The Terumo® Advanced Perfusion System 1 is the heart-lung machine of choice: designed for today’s practice and engineered for tomorrow’s challenges. Its built-in features and modular design allow perfusionists to configure the platform to keep pace with their practices’ evolving needs.
**Terumo® Advanced Perfusion System 1**

**The Heart-lung Machine of Choice for Your Evolving Practice**

- Compact, space-saving base with choice of brackets and holders facilitates the right pump configuration without expensive hardware costs.

- System design allows users to define safety responses and pump responses.

- Myocardial protection is paramount with standard and advanced multiple cardioplegia delivery options:
  - Multi-ratio cardioplegia delivery
  - Volume and timed delivery

- Central Control Monitor features fast processing, a high-resolution screen, and updated software.

- Base- or pole-mounted pumps with rotating race-ways help reduce circuit length and hemodilution.

- Pump status and safety messages can be viewed on both the pumps’ local controls or the Central Control Monitor.

- A unique electronic gas blender integrated into the base can be controlled locally or via the Central Control Monitor.

**The Right Platform for Today… And Tomorrow**

The Terumo System 1 can be readily configured to adapt to new protocols and individual patient needs. The system’s flexibility allows users to choose exactly how to manage a case including:

- How the safety connections and responses are defined.

- How the Central Control Monitor is used.

- Built-in advanced capabilities that can be implemented at users’ discretion.
Adaptable Safety and Monitoring Modules

With the ability to integrate up to 18 safety and monitoring modules and an internal battery backup that comes standard, the Terumo System 1 is designed with patient safety and user needs in mind. Users can integrate the desired number of safety and monitoring modules, selecting individual responses for each. Users can add or change modules as needed.

Modules can monitor or update:
- Ultrasonic level detector (alert/alarm) and air bubble detectors
- Flow, pressure, and temperature sensors
- Electronic venous line occluder
- Interface modules for TLink™ Data Management System and CDI™ Monitoring Systems

Pumps Enhance Flexibility and Performance

- The Terumo System 1 can support up to eight pumps, including two centrifugal pumps.
- Users can choose 6” or 4” roller pumps to adjust to different protocols.
- Both centrifugal and roller pumps can be controlled from the speed control knob or the Central Control Monitor.
- The roller pump’s occlusion mechanism with audible feedback can be adjusted while the pump is running.
- Arterial pump displays alert and alarm messages that affect operation.
- Self-adjusting tube clamp mechanism eliminates the need to change tube inserts.
- Remote-mounted centrifugal pump motor helps to reduce tubing lengths.
- Non-invasive flow sensor eliminates the need for a disposable flow probe.
- Uni-directional hand crank ensures correct blood flow direction.

Advanced Features

- **Pulsed Flow** operation on arterial pumps and user-selectable Coast™ response on centrifugal pumps.

- Pump flow setpoint and pressure setpoint (negative or positive) maintained by activating the **Servo-Regulation** feature.

- **Master/Follower** pump operation in which any two roller pumps can be used to deliver multi-ratio cardioplegia to minimize hemodilution and optimize myocardial protection.
Terumo® Advanced Perfusion System 1

Central Control Monitor

The Terumo System 1 Central Control Monitor is a high-resolution touch screen computer that serves as both a safety monitor and as the central interface for operating the system components. The Central Control Monitor’s intuitive graphic interface helps users organize information and view current perfusion parameters on a single screen without having to look at multiple displays.

- Customized configurations: Users can create up to 12 customized perfusion screens.
- Priority messaging area: Color-coded alarms, alerts, status, and error messages are displayed in order of priority.

The Central Control Monitor features fast processing, a high-resolution screen, and intuitive user interface.

