

HDYDRAULIC FLUID

Use only hydraulic mineral oils HLP according to DIN 51524-2 with a viscosity of approx. 25...100 mm²/s at operating temperature.

Please contact Wandfluh before using biodegradable or fire-resistant hydraulic fluids.

Permissible fluid temperature: -20... +70°C within the permissible viscosity range.

For the operating temperature range of +10...+60°C, we recommend ISO VG 32 (viscosity at 40°C: 32 mm²/s).

For the operating temperature range of +20...+70°C, we recommend ISO VG 46 (viscosity at 40°C: 46 mm²/s).

CONTAMINATION

Types of contamination:

Initial contamination:

This contamination takes place during the erection and commissioning of the hydraulic units. (Dust, swarf, rust, hammer scale, packaging residues, etc.)

Contamination by new oil:

The hydraulic fluid supplied by the supplier is often contaminated, so it must be filtered when it is filled into the hydraulic unit.

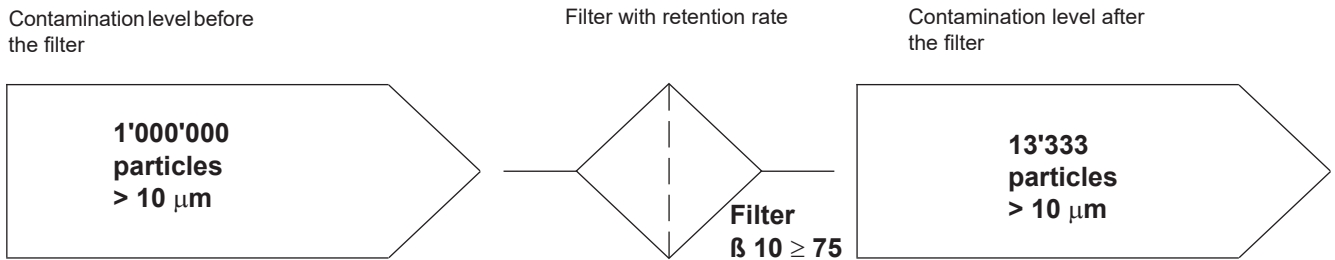
Contamination during operation:

Entry of dirt into the hydraulic tank due to insufficient ventilation, piston rod seals, etc.

Beta value and retention rate for filters

The retention rate of a filter element is the measure for the separation capacity of the filter for defined particle sizes. It is defined by the beta value (β_x). The β_x value is the ratio of all particles $> x \mu\text{m}$ before the filter, to the particles $> x \mu\text{m}$ after the filter. In the Wandfluh product documentation, the retention rate is specified as $\beta_x \geq 75$.

Example: Filter element with retention rate $\beta_{10} \geq 75$



Contamination classes

The contamination classes indicate how many particles of a certain size are contained in one millilitre of hydraulic fluid. Usually control and proportional valves are the components most sensitive to contamination in a hydraulic power unit. Therefore, they determine the overall degree of contamination of the hydraulic oil. In the Wandfluh product documentation, maximum permissible degrees of contamination are specified in classes according to ISO 4406:2021-01.

The following table shows the contamination classes (extract) according to ISO 4406:2021-01 and the hydraulic valve groups with the recommended filter rating for each.

Contamina- tion classes	Typical filter fineness $\beta_x \geq 75$ ($x = \mu\text{m}$)	Control valves	Prop. valves in control systems	Prop. valves in general	Valves with control spool	Soft shifting valves	Poppet valves	Valves in general > 160 bar	Valves in general < 160 bar
16/14/11	$\beta_{3...6}$								
18/16/13	$\beta_{6...10}$								
20/18/14	$\beta_{10...16}$								
21/19/15	$\beta_{16...25}$								