

**tedisel**medical

# COLUMN

USER AND CLEANING MANUAL



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## 1. Manufacturer

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## 2. Security information

Important notes in these operating instructions are marked with graphic symbols and signal words.

### 2.1. Injury risk warnings

Signal words such as DANGER, WARNING or CAUTION describe the degree of risk of injury. The different triangular symbols visually emphasise the degree of danger.



WARNING

Refers to a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Refers to a potential hazard which, if not avoided, may result in minor or slight injury.



DANGER

Refers to an immediate danger which, if not avoided, will result in death or serious injury.

### 2.2. Warnings of risk of damage

The signal word WARNING describes the degree of risk of material damage. The triangular symbol visually emphasises the degree of danger.



Damage to surfaces: warns of damage to surfaces due to unsuitable cleaning agents and disinfectants.



NOTICE

Refers to a potential hazard which, if not avoided, may cause damage to the equipment.

### 2.3. Supplementary symbols used in the safety instructions



Fire hazard



Explosion hazard: warns of ignition of explosive gas mixtures.



Dangerous voltage: warns about electric shocks that can cause serious injury or death.

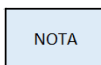


Failure of the roof support system



Risk of collision

### 2.4. Indication of additional information



A NOTE provides additional information and useful tips for safe and efficient use of the device.

### 2.5. Proper use of oxygen.

#### 2.5.1. Oxygen explosion



Oxygen becomes explosive when it comes into contact with oils, greases and lubricants.

Compressed oxygen presents an explosion hazard:

- Make sure that oxygen and gas outlets are free of oil, greasy materials and lubricants!
- Do not use cleaning agents containing oil, grease or lubricants.

#### 2.5.2. Fire hazard



**DANGER:** Escaping oxygen is combustible:

- Open fire, red-hot objects and open light are not allowed when working with oxygen!
- Don't smoke!

## 2.6. Patient environment

The dimensions in the figure below illustrate the minimum extent of the patient environment in an unrestricted area according to IEC 60601-1.

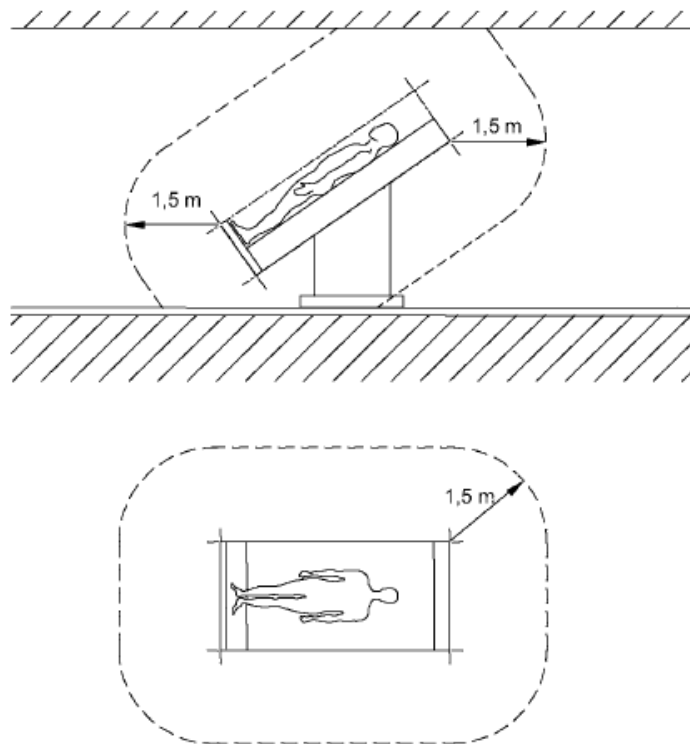


Fig. 1 Minimum extent of the PATIENT ENVIRONMENT

## 2.7. Combination with products from other manufacturers.

The suspension system is combined with the service head. To avoid dangerous overloads, which can damage or cause collapse of the service head and the pendant system, the specified maximum load capacity must be observed.



See section 6.7 of the user and cleaning manual supplied with the equipment.

Power supply packages intended to supply power to end devices must ensure electrical isolation and provide two protective measures according to IEC 60601-1.

NOTA

The party putting the device into operation is responsible for the validation of the whole system. If necessary, a conformity assessment procedure shall be performed and a declaration of conformity with Article 22 of the Medical Devices Regulation (EU) 2017/745 shall be provided.



Read the Operating Instructions provided by the external manufacturer to obtain the necessary information for the operation of the end device.



## 3. Risks

### 3.1. Gas explosions



Oxygen becomes explosive when it comes into contact with oils, greases and lubricants.

When in contact with oxygen in the air, medical gases may form an explosive or easily flammable gas mixture. The equipment is not suitable for use in environments containing flammable mixtures of anaesthetics with high concentrations of oxygen or nitrous oxide.

If such high concentrations of flammable mixtures of anaesthetics with oxygen or nitrous oxide occur in the environment of the device, there is a risk of ignition under certain conditions.

### 3.2. Risk of device malfunction



**CAUTION:** If a device is connected to the equipment and trips the protection mechanism of the corresponding circuit in the health care facility, other devices connected to the equipment will not receive power.

### 3.3. Risk of patient contamination and infection



**WARNING:** Parts of the pendant system and adaptations are made of plastic. Solvents can dissolve the materials, alcoholic content greater than 60 % may cause the plastic materials to become brittle. Dislodged particles may fall into open wounds. If liquid cleaning agents are allowed to penetrate into the hanging system and fittings, excess cleaning fluid may drip into open wounds. Strong acids, bases and agents with a high degree of corrosion resistance are not allowed to penetrate into the wound.

### 3.4. Fire risk



Plug-in connections for the supply of medical gases must not come into contact with oil, grease or flammable liquids.

### 3.5. Danger of electric shock



Signal cables (network, audio, video, etc.) must be electrically isolated from equipment and the ends of building connections to prevent contact with currents that can cause serious injury or death.

### 3.6. Risk of collision



In the event of a collision with other devices, walls or ceilings, the pendant system and service head may be damaged and important patient care systems may fail, after a collision, the service head and pendant system should be inspected for damage.

### 3.7. Risk of system crash due to overload



The dead weights of all attached components and the weight of the attached loads must not exceed the maximum load weight of the base support unit.



If the maximum load capacity has been exceeded, there is a risk that the suspension system or components of the suspension system may become detached from the securing device and fall.



- The maximum load capacity of the suspension system and its components must not be exceeded!

See point 6 of the user and cleaning manual supplied with the equipment.

- Do not attach or mount any additional loads on the extension arms, service head and end devices.

### 3.8. Risk of system crash due to poor installation



If the fasteners of the individual parts of the system are not correctly positioned or if the tightening torques of the fasteners are not observed, the suspension system may come loose from its fastenings and fall down.

## 4. Symbols used



Applicable part B



Earth (mass)



Equipotentiality



Protective earth (ground)

**N**

Connection point for neutral conductor



Nurse call button



Direct lighting



Indirect lighting



Operating instructions



Health Product



Waste electrical equipment



CE symbol



Product code



Unique identification code



Serial number



Manufacturer



Date of manufacture



Reference to the instruction manual



Damage to surfaces



Fire hazard



Danger of explosion



Dangerous tension



NOTICE

Notice



Risk of finger entrapment



WARNING

Warning



CAUTION

Caution



DANGER

Danger

## 5. Product data

This manual refers to the COLUMN model. This model is part of the UMOS family.

