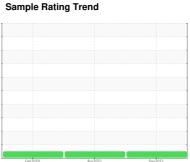


OIL ANALYSIS REPORT



NORMAL



3543-B - 3540-B CRYSTALLIZER

Gearbox

MOBIL MOBILGEAR 600 XP ISO 150 (44 Q

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sample Number Client Info WC0614178 WC0565730 WC0425046 Sample Date Client Info O2 Sep 2021 30 Apr 2021 24 Feb 2020 Apr 2021 Apr 2020 Apr 2020	S)		Fel	2020	Apr2021 Sep2	021	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		WC0614178	WC0565730	WC0425046
Oil Changed	Sample Date		Client Info		02 Sep 2021	30 Apr 2021	24 Feb 2020
Client Info	Machine Age	hrs	Client Info		0	0	0
NORMAL NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 history2 limit/base current history1 history2 history2 limit/base current history1 history2 limit/base current hist	Oil Age	hrs	Client Info		0	0	150
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >200 <1	Oil Changed		Client Info		N/A	N/A	Not Changd
Pron	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >15 0 <1 0 0 Titanium ppm ASTM D5185m 0 0 <1 0 Silver ppm ASTM D5185m 0 0 0 <1 0 Silver ppm ASTM D5185m 0 0 0 <1 0 Lead ppm ASTM D5185m >25 0 0 0 0 Lead ppm ASTM D5185m >20 0 0 0 Copper ppm ASTM D5185m >20 0 0 0 0 Tin ppm ASTM D5185m >20 0 0 0 0 Tin ppm ASTM D5185m >25 0 0 0 0 0 Anthimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Cadcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Iron	ppm	ASTM D5185m	>200	<1	<1	<1
Description	Chromium	ppm	ASTM D5185m	>15	0	0	0
Silver	Nickel	ppm	ASTM D5185m	>15	0	<1	0
Alluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead	Silver	ppm	ASTM D5185m		0	0	<1
Copper ppm ASTM D5185m >200 0 0 0 Tin ppm ASTM D5185m >25 0 0 0 Antimony ppm ASTM D5185m 0 4 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 23 20 27 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 0 1 0 Contaki	Aluminum	ppm	ASTM D5185m	>25	0	0	0
Trin	Lead	ppm	ASTM D5185m	>100	0	<1	0
Antimony ppm ASTM D5185m 0 4 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 0 1 0 CONTAMINANTS method limit/base	Copper	ppm	ASTM D5185m	>200	0	0	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Phosphorus ppm ASTM D5185m 0 1 0 0 Sulfur ppm ASTM D5185m 0 1 0 0 Sulfur ppm ASTM D5185m 0 1 0 0 Silicon </td <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>25</td> <th>0</th> <td>0</td> <td>0</td>	Tin	ppm	ASTM D5185m	>25	0	0	0
Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Borron ppm ASTM D5185m 23 20 27 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 0 1 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 <td>Antimony</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>4</td> <td>0</td>	Antimony	ppm	ASTM D5185m		0	4	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 23 20 27	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium ppm ASTM D5185m 0	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 <1 0 Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Contaminant ppm ASTM D5185m 0 0 0 0 Contaminant ppm ASTM D51	Boron	ppm	ASTM D5185m		23	20	27
Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 <1 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 0 1 0 Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 50 0 0 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Godium ppm ASTM D5185m >50 0 0 0 0 Potatissium ppm ASTM D5185m >20 0 0 0 0 Potatissium ppm ASTM D5185m >20 0 0 0 0 Vater	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 0 0 <1 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 314 298 332 Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m >50 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D6304 >0.2 0.010 0.009 0.007 Particles >4µm <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td><1</td> <td>0</td>	Molybdenum	ppm	ASTM D5185m		0	<1	0
Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 314 298 332 Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m >50 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Water % ASTM D5185m >0 0 0 0 Particles >4µm AST	Manganese	ppm	ASTM D5185m		0	0	0
Phosphorus ppm ASTM D5185m 314 298 332 Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m >50 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Water % ASTM D5185m >20 0 0 0 Particles >4µm ASTM D6304 >0.2 0 0 0 0 Particle	Magnesium	ppm	ASTM D5185m		0	0	<1
Zinc ppm ASTM D5185m 0 1 0 Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m >50 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Water % ASTM D5185m >20 0 0 0 Particles >4µm ASTM D6304 >2000 105.9 94.6 70 Particles	Calcium	ppm	ASTM D5185m		0	0	0
Sulfur ppm ASTM D5185m 10897 12811 14504 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m 0 <1	Phosphorus	ppm	ASTM D5185m		314	298	332
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 0 0 0 Sodium ppm ASTM D5185m 0 <1	Zinc	ppm	ASTM D5185m		0	1	0
Solition Solition	Sulfur	ppm	ASTM D5185m		10897	12811	14504
Sodium ppm ASTM D5185m 0 <1 0	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 0 Water % ASTM D6304 >0.2 0.010 0.009 0.007 opm Water ppm ASTM D6304 >2000 105.9 94.6 70 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >20000 4449 8050 10269 Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15	Silicon	ppm	ASTM D5185m	>50	0	0	0
Water % ASTM D6304 >0.2 0.010 0.009 0.007 opm Water ppm ASTM D6304 >2000 105.9 94.6 70 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >20000 4449 8050 10269 Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	<1	0
Opm Water ppm ASTM D6304 >2000 105.9 94.6 70 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >20000 4449 8050 10269 Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	0	0	0
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >20000 4449 8050 10269 Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Dil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Water	%	ASTM D6304	>0.2	0.010	0.009	0.007
Particles >4μm ASTM D7647 >20000 4449 8050 10269 Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	opm Water	ppm	ASTM D6304	>2000	105.9	94.6	70
Particles >6μm ASTM D7647 >5000 864 1378 2486 Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >640 54 42 168 Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm						
Particles >21μm ASTM D7647 >160 10 8 50 Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>5000	864	1378	2486
Particles >38μm ASTM D7647 >40 2 1 4 Particles >71μm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	•		ASTM D7647	>640	54	42	168
Particles >71µm ASTM D7647 >10 0 0 0 Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>160	10	8	50
Oil Cleanliness ISO 4406 (c) >21/19/16 19/17/13 20/18/13 21/18/15 FLUID DEGRADATION method limit/base current history1 history2	Particles >38µm		ASTM D7647	>40	2	1	4
FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm		ASTM D7647	>10	0	0	0
	Oil Cleanliness		ISO 4406 (c)	>21/19/16	19/17/13	20/18/13	21/18/15
Acid Number (AN) mg KOH/g ASTM D8045 0.707 0.766 0.731	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045		0.707	0.766	0.731



OIL ANALYSIS REPORT

