



MOL HYDRO HYDRAULIC OILS

Extra cleanliness, more efficient operation

mollubricants.com

EFFICIENT SOLUTIONS FOR ALMOST ALL APPLICATIONS

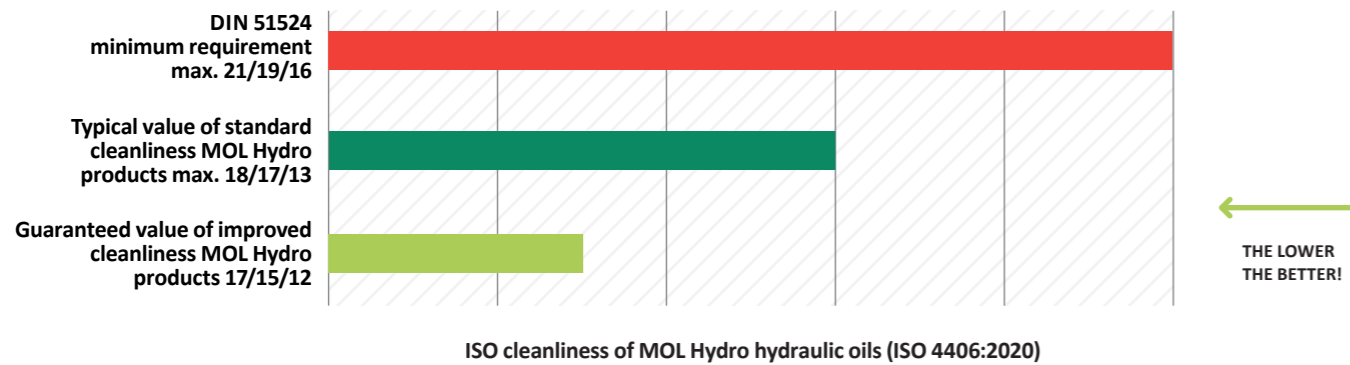
Your hydraulic system achieves its maximum productivity when it gets the right lubricants, that provide extra cleanliness and protection.



IMPROVED SYSTEM CLEANLINESS, MORE EFFICIENT OPERATION

Increase the lifetime of your filter and your operational efficiency, and ensure reliable operation using MOL Hydro hydraulic oils. The cleanliness of our products exceed the requirements of the DIN 51524 standard, so that with proper lubrication management, additional filtration during filling is not necessary unless specifically required. The use of MOL Hydro oils results in extremely low sediment formation, which helps to prevent premature filter clogging and ensures that valves operate smoothly without sticking.

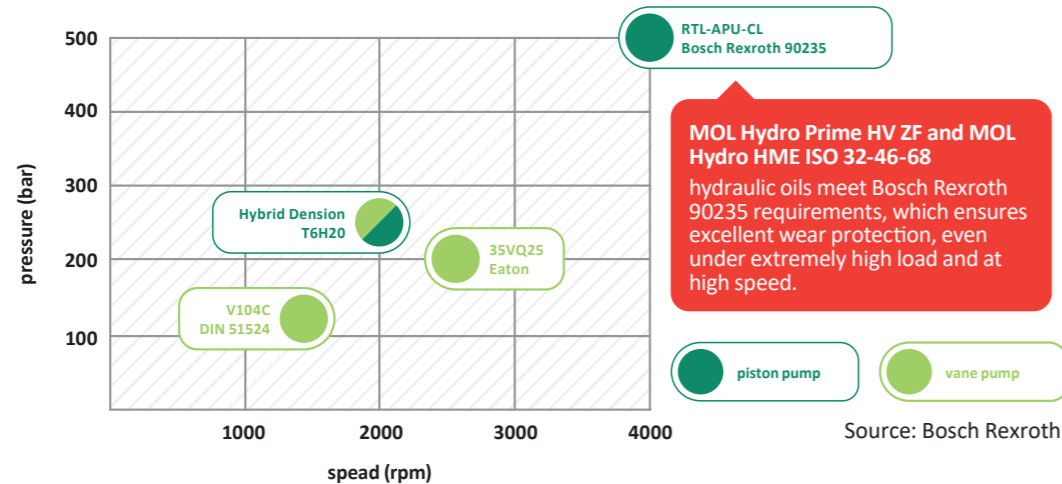
MOL HYDRAULIC OILS OFFER SPECIAL CLEANLINESS



OUTSTANDING WEAR PROTECTION

Due to their well-balanced additives, MOL Hydro hydraulic oils provide excellent wear protection for pumps, valves, cylinders, etc. over a wide temperature range, even in equipment exposed to heavy loads at high pressure. The use of our products can increase equipment life and reliability, as well as reduce maintenance costs.