### 5.1. Storage conditions

The packaging of this type of product consists of two parts, a first part containing the mobile arm (structural part of the equipment) and a second part corresponding to the service head.

The first consists of a cardboard box with a sturdy wooden structure and cardboard reinforcements inside the box to immobilise the arm. This packaging can be assembled in two heights.

The second consists of bubble wrap on the inside and a cardboard box on the outside. Non-stackable packaging.

Under no circumstances should the product be stored with open or damaged packaging. If the product is inspected on receipt and installation is not carried out within 1 day, the product packaging must be resealed.



NOTICE: Failure to follow these instructions may result in damage to the equipment.

Recommended temperature range: -20 °C to 60 °C

Recommended humidity range: 10 % to 75 %.

Atmospheric pressure: 500 hPa to 1,060 hPa

### 5.2. Operating conditions



NOTICE: Failure to follow these instructions may result in damage to the equipment.

Recommended temperature range: 10 °C to 40 °C

Recommended humidity range: 30 % to 75 %.

Atmospheric pressure: 700 hPa to 1,060 hPa

### 5.3. Service life

The service life of the UMOS family of products is determined by the service life of the distribution hoses and the medical gas inlets they incorporate, which is 8 years.

## 5.4. Product description

These systems have three main differentiated functions within the hospital and according to the area for which they are intended:

- Medical gas services
- Electrical, voice and data services
- Nurse call

COLUMN devices consist of two distinct parts, the structural part (drop tubes and/or arms), which is responsible for bringing the device to the desired point, and the service head, which serves as a supply interface for energy consumers and also for the housing, storage and storage of medical devices and accessories. See Fig. 2.

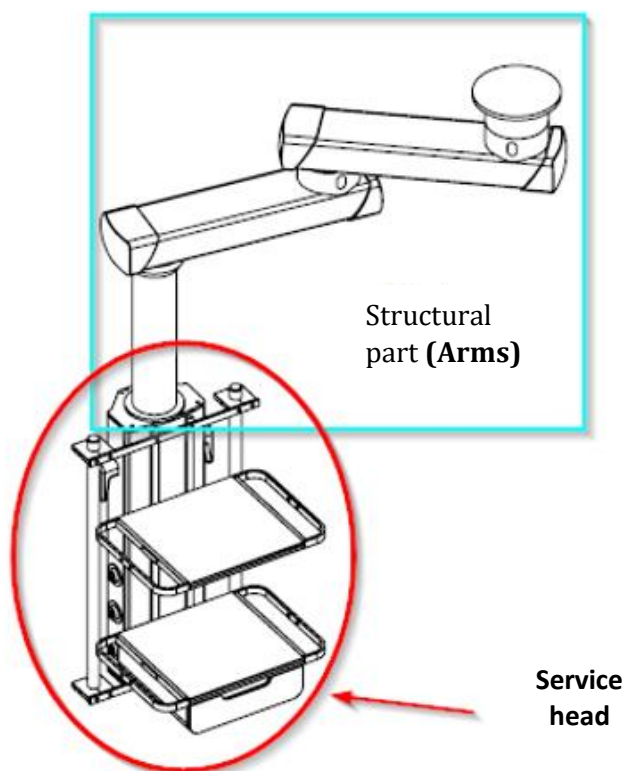


Fig.2 Parts of the equipment

NOTA

Only COLUMN accessories supplied by Tedisel (platforms, device holders, etc.) attached to the system head can be used to pick up loads. For this purpose, the different loading conditions of a base support unit and the individual accessories must be considered:

- The load capacity of the base support unit is defined by the maximum equipment load (see rating plate on the system head). When attaching pick-up accessories, the equipment load is reduced by the weight of the accessories themselves.



Exceeding the maximum capacity of the equipment may result in injury to staff or patient, as well as damage to property.

### 5.4.1. Types of suspended structure

COLUMN systems can be segmented according to the mechanical attachment system used for the suspension of the service head:

**(A) Depending on the type of brake:** electro-pneumatic (EN), electromagnetic (EM) or friction (F) depending on the mechanism used to lock the rotation of the arms and the service head.

The extension arms (2) and the drop tube are equipped with brakes to keep them stable in any adjusted position. There are three types of brakes, the mechanical or friction brake, always present, and two possibilities of brakes managed by the corresponding buttons (A), (B) located on the service head or on the screen support, one electromagnetic and the other pneumatic (actuated by compressed air).

Additional mechanical brakes (friction brakes) ensure that the outriggers remain stable at the bearing point to the roof tube and between the outriggers in the event of a failure of the pneumatic brake. The mechanical brake can be adjusted as described in point 8.4 of this manual.

**(B) Depending on whether the movement is assisted:** Without motor (NM), with motor (M), with spring (K) depending on whether or not the movement is assisted with respect to the vertical of the media column.

**(C) Depending on the number of arms:** Single (S), double (D), single (rotating) neck (R) depending on the need for displacement of the media column in reference to the vertical axis from the anchorage point of the equipment.

**(D) Depending on the load capacity:** Medium (M) or high (A) depending on the load requirement to accommodate other equipment.

**(E) According to column orientation:** Vertical (V) or horizontal (H)

**(F) Depending on the number of service heads:** Single (I) or tandem (T)

Below is an overview of the different features and configurations that the COLUMN model allows:

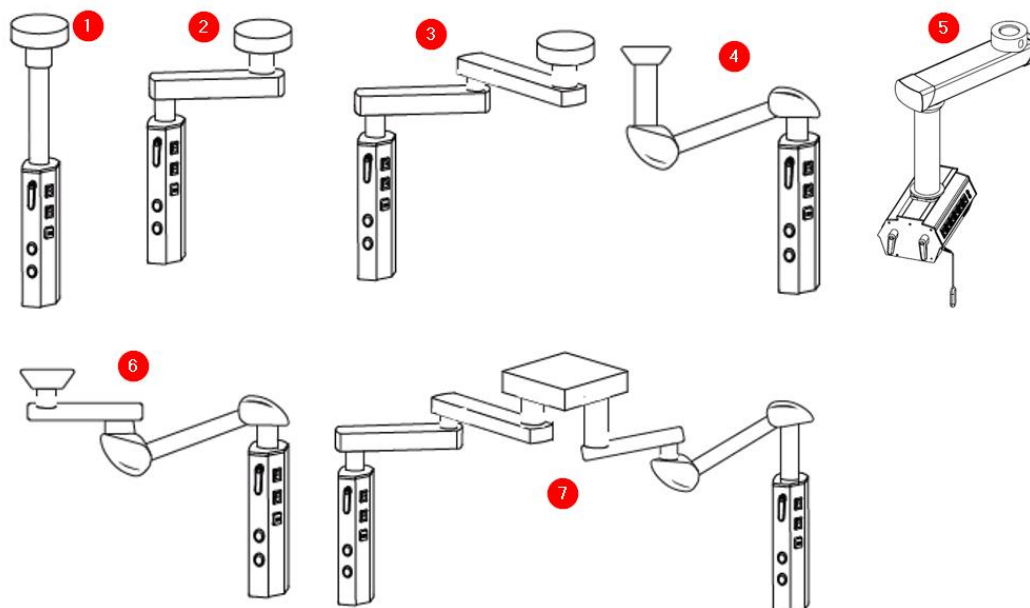


Fig.3 Typology scheme. Variants

#### 1. Direct ceiling fixing through downpipe

This configuration consists of a downcomer that only allows rotation of the service head around the vertical axis of the equipment.

