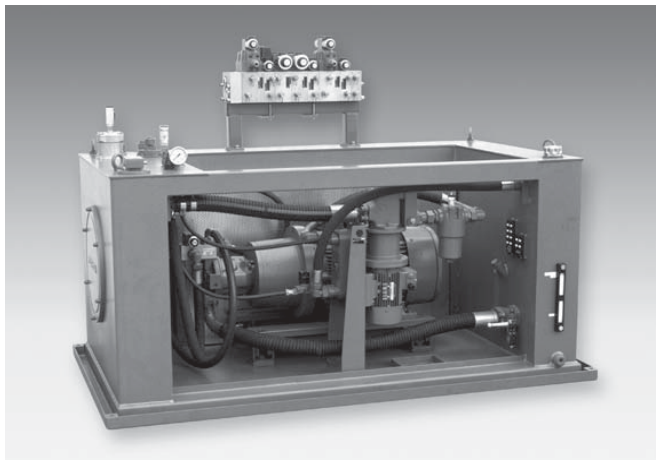
RE 51 096/01.03

Replaces: 09.02

Hydraulic power unit
Low noise compact unit
„Wisper power unit“
Type ABFAG

Reservoir nominal sizes 100-1000



Type ABFAG …open

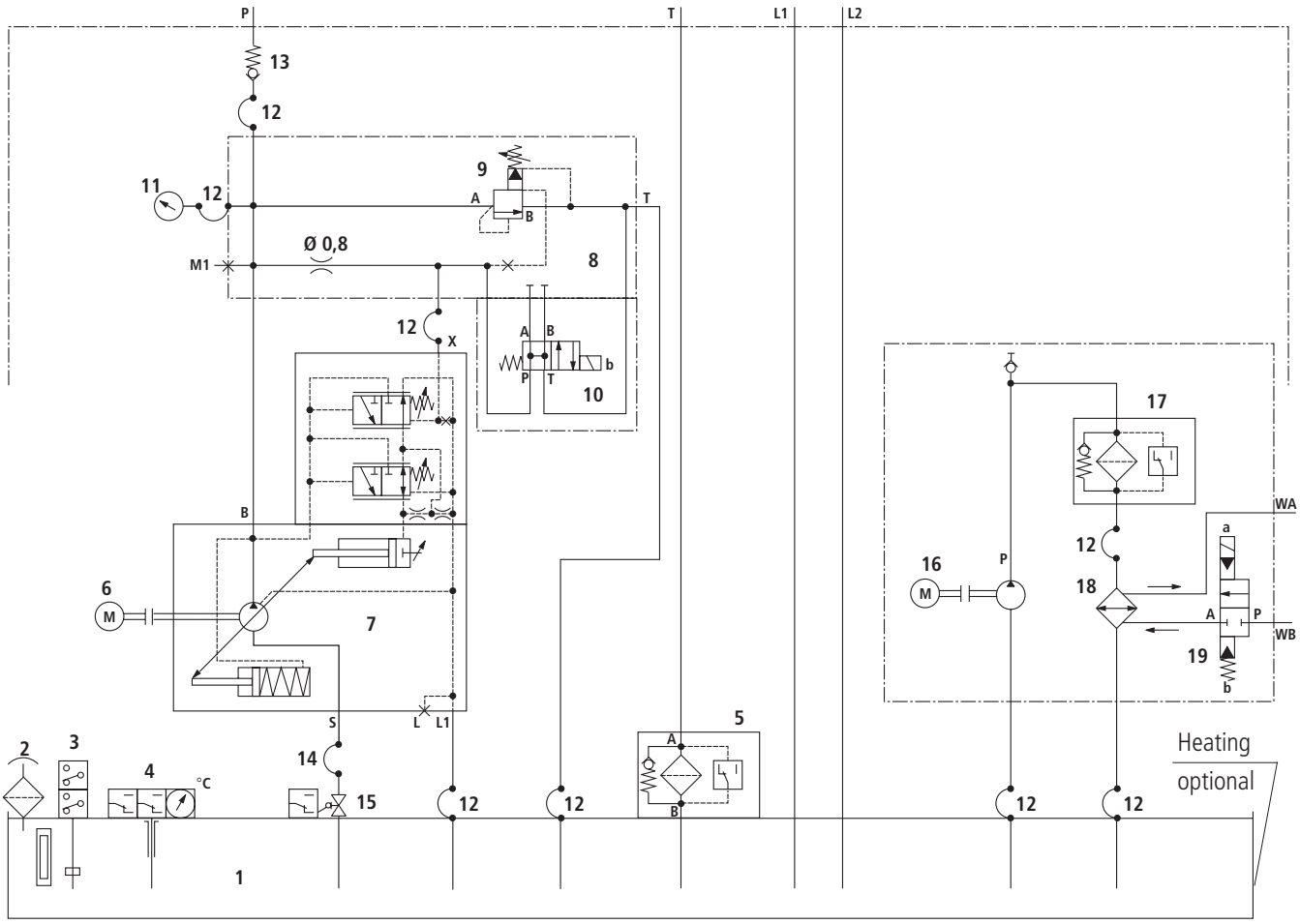
Type ABFAG …closed

Overview of contents

Features

- Very low noise compact unit
- Areas of application:
  - General machinery
  - Plastic processing machines
  - Stroke and lifting systems
  - Presses
  - Laboratory, schools
- The reservoir is in the form of a U with a flexibly mounted motor pump assembly
- The actuator connections terminate at a flexibly mounted bulkhead panel
- Good air separation characteristics
- Separate filter/cooler circuit
- Very accessible

Circuit: U form whisper power unit



1 Oil reservoir
2 Filler/breather
3 Float switch
4 Thermostat with display
5 Return filter
6 Electric motor
7 Axial piston pump
8 Pressure safety block
9 Pressure relief valve
10 Directional valve
11 Pressure gauge
12 Pressure hose
13 Check valve
14 Suction hose
15 Isolator valve with limit switch
16 Motor pump assembly
17 Filter
18 Oil/water cooler
19 Water control valve,

Ordering details

ABFAG –	S – 2X /	–	/ W	T	M

Standard power unit type ABFAG **= ABFAG**

Reservoir volume 100 litres **= 0100**
Reservoir volume 250 litres **= 0250**
Reservoir volume 630 litres **= 0630**
Reservoir volume 1000 litres **= 1000**

Material
Steel **= S**

Series 20 to 29 **= 2X**
(20 to 29: unchanged installation and connection dimensions)

Pump type
= A10VSO18
= A10VSO28
= A10VSO45
