

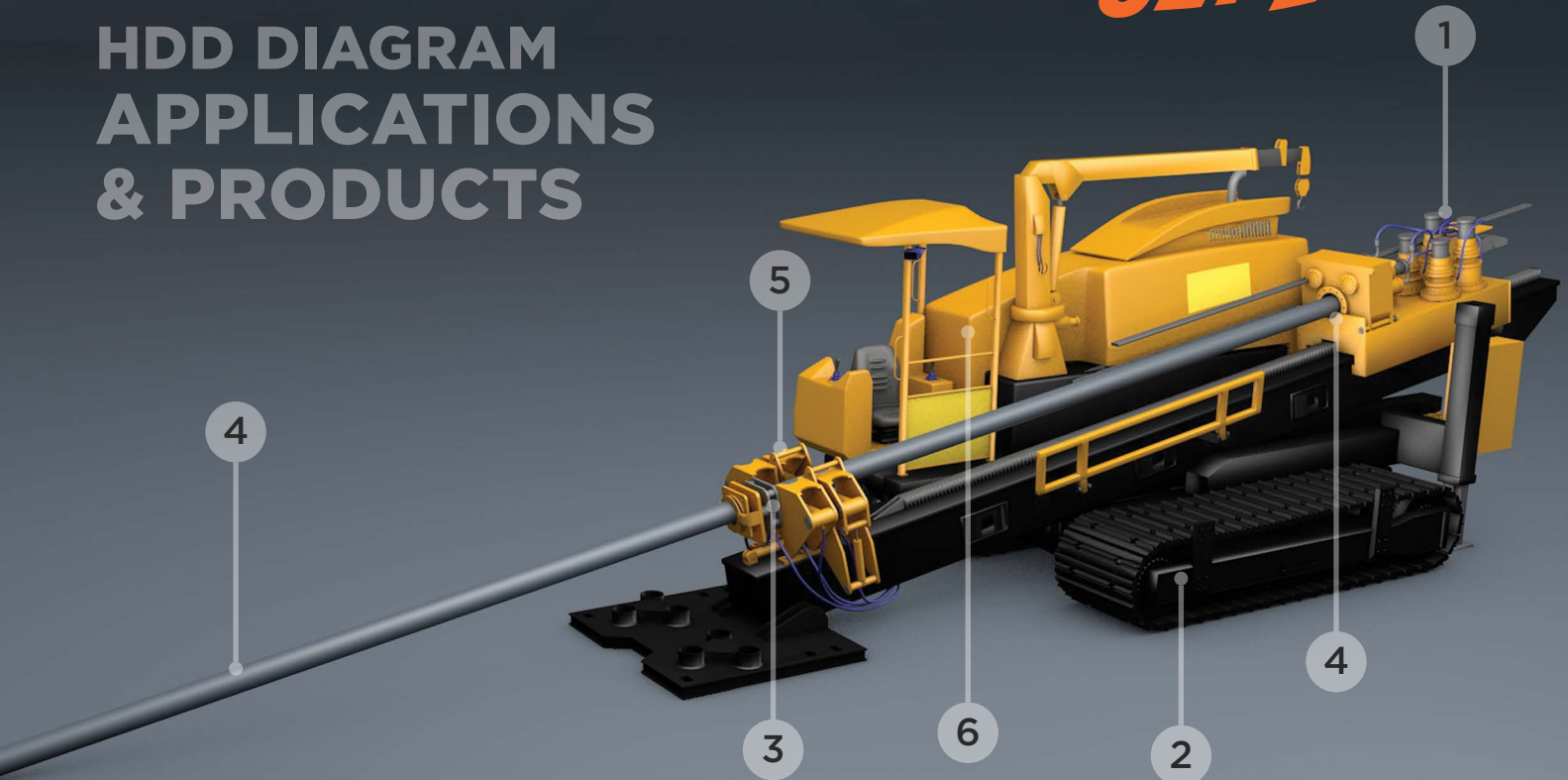


***JET-LUBE***<sup>®</sup>



**HORIZONTAL DIRECTIONAL  
.....  
DRILLING SOLUTIONS  
.....**

## HDD DIAGRAM APPLICATIONS & PRODUCTS



### 1. Hydraulic Systems

#### Jet-Lube®

- FR Hydraulic Oil
- Petro-Tape™ (hydraulic lines and fittings)
- V2® (hydraulic lines and fittings)