#### 2. Attachment via single non-motorised arm

This configuration allows rotation around two axes in order to bring the service head closer to the point of application. Working space depending on the arm length.

#### 3. Attachment via non-motorised double arm

This configuration allows rotation around three axes in order to bring the service head closer to the point of application. Working space depending on the combined lengths of the two arms.

#### 4. Fixing via single motorised arm with rotation

This configuration allows rotation around two axes in order to bring the service head closer to the point of application and also allows it to move vertically with an associated load (accessories). Working space depending on the length of the arms.

#### 5. Horizontal column arrangement

This is a configuration in which the service head is positioned horizontally. It allows an alternative arrangement of the service points. It can be fixed to the ceiling through all existing arm configurations or through the downpipe.

#### 6. Fixing via motorised double arm with rotation



This configuration allows rotation around three axes in order to bring the service head closer to the point of application and also allows vertical displacement of the associated load. Working space depending on the length of the arms.

## 7. Tandem

This configuration allows two of the above options to be combined in the same anchor point. Working space depending on the combined lengths of the different pieces of equipment.

A summary table with the nomenclatures of the individual variants is shown below.

Model	NO. ARMS		Payload			Motorized	Spring	Brake type		
	Simple	Double	Low	Medium	High			F	EM	EN
COLUMN ROTATION CD	-	-	-	-	x	-	-	x	-	-
COLUMN ROTATION RR	-	-	-	-	x	-	-	x	-	-
COLUMN	x	x	x	-	-	-	-	x	x	-
COLUMN-INVERTED	-	x	x	-	-	-	-	x	x	-
COLUMN XL	x	x	-	x	-	-	-	x	x	-
COLUMN XXL	-	x	-	-	x	-	-	x	x	-
COLUMN AIR	x	x	x	-	-	-	-	x	-	x
COLUMN AIR PLUS	x	x	-	x	-	-	-	x	-	x
COLUMN MOTOR FRICTION	x	x	x	-	-	x	-	x	-	-
COLUMN MOTOR AIRPLUS	x	x	x	-	-	x	-	x	-	x
COLUMN MOTOR XL	x	x	x	-	-	x	-	x	x	-
COLUMN MOTOR XL	-	x	-	-	x	x	-	x	x	-
COLUMN SPRING	x	x	x	-	-	-	x	x	x	-
COLUMN SPRING XL	-	x	-	x	-	-	x	x	x	-

Table 1 Types of suspended structure. Summary

### 5.4.2. Parts and control elements

#### 5.4.2.1 Drop tube

The length of the downpipes is variable according to each project and varies between 120 and 1500mm. The downpipes can be fixed to the service head or rotate 340° horizontally. The permissible

load will be 385Kg for the variant with rotation (pure tensile load on the axis of rotation). The maximum permissible tensile load for the fixed drop tube is 4,500Kg, so the limitation in these systems will be set by the service head and/or the carousels and trolleys. The length of the drop tube compensates for different ceiling heights to ensure that the service head is positioned at the desired working height.

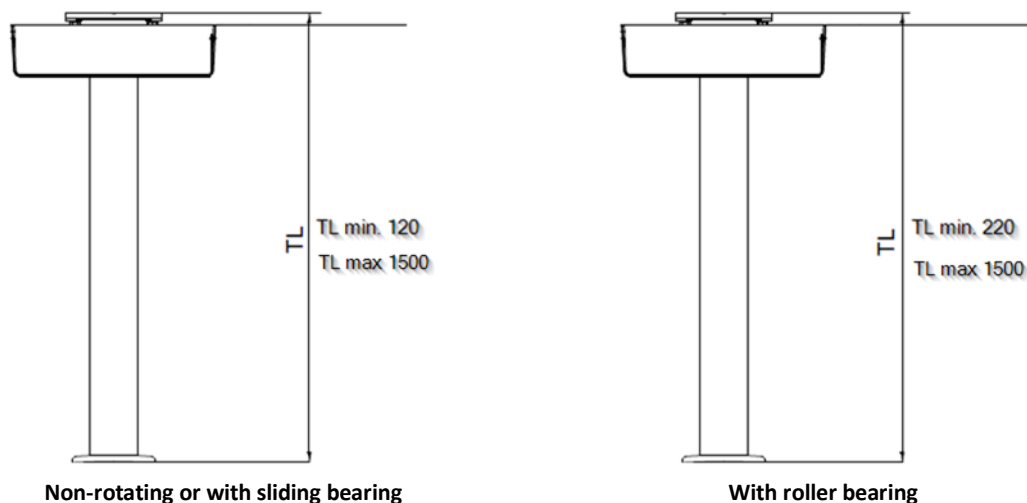


Fig.4 Drop pipes

There are two different variants for the drop tubes depending on the mechanism used for the rotation, i.e. the variant COLUMN ROTATION CD when the rotation takes place by means of a friction bearing and the variant COLUMN ROTATION RR when the rotation takes place by means of a roller bearing.

To avoid collisions with other components or walls, the swivel range of the drop tubes can be limited by means of internal end stops. The end stops are pre-set at the factory.



See section 8.4.2 of this manual for the setting of rotation stops

The brakes shall in any case be mechanical brakes and are located at the top of the drop tubes.

#### 5.4.2.2 Non-motorised arms

The length of the arms is variable according to each project and varies between 600 and 1600mm. They can be combined up to a maximum of 2750mm between the anchorage point of the equipment and the vertical axis of the service head. See Fig. 5, double arm on the left of the image and single arm on the right of the image.

