



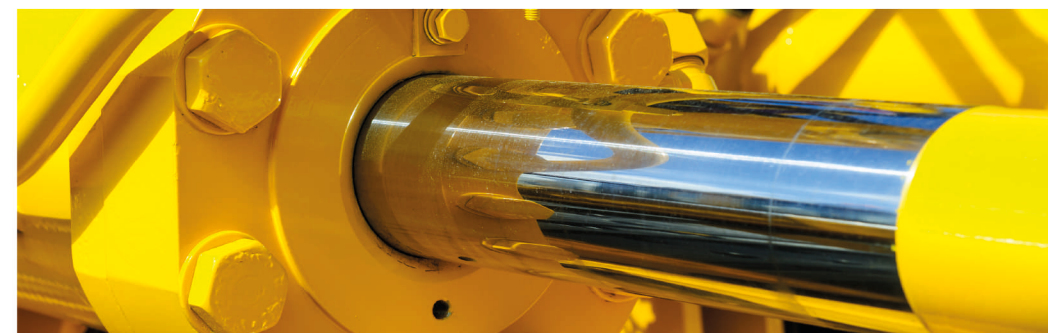
**PRISTA OIL HOLDING EAD**  
20 Zlaten Rog St, 1407 Sofia, Bulgaria  
tel: +359 2 962 01 10  
e-mail: [office@prista-oil.bg](mailto:office@prista-oil.bg)  
[www.prista-oil.com](http://www.prista-oil.com)

The data referred to as typical does not represent specifications and is based on current production. Manufacturing tolerances are allowed. The Company reserves the right to make changes.  
This edition replaces and supersedes all previous editions and information contained therein.

Printable version 2017-08



# PRISTA® HYDRAULICS



# PRISTA® HYDRAULICS

## Unyielding Power

From heavy duty construction and forestry equipment to steel mills and food processing, hydraulic systems must provide tough, unyielding power in the harshest of environments. At the heart of operation is the hydraulic fluid, transmitting energy in the combined form of pressure and flow, whilst lubricating components.

The competitive nature of the hydraulics market has created a trend of maximising power output and increasing operating temperatures, whilst minimising the oil reservoir size. This has resulted in exceedingly severe conditions for the hydraulic oil, extending past the performance of many traditional lubricating oils.

## Overcoming Potential Issues

Integral to plant and equipment operation, hydraulic system failure can be catastrophic, resulting in unplanned, costly downtime and repair bills. Hydraulic systems face a variety of issues, with wear and corrosion topping the list of reasons behind equipment failure.

Wear in hydraulic systems is often the result of an insufficient lubricant layer, which fails to protect the metal surface coming into contact with another. Solid contaminants, such as dust or dirt particles, can also cause abrasion and fatigue on machine surfaces, tearing and grinding away metal.



In moist and humid environments, water ingress can promote corrosion within the hydraulic system. Corroded surfaces can suffer from structural breakdown as metal is worn away, shedding particles into the oil. This debris circulates through the hydraulic lubrication system, causing wear and damage to vital components and clogging filters.

Furthermore, contamination of the hydraulic fluid can have adverse effects on the fluid's physical and chemical properties. Aside from accelerating the reactions of corrosion and oxidation, water contamination is detrimental to hydraulic fluid as it decreases the viscosity and load-carrying ability of the lubricant. This leads to increased component wear from greater surface-to-surface contact, and the potential for system failure.



