Rectifying a malfunctioning hydraulic system

Fault	Troubleshooting	Cause	Action
The equipment works jerkily.	Check whether the flow in the pressure hose from the pump pulsates. Oil spots on the pump and suction hose can indicate an air leakage. Check the oil level in the tank. Check whether the oil foams.	1. Pump not vented after installation. 2. Air leakage on the suction hose or pump. 3. Oil level too low. 4. Not optimal designed tank for separation of air from the oil. 5. Oil tank with too small air venting area.	1. Vent the pump. 2. Repair the air leakage. 3. Fill with oil. 4. Replace the return filter with an oil pipe or tank with solid baffle plate. 5. Change to a tank with a greater air venting area.
The equipment works jerkily when starting and at a high pump speed.	Check whether the pump cavitates. This is noticeable through flow pulsations and noise from the pump stopping when the speed is lowered.	1. Too small diameter on the suction hose. 2. Crushing or restriction of the suction hose. 3. Oil too thick. 4. Underpressure in the oil tank.	1. Change to a suction hose with a larger diameter. 2. Remove the restriction. 3. Change to an oil with a lower viscosity. 4. Change the air filter.
The oil has an abnormally high temperature.	Run the pump unloaded at working speed and measure the counter pressure. Connect a pressure gauge to the pressure hose close to the pump. The pressure must not exceed 2 MPa. Check whether the pressure rises to the correct value when a function is run towards the stop.	1. Too small a diameter or restriction in the pressure or return hoses. 2. Clogged pressure or return filter. 3. Oil flow too great. 4. Pressure relief valve tripped at too low a pressure. 5. Oil too thin. 6. Oil tank too small. 7. Oil level too low. 8. High continuous power output.	1. Change to hoses with a larger diameter; rectify the restriction. 2. Replace the filter. 3. Lower the speed or change to a smaller pump. 4. Adjust the valve or replace if necessary. 5. Change to an oil with a higher viscosity. 6. Change to a larger oil tank. 7. Fill with oil. 8. Fit an oil cooler.
The equipment has a lack of power.	Check whether the pressure rises to the correct value when a function is run towards the stop.	1. Pressure relief valve tripped at too low a pressure. 2. Defective directional control valve.	1. Adjust the valve or replace if necessary. 2. Replace the directional control valve.
The equipment runs abnormally slowly when loaded.	Connect a flow meter close to the pump. Check the flow. 1. The correct flow is obtained when loaded. 2. Abnormally low flow obtained when loaded.	1. Pressure relief valve tripped at too low a pressure. 2. Worn pump.	1. Adjust the valve or replace if necessary. 2. Replace the pump.
Noise from the pump.	1-5. Check whether the pump cavitates This is indicated by the noise stopping when the speed drops. Check whether the noise propagates in the hydraulic system. 6. Check whether the noise can be heard at all speeds.	1. Too small diameter on the suction hose. 2. Crushing or restriction of the suction hose. 3. Oil too thick. 4. Underpressure in the oil tank. 5. Worn pump.	1. Change to a suction hose with a larger diameter. 2. Remove the restriction. 3. Change to an oil with a lower viscosity. 4. Change the air filter. 5. Replace the pump.
Oil leakage from the pump.	Localise the oil leakage.	1. Leakage from the suction connection. 2. Leakage from the shaft seal. 3. Leakage from the plugs/fittings.	1. Replace the O-rings and tighten the hose clips. 2. Replace the shaft seals. 3. Replace the plugs/fittings and tighten carefully (15 Nm).
The pump shakes (intermediate shaft assembly).	Check whether the pump shakes, despite the flow not pulsating, i.e. the attachment does not jerk.	1. Play on intermediate shaft. 2. Incorrect joint angle on intermediate shaft. 3. Imbalance on intermediate shaft. 4. The universal joints are not in line with each other.	1. Replace the intermediate shaft. 2. Ensure that the spindle on the power take off and pump shaft are parallel. 3. Rectify the intermediate shaft. 4. Loosen and turn the spline coupling so that the universal joints are aligned with each other.

If oil leakage has occurred via a damaged shaft seal, ensure that no hydraulic oil has entered the gearbox!

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Technical data SCPD 56/26 DIN

Pump SCPD 56/26 DIN

Theoretical oil flow A+B		rpm	l/min		
at pump speed		600	33.5 + 15.5 = 49		
		1000	56.0 + 26.0 = 82		
		1200	67.0 + 31.0 = 98		
		1500	84.0 + 39.0 = 123		
		1800	100.5 + 46.5 = 147		
Displacement A+B	cm^3/rev	56.0 + 26.0			
Max pump speed	rpm	1850			
Max working pressure	bar	400			
Weight	kg	18			
Tare-weight torque without valve	Nm	21			
Theoretical power at pressure and pump speed		rpm	200 Bar	300 Bar	400 Bar
		600	11.2 + 5.2 = 16.4 kW	16.8 + 7.8 = 24.6 kW	22.4 + 10.4 = 32.8 kW
		1200	22.4 + 10.4 = 32.8 kW	33.6 + 15.6 = 49.2 kW	44.8 + 20.8 = 65.6 kW
		1800	33.6 + 15.6 = 49.2 kW	50.4 + 23.4 = 73.8 kW	67.2 + 31.2 = 98.4 kW
Nominal torque on pump shaft			200 Bar	300 Bar	400 Bar
at different pressures			178 + 83 = 261 Nm	267 + 124 = 391 Nm	356 + 165 = 521 Nm
Direction of rotation	Left (L) or Right (R)				

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WARNING

When the pump is running:
1. Do not touch the pressure hose
2. Watch out for rotating parts
3. The pump and hoses may be hot

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