

Instructions for use
MACH LED 115
Spot Light with LED Technology



LED 115 stand modeltem no. 1153101200
LED 115 wall model Item no. 1153102100

Special fixations:

LED 115 with fixation with table clamp Item no. 1153102500
LED 115 with fixation clamp for supply rails Item no. 1153102601
LED 115 with fixation for round and square tubes Item no. 1153102602
LED 115 with fixation plate Item no. 1153102604

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1. Safety instructions

Please pay attention to the directions for use when handling the lamp.

Attention:

**This device is not suitable for use in hazardous locations.
The lamp is classified as a group 1 device according to the MPG
(law for medical products).**

The lamp may be connected to mains only after the complete mounting of the stand and the lamp.

Repairs to the lamp and special installation work at the electronic power supply should only be carried out by ourselves or a company expressly authorised by ourselves.

The manufacturer is only responsible for the safety of the lamp and the stand if repairs and alterations have been carried out by themselves or a company who can guarantee that the safety regulations have been observed.

The manufacturer is not liable for personal or material damages if the lamp or the stand is inappropriate or incorrectly operated or misused.

General instructions

All Dr. Mach stand lamps are supplied with all installation and connection parts and components.

For packaging reasons, the five-foot stand is supplied in dismantled state. The stand tube is always assembled as a unit and only needs to be attached to the foot with the lower fastening screw.

The lamp is supplied with integrated connection lead and earthed plug.

The socket to be used for the lamp must be installed according to the requirements stipulated by the IEC or VDE 0100-710.

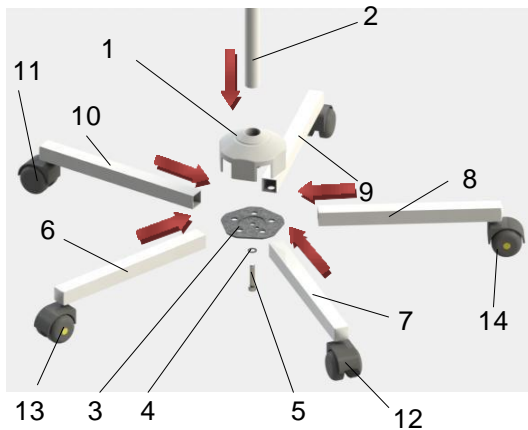
Please check that the earthed socket is available within the working area of the lamp.

2. Mounting instructions

Extent of supply

- 1x 5-footed plastic central base
- 2x extension arms with blocking rollers
- 2x extension arms with electrically conductive rollers
- 1x extension arm with roller
- 1x cam catch plate
- 1x cheese head screw M8 with lock washer
- 1x stand tube
- Lamp head with arm
- Mounting instructions/Instructions for use – lamp head and stand

2.1 Mounting the mobile stand



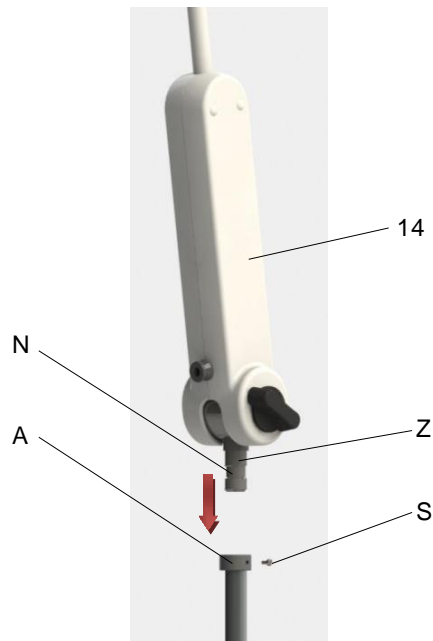
For mounting the stand proceed as follows:

- Place the central base **1** onto the stand tube $\varnothing 25$ **2**. The stiffness is to ensure a tight fit that is free from any movement.
- Pre-mount the cam catch plate **3** (cams point inwards), with the lock washer **4** and cheese head screw M8 **5**, so that the extension arm **6** can still fit easily into the central base. Insert the extension arm **6** into the central base from above holding the cam catch plate **3** against from the opposite side.
- Insert the other 4 extension arms **7-10** in the sequence shown in the left figure into the central base. The extension arms are held by the cams of the cam catch plates.

