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1 Important information before putting into operation

1.1 General

We appreciate you having decided to buy this product from our company. This unit bears the CE symbol and thus meets the basic requirements established by the EU guidelines governing medical products.

1.2 Warranty

This unit is guaranteed for a period of 12 months, commencing on the date of delivery to the end consumer.

During the warranty period, any defects resulting from faulty production or materials will be repaired free of charge by our customer service stations or directly at the factory.

IMPORTANT

- Any repairs to the equipment may only be carried out by ourselves or by a person or company expressly authorized by us to do so.

- If the repair is carried out by a person or firm authorized by us, the user of the equipment is requested to obtain from the person or company in question a certificate of the nature and extent of the repair work. This certificate must show the date the work was carried out and the company’s details, and must be signed. If the repair was not carried out by the manufacturer of the unit, repaired units and components must also bear the mark of the repairer.
1.3 Hotline

If you have any technical queries, please contact our Hotline on

Martin Medizin-Technik
Hotline

Technical questions
Tel. 07461/706-343
Fax 07461/706-190

The Hotline is manned on weekdays from 8.00 - 17.00 hours.

Please direct any questions you may have on maintenance or training to the manager of our Technical Service Department, phone 07461/706-332.
1.4 Notes on these Operating Instructions

These Operating Instructions describe in detail the setting-up and correct use of the equipment. Before using the equipment in the operating theater, it is essential that you familiarize yourself thoroughly with the operation and the functioning of the unit by reading the instructions through carefully.

As the manufacturer, we guarantee that the equipment has been carefully checked. Furthermore, we consider ourselves responsible for its continued safety, reliability and performance. However, this can only be provided that all checks and maintenance work are carried out by specialist personnel authorized by us and that the equipment is subsequently used only for the purpose for which it was designed. We can accept no liability for damage arising from the improper use of the equipment.

These Operating Instructions contain no detailed description of the endoscopy procedure, nor are they suitable for introducing a beginner to this surgical technique. Endoscopy instruments and equipment may only be used by doctors and medical assistants who hold the appropriate qualifications.

The safe and long-term use of the equipment is conditional on the exclusive use of original Martin spare parts.

Please keep these Operating Instructions in a safe place near the unit.
1.5 Safety instructions

**Functional test before starting an operation**

- **Important:** The unit has no reserve lamp!

Therefore always carry out a functional test of the lamp before starting an operation:

- Check whether the unit generates light. When doing so, never look directly into the light taper.

  If the cold-light source does not supply any light, refer to Section 7 (Faults and Troubleshooting List) in these Operating Instructions to determine the possible cause and method of remedying the fault.

- Check the status of the operating state indicator.

  If the red indicator lamp on the operating state indicator lights or flashes, the xenon lamp must be replaced before starting the operation.

The method for replacing faulty lamps is described in Section 4.5.

We recommend that you always keep a spare lamp (article no. 83-142-10) to hand. This means that in the event of a lamp fault, the unit’s functional capability can be restored as quickly as possible.

Use only Martin lamps.
Warning

- **Risk of explosion!**
  The unit is not explosion-proof. It must therefore not be used in the proximity of flammable gases.

- **Dazzling!**
  The light cable connection of the cold-light source MC 201 has a safety facility for protecting against dazzling. This is only effective as long as no light cable is inserted into the light cable jack.

- **Risk of injury!**
  The lamp can explode due to its high internal pressure in both the cold state and the hot state. Flying parts can cause serious injuries.
  During operation, the lamp emits intensive UV radiation which is hazardous to the eyes and skin. The high light intensity can cause serious eye damage if the arc is looked at directly.
  The lamps must always be handled in the supplied protective sleeve.
  Always wear suitable protective clothing when changing lamps.
  The lamp may only be operated inside the unit.
  Never look into the free end of the cold-light cable or into the endoscope when the lamp is burning.
Warning

- Risk of injury!
   Never open the housing!
   Inside there are parts which may only be serviced or repaired by trained technicians.

- Risk of burns!
   Exercise caution when replacing a lamp.
   Lamps and surrounding parts can become very hot.
   When changing the lamp, wait until the unit has completely cooled down.