#### Air Sentry®

- D-Series Desiccant Breathers
- Z-Series Desiccant Breathers
- X-Series Desiccant Breathers
- Guardian®-Series Desiccant Breathers

#### OilSafe®

- Sight Glasses
- Quick Connects
- Grease Fitting Protectors
- Pistol Grip Grease Guns

### 2. Crawler (Bearings/Pivots/Axles)

#### Jet-Lube®

- HD Gear Oil
- FR Hydraulic Oil
- Alco-EP™
- Rust-Guard™

### 3. Tongs (Clamps)

#### Jet-Lube®

- Alco-EP™

### 4. Bit, Back Reamer, Sub-Saver

#### Jet-Lube®

- Jet-Lok® III

### 5. Pipe Threads

#### Jet-Lube®

- HDD™ Kopr
- HDD™ Environmental

### 6. Rotating Bearing, Ring Gear, Pinion Gear

#### Jet-Lube®

- Alco-EP™
- Gear Guard™
- Gear Guard® Aerosol
- WLD®

### Other Applications

#### Bearings

- Jet-Lube® EP Bearing Grease

#### Machine Body

- KATS 6000 Series Coatings
- Jet-Lube® Easy-Clean® Liquid (for cleaning)
- OilSafe® Spill Deck (under)

#### If Applicable

- Jet-Lube® Dope Brush

### Toolbox Items - General Maintenance

#### Jet-Lube®

- FR Hydraulic Oil
- 12|34®
- 769 Lubricant®
- Magic Wrench®
- Rust-Guard™
- Gear Guard™
- Moly-Mist™
- Jet-Lok® III
- Clean-Up™ II
- Easy-Clean®
- 550® Extreme®
- Korr-Guard
- WRL™
- Jet-Red™

Horizontal Directional Drilling (HDD) has become one of the fastest growing trenchless technology construction methods for the installation of underground pipelines and conduits. Our Complete Line of High-Performance Products are designed to stand up to high pressure and temperature extremes ensuring that the drill pipes, reamers, tool joints, bearings, gears, and other components are able to operate at peak performance while maintaining low maintenance costs.

# MINIMIZE WEAR AND DOWNTIME.



**\*HDD Kopr and HDD Environmental available in 2 GAL Clear Pail.**

## COMPOUNDS

### HDD™ KOPR METALLIC TOOL JOINT & DRILL COLLAR COMPOUND

Unleaded, zinc-free compound containing copper flake, graphite, and other natural extreme pressure and anti-wear additives. HDD KOPR uses the same solids package formulated to prevent excessive circumferential makeup by increasing the coefficient of friction under compressive forces as standard KOPR-KOTE but in a smaller particle size range to accommodate automatic application systems.

- Certifications: Not classified as marine pollutant (DOT Approval CA2004080025)
- Application: Pipe Threads
- Service Rating: -65°F to 300°F (-55°C to 149°C)

### HDD™ ENVIRONMENTAL NON-METALLIC TOOL JOINT COMPOUND

Non-conductive compound containing natural extreme pressure and anti-wear additives. These are blended into JET-LUBE's all-weather calcium complex base grease. HDD ENVIRONMENTAL's base grease offers the additional advantage of low temperature application and service, superior adhesion to wet steel surfaces, resistance to water wash-off, and most drilling muds. HDD ENVIRONMENTAL's pumpability makes it ideal for HDD and other construction drilling applications.

- Certifications: NSF 61 Certified
- Friction Factor: Relative to: API RP 7G - 1.0
- Application: Pipe Threads
- Service Rating: -40°F to 350°F (-40°C to 177°C)

### DOPE BRUSH HEAVY-DUTY THREAD COMPOUND BRUSHES

Engineered to hold up to the rough conditions where they are used and the materials that are being applied. Solid wood handles with rubber drip collars make for safe handling. Available in two styles: tapered and beveled, 16" and 30" brush lengths. (Handle guard not included on 30" length.)