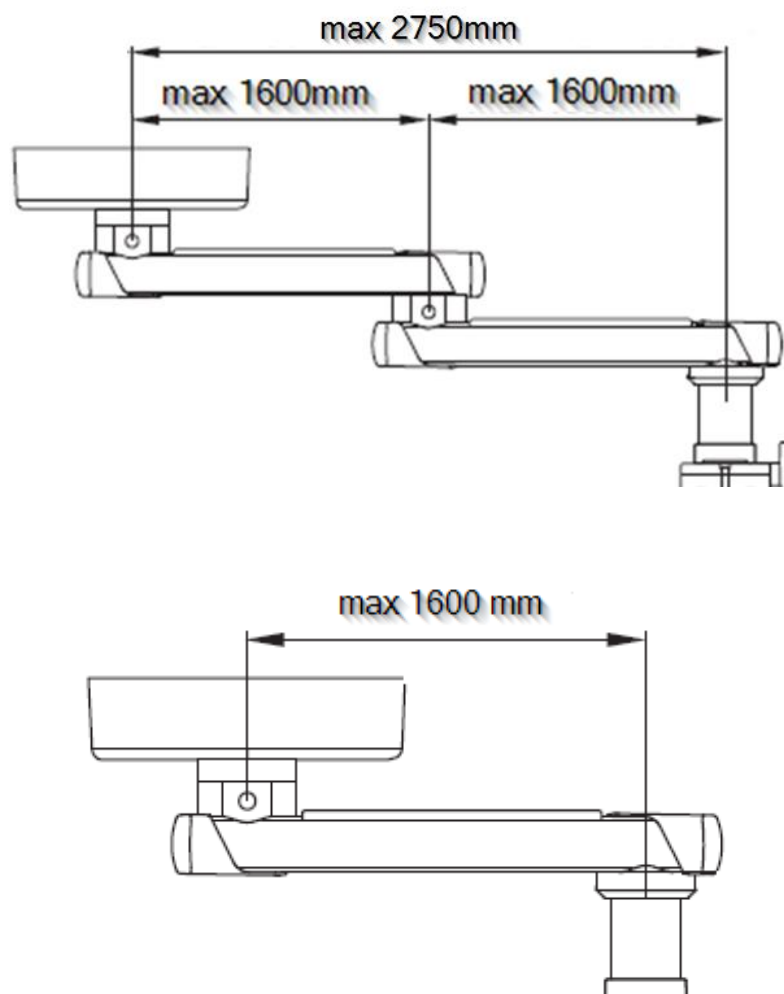


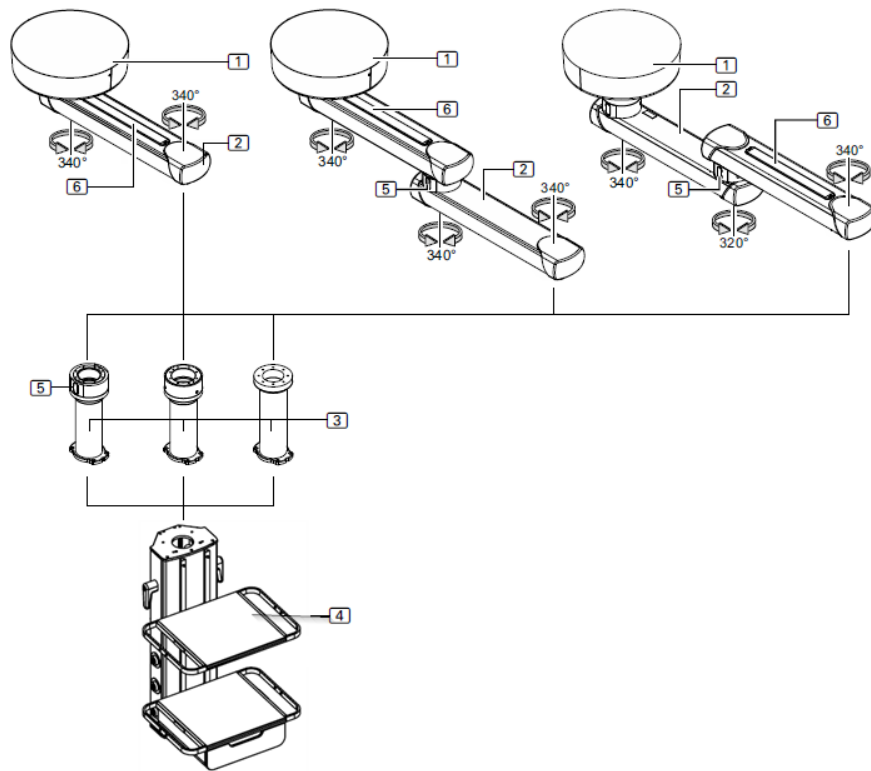
Fig.5 Non-motorised arms

Depending on the length configuration chosen, the permissible loads range from 130Kg to 1,000Kg. The extension arms can rotate 340° horizontally, the inverted variant (right in figure 4) only up to 320°. The length of the drop tube compensates for different ceiling heights to ensure that the service head is positioned at the desired working height. The service head can rotate 340° horizontally.

To avoid collisions with other components or walls, the swivel range of the extension arms (2) and the roller bearing drop tube (3) can be limited by means of internal end stops. The end stops of the extension arms (2) and the roller bearing drop tube (3) are preset at the factory.



See section 8.4.4 of this manual for the setting of rotation stops



*Fig.6 Non-motorised arm versions*

Please note that your individual suspended system may differ from these illustrations.



See product and installation drawing supplied with the equipment.

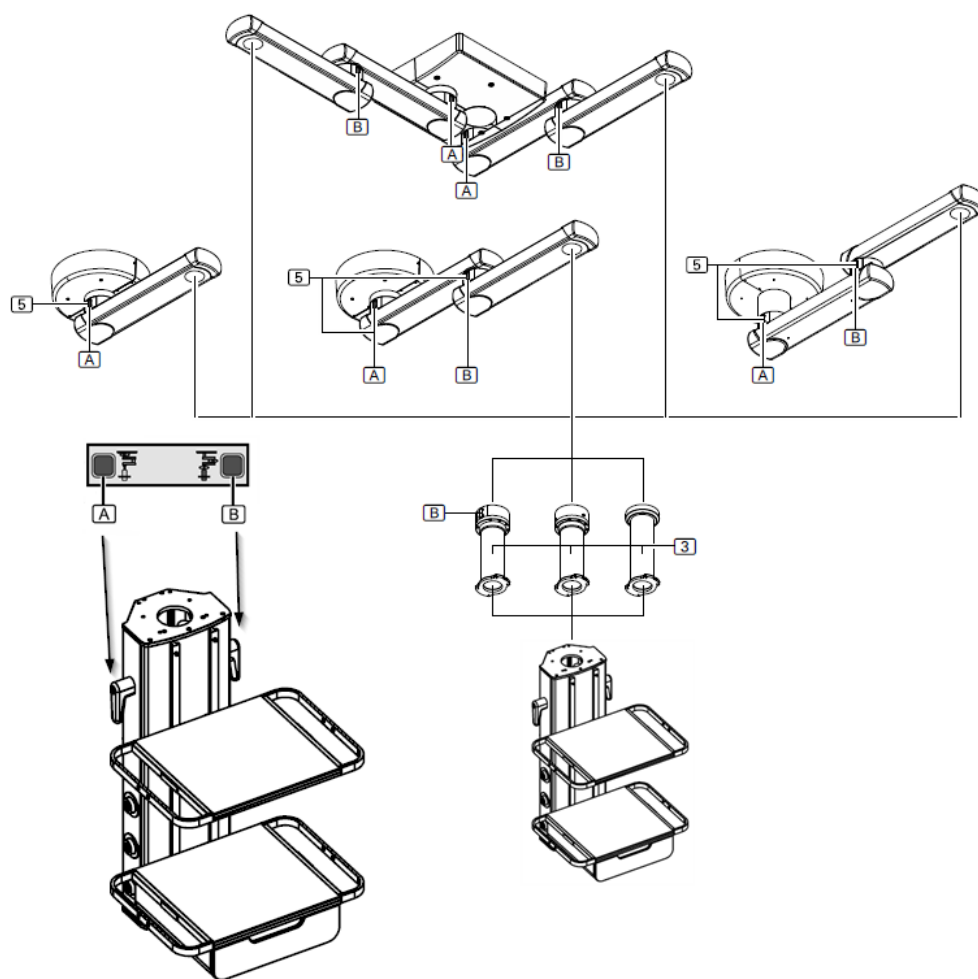



Fig.7 Location of the brakes on the non-powered arms

- 1** Ceiling trim
- 2** Extension spleen. Single - double - Different lengths available
- 3** Drop tube. Different lengths to compensate for ceiling height.
- 4** Service head. See section 5.4.3 of this manual. 
- 5** Brake guide at rotation point (of an extension arm or of the service head)
- 6** Indirect illumination of extension arms
- A** Brake A
- B** Brake B

**NOTA** Optional equipment of the COLUMN suspension systems, the corresponding brake guide (5) at the pivot point of the extension arm is switched on by releasing the brake A / B by pressing the brake button A / B on the service head (4).

