Contributing to Society through Science and Technology

Environmentally Friendly Hydraulic Technology

Our factory is located near Lake Biwa, the largest fresh water lake in Japan. It provides the daily life water for 15 million people living near by. The Shimadzu production system is strictly controlled not to pollute the beautiful water source.
Environmentally Friendly Hydraulic Technology

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Contributing to Society through Science and Technology
Shimadzu Corporate Profile

Since Shimadzu's Foundation, our business activities have always been conducted with the aim of "Contributing to Society through Science and Technology".

1875
Genzo Shimadzu started his business in Kyoto

1961
Hydraulic equipment section was established in Aircraft division

2002
Koichi Tanaka received the Nobel Prize in Chemistry for developing a novel method for mass spectrometric analyses of biological macromolecules

2011
50th anniversary of hydraulic business

Genzo Shimadzu Sr. (the founder)
Born in 1839 in Kyoto, the second son of Seibei Shimadzu, a maker of Buddhist altars. In 1875, inspired with the idea of raising the profile of science in Japan, he left the family business and started to manufacture physical and chemical instruments for educational purposes in Kiyamachi-Nijo.

Genzo Shimadzu Jr.
Born in 1869 in Kyoto, the first son of Genzo Sr. His childhood name was Umejiro but with the sudden death of his father in 1894, he became head of the family and assumed the name of his father. During his lifetime he was credited with 178 inventions and was chosen as one of the ten greatest inventors of Japan.

Business Field

Industrial Machinery and Equipment
Our development of advanced-level manufacturing and testing equipment is meeting the needs of next-generation production in cutting-edge industrial fields.

Analytical Instruments
Our cutting-edge analysis technologies are contributing to research, technology development, and quality control in a wide variety of fields.

Testing and Measuring Instruments
Our measuring, testing, and inspection technologies are helping to ensure greater urban safety and day-to-day peace of mind.

Medical Systems
Our advanced diagnostic imaging system is contributing to the early detection and early treatment of disease, opening up a new world of possibilities for medical facilities.

Aircraft Equipment
Our wide range of aircraft equipment is increasing both the safety and comfort of passengers to reduce the effects of stress during flight.
Hydraulic Gear Pumps

For the past 50 years, Shimadzu gear pumps have achieved total customer satisfaction through high efficiency, stable performance, and superior durability. Our gear pumps are used in a wide range of applications, including material handling equipment, specially-equipped vehicles, construction, and agricultural machinery.

Single Pumps

High Pressure Cast Iron Body Gear Pumps

SGP300, 400, 500, 600 Series

| Rated pressure | 250 bar / 3,625 psi |
| Displacement   | 10.4 ~ 60.0 cm³ / 0.63 ~ 3.79 in³ |
| Max speed      | 3,500 min⁻¹ |

- High volumetric efficiency at high temperature
- Compact design and high durability

High Pressure Cast Iron Body Low-noise Gear Pumps

SMG300, 400, 600 Series

| Rated pressure | 250 bar / 3,625 psi |
| Displacement   | 8.3 ~ 62.1 cm³ / 0.51 ~ 3.79 in³ |
| Max speed      | 3,000 ~ 3,500 min⁻¹ |

- Low noise
- High volumetric efficiency at high temperature
- Compact design and high durability
Hydraulic Gear Pumps

Single Pumps

Cast Iron Body Gear Pumps

SGP1 series

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure</td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>16.2 ~ 36.6 cm³ / 0.99 ~ 2.23 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>4,000 min⁻¹</td>
</tr>
</tbody>
</table>

- High volumetric efficiency at high temperature with specialized cast iron body

SGP2 series

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure</td>
<td>245 bar / 3,553 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>20.3 ~ 52.8 cm³ / 1.24 ~ 3.22 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>3,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Maintain high performance at high pressure with ceramic coated cast iron body

Aluminum Body Gear Pumps

YP10 series

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure</td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>0.8 ~ 7.0 cm³ / 0.05 ~ 0.43 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>4,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Lightweight achieved by aluminum body
- Compact design due to 2 piece body structure

YP15 series

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rated pressure</td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>5.1 ~ 15.9 cm³ / 0.31 ~ 0.97 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>4,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Lightweight achieved by aluminum body
- Compact design due to 2 piece body structure
Multi-Section Pumps

SD1, SD Series
- SD1: Tandem pump (combination of SGP1 + SGP1)
- SD: Tandem pump (combination of SGP2 + SGP2)

ST Series
- Triple pump (combination of SGP2 + SGP2)

DDG440 Series

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<table>
<thead>
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<tbody>
<tr>
<td>Rated pressure</td>
<td>250 bar / 3,625 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>No.1 Pump: 16.0 ~ 32.8 cm³ / 0.98 ~ 2.00 in³</td>
</tr>
<tr>
<td></td>
<td>No.2 Pump: 8.2 ~ 18.1 cm³ / 0.50 ~ 1.10 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>4,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Compact tandem pump featuring mono-body block design to provide both 1st and 2nd pump section
- Common inlet port for 1st section and 2nd section