PUMP LOAD TEST*



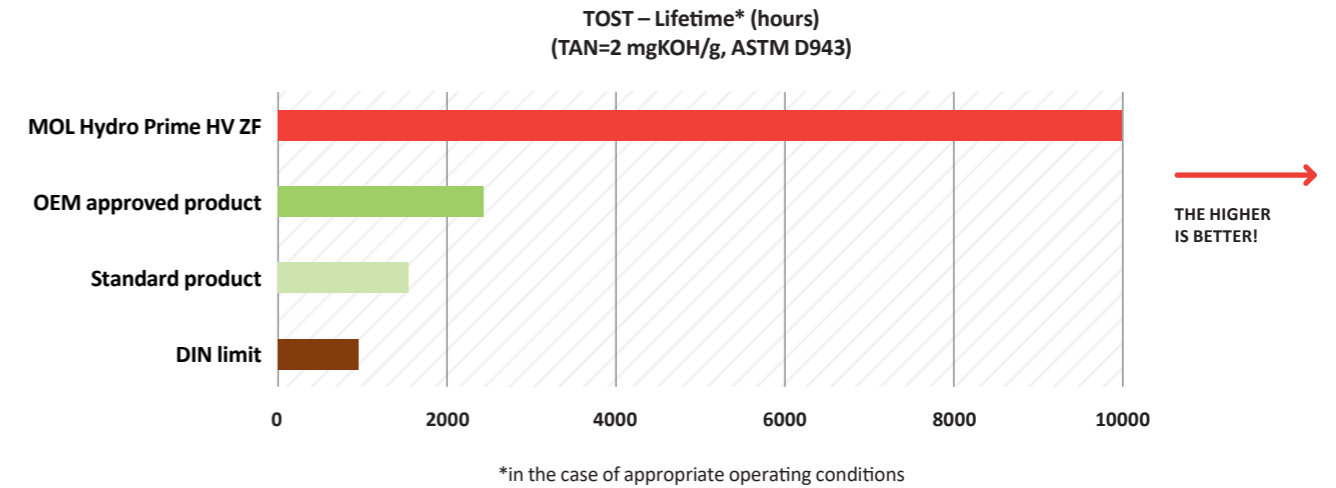
*Pump tests: Bosch Rexroth 90235, Parker Denison HF-0, Eaton (Vickers) E-FDGN-TB002-E, GM LS-2, AIST (US STEEL) 127



LONG OIL DRAINS

Extend oil life with MOL Hydro products, which help you optimise operations and maintain maximum cost efficiency. Our oils offer more than double the industrial average, even without the need for a new load. Regular LubCheck oil diagnostics can extend this period even longer.

Due to its superior oxidation stability, **MOL Hydro Prime HV ZF** offers up to three times the service life of the MOL Hydro HM range.



SYSTEM EFFICIENCY, HIGH PERFORMANCE

Our oils provide top performance due to their extremely good filterability, even in the presence of a small amount of water, in a wide range of industrial and mobile hydraulic systems operating under severe conditions.

MOL hydraulic oils are formulated to ensure excellent thermal and hydrolytic stability, which results in less sludge formation and deposits on servo valves and actuators. In the case of fine filtration, filter usage remains predictably low.

MOL Hydro Prime HV ZF offers increased operating efficiency even under extreme loads and energy savings of up to four per cent compared to the MOL Hydro HM range.



MOL HYDRAULIC OILS

MOL Hydro Prime HV ZF series



Complying with the most stringent machine manufacturer requirements (Bosch Rexroth RDE 90245, Parker Denison HF-0), the multigrade, zinc-free MOL Hydro Prime HV ZF hydraulic oil range provides perfect protection in modern, high-pressure mobile and industrial equipment operating under extreme loads, at both low

and high temperatures. Selected premium quality Group II base oils and an application-specific, balanced additive system ensure high quality. It can achieve three times longer service life, offers excellent hydraulic system efficiency as well as energy savings of four per cent.

