Miniature Piston Pumps
5 Piston & Cartridge Design

Pressures to 276 bar (4000 psi)
Displacements from .156 to .865 cc/rev (.01 to .05 in³/rev)
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Miniature Piston Pumps: Pumping Efficiencies up to 90% Allow Effective Use of .156 to .865 cc/rev Piston Pumps at Pressures to 276 bar (4000 psi)

Breakthrough designs come and go, succeed and fail. The really good designs pass the test of time and continue to succeed. The Oildyne Division mini pump is one of these good designs.

Mini pumps handle hydraulic oil, brake fluid, ultra-low viscosity fluids and many non-water based fluids with equal ease. Need greater versatility? These fixed displacement axial piston pumps are efficient and powerful too. Tests run on 15.1 cSt (78 SSU) fluid at 38°C (100°F) at 207 bar (3000 psi) showed a 90% volumetric efficiency. Capable of 276 bar (4000 psi) operation, mini pumps are available in nine displacements ranging from .156 to .865 cc/rev (.01 to .053 in³/rev).

Compact size, versatility, efficiency, power and speed are combined in a very competitive package in the Oildyne mini pumps. They’re suitable for many applications requiring compact power including automotive, marine, medical and military uses.

Mini Pump Features
• .156 to .865 cc (.01 to .053 in³) displacement per revolution
• Designed for open circuit systems
• Fixed displacement – Output flow is determined by motor drive speed.
• Operating temperature range: -40° to +149°C (-40° to 300°F)
• Inlet port on side or rear
• Will operate efficiently on extremely thin (5 cSt) fluid
• Tandem pumps, special configurations and bi-rotational pumps are available.

Cartridge Piston Pumps: Compact Fluid Power Redefined by the Oildyne Division.

This cartridge piston pump raises the standard for compact fluid power! This three-piston cartridge style pump is an efficient, fixed displacement pump that provided high performance at a very economical price. Pressure ratings up to 276 bar (4000 psi), driven speeds up to 5000 RPM, and the ability to provide a variety of seal types make this the solution to your unique application. This uni-rotational pump is capable of pumping non-water based fluids ranging in viscosity from solvents to thick fluids.

The three-piston cartridge pump maintains the performance and flexibility of the Oildyne five-piston, standalone pump while reducing the overall package dimensions.

This ultra-compact cartridge piston pump, approximately 33 mm (1.3 in) in diameter and 51 mm (2 in) long, is designed to fit into your specially machined manifold allowing for a custom package that fits your space needs.

Three standard displacements are available all within the existing physical size. (The internal cam angle determines the displacement).

Contact Oildyne Division for a drawing showing the cavity details as well as the motor shaft and flange details needed for your motor to drive and mount this pump to your manifold.

Cartridge Pump Features
• .1 to .33 cc (.006 to .020 in³) displacement per revolution
• Designed for manifold mounting
• Fixed displacement – Output flow is determined by motor drive speed.
• Operating temperature range: -40° to +149°C (-40° to 300°F)
• Will operate efficiently on extremely thin (5 cSt) fluid
• Counter clockwise rotation (from pump drive end)

See Page 34 for Cartridge Pump ordering code
## Miniature Piston Pump Basic Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Displacement</th>
<th>Continuous bar (psi)</th>
<th>Intermittent bar (psi)</th>
<th>Maximum bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In³ per rev.</td>
<td>241 (3500)</td>
<td>258 (3750)</td>
<td>276 (4000)</td>
</tr>
<tr>
<td></td>
<td>cc /rev</td>
<td>241 (3500)</td>
<td>258 (3750)</td>
<td>276 (4000)</td>
</tr>
<tr>
<td></td>
<td>Max RPM @ rated pressure W/O supercharge</td>
<td>4400</td>
<td>4000</td>
<td>3800</td>
</tr>
</tbody>
</table>

### Notes:
1. Tandem pumps must have the larger displacement called out first.
2. Tandem pumps are not available with the standard AC or DC motors - only standard shaft or 56C kit.
3. Drive shaft input torque must be under 3.5 Nm (525 in-oz) (equivalent to HRS865 operating at 207 bar (3000 psi); refer to catalog performance curves for torque data).
4. Bi-rotational pumps require the side port as case drain.
5. For configurations not shown above please contact Oildyne.
Performance Data

Performance data shown are the average results based upon a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with 15.1 cSt (78 SSU) fluid.

Performance Data
Note: Performance data is for reference only.
Typical Performance Data
at 12 VDC as assembled with a standard DC motor

Note: Performance data is for reference only.