- Pendant system: double arm type → **Green** at the pivot point of the upper extension arm and **Blue** at the pivot point of the lower extension arm.
- Pendant system: single arm type → **Green** at the pivot point of the extension arm.
- Pendant system: drop tube → **Blue** at the pivot point of the service head

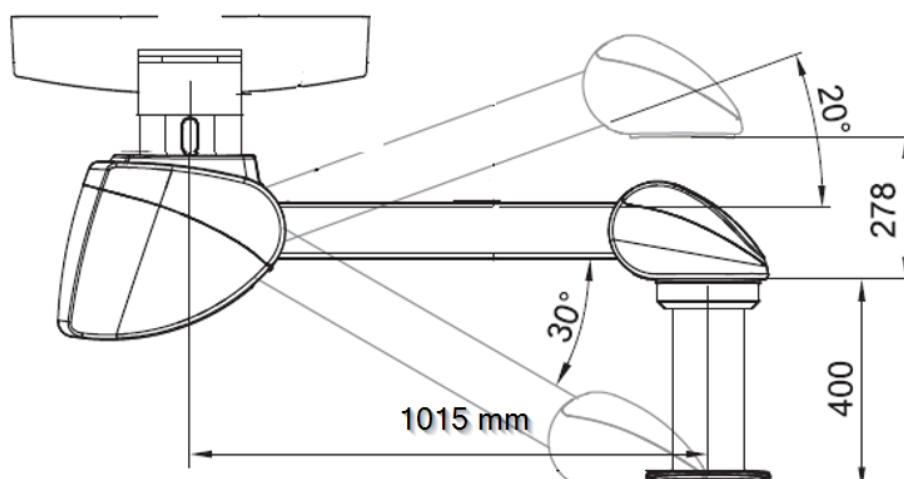
**NOTA** In the absence of the brake guide (5), labels of different colours are attached to the pivot point of the extension arm so that the brake A, B actuated by pressing the corresponding brake button A, B can be located:

- Hanging system: double arm type → The label on the pivot point of the upper extension arm is green and on the lower extension arm it is blue.
- Hanging system: single arm type → The label on the pivot point of the extension arm is green.

**NOTA** Optional equipment of the COLUMN pendant systems, the indirect lighting (6) of the extension arms (Surround LED basic C) with on/off switch in the service head.

### 5.4.2.3 Motorised arms

The length of the arms is variable according to each project. The motorised arm has a length of 1015mm, it can be combined with another one (forming a double arm) without motor whose length varies between 600 and 1600 mm, giving a maximum of 2615mm between the anchorage point of the equipment and the vertical axis of the service head. See Fig. 8.



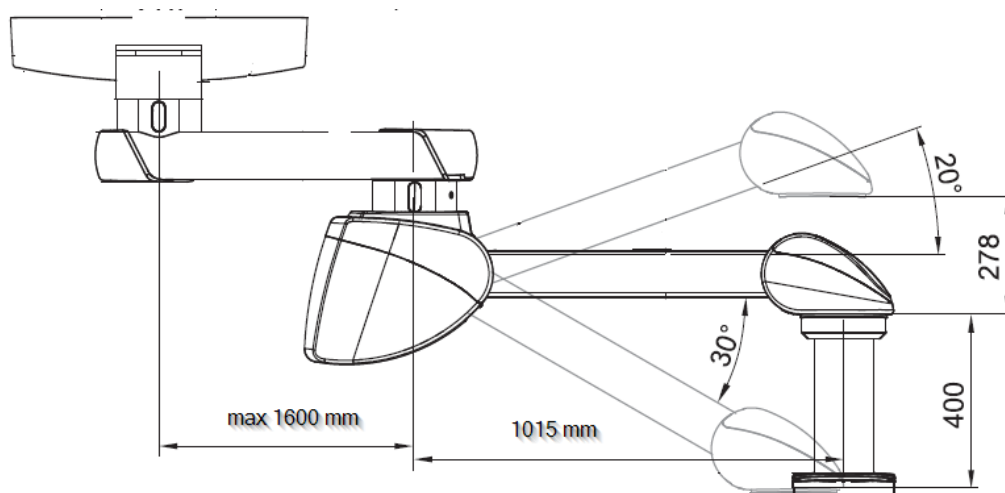


Fig.8 Motorised arms

The arms can rotate 340° horizontally and, in addition, the motor arm can be adjusted vertically 20° upwards and 30 degrees downwards. The length of the drop tube compensates for different ceiling heights to ensure that the service head is positioned at the desired working height. The service head can rotate 340° horizontally.

On the service head there is a double push button for activating the motors that raise or lower the system as shown in figure 9.

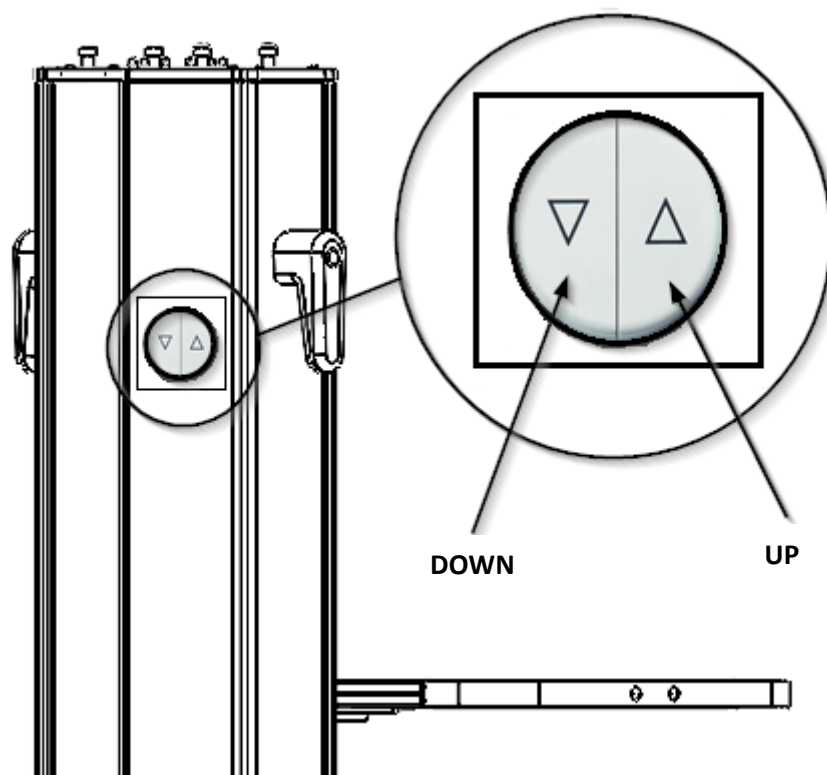


Fig.9 Motorised arm drive

To avoid collisions with other components or walls, the swivel range of the arms and the roller bearing drop tube (4) can be limited by means of internal end stops. The end stops of the arms and the roller bearing drop tube are preset at the factory.



See section 8.4.4 of this manual for the setting of rotation stops.

NOTA

Depending on the length configuration chosen, the permissible loads range from 140Kg to 250Kg.