= A10VSO71
= A10VSO100
= A10VSO140

M = NBR seals
(other seals on request)

⚠ Attention!
The compatibility of the seals and pressure fluid has to be taken into account!

T = With thermostat

W = With oil/water cooler

Electric motor frame size
E.g. 180M-4-B0 (see page 4)

Ordering example:
ABFAG-0250S-2X/A10VSO28/180M-4-B0/WTM

Function

Design

The oil reservoir is designed in the form of a ‚U' within which the motor pump assembly is located. The motor pump assembly is mounted on anti-vibration mounts. Due to the excellent isolation of structure-bourn noise using optimised anti-vibration mounts, the reservoir walls are subjected to very little vibration so that the noise emission from the unit is very low. Noise damping panels are fitted, one on the top and one on the side of the unit, these also contribute to the unusually low noise values. They also make the drive unit very accessible.

General guidelines:

– The actuator connections terminate at a flexibly mounted bulkhead panel.

– The enlarged wall surfaces ensure that any entrapped air easily separates from the pressure fluid.

Mounting controls

Space is foreseen on the rear and the reservoir top for mounting additional controls.

Space for mounting accessories, e.g. hydraulic accumulators, etc, is provided on the rear and sides of the unit.

Cooling

Heat generated by the power components of the unit is discipated via an oil/water cooler.

The cooler is integrated into a separate filter cooler circuit which provides continuous off-line filtration and cooling.