DNP21S Series

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Rated pressure</td>
<td>No.1 Pump: 206 bar / 2,987 psi</td>
</tr>
<tr>
<td></td>
<td>No.2 Pump: 39 bar / 566 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>No.1 Pump: 4.5 ~ 14.1 cm³ / 0.27 ~ 0.86 in³</td>
</tr>
<tr>
<td></td>
<td>No.2 Pump: 2.7 ~ 4.5 cm³ / 0.16 ~ 0.27 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>3,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Special slim body designed for use as charge pump
- Inlet piping free due to direct inlet port located in the front side

MRD2 Series

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Rated pressure</td>
<td>No.1 Pump: 172 bar / 2,538 psi</td>
</tr>
<tr>
<td></td>
<td>No.2 Pump: 172 bar / 2,538 psi</td>
</tr>
<tr>
<td>Displacement</td>
<td>No.1 Pump: 12.1 ~ 15.1 cm³ / 0.74 ~ 0.92 in³</td>
</tr>
<tr>
<td></td>
<td>No.2 Pump: 7.54 ~ 9.56 cm³ / 0.46 ~ 0.58 in³</td>
</tr>
<tr>
<td>Max speed</td>
<td>3,000 min⁻¹</td>
</tr>
</tbody>
</table>

- Simple structure due to reasonable design
- Lightweight achieved by aluminum body

Shimadzu Hydraulic Equipment
Multi Control Valves

Shimadzu has achieved great customer satisfaction with high quality hydraulic control valves for industrial vehicles. Shimadzu hydraulic control valves are specially designed for forklift trucks application, and have excellent performance and durability.

Manual Stack Valves (MSV Series)

**MSV04 Series**
- Rated flow: 85 L/min / 22.5 GPM
- Rated pressure: 206 bar / 2,987 psi
- Truck capacity: 1.0 - 3.5 ton / 2,200 ~ 7,700 lbs

**MSV06 Series**
- Rated flow: 120 L/min / 31.7 GPM
- Rated pressure: 206 bar / 2,987 psi
- Truck capacity: 3.5 - 5.5 ton / 7,700 ~ 12,000 lbs

**MSV08 Series**
- Rated flow: 177 L/min / 46.8 GPM
- Rated pressure: 206 bar / 2,987 psi
- Truck capacity: 6 - 10 ton / 13,000 ~ 22,000 lbs

Operability of all valves can be fully customized to manufacturers’ preference.
Options below are available for all series.
- a) Lift lock
- b) Flow divider
- c) Flow regulator
- d) Unloading function

Proportional Control Valves (SSV Series)

**SSV04 Series**
- Rated flow: 85 L/min / 22.5 GPM
- Rated pressure: 206 bar / 2,987 psi
- Truck capacity: 1.0 - 3.5 ton / 2,200 ~ 7,700 lbs

**SSV06 Series**
- Rated flow: 120 L/min / 31.7 GPM
- Rated pressure: 206 bar / 2,987 psi
- Truck capacity: 3.5 - 5.5 ton / 7,700 ~ 12,000 lbs

Operability of all valves can be fully customized to manufacturers’ preference.
Options below are available for all series.
- a) Lift lock
- b) Flow divider
- c) Flow regulator
- d) Unloading function
Shimadzu Hydraulic Equipment

**Power Packs**

Shimadzu Power Pack is an integration of small gear pumps (YP10), electric motors, oil tank, valves and other accessories in a compact package. Shimadzu Power Packs are widely used as great hydraulic power source for specially-equipped vehicles, agricultural machinery and lift devices.

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### AU Series

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Rated pressure</strong></td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td><strong>Pump size</strong></td>
<td>0.8 ~ 7 cm³ / 0.05 ~ 0.43 in³</td>
</tr>
<tr>
<td><strong>Motor power</strong></td>
<td>0.4 ~ 2.2 kW (3 phase 200 V)</td>
</tr>
</tbody>
</table>

- Relief valve and check valve are available

### PPL Series

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Rated pressure</strong></td>
<td>172 bar / 2,494 psi</td>
</tr>
<tr>
<td><strong>Pump size</strong></td>
<td>0.8 ~ 7 cm³ / 0.05 ~ 0.43 in³</td>
</tr>
<tr>
<td><strong>Tank size</strong></td>
<td>1 ~ 4 L / 0.26 ~ 1.06 gal</td>
</tr>
</tbody>
</table>

- 3rd bearing equipped for radial road

### DPF Series

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<tbody>
<tr>
<td><strong>Rated pressure</strong></td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td><strong>Pump size</strong></td>
<td>0.8 ~ 7 cm³ / 0.05 ~ 0.43 in³</td>
</tr>
<tr>
<td><strong>Tank size</strong></td>
<td>1 ~ 11 L / 0.26 ~ 2.91 gal</td>
</tr>
<tr>
<td><strong>Motor power</strong></td>
<td>0.7 ~ 1.7 kW (12/24 V)</td>
</tr>
</tbody>
</table>