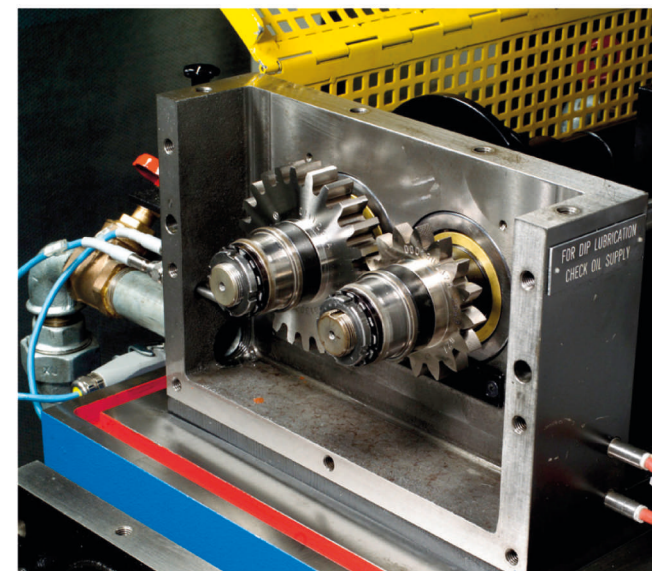
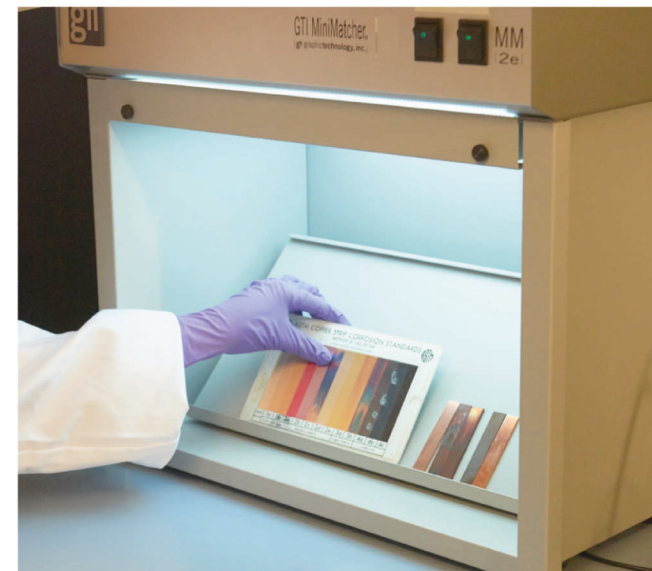
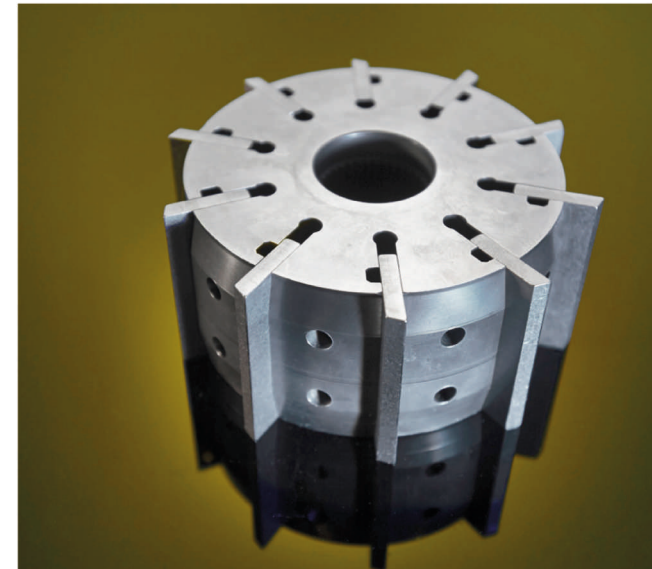
When air enters a hydraulic system through the reservoir or leaks, the hydraulic fluid can form a layer of surface foam. This can seriously affect the operation of hydraulic equipment, causing component damage and overheating. Air contamination can also lead to oxidation, as the oxygen converts oil molecules into acids. These acids can increase the fluid's viscosity and form sludge and varnish, which affect pump performance and system efficiency.

Overheating can counteract the additives in the fluid and decrease system efficiency, reducing viscosity to damaging levels and causing seal breakdown. A lubricant must be able to effectively dissipate heat and remain within its viscosity profile, whilst protecting components.