- Application: Pipe Threads, General Maintenance

Advantage of the clear pail is that the operator can see the volume of product.



## EPOXY & THREAD SEALANTS

### JET-LOK® III ZINC-FREE THREADLOCKER / TWO-PART EPOXY

Zinc-free epoxy with non-metallic fillers that can be used to permanently lock threaded connections under normal operating conditions. JET-LOK III uses a new catalyst for added pot life and durability with lower toxicity and less heat generation, making it the optimum choice for its recommended applications. It is specially designed for use on all threaded joints or fasteners where an exceptionally strong and durable bond is required. Ideal on drilling tools, casing, and other tubulars where the effective prevention of joint loosening is required. JET-LOK III's purpose is to sustain engagement on thrust and pull back. Available in 8oz and 2oz kits.

- Application: Bit, Back Reamer, Sub-Saver
- Service Rating: -50°F to 400°F (-46°C to 204°C)

### PETRO-TAPE™ HEAVY-DUTY INDUSTRIAL GRADE PTFE THREAD SEAL TAPE

Multipurpose, rugged, inert and highly resistant tape. It's impervious to steam, salt water, air, fuels, refrigerants, acids and alkalis (including sulfuric, hydrochloric, nitric, sodium hydroxide and chromic), solvents (including kerosene, aircraft oils, gasoline, diesel, carbon tet. and cleaning fluids), gases (including liquid and gaseous oxygen, ammonia, freon, chlorine, propane, natural gas, butane, acetylene and nitrogen). PETRO-TAPE is ≥3-mil thick and contains a light green pigment for easy identification. PETRO-TAPE's purpose is to seal threaded connections <3" in order to prevent leaks.

- Certifications: MIL-T-27730A • Canada ULC Listed
- Application: Engine, Fuel Tank, Hydraulic System
- Service Rating: -400°F to 500°F (-240°C to 260°C)

### V2® MULTIPURPOSE THREAD SEALANT W/ PTFE

Water-resistant joint compound that is soft-setting, non-petroleum based for use with potable water, liquids and gases where immediate pressurization is desirable or necessary. V2 is a water-resistant, non-staining, low-odor sealant which includes PTFE and unique natural fillers for tighter joint make-up due to increased thread lubrication.

- Certifications: MIL-TT-S-1732 • Nato S-716 • UNIFORM PLUMBING CODE: U.S. IAPMO File #1282 • ULC Listed for petroleum products • NSF P1 Registered Reg. #121265 • Conforms to assembly bill 1953 • NSF 61 Certified
- Application: Hydraulic System, Water, Oil, Diesel Fuel, Gas Pipe, Fitting Threads
- Service Rating: -70°F to 500°F (-57°C to 260°C)

## GREASES

### EP BEARING GREASE™

#### EXTREME PRESSURE MULTIPURPOSE GREASE

Highly adhesive lithium grease containing naturally occurring extreme pressure and boundary lubricants. EP BEARING GREASE's additive package enhances the shear stability, lubrication properties and high temperature characteristics of lithium based grease, making it a versatile, cost-effective, grease. The extreme pressure additive has the added benefit of reducing acidity created by oxidation of the base fluid and organic additives in high temperature environments.

- Certifications: API spec. 5CT and set forth in API RP 5A3
- Application: General Bearing Greasing, Track Rollers
- Service Rating: -0°F to 325°F (-18°C to 163°C)

### ALCO-EP™

#### EXTREME PRESSURE MULTIPURPOSE GREASE W/ MOS2

Versatile aluminum complex grease with a high level of rust and oxidation inhibitors. ALCO-EP contains molybdenum disulfide (MoS2) and graphite, which plate out to resist metal-to-metal contact in boundary modes of lubrication. ALCO-EP provides superior wear protection against extreme pressure and is highly water-resistant. Its 60-pound rating in the Timken load test proves ALCO-EP to have excellent load-carrying ability.

