

# VALVOLINE™

## HYDRAULIC OILS

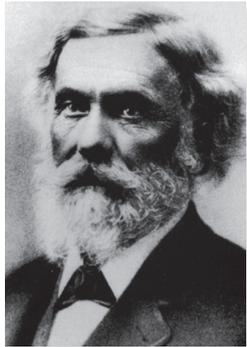


PEOPLE WHO KNOW USE VALVOLINE™





# TOGETHER, STRONGER!



### First brand - First in innovation

Dr. John Ellis created the petroleum industry's first brand in 1866. To free the jammed valves of a large V-shaped steam engine he used his own cylinder oil. He soon registered the name VALVOLINE as the world's first trademarked lubricant brand. Today, Valvoline lubricants, chemicals and car care products are manufactured, marketed and sold in more than 100 countries by Ashland Consumer Markets, a commercial unit of Ashland Inc.

### The innovative edge

Ashland operates a worldwide network of laboratories that develop and test Valvoline products. These high-quality products go beyond industry specifications, giving users the confidence that their vehicles will operate at peak performance.

### Over a century of quality

With nearly 140 years of success, the Valvoline brand is recognized as a leader in product and service quality, with millions of loyal customers around the world.

### Quality that endures

Dr. Ellis introduced a brand that represents innovation and quality. The industry has changed a lot since, but the passion and drive to deliver groundbreaking engine solutions lives on in today's high-performance Valvoline products.

### Commercial products

Valvoline offers a complete line of engine oils, greases, hydraulic fluids, transmission oils and gear oils for on-highway fleets, trucking, mining, construction, and industrial heavy duty jobs. Most of the Valvoline portfolio of commercial and industrial products have been tested on Cummins\* engines, and are proven to increase drain intervals and improve efficiency of engines.

## The oldest trademark in the industry



1873



1930's



1960's



1970's



1980



1987



1997



2004



# VALVOLINE HYDRAULIC OILS

The performance, life and reliability of hydraulic systems is highly sensitive to the quality and maintenance of the hydraulic fluid used. Today, hydraulic systems are expected to deliver peak performance while operating at higher pressures and temperatures and in tough conditions. That's why it pays to use a high-quality hydraulic fluid, check fluid samples regularly and carry out scheduled preventive maintenance.

Even now, the petroleum industry has minimal standards for hydraulic fluid base stocks or additives. But if your business relies on the intensive use of hydraulic power, Valvoline's UltraMax™ products provide modern hydraulic systems with superior anti-wear protection and heavy-duty service performance.



## DID YOU KNOW?

There are no standard classifications for hydraulic oil quality. Practically every manufacturer of hydraulic systems and equipment specifies different requirements for oil. The most common standard is DIN (51524 part 2 or 3) set by the German Institute for Standardization.

DIN 51524 part 2 = HLP  
DIN 51524 part 3 = HVLP



# WHAT MAKES A GOOD HYDRAULIC OIL?



## Optimum viscosity

A hydraulic fluid's resistance to flow is a key characteristic and has a big effect on how the system performs. If the fluid is too thick, it will flow through the system less easily and may affect operating efficiency.

If the fluid is too thin, its sealing properties will be impaired leading to leaks and worn parts. Valvoline hydraulic oils have just the right viscosity to ensure optimum system performance.



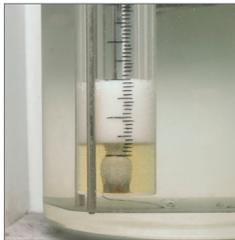
## Thermally stable

As time goes by, anti-wear additives in hydraulic fluids break down naturally, a process that can be accelerated by high temperatures. As a result, sludge and varnish form, which can clog filters, reduce flow and interrupt system operation. Acids that are also formed can corrode metals in piston pumps and other system components. To reduce these problems, Valvoline hydraulic oils are thermally stable, last longer and protect system components.



## Anti-corrosion agents

Hydraulic systems are vulnerable to water and condensation that can mix with hydraulic fluid causing corrosion of parts. Water can also react with additives to form compounds that degrade components. Valvoline hydraulic oils contain anti-corrosion agents that protect system parts.



