
		110	22	180L	00551441	00557936	550
		150	30	200L	00551442	00557934	610
		185	37	225S	00551443	00557933	670
		225	45	225M	00551444	00557961	700

Reservoir volume 630 litres

Pump type	q_{Vmax} in L/min	p_{max} in bar	Power in kW	E-motor frame size	Material No. ¹⁾	Material No. ²⁾	Weight in kg ³⁾
A10VSO 100	145	65	18,5	180M	00551445	00557962	610
		80	22	180L	00551447	00557963	625
		105	30	200L	00551448	00557965	685
		130	37	225S	00551449	00557969	745
		160	45	225M	00551451	00558022	775
		195	55	250M	00551450	00558023	880

Reservoir volume 800 litres

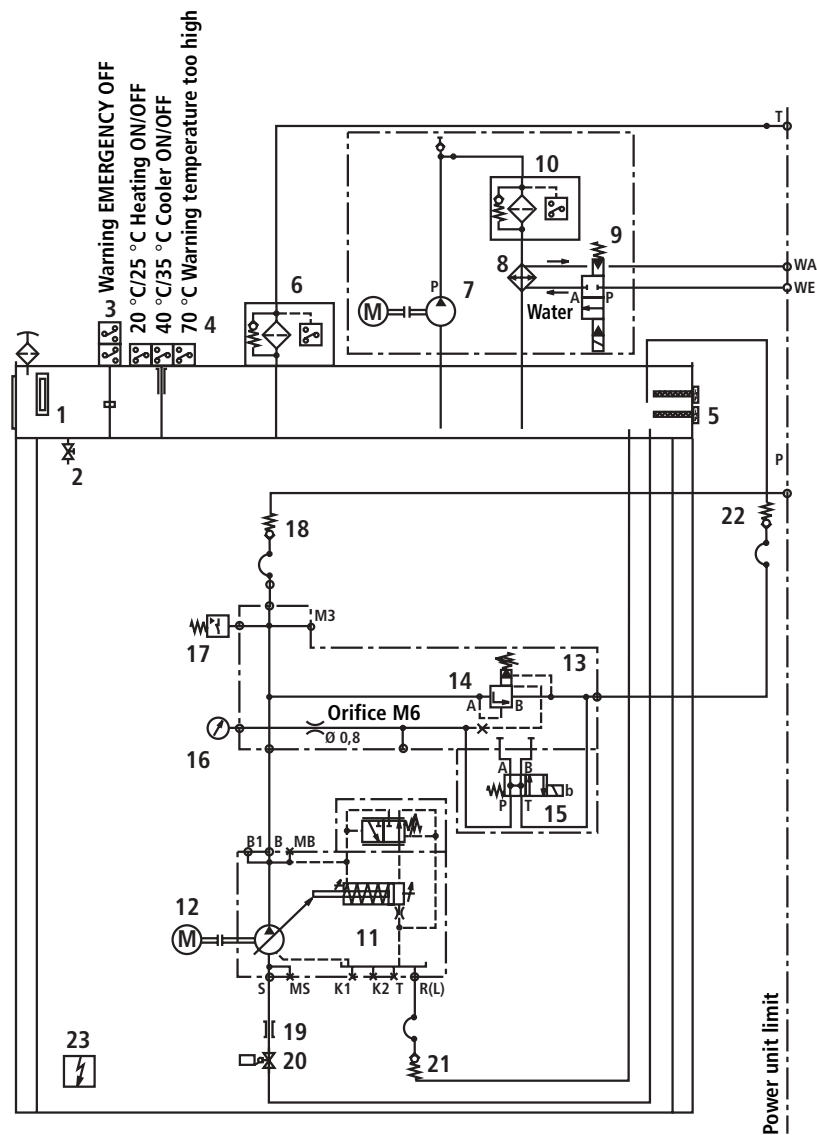
Pump type	q_{Vmax} in L/min	p_{max} in bar	Power in kW	E-motor frame size	Material No. ¹⁾	Material No. ²⁾	Weight in kg ³⁾
A4VSO 125	181	60	22	180L	00551466	00558033	760
		85	30	200L	00551467	00558044	775
		105	37	225S	00551468	00558048	835
		125	45	225M	00551470	00558049	895
		155	55	250M	00551471	00558246	925
		215	75	280S	00551472	00558154	1030
		270	90	280M	00551473	00558155	1205
A10VSO 140	200	75	30	200L	00551474	00558247	745
		90	37	225S	00551475	00558168	805
		110	45	225M	00551476	00558172	865
		130	55	250M	00551485	00558171	895
		190	75	280S	00551486	00558248	1000
		225	90	280M	00551489	00558173	1175

