



Durco[®] ESP3 Vertical Immersion Sump Pump

► Maintenance Checklist

⚠ DANGER

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

Recommended Lubrication (Lineshaft Bearings)

Recommended Grease		Mobile Polyrex EP 2 or Equivalent
Lubrication Interval ¹	Clean Liquids	8 hours
	Abrasive Liquids	4 to 6 hours
Lubrication Amount	Intermediate Bearings	11 g (0.4 oz)
	Bottom Bearing	18 g (0.7 oz)

1. Interval depends on process conditions.

Recommended Lubrication (Ball Bearings)²

Recommended Grease ³		Mobile Polyrex EP 2 (or compatible Polyurea with mineral oil)	
Lubrication Intervals ⁴	Under 71°C (160°F)		
	71 to 80°C (160 to 175°F)		
	80 to 94°C (175 to 200°F)		
Lubrication Amounts ⁵	Group 1	Initial Lube	50 g (1.8 oz)
		Relubrication	20 g (0.7 oz)
	Group 2	Initial Lube	75 g (2.7 oz)
		Relubrication	30 g (1.1 oz)
	Group 3	Initial Lube	115 g (4.1 oz)
		Relubrication	45 g (1.6 oz)

2. Maximum allowable thrust bearing housing temperature is 82°C (180°F).

3. Consult the driver's manufacturing details for lubrication information.

4. Assuming no contamination with good maintenance and operation practices. Bearing temperatures are up to 16°C (30°F) higher than housing temperature.

5. If new bearings are not lubricated, they should be packed half-full prior to installation and the housing lubricated as shown in table.

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

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Durco ESP3 pumps are manufactured in: Chesapeake, VA (USA).

USA and Canada
Flowserve Corporation
5215 North O'Connor Blvd.
Suite 2300
Irving, Texas 75039-5421 USA
Telephone: +1 937 890 5839

Europe, Middle East, Africa
Flowserve Corporation
Parallelweg 13
4878 AH Etten-Leur
The Netherlands
Telephone: +31 76 502 8100

Latin America
Flowserve Corporation
Martín Rodríguez 4460
B1644CGN-Victoria-San Fernando
Buenos Aires, Argentina
Telephone: +54 11 4006 8700
Telefax: +54 11 4714 1610

Asia Pacific
Flowserve Pte. Ltd.
10 Tuas Loop
Singapore 637345
Telephone: +65 6771 0600
Telefax: +65 6862 2329

Lineshaft Bearing Installation Details

Shaft Diameter, mm (in)	Bearing Insertion Depth, mm (in)
28.58 (1.125)	3.2 (0.125)
38.10 (1.500)	3.2 (0.125)
53.98 (2.125)	3.2 (0.125)

Bearing Size

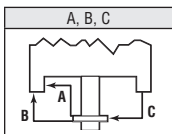
Pump Group Size	Ball Bearing Size
Group 1-1E	7308
Group 2-2E	7310
Group 3-3E	7313

Impeller Clearance Settings⁶

Temperature	Clearance ⁷ , mm (in)
< 71°C (160°F)	0.46 (0.018) +/- 0.07 (0.003)
> 71°C (160°F)	0.64 (0.025)

- For reverse vane impellers, the clearance is set to the cover while the open impeller clearance is set to the casing.
- Refer to the factory when rapid sump temperature fluctuations occur.

Motor Tolerances



TIR Dimensions

Frame Size	Tolerances		
	A, mm (in)	B, mm (in)	C, mm (in)
143TCV-256TCV	0.10 (0.004)	0.10 (0.004)	0.05 (0.002)
284TCV-286TCV	0.10 (0.004)	0.10 (0.004)	0.08 (0.003)
324TCV-445TCV	0.18 (0.007)	0.18 (0.007)	0.08 (0.003)

Tolerance Details

Description	Group 1		Group 2		Group 3	
	Max. I.D., mm (in)	Min. O.D., mm (in)	Max. I.D., mm (in)	Min. O.D., mm (in)	Max. I.D., mm (in)	Min. O.D., mm (in)
Shaft	NA	28.42 (1.119)	NA	37.95 (1.494)	NA	53.82 (2.119)
Lineshaft Bearings	Carbon	28.994 (1.1415)	NA	38.583 (1.5190)	NA	54.458 (2.1440)
	ARHT	29.096 (1.1455)	NA	38.545 (1.5175)	NA	54.445 (2.1435)
	Bronze	28.766 (1.1325)	NA	38.329 (1.5090)	NA	54.204 (2.1340)
	Rubber	28.766 (1.1325)	NA	38.329 (1.5090)	NA	54.242 (2.1355)
	PTFE	28.956 (1.1400)	NA	38.481 (1.5150)	NA	54.356 (2.1400)
	Iron	28.766 (1.1325)	NA	38.329 (1.5090)	NA	54.204 (2.1340)
Bearing Holder and Adapter	41.288 (1.6255)	NA	50.787 (1.9995)	NA	73.114 (2.8785)	NA
Adjusting Sleeve O.D. (under ball bearing)	40.013 (1.5753)	40.002 (1.5749)	50.013 (1.9690)	50.002 (1.9686)	65.016 (2.5597)	65.004 (2.5592)
Bearing Body I.D. (over ball bearing)	90.04 (3.545)	90.02 (3.544)	110.03 (4.332)	110.01 (4.331)	140.03 (5.513)	140.00 (5.512)

Recommended Bolt Torques for Lubricated or PTFE-coated Fasteners^{8, 9}

Description	Group 1		Group 2		Group 3	
	Size, in	Torque, Nm (lb-ft)	Size, in	Torque, Nm (lb-ft)	Size, in	Torque, Nm (lb-ft)
Column/column adapter cap screws and nuts	5/8	122 (90)	5/8	122 (90)	3/4	210 (155)
Discharge elbow/casing	1/2	61 (45)	1/2	61 (45)	5/8	122 (90)
	5/8	122 (90)	5/8	122 (90)	3/4	210 (155)
Manifold/mounting plate cap screws	1/2	61 (45)	1/2	61 (45)	1/2	61 (45)
Bearing body/column cap screws	3/8	24 (18)	1/2	50 (37)	1/2	50 (37)
Cap screw cover/adapter (token bolts)	3/8	27 (20)	3/8	27 (20)	3/8	27 (20)
					1/2	54 (40)
Gland packed box studs and nuts	3/8	As required	1/2	As required	1/2	As required
Gland seal chamber studs and nuts	3/8	19 (14)	1/2	41 (30)	1/2	41 (30)
Socket head cap screws – all	1/2	54 (40)	1/2	54 (40)	1/2	54 (40)

8. For non-lubricated or coated threads, add 25% to the values above.

9. Gasket joint torque values are for unfilled PTFE gaskets. Other gasket materials may require additional torque to seal. Exceeding metal joint torque values is not recommended.