

#### Machine Id **70049** Component **Pump Drive** Fluid **GEAR OIL ISO 220 (--- GAL)**

## RECOMMENDATION

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### WEAR

All component wear rates are normal.

### CONTAMINATION

Appearance is layered. There is no indication of any contamination in the oil.

## FLUID CONDITION

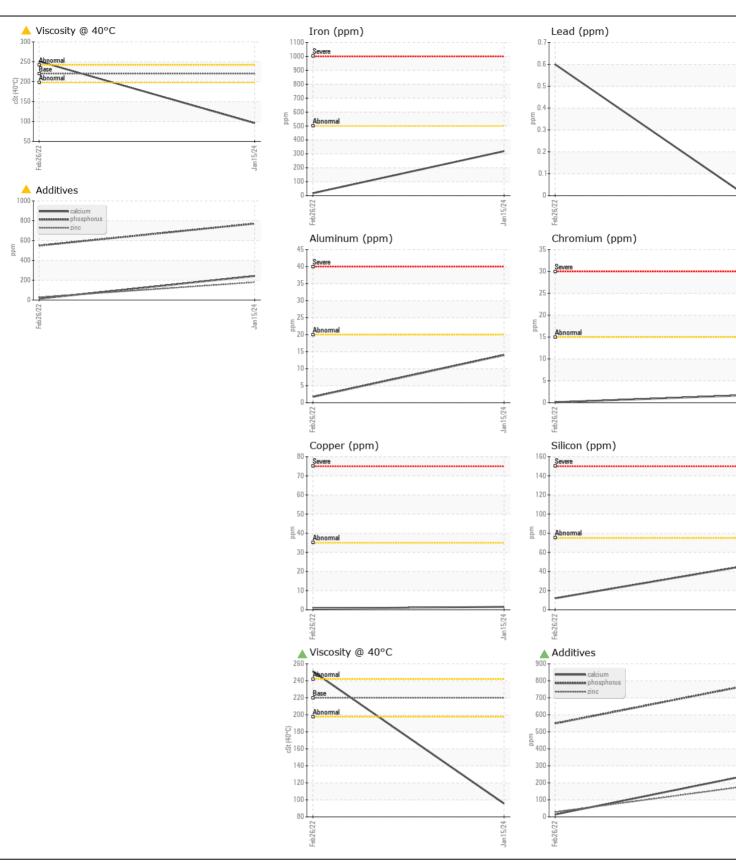
The oil viscosity is lower than normal. This plus the additive levels indicates the addition of a different brand, or type of oil. Confirm oil type.