Reservoir volume 1000 litres

Pump type	q_{Vmax} in L/min	p_{max} in bar	Power in kW	E-motor frame size	Material No. ¹⁾	Material No. ²⁾	Weight in kg ³⁾
A10VSO 180	261	70	37	225S	00551498	00558257	990
		85	45	225M	00551499	00558184	1020
		105	55	250M	00551500	00558185	1125
		145	75	280S	00551501	00558186	1300
		175	90	280M	00551503	00558183	1350
		215	110	315S	00551504	00558189	1520
		260	132	315M	00551505	00558187	1600

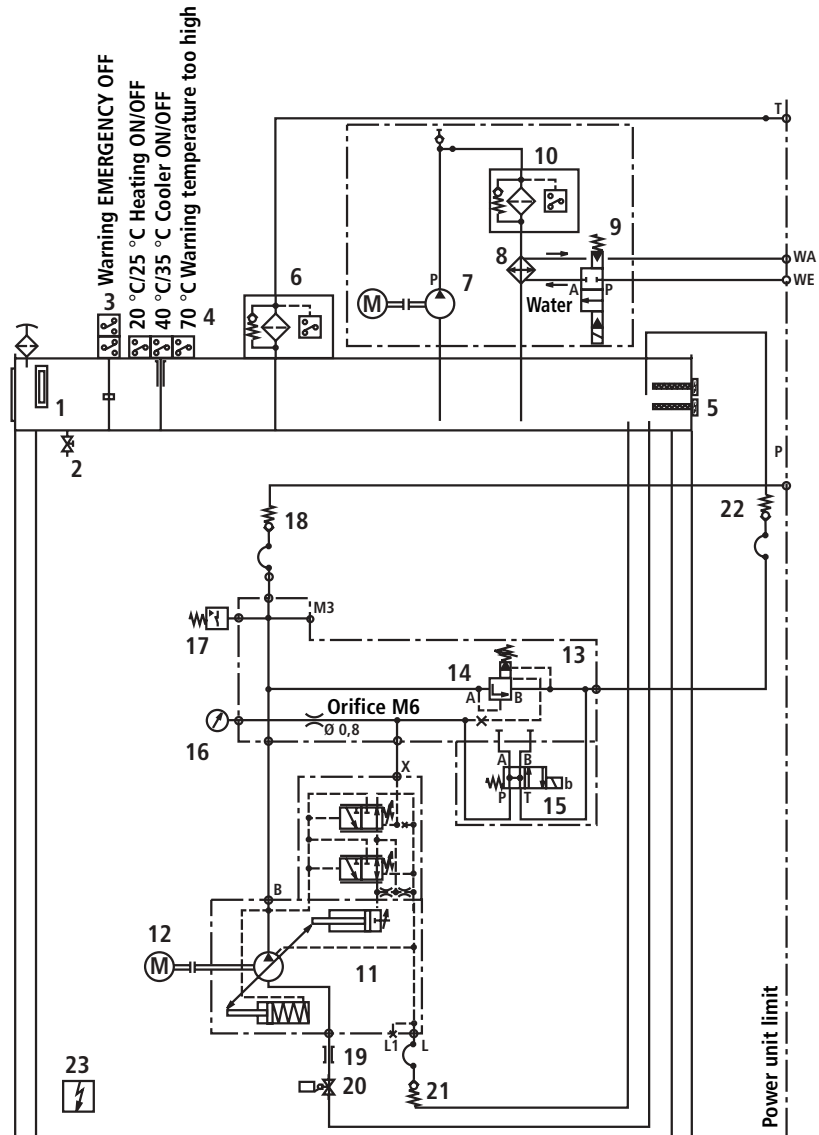
- ¹⁾ With oil-water heat exchanger, without electronics ³⁾ The weights stated are for a total system without oil and electronics (switching cabinet). Weight of electronics approx. 160 kg.
²⁾ With oil-water heat exchanger, with electronics