## Choosing the Right Hydraulic Oil

Using the correct hydraulic fluid for the application is a necessity in ensuring optimum performance. Prista Oil have many years of expertise in this field, alongside a long history of supporting customers with the correct hydraulic lubricant choices in order to meet their specific requirements.

Prista Oil run laboratory and mechanical testing in order to prove that their lubricant technology meets the most demanding requirements of hydraulic operation in severe environmental conditions. Only when a lubricant has demonstrated and proven its required performance levels will Prista Oil trust and promote their lubricant for sale into the customer's vital equipment and machinery.



## Vane Pump Testing

Vane pumps are subject to high amounts of wear due to the constant metal-on-metal contact therefore require quality antiwear additives to provide protection. There are numerous vane pump tests to evaluate the suitability of lubricant. Some involve the pump being run at a steady rate, whilst others put the pump into cycles and add water to put the pump under further stress. The tests evaluate wear and viscosity loss. The weight loss of the pump and any visual wear will determine failure of the lubricant. The high pressure and temperatures will also increase the rate of oxidation and thermal stress the fluid must endure, which may increase wear, cause oil thickening and form sludge. A premium hydraulic fluid such as Prista MHM, delivers over 90% more protection for the vane pump as shown in the V104C test.

## Copper Strip Corrosion

Corrosion is a chemical reaction that occurs on a metal surface. This reaction produces surface irregularities and coolant contamination which may cause abrasive or adhesive wear. The copper corrosion test is designed to determine the potential levels of corrosion in a lubricant. In this test, a strip of copper is immersed in the fluid and tested at various temperatures, the strip is removed after each test and checked for staining of the copper. The results range from very little to no staining (1a) all the way to very dark stains (4c). This test helps determine the suitability of lubricant for use in equipment. In laboratory tests, Prista MHM shows a result of 1a, proving its effectiveness to resist corrosion.

## Antiwear Testing

The FZG test evaluates a lubricant's wear properties at the interface of a loaded set of gears. During the FZG test, the gears are loaded through a coupling that is set to known load conditions or stages. The gears are rotated by a variable speed electric motor and the fluid temperature is controlled by heating and/or cooling elements. The load stages are 7.5 to 15 minutes long, each subsequent stage increases the load on the gears, which are inspected between every stage. This test evaluates potential wear the fluid has on the gears under severe loading conditions. Wear testing is key in lubricant development to ensure that it fully protects componentry. If wear occurs it will shorten the life expectancy of the lubricant and reduce its capacity for protecting the equipment. **Prista® MHM** provides 20% wear enhancement as shown in the FZG EP wear test.



# PRISTA® MHM

## Description and Application

**Prista® MHM** hydraulic oils are formulated from highly refined mineral base stocks, exhibiting very good demulsibility and air-release properties, and blended with a highly efficient additive system including rust, oxidation and corrosion inhibitors and anti-wear agents. **Prista® MHM** hydraulic oils are developed for use as working media in hydrostatic lubrication systems, and in circulating systems for the lubrication of moving parts and mechanism. Both applications require lubricants of very high oxidation stability, improved anti-wear and anti-scuffing properties and ensuring reliable R&O protection. **Prista® MHM** hydraulic oils successfully pass Vickers 104C Vane Pump Test.

**Prista® MHM** oils are suitable for application in hydraulic systems equipped with hydraulic vane pumps, hydraulic gear pumps and hydraulic piston units. They are also effectively used as working fluid in plastic component extruders. Thanks to the high quality base oils and additives used in the formulation of these oils, they are well-suited for hydraulic system operated at very high pressures exceeding 25 MPa and oil temperatures exceeding 90°C.