Remark: Mount the two locking rollers **11 and **12**, and the two electrically conductive rollers **13** and **14** as shown in the figure (not next to each other).**

- Tighten the catch plate with an Allen key SW6 (approx. 15Nm).
The cams of the catch plate must mate with the drill holes of the extension arms so that every extension arm is tightly fitted to both the central base and stand tube.
The cams also prevent the extension arms from being pulled out.

2.2 Mounting the light



Tighten screw **S** in the mounting device (stand, wall, table, rail, round and rectangular tube, screw-on plate) after the lamp has been attached. This prevents the lamp from being unintentionally removed.

Make sure that joint **Z** at the lower side of transformer housing **14** is fully inserted into tube **A**, so that the safety screw **S** engages properly in the provided groove **N**.

2.3 Wall attachment

- Mark the position of the holes to be drilled in the wall using the wall bracket.
- Drill the holes and insert dowels provided by the customer. Dr. Mach does not include dowels in the scope of supply.
- For mounting the lamp see point 2.2.

2.4 Table attachment

- Screw table clamp onto table.
- For mounting the lamp see point 2.2.

2.5 Rail attachment

- Attach light mounting in the desired position on the rail.
- For mounting the lamp see point 2.2.

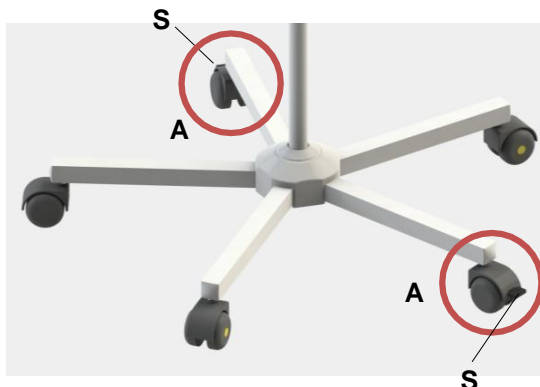
2.6 Round and rectangular tube attachment

- Screw light mounting in desired position onto tube.
- For mounting the lamp see point 2.2.

2.7 Attachment of screw-on plate

- Drill attachment holes and attach with screws.
- For mounting the lamp see point 2.2.

3. Directions for use



3.1 Stand foot

The five-foot stand is equipped with two opposing braked wheels **A**.

Set the brake by pressing the pedal **S** on the roller. Unlock by lifting the pedal again.

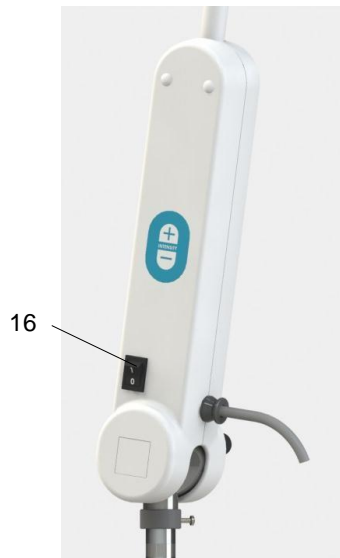


3.2 Stand tube

The stand tube can be adjusted continuously in height and fixed in the precisely required position, needing only one hand.

The height is adjusted by lifting the slip button **15**. The position of the light is automatically fixed on letting go.

As long as the slip button **15** is raised, the extension tube can be pulled off or inserted into the stand tube.



3.3 Operating the light

3.3.1 ON/OFF switch

Push the switch **16** on the power supply housing to switch the light on and off.

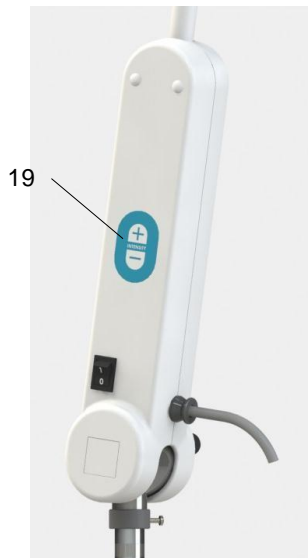


3.3.2 Positioning

Use the clamping lever **17** on the power supply housing to position the light arm.

Use the handle **18** on the light head to position the light.

The flexible joint **G** holds the light head in the requested position.

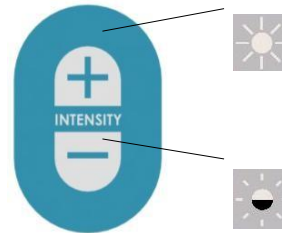


3.3.3 Electronic light intensity control

The light is supplied with an electronic light intensity control.