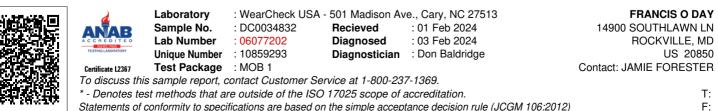
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TestUOMMethodLimit/MCurrentHistory1History2Sample NumberCClient InfoDC0034832DC0019507Sample DateClient InfoIS Jan 202426 Feb 2022Machine AgehrsClient InfoI0001000Filter AgehrsClient InfoI0001000Filter AgehrsClient InfoChangedChangedFilter AngedClient InfoN/AN/AN/ASample StatusClient InfoN/ANORMALChromiumppmASTM D5185>50031917NickelppmASTM D5185>10<1<NickelppmASTM D5185>10<1SilverppmASTM D5185>20142JuminumppmASTM D5185>2<14AurninumppmASTM D5185>2<14VanadiumppmASTM D5185>2<14VanadiumppmASTM D5185>2<14VanadiumppmASTM D5185>2<14VanadiumppmASTM D5185>2<14VanduppmASTM D5185>2<14SilicorppmASTM D5185>20A42Yand							
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Machine AgehrsClient InfoJon36782365Oil AgehrsClient Info00.00Filter AgehrsClient InfoChangedChangedOil ChangedClient InfoN/AN/AN/ASample StatusClient InfoN/AN/AN/AIronppmASTM D518m500319177ChromiumppmASTM D518m50031917.7NickelppmASTM D518m5004.1NickelppmASTM D518m5004.1SilverppmASTM D518m5004.1AluminumppmASTM D518m5201442.2LeadppmASTM D518m5201442.4VanadiumppmASTM D518m5201442.4VanadiumppmASTM D518m520142.4VanadiumppmASTM D518m520142.4VanadiumppmASTM D518m520142.4VanadiumppmASTM D518m520142.4VanadiumppmASTM D518m520142.4SiliconppmASTM D518m520142.4SiliconppmASTM D518m520AGENONE </th <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>DC0034832</th> <th>DC0019507</th> <th></th>	Sample Number		Client Info		DC0034832	DC0019507	
Oil Age Filter AgehrsClient InfoI0001000Filter AgehrsClient Info00Oil ChangedClient InfoN/AN/ASample StatusClient InfoN/AN/AIronppmASTM D5185>500319177ChromiumppmASTM D5185>500319177NickelppmASTM D5185>10<1<1NickelppmASTM D5185>10<1<1SilverppmASTM D5185<0<142AluminumppmASTM D5185>20142LeadppmASTM D5185>20142VandaumppmASTM D5185>20142VandaumppmASTM D5185>20142ValdaumppmASTM D5185>20142ValdaumppmASTM D5185>20142ValdaumppmASTM D5185>20142SiliconppmASTM D5185>20142SiliconppmASTM D5185>20Af2SiliconppmASTM D5185>20Af2SiliconppmASTM D5185>20Af2SiliconppmASTM D518	Sample Date		Client Info		15 Jan 2024	26 Feb 2022	
Filter Age OIIss Client InfoIss Client InfoChangedChangedGli ChangedClient InfoN/AN/AFilter ChangedQClient InfoN/AN/ASample StatusTATTENTIONNORMALIronppmASTM D5185n>500319177ChromumppmASTM D5185n>10<1<1NickelppmASTM D5185n>10<1<1NickelppmASTM D5185n>10<1<1SilverppmASTM D5185n>201422AluminumppmASTM D5185n>352<1CopperppmASTM D5185n>440<1VanadiumppmASTM D5185n>504612Vellow Metalscalar'VisualNONENONENONESiliconppmASTM D5185n>204612ValdervolusiNONENONENONESiliconppmASTM D5185n>204612ValdervolusiNONENONENONESiliconppmASTM D5185n>204612SoliconppmASTM D5185n>20AGESiliconppmASTM D5185n>10AGE <td< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>3678</th><th>2365</th><th></th></td<>	Machine Age	hrs	Client Info		3678	2365	
Oli ChangedClient InfoKhangedChangedChangedFilter ChangedOlient InfoN/AN/ASample StatusXTM D5185>5003191.7IronppmASTM D5185>102<1NickelppmASTM D5185>10<1<NickelppmASTM D5185>10<1<TitaniumppmASTM D5185>10<1<SilverppmASTM D5185>2014<<AluminumppmASTM D5185>352<1CopperppmASTM D5185>440<1VanadiumppmASTM D5185>440<VanadiumppmASTM D5185>52<1Vellow Metalscalar'visualNONENONENONESiliconppmASTM D5185>724612SiliconppmASTM D5185>724612SiliconppmASTM D5185>042SiliconppmASTM D5185>72Aff2SiliconppmASTM D5185>72Aff2SoliconppmASTM D5185>72Aff2SiliconppmASTM D5185>72Aff2<	Oil Age	hrs	Client Info		1000	1000	
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IronppmASTM D5185m>500 <b>319</b> 177ChromiumppmASTM D5185m>10<1<1<NickelppmASTM D5185m>10<1<1<TitaniumppmASTM D5185m<0<14<1<SilverppmASTM D5185m<0<14<1<AluminumppmASTM D5185m<0<142<LeadppmASTM D5185m<0<14<1<CopperppmASTM D5185m>4000<1YanadiumppmASTM D5185m>4000<<VanadiumppmASTM D5185m>4000<<Yellow Metalscalar*VisualNONENONENONE<SiliconppmASTM D5185m>754612Yellow Metalscalar*VisualNONENONENONE<SiliconppmASTM D5185m>2042Yellow Metalscalar*VisualNORMODERNONESiliconppmASTM D5185m>2042SoliconppmASTM D5185m>754612SoliconppmASTM D5185m>0AASoliconppmASTM D5185m>0NORENORESoliconscalar	Filter Changed		Client Info		N/A	N/A	