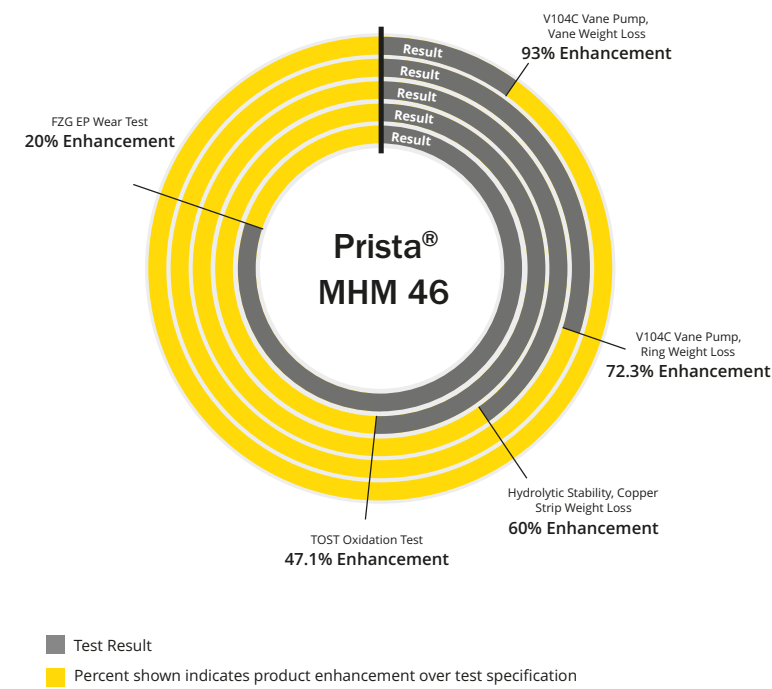
## Benefits

- High resistance to oxidation
- Maximum equipment protection of rust and corrosion
- Extremely stable in presence of water



## Specifications

ISO 3448	VG 15, 22, 32, 46, 68, 100
ISO 6743/4	ISO-L-HM
ISO 11158	HM
DIN 51524	Part 2 (HLP)
US Steel	127( VG 32,46, 68)
Denison	HF-0 (including Denison T6C pump test), HF-1 & HF-2
Vickers	M-2950-S, I-286-S
Cincinnati Machine	P68(VG 32), P69(VG 68), P70(VG 46)



Data based on the following test methods in accordance to the VG 46 limits:

- ISO 20763
- ASTM D2619
- ASTM D943
- ISO 14635 -1

# PRISTA® MHV

## Description and Application

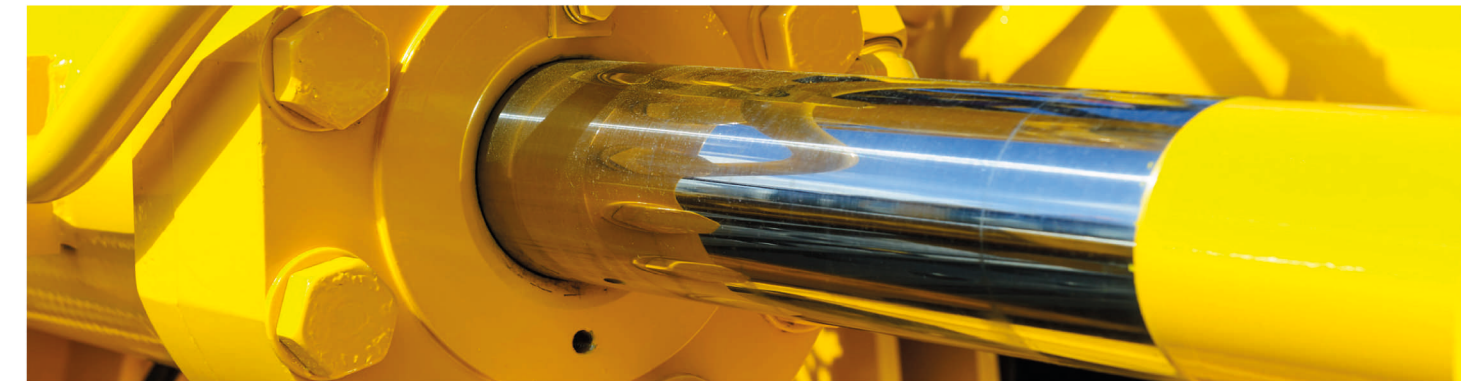
**Prista® MHV** hydraulic oils are formulated from highly refined mineral base stocks exhibiting very good demulsibility and air-release properties blended with a highly efficient additive system including rust, oxidation and corrosion inhibitors, anti-wear agents and a polymethacrylate VII (Viscosity Index Improver).