The light intensity can be adjusted and set at the key pad **19** on the power supply housing as follows:

- Pressing the key **Intensity +**: the light intensity increases;
- Pressing the key **Intensity -**: the light intensity decreases.



4. Cleaning

4.1 Mobile stand

The surface of the stands can be easily kept clean by simply wiping with a damp cloth. Conventional cleaning agents can be used.

In case of disinfection only use disinfectants with less than 20% alcohol.



4.2 Light head

The lamp has a high-quality surface, which can be cleaned with conventional cleaning agents. Only use disinfectant with **less than 20% alcohol**.

4.3 Protection disk

The protection disk **20** is made of a high-quality plastic. For cleaning use lukewarm water and a soft viscose sponge. Pay attention to the following during cleaning:

- Wipe over the protection disk **20** with a wet cloth (never use a dry cloth!).
- Only use disinfectant with **less than 20% alcohol**.



Alc. ≤ 20 %

Wipe the protection disk **20** after cleaning with an antistatic, non-fluffy cloth.

5. Maintenance

The light Mach LED 115 is equipped with a clamping lever on the power supply housing. After the mounting of the light with the mobile stand or the other fixation designs this clamping lever must be adjusted according to the customer's requirements.

Preventive maintenance of the light must be done every two years. This includes a technical and mechanical check-up.

Remark: Before doing any maintenance work on the light the light must be turned off and disconnected from mains. Please protect the light against switching on.

5.1 Periodical maintenance work

The following maintenance work / tests has / have to be done every six months:

- check on defects in paint work;
- check on fissures at plastic parts;
- check on deformation of the suspension.

The following maintenance work / tests has / have to be done once a year:

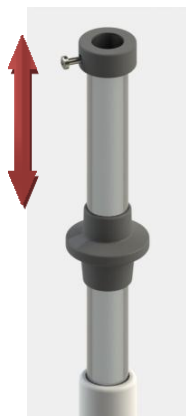
- check the function;
- electrical safety test;
- check the suspension.



5.2 Settings at the light arm

♦ Adjusting the clamping lever

In case the movement of the light head is tight or it doesn't hold its position anymore, the braking efficiency of the clamping lever on the power supply housing must be adjusted.



5.3 Settings at the mobile stand

♦ One-handed height adjustment

Adjusting the spring force at these stands is not possible.

It is usually not necessary to adjust the spring force at stands with one handed height adjustment.

6. Data

6.1 Technical data

Five foot stand

Lamp type		Mach 115
Data		
Stand foot	Number of extension arms	5
	Length of extension arms	310mm
	Rollers Ø	50mm
Stand tube	Approx. length.	95cm – 145cm
	Diameter	25mm
	Extension	yes
	Cable connection	no
	Suitable for article no.	115 310 1200
Arm + lamp head	Mounting	<ul style="list-style-type: none"> arm and Lamp head premounted arm mounted to stand

Light head Mach LED 115

Mach LED 115	
Central light intensity at a distance of 0,5 meters	60.000 Lux
Colour rendering index R _a	95
Light field size	14 cm
Colour temperature (Kelvin)	4500 K
Electronic light intensity control at the light head	50 – 100 %
Number of LED's	7
Life span of the LED's	≥ 40.000 h
Diameter of the light head	22 cm

Remark:

The technical data are subject to fluctuations. Due to manufacturing reasons the real values can slightly differ from the data mentioned above.

The values for R_a can differ with approx ± 5%.

The values for the colour temperature can differ with approx ± 200K.

6.2 Electrical Data

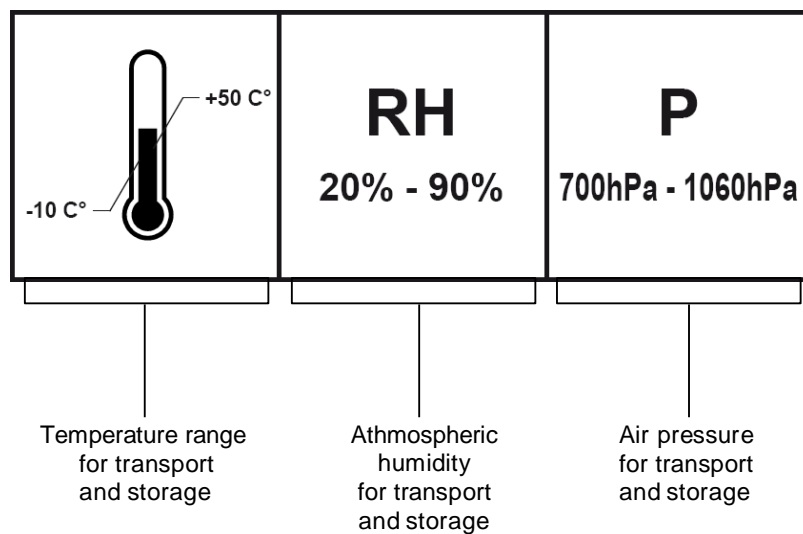
Mach LED 115	
Power consumption	10 W
Operating voltage DC	24 V DC
Current	0,42 A

