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Bio-SynXtra™ Trans-Hydraulic (All-Weather Super Universal Tractor Fluid)

*"Biobased Lubricants that
Perform Like Synthetics"*



STABILIZED™
by Renewable Lubricants

Bio-SynXtra™ Trans-Hydraulic is a universal tractor fluid (UTF) that incorporates Stabilized* additive technology with biodegradable¹ biobased and bio-synthetic based stocks for improved performance over conventional tractor oils. This multi-grade formulation contains special frictional modifiers for the Wet Brake's equipment design, and compounded with detergent, dispersant, anti-wear, anti-rust, and anti-foam inhibitors. Bio-SynXtra™ Trans-Hydraulic Fluid is a multi-purpose all-weather super tractor hydraulic fluid that can commonly be used in farm and construction equipment, off-highway vehicles, industrial tractors used in agricultural, industrial, and construction equipment, with proven field performance.

Although it may differ from manufacturers' recommended fluids, Bio-SynXtra™ Trans-Hydraulic Fluid is suitable and can commonly be used for use in all of the following applications.; Allison C-3, Cat TO-2 and API GL-4, FZG/Low-Speed/High Torque, J20-C/M1139 High Torque Axle, Wet Brake Chatter/Squawk, PTO Clutch, the North America Performance Requirements for Universal Tractor Transmission Oils (UTTOs), and Multipurpose Tractor Oils (MTO)

Biodegradable Tractor Transmission Oil Providing Excellent Performance, and suitable and commonly used in the following Tractor specifications:

Ford, New Holland M2C134-D, FNHA-2-201,
M2C86-C, M2C86-C/B, **M2C41-B/A, M2C48-C/B,
M2C92-A, M2C53-B/A, M2C134-C/B/A,
CNH MAT 3525

Massey-Ferguson M1135, M1141, M1139,
M1143, M1145, **M1110, M1127B/A, M1129A

Kubota, UDT, Super UDT

John Deere J20C, J14A/B/C, **J20D

Steiger, SEMS 1700A

Versatile, 28M, 24M

Case International

**JIC-145/MS-1210

JIC-185/MS-1204, MS-1205, MS-1206

MS-1207, MS-1209, MS1127, M1129-A

Agco, White Farm

Q-1826 Q-1705, Q-1766, Q-1802, Type 55

Agco, Deutz-Allis 821XL

Landini

Fiat-Hesston, AF-87, Multi-F

TRANSMISSION OEM'S

**J20C spec for Allison C4

Caterpillar TO-2, MTO

Hydraulic: Vickers, Denison, Commercial Intertech, Rexroth, Sauer-Sundstrand

**Lower viscosity specifications can be replaced where recommended.

Bio-SynXtra™ Trans-Hydraulic meets the Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for Environmentally Acceptable Lubricants (EALs), and should be used in hydraulic systems where **LOW TOXICITY, BIODEGRADABILITY** and **NON-BIOACCUMULATION** properties are required. This product exceeds the acute toxicity (LC-50 / EC-50 >1000 ppm) criteria adopted by the US Fish and Wildlife Service and the US EPA. Bio-SynXtra™ Trans-Hydraulic is an **ENVIRONMENTALLY ACCEPTED LUBRICANT (EAL)** that is formulated from renewable agricultural biobased resources. We believe Earth's environmental future rests in the use of renewable materials.

¹Ultimate/Readily Biodegradation (Pw1) within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants

STABILIZED by Renewable Lubricants™* is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow technology. High Oleic Base Stock (HOBS) are agricultural vegetable oils. This Stabilized technology allows the HOBS to perform as a high performance formula in high and low temperature applications, reducing oil thickening and deposits.