Integrated electronic gas blender can be controlled through the Central Control Monitor or locally.
## Specifications

**Terumo System 1 Base**
- **801763**
  - Voltage: 100/115V 50/60 Hz, 220/240V 50/60 Hz
  - Height: 22.6 in (57.4 cm)
  - Width: 35.2 in (89.4 cm)
  - Depth: 26.5 in (67.3 cm)
  - Weight: 262 lbs (118.8 kg)
- **801764**
  - Voltage: 100/115V 50/60 Hz, 220/240V 50/60 Hz
  - Height: 22.6 in (57.4 cm)
  - Width: 35.2 in (89.4 cm)
  - Depth: 26.5 in (67.3 cm)
  - Weight: 262 lbs (118.8 kg)

**Flexible Halogen Lamps**
- **801238**
  - Size: 33 in (83.8 cm)
  - Voltage: 24VDC
- **801558**
  - Size: 15 in (38.1 cm)
  - Voltage: 24VDC

**Pressure Module**
- **802112**
  - Two pressure transducers per module
  - Operating range: (-250) mmHg – 900 mmHg
  - Maximum of 8 transducers

**Temperature Module**
- **802114**
  - YSI 400, two temperature sensors per module
  - Operating range: 0 – 50° C
  - Maximum of 8 sensors

**Flow Module**
- **802018**
  - Non-invasive flow measurement, one per module
  - Operating range: (-9.9) L/min to 9.9 L/min
  - Maximum of 4 modules

**Ultrasonic Level Detection Module**
- **802111**
  - One alarm sensor, one alert sensor per module
  - Reservoir: Functions with hardshell reservoirs that have a wall thickness of 0.07 in – 0.15 in (1.8 mm – 3.8 mm)
  - Maximum of 1 module

**Electronic Venous Occluder Module**
- **803480**
  - Operating range: 0 – 100% flow on 1/4 in to 1/2 in tubing
  - Maximum of 1 module

**Interface Module for CDI System 500**
- **803479**
  - One CDI System 500 monitor per module
  - Maximum of 1 module

**Interface Module for RS-232**
- **802113**
  - One TLink Data Management System per module
  - Maximum of 1 module

## Electronic O₂ Blender/Analyzer**
- **801189**
  - Operating range:
    - Flow: 0 – 10 L/min
    - FiO₂: 0.21 – 1.00

## Central Control Monitor**
- **816300**
  - Height: 13.7 in (34.8 cm)
  - Width: 15.7 in (39.9 cm)
  - Depth: 3.4 in (8.6 cm)
  - Weight: 15 lbs (6.8 kg)

## Roller Pumps**
- **816570** (small)
  - Pumphead diameter: 4 in (10.2 cm)
  - Voltage: 24VDC
  - Height: 12.5 in (31.8 cm)
  - Width: 7.1 in (18.0 cm)
  - Depth: 11.8 in (30.0 cm)
  - Weight: 21 lbs (9.5 kg)
  - Operating range: 0 – 4 L/min

- **816571** (large)
  - Pumphead diameter: 6 in (15.2 cm)
  - Voltage: 24VDC
  - Height: 12.5 in (31.8 cm)
  - Width: 8.5 in (21.6 cm)
  - Depth: 13.1 in (33.3 cm)
  - Weight: 24 lbs (10.9 kg)
  - Operating range: 0 – 10 L/min

## Centrifugal Control Unit**
- **816572**
  - Voltage: 24VDC
  - Height: 3.1 in (8.0 cm)
  - Width: 7.3 in (18.4 cm)
  - Depth: 8.5 in (21.6 cm)
  - Weight: 2.4 lbs (1.1 kg)
  - Operating range: 0 – 7 L/min

## Flexible Halogen Lamps**
- **801238**
  - Size: 33 in (83.8 cm)
  - Voltage: 24VDC
- **801558**
  - Size: 15 in (38.1 cm)
  - Voltage: 24VDC
## Ordering Information

### Terumo System 1 Base*

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>801763</td>
<td>100/115V base</td>
<td>1</td>
</tr>
<tr>
<td>801764</td>
<td>220/240V base</td>
<td>1</td>
</tr>
<tr>
<td>803739</td>
<td>Programmed PC card system configuration</td>
<td>1</td>
</tr>
<tr>
<td>801016</td>
<td>Hand crank (includes 2 hand cranks)</td>
<td>2</td>
</tr>
<tr>
<td>802089</td>
<td>Hand crank bracket</td>
<td>3</td>
</tr>
<tr>
<td>816300</td>
<td>Central Control Monitor</td>
<td>4</td>
</tr>
<tr>
<td>816261</td>
<td>Central Control Monitor Cover</td>
<td>39</td>
</tr>
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</table>

### Base Options

Each blender requires a hose kit and adaptor set.