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

Connections	– Oil		Pipe threads to ISO 1179, pipe connections to DIN 2353/ ISO 8434, flanges to ISO 6162
	– Water		Pipe threads to ISO 228/1
Pump types			A10VSO 18 to catalogue sheet RE 92 712
			A10VSO 28 … 140 to catalogue sheet RE 92 711
			PVV 18 … 60 to catalogue sheet RE 10 335
Motor pump assembly			ABAPG to catalogue sheet RE 51 062
Type of pipework			Fittings to DIN 2353; light/heavy series; Type Walform
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil); HEPG (polyglycols); HEES (syntetic ester); Other pressure fluids on request. Please take our specifications stated within catalogue sheet RE 07 075 into account.
Pressure fluid temperature range		°C	0 … + 80 The optimim power unit operating temperature using mineral oil HLP to DIN 51 524 lies between 40 and 50 °C. For continuous operation the operating temperature should **not** exceed 70 °C.
Pressure safety			Pump safety valve to catalogue sheet RE 25 890 for the variable displacement pump type A10VSO
Cooling medium			Drinking, industrial, stream and river water
Motor voltage/frequency			400/690 V-D/Y-50 Hz; 460 V-D-60 Hz (other voltages on request); frame type B 35
Direction of rotation			Clockwise
Water control valve			Electrically operated 2/2-way water control valve to AB-E 21-23
Viscosity range	– Optimum	mm^2/s	16 … 36
	– Briefly	mm^2/s	10 … 1000 (also see RE 92 711; 92 712 and RE 10 335
Degree of contamination			Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 8. We therefore recommend a filter with a minimum retention rate of $\beta_{10} \geq 100$.
Surface protection	– 1st under coat		All steel components with zinc dust paint
	– 2nd under coat		Epoxy under coat RAL 5009 (RN 123.01)

Selection table

The Material No. can be determined after the pump type, nominal size and nominal pressure has been defined.

The Material No. contains all of the components shown in the circuit.

Reservoir volume 100 litres (filling capacity 130 ltrs.)

Pump nom. size	$q_{V\ max}$ in L/min	p_{max} in bar	Power *P* in kW	E-motor frame size	Cooling cap. In kW	Material Number
A10VSO 18	26	145	7.5	132M-4-B1	4	00244959

Reservoir volume 250 litres

Pump nom. size	$q_{V\ max}$ in L/min	p_{max} in bar	Power *P* in kW	E-motor frame size	Cooling cap. In kW	Material Number
A10VSO 28	39	135	11	160M-4-B0	4	R900772815
	39	190	15	160L-4-B1	4	R900244978
	39	230	18.5	180M-4-B0	7.5	R900244979
	39	280	22	180L-4-B1	7.5	R900244980
A10VSO 45	63	115	15	160L-4-B1	7.5	R900772816
	63	145	18.5	180M-4-B0	7.5	R900244981
	63	170	22	180L-4-B1	7.5	R900244982
	63	235	30	200L-4-B0	15	R900244983

Reservoir volume 630 litres

Pump nom. size	$q_{V\ max}$ in L/min	p_{max} in bar	Power *P* in kW	E-motor frame size	Cooling cap. In kW	Material Number
A10VSO 71	100	90	18.5	180M-4-B0	7.5	R900772817
	100	110	22	180L-4-B1	7.5	R900772818
	100	150	30	200L-4-B0	15	R900244984
	100	185	37	225S-4-B0	15	R900244985
	100	225	45	225M-4-B1	15	R900244986
A10VSO 100	145	100	30	200L-4-B0	15	R900772819
	145	125	37	225S-4-B0	15	R900772820
	145	160	45	225M-4-B1	15	R900244987
	145	195	55	250M-4-B0	30	R900244988
	145	265	75	280S-4-B0	30	R900244989

Reservoir volume 1000 litres

Pump nom. size	$q_{V\ max}$ in L/min	p_{max} in bar	Power *P* in kW	E-motor frame size	Cooling cap. In kW	Material Number
A10VSO 140	203	110	45	225M-4-B1	15	R900772821
	203	140	55	250M-4-B0	30	R900244993
	203	190	75	280S-4-B0	30	R900244994
	203	220	90	280M-4-B1	30	R900244995