Circuit, power unit type ABHSG with pump type A4VSO and an oil-water heat exchanger

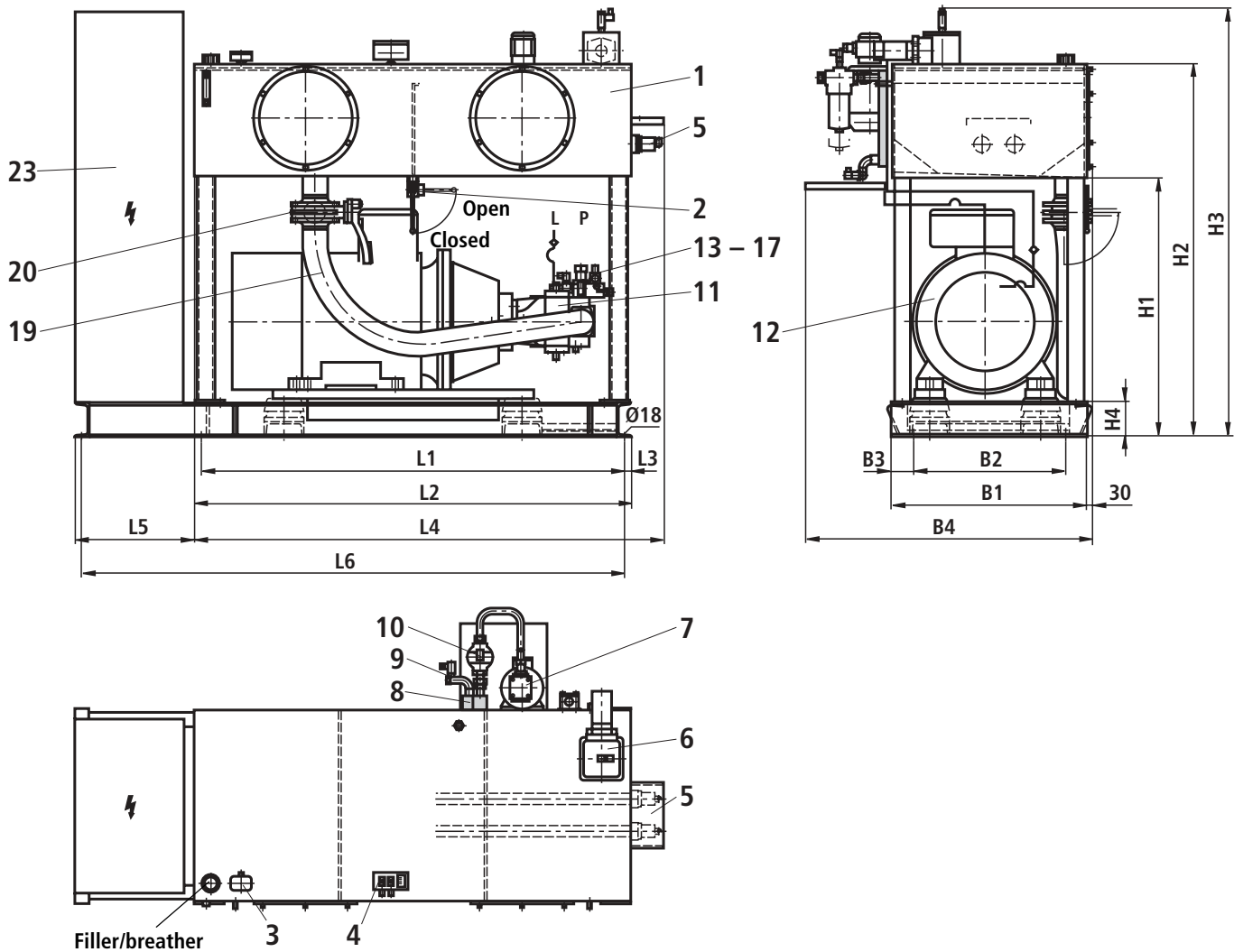


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|----|--|----|------------------------|
| 1 | Reservoir with sight glass | 13 | Pressure control block |
| 2 | Oil drain valve | 14 | Pressure relief valve |
| 3 | Float switch | 15 | Directional valve |
| 4 | Thermostat | 16 | Pressure gauge |
| 5 | Heater | 17 | Pressure switch |
| 6 | Return filter | 18 | Check valve |
| 7 | Motor pump assembly | 19 | Suction hose |
| 8 | Oil-water heat exchanger | 20 | Isolator valve |
| 9 | Electric water control valve | 21 | Check valve |
| 10 | Filter | 22 | Check valve |
| 11 | Pressure compensated axial piston pump | 23 | Switching cabinet |
| 12 | Three-phase electric motor | | |

Circuit, power unit type ABHSG with pump type A10VSO and an oil-water heat exchanger



- | | | | |
|----|--|----|------------------------|
| 1 | Reservoir with sight glass | 13 | Pressure control block |
| 2 | Oil drain valve | 14 | Pressure relief valve |
| 3 | Float switch | 15 | Directional valve |
| 4 | Thermostat | 16 | Pressure gauge |
| 5 | Heater | 17 | Pressure switch |
| 6 | Return filter | 18 | Check valve |
| 7 | Motor pump assembly | 19 | Suction hose |
| 8 | Oil-water heat exchanger | 20 | Isolator valve |
| 9 | Electric water control valve | 21 | Check valve |
| 10 | Filter | 22 | Check valve |
| 11 | Pressure compensated axial piston pump | 23 | Switching cabinet |
| 12 | Three-phase electric motor | | |



- | | |
|---|-------------------------------|
| 1 Reservoir with sight glass | 12 Three-phase electric motor |
| 2 Oil drain valve | 13 Pressure control block |
| 3 Float switch | 14 Pressure relief valve |
| 4 Thermostat | 15 Directional valve |
| 5 Heater | 16 Pressure gauge |
| 6 Return filter | 17 Pressure switch |
| 7 Motor-pump assembly | 18 Check valve |
| 8 Oil-water heat exchanger | 19 Suction hose |
