

Technical information



STOLL front loaders

Purity classes according to ISO 4406 for hydraulic oil (ISO code 17/15/12)

Scope: Front loaders, implements and hydraulic equipment

Symptom: Damage to valves and hydraulic cylinders

Possible cause: Contaminated hydraulic oil

The damage analysis on hydraulic components usually reveals damage caused by a high level of hard particles in the hydraulic oil. These particles can cause damage to the equipment, which can lead to a total failure.

In view of the high availability of the machine, low maintenance costs and service life of the hydraulic components used (hydraulic valves, hydraulic cylinders and hydraulic pumps), care should be taken to ensure the quality and purity of the hydraulic oils used.

To this end, the change intervals of the manufacturer should also be observed. If there is any doubt about the quality of the hydraulic medium used, the hydraulic oil should be analysed.

As a rule of thumb, the following applies in this context: The harder the particles the greater the extent of the damage.

Likewise, the pressure of the system also plays a role. Higher pressure can compact the dirt particles more firmly into the lubrication gap, thereby causing greater damage.

There are fundamentally three types of damage intensity:

Very badly damaging are:

Air, water, corundum, scale and rust particles

Badly damaging are:

Iron, steel, brass, bronze and aluminium

Slightly damaging are:

Hard textiles/fibres, seal wear, rubber particles, paint particles, oxidation compounds of hydraulic oil

Comparisons:

A human hair is approximately 75 µm in diameter.

Reference is made to fine dirt particles in the hydraulic system if they are 5–15 µm in diameter.

Coarse dirt particles refer to particles with a diameter of more than 15 µm.

Very fine soiling refers to particles of 2–5 µm

TI-2.3-03_EN Created by KH at 01.11.2017

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Frequently occurring damage

Type of contamination	Malfunction, damage
Coarse particles	Complete malfunction of individual components
Fine particles	Higher wear, leaks and valve blockage
Finest particles	Oil silting and rapid deterioration of oil
Water	Corrosion, wear and rapid deterioration of oil

The oil should be changed immediately and, if necessary, also flushed, in systems with a high number of particles and large particle sizes.

It may also be advisable to install a corresponding high pressure filter in front of the single lever control unit or in front of the oil supply of the front loader.

This significantly reduces the contamination in the system and ensures the downstream devices work most efficiently.

Approved purity class of hydraulic oil for STOLL front loaders, STOLL implements and all other STOLL hydraulic components.

Purity class according to ISO 4406 (ISO code) 17/15/12

(Standard in proportional and high pressure hydraulics)

The numbers of the ISO code represent the following information (particle/1 ml):

- **17** signifies that there are more than 640 and up to and including 1300 particles equal to or larger than 4 µm in 1 ml of oil.
- **15** signifies that there are more than 160 and up to and including 320 particles equal to or larger than 6 µm in 1 ml of oil.
- **12** signifies that there are more than 20 and up to and including 40 particles equal to or larger than 14 µm in 1 ml of oil.

We do not acknowledge any damage caused by using the wrong quality of oil or insufficient oil purity as a valid complaint.

We recommend that you filter the oil when filling the tractor.

There is an impermissible increased contamination of particles especially in new oils that are delivered in barrels, tankers or mini containers.

Typical contamination of fresh oil

Transport container	Determined purity class	Type of dirt particles
200 l barrel	19/17/16 – 23/21/18	Predominantly metal abrasion, plastic particles, seals
200 l – 1000 l plastic container	Average 20/18/16	Plastic, fibres, metal, chips up to 3 mm
Tank truck	Average 20/18/16	Transport. All types of particles

TI-2.3-03_EN Created by KH at 01.11.2017