Typical noise values (measured at n = 1450 min^{-1}, ϑ_{oil} = 50 °C) Details in dB(A)

Pump type	Pressure in bar	Flow L/min	Pump nominal size 18	28	45	71	100	140
A10VSO	100	q_{Vmin}	59	60	62	65	68	69
		q_{Vmax}	62	63	65	68	70	71
	200	q_{Vmin}	61	63	65	68	71	72
		q_{Vmax}	64	65	68	71	73	75
	300	q_{Vmin}	63	66	69	71	72	73
		q_{Vmax}	66	68	71	73	75	75

Noise pressure level to DIN 45 635 part 1, 41;

Distance from noise sensor to power unit; -1m

Measured at n = 1450 min^{-1}; operating temperature ϑ = 50 °C

Pressure fluid: Mineral oil HLP to DIN 51 524 part 2

Noise reflections at the place of final use can lead to a higher noise pressure level. (Lower noise levels on request)

With n = 1000 min^{-1} the noise values can be reduced by approx. 3 dB(A).

With n = 1800 min^{-1} the noise values are increased by approx. 3 dB(A).

When using a drip tray which complies with the WHG (Water Protection Act), the typical noise valves increase by approx. 3 dB(A). Built-on controls also increase the noise pressure level!

Replacement filter elements

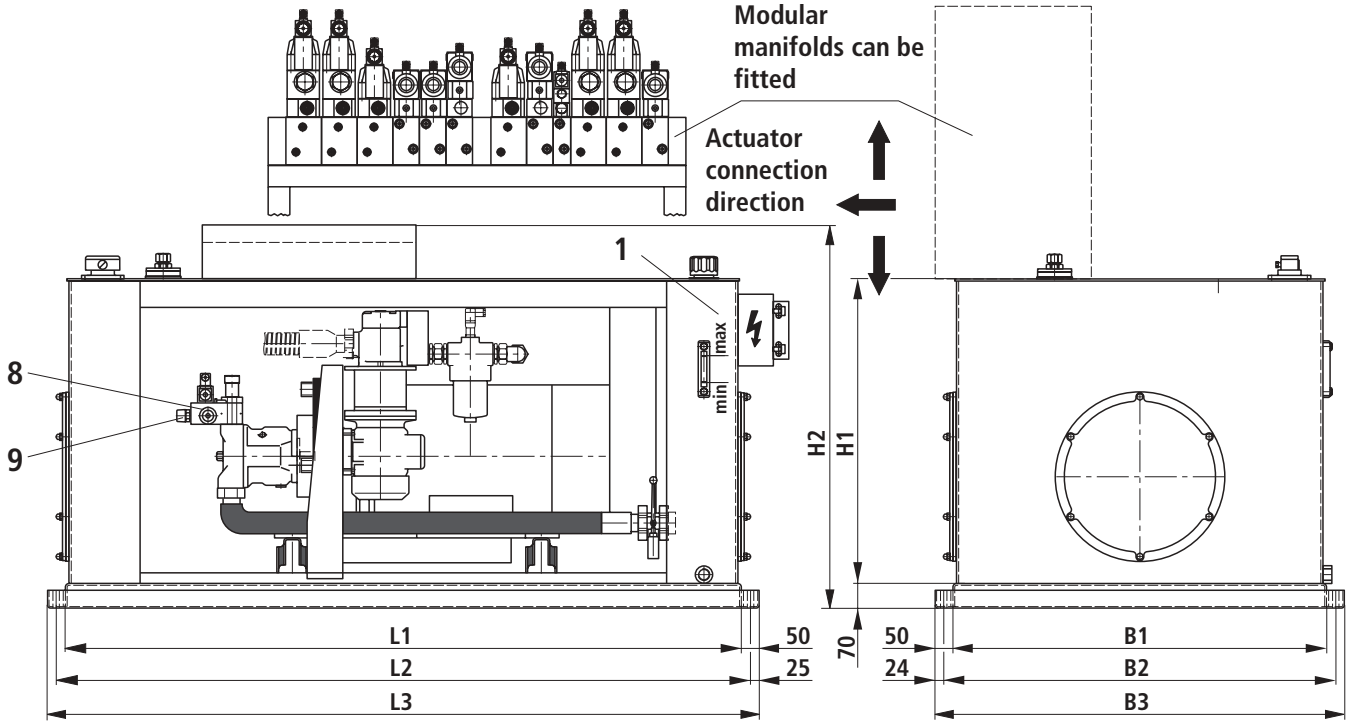
Reservoir NS	Pump type	E-motor P in kW	Filter element type for the hydraulic power unit	Material No.	Filter element type for the filter cooler circuit	Material No.
100	A10VSO 18	7.5	ABZFE-R0050-10-1X/M-A	R900229746	ABZFE-N0080-10-1X/M-A	R900229751
250	A10VSO 28	11; 15	ABZFE-R0140-10-1X/M-A	R900229747	ABZFE-N0080-10-1X/M-A	R900229751
		18.5; 22	ABZFE-R0140-10-1X/M-A	R900229747	ABZFE-N0160-10-1X/M-A	R900229752
	A10VSO 45	15-22; 30	ABZFE-R0140-10-1X/M-A	R900229747	ABZFE-N0160-10-1X/M-A	R900229752
630	A10VSO 71	18.5-22; 30-45	ABZFE-R0450-10-1X/M-A	R900229749	ABZFE-N0160-10-1X/M-A	R900229752
	A10VSO 100	30-45	ABZFE-R0450-10-1X/M-A	R900229749	ABZFE-N0160-10-1X/M-A	R900229752
		55-75	ABZFE-R0450-10-1X/M-A	R900229749	ABZFE-N0240-10-1X/M-A	R900229753
1000	A10VSO 140	45	ABZFE-R0450-10-1X/M-A	R900229749	ABZFE-N0160-10-1X/M-A	R900229752
		55-90	ABZFE-R0450-10-1X/M-A	R900229749	ABZFE-N0240-10-1X/M-A	R900229753