| 9 Electric water control valve | 20 Isolator valve |
| 10 Filter | 21 Check valve |
| 11 Pressure compensated axial piston pump | 22 Check valve |

Reservoir NS in litres	B1	B2	B3	B4	H1	H2	H3	H4	L1	L2	L3	L4	L5		L6	
													≤ 45 kW	≥ 55 kW	≤ 45 kW	≥ 55 kW
400	735	635	50	1135	990	1320	1590	120	1535	1575	20	1725	300	500	2025	2225
630	945	700	122,5	1415	830	1350	1620	140	1460	1510	25	1660	300	500	1965	2165
800	900	700	100	1370	940	1460	1730	160	1950	2010	30	2160	300	500	2460	2690
1000	1065	800	132,5	1535	1010	1560	1830	160	1950	2010	30	2160	300	500	2460	2690

Power and control electronics

The compact design of the power unit makes it possible to mount the electrical control directly onto the base frame.

The control conforms to the VDE and VBG4 regulations and is fitted into a commercially available terminal box.

The control basically consists of:

- Sheet metal terminal box; protection to IP55; enclosed on all sides; door with rubber seal, hinged on the left hand side
- Bottom cable entry via Pg fittings
- Power supply: 3 x 400 V, 50 Hz, N, PE
- Main switch, fuses, switching elements for electric motor and oil heaters
- Overload relays, coupling relays, emergency off safety relays
- Power supply for 230 VAC and 24 VDC
- Programmable logic control type S5-100U with programming on an EPROM memory module

Options:

- AMP meter for main motor
- Elapsed time meter for main motor
- Terminal box lighting via a door actuated limit switch
- Air cooler instead of an electro-magnetic cooling valve

Features:

For external signals potential-free contacts are available for „ready for operation, operation, warnings and faults“.

There is a separate PLC connection available for switching-on the power unit from an external source.

The operating and display elements are contained in an anodised panel which is fitted onto the terminal box door.

Electric motors with powers of 7.5 kW or more, star delta start-up is provided.

