

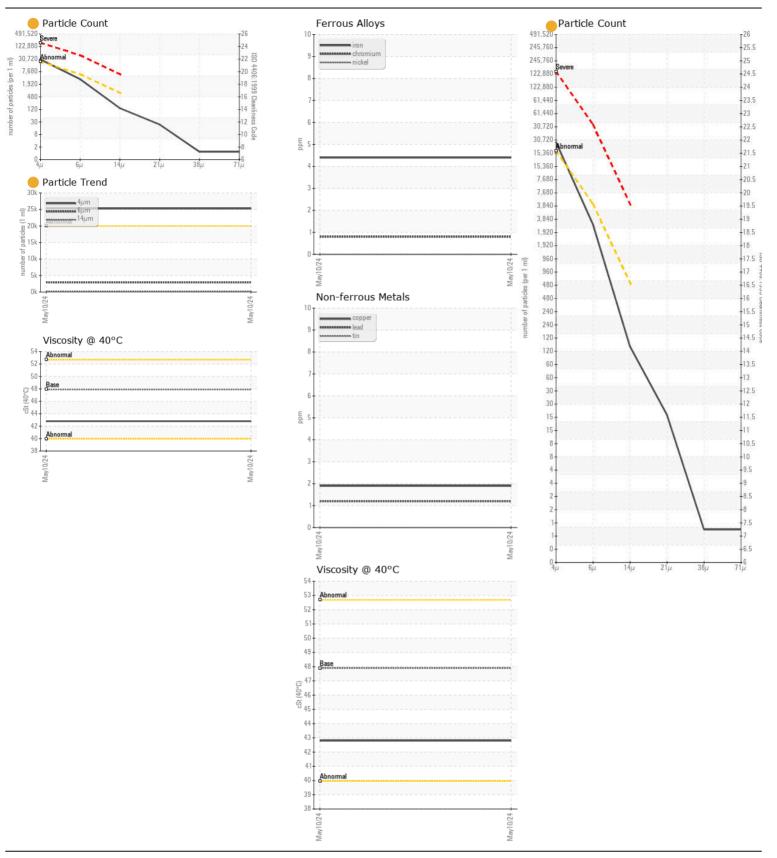


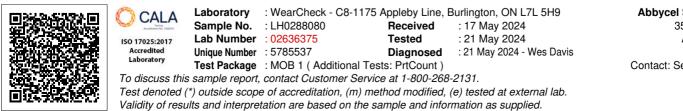
LIEBHERR L566 077757-1758

Hydraulic System

PETRO CANADA HYDREX XV ALL SEASON HYDRAULIC OIL (--- GAL)

| Test UOM Method United History1 History2 We recommend you service the filters on this component. Resample 2ne Client thrio 10 May 202 | | | | | | | <u> </u> | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------------|--------|---------------|-----------|-------------|----------|----------|
| We recommend you service the lifters on this component. Resample to the next service interval to monitor. UH028000 1.0 UH02800 1.0 <thuh02800 1.0<="" th=""> UH02800 1.0</thuh02800> | RECOMMENDATION | Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
| the next service interval to monitor. Simple bala Machine Age Third into into into into into into into into | | Sample Number | | Client Info | | LH0288080 | | |
| Machine Age Ints Clind Into SS6 Image Image Oil Age Ints Clind Into 0 Image Image Filter Age Ints Clind Into 0 Image Image Oil Changed Clind Into NXA Image Image Image Sample Status Time Into NXA Image Image Image All component wear rates are normal. Image | | Sample Date | | Client Info | | 10 May 2024 | | |
| Filter Age hrs Client Info 0 Oil Changed Client Info No Change WEAR Iron ppm ATIONSING >-0 All component wear rates are normal. Iron ppm ATIONSING >-0 Nickel ppm ASIMUSING >10 0 Silver ppm ASIMUSING >10 0 All component wear rates are normal. Nickel ppm ASIMUSING >10 0 Nickel ppm ASIMUSING 0 Quandum ppm ASIMUSING 0 0 Tim ppm ASIMUSING 1 1 | the next service interval to monitor. | Machine Age | hrs | Client Info | | 556 | | |
| OI Changed Filter Changed Sample Status Client Info No Change M In- In- WEAR Nine Intervino Nine Intervino Intervino <td< th=""><th></th><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th></th><th></th></td<> | | Oil Age | hrs | Client Info | | 0 | | |
| Filter Ohanged Client Info NA | | Filter Age | hrs | Client Info | | 0 | | |
| Sample Status ATTENTION n n WEAR Iron ppm ASTM DSISS 20 4 1 1 All component wear rates are normal. Iron ppm ASTM DSISS 1.0 0 1 1 Nickel ppm ASTM DSISS 10 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | Oil Changed | | Client Info | | Not Changd | | |
| WEAR Iron ppm ASIU 5586m -20 4 All component wear rates are normal. Ppm ASIU 5586m -10 Nickel ppm ASIU 5586m 0 Silver ppm ASIU 5586m 0 All component wear rates are normal. Ppm ASIU 5586m 0 Silver ppm ASIU 5586m 0 Auminum ppm ASIU 5586m 10 1 Asiu 5586m 10 0 Vanadium ppm ASIU 5586m 10 0 Vanadium ppm ASIU 5586m 20 1 Vanadium ppm ASIU 5586m 20 Vanadium ppm | | Filter Changed | | Client Info | | N/A | | |