Patented Product: US Patent 6,383,992, US Patent 6,534,454 with additional Pending and Foreign Patents

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| | | | | | | |
|---------------------------|-------------------------------------|-----------------|----------------------|--------------|--------------|--------------|
| Availability | F.O.B.: Hartville, Ohio, USA | 1 Gallon | 5 Gallon Pail | Drum | Totes | Bulk |
| RLI Product Item # | | 81223 | 81224 | 81226 | 81227 | 81229 |

| Test | Typical Results | Specification Limits |
|---|------------------------|-----------------------------|
| SAE Grade: | 5W30 | |
| Viscosity @ 100°C ASTM D-445 SAE 30= | 9.72 | 9.10 min. |
| Viscosity @ 40°C ASTM D-445 | 46.38 | Report |
| Viscosity @ 25°C ASTM D-445 | 82.9 | Report |
| Viscosity Index ASTM D-2270 | 202 | 140 |
| Shear Stability Orbahn ASTM D-6278 | | |
| Vis. @ 100°C (after shear) | 9.6 | 9.10 min. |
| Brookfield Viscosity ASTM D-2983 | | |
| @-20°C 1,500 cP per J20D | 1,200 cP | 5,500 max. |
| @-35°C | 10,500 cP | 70,000 max. |
| @-40°C 20,000 cP per J20D | 18,500 cP | 20,000 max. |
| Flash Point, °C (ASTM D-92) | 252 | 200 min. |
| Stable Pour Point, °C (ASTM D-97) | -45 | -36 max. |
| Rust Prevention A&B, (ASTM D-665) | Pass Clean | No Visible Rust |
| Acid Number, mg KOH / g (ASTM D-974) | 0.56 | Report |
| Dielectric Strength (ASTM D-877) | 48 KV | 35 KV (Minimum) |
| Four Ball Wear (ASTM D-4172) | | |
| 1 h, 65°C, 1500 rpm, 40 kg, | 0.36 | 0.40 max. |
| Oxidation Stability JDQ 16 | | |
| Evaporation Loss | 0.85% | 5.0% max. |
| Viscosity Increase @ 100°C | 3.0% | 10.0% max. |
| Viscosity Increase @ 40°C | 3.8% | ----- |
| Sludge Formation | None | None |
| Additive Separation | None | None |
| Rust Protection JDQ 22 | >100 | 100 hrs. min. |
| Copper Corrosion JDQ 32 | 1A | 1B max. |
| Foaming Characteristics JDQ 33 | | |
| Sequence I | 0/0 | 25/0 ml. max. |
| Foam Breaktime | 0 | 30 sec. max. |
| Sequence II | 40/0 | 50/0 ml. max. |
| Foam Breaktime | 0 | 30 sec. max. |
| Sequence III | 0/0 | 25/0 max. |
| Foam Breaktime | 0 | 30 sec. max. |
| Water Sensitivity JDQ 19 | | |
| Solids | 0.0 | 0.1 %v max. |
| Additive Loss | 0.0 | 15.0% wt. max. |
| Extreme Pressure Properties JDQ 34 | | |
| Timken Abrasion Mass Loss | 0.5 mg. | 1.5 mg. max |
| Timken OK Load | 73 N | 45 N min. |
| Rubber Compatibility JDQ 9 | | |
| Volume Change | +2 | 0 to +5% |
| Hardness Change | -1 | 0 to -5 pts. |
| Precipitation | None | Trace |
| Rubber Compatibility | | |
| Reference 69X311111 | | |
| Volume Change | +3 | 0 to +5 |
| Hardness Change | -1.5 | 0 to -5 |
| Precipitation | None | None |
| Oil Compatibility JDQ 23 | | |
| Additive Separation | None | None |
| Formation | None | None |
| Low Temperature Fluidity JDQ 73/74 | | |

Cold Soak @ -35°C

20 secs.

30.0 sec. max.*

Slow Cool

@ -30°C

30 mm in 3 sec.

30.0 sec. max.*

@ -35°C flow in 30 sec.

30 mm in 11 sec.