- Application: Boom Assembly, Stabilizers, Crawler (Bearings/Pivots/Axles), Track Assemblies, Tongs (Clamps), Rotating Bearing, Ring Gear, Pinion Gear, Rack Rollers, Bushings, Sliding Surfaces, Low to Moderate Speed Anti-friction Bearings
- Service Rating: -25°F to 450°F (-32°C to 232°C)

## OILS

### HD GEAR OIL

#### HEAVY-DUTY GEAR OIL

Extreme pressure gear oil formulated to meet the exacting demands of most types differentials and transmissions including heavy-duty off-road fleets and mobile equipment including HDD machinery. HD GEAR OIL is designed to perform under adverse conditions such as, heavily loaded gears, shock loading and frequent reversing action.

- Application: Crawler (Bearings/Pivots/Axles), Gearboxes, Pumps
- Service Rating: 80W-90 -20°F to 350°F (-29°C to 177°C)  
85W-140 0°F to 350°F (-18°C to 177°C)

### FR HYDRAULIC OIL

#### FIRE RESISTANT HYDRAULIC OIL

Formulated to meet guidelines for Factory Mutual (FM) 6930. Factory Mutual approved oils are designed for enhanced safety where potential fire hazards may exist. The formulation is based on polyol ester synthetic fluid. This type of oil is exceptionally robust. Reinforcing this outstanding lubricity, selected additives enhance wear protection. Extended pump and component service will result in reduced downtime and maintenance costs.

Certifications: Factory Mutual - meets guidelines for FM 6930  
Application: Hydraulic Systems, Crawler (Bearings/Pivots Axles), Gearboxes, Pumps  
Service Rating: -40°F to 350°F (-40°C to 177°C)



## TOOLBOX ITEMS

### GEAR GUARD™

#### OPEN GEAR LUBRICANT W/ MOLY AND GRAPHITE

Zero VOC, paste-like, viscous lubricant for reducing friction and wear. GEAR GUARD is a heavy-duty compound, specially prepared to penetrate pores of metal, with exceptional "stay-put" characteristics. It provides maximum lubrication and shock-load protection, reduces gear noise, lubricates, prevents scoring, spalling or welding of the gear teeth; assuring a smooth, long-lasting, economical and effective coating. Its black color guides proper coverage, allowing easy touch up. GEAR GUARD resists heat and pressure, will not wash or wear off because of weather, and will not break down after repeated working.

- Application: Rotating Bearing, Ring Gear, Pinion Gear, General Maintenance
- Service Rating: -25°F to 350°F (-32°C to 175°C)

### 550® EXTREME®

#### LOW "E" NONMETALLIC ANTI-SEIZE & THREAD LUBRICANT

Zero VOC, lead-free enhanced formulation that uses a balance of molybdenum disulfide and surface modified synthetic graphite in a corrosion resistant calcium sulfonate complex base combined to provide protection for a wide variety of applications over a wide temperature range. Its composition offers maximum protection against seizure and heat freeze. 550 EXTREME eases assembling and dismantling saving man hours. It assures protection against rust, oxidation, and corrosion. It will not harden, evaporate, or settle out; and it requires no thinning.

- Certifications: MIL-PRF-907F • Raytheon Specification - M8656839 Type III
- Application: Stabilizers, Track Assemblies, General Maintenance
- Service Rating: Select Applications/Services: 2400°F (1316°C) • Brushable to or as a lubricant: -10°F (-23°C) • Static Applications: -265°F (-165°C) \*\*Based on component literature data in cryogenic applications.

### JET-LOK® III

#### ZINC-FREE THREADLOCKER / TWO-PART EPOXY

Zinc-free epoxy with non-metallic fillers that can be used to permanently lock threaded connections under normal operating conditions. JET-LOK III uses a new catalyst for added pot life and durability with lower toxicity and less heat generation, making it the optimum choice for its recommended applications. It is specially designed for use on all threaded joints or fasteners where an exceptionally strong and durable bond is required. Ideal on drilling tools, casing, and other tubulars where the effective prevention of joint loosening is required. JET-LOK III's purpose is to sustain engagement on thrust and pull back. Available in 8oz and 2oz kits.