Chromium         ppm         ASTM D5185m         >10         2         <1	Sample Status				ATTENTION	NORMAL	
Chromium         ppm         ASTM D5185m         >10         2         <1	Iron			. 500	210	17	
NickelppmASTM D5185m>10<1							
TitaniumppmASTM D5185mGGISilverppmASTM D5185m0<1AluminumppmASTM D5185m>20142LeadppmASTM D5185m>20142CopperppmASTM D5185m>352<1TinppmASTM D5185m>40<1VanadiumppmASTM D5185m>40<1VanadiumppmASTM D5185m>40<1VanadiumppmASTM D5185m>754612Yellow Metalscalar*VisualNONENONENONESiliconppmASTM D5185m>754612SiliconppmASTM D5185m>2042WaterWC Method>0.2NEGNONESilitscalar*VisualNONENONENONESand/Dirtscalar*VisualNORNONENONEAppearancescalar*VisualNORMLALAYRDNORLLGodrscalar*VisualNORMLNCRMLNORMLAppearancescalar*VisualNORMLALAYRDNORLLBoronppmASTM D5185m15<10BariumppmASTM D5185m15<1<-1<					_		
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LeadppmASTM D5185mO<1				00	-		
Copper         ppm         ASTM D5185m         >35         2         <1				>20			
TinppmASTM D5185m>40<1				05	-		
VanadiumppmASTM D5185m000White Metalscalar*VisualNONENONENONENONEYellow Metalscalar*VisualNONENONENONENONESiliconppmASTM D5185m>754612PotassiumppmASTM D5185m>2042WaterWC Method>0.2NEGNEGSilitscalar*VisualNONEMODERNONEDebrisscalar*VisualNONENONENONESand/Dirtscalar*VisualNORMNONENORMAppearancescalar*VisualNORMNORMLNORMLOdorscalar*VisualNORMNORMLNORMLSodiumppmASTM D5185m50217BoronppmASTM D5185m15<10MaganeseppmASTM D5185m15<10MagnesiumppmASTM D5185m50113MagnesiumppmASTM D5185m50113PhosphorusppmASTM D5185m50180242144SoliumppmASTM D5185m50180249MagnesiumppmASTM D5185m50180249					_		
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Yellow Metalscalar*VisualNONENONENONE $\sim$ SiliconppmASTM D5185m>7546612PotassiumppmASTM D5185m>2042WaterWC Method>0.2NEGNEGSilitscalar*VisualNONEMODERNONEDebrisscalar*VisualNONENONENONESand/Dirtscalar*VisualNONENONENONEAppearancescalar*VisualNORMLALAYRDNORMLOdorscalar*VisualNORMLMOERNORMLSodiumppmASTM D5185m50217BariumppmASTM D5185m15<10ManganeseppmASTM D5185m50113MagnesiumppmASTM D5185m50113PhosphorusppmASTM D5185m50113SiturppmASTM D5185m50113MagnesiumppmASTM D5185m50113PhosphorusppmASTM D5185m5011249MagnesiumppmASTM D5185m5018028SiturppmASTM D5185m10018028MagnesiumppmASTM D5185m <td< th=""><th></th><th></th><th></th><th>NONE</th><th></th><th></th><th></th></td<>				NONE			
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Siltscalar*VisualNONEMODERNONEDebrisscalar*VisualNONENONENONESand/Dirtscalar*VisualNONENONENONEAppearancescalar*VisualNORMLALAYRDNORMLOdorscalar*VisualNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGSodiumppmASTM D5185m502177BoronppmASTM D5185m15<10MolybdenumppmASTM D5185m15<10MagnesiumppmASTM D5185m50113PhosphorusppmASTM D5185m50113PhosphorusppmASTM D5185m10018028SulfurppmASTM D5185m1250152976866	Potassium	ppm	ASTM D5185m	>20	4	2	
Debrisscalar*VisualNONENONENONESand/Dirtscalar*VisualNONENONENONEAppearancescalar*VisualNORML▲ LAYRDNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGSodiumppmASTM D5185m502177BoronppmASTM D5185m15<10MolybdenumppmASTM D5185m15<10MagnesiumppmASTM D5185m50113PhosphorusppmASTM D5185m50113ZincppmASTM D5185m350 <b>180</b> 28SulfurppmASTM D5185m125015805686	Water		WC Method	>0.2	NEG	NEG	
Sand/Dirtscalar*VisualNONENONEAppearancescalar*VisualNORML▲ LAYRDNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGSodiumppmASTM D5185m502177BoronppmASTM D5185m502177BariumppmASTM D5185m15<10MolybdenumppmASTM D5185m15<1<1MagnesiumppmASTM D5185m50113CalciumppmASTM D5185m50113PhosphorusppmASTM D5185m350 <b>180</b> 28ZincppmASTM D5185m12500180286	Silt	scalar	*Visual	NONE	MODER	NONE	
Appearancescalar*VisualNORML▲ LAYRDNORML····Odorscalar*VisualNORMLNORMLNORMLNORML····Emulsified Waterscalar*Visual>0.2NEGNEG····SodiumppmASTM D5185m50217····BoronppmASTM D5185m15<10····BariumppmASTM D5185m15<10····MolybdenumppmASTM D5185m15<10····ManganeseppmASTM D5185m50113····CalciumppmASTM D5185m501113····PhosphorusppmASTM D5185m350 <b>A 242</b> 144····PhosphorusppmASTM D5185m10018028····SulfurppmASTM D5185m100180286····	Debris	scalar	*Visual	NONE	NONE	NONE	