**Prista® MHV** lubricants are suitable for use in hydraulic systems subjected to widely varying temperatures from minus 30°C to +50°C, i.e. as in the open. They are intended for use in hydrostatic lubrication systems and moving parts in circulating systems, demanding lubricants with very high oxidation stability, improved anti-wear and anti-scuffing properties, good R&O protection and high shear stability. Oils are suitable for use in hydraulic systems hydraulic vane pumps, hydraulic gear pumps and hydraulic piston units.

Thanks to the high quality base oils and additives used in the formulation of these oils they are well suited for hydraulic system operated at very high pressures exceeding 25 MPa and oil temperatures exceeding 90°C.

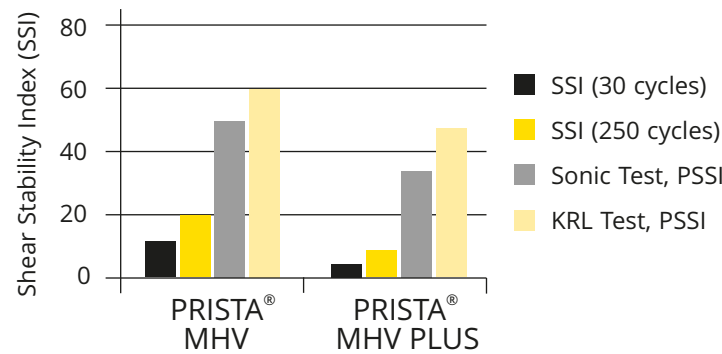
## Benefits

- High viscosity index
- Maximum equipment protection at widely varying temperatures
- Extremely stable at low temperature



## Specifications

ISO 3448	VG 15, 22, 32, 46, 68,100, 150
ISO 6743/4	ISO-L-HV
ISO 11158	HV
DIN 51524	Part 3 (HVLP)
US Steel	127 (VG 32,46,68)
Denison	HF-0 (including Denison T6C pump test), HF-1 & HF-2
Vickers	M-2950-S, I-286-S



# PRISTA® MHM-D

## Description and Application

**Prista® MHM-D** hydraulic oils are developed to be used as working media in both hydrostatic lubrication systems and in circulating systems for the lubrication of moving parts and mechanisms, subjected to severe operating conditions. Thanks to their improved detergent/dispersant properties, **Prista® MHM-D** hydraulic oils readily disperse particulates and emulsify liquid contaminants. Thus they prevent, as much as practically possible, the formation of deposits and sludge, preventing the occurrence of premature failures.

Their special advantages, however, will be mostly benefited in cases where contamination of the system cannot be avoided and here **Prista® MHM-D** will prove that they are trustworthy and reliable oils. **Prista® MHM-D** hydraulic oils are formulated from highly refined mineral base stocks exhibiting very good demulsibility and air-release properties, blended with a highly efficient additive system including conventional oxidation, rust and corrosion inhibitors plus additional detergent/dispersant agents.