Average Input Torque
Speed: 3000 RPM

Note: Performance data is for reference only.
Performance Data

DC Motor Duty Cycle Characteristics
Current Draw vs On Time General Guidelines at 21°C (70°F)

- S1: 12 VDC = 12.6 A
- S1: 24 VDC = 2.6 A

AC Motor and Miniature Piston Pump Performance

115 VAC Motor Flow Rate 60 Hz

NOTES:
The 115 VAC performance shown is at 60 Hz.
At 230 VAC the current draw will be approximately ½ of that shown.
At 50 Hz, the flow will be about 5/6 of that shown and the current will be about 25% higher than the 60 Hz values.
Performance data shown is for reference only.
Dimensions

Miniature Piston Pump

Basic Pump

Standard 1/3 HP DC Permanent Magnet Motor with Pump

Standard 1/3 HP AC Motor with Pump

Note: All dimensions in mm (inches).
Miniature Piston and Cartridge Pumps

Tandem Miniature Piston Pump

Note: tandem pumps are not completely isolated from each other.

Dimensions

Note: All dimensions in mm (inches)

Cartridge Pump Ordering Code

COMPONENT
C Cartridge Piston Pump

ROTATION
L CCW (from shaft input end)

SEALS
B Buna N
V Fluorocarbon
E EPR

SHAFT/MOTOR
OO No motor or shaft

PUMP SIZE
CODE DISP.
050 .17 cc/rev
075 .25 cc/rev
100 .33 cc/rev
**Specifications**

Displacements: .1 cc/rev (.006 in³/rev.) to .33 cc/rev (.020 in³/rev.)

Speeds: Up to 5000 rpm maximum

Pressures: 207 bar (3000 psi) maximum continuous

276 bar (4000 psi) maximum intermittent

Temperature Ranges: Up to 120°C (250°F)

Seals Available: Variety

Weight: .19 kg (.42 lbs)

Fluids Compatibility: Variety, not water-based

Specifications subject to change without notice.
Performance data is for reference only.

This cartridge piston pump continues Oildyne’s tradition of producing innovative products which can be customized to specific industries. Please call us to discuss how this cartridge pump can be used in your unique application. Detailed cavity and motor interface dimensions are available on request. Ask for Oildyne drawing 500059

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**Cartridge Pump Dimensions**

(with sample manifold requirements)

All dimensions in mm (inches)

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**Cartridge Dimensions**

(All Displacements)

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**Sample Manifold Requirements**

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10. Buyer’s Obligation: Rights of Seller. To secure payment of all sums due or otherwise, Seller retains a security interest in all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorize Seller as its attorney to execute and file on Buyer’s behalf all documents Seller deems necessary to perfect its security interest.

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14. Force Majeure. Seller does not assume the risk and is not liable for delay or failure to perform any of Seller’s obligations by reason of events or circumstances beyond its reasonable control (hereinafter “Events of Force Majeure”). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agencies or countries, acts of nature, delays in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller’s reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller’s right to enforce that provision in the future. Violation of any provision of this agreement by legislation or other party shall not invalidate the remaining provisions herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days prior written notice. Buyer may terminate this agreement by giving Seller thirty (30) days’ prior written notice. Buyer may also terminate this agreement for any reason (including without limitation, default) by giving Seller thirty (30) days prior written notice. If Buyer is sold or divested by or to any governmental entity, any foreign political party or official thereof, any candidate for foreign office, any commercial official or foreign government, any foreign government official, any foreign private company, or any other person to the extent of a substantial business, then Seller may terminate this agreement by giving thirty (30) days prior written notice.

17. Governing Law. This agreement and the sale and delivery of all Products are deemed to have taken place, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and in all courts of competent jurisdiction, and the laws of any other country to which Products sold hereunder are exported. Buyer shall also agree to any applicable industry standards and Product information. If Seller provides Product or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

18. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, trademarks, copyrights, trade dress and trade secrets (“Intellectual Property Rights”). Seller will defend at its expense and will pay Buyer’s costs of defending any claim or damage suit alleged or claimed to have been infringing, and any settlement or damages awarded in an action brought against Buyer based upon an allegation that a Product sold pursuant to this agreement infringes the Intellectual Property Rights of a third party, Seller’s obligation to defend and indemnify Buyer is conditioned upon Buyer notifying Seller, in writing, of any infringement claim or suit as soon as practicable after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including any negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at Seller’s option, (a) replace, modify or alter the Product to make it non-infringing, or offer to accept return of the Product and refund the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section constitute Seller’s sole and exclusive liability and Buyer’s sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior agreements, understandings or negotiations or oral or written agreements respecting the subject matter are herein merged. The terms contained herein may not be modified unless in writing and signed by an authorized representative of Seller.

20. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, rules, codes, and regulations promulgated by any federal, state, local, or international governmental or regulatory authority, including without limitation the U. K. Bribery Act, the FCPA, the U.S. Anti-Kickback Act (“Anti-Kickback Act”) and the U.S. Food Drug and Cosmetic Act ("FDCA") each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official or foreign governmental official for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.

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