



Durco® Mark 3™ ISO

ISO 2858/5199

► Maintenance Checklist



⚠ DANGER

Read User Instructions **before** installing, operating or maintaining this pump.
Copies available from Flowserve pump representatives.

Specific requirements apply relating to the Product Certification, Permit or Conformity; refer to Conformity document provided with the machine and always consider during change management on the machine, e.g., when changing a seal.



Impeller Clearance¹, mm (in)

Temp, °C (°F)	Impellers up to 210 mm	Impellers 211 to 260 mm	Impellers > 260 mm	
			Standard	150 to 400 200 to 400 150 to 500
50 (122)	0.3 (0.012)	0.4 (0.016)	0.5 (0.020)	1.0 (0.040)
100 (212)	0.4 (0.016)	0.5 (0.020)	0.6 (0.024)	1.0 (0.040)
150 (302)	0.5 (0.020)	0.6 (0.024)	0.7 (0.028)	1.1 (0.044)
200 (392)	0.6 (0.024)	0.7 (0.028)	0.8 (0.032)	1.2 (0.048)
250 (482)	0.7 (0.028)	0.8 (0.032)	0.9 (0.036)	1.3 (0.052)

1. OP impellers are adjusted from the casing; RV impellers are adjusted from the cover. CL impellers do not require adjustments.

Shaft Data, mm (in)

Max. shaft deflection at seal chamber	0.050 (0.002)
Max. shaft runout at seal chamber	0.025 (0.001)
Max. shaft end play axially	0.050 (0.002)

ISO Frame Sizes

ISO Frame Size	Impeller Drive Thread		Shaft Diameter at the Coupling
	OP and RV	CL	
1	M22	M16	24 mm (0.945 in)
2	M30	M16	32 mm (1.260 in)
3	M39	M20	42 mm (1.654 in)
4	M48	-	48 mm (1.890 in)

Recommended Torques

Fastener	Screw Size	Torque, Nm (lbf-ft)
All except where otherwise stated	M8	16 (12)
	M10	25 (18)
	M12	35 (26)
	M16	80 (59)
	M20	130 (96)
Impeller nut	M12	16 (12)
	M16	41 (31)
	M20	80 (59)
	M22	106 (79)
	M24	135 (100)

Oil-Lubricated Bearing Types

ISO Frame Size	Medium Duty		Heavy Duty		Heavy Duty (Optional)		Approx. Oil Capacity ² , L (US fl. oz)
	Pump End	Drive End	Pump End	Drive End	Pump End	Drive End	
1	6207 C3	3306 C3	6207 C3	7306 pair back-to-back	NUP 207 C3	7306 pair back-to-back	0.5 (17)
2	6309 C3	3309 C3	6309 C3	7309 pair back-to-back	NUP 309 C3	7309 pair back-to-back	1.0 (34)
3	6311 C3	3311 C3	6311 C3	7311 pair back-to-back	NUP 311 C3	7311 pair back-to-back	0.8 (27)
4	6313 C3	3313 C3	6313 C3	7313 pair back-to-back	NUP 313 C3	7313 pair back-to-back	1.6 (54)

2. Sump volume only. Does not include oil in the constant level oiler.

Grease-Lubricated Bearing Types

ISO Frame Size	Medium Duty		Heavy Duty		Capacity, g (oz)	
	Pump End	Drive End	Pump End	Drive End	Pump End	Drive End
1	6207 Z C3	3306 Z C3	6207 Z C3	7306 pair back-to-back	6 (0.2)	14 (0.5)
2	6309 Z C3	3309 Z C3	6309 Z C3	7309 pair back-to-back	13 (0.5)	25 (0.9)
3	6311 Z C3	3311 Z C3	6311 Z C3	7311 pair back-to-back	18 (0.6)	35 (1.2)
4	6313 Z C3	3313 Z C3	6313 Z C3	7313 pair back-to-back	20 (0.7)	46 (1.6)

