corpuls®

FOCUS – ON – PATIENTS

corpuls³ HYPERBARIC

corpuls3

HYPERBARIC MULTI-TALENT

The corpuls3 is not only a device – it is a 3 module system:

The **corpuls3** with its revolutionary device design has already proven reliable time and time again in the preclinical emergency medical service. In cooperation with competent partners from the field of hyperbaric medicine, a HBO version of the **corpuls3** has been developed especially for use in hyperbaric chambers.

Monitoring Unit

Patient Box

Defibrillator | Pacer

The modules can be separated at any time, as and when required. They communicate wirelessly, eliminating annoying cables. In this way, maximum flexibility in monitoring and in resuscitation with defibrillation is achieved in hyperbaric chambers as well.

ADVANTAGES

- **Certification for use in hyperbaric chambers** with up to 3 barg as per German Lloyd Rules for Underwater Technology, Chapter1 – Diving Systems and Diving Simulators, Section 2, N, 4.5.2 (equivalent to DNVGL RU UWT Pt.4 Ch.8 Sec.3 [2.1])
- **Comprehensive monitoring** as well as safe **defibrillation and pacing** in the hyperbaric chamber
- Continuous, non-invasive **measurement of carboxyhemoglobin** (SpCO)
- **Complete monitoring** of the vital parameters by wireless technology outside the hyperbaric chamber
- Support of users by **AED protocol** according to the current **ERC/AHA Guidelines** and **smart-Metronome**

SPECIFICATIONS

- Transflective **8.4" display**
- **Wide printer** (10,6 cm)
- **Weight**: **7,4 kg** (basic configuration)
- **Dimensions** of complete device (WxHxD): **30.5 cm x 36 cm x 23 cm**
- High **dust and splash protection** (IP55)
- **Battery life** 7-10 hours, according to settings and demand
- Optional with **pacemaker**
- **HBO operating environment**: 0 °C to +45 °C
- Vibration- and shock-tested with **EN 1789**
- Conforms with selected sections of the international **Standard for Airborne Equipment** RTCA DO 160 G
- Conforms with selected sections of the **US Military Standard** MIL STD 810 G

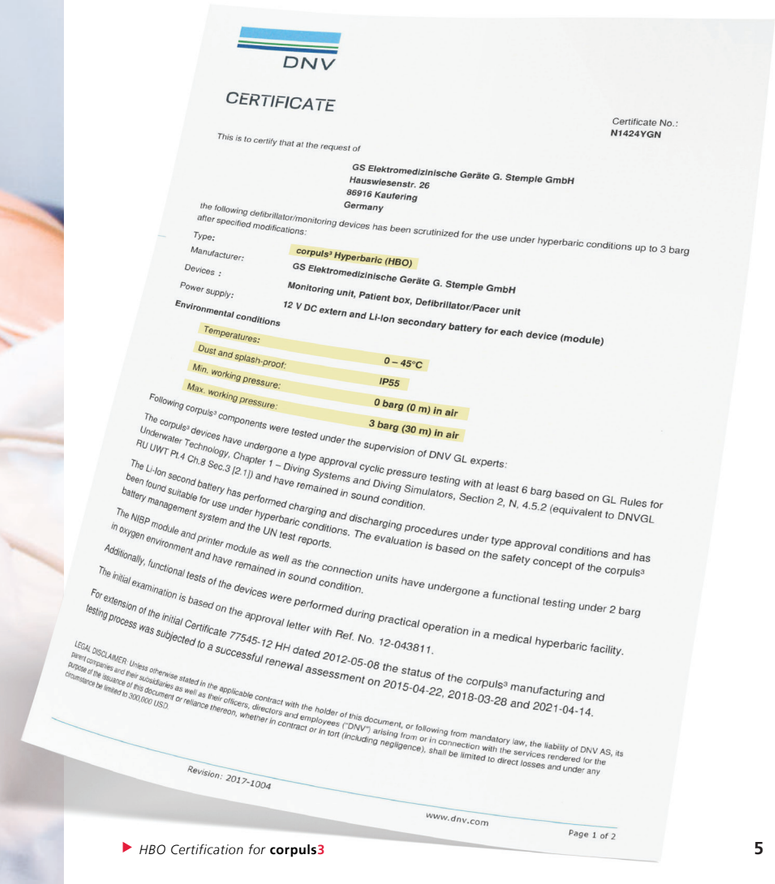
The unique wireless RF technology allows the modules to communicate with one another as if they were physically connected.

Illustration of the **corpuls3** HYPERBARIC.

EMERGENCY TREATMENT IN HYPERBARIC CHAMBER

In today's medicine, hyperbaric chamber therapy is considered to be an effective therapeutic measure in cases of carbon monoxide poisoning, diving accidents, arterial gas embolisms and gas gangrene. Particularly when such conditions are diagnosed, the patients are often in poor physical condition and their lives are acutely threatened. Comprehensive and reliable monitoring therefore has the highest priority.

If the patient suffers cardiac arrest, the hyperbaric treatment should normally not be discontinued abruptly. The HBO version of the **corpuls3** enables the hyperbaric chamber personnel to enhance the effectiveness of resuscitation by early shock delivery in spite of increased ambient pressure.
In this process, the **corpuls3** guides the user safely through the currently valid resuscitation algorithm and supports the correct implementation of the therapy by means of smartMetronome.