Features	Benefits
Excellent oxidation stability	Three times* longer service life can be achieved
Excellent wear protection	Safe operation even at extra peak loads of high performance equipment
Extra cleanliness	Sediment-free, clean system components, safe operation, lower maintenance costs
Outstanding shear stability	Outstanding wear protection even under extra loads
Excellent low-temperature properties	Maximum equipment protection even at low operating temperatures
Specific composition	Excellent hydraulic system efficiency, up to 4% energy savings*

*Compared to the MOL Hydro HM line, the available savings depend on the application and operating conditions.

MOL Hydro HV series

MOL Hydro HV series are multigrade hydraulic oils with performances substantially exceeding ISO HV requirements. Due to their outstanding thermal and mechanical stability, they are excellent for outdoor applications, in hydraulic systems operating in a wide temperature range.

Features	Benefits
Outstanding wear protection	Longer equipment life and lower maintenance costs
Outstanding thermal and mechanical stability	Reliable operation in high and low temperatures, even under heavy loads
Lower deposit formation	Long drain intervals

MOL Hydro HM AL series

MOL Hydro HM AL is a high-quality hydraulic fluid meeting the requirements of the Parker Denison HF-0 specification, which is excellent for hydraulic systems operating at high pressure and under heavy operating conditions or at low temperatures (pumps, servo system). It's also recommended for use in hydraulic systems in machinery (tools in the plastic industry, in turbo screws and vane compressors) and in circulation systems.

Features	Benefits
Outstanding wear resistance, its anti-wear performance close to that of gear oils (FZG 12)	Long equipment life
Zinc, calcium, silicon free	Exceeding performance than conventional zinc containing hydraulic oils
Excellent thermal and hydrolytic stability, oxidation resistance	Extended service life
Extremely good filterability, even in the presence of a small amount of water	Stick-free operation of servo and control valves, low deposit formation
High cleanliness	More efficient and reliable operation

MOL Hydro HME series



The MOL Hydro HME series are premium-quality hydraulic fluids meeting the requirements of the Bosch Rexroth RDE 90245 and Parker Denison HF-0 specification for industrial and mobile applications.

Features	Benefits
Outstanding wear protection	Increased equipment life and decreased maintenance costs
Excellent performance – even under heavy loads	Reliable operation
High cleanliness	More efficient operation

MOL Hydro HLPD-AL series

An ash-free hydraulic oil with detergent properties, MOL Hydro HLPD-AL provides consistently high performance, even in an environment affected by water and dust and in industrial and mobile hydraulic systems working under heavy load conditions.

Features	Benefits
Excellent protection against wear even at high loads and low speeds (Brugger value >50 N/mm ²). Its anti-wear performance is close to that of gear oils (FZG 12)	Longer equipment life and reliable operation
Its balanced additive system does not contain zinc, calcium, silicon	Appropriate cleanliness of equipment, reduced environmental impact
It prevents jamming of system elements	Reliable operation