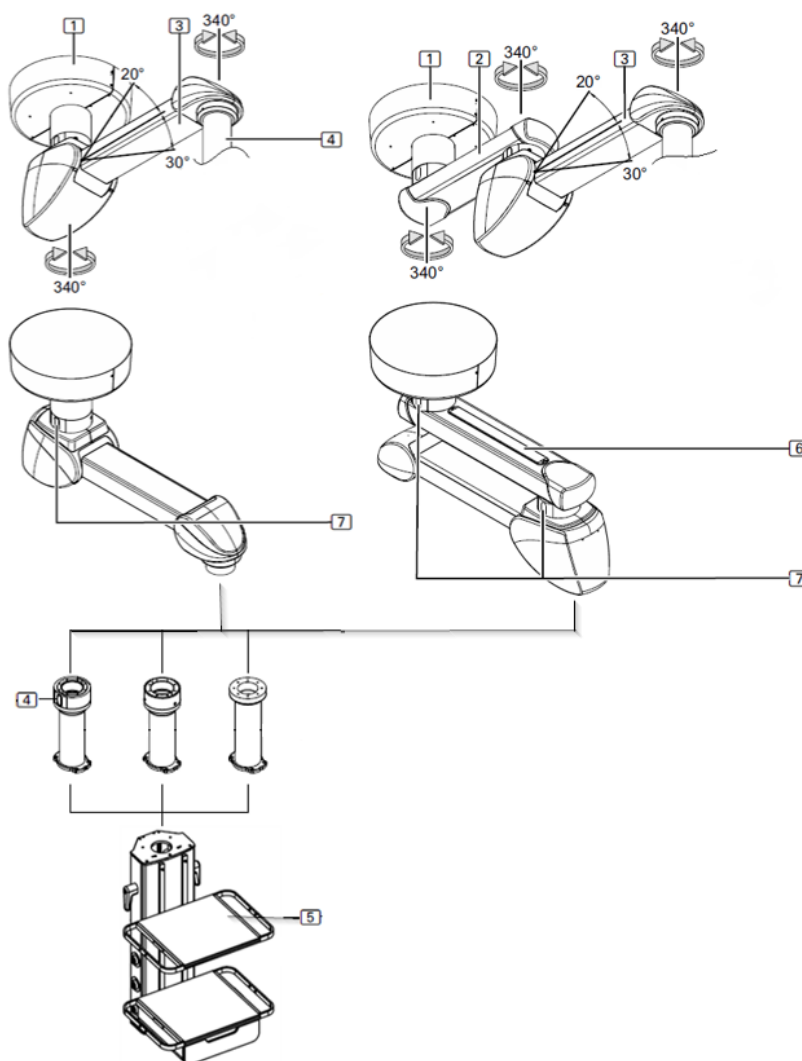


Fig.10 Motorised arm versions

Please note that your individual suspended system may differ from these illustrations.



See product and installation drawing supplied with the equipment.



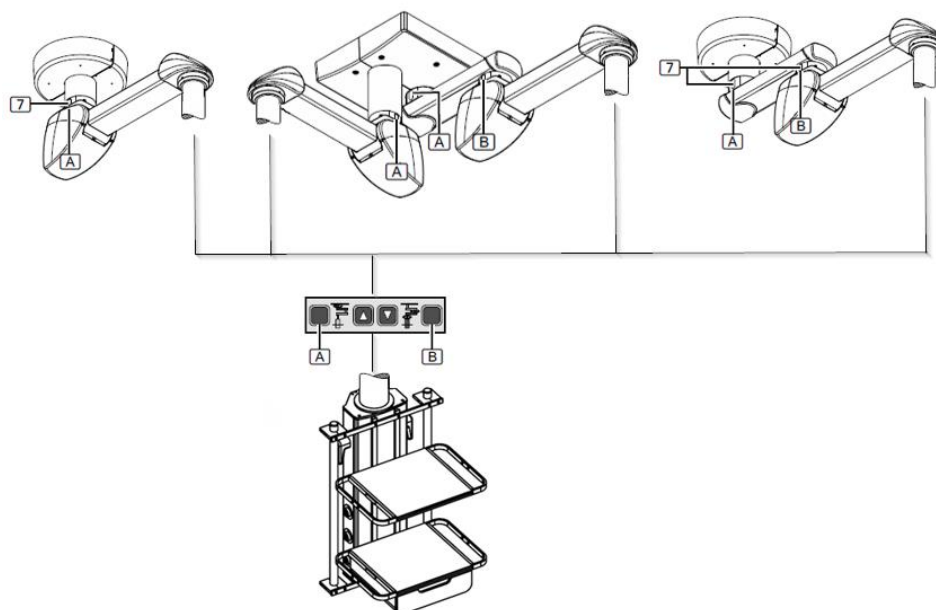



Fig.11 Location of the brakes on the motorised arms

- 1** Ceiling trim
- 2** Extension spleen. Different lengths available
- 3** Motorised arm. Height adjustable
- 4** Drop tube. Different lengths to compensate for ceiling height.
- 5** Service head. See section 5.4.3 of this manual. 
- 6** Indirect lighting of the extension arms
- 7** Brake guide at rotation point (of an extension arm or of the service head)
- A** Brake A
- B** Brake B

NOTA

Optional equipment of the COLUMN suspension systems, the corresponding brake guide (7) at the pivot point of the extension arm is switched on by releasing the brake A / B by pressing the brake button A / B on the service head (5).

- Pendant system: double arm type → Green at the pivot point of the extension arm and Blue at the pivot point of the motorised arm.

- Pendant system: single arm type → Green at the pivot point of the motorised arm.

**NOTA** In the absence of the brake guide (7), labels of different colours are attached to the pivot point of the extension arm or the motor arm in order to locate the brake A, B actuated by pressing the corresponding brake button A, B:

- Pendant system: double arm type → The label on the pivot point of the extension arm is green and on the motorised arm it is blue.
- Hanging system: single arm type → The label on the pivot point of the arm is green.

**NOTA** Optional equipment for COLUMN pendant systems with extension arm, indirect lighting (6) of the extension arms (Surround LED basic C) with on/off switch in the service head (5).

#### 5.4.2.4 Spring-loaded arms

The length of the chassis is variable according to each project. The spring arm has a length of 1015mm, it can be combined with another one (forming a double arm) without motor whose length varies between 600 and 1600 mm, giving a maximum of 2615mm between the anchorage point of the equipment and the vertical axis of the service head. See Fig. 12

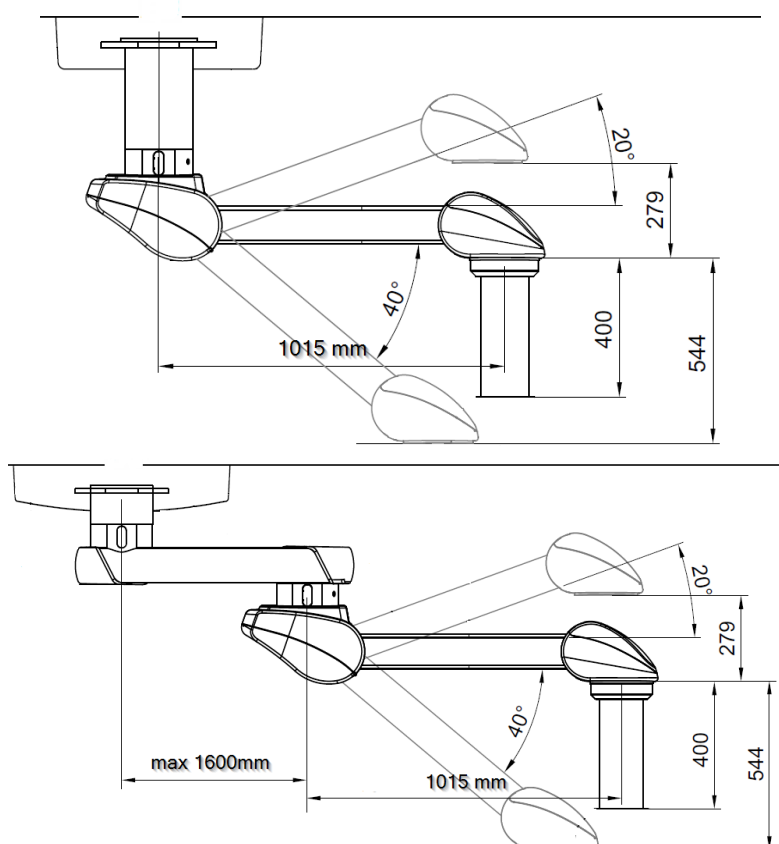


Fig.12 Spring-loaded arms

The arms can rotate 340° horizontally and, in addition, the spring-loaded arm can be adjusted vertically 20° upwards and 40 degrees downwards. The length of the drop tube compensates for different ceiling heights to ensure that the service head or screen holder is positioned at the desired working height. The service head and screen holder can be rotated 340° horizontally.