DNV

CERTIFICATE

Certificate No.:
N1424YGN

This is to certify that at the request of

GS Elektromedizinische Geräte G. Stemple GmbH
Hauswiesenstr. 26
86916 Kaufering
Germany

the following defibrillator/monitoring devices has been scrutinized for the use under hyperbaric conditions up to 3 barg after specified modifications:

Type: **corpuls³ Hyperbaric (HBO)**
Manufacturer: **GS Elektromedizinische Geräte G. Stemple GmbH**
Devices : **Monitoring unit, Patient box, Defibrillator/Pacer unit**
Power supply: **12 V DC extern and Li-Ion secondary battery for each device (module)**
Environmental conditions
Temperatures: **0 – 45°C**
Dust and splash-proof: **IP55**
Min. working pressure: **0 barg (0 m) in air**
Max. working pressure: **3 barg (30 m) in air**

Following corpuls³ components were tested under the supervision of DNV GL experts:

The corpuls³ devices have undergone a type approval cyclic pressure testing with at least 6 barg based on GL Rules for Underwater Technology, Chapter 1 – Diving Systems and Diving Simulators, Section 2, N. 4.5.2 (equivalent to DNVGL RU UWT Pt.4 Ch.8 Sec.3 [2.1]) and have remained in sound condition.

The Li-Ion second battery has performed charging and discharging procedures under type approval conditions and has been found suitable for use under hyperbaric conditions. The evaluation is based on the safety concept of the corpuls³ battery management system and the UN test reports.

The NIBP module and printer module as well as the connection units have undergone a functional testing under 2 barg in oxygen environment and have remained in sound condition.

Additionally, functional tests of the devices were performed during practical operation in a medical hyperbaric facility.

The initial examination is based on the approval letter with Ref. No. 12-043811.

For extension of the initial Certificate 77545-12 HH dated 2012-05-08 the status of the corpuls³ manufacturing and testing process was subjected to a successful renewal assessment on 2015-04-22, 2018-03-28 and 2021-04-14.

Revision: 2017-1004

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▶ *HBO Certification for* **corpuls3**

HBO THERAPY WITH MONITORING

To enable maximum mobility in spite of confined spatial conditions, various holders are available for the 3 modules of the **corpuls3**. Thus, the patient box can for example be fixed directly to the stretcher and the monitor can be taken along to the control room.

The following vital parameters can be measured with the **corpuls3** during hyperbaric therapy:

- **HR**
- **SpO_2, SpCO, SpHb, SpMet**
- **RRp®** (Respiration Rate from the Pleth)
- **$etCO_2$, RR** (intubated and not intubated)
- **NIBP**
- **12-lead** diagnostic ECG
- **4-channel** IBP
- **2-channel** temperature

Up to 6 curves and 13 vital parameters are generously depicted on the 8.4" large display.
Due to the wireless communication between the individual modules, patients can also be monitored reliably from the control room of the hyperbaric chamber.

corpuls3
HYPERBARIC

MONITOR

- Up to **6 curves and 13 vital parameters**
- Diagnostic **12-lead ECG preview**
- **Quick access** to important menu items via 7 softkeys and function buttons
- **1-2-3 operation** in defibrillation modes
- **Wide printer** (106mm) with simultaneous real-time printout of up to 6 curves
- **4G modem**, WLAN or LAN port for **data transmission/telemedicine**
- All-around **impact protection**
- **Weighs** only 2.7 kg
- **Dimensions** (WxHxD): 30.5 cm x 29.5 cm x 12 cm

PATIENT BOX

- **12-lead** diagnostic ECG, heart rate
- **ECG-Analysis and Information Software**
- Masimo Rainbow SET® Technologie for **SpO_2, PP, PI, SpCO, SpMet, SpHb, RRp®**
- **Non-invasive blood pressure measurement** (SunTech®)
- **Capnography** with mainstream technology capONE®
- 2 channels for **temperature measurement**
- 4 channels for **invasive pressure measurement**
- **Display** for vital parameters, remaining time and alarms
- Acoustic **alarm indicator**
- Microphone for **audio recording**
- **Bluetooth and CompactFlash®**
- **Weight**: 1.3 kg
- **Dimensions** (WxHxD): 26.5 cm x 13.5 cm x 5.5 cm

DEFIBRILLATOR

- **Biphasic, rectangular waveform,** impedance compensated
- **2 to 200 Joule,** configurable energy protocol
- **AED and manual defibrillator**
- **AED protocol** according to the current Guidelines, updateable anytime
- **Pacer** with FIX-, DEMAND- and OVERDRIVE mode
- **Pre-connected corPatch therapy electrodes** in separate bag
- **Up to 200 shocks** with fully charged battery
- **Weight:** 3.7 kg
- **Dimensions** (WxHxD): 30 cm x 29 cm x 19 cm

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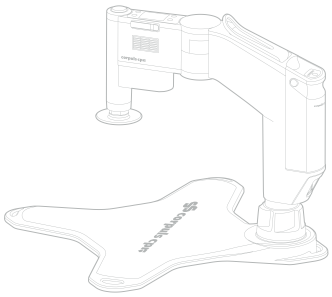

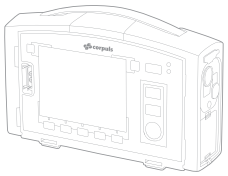

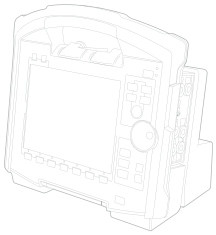

For more than 40 years, **corpuls®** has developed and produced innovative high-end equipment for emergency and intensive care medicine.
Today, in our headquarters in Kaufering, over 400 hearts each beat around 80.000 times every work day while aspiring to meet the high standards of rescue workers from over 70 countries around the world.

Since day one, **corpuls** defibrillators, patient monitoring systems and chest compression devices have set the standard in the realisation of the most advanced insights in medical science, as well as in terms of innovation and ergonomics. Complemented by smart telemedicine and data analysis across devices, the **corpuls system** guarantees reliable and safe help in the fight for human lives.

corpuls®

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