- Application: Bit, Back Reamer, Sub-Saver
- Service Rating: -50°F to 400°F (-46°C to 204°C)

## TOOLBOX ITEMS

### MOLY-MIST™ DRY FILM LUBRICANT W/MOS2



Consists of a high percentage of micro-fine MoS<sub>2</sub> suspended in a unique liquid, quick-drying vehicle. MOLY-MIST bonds dry-form MoS<sub>2</sub> powder to surfaces without heating or baking. It prevents galling and reduces torque. When sprayed on any surface it 'touches dry' quickly and cures to an even, tenacious coating in a matter of 30 minutes.

- Application: Boom Assembly, Stabilizers, General Maintenance
- Service Rating: -300°F to 750°F (-184°C to 399°C)

### RUST-GUARD™ CORROSION INHIBITOR

Non-toxic specialized, water-displacing formula that dries to a uniform, thin waxy film to effectively seal out moisture and corrosion. RUST-GUARD provides long-term protection on all metal and alloy surfaces, even under harsh environmental conditions such as water, high humidity or salt spray. It may be used both indoors or outdoors as a protective coating on raw materials, new machined parts, tools, pipe, fittings, valve, etc., while they are being stored or in transit.

- Certifications: Conforms to MIL-PRF-16173E (Grades 1 and 2)
- Application: Boom Assembly, Stabilizers, Crawler (Bearings/Pivots/Axles), Track Assemblies, General Maintenance

### 12|34® LUBRICANT & PENETRANT (available in Canada only)

Multipurpose penetrating, moisture displacing, lubricating and corrosion preventative. Unequaled where salt water, salt spray or other harsh environments are encountered. 12|34® gives total performance while being environmentally safe and easy to use.

- Certifications: MIL-C-23411
- Application: General Maintenance
- Service Rating: -100°F to 300°F (-75°C to 150°C)

### 769 LUBRICANT® LUBRICANT & PENETRANT

A leading multipurpose, penetrating, lubricating, moisture displacing and corrosion preventative product for use where salt water, salt spray or other harsh environments are present. 769 Lubricant gives total performance while being environmentally safe, easy to use and non-flammable.

- Certifications: NSF H2 Registered #137551 (Bulk), #137644 (Aerosol) • MIL-PRF-81309H (Aerosol) Type II & III Class II • CO2 Grade MIL-PRF-81309H (Bulk) Type II & III • Class I MIL-C-16173E Grade 3 MIL-C-23411A VV-P-216B CID A-A-50493C Class B Type I
- Application: General Maintenance

### EASY-CLEAN® LIQUID FRAC AND RIG WASH

Nonflammable, biodegradable cleaner/degreaser that uniquely combines cleaning agents with newly-developed emulsifying technology to provide a product that can effectively remove carbon, grease, oil, and other organic deposits while being both safe and ozone friendly.

- Application: General Maintenance

### MAGIC WRENCH® SUPER PENETRANT

Silicone-free penetrating oil that attacks rust and corrosion quickly and safely to free corroded parts, loosen nuts and aid in the disassembly of mechanical components. MAGIC WRENCH'S versatile synthetic formula penetrates, lubricates, removes moisture and protects chains, cables, slides and other moving parts. Safe on all metals and plastics.

- Certifications: NSF H1 Registered #048231 (Bulk), #048230 (Aerosol)
- Application: General Maintenance
- Service Rating: -40°F to 350°F (-40°C to 177°C)

### CLEAN-UP™ II INDUSTRIAL GRADE DEGREASER

Low VOC blend of solvents designed to quickly dissolve and rinse away dirt, grease, grime, oil, tar and wax while being both environmentally responsible and ozone friendly. CLEAN-UP II contains no chlorinated or fluorinated solvents, no hazardous air pollutants, and evaporates residue-free quickly.