MOL Hydro HLPD series

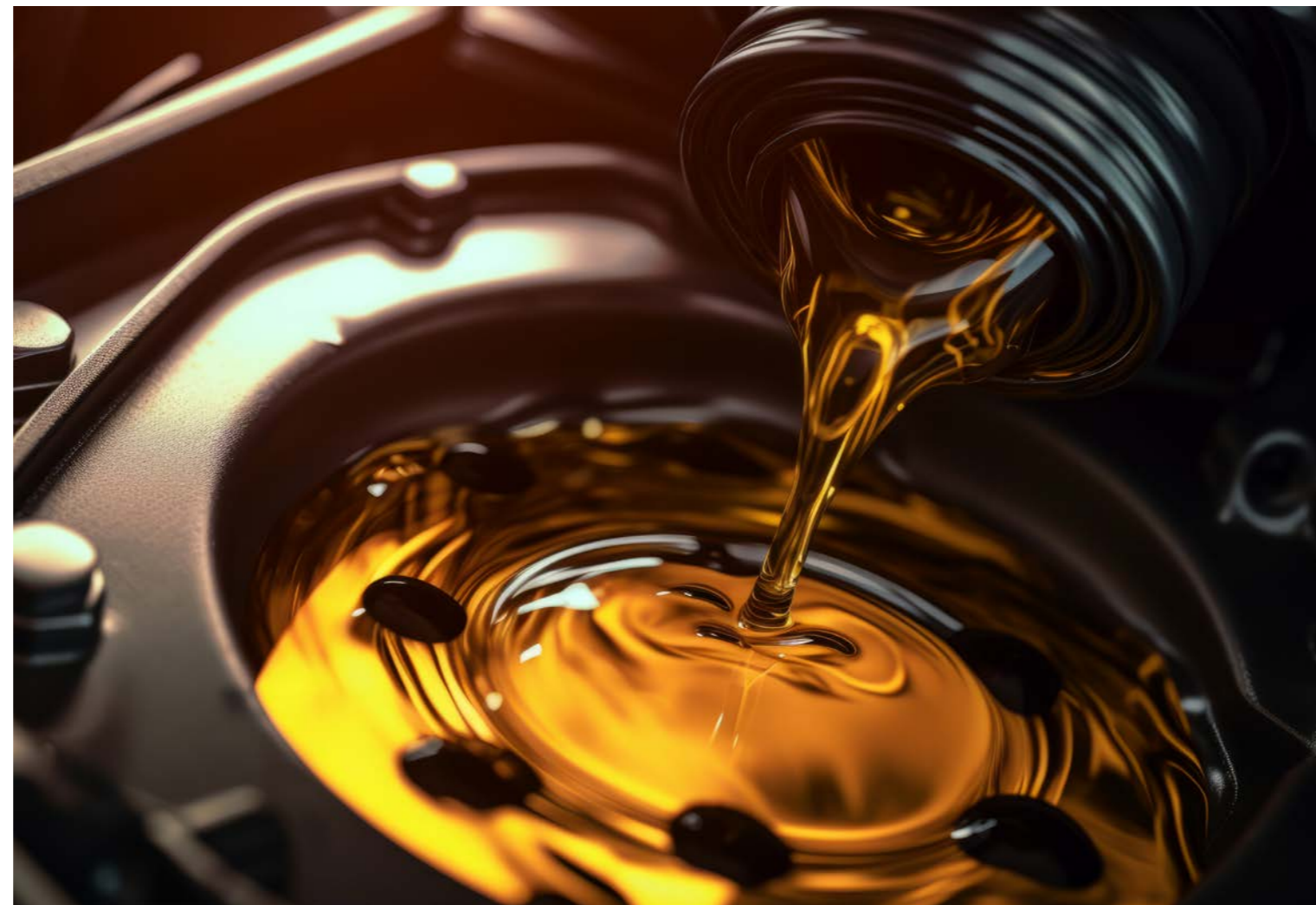
Premium quality detergent hydraulic fluid containing a zinc-based additive for outdoor mobile applications and CNC machines.

Features	Benefits
Powerful detergent effect	Lower sticky residues and deposits
Outstanding wear protection	Long equipment life and lower maintenance costs

MOL Hydro HM series

These are general-purpose hydraulic work fluids exceeding the ISO HM requirements and providing reliable performance for a wide range of industrial and mobile hydraulic equipment.

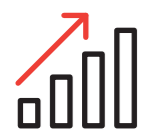
Features	Benefits
Efficient wear protection	Improved equipment life and lower maintenance costs
Low deposit formation	Long oil-drain intervals
High cleanliness	More efficient and reliable operation



OUR PRODUCTS AVAILABLE IN IMPROVED CLEANLINESS VERSIONS

Modern hydraulic systems are increasingly sensitive to contamination. As a result, major equipment manufacturers are demanding a higher level of cleanliness than the standard purity required by regulations for their new types of machinery and high-pressure systems. MOL has developed improved cleanliness lubricants to ensure the requirements of such equipment are being met, with the MOL Hydro IC product line. This series meets international specifications as well as the cleanliness requirements of ISO 4406:17/15/12, thus meeting the expectations of the most advanced equipment.

