Durco® Mark 3™ Group 4
High-Capacity Chemical Process Pump

Experience In Motion
The all new Durco Mark 3 Group 4 pump offers increased capacity with proven Durco performance and reliability along with ASME B73.1 design features. Offering flow rates to 3861 m³/h (17 000 US gpm) — well beyond ASME size limits — the Durco Mark 3 Group 4 pump is ideal for high-flow, high-head applications in the chemical processing and general industries.

Benefits that impact your bottom line
The Durco Mark 3 Group 4 pump incorporates many of the proven reliability- and performance-enhancing features of the Durco Mark 3 family of pumps.

- Increased reliability and mechanical seal life due to the ideal seal environment created by the SealSentry™ seal chamber
- Renewable, high-efficiency performance over the life of the pump enabled by the reverse vane impeller with balance holes
- Fast and accurate impeller setting with the Durco external impeller adjustment mechanism
- Lower-cost predictive maintenance facilitated by two-piece power end with self-contained bearing housing and adaptor
Operating parameters

- Flows to 3861 m³/h (17,000 gpm)
- Heads to 125 m (410 ft)
- Discharge pressures to 19 bar (275 psi)
- Temperatures from -73°C to 204°C (-100°F to 400°F); ductile iron: -29°C to 204°C (-20°F to 400°F)

Typical applications

- Bulk tank transfer
- Chemical transfer
- Wastewater scrubber
- Cooling tower feed
- Ethanol processing
- Light chemical slurries
- Corn wet milling
- Reverse osmosis plants
- Evaporator feed

13 sizes available

The expanded hydraulic range of the Durco Mark 3 Group 4 pumps comprises 13 sizes on two bearing frame platforms:

- 41K12x10-16
- 41K14x14-16
- 41K8x4-19
- 41K8x6-19
- 41K10x6-19
- 41K12x10-19
- 41K14x12-19
- 42K10x8-19
- 42K16x16-19
- 42K12x8-22
- 42K12x10-22
- 42K12x12-22
- 42K12x14-22

Complementary pump designs

- Durco Mark 3 ASME standard chemical process pump
- Durco Mark 3 ISO standard chemical process pump
- FRBH paper stock pump
The Durco Mark 3 Group 4 is designed for maximum reliability and efficiency in demanding high-capacity applications.

**Features and benefits**

Reverse vane impeller is the only impeller design that offers *repeatable pump performance* throughout the life of the pump. Open impellers available.

Durco SealSentry seal chambers feature flow modifiers that *extend seal life* by providing self-flushing capability.

Standard sealed bearing housing with labyrinth seals *keep lubricant in and contaminants out*.

Two-piece power end design with self-contained bearing housing *reduces maintenance costs* and *facilitates predictive maintenance*.

Heavy-duty radial and thrust bearings are selected for long *life and reliability*.

External micrometer impeller adjustment accurately sets impeller clearance in 20 seconds, *simplifying maintenance*.

Rugged shaft and bearing design *extends bearing life* and reduces shaft deflection and vibration.

Back pull-out design *reduces maintenance costs* by allowing the rotating element to be removed without removing the casing, piping or motor.
Reverse vane impeller lowers total cost of pump ownership

The new Mark 3 Group 4 pump features a reverse vane impeller for outstanding efficiency and performance. This exclusive Durco design also reduces downtime by simplifying maintenance and extending bearing and seal life.

• Repeatable efficient performance — With only one critical running tolerance (between the impeller and the rear cover), the reverse vane impeller assures like-new efficiency and performance each time it’s adjusted.

• Fast and accurate impeller setting — The reverse vane impeller is the only impeller design that takes full advantage of the back pull-out feature. Impeller and mechanical seal settings can be done in the shop — on the bench — instead of adverse field conditions.

• Lower repair and replacement costs — Abrasive wear is on the machinable rear cover, rather than the more expensive casing. Furthermore, there are no costly sideplates, which can provide leak paths.

• Prolonged seal and bearing life — Balance holes maintain low, predictable seal chamber pressure and thrust loads.