- Certifications: California Compliant and acceptable for use in CARB/OTC States
- Application: General Maintenance

### WRL™ WIRE ROPE AND CHAIN LUBRICANT

Coats the internal strands of wire ropes with a nearly VOC-free lubricant to prevent friction and wear. This results in longer life, less downtime for rope changes and more production. WRL quickly penetrates to the cores to ensure that the rope is lubricated throughout while providing a non-drying, non-tacky film on the outside of the rope that protects outer strands from corrosion, as well as lubricating the wire rope drums and sheaves.

- Application: General Maintenance
- Service Rating: -25°F to 350°F (-32°C to 175°C)

### KORR-GUARD™ THREAD PIPE STORAGE COMPOUND

Specialized water-displacing formula that utilizes a unique approach to rust and corrosion prevention. KORR-GUARD is a semi-fluid compound for ease of application, and it is slightly over-based to protect against acid fume and oxidation. High strength polymers, graphite, and other naturally occurring, extreme-pressure, and anti-wear additives lock together under pressure to resist galling, seizure, and downhole makeup.

- Application: General Maintenance
- Service Rating: -20°F to 425°F (-29°C to 218°C)

### JET-RED™ PREMIUM MULTIPURPOSE GREASE

Versatile, high-temperature lithium complex grease designed to meet a wide range of lubrication needs. JET-RED offers superior protection in environments with dirt, dust, high humidity, rain, snow, and extreme temperatures due to its high dropping point and exceptional resistance to heat, water, oxidation, and heavy loads. This multipurpose grease is specially formulated to provide lubrication for bearings, journals, and other greasing applications. Its versatility makes it ideal for use in oil drilling, construction, road building, mining, shipbuilding, and any other application that requires high-quality lubrication.

- Application: Bearings, Journals, General Maintenance
- Service Rating: EP -10°F to 300°F (-23°C to 149°C)  
EP 2 0°F to 400°F (-18°C to 204°C)

# RELIABILITY PRODUCTS

## DESICCANT BREATHERS

### AIR SENTRY® D-SERIES, Z-SERIES, X-SERIES, GUARDIAN®-SERIES

Air Sentry breathers set the standard for contamination control. These breathers offer state-of-the-art features that virtually eliminate particulate and moisture contamination, keeping your equipment and fluids lasting longer. Air Sentry breathers integrate check valve technology and replacement cartridges, to significantly reduce purchase and maintenance costs. Cover a wide range of application requirements. The clear view 360 degree design makes it easy to inspect the saturation of the color-changing silica gel from a distance. The inert silica gel turns from gold to dark green to visually indicate the adsorption of moisture and confirm the breather is getting the job done. Air Sentry products cover a wide range of application requirements. The line consists of Good, Better and Best options designed to meet your specific application and duration specification.

Service Rating: -20°F to +200°F (-29°F to +93°C)



#### D-SERIES

D-SERIES breathers feature numerous models in a variety of sizes, they are fully disposable and designed to satisfy the requirements of most stationary fluid management applications. The breathers provide application flexibility by using 100% silica gel for moisture adsorption. All D-SERIES models feature 2-micron solid particle filtration and are available with airflow ratings of 20 cfm.

- Application: Stationary Applications, Oil Storage Tanks, Fluid Reservoirs, Transformers, Pumps, Gearboxes



#### X-SERIES

X-SERIES breathers are a better solution for high humidity and high dust environments. This breather series offers replacement cartridges for each breather. To extend desiccant life, the X-SERIES incorporates two check valves into a reusable top cap. The check valves provide a closed system until airflow is required, thus extending the service life of the differential pressure between the atmosphere and fluid reservoir exceeds a 0.1-psi threshold (cracking pressure of the check valves). The exhaust check valve permits air to exit the reservoir when the differential pressure exceeds 0.1-psi.

- Application: High Humidity/High Dust Applications, Paper Mills, Wash-Down Areas, Steam-Cleaning Rooms, Mine Quarries



#### Z-SERIES

Z-SERIES breathers are fully disposable and are designed for applications where space is limited or air flow requirements are lower than 5 cfm. The Z-SERIES is typically used on gearboxes and low fluid volume applications where mounting space is limited or where a larger breather will not fit without remote mounting. All Z-SERIES models feature two 2 micron filters, one on the inlet and a second on the outlet.

