



# ITT

# Goulds Pumps

## 3196 X-Series 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
STX	16	475
MTX	42	1250
LTX	48	1425
XLT-X	96	2850
X-17	96	2850

#### 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	STX		MTX/LTX		XLT/X17	
	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 350° To 500° F					
	Standard Pump With No modifications High Temperature Grease And Stuffing Box Cooling.					

#### SHAFT END PLAY in. (mm)

		STX	MTX	L TX	XLT-X, X17
Double row	(min)	0.0011 (.028)	0.0013 (.033)	N/A	0.0014 (.036)
	(max)	0.0019 (.047)	0.0021 (.054)		0.0023 (.058)
Duplex	(min)	*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 STX, MTX, XLT-X, X-17

#### ✓ IMPELLER BALANCE CRITERIA (ISO G6.3)

0.011 oz.-in./lb. @ 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	
	6" STX	8" STX	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)
Casing Bolts (370)	6" STX	20 FT-LBS (27 Nm)	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)
	MTX, LTX	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)	45 FT-LBS (60 Nm)
Frame to Adapter Bolts (370E)	XLT-X, X-17	30 FT-LBS (40 Nm)	45 FT-LBS (60 Nm)	45 FT-LBS (60 Nm)
	STX, MTX	20 FT-LBS (27 Nm)	30 FT-LBS (40 Nm)	30 FT-LBS (40 Nm)
Bearing Clamp Ring Bolts (236A) Duplex Bearing Only	LTX	10 IN-LBS (1.1 Nm)	17 IN-LBS (1.9 Nm)	83 IN-LBS (9.4 Nm)
		55 IN-LBS (6.2 Nm)		
Bearing End Cover Bolts (371C)	XLT-X, X17	9 FT-LBS (12 Nm)	12 FT-LBS (16 Nm)	
Dynamic Seal Cap Screws (265)	STX, MTX, LTX	55 IN-LBS (6.2 Nm)	83 IN-LBS (9.4 Nm)	
	XLT-X, X-17	9 FT-LBS (12 Nm)	12 FT-LBS (16 Nm)	
<b>3196 BEARING TYPE*</b>				
Size	Inboard	Outboard		
	STX 6207	5306A-C3	*7306 BECBM	
MTX 6309	5309AH-C3	*7309 BECBM		
LTX 6311		7310 BECBM		
XLT-X, X17 6313		5313A-C3	*7313 BECBM	

### REBUILD CHECKS

#### ✓ BEARING FITS & TOLERANCES

MODEL	STX in. (mm)	MTX in. (mm)	LTX in. (mm)	XLT-X, X-17 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	2.8946 (72.000)	3.9370 (100.000)	4.7244 (120.000)	5.5118 (140.000)
	2.8953 (72.019)	3.9379 (100.022)	4.7253 (120.022)	5.5128 (140.025)
SHAFT O.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 I.D. OUTBOARD	2.8946 (72.000)	3.9370 (100.000)	4.7244 (120.000)	5.5118 (140.000)
	2.8941 (71.987)	3.9364 (99.985)	4.7238 (119.985)	5.5111 (139.982)
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	2.8946 (72.000)	3.9370 (100.000)	4.3307 (110.000)	5.5118 (140.000)
	2.8953 (72.019)	3.9379 (100.022)	4.3316 (110.022)	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	2.8946 (72.000)	3.9370 (100.000)	4.3307 (110.000)	5.5118 (140.000)
	2.8941 (71.987)	3.9364 (99.985)	4.3301 (109.985)	5.5111 (139.982)