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Goulds Pumps

3196 i-FRAME Maintenance Checklist
OPERATION CHECKS

LUBRICATION

Recommended lubricants:
OIL: ISO VG68 High quality turbine oil
 For pumpage temperature over
 250° F (121° C) use synthetic oil
GREASE: NLGI No. 2, sodium or lithium based

OIL SUMP CAPACITY		
Frame	oz.	ml
STĪ	16	400
MTĪ	47	1400
LTĪ	47	1400
XLT-Ī	100	3000
Ī-17	100	3000

Relubrication Interval (Oil)

Power End Type	Mineral Oil	Synthetic Oil	Regreaseable
Standard	3 mo.	6 mo.	3 mo.
Sealed	3 mo.	24 mo.	N/A

Impeller Adjustment

Service Temperature	STĪ		MTĪ/LTĪ		XLT-Ī/Ī17	
	inches	mm	inches	mm	inches	mm
-20 to 150° F (-29 to 66° C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 175° F (79° C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 200° F (93° C)	0.005	0.13	0.008	0.20	0.015	0.38
Up to 250° F (121° C)	0.006	0.16	0.009	0.23	0.016	0.41
Up to 300° F (149° C)	0.007	0.19	0.010	0.26	0.017	0.44
Up to 350° F (177° C)	0.009	0.22	0.012	0.29	0.019	0.47
Up to 400° F (204° C)	0.010	0.25	0.013	0.32	0.020	0.50
Up to 450° F (232° C)	0.011	0.28	0.014	0.35	0.021	0.53
Up to 500° F (260° C)	0.012	0.30	0.015	0.38	0.022	0.56
Up to 550° F (288° C)	0.013	0.33	0.016	0.41	0.023	0.59
Up to 600° F (316° C)	0.014	0.36	0.017	0.44	0.024	0.62
Up to 650° F (343° C)	0.016	0.39	0.019	0.47	0.026	0.65
Up to 700° F (371° C)	0.017	0.42	0.020	0.50	0.027	0.68

ALIGNMENT Coupling to be aligned to within 0.002 in. T.I.R. for both parallel and angular readings

VIBRATION Maximum Vibration Level 0.25 in./sec unfiltered at inboard and outboard bearing location.

TEMPERATURE Normal Power End operating temperature 120 to 180° F (50 to 82° C)

Maximum Recommended Operating Temperature

Lubrication	Mineral Oil			Synthetic Oil		
	Without Cooling	With Finned Tube Oil Cooler	With High Temp. Option	Without Cooling	With Finned Tube Oil Cooler	With High Temp. Option
Flood Oil	350° F	500° F	700° F	450° F	500° F	700° F
Oil Mist	350° F	500° F	700° F	450° F	500° F	700° F
Grease	Up To 350° F Standard Pump With No modifications 350° To 500° F High Temperature Grease And Stuffing Box Cooling.					

SHAFT END PLAY in. (mm)				
Double row	(min)	STĪ		XLT-Ī, Ī17
		0.0011 (.028)	0.0013 (.033)	
(max)	0.0019 (.047)	0.0021 (.054)	N/A	0.0014 (.036)
	0.0007 (.012)	0.0009 (.022)	0.0010 (.026)	0.0010 (.026)
(max)	0.0010 (.026)	0.0012 (.030)	0.0015 (.038)	0.0015 (.038)

*Optional on STĪ, MTĪ, XLT-Ī, X-1 7

Form No. CK31961

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IMPELLER BALANCE CRITERIA (ISO G6.3)

0.011 oz.-in. lbs. @ 3600 RPM
 18 g-mm/Kg @ 3600 RPM

INDICATOR CHECKS

- Impeller Vane Runout - 0.005 in. T.I.R. Max.
- Shaft Straightness - 0.0005 in. T.I.R. Max.
- Shaft Runout - 0.002 in. T.I.R. Max.
- Stuffing Box Runout - 0.005 in. T.I.R. Max.

