

✓ WEAR RING CLEARANCES (ENCLOSED IMPELLER ONLY)

Radial Ring Clearances - Enclosed Impellers						
Size		Impeller Ring OD		Casing Ring ID		Clearance
		Min	Max	Min	Max	
3x6-12	In	6.4771	6.4811	6.5111	6.5151	0.030-0.038
	Mm	164.52	164.62	165.38	165.48	0.76-0.96
4x6-12	In	7.3038	7.3078	7.3378	7.3418	0.030-0.038
	Mm	185.52	185.62	186.38	186.48	0.76-0.96
3x6-14	In	6.4771	6.4811	6.5111	6.5151	0.030-0.038
	Mm	164.52	164.62	165.38	165.48	0.76-0.96
4x6-14	In	7.3038	7.3078	7.3378	7.3418	0.030-0.038
	Mm	185.52	185.62	186.38	186.48	0.76-0.96
4x6-16	In	7.6975	7.7015	7.7315	7.7355	0.030-0.038
	Mm	195.52	195.62	196.38	196.48	0.76-0.96
6x8-14	In	8.2147	8.2187	8.2487	8.2527	0.030-0.038
	Mm	208.65	208.75	209.52	209.62	0.76-0.96
8x8-14	In	9.232	9.236	9.266	9.27	0.030-0.038
	Mm	234.49	234.59	235.36	235.46	0.76-0.96
10x10-14	In	10.5022	10.5062	10.5362	10.5402	0.030-0.038
	Mm	266.76	266.86	267.62	267.72	0.76-0.96
6x8-16	In	8.2147	8.2187	8.2487	8.2527	0.030-0.038
	Mm	208.65	208.75	209.52	209.62	0.76-0.96
4x6-19	In	8.2147	8.2187	8.2487	8.2527	0.030-0.038
	Mm	208.65	208.75	209.52	209.62	0.76-0.96
6x10-16	In	9.3511	9.3551	9.3851	9.3891	0.030-0.038
	Mm	237.52	237.62	238.38	238.48	0.76-0.96
8x10-16	In	10.7268	10.7308	10.7653	10.7693	0.0345-0.0425
	Mm	272.46	272.56	273.44	272.54	0.88-1.08
10x12-16	In	12.3803	12.3843	12.4189	12.4229	0.0345-0.0425
	Mm	314.46	314.56	315.44	315.54	0.88-1.08
14x14-16	In	13.5614	13.5654	13.6	13.604	0.0345-0.0425
	Mm	344.46	344.56	345.44	345.54	0.88-1.08
4x8-19	In	8.4456	8.4496	8.4796	8.4836	0.030-0.038
	Mm	214.52	214.62	215.38	215.48	0.76-0.96
6x10-19	In	9.3511	9.3551	9.3851	9.3891	0.030-0.038
	Mm	237.52	237.62	238.38	238.48	0.76-0.96
8x10-19	In	10.7268	10.7308	10.7653	10.7693	0.0345-0.0425
	Mm	272.46	272.56	273.44	272.54	0.88-1.08
10x12-19	In	12.774	12.778	12.8125	12.8165	0.0345-0.0425
	Mm	324.46	324.56	325.44	325.53	0.88-1.08
6x10-22	In	9.9416	9.9456	9.9756	9.9796	0.030-0.038
	Mm	252.52	252.62	253.38	2.5348	0.76-0.96
8x10-22	In	11.3961	11.4001	11.4346	11.4386	0.88-1.08
	Mm	289.46	289.56	290.44	290.54	0.0345-0.0425
12x14-19	In	13.9551	13.9591	13.9936	13.9976	0.88-1.08
	Mm	354.46	354.56	355.44	355.54	0.0345-0.0425
16x16-19	In	15.2539	15.2579	15.2924	15.2964	0.88-1.08
	Mm	387.45	387.55	388.43	388.53	0.0345-0.0425
10x12-22	In	12.774	12.778	12.8125	12.8165	0.0345-0.0425
	Mm	324.46	324.56	325.44	325.53	0.88-1.08
12x14-22	In	14.626	14.63	14.6645	14.6685	0.0345-0.0425
	Mm	371.5	371.6	372.48	372.58	0.88-1.08
14x16-22	In	16.5961	16.5575	16.5921	16.5961	0.0345-0.0425
	Mm	420.46	420.56	421.44	421.54	0.88-1.08
6x10-25	In	11.0812	11.0852	11.1197	11.1237	0.0345-0.0425
	Mm	281.46	281.56	282.44	282.54	0.88-1.08
8x12-25	In	12.774	12.778	12.8125	12.8165	0.0345-0.0425
	Mm	324.46	324.56	325.44	325.54	0.88-1.08
10x14-25	In	13.9551	13.9591	13.9936	13.9976	0.0345-0.0425
	Mm	354.46	354.56	355.44	355.54	0.88-1.08