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
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</thead>
<tbody>
<tr>
<td>801188</td>
<td>Electronic O₂ blender/analyzer</td>
<td>5</td>
</tr>
<tr>
<td>164235</td>
<td>Pole-mounted blender</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Hose kits

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
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</thead>
<tbody>
<tr>
<td>814475</td>
<td>U.S. hose kit (3 hoses: green, yellow, black)</td>
<td>7</td>
</tr>
<tr>
<td>814474</td>
<td>Non-U.S. hose kit (3 hoses: blue, yellow, black)</td>
<td>8</td>
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</tbody>
</table>

#### Hose adaptor sets

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>144207</td>
<td>NCG hose adaptor set</td>
<td>9</td>
</tr>
<tr>
<td>144215</td>
<td>D.I.S.S. hose adaptor set</td>
<td>10</td>
</tr>
<tr>
<td>144223</td>
<td>Ohio Diamond hose adaptor set</td>
<td>11</td>
</tr>
</tbody>
</table>

### Center Poles and Accessories

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>145980</td>
<td>Crossbar fitting (required for each additional pole)</td>
<td>12</td>
</tr>
<tr>
<td>16553301</td>
<td>2 ft (0.6 m) pole</td>
<td>13</td>
</tr>
<tr>
<td>131115</td>
<td>3 ft (0.9 m) pole</td>
<td>14</td>
</tr>
<tr>
<td>16553401</td>
<td>4 ft (1.2 m) pole</td>
<td>15</td>
</tr>
<tr>
<td>816489</td>
<td>Shelf</td>
<td>16</td>
</tr>
<tr>
<td>816370</td>
<td>Metallic sliding back cover panel kit</td>
<td>17</td>
</tr>
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</table>

### Flexible Halogen Lamp

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>801238</td>
<td>33 in (83.8 cm) flexible halogen lamp</td>
<td>18</td>
</tr>
<tr>
<td>801558</td>
<td>15 in (38.1 cm) flexible halogen lamp</td>
<td>19</td>
</tr>
</tbody>
</table>

### Roller Pumps

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>816571</td>
<td>Roller pump, 6 in (15.2 cm) diameter</td>
<td>20</td>
</tr>
<tr>
<td>816570</td>
<td>Roller pump, 4 in (10.2 cm) diameter</td>
<td>21</td>
</tr>
<tr>
<td>801093</td>
<td>Pole mount pump rest with bracket</td>
<td>22</td>
</tr>
<tr>
<td>816477</td>
<td>Dual pumps pole mount bracket</td>
<td>23</td>
</tr>
<tr>
<td>816483</td>
<td>Descending pole mount pump bracket</td>
<td>24</td>
</tr>
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</table>

### Integrated Centrifugal System

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>164267</td>
<td>Drive motor</td>
<td>25</td>
</tr>
<tr>
<td>816572</td>
<td>Control unit</td>
<td>26</td>
</tr>
<tr>
<td>164268</td>
<td>Manual drive</td>
<td>27</td>
</tr>
<tr>
<td>804372</td>
<td>Pole mount centrifugal display box</td>
<td>28</td>
</tr>
<tr>
<td>816620</td>
<td>Flexible mounting arm</td>
<td>29</td>
</tr>
</tbody>
</table>

### Flow Sensing

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>802018</td>
<td>Flow module</td>
<td>30</td>
</tr>
<tr>
<td>6382</td>
<td>Non-invasive flow sensor, 3/8 in (9.5 mm) x 3/32 in (2.4 mm) wall, reusable</td>
<td>31</td>
</tr>
<tr>
<td>801550</td>
<td>Mounting bracket (holds 2 modules)</td>
<td>32</td>
</tr>
</tbody>
</table>