- Application: Limited Space Applications, Gearboxes, Drums, Totes, Small Oil Containers



#### GUARDIAN®-SERIES

GUARDIAN is Air Sentry's industry leading breather series. Some models feature an isolation check valve that keeps exhaust air from depleting the desiccant and protects from volatile fumes and splashing fluids. The GUARDIAN's casing is constructed from Tritan®, a patented material highly resistant to impact and chemicals with a broad range of operating temperatures. These unique features equate to a longer life for your breather and your equipment. GUARDIAN's modular construction and optional add-on features allow you to customize each GUARDIAN model to your specific application requirements. This breather series offers replacement cartridges. All GUARDIAN-SERIES models feature two 2 micron filters, one on the inlet and a second on the outlet.

- Application: Ideal for Most Applications - The only desiccant breather series that Air Sentry recommends for diesel fuel applications\* (not recommended for other fuel applications) \*Guardian breathers used on diesel fuel applications must be accompanied with an isolation check valve. See Guardian models ending in NC, NG, NGC. Not available in models ending in N.



# LUBRICATION MANAGEMENT

OilSafe® is the reliable choice for smart, safe storage and transfer. OilSafe's lubrication management products establish best practices throughout your workflow. Every step is color-coded to eliminate risk and human error - simplifying maintenance extending the life of the machines that make your product. And keep your business running.

## DRUMS

Tough, and comfortable to handle, these DRUMS are available in 5 different sizes (1.5, 2, 3, 5, 10 Liter/US Quart.). Fully sealing when fitted to OilSafe Color-Coded Lids. Extra wide neck opening (120mm / 4.7") for rapid pouring and easy cleaning. Ultra durable construction so it will not warp, leak, bend or break.



## COLOR-CODED LIDS

Advanced sealing thread design that ensures a secure fit on OilSafe Drums. OilSafe LIDS have ultra durable construction that will not warp, leak or break. Available styles: (Utility, Storage, Stumpy, Stretch and Mini Spout.) Available in 10 OilSafe colors to eliminate cross-contamination and easily identify contents.



## COLOR-CODED IDENTIFICATION LABELS

Customized Fluid ID LABELS provide clear identification to easily identify contents and eliminate cross-contamination. Available in many styles and 10 OilSafe colors.

## COLOR-CODED GREASE FITTING PROTECTORS

Designed to save you the cost of equipment failures related to contamination or misapplication. These protectors provide a secure seal over most common grease fittings providing excellent protection against contamination. Available in 10 OilSafe colors and space for labels. the grease fitting protectors clearly identify what grease is required for the fitting.



## COLOR-CODED GREASE GUNS

Heavy-duty OilSafe Grease Guns are designed for punishing day-in and day-out heavy industrial applications. Grease Gun tubes are color-coded to prevent cross-contamination, available in 10 OilSafe colors with clear or steel body. Available styles (Pistol, Lever, Battery-Operated.)



## GREASE METER

Fit meter to OilSafe Grease Gun. With this Grease Meter it is possible to grease precisely according to the bearing manufacturer's recommendations. problems with manual greasing of bearings include wide variations in grease gun output volume and pressure. This potentially leads to over-greasing, under-greasing and over pressurization.



## COLOR-CODED QUICK CONNECTS

Offer a flexible, durable and safe hose interface for use with lubrication management equipment. Manufactured from anodized aluminum and available in 10 colors or silver to easily identify fluid contents and set the bar with an error-proof/exclusive fit; only two terminals of the same color can fully connect making cross-contamination impossible.



## SIGHT GLASSES

Withstands harsh environments, including extreme temperatures and a variety of industrial fluids. This glass is up to four times stronger than other acrylic sight glasses; it is shatterproof, stain-proof and chemically resistant.



## ENVIRONMENTAL SPILL CONTAINMENT DECKS

Heavy-duty Spill Decks are designed for stand alone use or can connect with other Spill Decks for a customized work area. Low-profile for fitting under the HDD rigs and worksite fluid management, enhancing increased safety and environmental responsibilities.