# PRISTA® MHM-46 Plus

## Description and Application

**Prista® MHM-46 Plus** hydraulic oil is formulated from premium quality highly refined base stocks possessing very good demulsibility and air release properties with the addition of a specially selected additive package containing oxidation, rust, corrosion and wear inhibitors. **Prista® MHM-46 Plus** is designated for the lubrication of hydrostatic hydraulic systems and friction mechanisms with circulating lubrication, demanding lubricants with high oxidation stability and good rust preventive properties with enhanced anti-wear and anti-scuffing properties.

This oil is suitable for application in hydraulic systems equipped with hydraulic vane pumps, hydraulic gear pumps and hydraulic piston units. It can be successfully used as working fluid in plastic extruders. Thanks to the high quality of raw materials used in its manufacturing, **Prista® MHM-46 Plus** is suitable for use in hydraulic systems operating under pressure above 25 MPa and at temperatures above 90°C.

## Benefits

- High resistance to oxidation
- Maximum equipment protection of rust and corrosion
- Prevent sludge and deposit formation

## Specifications

ISO 3448	VG 22, 32, 46, 68, 100
ISO 6743/4	ISO-L-HM
ISO 11158	HM (w/o demulsibility)
DIN 51524	Part 2 (HLPD)
MAN	N 698-H-LPD

# PRISTA® MHV Plus

## Description and Application

**Prista® MHV Plus** is a new generation of hydraulic oils blended with premium quality base stocks. Thanks to the highly refined base stocks used the finished lubricants possess high oxidation stability and extended performance life.

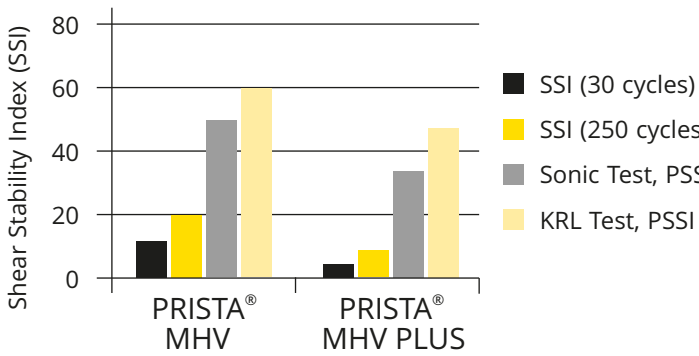
They are blended with highly efficient additive system including rust, oxidation and corrosion inhibitors, anti-wear agents composition. Thanks to the viscosity index modifier hydraulic systems/fluids of higher shear stability operate with higher efficiency and durability.

**Prista® MHV Plus** are suitable for use in hydraulic systems subjected to widely varying temperatures from -30°C to +50°C, i.e. same as in the open air. They are designated for use in hydrostatic lubrication systems and moving parts in circulating systems, demanding lubricants with very high oxidation stability, improved anti-wear and anti-scuffing properties, good R&O protection and high shear stability. The oils are suitable for use in hydraulic systems, hydraulic vane pumps, hydraulic gear pumps and hydraulic piston units.

Thanks to the high quality base oils and additives used in the formulation of these oils they are well suited for hydraulic system operated at very high pressures exceeding 25 MPa and oil temperatures exceeding 90°C.

## Benefits

The benefits of **Prista® MHV Plus** are presented graphically below:



## Specifications

ISO 3448	VG 32, 46
ISO 6743/4	ISO-L-HV
ISO 11158	HV
DIN 51524	Part 3 (HVLP)
US Steel	127
Denison	HF-0 (including Denison T6C pump test), HF-1 & HF-2
Vickers	M-2950-S, I-286-S

# PRISTA® FD 5

## Description and Application

**Prista® FD 5** spindle oil is formulated from a special selection of highly refined mineral base stocks blended with an additive package improving the oxidation stability, rust & corrosion protection and anti-wear properties of the oil.

**Prista® FD 5** spindle oil is designated for oil-bath or oil-mist lubrication of plain and rolling bearings and some couplings.

## Specifications

ISO 3448	VG 5
ISO 6743/2	ISO L-FD-5
ISO/TR	10481:1993