Recommended Oil Lubricants

Centrifugal Pump Lubrication	Oil	Splash/Force Feed/Purge Oil Mist/Pure Oil Mist Lubrication		
	Viscosity cSt @ 40°C	32	46	68
Oil Temperature Range ³	-5°C to 65°C (23°F to 149°F)	-5°C to 78°C (23°F to 172°F)	-5°C to 80°C (23°F to 176°F)	
Designation to ISO 3448 and DIN51524 part 2	ISO VG 32 32 HLP	ISO VG 46 46 HLP	ISO VG 68 68 HLP	
Oil Companies and Lubricants	BP Castrol ⁴	Energol HLP-HM 32	Energol HLP-HM 46	Energol HLP-HM 68
	ESSO ⁴	NUTO HP 32	NUTO HP 46	NUTO HP 68
	ELF/Total ⁴	ELFOLNA DS 32 Azolla ZS 32	ELFOLNA DS 46 Azolla ZS 46	ELFOLNA DS 68 Azolla ZS 68
	LSC (for oil mist)	LSO 32 (Synthetic oil)	LSO 46 (Synthetic oil)	LSO 68 (Synthetic oil)
	ExxonMobil (mineral oil) ⁴	Mobil DTE 24	Mobil DTE 25	Mobil DTE 26
	ExxonMobil (oil bath only — long life) ⁴	Mobil SHC 524 (synthetic oil) ⁵	Mobil SHC 525 (synthetic oil)	Mobil SHC 526 (synthetic oil)
	Q8 ⁴	Q8 Haydn 32	Q8 Haydn 46	Q8 Haydn 68
	Shell ⁴	Shell Tellus 32	Shell Tellus 46	Shell Tellus 68
	Chevron Texaco ⁴	Rando HD 32	Rando HD 46	Rando HD 68
	Wintershall (BASF Group) ⁴	Wiolan HS32	Wiolan HS46	Wiolan HS68
Fuchs ⁴	Renolin CL 32	Renolin CL 46	Renolin CL 68	

- Allow two hours for bearing temperature to stabilize. The final temperature will depend on the ambient, r/min, pumpage temperature and pump size. Check the grade capability where the ambient is less than -5°C (23°F).
- Use LSC for oil mist. Oil parameters provide flash point > 166°C (331°F), density > 0.87 @ 15°C (59°F), pour point of -10°C (14°F) or lower.
- ExxonMobil SHC 524 synthetic oil has a pour point temperature of -54°C (-65°F). This oil can be used for ambient temperatures as low as -50°C (-58°F).

Recommended Grease Lubricants

NLGI grade 2 is generally advised for horizontal bearing housings and NLGI 3 where the bearing housing is used vertically. The bearings are pre-greased. The NLGI 2 grade fitted in the factory with grease nipples is Mobil Polyrex EM grease which has a Polyurea soap incorporating a mineral oil. NLGI 3 grade is recommended for vertical applications, if vertical orientation was specified with order, then the NLGI 3 grease fitted in the factory for vertical application is Mobil Polyrex EM103 grease or equivalent which has a Polyurea soap incorporating a mineral oil. These greases are suitable for high bearing and ambient temperatures and ambient down to at least -20°C (-4°F). Below this ambient, specialist greases may be required and Shell Aeroshell 22 is normally required for the minimum ambient down to nitrile limitation of -45°C (-49°F). Different types or grades of greases must never be mixed. When applicable, food grade grease NSF H1 Klubersynth UH1 64-62 may be used and is NLGI grade 2.

Nomenclature

ISO Frame Size _____ **1 K 80 - 50 - *200 A - RV**

1 = Frame 1 with two-piece bearing housing
 2 = Frame 2 with two-piece bearing housing
 3 = Frame 3 with two-piece bearing housing
 4 = Frame 4 with two-piece bearing housing
 C = Close Coupled

Durco Mark 3 Range _____

Suction Branch Diameter (mm) _____

Discharge Branch Diameter (mm) _____

Configuration _____

* Blank = Standard
 R = Recessed
 P = Unitized Self-Primer
 N = Centerline Mounted High-Pressure 25 bar (363 psi)
 H = Foot Mounted High-Pressure 25 bar (363 psi)

Nominal Impeller Diameter (mm) _____

Hydraulics _____

A = Extended Flow Hydraulic
 B = ISO 2858 Standard Hydraulic
 C = ISO 2858 Hydraulic

Impeller Design _____

RV = Reverse Vane Impeller
 OP = Open Impeller
 CL = Closed Impeller

Vibration

Maximum bearing housing level:
 4.5 mm/s rms (0.177 in/sec rms)

IPS Beacon™2 Condition Monitor

Each Durco Mark 3 ISO pump is supplied with an IPS Beacon2 Condition Monitoring unit mounted on the bearing housing of the pump. The Beacon2 features a system of LED indicator lights that allow operators to ascertain overall pump health at a glance.

Indication	Pump Health Status
Blinking green	Current normal operation
Blinking red	Current alert condition
Blinking green and red	Current normal operation but previously occurred alert condition
Rapid flashing or solid red	Battery is depleted

Please note there are no user serviceable parts in this unit and it is not possible to replace the battery. Once the battery is depleted or exhausted, the complete unit must be replaced. Please consult the IPS Beacon2 User Instructions manual (26999949) available from Flowserve.com.

For sales and product information, go to www.flowserve.com.

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