| All component wear rates are normal. Chromium ppm ASIN DISISM >10 <1 | | Sample Status | | | | ATTENTION | | |
| All component wear rates are normal. Chromium ppm ASIN DISISM >10 <1 | | | | | | | | |
| All component wear rates are normal. Nickel ppm #X10058(m) 10 0 Tanium ppm #X10058(m) 0 All winium ppm #X10058(m) 0 All winium ppm #X10058(m) >10 1 Copper ppm #X10058(m) >10 0 Vandum ppm #X10058(m) >0 0 Velow Metal scalar Visual* NONE NONE Patcles >1 #10 issa Value Value ASTM 07647 >500 20 <t< th=""><th>WEAR</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<> | WEAR | | | | | | | |
| Nickei pin Astrobision viol o Silver ppm &StND01836 0 Silver ppm &StND01836 0 Aluminum ppm &StND01836 >-0 Lead ppm &StND01836 >-0 Tin ppm &StND01836 >-0 0 Vanadium ppm &StND01836 >-20 1 Vanadium ppm &StND01836 >-20 1 Vanadium ppm &StND01636 >20 1 | All component wear rates are normal | | | () | | | | |
| Silver pp ASTU 0515(m) 0 Aluminum pp ASTU 0515(m) -0 Copper pp ASTU 0515(m) -70 2 Copper pp ASTU 0515(m) -70 2 Vanadium ppm ASTU 0515(m) -70 Vanadium ppm ASTU 0515(m) -70 Vallow Metal scalar Visual NONE NONE Vallow Metal scalar Visual NONE NONE Patricles -Stym ASTM 0585(m) -20 1 Patricles -Stym ASTM 0784 Patricles -Stym ASTM 0784 | | | | | >10 | | | |
| Aluminum ppm ASTM 05185m >10 <1 | | | | | | | | |
| Lead ppm ASTM DSR6/m >10 1 Copper ppm ASTM DSR6/m >50 0 Tin ppm ASTM DSR6/m >10 0 Vanadium ppm ASTM DSR6/m >10 0 Vanadium ppm ASTM DSR6/m NONE NONE Value Visual* NONE NONE NONE Patholesistim ppm ASTM DSR6/m >20 1 Patholesistim ppm ASTM DSR6/m >20 1 Patholesistim ppm ASTM DSR6/m >20 1 Patholesistim ppm ASTM D7847 >600 20 Patholesistim Scalar Visual* NONE ASTM D7847 >600 2219141 <tr< th=""><th></th><th></th><th>ppm</th><th></th><th></th><th></th><th></th><th></th></tr<> | | | ppm | | | | | |
| Copper ppm ASTM 2583/m >75 2 Tin ppm ASTM 2583/m >10 0 Vanadium ppm ASTM 2583/m >10 0 White Metal scalar Visual* NONE NONE CONTAMINATION Silicon ppm ASTM 2583/m >20 1 Potassium ppm ASTM 2583/m >20 1 Water WC Method >0.1 NEG Particles >49(m ASTM 07847 >640 120 Particles >49(m ASTM 07847 >640 1 Particles >71(m ASTM 07847 >640 1 Particles >71(m ASTM 07847 >460 1 | | | | 1 / / | | | | |
| Tin ppm ASTM D5185(m) >10 0 Vanadium ppm ASTM D5185(m) 0 0 While Welat scalar Visual* NONE NONE NONE CONTAMINATION Silicon ppm ASTM D5185(m) >20 1 Protessium ppm ASTM D5185(m) >20 1 Water Worker Worker Worker 2000 25263 Particles >4µm ASTM D7647 >5000 219 Particles >4µm ASTM D7647 >5000 219 Particles >31µm ASTM D7647 >400 10 Particles >31µm ASTM D7647 >400 1 Particles >31µm ASTM D7647 >400 1 Particles >31µm | | | | | | | | |