To avoid collisions with other components or walls, the swivel range of the arms and the roller bearing drop tube (4) can be limited by means of internal end stops. The end stops of the arms and the roller bearing drop tube are preset at the factory.



See section 8.4.4 of this manual for the setting of rotation stops.

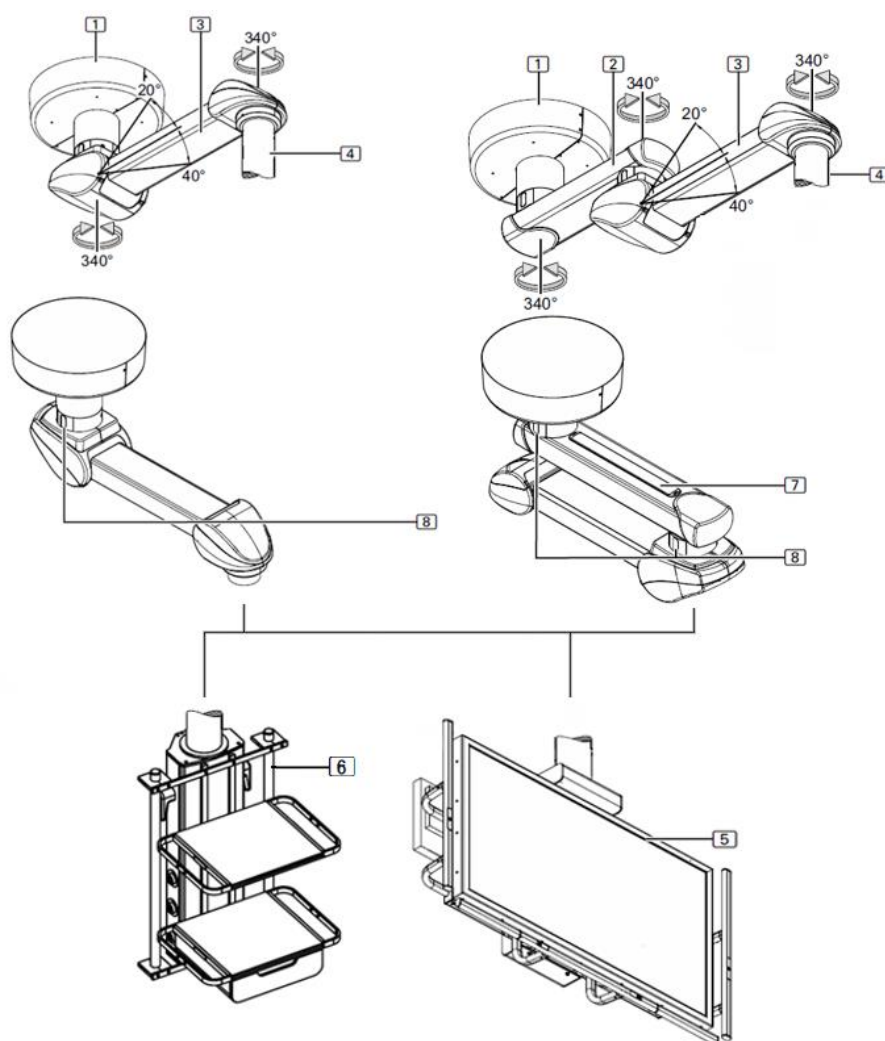


Fig.13 Spring-loaded arm versions

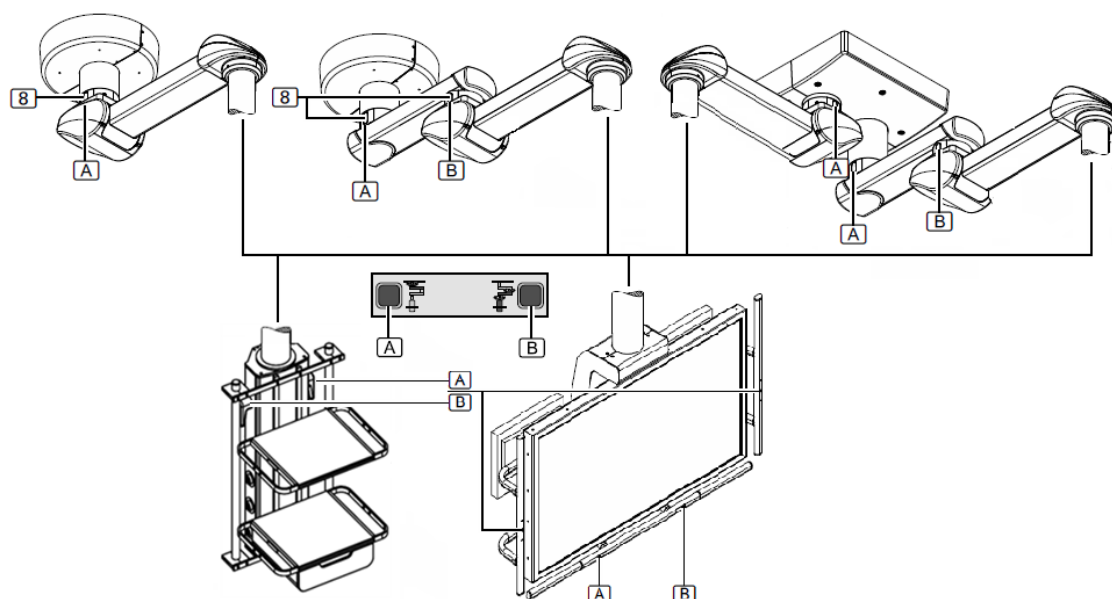



Fig.14 Location of the brakes on the spring arms

- 1** Ceiling trim
- 2** Extension spleen. Different lengths available
- 3** Spring-loaded arm. Height adjustable
- 4** Drop tube. Different lengths to compensate for ceiling height.
- 5** CEMOR display holder
- 6** Service head. See section 5.4.3 of this manual. 
- 7** Indirect lighting of extension arms
- 8** Brake guide at rotation point (of extension arm, service head or display bracket)
- A** Brake A
- B** Brake B

**NOTA**

Optional equipment of the COLUMN suspension systems, the corresponding brake guide (8) at the pivot point of the extension arm or spring arm is switched on when the brake A / B is released by pressing the brake button A / B on the service head (6) or on the display bracket (5).

- Pendant system: double arm type → **Green** at the pivot point of the extension arm and **Blue** at the pivot point of the spring arm.

- Pendant system: single arm type → **Green** at the pivot point of the spring-loaded arm.

NOTA

In the absence of the brake guide (8), labels of different colours are attached to the pivot point of the extension arm or the spring arm in order to be able to locate the brake A, B actuated by pressing the corresponding brake button A, B:

- Hanging system: double arm type → The label on the pivot point of the extension arm is green and on the spring arm it is blue.