High light energy of the cold-light.
The patient can suffer burns. The cloth cover and other flammable materials can burn or catch fire.

Prevention: Leave the cold-light cable connected to the lens, or disconnect it from the cold-light source after the lens has been removed from the abdominal cavity.
2 Description of the unit

2.1 Area of application
The Martin MC 201 cold-light source is used to illuminate body cavities or parts of the body during all endoscopic diagnoses and therapy procedures. Due to its enormous light intensity, the MC 201 is particularly suitable for illuminating large cavities.

2.2 Description of the unit
The Martin MC 201 is a high-performance cold-light source which boasts an extremely high light intensity. It allows brilliant illumination of the OP field even in very light-intensive applications in endoscopy.

The superb characteristics of the new Martin XENON generation of lamps are:

• Extremely high light intensity
Thanks to the extreme efficiency of this newly developed XENON lamp, light intensities are achieved with 180 W electrical output which were previously only possible with 300 W units.

With our development know-how in the field of medical lighting systems, Martin has again realized a product which is fully in line with the philosophy “light instead of heat”.

• Actually “cold” XENON light
Since the new 180 W XENON lamp only loops a negligibly small, heat-producing infrared spectral component into the light cable, heating of the cold-light cable and of the lens is reduced to a minimum.

The problems of high heat emissions which occur with 300 W units in this light intensity class do not arise in the case of the 180 W unit. For this reason, no special cold-light cables are required for the Martin cold-light source MC 201. The low heat load of the light cable increases its service life.

• Dichroic lamp reflector
The newly developed XENON lamp uses a specially coated dichroic lamp reflector which only couples the visible spectra components of the light into the cold-light cable. The heat-producing infrared components are not reflected. This new type of reflector enables you to dispense with the previously necessarily, expensive heat sinks.
• **XENON light with daylight character**

The XENON light, with its color temperature of 6000 K, has a daylight character. This gives particularly natural lighting which allows precise differentiation of tissue structures.

• **Monitoring the lamp operating hours**

The operating hours of the lamp are monitored by a microprocessor. Any necessary lamp change is signaled in good time by easily understandable symbols. This guarantees a very high level of operational reliability.

• **Universal application possibilities thanks to the Martin cold-light cable system**

The Martin cold-light cable system includes high-performance cold-light cables for all application areas. Various adapters enable the most widely used light cable systems to be connected. All cables and adapters can be steam-sterilized (autoclaved) up to 134 °C.

• **User-friendly front panel with membrane keypad**

The clear arrangement of the controls and display elements on the front panel of the Martin MC 201 cold-light source makes it especially easy to operate. The membrane-covered version allows cleaning and disinfecting to operating theater standard.

• **Simple lamp replacement**

By pulling out the sliding lamp panel it is possible to replace used lamps quickly and without tools.
• **Clear brightness setting display**
The set light intensity is displayed by a light field. The minimum and maximum values are marked by a yellow light field so that the user can check the brightness settings at a glance even in darkened rooms and from a greater distance.

• **Ideal combination possibilities with the Martin MIC range**
Martin supplies a wide range of instruments and units for use in endoscopic surgery which were developed in collaboration with clinical users and on the basis of state-of-the-art technologies. We would be pleased to send you detailed information on our
- camera systems,
- monitors,
- cold-light sources,
- insufflatators,
- irrigation / suction pumps,
- MIC instrument systems,
- trocar systems,
- electrical surgical units with a wide range of monopolar and bipolar accessories.
3 Putting the unit into operation

3.1 Initial check

Please check immediately that the unit and all accessories are complete and have not suffered any damage in transit.

Claims for damage can only be accepted if the supplier or carrier are informed without delay. A damage report must then be made immediately and submitted to the nearest MARTIN agent or to MARTIN directly in order for the damage claim to be made against the insurance.

When returning the equipment to MARTIN or to a MARTIN service station, please use the original packing.

The goods must be accompanied by the following information:
- Name and address of the owner,
- Type and serial number,
- Description of the fault.

3.2 Setting up the unit

Set up the unit on a flat surface in a dry environment. The ambient temperature must be between +10 °C and +40 °C and the relative humidity must be between 30 % and 70 %.

