Fluid Selection, Specifications, and Capacities

Lubricant Selection & Specifications

Always refer to manufacture's (e.g. engine, transmission, axle) maintenance manual before performing any maintenance.

The efficiency and useful life of mechanical equipment is as dependent on proper lubrication as on proper engineering design. The importance of proper lubrication is increased because of the greater loads and pressures imposed on present day mobile heavy equipment. For this reason, we are vitally interested in promoting widespread usage of the best possible lubricants for Allied Systems Company products. Our purpose in compiling these specifications is to provide a guide to aid in the selection of a lubricant that will provide optimum service life.

Because many brands of fluid are available, it is not practical to test each one. Selecting the correct fluid should be done with the help of a reputable oil supplier who is responsible for the quality of the fluid. Our lubricant recommendations are based on commercial products that have given optimum results in normal operation. In all cases, the lubricant supplier assumes all responsibility for the performance of his product and for product liability.

When changing fluids use the following guidelines:

- Add only filtered fluids.
- If adding lubricants other than what is currently in the reservoir, a warranty of compatibility should be obtained from the oil supplier.
- When the fluid is changed due to changes in ambient temperatures, the system should be completely drained and the fluid replaced.

Table 5-2-1 lists the fluids and capacities used for the initial factory fill. These fluids will be used on all WAGNER Logstacker units unless the unit is to be operated in extreme climatic conditions.

Allied Systems Company requires that lubricants meet, or exceed, the specifications of the oils listed below to avoid component failure and for warranty consideration. If a cross reference to Mobil Oil Corporation specifications is required, please consult your local lubricant dealer.

NOTICE

Failure to use the recommended oil during the warranty period may void warranty (expressed or implied) on related hydraulic components, if inspection indicates lubrication related cause. Oil samples will be required with submission of all hydraulic components for warranty consideration.

Only the oils listed are tested and approved by Allied Systems. Any substitutions made are done so at your own risk.

Component	Fluid Type	Specification	Capacity
Engine	Engine Oil	Mobil Delvac 1300 Super 15W-40	12 Gal (45.4 L)
Fuel Tank	Diesel Fuel	No 2 Diesel Fuel	450 Gal (832.7 L)*
Cooling System	Water/Antifreeze	Anti-Freeze, Premix 50/50	20 Gal (75.7 L)*
Hydraulic System	Hydraulic Oil	Mobilfluid 424	550 Gal (2081.9 L)*
Transmission System	Transmission Oil	Mobilfluid 424	20 Gal (75.7 L)*
Axle (Differential/Planetary)	Gear Oil	Mobile HD 80W-90	72 Gal (211.9 L)*
	Additive	Lubrizol® 6178	1 Gal (3.8 L)*
Chassis, Manual Lube	Grease	Mobilgrease Special No. 2	As req'd
Drivelines	Grease	Mobilith SHC 220 Grease	As req'd

*Estimated

Table 5-2-1 Fluid Specifications and Capacities

Scheduled Oil Sampling

Use scheduled oil sampling to monitor machine condition and maintenance requirements. Oil samples from engine, transmission, axles, and hydraulic system should be taken when oil is hot and well mixed to ensure an accurate analysis.

Hydraulic Oil Cleanliness

Oil is a vital part of any machine's service life, but the cleanliness of that oil may be more important than you think. When using clean oil (low ISO code), component life expectancy can increase dramatically. Dirty oil can cause more damage to your machine than you may think. Dirt in the oil can cause permanent wear within the machine limiting the service life dramatically.

Scale numbers, which represent what is called the ISO 4406 code, are used to represent the cleanliness of your oil. They allow you to study current contamination levels and set goals for the future.

The cleanliness code of hydraulic oil required at all times for your Wagner is **18/16/13**.

Refer to Figure 5-2-1 to help you better understand this rating scale. The system works by giving a 3-part code which represents the number of particles per milliliter (mL) of oil depending on particle size. The first number is representative of particles greater or equal to 4 microns (µm), the second 6µm, and the third 14µm. So an oil with the rating 17/12/9 would represent that there are between 640 to 1300 4µm sized particles per ml, 20-40 6µm sized particles per ml, and 2.5 to 5 14µm sized particles per ml present in that particular oil.

NOTE: The "/ " used in the code in no way represents a ratio in the scale. It is used only as a divider between numbers.

NOTE: The ISO 4406 code was changed in 1999 to ISO 4406-1999. At times the old standard may still be used so be sure you know what version of the code you are dealing with. ISO 4406-1987 (old) had only two numbers and different sizes for particles represented by each number. In that code the first number represented particles 5µm and the second number was for particles 15µm.

There are many ways oil can become contaminated, including but not limited to poor care at the refinery, in transport, at your site, or within the machine itself. New

Number of Particles Per 1 mL of Fluid		
ISO Code	Minimum	Maximum
1	0.01	0.02
2	0.02	0.04
3	0.04	0.08
4	0.08	0.16
5	0.16	0.32
6	0.32	0.64
7	0.64	1.3
8	1.3	2.5
9	2.5	5
10	5	10
11	10	20
12	20	40
13	40	80
14	80	160
15	160	320
16	320	640
17	640	1300
18	1300	2500
19	2500	5000
20	5000	10000
21	10000	20000
22	20000	40000
23	40000	80000
24	80000	160000
25	160000	320000
26	320000	640000
27	640000	1300000
28	1300000	2500000

Figure 5-2-1 ISO 4406-1999 Fluid Cleanliness Codes

oil is not necessarily going to be as clean as desired and may need to be filtered before adding it to the tank.

Filtration, storage and handling procedures are the most crucial elements to providing clean oil for your machinery. A few important steps in an oil cleanliness program are:

- Test your current oil cleanliness levels so you know what to compare your cleaned oil to.
- Carefully evaluate your handling and storage practices.
- Set goals for your company for cleanliness standards.
- Start improvements in filtration, storage, and handling practices.
- Observe and record your progress and return on investment.

Recirculating filtration systems can greatly help you achieve and maintain your cleanliness goals. For smaller jobs a cart mounted system used on strategic intervals is acceptable for this propose. These units can also be used to filter new oil before it is ever put into a machine. At times with larger jobs a permanently installed system may be required to meet your needs. Cartridge type filters are common in this type of system so make sure to change them as required.

⚠ CAUTION

DO NOT use the filters on the machine to initially clean your oil. Doing so will result in unfiltered oil contaminating your system before it can be filtered.

A change in storage and handing techniques is often the most cost effective way to help with the cleanliness of your oil. To help prevent moisture from entering the storage drum during the “breathing process” maintain the temperature in your storage area to a small range. Providing a storage space free of dirt and moisture will also help with this.

Another simple step is to buy cleaner oil. Your company can specify the cleanliness of the oil you purchase. It will likely be more expensive but with the increase in machinery life it is worth the cost. If this is the way your company decides to get clean oil make sure to test it upon arrival to make sure you are actually receiving what you are paying for.

Storage and Handling

Use whatever means necessary to maintain the ISO 4406 cleanliness standard listed on the previous page.

Store drums on their sides. If possible, keep them indoors or under a roof. Keep the drums sealed tightly.

Before opening a drum, clean the top of the drum thoroughly to prevent dirt from entering.

Use only clean containers, hoses, etc. to transfer oil from the drum to the hydraulic tank. An oil transfer pump equipped with a 10 micron filter is recommended. Keeping the oil clean and moisture free will help it last much longer and prevent contamination damage to close-fitting parts.

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