| Vanadium ppm ASTMD5185(m) 0 White Metal scalar Visual* NONE NONE CONTAMINATION None None Silicon ppm ASTMD5168(m) >-20 1 Potassium ppm ASTMD5168(m) >-20 1 Water WO Metbod >-0.1 NEG Particles >4µm ASTMD7647 >5000 2919 Particles >4µm ASTMD7647 >640 1 Particles >4µm ASTMD7647 >10 1 Particles >1µm ASTMD7647 >10 1 Particles >1µm ASTMD7647 >10 1 OID Cleaninessi scalar Visual* <norl< td=""> NORL</norl<> | | | | | | | | |
| White Metal Yellow Metal scalar Visual* NONE NONE I I CONTAMINATION Silicon pp ASTM05156m >20 1 I I There is a light amount of silt (particulates < 14 microns in size) present in the oil. Silicon pp ASTM05156m >20 1 I I Particles >4µm IA ASTM0747 >2000 22523 I I I Particles >4µm ASTM07647 >600 10 I I I Particles >4µm ASTM07647 >600 10 I I I Particles >4µm ASTM07647 >600 10 I I I Particles >4µm ASTM07647 >600 1 I I I Particles >4µm ASTM07647 >600 1 I I I Oil Cleanliness Scalar Visual* NONE VIE I I Sofd/Dir <th></th> <th></th> <th></th> <th></th> <th>>10</th> <th></th> <th></th> <th></th> | | | | | >10 | | | |
| Yeilow Metal scalar Visual* NONE CONTAMINATION ppm ASTM D5185m >20 1 Drese is a light amount of silt (particulates < 14 microns in size) pre ASTM D5185m >20 1 Particles >4µm ASTM D7647 >5000 225283 Particles >4µm ASTM D7647 >5000 225283 Particles >4µm ASTM D7647 >5000 225283 Particles >4µm ASTM D7647 >640 120 Particles >4µm ASTM D7647 >10 1 Particles >71µm ASTM D7647 >10 1 Sitic on a scalar Visual* NONE NONE Sitic scalar Visual* NONE NONE Sitic scalar Visual* NONE NONE <th></th> <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th></th> | | | | | | - | | |
| CONTAMINATION Silicon ppm ASTM D5185(m) >20 1 There is a light amount of silt (particulates < 14 microns in size) Potassium ppm ASTM D5185(m) >20 1 Water WC Method >0.1 NEG Particles >6µum ASTM D5747 >6000 2919 Particles >14µm ASTM D7647 >6000 201 Particles >14µm ASTM D7647 >600 20 Particles >21µm ASTM D7647 >100 1 Particles >30µm ASTM D7647 >100 1 Particles >71µm ASTM D7647 >100 1 Oil Cleantiness ISO 4406 (c) 211916 Sard/D1t scalar Visual* NONE NONE Soldware scalar Visual* </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> | | | | | | | | |
| Potassium ppm ASTM D518(m) 2.00 1 Water Water WC Method >.0.1 NEG Water Water WC Method >.0.1 NEG Particles >4µm ASTM D7647 >5000 2919 Particles >4µm ASTM D7647 >640 120 Particles >1µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >10 1 Sitt scalar Visual* NONE VLITE Sitt scalar Visual* NORM NORM Sodium scalar Visual* NORM NORM Indeisfed Wate | | Yellow Metal | scalar | Visual* | NONE | NONE | | |