NOTE

- The ventilation slots in the unit must not be covered. A built-in safety contact will switch off the unit automatically if it overheats.

3.3 Optical-fiber cable system connection

The adapter for the connection of cold light cables (systems Storz, Wolf or Olympus) must be ordered separately. Screw it into the socket clockwise using the flat spanner provided. The system connector is correctly positioned when it is flush with the front panel.

Refer to the section “Accessories” for the order numbers of the individual adapters.
3.4 Connecting the unit to the mains

Warning

• Risk of explosion.

The mains plug may only be connected to the power supply outside areas where there is a risk of explosion.

The cold-light source MC 201 has a worldwide voltage power supply unit and can be operated on voltages of between 100 – 240 VAC.

The unit may only be connected electrically to a correctly installed and grounded socket in compliance with the regulations.

Use the supplied mains connection cable to make the connection between the mains socket and the mains supply jack (15) of the unit. Press the plug into the jack as far as it will go.

Incorporate the unit into the equipotential bonding system in accordance with the locally valid safety regulations.
4 Controls and operating the unit

4.1 Control elements and displays

Fig. 4.1: Control elements and displays of the cold-light source MC 201
Control elements and displays of the cold-light source MC 201

1. Mains switch (On / Off)
2. Mains indicator lamp
3. Warning sign: **Follow the operating instructions and safety instructions.**
4. On / Off switch for the video signal control with integrated indicator lamp (this switch is without function on units without video signal control)
5. On / Off switch for the xenon lamp with integrated indicator lamp
6. Operating state indicator for the lamp
7. Button for reducing the light intensity
8. Button for increasing the light intensity
9. Light intensity indicator
10. Light cable connection (unit adapter for cold-light cable)
11. Locking screw
12. Push-in module
13. Equipotential bonding pin
14. Rating plate
15. Mains connection socket
16. Mains fuses
17. Video Out – interface*
18. Video In – interface*

* Only on versions which are fitted with this option
4.2 Switching on the unit

Having switched on the Martin cold-light source MC 201 at the mains switch (1), the mains indicator lamp (2) lights up. The xenon lamp is in stand-by mode.

Insert the cold-light cable:

Push the cold-light cable with the corresponding adapter (Storz, Wolf or Olympus) into the cold-light cable socket (10) until it engages.

Note:

In order to obtain an optimum light level, the entry and exit surfaces of the cable and endoscope must be kept clean.

Cleaning: Use a neutral soap and a swab.

Post-cleaning and drying: Use alcohol and a swab.

Warning

High light energy of the cold-light source.

The patient can suffer burns. The cloth cover and other flammable materials can burn or catch fire.

Prevention: Keep the cold-light cable connected to the lens or disconnect it from the cold-light source after the lens has been removed from the abdominal cavity.

Pressing the XENON button (5) switches on the lamp.

The XENON button flashes during switching-on. The XENON button lights up after successful switching-on.

Two minutes can elapse until a stable arc is obtained, i.e. the full lighting intensity.
The operating state indicator of the lamp (6) lights up green, yellow or red, depending on the lamp’s operating period.

**Green** Lamp is already in operation for 0 - 449 hours.
**Yellow** Lamp is already in operation for 450 - 489 hours.
**Red** Lamp is already in operation for 490 - 499 hours.

When the operating state indicator lights up red, you should arrange a lamp replacement after the end of the operation.

If the lamp has exceeded the permissible operating duration of 500 hours, this is signaled by the operating state indicator flashing red.

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**WARNING**

- Exceeding the lamp’s maximum permissible operating period represents a safety hazard.
- So the user has to ensure that the permissible operating duration of 500 hours will not be exceeded under any circumstances.

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**The lamp must be replaced immediately!** The method for changing the lamp is outlined in Section 4.5.

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**NOTE**

- For safety reasons, switching on of the lamp is blocked by the internal software if an operating period of 500 hours is exceeded.
- In order to release switching on of the lamp again, change the lamp immediately and carry out a reset.

The method of changing the lamp and the reset are described in Sections 4.5 and 4.6.
4.3 Operating mode “Manual brightness control”

This operating mode is for applications where the light source is used together with camera systems fitted with an internal brightness control function (shutter).

