Maquet, a trusted partner for hospitals and physicians for over 175 years, is the global leader in providing medical systems that meet the needs of the most medically challenging patients, while exceeding the expectations of the hospital teams that care for them. Maquet designs, develops and distributes innovative therapy solutions and infrastructure capabilities for high-acuity areas within the hospital including the intensive care unit (ICU), the operating room (OR) and hybrid OR/cath lab as well as intra and inter hospital patient transport.

The Permanent Life Support (PLS) System from Maquet has been developed to support patients requiring prolonged respiratory and/or circulatory assistance with blood flows between 0.5 and 7 l/min. The PLS Set circuitry was designed, and is assembled with the minimum number of essential components in order to achieve unobstructed blood flow with less blood damage that contributes to better patient outcomes. Together with its reliable hardware as well as a wide range of cannulae the PLS System fulfills the extremely demanding requirements for prolonged extracorporeal life support.
Extracorporeal heart-lung support system

Areas of application

The PLS System is an adult respiratory and/or circulatory support system for use in the intensive care unit, cardiac catheter laboratory as well as operating, trauma and emergency rooms validated with a CE certification for 14 days continuous use.* It can also be used to maintain extracorporeal support of patients being transported between hospital departments.

In the intensive care unit the PLS System can provide appropriate extracorporeal support to adult patients with a wide range of life threatening conditions. These may include:

- Acute Respiratory Distress Syndrome (ARDS)¹²³⁴
- Pulmonary Embolism²
- Septic Shock Syndrome¹
- Multiple Organ System Failure¹

In the catheter laboratory and cardiology department the PLS System can be used to provide urgent circulatory support with oxygenation in the event of sudden heart failure thus preventing organ damage.

In the operating room patients who need post-surgery circulatory support can be transferred onto the PLS System and moved to the intensive care unit easily². Also patients from the emergency and trauma rooms who need treatment in other hospital departments, e.g. for revascularization or PTCA, can be placed on the PLS System and then moved to the operating room, catheter laboratory or intensive care unit.

Areas of application may include:

- Cardiogenic shock¹⁴⁵
- Low cardiac output syndrome (LCOS)⁴
- Bridge to recovery, bridge to bridge, bridge to decision⁴

Emergency medical situations can benefit from the availability and mobility of the PLS System. Certain patients can benefit from the rapid restoration and stabilization of cardiovascular functions that ECLS can offer. The following indications may be appropriate for using the PLS System:

- Anaphylactic shock¹
- Intoxication⁴
- Severe hypothermia¹
- Barotrauma³⁴

"PLS has made priming easier in reducing the volume, plus it is inexpensive."

Hasse Karlsson,
Perfusionist, Sahlgrenska University Hospital,
Gothenburg, Sweden


*When used with HLS Cannulae with BIOLINE Coating
The PLS System
Components at a glance

The PLS System consists of the following components:
• PLS Set / PLS Set Plus or HIT Set PLS Plus
• ROTAFLOW Console with ICU Kit RFC
• ROTAFLOW Drive Unit
• ROTAFLOW Emergency Drive
• Holder
• HLS Cannulae

The PLS Set consists of the PLS-i Oxygenator and the
ROTAFLOW Centrifugal Pump both incorporated in a
tip-to-tip tubing set with BIOLINE Coating. The high per-
formance of the oxygenator and pump ensures safe and
effective patient support and user management. The low
resistance of the PLS-i Oxygenator and the high efficiency of
the ROTAFLOW Centrifugal Pump reduce blood damage to a
minimum.

The PLS-i Oxygenator incorporates highly plasma-
resistant polymethylpentene (PMP) fibers and a modified
housing designed specifically for prolonged use. These tight
PMP fibers eliminate plasma leaks. With an approval for 14
days continuous use, the need for oxygenator replacement
is significantly reduced.

The ROTAFLOW Centrifugal Pump with its high biocom-
patibility is responsible for improved blood handling and
lower levels of pump-induced hemolysis. This central-
rigid blood pump without any shaft or seals has a spinning
rotor with flow channels that move the incoming blood in
rotary motion, directing it through a spiral housing to the
outflow port. The one-point sapphire bearing and the low
priming volume combined with the spiral formed chamber
ensures gentle blood handling and optimized blood flow.

The PLS Set Plus includes two additional connectors
with luer lock for hemofiltration or dialysis. The connectors
have been incorporated between the oxygenator outlet
and pump inlet so that a CRRT device can be attached to
the extracorporeal circuit.

HIT Set PLS Plus is specially designed for use on patients
who are susceptible to heparin-induced thrombocytopenia.
HIT Set PLS Plus can be used for up to 5 days combined
with SOFTLINE coated HLS Cannulae.
Fully equipped **Sprinter Cart XL**
Hardware at a glance

- Infusion pole
- ROTAFLOW Console
- Fixed tray for additional storage
- EGB 40 Electronic Gas Blender
- HU 35 Heater Unit
- Gas bottle with holder
- Medical isolating transformer
- ROTAFLOW Emergency Drive
- ROTAFLOW Drive Unit
## Technical Data

### PLS System

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total priming volume</strong></td>
<td>585 ml</td>
</tr>
<tr>
<td><strong>Blood flow rate</strong></td>
<td>0.5–7 l/min</td>
</tr>
<tr>
<td><strong>Gas exchange surface area</strong></td>
<td>1.8 m²</td>
</tr>
<tr>
<td><strong>Heat exchange surface area</strong></td>
<td>0.4 m²</td>
</tr>
<tr>
<td><strong>Water connectors</strong></td>
<td>1/2” Hansen coupling</td>
</tr>
<tr>
<td><strong>Housing material</strong></td>
<td>Polycarbonate (PC)</td>
</tr>
<tr>
<td><strong>Fiber material for gas exchange</strong></td>
<td>Polymethylpentene (PMP)</td>
</tr>
<tr>
<td><strong>Fiber material for water flow</strong></td>
<td>Polyurethane (TPU)</td>
</tr>
<tr>
<td><strong>Surface</strong></td>
<td>190 cm²</td>
</tr>
<tr>
<td><strong>Housing material</strong></td>
<td>Polycarbonate (PC)</td>
</tr>
<tr>
<td><strong>RPM speed</strong></td>
<td>0–5000 RPM</td>
</tr>
<tr>
<td><strong>Resolution of display</strong></td>
<td>0.01 l/min</td>
</tr>
<tr>
<td><strong>Flow rates</strong></td>
<td>0–9.9 l/min</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>179 x 385 x 243 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 15 kg</td>
</tr>
</tbody>
</table>
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Getinge Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, Getinge and Maquet. ArjoHuntleigh focuses on patient mobility and wound management solutions. Getinge provides solutions for infection control within healthcare and contamination prevention within life sciences. Maquet specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.

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See instructions for use for full prescribing information, including indications, contraindications, warnings, precautions and adverse events.

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