Goulds 3180/85/81/86 Maintenance Checks



OPERATION CHECKS

✓ LUBRICATION

Recommended Lubricants:

Oil: ISO VG68 High Grade Turbine Oil [up to 180°F (80°C)]
ISO VG100 [T>180°F (80°C)]

Oil Sump Capacity		
Frame	Ounces	Liters
S	35	1
M	70	2
L	70	2
XL	105	3

Grease: NLGI No. 2 Sodium or Lithium Base [up to 230°F (110°C)]
NGLI No. 3 with oxidation stabilizers [T>230°F (110°C)]

Grease Amounts								
Frame	Initial Grease				Re-Grease ¹			
	Thrust (Angular Contact)		Radial (Cylindrical Roller)		Thrust (Angular Contact)		Radial (Cylindrical Roller)	
	Oz.	Grams	Oz.	Grams	Oz.	Grams	Oz.	Grams
S	7.0	185	6.0	165	2.5	70	2.5	70
M	10.0	290	7.0	180	4.0	115	2.5	70
L	17.0	475	10.0	280	7.0	200	4.0	115
XL	28.0	800	16.0	450	12.0	345	6.5	190

¹ Amount is based on purging half of the old grease from the housing reservoir.

Re-lubrication Interval:

Oil: Change after first 200 hours of operation for new bearings, every 3 months thereafter.

Grease: Re-grease every 3 months.

✓ IMPELLER ADJUSTMENT

Temperature, °F (°C)	Front Clearance, in (mm)
Up to 120° (50°)	0.015 (0.40)
120° (50°) - 210° (100°)	0.018 (0.45)
210° (100°) - 300° (150°)	0.020 (0.50)

✓ ALIGNMENT

Coupling to be aligned to within 0.002 in. TIR for both parallel and angular readings.

Cold Setting of Parallel Vertical Alignment (3180 and 3185 only)	
Temperature, °F (°C)	Set Driver Shaft, in (mm)
Up to 50° (10°)	0.002 (0.05) low
50° (10°) - 150° (65°)	0.001 (0.03) high
150° (65°) - 250° (120°)	0.005 (0.12) high
250° (120°) - 350° (175°)	0.009 (0.23) high
350° (175°) - 450° (220°)	0.013 (0.33) high

✓ TEMPERATURE

Temperature Limits	
Pump Configuration	Suitability
Grease Lube	Up to 350°F (180°C)
Oil Lube w/o Cooler	Up to 350°F (180°C)
Oil Lube with Cooler	Up to 450°F (230°C)

Note: Normal bearing operating temperatures run between 120° and 180°F (50° - 80°C). Bearing temperatures are generally 45°F (25°C) higher than the bearing housing/frame surface temperature.

REBUILD CHECKS

✓ SHAFT END PLAY

Shaft End Play, in (mm)				
Range	Frame			
	S	M	L	XL
Min	0.0	0.0	0.0	0.0
Max	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)	0.001 (0.025)

✓ BEARING TYPE, FITS, AND TOLERANCES

Bearing Types		
Frame	Inboard	Outboard
S	NUP-311ECP	7311 BECBY
M	NUP-312ECP	7312 BECBY
L	NUP-314ECP	7315 BECBY
XL	NUP-317ECP	7318 BECBY

✓ INDICATOR CHECKS

- Impeller Vane Runout: ≤12" .006 in. TIR Max
12" ≤ x ≤16" .007 in. TIR Max
16" ≤ x ≤25" .008 in. TIR Max
- Shaft Straightness - 0.0005 in. TIR Max
- Shaft Runout - 0.002 in. TIR Max
- Stuffing Box/Seal Chamber Runout - 0.005 in. TIR Max