10.0 mm min.**

*Must flow 30 mm in a maximum of 30 seconds to pass.

| Test | Typical Results | Specification Limits |
|---|------------------------------------|---|
| JDQ 94 PST Clutch Friction | | |
| Total Cycles | 2,000 | 2,000 |
| Initial Friction Coefficient | 0.077 | 0.15 max. |
| Final Friction Coefficient | 0.105 | 0.08 min. |
| Stall Time (sec.) | 1.77 | 5.0 max. |
| Disk #1 Wear (mm) | 0.178 | 0.38 max. |
| Disk #2 Wear (mm) | 0.174 | 0.38 max. |
| Disk #3 Wear (mm) | 0.254 | 0.38 max. |
| Disk #4 Wear (mm) | 0.178 | 0.38 max. |
| JDQ 102 Shear Stability | | |
| Viscosity @ 100°C | 9.8 | |
| Viscosity @ 100°C (sheared) | 9.4 | |
| % Viscosity Loss | 6.0% | |
| JDQ 95 Spiral Bevel/Final Drive Gear Wear | | |
| Gear Surface Condition | | |
| Pinion | None | No Scoring |
| Ring | None | No Scoring |
| Spiral Bevel Rating | 9 | Scale of 1-10, 10 = the best |
| Sun Pinion Wear | | |
| Left Side Average | <0.025 | <0.025 |
| Right Side Average | <0.025 | <0.025 |
| JDQ 84 Sundstrand Hydraulic Pump | | |
| Flow Degradation | Better than reference | Equal to or better than reference which is -2.0%. |
| JDQ 96 Brake Torque Variation and Friction | | |
| | Computer Results | Torque |
| Cycles | Relative Capacity | Variation |
| 1,000 | 293,131 | 44,470 |
| 10,000 | 308,090 | 36,730 |
| 20,000 | 310,651 | 36,220 |
| 30,000 | 312,768 | 42,380 |
| Total | 1,224,640 | 159,800 |
| Allison C-4 Oxidation Test (J20C Spec.) | | |
| Tan Increase | 5.0 | 7.0 max. |
| Carbonyl Absorbance | 0.9 | 0.9 max. |
| Front Pump Seal | | |
| | Moderate-Hardening Light Sludge | Moderate to Heavy Hardening Light to Medium Sludge |
| Allison C-4 Wear Test | | |
| Total weight loss | 1.4 mg | 15.0 max. |
| Allison C-4 Paper Clutch Friction test | | |
| | <=5,000 >5,000 | <=5,000 >5,000 |
| | Cycles | Cycles |
| Slip Time, max. | 0.70 0.55 | 0.72 0.61 |
| Mid-Point Friction Coeff. min. | 0.076 0.095 | 0.068 0.088 |

| | | | |
|---|-----------|-------|-----------------------|
| | 1,500 | | 5,500 |
| | Cycles | | |
| Slip Time, max. | 0.70 | 0.74 | 0.71 max. |
| Mid-Point Friction Coeff. min. | 0.101 | 0.097 | 0.104 min. |
| Biodegradability CEC-L33A93 | >80% | | 80% or greater |
| OECD 301B Mod. Sturm | >60% | | 60% or greater |
| ASTM D-5864 | >60% | | 60% or greater |
| Ecotoxicity | | | |
| Fathead minnow, 96h LC50, | >2000 ppm | | EPA requirement >1000 |
| Daphnia magna, 48h EC50, | >2000 ppm | | EPA requirement >1000 |
| Alga Growth Inhibition EC50 | >2000 ppm | | EPA requirement >1000 |
| Meets EPA requirements 560/6-82-002, 560/6-82-003 | | | |

Energy Conserving Formulation – USDA Biobased and BioPreferred

Additional Benefits:

- * Biodegradability
- * Eco-nontoxicity
- * Improved cold weather performance
- * Excellent oxidation stability
- * Enhanced efficiency in synchronised and glide shift transmissions
- * Interchangeable with standard UTTO's
- * Improved performance over conventional UTTO's
- * High Flash Point / More Fire Resistant
- * Eco-nontoxicity
- * USDA Biobased
- * BioPreferred