| Potassium ppm ASTM D518(m) 2.00 1 Water Water WC Method >.0.1 NEG Water Water WC Method >.0.1 NEG Particles >4µm ASTM D7647 >5000 2919 Particles >4µm ASTM D7647 >640 120 Particles >1µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >640 1 Particles >71µm ASTM D7647 >10 1 Sitt scalar Visual* NONE VLITE Sitt scalar Visual* NORM NORM Sodium scalar Visual* NORM NORM Indeisfed Wate | CONTAMINATION | Silioon | nnm | | . 20 | 4 | | |
| There is a light amount of silt (particulates < 14 microns in size) Water WC Method >0.1 NEG Particles >4µm ASTM D7647 >20000 •25263 Particles >4µm ASTM D7647 >5000 2019 Particles >14µm ASTM D7647 >640 120 Particles >21µm ASTM D7647 >40 1 Oli Cleantiness Scalar Visual* NONE NONE Silt scalar Visual* NONE NORM Solur scalar Visual* NORM NORM Debris scalar Visual* | CONTAMINATION | | | | | | | |
| Present in the oil. Particles >4µm ASTM D7647 >2001 C+C Particles >6µm ASTM D7647 >5000 2919 Particles >6µm ASTM D7647 >6400 120 Particles >6µm ASTM D7647 >100 200 Particles >2µm ASTM D7647 >10 1 Particles >38µm ASTM D7647 >10 1 Particles >71µm ASTM D7647 >0 1 Particles >71µm ASTM D7647 >00 1 Oil Cleantiness ISO 4406 (c) 21191/14 Sand/Diri scalar Visual* NONE NONE Appearance scalar Visual* NORM NORM Molydeenum ppm ASTM D76550 0 0 <th>There is a light amount of silt (particulates < 14 microns in size)</th> <th></th> <th>ppiii</th> <th>1 / /</th> <th></th> <th></th> <th></th> <th></th> | There is a light amount of silt (particulates < 14 microns in size) | | ppiii | 1 / / | | | | |
| Particles >6µm ASTM D7647 >5000 2919 Particles >14µm ASTM D7647 >640 120 Particles >21µm ASTM D7647 >160 20 Particles >38µm ASTM D7647 >100 1 Particles >1µm ASTM D7647 >10 1 Particles >38µm StatM D7647 >10 1 Particles >38µm ASTM D7647 >10 1 Particles >38µm ASTM D7647 >10 1 Particles >38µm Scalar Visual* NONE NONE Silt scalar Visual* NONE NONE Sand/Dir scalar Visual* NONE NORML Appearance scalar Visual* NORML NORML Molybdenum ppm ASTM D585m 0 <1 | present in the oil. | | | | | | | |
| Particles >14µm ASTM D7647 >640 120 Particles >21µm ASTM D7647 >160 20 Particles >38µm ASTM D7647 >100 1 Particles >38µm ASTM D7647 >100 1 Particles >71µm ASTM D7647 >100 1 Oil Cleantiness IS0 4406 (s) 2/19/16 2/219/14 Silt scalar Visual* NONE NONE Sold ODiri scalar Visual* NONE NONE Odor scalar Visual* NORM NORM Codor scalar Visual* NORM NORM Emulsified Water scalar Visual* NORM NORM Boron ppm ASTM D585m 0 Molybdenum pm ASTM D585m 0 < | | | | | | | | |
| Particles >21µm ASTM D7647 >160 20 Particles >38µm ASTM D7647 >40 1 Particles >71µm ASTM D7647 >10 1 Oil Cleanlines ISO 4406 (o) >21/19/16 Oil Cleanlines ISO 4406 (o) >21/19/16 Silt scalar Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORM NORM Or scalar Visual* NORM NORM FLUID CONDITION Sodium ppm ASTM D5185/m 0 0 Boron ppm ASTM D5185/m 0 0 | | | | | | | | |
