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| <b>Астрахань</b> (8512)99-46-04    | <b>Казань</b> (843)206-01-48      | <b>Набережные Челны</b> (8552)20-53-41 | <b>Самара</b> (846)206-03-16          | <b>Тула</b> (4872)33-79-87      |
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| <b>Белгород</b> (4722)40-23-64     | <b>Калуга</b> (4842)92-23-67      | <b>Новокузнецк</b> (3843)20-46-81      | <b>Санкт-Петербург</b> (812)309-46-40 | <b>Ульяновск</b> (8422)24-23-59 |
| <b>Благовещенск</b> (4162)22-76-07 | <b>Кемерово</b> (3842)65-04-62    | <b>Ноябрьск</b> (3496)41-32-12         | <b>Саратов</b> (845)249-38-78         | <b>Улан-Удэ</b> (3012)59-97-51  |
| <b>Брянск</b> (4832)59-03-52       | <b>Киров</b> (8332)68-02-04       | <b>Новосибирск</b> (383)227-86-73      | <b>Севастополь</b> (8692)22-31-93     | <b>Уфа</b> (347)229-48-12       |
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| <b>Волгоград</b> (844)278-03-48    | <b>Красноярск</b> (391)204-63-61  | <b>Пенза</b> (8412)22-31-16            | <b>Ставрополь</b> (8652)20-65-13      | <b>Череповец</b> (8202)49-02-64 |
| <b>Вологда</b> (8172)26-41-59      | <b>Курск</b> (4712)77-13-04       | <b>Петрозаводск</b> (8142)55-98-37     | <b>Сургут</b> (3462)77-98-35          | <b>Чита</b> (3022)38-34-83      |
| <b>Воронеж</b> (473)204-51-73      | <b>Курган</b> (3522)50-90-47      | <b>Псков</b> (8112)59-10-37            | <b>Сыктывкар</b> (8212)25-95-17       | <b>Якутск</b> (4112)23-90-97    |
| <b>Екатеринбург</b> (343)384-55-89 | <b>Липецк</b> (4742)52-20-81      |  | <b>Тамбов</b> (4752)50-40-97          | <b>Ярославль</b> (4852)69-52-93 |

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# **Технические характеристики на сердечно-легочной поддержки Cardiohelp, насосы HLS Advanced компании GETINGE**

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# HLS Set Advanced circulatory and/or respiratory assist

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## **A trusted partner for hospitals and clinicians since 1838:**

Maquet Cardiovascular is a leading manufacturer of products for the use in the fields of intensive care, emergency medicine, cardiology and cardiac surgery. With the launch of the CARDIOHELP System, the world's smallest heart-lung machine, Maquet has consolidated its position as the innovative leader in the field of ECLS (Extracorporeal Life Support) and has begun a new era in this sector.

**The HLS Set Advanced, with the HLS Module Advanced as its core component**, represents a state-of-the-art oxygenator for circulatory and/or respiratory ECLS. It expands therapy applications with a continuous use up to 30 days as well as inter- and intra-hospital transport. Furthermore all necessary equipment for a safe and effective patient care is available – including a wide range of cannulae.



# HLS Set Advanced

## Integration meets innovation

**The HLS Set Advanced provides complete monitoring and is specially developed** for veno-venous or veno-arterial extracorporeal support for up to 30 days continuous use.\* Powered by CARDIOHELP, the world's smallest heart-lung machine, the system combines user-friendliness and patient safety. The system also has all the necessary approvals for the transport of patients on extracorporeal support within or between hospitals.

The HLS Set Advanced is available in two versions: HLS Set Advanced 5.0 with a blood flow of up to 5 l/min and HLS Set Advanced 7.0 with a blood flow of up to 7 l/min. Both sets have a biocompatible BIOLINE Coating. The HIT Set Advanced with SOFTLINE Coating is available for patients who are susceptible to heparin-induced thrombocytopenia.



HLS Module Advanced mounted on the CARDIOHELP

**The core of the HLS Set Advanced, the HLS Module Advanced, is the world's first oxygenator** with an incorporated low-trauma centrifugal pump and an infrared sensor to measure venous oxygen saturation (SvO<sub>2</sub>), hematocrit (Hct), hemoglobin (Hb) and venous temperature (TVen). Previously these parameters could only be measured using an external blood gas analyzer or a sensor in the venous blood line. Sensors to measure three pressures and the arterial temperature are also integrated into the module, thus avoiding the need for external measurements, improving accuracy and reducing the risk of air emboli and thrombus formation.



HLS Module Advanced

\*When used with HLS Cannulae with BIOLINE Coating.