MOL Hydro IC products are available in four performance levels (HLP, HLPD, HVLP, HVLP-D) according to DIN 51524 standards, including zinc-free and ash-free versions.

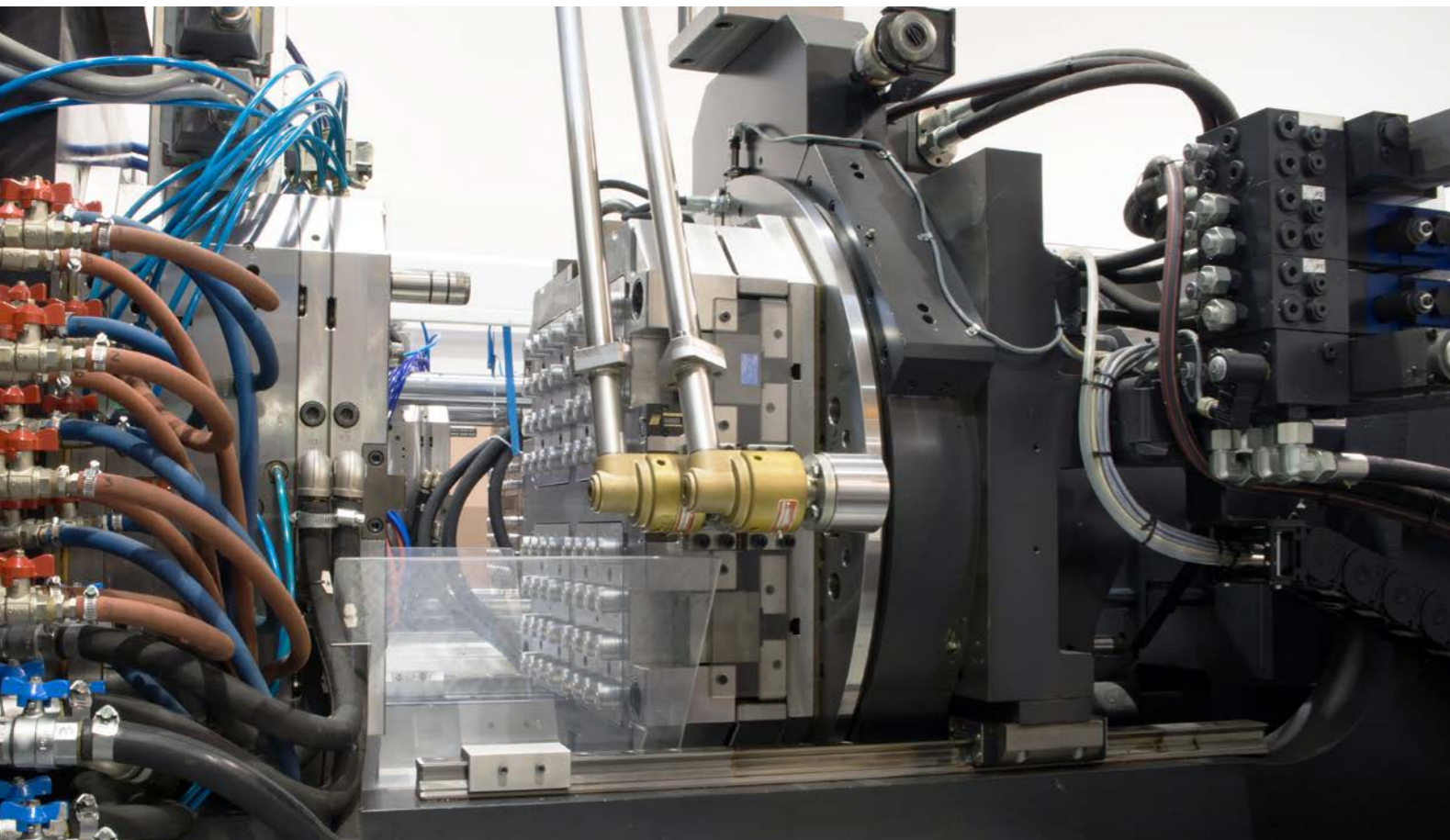


HIGH SYSTEM EFFICIENCY

Using these products with improved cleanliness ensures longer component and machine life, greater operational reliability and avoids unexpected repairs. When compared to the use of standard clean hydraulic oils, they offer:

- ✓ Up to 2-4 times longer equipment life*
- ✓ Up to 2-4 times longer oil life*
- ✓ Up to 50-70% fewer breakdowns, lower maintenance costs*
- ✓ Reduced filtration time, fewer filter elements required
- ✓ Easier cold start

*When premium quality, improved cleanliness lubricants are used in conjunction with proper lubrication management and regular oil diagnostics.