Having switched on the lamp with the XENON button (5), the light source automatically provides the set light intensity. The indicator (9) is fully lit across all 12 steps at maximum light intensity.

In order to optimally adapt the light intensity to the prevailing light conditions, the brightness can be increased by pressing the buttons “increase light intensity” (8) or “reduce light intensity” (7). This brightness adjustment is steplessly variable.

Continuous pressing of the buttons “increase light intensity” (8) or “reduce light intensity” (7) results in continuous adjustment of the light intensity in the required direction.

Touching the relevant button briefly permits fine adjustment of the light intensity.
4.4 Operating mode  “Automatic brightness control by video signal control” (optional)

(Only available in unit variant article no. 83-142-01).

This operating mode is for applications where the light source is used together with camera systems not fitted with an internal brightness control facility.

In this operating mode, the light source automatically provides the required amount of light. The video signal required to adjust the brightness level must be fed into the light source. To do this, connect the socket video out of the monitor or of the video camera’s control unit to the socket video in (18) on the back of the light source.

An additional unit with a video signal compatible input, such as a monitor or a video recorder, can be connected to the socket video out (17).

Switch off the camera’s own control (shutter) to operate the light source with internal automatic brightness control. In this context, reference should be made to the operating instructions for the camera.

To operate the light source, switch on the xenon lamp by pressing the XENON button (5). The indicator lamp in the button lights up. The video signal control is then activated by pressing the VIDEO button (4). The indicator lamp in the VIDEO button also lights up. The brightness of the cold-light source is controlled via the video signal. The set light intensity can be read off on the display (9).
NOTE

- The VIDEO button (4) is inactive if you use a cold-light source without video signal control (article no. 83-142-00).
- The VIDEO button (4) can only be activated if the XENON button (5) is already activated.
- The connection between the camera and monitor should always be direct and as short as possible. Looping the video signal through other units or using long cables can impair image quality.

not recommended

![Diagram of not recommended connection](image1.png)

recommended

![Diagram of recommended connection](image2.png)
4.5 Replacing faulty lamps

Warning
Use only Martin XENON replacement lamps 180 W (Article No. 83-142-10)
• Risk of burns!
Exercise caution when replacing a lamp.
Lamps and surrounding parts can become very hot.
When changing the lamp, wait until the unit has completely cooled down.

• Risk of injury!
The lamp can explode due to its high internal pressure in both the cold state and the hot state. Flying parts can cause serious injuries.
During operation, the lamp emits intensive UV radiation which is hazardous to the eyes and skin. The high light intensity can cause serious eye damage if the arc is looked at directly.
The lamps must always be handled in the supplied protective sleeve. Always wear suitable protective clothing when changing lamps.
The lamp may only be operated inside the unit.
IMPORTANT

• Never allow the lamp to come into contact with the glass reflector.
• Fingerprints burn in and can reduce the lamp’s service life.
• Grip the lamp only on the ceramic base.
• Always have a replacement lamp (Article No. 83-142-10) available. In the event of a lamp defect, this enables the unit’s functional capability to be restored as quickly as possible.
• Reset the operating state indicator after changing the lamp (see Section 4.6).
If the red indicator lamp on the operating state indicator (6) lights up or flashes, the xenon lamp **must** be replaced.

To do this, please refer to the description and illustrations below:

1. Switch off the unit at the mains switch (1).
2. Disconnect the mains connection by pulling out the mains plug.
   
   ![Diagram showing the process of disconnecting the mains connection]

3. Undo the locking screw (11).
   
   ![Diagram showing the process of undoing the locking screw]

4. Pull out the push-in module (12) by the handle as far as it will go.
   
   ![Diagram showing the process of pulling out the push-in module]

5. Disengage the lamp connector (20) by simultaneously pushing on both locking lugs (A) on the front surfaces of the connector. Carefully pull the plug out of the socket (B).
   
   ![Diagram showing the process of disengaging the lamp connector]

6. Press the lamp claw (21) back.
   
   ![Diagram showing the process of pressing the lamp claw back]
7. Press the lamp claw (21) back.