Bearing Fits and Tolerance, in (mm)				
Fit	Frame			
	S	M	L	XL
Shaft OD	2.1666 (55.032)	2.3634 (60.030)	2.7571 (70.030)	3.3478 (85.034)
	2.1659 (55.014)	2.3626 (60.010)	2.7563 (70.010)	3.3470 (85.014)
TIGHT	0.0018 (0.047)	0.0018 (0.046)	0.0018 (0.046)	0.0021 (0.053)
TIGHT	0.0005 (0.013)	0.0004 (0.010)	0.0004 (0.010)	0.0005 (0.013)
Bearing ID	2.1654 (55.0)	2.3622 (60.0)	2.7559 (70.0)	3.3465 (85.0)
	2.1648 (54.986)	2.3616 (59.985)	2.7553 (69.985)	3.3457 (84.981)
Frame ID	4.7253 (120.023)	5.1191 (130.025)	5.9065 (150.025)	7.0876 (180.025)
	4.7244 (120.0)	5.1181 (130.0)	5.9055 (150.0)	7.0866 (180.0)
LOOSE	0.0015 (0.038)	0.0017 (0.043)	0.0017 (0.043)	0.0020 (0.051)
LOOSE	0 (0)	0 (0)	0 (0)	0 (0)
Bearing OD	4.7244 (120.0)	5.1181 (130.0)	5.9055 (150.0)	7.0866 (180.0)
	4.7238 (119.985)	5.1174 (129.982)	5.9048 (149.982)	7.0856 (179.974)
Shaft OD	2.1660 (55.016)	2.3628 (60.015)	2.9533 (75.014)	3.5444 (90.028)
	2.1655 (55.004)	2.3623 (60.002)	2.9528 (75.001)	3.5438 (90.013)
TIGHT	0.0012 (0.030)	0.0012 (0.030)	0.0011 (0.028)	0.0019 (0.048)
TIGHT	0.0001 (0.002)	0.0001 (0.002)	0 (0)	0.0005 (0.013)
Bearing ID	2.1654 (55.0)	2.3622 (60.0)	2.9528 (75.0)	3.5433 (90.0)
	2.1648 (54.986)	2.3616 (59.985)	2.9522 (74.986)	3.5425 (89.980)
Housing ID	4.7253 (120.023)	5.1191 (130.025)	6.3002 (160.025)	7.4815 (190.030)
	4.7247 (120.007)	5.1185 (130.010)	6.2994 (160.005)	7.4806 (190.007)
LOOSE	0.0015 (0.038)	0.0017 (0.043)	0.0020 (0.051)	0.0024 (0.061)
LOOSE	0.0003 (0.008)	0.0004 (0.010)	0.0002 (0.005)	0.0003 (0.008)
Bearing OD	4.7244 (120.0)	5.1181 (130.0)	6.2992 (160.0)	7.4803 (190.0)
	4.7238 (119.985)	5.1174 (129.982)	6.2982 (159.974)	7.4791 (189.970)

✓ TORQUE VALUES

Torque Values, ft-lbs (N-m)		
Location		Recommended Torque
Impeller Nut	S & M Groups	240 (325)
	L & XL Groups	600 (800)
Frame to Seal Chamber Bolts	S & M Groups	30 (40)
	L & XL Groups	50 (65)
Brg Retainer to Housing Screw	S & M Groups	15 (20)
	L & XL Groups	20 (25)
Casing Lug Bolt	12" - 19"	125 (170)
	22" - 25"	200 (270)
Suction Sideplate Nut	12" - 16"	10 (15)
	19" - 25"	20 (25)

Maximum Bearing Locknut Torque			
Group	Outboard Bearing Size	Locknut Size	Maximum Torque Ft-Lb (N-m)
S	SKF 7311 BECBY	N-11	90 (122)
M	SKF 7312 BECBY	N-12	110 (149)
L	SKF 7315 BECBY	AN-15	210 (285)
XL	SKF 7318 BECBY	AN-18	350 (475)