Odorscalar*VisualNORMLNORMLNORMLEmulsified Waterscalar*Visual>0.2NEGNEGSodiumppmASTM D5185m0<1BoronppmASTM D5185m50217BariumppmASTM D5185m15<10MolybdenumppmASTM D5185m15<10ManganeseppmASTM D5185m50113MagnesiumppmASTM D5185m501113PhosphorusppmASTM D5185m350 <b>A 242</b> 144PhosphorusppmASTM D5185m10018028SulfurppmASTM D5185m100152976866	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Emulsified Water         scalar         *Visual         >0.2         NEG         NEG            Sodium         ppm         ASTM D5185m         50         2         17            Boron         ppm         ASTM D5185m         50         2         177            Barium         ppm         ASTM D5185m         15         <1         0            Molybdenum         ppm         ASTM D5185m         15         <1         0            Manganese         ppm         ASTM D5185m         15         <1         3            Magnesium         ppm         ASTM D5185m         50         11         3            Phosphorus         ppm         ASTM D5185m         50         11         3            Phosphorus         ppm         ASTM D5185m         50         242         14            Phosphorus         ppm         ASTM D5185m         350         771         549            Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         125	Appearance	scalar	*Visual	NORML	LAYRD	NORML	
Sodium         ppm         ASTM D5185m         0         <1	Odor	scalar	*Visual	NORML	NORML	NORML	
Boron         ppm         ASTM D5185m         50         2         17            Barium         ppm         ASTM D5185m         15         <1         0            Molybdenum         ppm         ASTM D5185m         15         <1         0            Manganese         ppm         ASTM D5185m         15         <1         <1            Magnesium         ppm         ASTM D5185m         50         11         3            Calcium         ppm         ASTM D5185m         50         111         3            Phosphorus         ppm         ASTM D5185m         50         114             Zinc         ppm         ASTM D5185m         350         ▲ 771         5499            Sulfur         ppm         ASTM D5185m         100         180         28	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
Barium         ppm         ASTM D5185m         15         <1	Sodium	ppm	ASTM D5185m		0	<1	
Molybdenum         ppm         ASTM D5185m         15         <1	Boron	ppm	ASTM D5185m	50	2	17	
Manganese         ppm         ASTM D5185m         3         <1	Barium	ppm	ASTM D5185m	15	<1	0	
Magnesium         ppm         ASTM D5185m         50         11         3            Calcium         ppm         ASTM D5185m         50         ▲ 242         14            Phosphorus         ppm         ASTM D5185m         350         ▲ 771         549            Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         12500         15297         686	Molybdenum	ppm	ASTM D5185m	15	<1	<1	
Calcium         ppm         ASTM D5185m         50         ▲ 242         14            Phosphorus         ppm         ASTM D5185m         350         ▲ 771         549            Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         12500         15297         686	Manganese		ASTM D5185m		3	<1	
Calcium         ppm         ASTM D5185m         50         ▲ 242         14            Phosphorus         ppm         ASTM D5185m         350         ▲ 771         549            Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         12500         15297         686	Magnesium		ASTM D5185m	50		3	
Phosphorus         ppm         ASTM D5185m         350         ▲ 771         549            Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         12500         15297         686			ASTM D5185m	50	<b>242</b>	14	
Zinc         ppm         ASTM D5185m         100         180         28            Sulfur         ppm         ASTM D5185m         12500         15297         686	Phosphorus		ASTM D5185m	350		549	
Sulfur         ppm         ASTM D5185m         12500         15297         686	-					28	

Contact/Location: JAMIE FORESTER - FRAROCDC

# WEAR NORMAL CONTAMINATION ATTENTION FLUID CONDITION ATTENTION





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: JAMIE FORESTER - FRAROCDC