TORQUE VALUES

Location	Lubricated Threads		Dry Threads	
	inches	mm	inches	mm
Casing Bolts (370)	6" STĪ	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)	
	8" STĪ	20 FT-LBS (27 Nm)	30 FT-LBS (40 Nm)	
	MTĪ, LTĪ	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)	
Frame to Adapter Bolts (370B)	XLT-Ī, Ī17	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)	
	STĪ, MTĪ	20 FT-LBS (27 Nm)	30 FT-LBS (40 Nm)	
Bearing Clamp Ring Bolts (268A) Duplex Bearing Only	STĪ, MTĪ	10 IN-LBS (1.1 Nm)	17 IN-LBS (1.9 Nm)	
	LTĪ	55 IN-LBS (6.2 Nm)	83 IN-LBS (9.4 Nm)	
Bearing End Cover Bolts (371C)	XLT-Ī, Ī17	9 FT-LBS (12 Nm)	12 FT-LBS (16 Nm)	
	STĪ, MTĪ	55 IN-LBS (6.2 Nm)	83 IN-LBS (9.4 Nm)	
Dynamic Seal Cap Screws (268)	LTĪ	9 FT-LBS (12 Nm)	12 FT-LBS (16 Nm)	
	XLT-Ī, Ī17	9 FT-LBS (12 Nm)	12 FT-LBS (16 Nm)	

3196 BEARING TYPE

Size	Inboard	Outboard
STĪ	6207	7506
MTĪ	6309	7509
LTĪ	6311	7310
XLT-Ī, Ī17	6313	3313

REBUILD CHECKS

BEARING FITS & TOLERANCES

MODEL	STĪ in. (mm)	MTĪ in. (mm)	LTĪ in. (mm)	XLT-Ī, Ī17 in. (mm)
SHAFT O.D. INBOARD	1.3785 (35.013)	1.7722 (45.013)	2.1660 (55.015)	2.5597 (65.015)
	1.3781 (35.002)	1.7718 (45.002)	2.1655 (55.002)	2.5592 (65.002)
BEARING I.D. INBOARD	0.0010 (0.025) TIGHT	0.0010 (0.025) TIGHT	0.0012 (0.030) TIGHT	0.0012 (0.030) TIGHT
	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT
FRAME I.D. INBOARD	1.3780 (35.000)	1.7717 (45.000)	2.1654 (55.000)	2.5591 (65.000)
	1.3775 (34.988)	1.7712 (44.988)	2.1648 (54.985)	2.5585 (64.985)
BEARING O.D. INBOARD	2.8346 (72.000)	3.8370 (100.000)	4.7244 (120.000)	5.5118 (140.000)
	2.8341 (71.987)	3.8379 (100.022)	4.7253 (120.022)	5.5128 (140.025)
SHAFT O.D. OUTBOARD	1.1815 (30.011)	1.7722 (45.013)	1.9690 (50.013)	2.5597 (65.015)
	1.1812 (30.002)	1.7718 (45.002)	1.9686 (50.002)	2.5592 (65.002)
BEARING I.D. OUTBOARD	0.0008 (0.021) TIGHT	0.0010 (0.025) TIGHT	0.0010 (0.025) TIGHT	0.0012 (0.030) TIGHT
	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT	0.0001 (0.002) TIGHT
HOUSING I.D. OUTBOARD	1.1811 (30.000)	1.7717 (45.000)	1.9685 (50.000)	2.5591 (65.000)
	1.1807 (29.990)	1.7712 (44.988)	1.9680 (49.988)	2.5585 (64.985)
BEARING O.D. OUTBOARD	2.8346 (72.000)	3.8370 (100.000)	4.7244 (120.000)	5.5118 (140.000)
	2.8333 (72.019)	3.8379 (100.022)	4.7253 (120.022)	5.5128 (140.025)
BEARING I.D. OUTBOARD	0.0012 (0.032) LOOSE	0.0015 (0.037) LOOSE	0.0015 (0.037) LOOSE	0.0017 (0.043) LOOSE
	0.0000 (0.000) LOOSE	0.0000 (0.000) LOOSE	0.0000 (0.000) LOOSE	0.0000 (0.000) LOOSE
BEARING O.D. OUTBOARD	2.8346 (72.000)	3.8370 (100.000)	4.7244 (120.000)	5.5118 (140.000)
	2.8341 (71.987)	3.8364 (99.985)	4.7237 (119.982)	5.5111 (139.982)