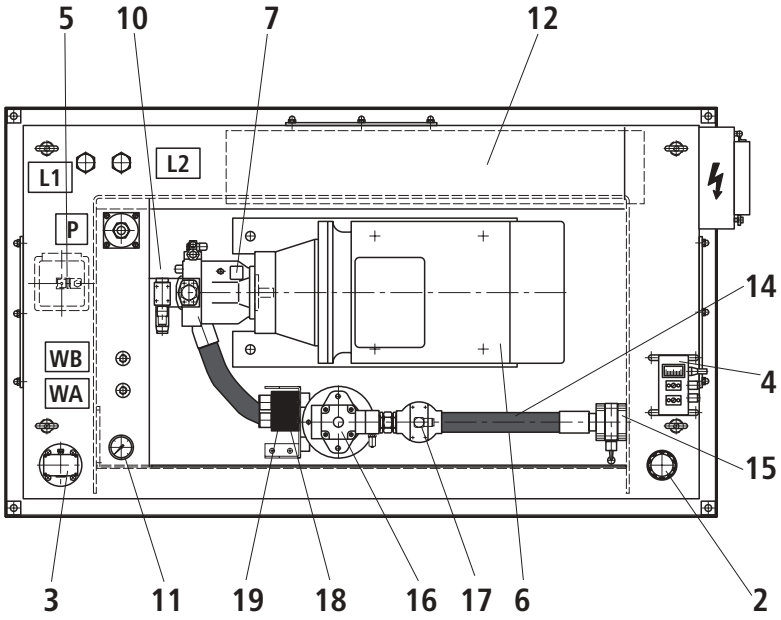
Float switch settings

Reservoir nominal size	Residual volume at the upper switching point in litres	Residual volume at the lower switching point in litres
100	93	69
250	160	145
630	515	455
1000	745	685

Flange and fitting sizes (SAE connections 3000 PSI) (Dimensions in mm)