| Particles >38µm ASTM D7647 >40 1 Particles >71µm ASTM D7647 >10 1 Oil Cleanliness ISO 4406 (c) 2/11916 © 2/191/4 Silt scalar Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORM NORM Odor scalar Visual* NORM NORM Odor scalar Visual* NORM NORM Odor scalar Visual* NORM NORM Dodor scalar Visual* NORM NOR Bronn ppm ASTM D51850 | | | | | | | | |
| Particles >71µm ASTM D7647 >10 1 Oil Cleanliness ISO 4406 (c) >21/19/16 •22/19/14 Silt scalar Visual* NONE NONE Silt scalar Visual* NONE NONE Sand/Dirl scalar Visual* NONE NONE Appearance scalar Visual* NORH NORH Odor scalar Visual* NORH NORH Britine bilistice/bale for scalar Visual* NORH Molybdenum ppm ASTM D5185(m) | | | | | | | | |
| Oil CleanlinesISO 4406 (c)\$21/19/1622/19/14SiltscalarVisual*NONENONEDebrisscalarVisual*NONEVLITESand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLMoltified WaterscalarVisual*NORMNegBariumppmASTM D5185(m)0MaganesepmASTM D5185(m)00MagnesiumppmASTM D5185(m)1055PhosphorusppmASTM D5185(m)100560PhosphorusppmASTM D5185(m)670560SuffurppmASTM D5185(m)850658SuffurppmASTM D5185(m)16002433 | | | | | | | | |
| SiltscalarVisual*NONENONEDebrisscalarVisual*NONEVLITESand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORNORMLAppearancescalarVisual*NORNORMLOdorscalarVisual*NORNORMLOdorscalarVisual*NORNORMLOdorscalarVisual*NORNORMLMulsified WaterscalarVisual*>0.1NEGSodiumppmASTMD5185(m)0BoronppmASTMD5185(m)0MolybdenumppmASTMD5185(m)00ManganeseppmASTMD5185(m)10MagnesiumppmASTMD5185(m)10S66PhosphorusppmASTMD5185(m)100S66ZincppmASTMD5185(m)1600S658SulfurppmASTMD5185(m)1600Z433 | | | | | | | | |
| DebrisscalarVisual*NONEVLITESand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORMLNORMLOdorscalarVisual*NORMLNORMLEmulsified WaterscalarVisual*NORMLNORMLNorescalarVisual*NORMLNORMLFLUID CONDITIONSodiumppmASTM D5185(m)BoronppmASTM D5185(m)0BariumppmASTM D5185(m)0MolydenumppmASTM D5185(m)0MagnesiumppmASTM D5185(m)100MagnesiumppmASTM D5185(m)10866PhosphorusppmASTM D5185(m)100866ZincppmASTM D5185(m)16002433 | | | scalar | | | | | |
| Sand/DirtscalarVisual*NONENONEInoneInoneInoneAppearancescalarVisual*NORMNORMInoneInoneInoneOdorscalarVisual*NORMNORMNORMInoneInoneInoneEmulsified WaterscalarVisual*NORMNORMInoneInoneInoneInoneFLUID CONDITIONSodiumppmASTM D5185(m)0InoneInoneInoneBoronppmASTM D5185(m)00InoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInoneInone | | | | | | | | |
| Appearance OdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLEmulsified WaterscalarVisual*>0.1NEGFLUID CONDITIONSodiumppmASTM D5185(m)BoronppmASTM D5185(m)0BariumppmASTM D5185(m)00MolybdenumppmASTM D5185(m)00MaganeseeppmASTM D5185(m)00CalciumppmASTM D5185(m)05MagnesiumppmASTM D5185(m)05CalciumppmASTM D5185(m)100866PhosphorusppmASTM D5185(m)100658ZincppmASTM D5185(m)658658SulfurppmASTM D5185(m)16002433 | | | | | | | | |
| OdorscalarVisual*NORMLNORMLEmulsified WaterscalarVisual*>0.1NEGFLUID CONDITIONSodiumppmASTM D5185(m)0<1 | | | | | | | | |
| Emulsified WaterscalarVisual*>0.1NEGFLUID CONDITIONSodiumppmASTM D5185(m)<1BoronppmASTM D5185(m)0<1BariumppmASTM D5185(m)0<1MolybdenumppmASTM D5185(m)00MaganeseppmASTM D5185(m)00MagnesiumppmASTM D5185(m)05CalciumppmASTM D5185(m)108666PhosphorusppmASTM D5185(m)658ZincppmASTM D5185(m)850658SulfurppmASTM D5185(m)16002433 | | •• | | | | | | |
| FLUID CONDITION Sodium ppm ASTM D5185(m) <1 | | | | | | | | |
| Boron ppm ASTM D5185(m) 0 <1 | | | | | | | | |
| Boron ppm ASTM D5185(m) 0 <1 | FLUID CONDITION | Sodium | ppm | ASTM D5185(m) | | <1 | | |
| Molybdenum ppm ASTM D5185(m) O O O Manganese ppm ASTM D5185(m) 1 O Magnesium ppm ASTM D5185(m) 1 O Calcium ppm ASTM D5185(m) 100 8666 Phosphorus ppm ASTM D5185(m) 670 5600 Zinc ppm ASTM D5185(m) 850 6588 Sulfur ppm ASTM D5185(m) 1600 2433 | | Boron | ppm | ASTM D5185(m) | 0 | <1 | | |
| Manganesse ppm ASTM D5185(m) 1 0 Magnesium ppm ASTM D5185(m) 0 5 Calcium ppm ASTM D5185(m) 100 866 Phosphorus ppm ASTM D5185(m) 670 560 Zinc ppm ASTM D5185(m) 850 658 Sulfur ppm ASTM D5185(m) 1600 2433 | I he condition of the oil is acceptable for the time in service. | Barium | ppm | ASTM D5185(m) | 0 | 0 | | |
| Magnesium ppm ASTM D5185(m) 0 5 Calcium ppm ASTM D5185(m) 100 866 Phosphorus ppm ASTM D5185(m) 670 560 Zinc ppm ASTM D5185(m) 850 658 Sulfur ppm ASTM D5185(m) 1600 2433 | | Molybdenum | ppm | ASTM D5185(m) | 0 | 0 | | |
| Calcium ppm ASTM D5185(m) 100 866 Phosphorus ppm ASTM D5185(m) 670 560 Zinc ppm ASTM D5185(m) 850 658 Sulfur ppm ASTM D5185(m) 1600 2433 | | Manganese | ppm | ASTM D5185(m) | 1 | 0 | | |
| Calcium ppm ASTM D5185(m) 100 866 Phosphorus ppm ASTM D5185(m) 670 560 Zinc ppm ASTM D5185(m) 850 658 Sulfur ppm ASTM D5185(m) 1600 2433 | | Magnesium | ppm | ASTM D5185(m) | 0 | 5 | | |
| Phosphorus ppm ASTM D5185(m) 670 560 Zinc ppm ASTM D5185(m) 850 658 Sulfur ppm ASTM D5185(m) 1600 2433 | | Calcium | | ASTM D5185(m) | 100 | 866 | | |
| Sulfur ppm ASTM D5185(m) 1600 2433 | | Phosphorus | ppm | ASTM D5185(m) | 670 | 560 | | |
| | | Zinc | ppm | ASTM D5185(m) | 850 | 658 | | |
| Visc @ 40°C cSt ASTM D7279(m) 47.9 42.8 | | Sulfur | ppm | ASTM D5185(m) | 1600 | 2433 | | |
| | | Visc @ 40°C | cSt | ASTM D7279(m) | 47.9 | 42.8 | | |





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Submitted By: ? Page 2 of 2