8. Take a new lamp (22) out of the packing and carefully place it into the lamp holder.

9. Release the lamp claw (23). The lamp is automatically engaged in the correct position.

   Ensure that you insert the lamp in the correct position (22). The small lug on the lamp holder must project into the anti-rotation device (23) (groove in the ceramic ring) of the front lamp base.
10. Push the push-in module into the unit as far as it will go and tighten the locking screw (11).

11. Push the push-in module into the unit as far as it will go and tighten the locking screw (11).

12. Now reset the lamp operating state indicator (see Section 4.6).
4.6 Resetting the lamp operating state indicator

IMPORTANT
- Reset the lamp operating state indicator only when you have inserted a new lamp
  Otherwise damage can arise on the unit if the permissible lamp service life is exceeded.

After every lamp change, you must carry out a lamp operating state indicator reset. To do so, proceed as follows:

1. Make the mains connection by inserting the mains plug into the main connection jack (15). Do not yet switch on the unit at the mains switch (1).

2. Simultaneously press the keys “increase light intensity” (8) and “reduce light intensity” (7). While keeping this key combination pressed, switch on the unit at the mains switch (1) and wait for three seconds.

3. All three light fields of the lamp operating state indicator (6) flash for three seconds.
5 Accessories

<table>
<thead>
<tr>
<th>Article No.</th>
<th>Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>83-042-00</td>
<td>Martin MC 201 cold-light source with 180 W xenon lamp, without video signal control</td>
</tr>
<tr>
<td>83-042-01</td>
<td>Martin MC 201 cold-light source with 180 W xenon lamp, with video signal control</td>
</tr>
<tr>
<td>83-142-10</td>
<td>Replacement XENON lamp 180 W</td>
</tr>
<tr>
<td>83-141-10</td>
<td>Adapter for Storz system</td>
</tr>
<tr>
<td>83-141-11</td>
<td>Adapter for Wolf system</td>
</tr>
<tr>
<td>83-141-12</td>
<td>Adapter for Olympus system</td>
</tr>
<tr>
<td>83-260-00</td>
<td>Coldlight Cable w. Adapt. Wolf Ø 4,8 mm, 230 cm</td>
</tr>
<tr>
<td>83-260-01</td>
<td>Coldlight Cable w. Adapt. Storz Ø 4,8 mm, 230 cm</td>
</tr>
<tr>
<td>83-260-02</td>
<td>Coldlight Cable w. Adapt. Olympus Ø 4,8 mm, 230 cm</td>
</tr>
<tr>
<td>08-468-00-02</td>
<td>BNC cable, 75 Ohm, 2 m</td>
</tr>
</tbody>
</table>
6 Care and maintenance of the unit

In order to maintain full performance of the unit, appropriate effort should be made in the care, maintenance and storage of the unit.

6.1 Cleaning

Before any cleaning, the unit must be switched off at the mains and the mains cable must be disconnected. The lamp system must have cooled down.

In order to obtain optimum light efficiency, the light entry and exit surfaces on the light cable and endoscope must be kept clean.

Cleaning: Use a neutral soap and swab.

Post-cleaning and drying: Use alcohol and a swab.

A diluted disinfectant solution is suitable for cleaning the unit’s external surfaces. The solution concentration should be in accordance with the instructions of the disinfectant manufacturer.

It is essential to ensure that the liquid does not enter the unit.

The unit must under no circumstances be sterilized.

6.2 Annual service inspection

The unit should be checked annually by an authorized service technician. Otherwise, the manufacturer accepts no responsibility for the operational safety of the unit. All service work such as modifications, repairs, calibrations etc. may only be carried out by the manufacturer or by specialists authorized by the manufacturer.

The user of the unit must obtain a certificate from the service technician for inspection and repair work. This certificate contains the type and extent of the work carried out, the date and details of the company, and is signed.