### TLink Data Management System

Call Data management software

### Air Bubble Detection

(One each included with Terumo System 1)

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>802110</td>
<td>Air bubble detect module</td>
<td>33</td>
</tr>
<tr>
<td>822763</td>
<td>Cable assembly</td>
<td>34</td>
</tr>
<tr>
<td>149876</td>
<td>Pole clip sensor holder</td>
<td>35</td>
</tr>
</tbody>
</table>

### Ultrasonic air sensor (choose 1 of 3)

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>5793</td>
<td>3/8 in x 3/32 in (9.5 mm x 2.4 mm)</td>
<td>36</td>
</tr>
<tr>
<td>5795</td>
<td>1/4 in x 3/32 in (6.4 mm x 2.4 mm)</td>
<td>37</td>
</tr>
<tr>
<td>5785</td>
<td>1/4 in x 1/16 in (6.4 mm x 1.6 mm)</td>
<td>38</td>
</tr>
</tbody>
</table>

### Venous Occluder

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>803480</td>
<td>Occluder module</td>
<td>39</td>
</tr>
<tr>
<td>806455</td>
<td>Occluder head</td>
<td>40</td>
</tr>
<tr>
<td>816620</td>
<td>Flexible mounting arm</td>
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</tr>
</tbody>
</table>

### Pressure Monitoring

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
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</thead>
<tbody>
<tr>
<td>802112</td>
<td>Pressure module (2 pressures per module)</td>
<td>42</td>
</tr>
</tbody>
</table>

### Temperature Monitoring

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>802114</td>
<td>Temperature module, YSI® series 400 compatible (2 temperatures per module)</td>
<td>43</td>
</tr>
</tbody>
</table>

YSI® is a registered trademark of Yellow Springs Instruments.

### Data Interface Modules

<table>
<thead>
<tr>
<th>CATALOG #</th>
<th>DESCRIPTION</th>
<th>DIAGRAM #</th>
</tr>
</thead>
<tbody>
<tr>
<td>802113</td>
<td>Serial interface module RS-232</td>
<td>44</td>
</tr>
<tr>
<td>803479</td>
<td>Interface module for CDI™ System 500</td>
<td>45</td>
</tr>
</tbody>
</table>

* Shaded gray items in diagram are included with the Terumo System 1.
Terumo System 1 Ordering Information Diagram

Shaded gray items in diagram are included with the Terumo System 1.
**Terumo® Advanced Perfusion System 1**

**Flexible**
From basic to complex configurations, the system can evolve as user needs change.

**Modular**
Components function and can be controlled individually.

**Centralized Control**
Intuitive, centralized user control is facilitated through Central Control Monitor.

**Advanced Functions**
Added safety connections and pump response features can be activated at any time.

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**For more information on this or other Terumo Cardiovascular Group products, contact:**

**TERUMO CARDIOVASCULAR GROUP**
6200 Jackson Road
Ann Arbor, MI 48103-9300
USA
734.663.4145
734.663.7981 fax
www.terumo-cvgroup.com

**TERUMO EUROPE N.V.**
Authorized EC Representative
Interleuvenlaan 40
3001 Leuven
Belgium
32.16.38.12.11
32.16.40.02.49 fax
www.terumo-europe.com

**TERUMO EUROPE N.V. CARDIOVASCULAR DIVISION**
Ludwig-Erhard-Strasse 6
65760 Eschborn
Germany
49.6196.80.230
49.6196.8023.555 fax
www.terumo-europe.com

**TERUMO LATIN AMERICA CORPORATION**
8750 NW 36th Street, Suite 600
Miami, FL 33178
USA
305.477.4822
305.477.4872 fax

**TERUMO CORPORATION**
44-1, 2-chome
Hatagaya, Shibuya-Ku
Tokyo, 151-0072
Japan
81.3.3317.6010 fax
www.terumo.co.jp

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**Printed in the USA**