



marine lubricants

# Rando® HDZ



## Description

Rando® HDZ oils are high-viscosity, high-performance, anti-wear hydraulic oils, formulated specifically to cater to the widely varying operating temperatures in the marine environment. These oils are blended from high-viscosity index lubricating oil stocks and several specially selected additives designed to give robust protection to hydraulic pumps. Rando HDZ meets the requirements of major hydraulic equipment manufacturers for rust and oxidation inhibited hydraulic fluids, as well as for EP or anti-wear hydraulic fluids.

## Typical Characteristics

ISO Viscosity Grade	15	22	32	46	68	100
MPID	219300	219383	219301	219302	219303	219304
Kinematic viscosity at 40°C, mm <sup>2</sup> /s	15.0	22.0	32.0	46.0	68.0	100.0
Kinematic viscosity at 100°C, mm <sup>2</sup> /s	3.9	5.0	6.3	8.2	11.0	14.2
Density at 15°C, kg/l	0.88	0.95	0.87	0.87	0.88	0.88
Viscosity Index	155	165	151	154	150	139
Pour point, °C	-60	-48	-48	-47	-42	-36
Flash point, °C	144	188	220	216	222	236
Copper Corrosion, 3h/150°C	1A	1A	1A	1A	1A	1A
Foam Seq. II (after blowing), ml	10	10	10	10	10	10
Foam Seq. II (after 10' standing), ml	0	0	0	0	0	0

## Recommended Applications

Rando® HDZ oils are recommended for use in all shipboard hydraulic machinery and specifically for hydraulic equipment used under extreme operating temperatures such as deck machinery. The multi-viscosity feature promotes even and continuous power transmission over a wide temperature range with a minimum of shudder, and maximum accuracy.

## Rando HDZ Oils Are Approved For:

- ✓ **Fives Cincinnati** (formerly MAG Cincinnati, Cin Machine, Cin Milacron) P-68 (ISO 32), P-70 (ISO 46), P-69 (ISO 68)
- ✓ **Besensoni** crane (ISO 46)
- ✓ **Japan IBUKI** horn (ISO 32)
- ✓ **Alfa Laval** (ISO 32)
- ✓ **Sibre** (ISO 32, 46 & 68)
- ✓ **Parker Hannifin (Denison)** HF0 (ISO 32, 46, 68)



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## Rando HDZ Oils Meet The Requirements Of:

- ✓ **Arburg** (ISO 46), ASTM D6158, HV (ISO 15, 22, 32, 46, 68, 100)
- ✓ **Bosch Rexroth** former specification RE 90220-01 (ISO 32, 46, 68)
- ✓ **US Steel** 127, 136 DIN 51524-3, HVLP (ISO 15, 22, 32, 46, 68, 100)
- ✓ **Frank Mohn, Framo** hydraulic cargo pumping (ISO 46), ISO 11158 L-HV (ISO 15, 22, 32, 46, 68, 100), JCMAS HK-1 (ISO 32, 46)
- ✓ **Turblex** compressor (ISO 46)
- ✓ **Rehfuss** gear (ISO 15 & 32)
- ✓ **Eaton-Vickers** I-286-S, M-2950-S, 35VQ25A (ISO 46, 68)
- ✓ **Sauer Bibus** geared pump (ISO 46 & 68)
- ✓ **Dieckow** pumps (ISO 46 & 68)
- ✓ **Europa** regulateur, governor (ISO 68 & 100)
- ✓ **Bremivi** planetary gear (ISO 32)
- ✓ **Bremivi** winches (ISO 46)
- ✓ **Goizper** pumps (ISO 32 & 46)
- ✓ **Hatlapa** deck machinery (ISO 46, 68 & 100)
- ✓ **Mariner** deck machinery (ISO 32 & 46)
- ✓ **GEA Westfalia** belt driven purifier (ISO 46)
- ✓ **Manabe Zoki** deck machinery (ISO 46 & 68)
- ✓ **MarFlex** pumps (ISO 32 & 46)

## Performance Benefits

**1. Anti-Wear and EP Properties**

Extends the life of hydraulic pump and motor parts in heavy-duty service and helps protect against destructive wear under overload conditions.

**2. Ultra-High Viscosity Index**

Contains a specially selected high shear-stable viscosity index improver, which gives the lubricant a superior operating temperature window, even under high shear-rate conditions. Rando HDZ oils provide real “crossgrading” benefits and stay in grade, even when subjected to the shearing condition of high-speed, high-pressure hydraulic systems in severe service.

**3. Low Pour Point**

Remains liquid at low operating temperatures.

**4. Oxidation Stability**

High oxidation stability helps ensure long life and prevent accumulation of sludge and deposits.

**5. Corrosion Protection**

Helps protect against rusting of close-fitting hydraulic system parts and prevents the regeneration of abrasive rust and corrosion.

**6. Water Resistance**

Water-separation characteristics assure speedy removal of water from leaks and condensation.

**7. Foam Resistant**

Combined with selected foam inhibitors, resists foaming, thus preventing accumulation of surface foam at high-oil circulation rates.

**8. Filterability**

Rando HDZ oils show good filterability properties even in the presence of water. They passed the AFNOR NFE 48 dry and wet filterability tests.



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