Unauthorized opening of the housing for repairs and / or modifications to the unit by third parties releases us from any liability whatsoever with regard to the unit’s operational safety.
## 7 Faults and troubleshooting list

<table>
<thead>
<tr>
<th>Fault</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains indicator lamp (2) does not light up</td>
<td>No mains voltage</td>
<td>Check the power supply</td>
</tr>
<tr>
<td>Cold-light unit plug or mains plug not correctly inserted</td>
<td>Check mains connection</td>
<td></td>
</tr>
<tr>
<td>Unit not switched on</td>
<td>Switch on the unit at the mains switch (1)</td>
<td></td>
</tr>
<tr>
<td>Push-in module (12) not closed</td>
<td>Close the push-in module (12) and lock it with a locking screw (11)</td>
<td></td>
</tr>
<tr>
<td>Fuses faulty</td>
<td>Check the fuses in the fuse holders (16) on the rear panel (TX.XA)</td>
<td></td>
</tr>
<tr>
<td>Light source produces no light. Xenon indicator lamp (5) does not light up</td>
<td>XENON button (5) not pressed</td>
<td>Press the xenon button (5)</td>
</tr>
<tr>
<td>Light source produces no light / xenon indicator lamp (5) lights up / red warning light of the lamp operating state indicator (6) flashes.</td>
<td>Xenon lamp has exceeded the permissible number of operating hours</td>
<td>Replace the xenon lamp immediately (see sections 4.5 and 4.6)</td>
</tr>
<tr>
<td>Light source produces no light / xenon indicator lamp lights up</td>
<td>Internal unit fuse faulty</td>
<td>Request service technician</td>
</tr>
<tr>
<td>Video control lamp does not light up when pressed</td>
<td>Unit not equipped with video signal control option</td>
<td>If necessary, have the unit retrofitted with the video signal control facility by Service</td>
</tr>
<tr>
<td>No manual brightness control possible. Video control lamp lights up</td>
<td>Unit operates in video signal control mode</td>
<td>Press the video signal control button (4)</td>
</tr>
<tr>
<td>Fault</td>
<td>Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Light source produces insufficient light</td>
<td>Cold-light cable not pushed into the light cable jack (10) as it will go</td>
<td>Push in the cold-light cable as far as it will go</td>
</tr>
<tr>
<td></td>
<td>Cold-light cable faulty</td>
<td>Replace cold-light cable</td>
</tr>
<tr>
<td></td>
<td>Optical system dirty</td>
<td>Clean end surfaces of the cold-light cable and light entry and exit surfaces on the endoscope</td>
</tr>
<tr>
<td>Segment 1 of the light intensity indicator (9) flashes</td>
<td>Overtemperature in the unit</td>
<td>Request service technician</td>
</tr>
<tr>
<td>Segment 12 of the light intensity indicator (9) flashes</td>
<td>Too many lamp data records saved</td>
<td>Request service technician</td>
</tr>
</tbody>
</table>
## 8 Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mains connection</td>
<td>100–240 V, 50–60 Hz</td>
</tr>
<tr>
<td>Power input</td>
<td>350 VA</td>
</tr>
<tr>
<td>Design</td>
<td>In accordance with DIN IEC 601/1</td>
</tr>
<tr>
<td>Protection class</td>
<td>I</td>
</tr>
<tr>
<td>Type</td>
<td>BF</td>
</tr>
<tr>
<td>Class (MDD)</td>
<td>I</td>
</tr>
<tr>
<td>Color temperature</td>
<td>6000 K</td>
</tr>
<tr>
<td>RA value</td>
<td>&gt; 90</td>
</tr>
<tr>
<td>Wave length of the emitted light</td>
<td>380 to 780 nm</td>
</tr>
<tr>
<td>Xenon lamp service life</td>
<td>500 hours</td>
</tr>
<tr>
<td>Interference suppression</td>
<td>EN 55011 (CISPR 11)</td>
</tr>
<tr>
<td></td>
<td>EN 50082, Parts 1 &amp; 2</td>
</tr>
<tr>
<td>Temperature range</td>
<td>+10 °C to +40 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>30 % to 70 %</td>
</tr>
<tr>
<td>Drip water protection</td>
<td>IP X1</td>
</tr>
<tr>
<td>Dimensions</td>
<td>405 x 135 x 305 mm (W x H x D)</td>
</tr>
<tr>
<td>Weight</td>
<td>12 kg</td>
</tr>
</tbody>
</table>

Conform with 93/42/EEC