MAINTAINING ENHANCED CLEANLINESS IS ONLY POSSIBLE WITH COMPREHENSIVE LUBRICATION MANAGEMENT

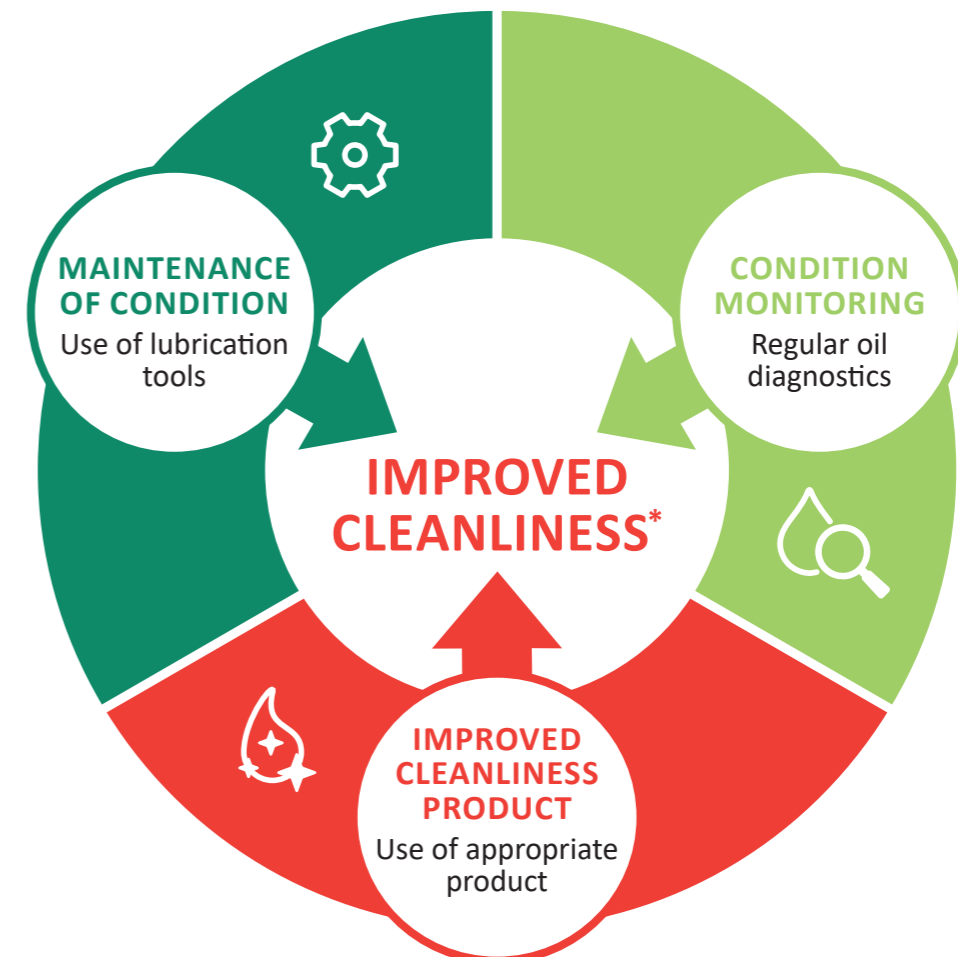
Maintaining systems with improved cleanliness is only possible with comprehensive lubrication management. MOL offers a comprehensive 360° lubrication solution for the optimal operation of lubrication systems. This includes not only the provision of improved cleanliness lubricants, but also a comprehensive 360° lubrication management system.

- ▶ Regular oil diagnostic checks allow the condition of both the lubricant and the machinery to be monitored. The test results from the MOL LubCheck laboratory support condition-based and preventive maintenance as well as optimal oil change timing.
- ▶ The use of our lubrication tools contributes to the efficient and accurate use of lubricants, helping to avoid lubricant mixing, under or over lubrication and minimises contamination.