Reservoir NS (in ltrs.)	Pump type A10VSO 18			A10VSO 28			A10VSO 45			A10VSO 71			A10VSO 100			A10VSO 140		
	P	T	L	P	T	L	P	T	L	P	T	L	P	T	L	P	T	L
100	Ø16	G1	Ø18															
250				Ø20	G1	Ø18	Ø25	G11/2	Ø18									
630										Ø30	G11/2	Ø22	Ø38	SAE2	Ø28			
1000																Ø38	SAE2	Ø28





Reservoir - NS	L1	L2	L3	B1	B2	B3	H1	H2
100	1450	1502	1550	800	852	900	755	1070
250	1850	1902	1950	1000	1052	1100	955	1315
630	2300	2352	2400	1200	1252	1300	1080	1590
1000	2300	2352	2400	1250	1302	1350	1280	1790

1 Oil reservoir
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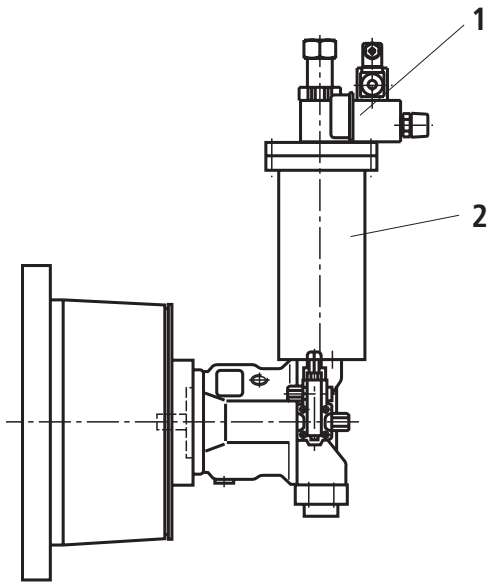
4 Thermostat with display
5 Return filter
6 Electric motor
7 Axial piston pump
8 Pressure safety block
9 Pressure relief valve
10 Directional valve
11 Pressure gauge
12 Area for controls
13 Check valve (in pipe work)
14 Suction hose
15 Isolator valve with limit switch
16 Motor pump assembly
17 Filter
18 Oil/water cooler
19 Water control valve, electrical

Pulsation damper (optional)

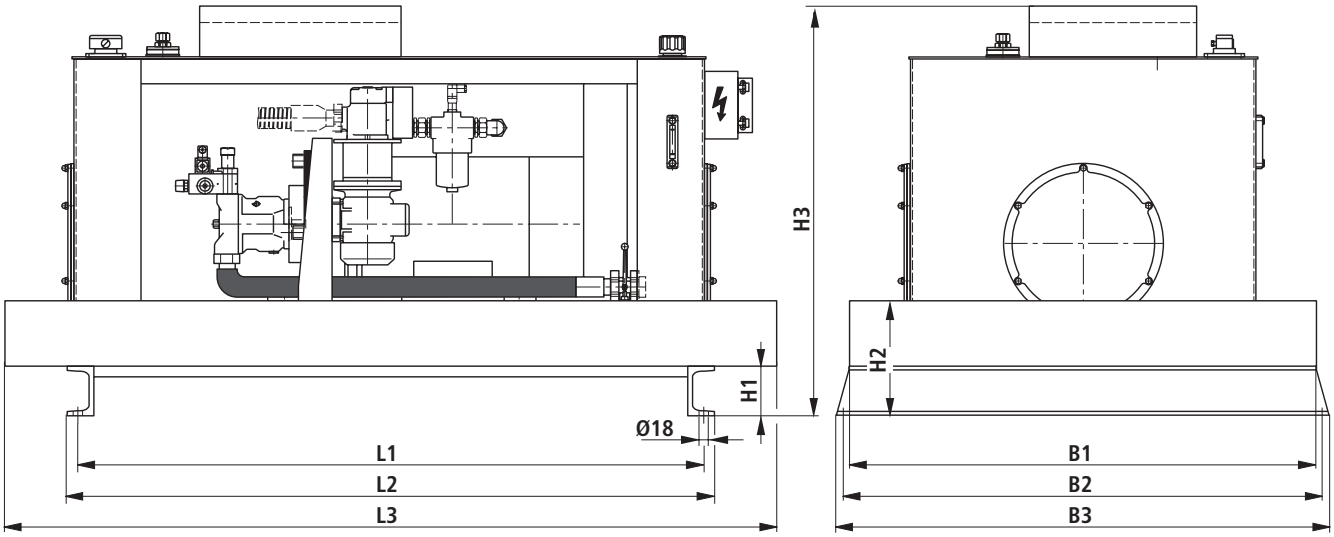
Pulsation dampers are fitted into hydraulic systems that use displacement pumps and where noise is transmitted via the pressure fluid. Controls that are built onto the unit and their assoicated pipe work increase the noise valves. The nominal values can be retained by using the pulsation damper (see page 5). It is fitted directly onto the pumps pressure connection.
For further information see RE 50 142.