# HLS Set Advanced

## Benefits at a glance

### Benefits

- Fully monitored system for added patient safety which may lead to reduced bedside costs
- Due to the non-invasive integrated sensor technology there are no hazards of air embolism, stagnant zones, clotting and cavitation from external pressure sensors. There are no pressure lines that need flushing
- Precise and continuous monitoring of the patient's condition
- Rapid detection of cannulae misplacement and kinking by monitoring pressure changes
- Alarms and interventions can be set in order to avoid dangerous events such as cavitation or lesions/damage to vessel walls
- Having all the necessary system transport approvals ensures safe intra- and inter-hospital patient transport
- The sterile packaging contains all the necessary components and tubing
- Quick and easy set-up and priming for fast deployment in emergency situations
- Low priming volume for less hemodilution
- Color-coded tubing for safe patient connection
- Integrated heat exchanger for precise temperature management
- Special design features allow for up to 30 days continuous use reducing the risk to patients when conventional sets need to be exchanged during the support procedure
- The HLS Set Advanced 5.0/7.0 comes with the biocompatible BIOLINE Coating (HIT Set Advanced with SOFTLINE Coating is available)



HLS Set Advanced in an ICU environment

# HLS Set Advanced & CARDIOHELP

## Enlarging therapy options

**The CARDIOHELP System represents a user-friendly platform for powering various extracorporeal circulatory and respiratory support applications:**

- CARDIOHELP is ideal for use in intensive care units, operating rooms, catheter laboratories and emergency rooms
- The CARDIOHELP is a combined drive and control unit that comes with a compact, functional design and can be deployed rapidly
- With just a single rotary knob and a touch screen CARDIOHELP is very convenient to use
- CARDIOHELP is equipped with new software for more intuitive and user-friendly handling as a result of the “thApp” principle
- All available sets for CARDIOHELP are easily attached to the CARDIOHELP drive



CARDIOHELP – the multi-therapy solution

**With a weight of about 10 kg CARDIOHELP is the perfect solution for intra- and inter-hospital patient transport:**

- Approvals conforming to RTCA DO 160\*, EN 13718 Part 1, EASA Part 21, BK117 & EC145 (air ambulance) and EN 1789 (road ambulance)
- Transport approval for selective disposables including the HLS Set Advanced
- Secure installation in any ambulance and various helicopter types
- Connection to the electrical system on a helicopter or ground transport vehicle
- Integrated lithium-ion batteries guarantee 90 minutes of independent operation
- Necessary equipment such as the HKH 8860 Mobile Holder, HKH 8850 Base Plate and the CARDIOHELP Trolley System is available



CARDIOHELP – a perfect solution for patient transport



# HLS Set Advanced & CARDIOHELP device

## Technical data

| Technical Data   | HLS Set Advanced 5.0   | HLS Set Advanced 7.0  |
|--|--|---|
| Flow rates   | 0.5–5 l/min  | 0.5–7 l/min   |
| Gas exchange surface area                                    | 1.3 m <sup>2</sup>   | 1.8 m <sup>2</sup>  |
| Heat exchange surface area                                   | 0.3 m <sup>2</sup>   | 0.4 m <sup>2</sup>  |
| Priming volume HLS Module Advanced                           | 240 ml   | 273 ml  |
| Priming volume HLS Set Advanced with 2 x 2.3 m tubing length | 570 ml   | 600 ml  |
| Gas exchange fibers  | Diffusion membrane (PMP)   | Diffusion membrane (PMP)  |
| Duration of use with BIOLINE Coating                         | Max. 30 days   | Max. 30 days  |
| Duration of use with SOFTLINE Coating                        | Max. 5 days  | Max. 5 days   |
| Integrated venous measuring cell                             | <ul style="list-style-type: none"> <li>– oxygen saturation SvO<sub>2</sub> – hemoglobin (Hb)</li> <li>– hematocrit (Hct)</li> <li>– temperature</li> </ul> | <ul style="list-style-type: none"> <li>– oxygen saturation SvO<sub>2</sub></li> <li>– hemoglobin (Hb)</li> <li>– hematocrit (Hct)</li> <li>– temperature</li> </ul> |
| Integrated sensors   | <ul style="list-style-type: none"> <li>– 3 pressures (venous, arterial, internal)</li> <li>– arterial temperature</li> </ul>                               | <ul style="list-style-type: none"> <li>– 3 pressures (venous, arterial, internal)</li> <li>– arterial temperature</li> </ul>  |

| Technical Data                           | CARDIOHELP-i  |
|--|---|
| Dimensions (H x W x D) with guard closed | 315 x 255 x 427 mm (without holder/disposable)  |
| Weight                                   | Approx. 10 kg   |
| Display                                  | 5.7" LCD touchscreen  |
| Sensors                                  | <ul style="list-style-type: none"> <li>4 x External pressures</li> <li>3 x Internal pressures</li> <li>2 x External temperatures</li> <li>2 x Internal temperatures</li> <li>1 x Venous oxygen saturation</li> <li>1 x Hemoglobin</li> <li>1 x Hematocrit</li> <li>1 x Flow/Bubble sensor</li> <li>1 x Bubble sensor</li> <li>1 x Level sensor</li> </ul> |
| Operating voltage range                  | 11–28 Volt DC<br>100–240 Volt AC/50–60 Hz   |
| Interfaces for                           | 1 x USB port type A (for data export on USB stick)<br>1 x USB port type B (for data recording system and service purposes)<br>1 x Connection for alarm output (ward call)   |
| Battery operating time                   | Min. 90 min (fully charged batteries)   |

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