Ask for our package offer and see how our comprehensive lubrication management solutions can ensure the cleanliness and efficiency of your systems!

THREE REQUIREMENTS TO ENSURE IMPROVED CLEANLINESS



*Improved cleanliness can only be achieved when all three elements are met simultaneously.

OUR WIDE PORTFOLIO OFFERS SOLUTIONS FOR ALMOST ALL NEEDS

Product name	Classification	Technology	Grade	ISO viscosity grades	Specifications and approvals	Special features
MOL Hydro Prime HV ZF*	ISO: HV DIN: HVLP	Zn-free	Premium	32-46-68	Bosch Rexroth RDE 90245; Eaton E-FDGN-TB002-E; Parker Denison HF-0; Arburg; ISO-L-HV; DIN 51524-3 (HVLP)	Extra-long service life, up to 4% energy savings compared to MOL Hydro HM, outstanding wear protection; TOST>10,000 hours; FZG > 12
MOL Hydro HV	ISO: HV DIN: HVLP	Zn-based	Premium	15-22-32-46-68-100	Parker Denison HF-0, Eaton-Vickers and many other equipment manufacturers, ISO 11158, DIN 51524-3	HME with higher viscosity index ~150, FZG 11
MOL Hydro HV Extra	ISO: HV DIN: HVLP		Special	15-46	exceeds ISO 11158, DIN 51524-3 specification	15: higher viscosity index (270), 46: Extra wear protection
MOL Hydro HVD	DIN: HVLPD		Premium	46	ISO 11158, DIN 51524-3 (except water separation)	HV with detergent function
MOL Hydro HVLP	ISO: HV DIN: HVLP		Standard	32-46-68	ISO 11158, DIN 51524-3	Better value vs price ratio, FZG 10
MOL Hydro Arctic	ISO: HV DIN: HVLP	Zn-free	Special	32	exceeds ISO 11158, DIN 51524-3 specification	Viscosity index >300
MOL Hydro HM AL	ISO: HM DIN: HLP	Zn-free, Ashless	Premium	22-32-46-68	Parker Denison HF-0, Cincinnati, ENGEL, and many other equipment manufacturers, ISO 11158, DIN 51524-2	Long life, extra protection, reliable operation, FZG 12
MOL Hydro HM 46 AL Extra*			Special	46	US Steel, SEB, ISO 11158, DIN 51524-2	Special anti-wear: Brugger ~35 N/mm ² , FZG 12, extra cleanliness: max.18/16/13
MOL Hydro HME*		Zn-based	Premium	10-15-22-32-46-68-100-150	Bosch Rexroth RDE 90245, Parker Denison HF-0, Cincinnati, ENGEL, and many other equipment manufacturers, ISO 11158, DIN 51524-2	Long life, extra protection, reliable operation, FZG 11
MOL Hydro HLPD AL	DIN: HLPD	Zn-free, Ashless	Premium	32-46-68	Mueller Weingarten, Krauss Maffei, ISO 11158, DIN 51524-2 (except water separation)	Special anti-wear: Brugger >50 N/mm ² , FZG 12
MOL Hydro HLPD		Zn-based	Premium	22-32-46-68	ISO 11158, DIN 51524-2 (except water separation)	Detergent function, FZG 11
MOL Hydro HM	ISO: HM DIN: HLP		Standard	22-32-46-68	ISO 11158, DIN 51524-2	Better value vs price ratio, FZG 10



OUR HYDRAULIC OILS MARKED WITH AN * IN THE TABLE ARE ALSO AVAILABLE IN AN IMPROVED CLEANLINESS VERSION. WE CAN EXTEND OUR PRODUCT RANGE WITH DIFFERENT TYPES OF HYDRAULIC OILS BASED ON YOUR SPECIFIC REQUIREMENTS. PLEASE CONTACT OUR SALES REPRESENTATIVE FOR FURTHER INFORMATION.