- Silent relief valve is available

### PWPM Series

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<tbody>
<tr>
<td><strong>Rated pressure</strong></td>
<td>206 bar / 2,987 psi</td>
</tr>
<tr>
<td><strong>Pump size</strong></td>
<td>1 ~ 2.5 cm³ / 0.06 ~ 0.15 in³</td>
</tr>
<tr>
<td><strong>Tank size</strong></td>
<td>2 ~ 3 L / 0.53 ~ 0.79 gal</td>
</tr>
<tr>
<td><strong>Motor power</strong></td>
<td>1.2 ~ 2.0 kW (12/24 V)</td>
</tr>
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</table>

- Steel cover to shut off the noise and water

### BPS Series

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</thead>
<tbody>
<tr>
<td><strong>Rated pressure</strong></td>
<td>88 bar / 1,276 psi</td>
</tr>
<tr>
<td><strong>Pump size</strong></td>
<td>3 ~ 7 cm³ / 0.19 ~ 0.43 in³</td>
</tr>
<tr>
<td><strong>Tank size</strong></td>
<td>0.2 L / 0.05 gal</td>
</tr>
</tbody>
</table>

- Compact electro-hydraulic steering system

* The operability of all power packs can be fully customized to manufacturer’s preference.
Efforts to Environment

One of our top management initiatives is balancing business operations with global environmental conservation. Shimadzu actively contributes to building a sustainable society by developing environmental measurement instruments along with various other products, participating in environmental conservation activities, and engaging in events that contribute to society.

Environmentally Friendly Systems at Seta Works

We have been developing environment-friendly systems at our Seta Works. One of them is the wastewater treatment system. The air discharged from special “Aquablast” nozzles enhances oxygen dissolving efficiency to create a high-oxygen environment that promotes the action of aerobic bacteria, which purify the wastewater. Another environment-friendly system is the recycling system at Seta Works by adopting aqueous cutting liquid instead of oil which was widely used in the past. The dirty cutting liquid from each machine is pumped and collected in the “dirty tank”, purified by a special filter and returned to the “clean tank”, and then re-supplied back to every machine. This system makes it possible to reduce the use of water because we do not have to drain the wastewater.
Efforts to Environment

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Global Network

Group Companies: 72 (28 in Japan, 44 overseas)

Sales and Operations

1. Shimadzu Corporation Global Marketing Group
   1-8-1, Tsukinowa, Otsu-city, Shiga 520-2152, Japan
   Phone: +81-77-543-6358  Fax: +81-77-543-6359
   www.shimadzu.com

2. Shimadzu Industrial Equipment
   www.spi-sie.com
   Santa Clara Office
   2340-C Walsh Avenue, Santa Clara, California 95051, U.S.A.
   Phone: 1 (408) 566-0960  Fax: 1 (408) 566-0961

3. Shimadzu Europa GmbH
   Albert-Hahn-Strasse 6-10, 47269 Duisburg, F.R. Germany
   Phone: 49 (203) 7687-0  Fax: 49 (203) 7666-25

4. Shimadzu Korea Vacuum Equipment Co., Ltd.
   2F, Jisamro 338-8, Giheung-gu, Yongin-si, Gyeonggi-do, 446-909 Korea
   Phone: 82-31-283-0242/0243  Fax: 82-31-283-0263
   www.shimadzu.kr

Manufacturing base

5. Shimadzu Precision Technology, Ltd
   1-8-1, Tsukinowa, Otsu-city, Shiga 520-2152, Japan

6. Tianjin Shimadzu Hydraulic Equipment Co., Ltd.
   No. 15, Xinghua Sizhi Road, Xiqing Economic Development Area, Tianjin, 300385 P.R. China

We have been developing environment-friendly systems at our Seta Works. One of them is the wastewater treatment system. The air discharged from special “Aquablaster” nozzles enhances oxygen dissolving efficiency to create a high-oxygen environment that promotes the action of aerobic bacteria, which purify the wastewater. Another environment-friendly system is the recycling system at Seta Works by adopting aqueous cutting liquid instead of oil which was widely used in the past. The dirty cutting liquid from each machine is pumped and collected in the “dirty tank”, purified by a special filter and returned to the “clean tank”, and then re-supplied back to every machine. This system makes it possible to reduce the use of water because we do not have to drain the wastewater.

Eco-friendly Systems at Seta Works

- Preserve local ecosystem
- Clean local areas
- Prevent global warming
- Chemical material management
- Recycling resources
- Water management
- Support for project by United Nations University
- Support for Social Environmental Activities
- Support for new energy
- Support for new materials
- Environmental analysis (Water, air, etc)
- Support for mobility development
- Environmental analysis

Shimadzu Industrial Equipment

EC97J1031