

CHOICE OF OIL

The viscosity rating of motor oils has been standardised by the SAE, based on a set of numbers that classifies oils based on their kinematic viscosity.

The viscosity rating is very important for identifying whether an oil is suitable for specific operating conditions: oils with a high viscosity rating are ideal for use in summer, whereas oils with lower viscosity ratings are best in winter. Multi grade oils are capable of adapting and their operating range is described by two numbers: the cold temperature viscosity and the hot temperature viscosity. Leuco S.p.A. recommends using SAE 10W-40 multi grade oils with its pumps

The code for multi grade oils consists of two numbers separated by a "W": the first number shows the low temperature rating and the second number is the high temperature rating.

Multi grade oils help cold starts: their fluidity at low temperatures facilitates cold starts and safeguards the lubricating film even during the critical pump start-up phase.

| SAE viscosity rating | Low temperature viscosity | | High temperature viscosity | | |
|----------------------|---------------------------|---------------|----------------------------|----------------|---|
| | Start up | Pumping | Kinematic viscosity | | HTHS |
| | (cP) | (cP) | (cSt) at 100°C | (cSt) at 100°C | at 150°C (cp) |
| | MAX | MAX | MIN | MAX | |
| 0W | 6,200 at -35 | 60,000 at -40 | 3.8 | - | |
| 5W | 6,600 at -30 | 60,000 at -35 | 3.8 | - | |
| 10W | 7,000 at -25 | 60,000 at -30 | 4.1 | - | |
| 15W | 7,000 at -20 | 60,000 at -25 | 5.6 | - | |
| 20W | 9,500 at -15 | 60,000 at -20 | 5.6 | - | |
| 25W | 13,000 at -10 | 60,000 at -15 | 9.3 | - | |
| 20 | - | - | 5.6 | < 9.3 | 2.6 |
| 30 | - | - | 9.3 | < 12.5 | 2.9 |
| 40 | - | - | 12.5 | < 16.3 | 2.9 (rating 0W40, 5W40 and 10W40) |
| 40 | - | - | 12.5 | < 16.3 | 3.7 (rating 15W40, 20W40, 25W40 and 40) |
| 50 | - | - | 16.3 | < 21.9 | 3.7 |
| 60 | - | - | 21.9 | < 26.1 | 3.7 |

The maximum hot temperature is 100°C. This temperature was originally chosen to represent the oil temperature and is still used to define SAE ratings. However, developments in engine technology mean that oil temperatures can now reach significantly higher values (150°C or more).

THE OPERATING OIL TEMPERATURE OF HAWK PUMPS VARIES BETWEEN 45 AND 70°C DEPENDING ON THE MODEL AND OPERATING CONDITIONS.

HAWK pumps can use either mineral or synthetic oils

The specifications of synthetic oils are better than those of mineral oils, especially as regards:

- Low evaporation rate
- The ability to maintain the correct viscosity when exposed to high mechanical stress and high temperatures
- Lower oil degradation
- Faster lubrication at start up or at low temperatures
- Excellent protection at high temperatures
- Exceptional resistance to thermal degradation
- More efficient pump operation at a wider range of temperatures
- Extraordinary protection against the formation of deposits
- Higher resistance to oil oxidation (thickening) reducing the pump's resistance to advancement
- Reduced oil consumption when operating at high speeds