

# Durco® Mark 3™ ISO MAG

Sealless magnetic drive single-stage centrifugal pumps according to: ISO 2858, ISO 5199 and ISO 15783



## MAINTENANCE CHECKLIST



# DANGER



Read User Instructions before installing, operating or maintaining this pump.

Copies are available from Flowserve pump representatives.

Durco Mark 3 pumps contain extremely strong permanent Samarium Cobalt magnets, which could affect the functioning of pacemakers and implanted heart defibrillators. If you wear these devices, keep a sufficient distance to the magnets.

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.



### Maintenance intervals

Routine (daily/weekly)	Periodic (every six months)
Check operating behavior. Ensure noise, vibration and bearing temperatures are normal.	Check foundation bolts for security of attachment and corrosion.
Check that there is no abnormal fluid or lubricant leaking.	Check level and condition of lubricant.
Check coupling protection and lantern/bearing bracket protection. <sup>b</sup>	Check coupling for correct alignment and worn driving elements. <sup>c</sup>
Check level and condition of lubricant.	
Check hourly usage to determine if bearing lubricant requires changing. <sup>a,b</sup>	

**a.** Only for long-coupled execution with oil lubrication bearing

**b.** On open-design execution, over 180°C (356°F)

**c.** Only for long-coupled execution

### ISO frame sizes

Description	Magnet system	Wetted shaft nut	Drive end shaft diameter at coupling
35	1.2	at impeller	24 mm (0.94 in)
45	3	at inner magnet rotor	32 mm (1.26 in)
45	4.6	at impeller	32 mm (1.26 in)
55	4.6	at impeller	42 mm (1.65 in)

### Clearances

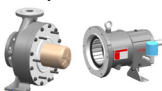
Description	Value
Difference in diameter between impeller and casing wear rings	between 0.3 and 0.5 mm (0.01 to 0.02 in)
Axial movement of the shaft between the slide bearings	approximately 1 mm (0.04 in)
Radial slide bearings clearance	between 0.05 and 0.1 mm (0.002 and 0.004 in)
Axial plain bearing grooves depth	should not be less than 1.9 mm (0.07 in)

### Tightening torques

Screw	Size	Torque, Nm (lbf-ft)
All except where otherwise stated	M8	26
	M12	59
	M16	98

**NOTE:** Uneven tightening could lead to heavy material stresses and improper alignment of sealing surfaces.

### Back pullout



Contained back pullout



Normal back pullout

### Containment shells



Ceramic and metal containment shells are interchangeable by replacing the clamping ring.

## Bearing types

Frame sizes	Oil lubricated	Grease lubricated (grease for life)
Frame 35	6208	6208-2RS1
Frame 45	6210	6208-2RS1
Frame 55	6014	6014-2RS1

## Lubrication

Temperature range <sup>a</sup>	> 80°C (176°F)	< 80°C (176°F)		< 0°C (32°F)
		n ≤ 1,500 rpm	n > 1,500 rpm	
Velocity	Complete range	n ≤ 1,500 rpm	n > 1,500 rpm	Complete range
Lubricating oil to DIN 51517	CL 100	CL 68	CL 46	CL 22
Kin. viscosity @ 40°C (104°F) in mm <sup>2</sup> /s	100	61.2 to 74.8	41.8 to 50.8	19.8 to 24.2
Grease bearings change interval	Replace after 17,500 hours or every 24 months			
Oil change interval	4,000 hours or at least every six months			
Oil filling volume (approx.)	Frame 35: 0.25 L		Frames 45 and 55: 0.4 L	

**a.** It normally takes two hours for bearing temperature to stabilize, and the final temperature will depend on the ambient, rpm, pumpage temperature and pump size.

The unit must be filled to the center of the site glass before starting. Do not overfill. The oil level should be checked when the pump is stopped.

## Bearing cartridge position

Size	Installation position at speed (rpm)		Size	Installation position at speed (rpm)	
	< 1,800	> 1,800		< 1,800	> 1,800
40-25-125	1	1	40-25-200	1	1
50-32-125	1	1	50-32-200	1	1
65-40-125	1	1	65-40-200	1	1
80-50-125	1	1	80-50-200	1	1
100-65-125	1	1	100-65-200	1	2
40-25-160	1	1	125-80-200	1	2
50-32-160	1	1	125-100-200	1	2
65-40-160	1	1	50-32-250	1	2
80-50-160	1	1	65-40-250	1	2
40-25-200	1	2	80-50-250	1	2
50-32-200	1	2	100-65-250	1	2
65-40-315	1	2	125-80-250	1	2
80-50-315	1	2	125-100-250	1	2
100-65-315	1	2	150-125-250	1	2
			200-150-250	1	2

**Installation position 1:** Install the bearing cartridge 3242 such that the two partial flow holes (Ø 9 mm [0.35 in]) are on the horizontal axis and in line with the holes in the casing covers (1220.1 and 1220.2). This ensures the partial flow returns through the holes to the back of the impeller.

**Installation position 2:** Install the bearing cartridge 3242 such that the partial flow holes (Ø 9 mm [0.35 in]) are on the vertical axis. The small partial flow hole (Ø 6 mm [0.24 in]) will then be on the horizontal axis, above one of the holes in the casing covers (1220.1 and 1220.2). This ensures the partial flow returns through this small hole to the back of the impeller.

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