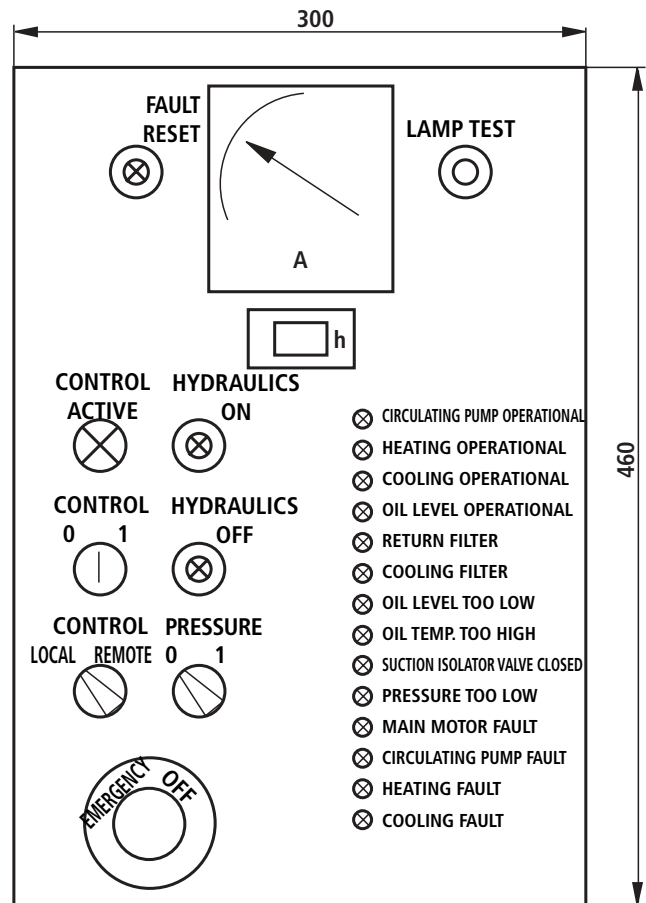
Thermistors are fitted to electric motors from size 45 kW.

The control is fitted and connected to the hydraulics and is functionally tested.

The documentation provided comprises of a general assembly drawing, a circuit drawing, terminal allocation drawing, parts list and a printout of the PLC programme.

Bedienungspanel

(eingebaut in die Türe des Elektronik-Schaltschrankes)



Commissioning guidelines

General

- The units supplied by ourselves have been tested for function and performance. changes in any form or manner are not permitted, as this would invalidate any guarantee claims
- Repairs may only be carried out by the manufacturer, authorised agent or subsidiary. No guarantee will be accepted for commissioning carried out by yourselves.

Commissioning

- Only fill with pressure fluid via a filter with a suitable rating and retention rate.
- Take into account when connecting at the electric motor, the arrow showing direction of rotation.

- Start the pump under no load conditions and allow it to run for a few seconds at zero pressure, this is to ensure adequate lubrication.
- On no account run the pump without oil.
- The system has to be rechecked if the pump, after approx. 20 seconds, does not run without creating bubbles.
- After the operating values have been reached, check the pipe work for leaks and check the operating temperature.

Bleeding

- Before commissioning the pump housing must be filled with oil.

Important guidelines

- Assembly, maintenance and servicing must only be carried out by authorised, trained and instructed personnel!
- The unit must only be operated within the permitted limits!
- When carrying out any work on the unit switch the system to zero pressure! Conversions and modifications done by yourselves which affect safety and function are not permitted!
- Provide protective measure and do not remove any protective devices.
- Ensure that the unit is mounted correctly, e.g. fixing bolts correctly fitted! (Take into account the prescribed tightening torque!)
- The general valid safety and accident regulations are to be adhered too!

Notes with regard to the EC machinery directive 98/37/EG, annex II, section B:

The sub-assemblies are manufactured to conform with the harmonised standards EN 982, EN 983, DIN EN 292 and DIN EN 60 204-1.

The commissioning cannot be carried out until it has been confirmed that the machine, to which the sub-assemblies are to be fitted, conforms with the EC guidelines.

Engineering guidelines

Extensive guidelines and assistance can be found in the Hydraulic Trainer, volume 3 RE 00 281, „Planning and design of hydraulic power systems“.

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