	Corrosion protection	Enhanced lifetime	Wear protection	Operation in wide temperature range	Detergent/dispersant function
HVLPD	✓	✓	✓	✓	✓
HV/HVLP	✓	✓	✓	✓	
HLPD	✓	✓	✓		✓
HM/HLP	✓	✓	✓		

Approvals and claims will vary by viscosity grade. For proper lubricant selection, full details on their approvals and special products, please contact our experts.

Zn-free, ashless:	Longer lifetime, better anti-wear performance, better stability, lower environmental impact (e.g. in wastewater)
VI (Viscosity Index):	Wider application range, minimized temperature dependence
Detergent performance:	Contamination control, jamming of system elements can be eliminated, ensures appropriate cleanliness of system
Bosch Rexroth RDE 90245:	Challenging new high pressure/speed pump test, outstanding reliability
Parker Denison HF-0:	One of the highest performance-level of mineral oil-based hydraulic oils, reliable operation over a longer lifetime
Mueller Weingarten, Brugger-test:	Excellent protection against wear, even at high load / low speed conditions

OUR SERVICES

MOL LUBCHECK - OIL AND MACHINE DIAGNOSTICS



Regular oil checks allow the accurate determination of lubricant use or degradation and machine deterioration before the associated consequences result in significant breakdowns, and can avoid expensive repairs. With the help of LubCheck oil diagnostics, maintenance costs and oil change periods can be optimised, and in addition, unplanned breakdowns and production losses can be kept to a minimum.

The internationally accredited MOL LubCheck laboratory has been a member of the WearCheck International organisation since 1997.



More details about our LubCheck service can be found in our separate publication.

MOL LUBTECH - LUBRICATION TECHNOLOGY CONSULTING



With years of experience, our expert team is ready to help you with any lubrication-related issue whether it is selecting the right lubricant, solution of a technical problem or other issues related to lubricants in general. We also check the selected product in the framework of an application technology onsite test upon request.



Contact our colleagues at the lubtechdesk@mol.hu email address or call at +36 (1) 886-5030.

MOL LUBONSITE - OIL RECONDITIONING AND MAINTENANCE



Hydraulic oils are maintenance-intensive lubricants. Continuously checking the contaminant content is an essential part of the proactive maintenance strategy. The detection of contaminants at an early stage allows the timely execution of the necessary intervention. Our widely applicable equipment and skilled, experienced colleagues allow us to guarantee the required consistent quality of hydraulic and circulation oils and ensure that your machinery operates with higher reliability at lower maintenance cost.

MOL LUBSUIT - CUSTOMISED LUBRICANT DEVELOPMENT



Do you need special quality, specific cleanliness grade lubricants for your equipment? Our development team and our state-of-the-art manufacturing system meets the ISO 9001:2015 standard requirements, and guarantees that we will supply the product best suited for your machines.

MOL LUBSHARE - TRAINING



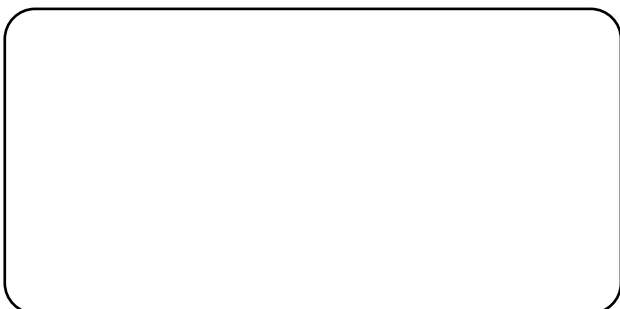
The expertise and practical experience of our specialists are also available to you. To facilitate the implementation of an efficient lubrication maintenance practice, you can become familiar with the latest lubrication management techniques from a practical perspective by attending the MOL Lubrication Management training courses. Upon request, we also deliver onsite training tailored to your needs.





- ▶ **MOL LUBCHECK**
OIL AND MACHINE DIAGNOSTICS
- ▶ **MOL LUBTECH**
LUBRICATION TECHNOLOGY CONSULTING
- ▶ **MOL LUBONSITE**
ONSITE LUBRICANT MAINTENANCE
- ▶ **MOL LUBSUIT**
CUSTOMISED LUBRICANT DEVELOPMENT
- ▶ **MOL LUBSHARE**
TRAINING

YOUR PARTNER:



**AUTHORIZED
DISTRIBUTOR**