Ruby Air Operated Diaphragm Pumps

www.alphadynamicpumps.co.uk
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New pump line with a brand new design that offers reinforced pumping potentials. The updated designing provides the possibility to use also other materials at the hydraulic parts without decreasing the efficiency in pressure. Plus, it offers even bigger performance provided with economy.

Ruby Pumps composition codes

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<tr>
<th>Pump model</th>
<th>Body</th>
<th>Center block</th>
<th>Diaphragms</th>
<th>Valve Seats</th>
<th>Balls</th>
<th>O-ring</th>
<th>Other options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini 017</td>
<td>V: PVDF+CF</td>
<td>A: Aluminium</td>
<td>E: EPDM Conductive</td>
<td>E: EPDM</td>
<td>E: EPDM</td>
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</tr>
<tr>
<td>Ruby 012</td>
<td>A: Aluminium</td>
<td>AN: Alu Nickel Plated</td>
<td>T: TFM+EPDM Conductive</td>
<td>T: TFM+EPDM</td>
<td>T: TFE</td>
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<tr>
<td>Ruby 020</td>
<td>PC: PP+CF</td>
<td>ST: PTFE+TANTOPRENE (Backup)</td>
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<td>ST: PTFE+TANTOPRENE</td>
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<td>Ruby 060</td>
<td>Ruby 160</td>
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<td>Ruby 350</td>
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Main features

Available in PP, PP+CF, PVDF, ALUMINIUM and AISI 316 STAINLESS STEEL

- Use in potentially explosive atmospheres (conductive series)
- Easy disassembling and re-assembling
- High efficiency degree
- Economical air consumption, ecological designing
- Pressure / capacity high efficiency
- Oil free operation
- Very low level of icebarriers, up to zero in high wear outs
- New air valve designing, fully controled air passage, with the potential to use additional ice barrier protectives.

- Easy trasportation
- New generation diaphragms with embodied inner / outer piston
- New generation PTFE diaphragms of embodied type for long-life operation (compound)
- Potential to be submersible
- Possibility to be used in dirty environments due to their closed designing
- Easy entrance orientation changing (manifold reverse)
- Automatic suction
How it works

The Ruby diaphragm pump is an air-operated, positive displacement, self-priming pump. These drawings show flow pattern through the pump upon it’s initial stroke. It is assumed the pump has no fluid in it, prior to it’s initial stroke.

**FIGURE 1** The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on it’s suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

**FIGURE 2** When the pressurized diaphragm, diaphragm A, reaches the limit of it’s discharge stroke, the air valve redirects pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off it’s seat, while the opposite discharge valve ball is forced onto it’s seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off it’s seat allowing the fluid being pumped to fill the liquid chamber.

**FIGURE 3** At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches it’s original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.
Installation

**DRUM TRANSFER**

**SELF PRIMING**

**IMMERSED**

**TWIN SUCTION & DELIVERY MANIFOLD**

**POSITIVE SUCTION HEAD**

**TWIN SUCTION MANIFOLD**

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**ATEX Certificate**

**ALPHADYNAMIC PUMPS** has stored the documentation certifying ATEX compliance according to Directive 94/9/CE for its ranges of Ruby air operated diaphragm pumps with the SGS Baseefa Limited certification body. They are manufactured in a CONDUCT, class II 2 GD c IIB T4 version.

The equipment user is responsible for classifying its area of use.

On the other hand, the manufacturer shall identify and affix the certification class of the manufactured equipment.
Advance Unified Diaphragms Featuring

- Easy installation and maintenance
- Excellent service life
- Inventory cost reduction
- Improved performance
- Greater displacement per cycle
- No center hole, elimination of potential leak paths.
- There is no need for the main axis to be insured
- They can be screwed and unscrewed without the use of tools

Advance Unified Diaphragm Offers:

The prominences decrease the stretching of the PTFE during the regression and prevent it from cracking.

Exclusive conical shape provides excellent service life, suction lift and lower start-up pressure.

Backing ribs sustain and guide the diaphragm's flexibility for extended life and reduced cavitation on suction stroke.

Oversized integrated plate supports nearly 50% of the diaphragm through the entire dynamic motion.