Increase pump reliability with SealSentry seal chambers

The new Durco Mark 3 Group 4 pump incorporates proven Durco SealSentry seal chamber technology that increases pump reliability while reducing operating costs. Flow modifiers induce flow within the seal chamber to effectively remove solids, vapors and heat away from the seal. The result is a much more seal-friendly environment that enables:

• Improved seal performance, reliability and life
• Reduced seal maintenance and repair costs
• The use of less costly seals and eliminates the need for external seal flush plans

Reliability-enhancing construction

• Precision machined, metal-to-metal, inter-connecting faces at the casing, seal chamber, adapter and bearing housing provide reliable sealing and optimum concentricity.
• Robust, solid shaft ensures less than 0.05 mm (0.002 in) deflection at the seal face and low L/D4 ratio, thereby extending mechanical seal life.
The Durco Mark 3 Group 4 power end incorporates all the proven reliability-, maintenance- and performance-enhancing features of the Durco ANSI 3A power end. These mitigate the risk of mechanical failure under even the harshest operating conditions.

- Double-row angular contact outboard and single-row, deep groove inboard bearings provide excellent axial and radial load support.
- External micrometer adjustment mechanism enables accurate impeller clearance setting in 20 seconds, restoring pump efficiency.
- Rugged two-piece bearing housing design features a separate adaptor and a self-contained bearing housing that greatly simplify maintenance and assembly operations.
- Metal-to-metal construction assures a true running and concentric shaft, extending bearing and mechanical seal life.
- Flowserve Bearing Gard™ non-wearing bearing isolators
- IPS Beacon™ vibration and temperature monitor
- Oil fill port sealed with NPT plug
- Magnetic drain plug
- Oil splash lubrication standard; optional greased and oil mist

With only two sizes, the power end also offers a high degree of interchangeability that makes it ideal for predictive maintenance programs and helps to lower inventory carrying costs. A fleet of pumps can be kept in high working order, with only a few spare bearing housings rotated among them.

All new Durco Mark 3 Group 4 pumps incorporate the IPS Beacon 2 power end condition monitor. Mounted on top of the bearing housing, the IPS Beacon 2 continuously monitors the bearings and provides a visual signal that a current or past alert condition has occurred. LEDs indicate when thrust bearing temperature or vibration levels exceed set-point limits.
## Materials of construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
<th>Class</th>
<th>Material</th>
<th>Class</th>
<th>Material</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing</td>
<td>Ductile iron</td>
<td>ASTM 395 Gr 60-40-18</td>
<td>316 SS</td>
<td>316 SS</td>
<td>CD4MCuN</td>
<td>Alloy 20</td>
</tr>
<tr>
<td>Cover</td>
<td>316 SS</td>
<td>ASTM A744 Gr CF-8M</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
</tr>
<tr>
<td>Impeller</td>
<td>316 SS</td>
<td>ASTM A744 Gr CF-8M</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
</tr>
<tr>
<td>Shaft sleeve</td>
<td>316 SS</td>
<td>ASTM A744 Gr CF-8M</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
<td>CD4M-Duplex</td>
</tr>
<tr>
<td>Sleeved shaft</td>
<td>Carbon steel</td>
<td>4140BC steel</td>
<td>Carbon steel</td>
<td>4140BC steel</td>
<td>Carbon steel</td>
<td>4140BC steel</td>
</tr>
<tr>
<td>Solid shaft</td>
<td>Duplex</td>
<td>A276 S32205</td>
<td>Duplex</td>
<td>A276 S32205</td>
<td>Duplex</td>
<td>A276 S32205</td>
</tr>
<tr>
<td>Impeller nut</td>
<td>Duplex</td>
<td>A276 S32205</td>
<td>Duplex</td>
<td>A276 S32205</td>
<td>Duplex</td>
<td>A276 S32205</td>
</tr>
<tr>
<td>Bearing housing</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
</tr>
<tr>
<td>Bearing house adaptor</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
<td>Cast iron</td>
<td>ASTM A48 class 25B</td>
</tr>
</tbody>
</table>

## Range chart

**Flow Rate – 60 Hz**

![Flow Rate – 60 Hz chart](chart_image)

**Flow Rate – 50 Hz**

![Flow Rate – 50 Hz chart](chart_image)
Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only and should not be considered certified or as a guarantee of satisfactory results by reliance thereon. Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding any matter with respect to this product. Because Flowserve is continually improving and upgrading its product design, the specifications, dimensions and information contained herein are subject to change without notice. Should any question arise concerning these provisions, the purchaser/user should contact Flowserve Corporation at any one of its worldwide operations or offices.

©2019 Flowserve Corporation. All rights reserved. This document contains registered and unregistered trademarks of Flowserve Corporation. Other company, product, or service names may be trademarks or service marks of their respective companies.