Pump	Nominal size	Material number
A10VSO	18, 28	R900863597
A10VSO	45, 71	R900863407
A10VSO	100, 140	R900863406



1 Pump safety block to RE 25 890
2 Pulsation damper (max. pressure 300 bar)

Drip tray in accordance with the Water Protection Act (WHG) (optional)



Reservoir - NS	Material No.	L1	L2	L3	B1	B2	B3	H1	H2	H3
100	R900780835	1500	1550	1800	1150	1200	1250	140	260	1215
250	R900780836	1900	1950	2200	1350	1400	1450	140	260	1460
630	R900780837	2350	2400	2650	1550	1600	1650	140	320	1735
1000	R900780838	2350	2400	2650	1600	1650	1700	140	400	1955

When using a drip tray which complies with the WHG (Water Protection Act), the typical noise values increase by approx. 3 dB(A).

Ordering example:

OELWANNE ABFAG 250S 2200 x 1450 x 260
(Material No. **R900780836**)

Engineering guidelines

These units are of a molular design.
For further information please contact your Bosch Rexroth sales office.

Comprehensive instructions and proposals can be found in the Hdyraulic Trainer, volume 3, RE 00 281, „Planning and design of hydraulic power systems."

Commissioning guidelines

General

- The power units supplied by ourselves have been tested for function and performance. Changes in any form or manner to the power units are not permitted as this would also invalidate any guarantee claims.
- Repairs may only be carried out by the manufacturer or authorised agent or subsidary. No guarantee with be accepted for commissioning carried out by third parties.

Commissioning

- Only fill the pressure fluid via a filter which has the necessary retention rate.
- Take into account the direction of rotation arrow when connecting the electric motor.
- Start the pump without load and let it displace oil without pressure for a few seconds in order to provide sufficient lubrication.
- Never run the pumpt **without** oil.
- If the pump, after approx. 20 seconds, does not displace oil without any bubbles then the system has to be rechecked.
- After the operating values have been reached, check the pipe connections for leakage and check the operating temperature.

Bleeding

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

⚠ Important guidelines

- Assembly, maintenance and servicing of the power unit must only be carried out by authorised, trained and instructed personnel!
- The power unit must only be operated within the permissible limits!
- When carrying out any work on the power unit, switch the system to zero pressure! Unauthorised conversions and modifications which affect the safety and function are not permitted!
- Provide protective measures and **do not** remove any existing protective devices.
- Ensure that the fixing bolts are correctly fitted! (Take into account the prescribed tightening torque!)
- The general valid safety and accident prevention regulations must be adhered too!
- Reservoir nominal size 100 has to be filled with a minimum of 130 litres (sight glass „max").

Note: with reference to the EC machinery guidelines 89/392 EWG annex II, section B; manufacturer's declaration:

The supplied assemblies have been manufactured in accordance with the harmonised standards prEN 982, prEN 983 DIN EN 292 and DIN EN 60 204-1.
Commissioning may not take place until it has been confirmed that the machine, into which the assembly is to be installed, conforms with the regulations stated within the EG guidelines.

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