## Foam inhibitors

No hydraulic system is completely airtight. As a result, air bubbles can form in hydraulic fluid under pressure. When the fluid is depressurized, the bubbles expand to produce foam which can significantly impair system performance. Valvoline hydraulic oils contain powerful foam inhibitors that reduce the size and volume of air bubbles.



## Compatibility with seals

Most hydraulic systems incorporate seals made of rubber or other elastomers and contact with hydraulic oils can cause seals to harden, swell or crack, particularly at high temperatures. Valvoline hydraulic oils are compatible with seals under a wide range of conditions.

Other important characteristics of a good hydraulic oil are: compressibility, wear resistance, oxidation stability, filterability, demulsibility and hydrolytic stability.



# VALVOLINE HYDRAULIC OILS

## UltraMax HLP

UltraMax HLP hydraulic fluids are based on highly refined mineral oil and enhanced with a stabilized zinc additive system.

- > For mobile and static hydraulic applications
- > Good anti-wear performance prevents wear of internal components and reduces downtime
- > High resistance to oxidation helps extend service life
- > Available in a variety of ISO viscosity grades

## UltraMax HVLP

This range of high viscosity index (VI) hydraulic oils offers superior anti-wear protection and heavy-duty service performance even in extreme climatic conditions.

- > Applications include outdoor equipment subjected to high and low temperatures such as many off-highway applications
- > High viscosity index helps improve system operation over a wide temperature range
- > Good anti-wear performance - prevents wear of internal components and reduces downtime
- > Available in a variety of ISO viscosity grades

## Ultraplant ES

A synthetic ester-based biodegradable hydraulic fluid with improved anti-oxidant, anti-wear and anti-corrosion properties. Ultraplant ES can be used in environmentally sensitive areas like waterways, agriculture, forestry, mining and construction.

- > Biodegradable
- > Meets the requirements of the "Clean Lubricants" Act, as defined by the City of Gothenburg, Sweden
- > Available in an ISO 46 viscosity grade



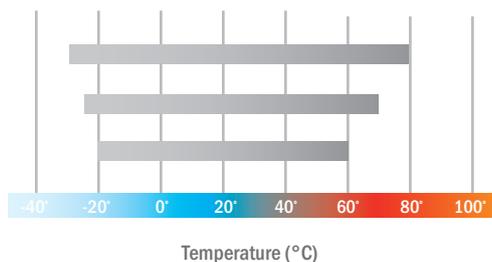
### DID YOU KNOW?

Additives are used in hydraulic fluids at very low treat rates – often only 0.5% to 1.5% of fluid volume. First-class hydraulic oil is a careful blend of additives with a high-quality base stock.

005

## Operating temperature range

Ultraplant ES  
 Ultraplant HVLP  
 Ultraplant HLP



## Hydraulic fluid categories

### Mineral based:

- H** Straight mineral oils
- HL** As H with corrosion and oxidation protection
- HLP** As HL with wear protection
- HVLP** As HLP with high viscosity index (VI)

### Biodegradable:

- HEES** Synthetic ester based



# VALVOLINE POST™ OIL ANALYSIS PROGRAM

Find out what's happening inside your equipment and stay one step ahead with the Valvoline POST Oil Analysis Program:

- > Provides a regular health check for your equipment
- > Identifies potential problems before they lead to costly downtime or reduced performance
- > Simple procedure: send samples to the Valvoline lab and receive detailed results, expert analysis and recommended actions