6.3 Environmental conditions**Operation**

	Min.	Max.
Temperature	+10°C	+40°C
Relative atmospheric humidity	30 %	75 %
Air pressure	700 hPa	1060 hPa

Transport / storage

	Min.	Max.
Temperature	-10°C	+50°C
Relative atmospheric humidity	20 %	90 %
Air pressure	700 hPa	1060 hPa

References on the package

7. CE-mark



The products Mach LED 115 comply with the standards 93/42/EEC for medical products of the European Community's Council. Dr. Mach applies the standard EN 60601-2-41. Dr. Mach GmbH is certified according to DIN EN ISO 13485:2003.

8. Disposal



The OT-lamp doesn't contain any dangerous goods.
The components of the OT-lamp should be properly disposed at the end of its shelf-life. Make sure, that the materials are carefully separated.
The electrical conducting boards should be submitted to an appropriate recycling proceeding.
The rest of the components should be disposed according to the contained materials.

9. Electromagnetic compatibility

Table 201 – Guidance and manufacturer's declaration – electromagnetic emission – for all EQUIPMENT AND SYSTEMS (see 6.8.3.201 a) 3))

1	Guidance and manufacturer's declaration – electromagnetic emission		
2	The MACH LED 115 is intended for use in the electromagnetic environment specified below. The customer or the user of the MACH LED 115 should assure that it is used in such an environment.		
3	Emissions test	Compliance	Electromagnetic environment - guidance
7	Harmonic emissions IEC 61000-3-2	Class C	The MACH LED 115 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
8	Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	
12	RF emissions CISPR 15	Complies	The MACH LED 115 is not suitable for interconnection with other equipment.

Table 202 – Guidance and manufacturer's declaration – electromagnetic immunity – for all EQUIPMENT and SYSTEMS (see 6.8.3.201 a) 6))

Guidance and manufacturer's declaration – electromagnetic immunity			
The MACH LED 115 is intended for use in the electromagnetic environment specified below. The customer or the user of the MACH LED 115 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient / burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (>95 % dip in U_T) for 5 sec	< 5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (>95 % dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the MACH LED 115 requires continued operation during power mains interruptions, it is recommended that the MACH LED 115 be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a. c. mains voltage prior to application of the test level.			

Table 204 – Guidance and manufacturer's declaration – electromagnetic immunity –
for EQUIPMENT and SYSTEM that are not LIFE-SUPPORTING (see 6.8.3.201 b))


Guidance and manufacturer's declaration – electromagnetic immunity			
The MACH LED 115 is intended for use in the electromagnetic environment specified below. The customer or the user of the MACH LED 115 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 V 150 kHz to 80 MHz	3 V	<p>Portable and mobile RF communications equipment should be used no closer to any part of the MACH LED 115 including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1,17\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	$d = 1,17\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2,34\sqrt{P} \quad 800 \text{ MHz to } 2,5 \text{ GHz}$ <p>where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).^b</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
<p>NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic is affected by absorption and reflection from structures, objects and people.</p>			
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the MACH LED 115 is used exceeds the applicable RF compliance level above, the MACH LED 115 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the MACH LED 115.</p> <p>^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			

Table 206 – Recommended separation distances between portable and mobile RF communications equipment and the EQUIPMENT or SYSTEM - for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING (see 6.8.3.201 b))

Recommended separation distances between portable and mobile RF communications equipment and the MACH LED 130			
The MACH LED 115 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the MACH LED 115 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MACH LED 115 as recommended below, according to the maximum output power of the communications equipment			
Rated maximum output of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,17\sqrt{P}$	80 MHz to 800 MHz $d = 1,17\sqrt{P}$	800 MHz to 2,5 GHz $d = 2,34\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,37	0,37	0,74
1	1,17	1,17	2,33
10	3,69	3,69	7,38
100	11,67	11,67	23,33
For transmitters rated at a maximum output power not listed above the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			