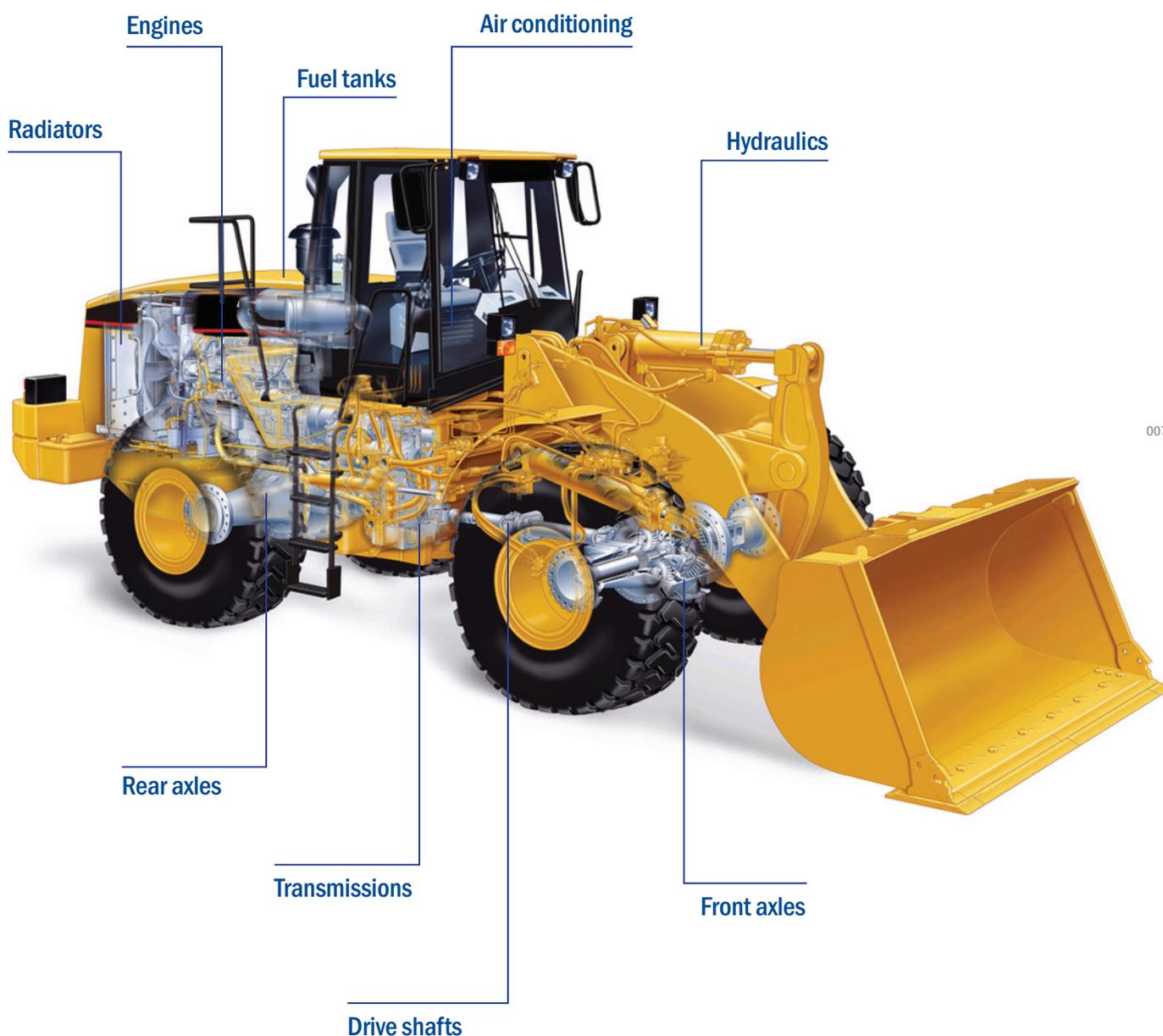
## DID YOU KNOW?

Water in the form of rain and condensation is a big contaminant in hydraulic systems, resulting in degradation of system components and fluid. Oil becomes cloudy when contaminated with water above its saturation level, typically no more than 200 - 300 ppm for mineral hydraulic oil. That's why draining moisture from the hydraulic system is an important end-of-the-day procedure.



# VALVOLINE HEAVY DUTY FLUIDS FOR YOUR VEHICLE

Valvoline offers a complete portfolio of lubricants and chemicals for every part of your equipment, including engine oils, gear and axle oils, transmission fluids, greases and coolants. Ask your Valvoline representative for more information about specific products recommended for your business's equipment.





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