- Hanging system: single arm type → The label on the pivot point of the arm is green.

NOTA

Optional equipment for COLUMN pendant systems with extension arm, indirect lighting (7) of the extension arms (Surround LED basic C) with on/off switch in the service head (6).

### 5.4.3. Types of service heads

There are two possible configurations for the media or service head, the most common of which is vertical, shown left in Fig. 15, where the media head is parallel to the downpipe axis. In the second configuration it is horizontal, right image in Fig. 15.

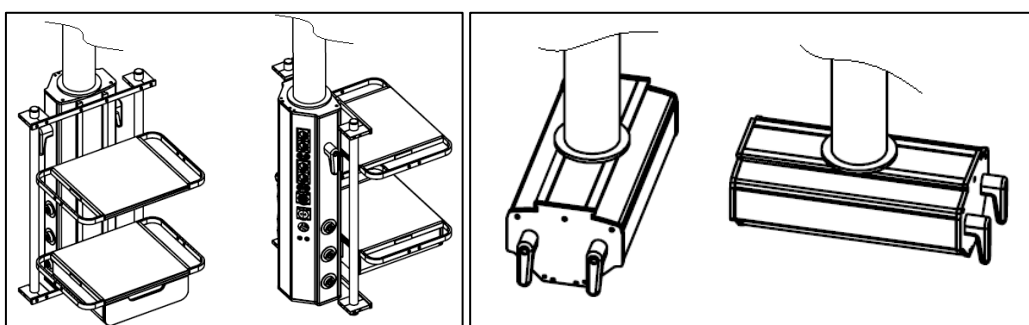


Fig.15 Types of service heads

#### 5.4.3.1 Vertical service head TDSHV and TDSHV XL

In this configuration, two areas can be distinguished in the media head, the main one being the front side (loading area), on the left in Fig. 16, where there are two DIN rails on which different accessories can be mounted. On the rear side, in the centre in Fig. 16, are the sockets or terminal units which serve as the supply interface for the power consumers which can be connected to the device. Depending on the height of the chassis, there are 4 standard sizes, on the right in Fig. 16. For special lengths please consult the manufacturer (\*).

NOTA

The TDSHV XL variant has a higher load capacity to accommodate an anaesthesia table.

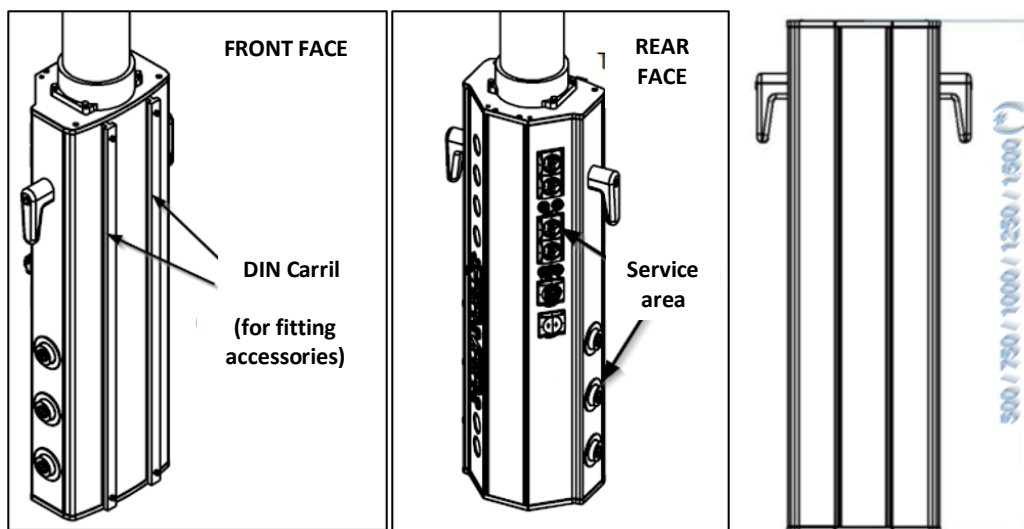


Fig.16 Vertical service heads

#### 5.4.3.2 Horizontal service head TDSHH

In this configuration, two zones can be distinguished in the media head. On the two side faces there is the service area where the sockets for power, voice and data supply and gases are located, which serve as a supply interface for the energy consumers that can be connected to the device. On the underside there are two tubes on which various accessories can be attached. Depending on the length of the chassis, there are 3 standard sizes for the horizontal service heads, as shown in the lower part of Fig. 17. For special lengths please contact the manufacturer (\*).



See Accessories section 5.3.3.4 of this manual.

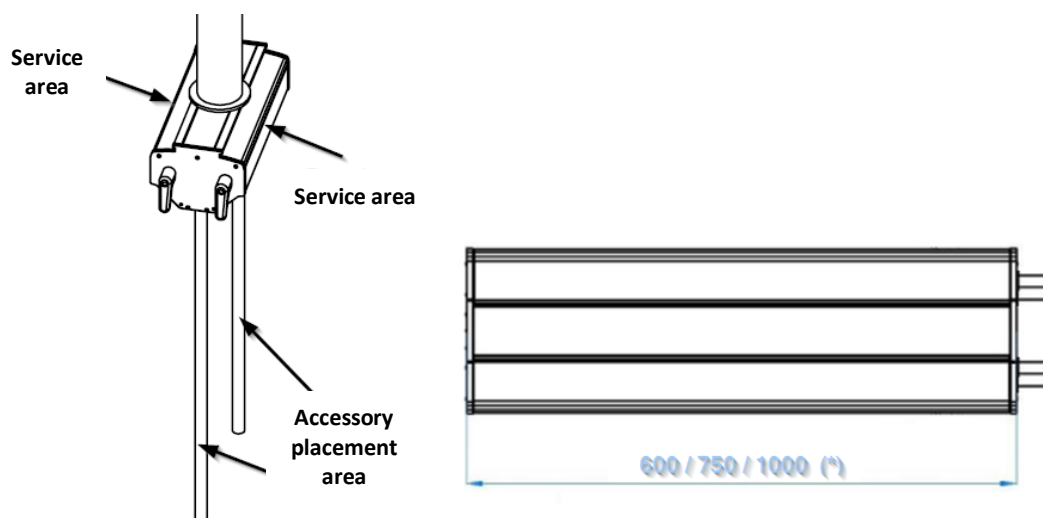


Fig.17 Horizontal service head

### 5.4.3.3 Other service head features

#### 1. Treatment and finishing

Aluminium profiles can be processed either raw and then polished or anodised.

Finishes can be epoxy paint or antibacterial paint.

The standard colour used is matt white, but any other colour is possible according to project specifications.

#### 2. Lighting

Installation of 18 W LED strips, length 600 mm and colour temperature 4500 °K, in the upper part of the arms. Both 120 V and 230 V power supply.

Possibility of strips of different power and colour temperature subject to specific requests per project.

Possibility of installing a 3.2 W LED spotlight in the lower part of the column, for position or vigil lighting.

#### 3. Drives

Possibility to control and manipulate the lighting by means of different actuators: switches, push buttons, nurse calls, potentiometers or dimmers and switches.

#### 4. Electrical outlets

Possibility of installation of electrical sockets type A and B (Standard and Hospital Grade), type C, D, E, F, G, H, I, J, K, L, M, N, O, and multi standard sockets.

Possibility of colour variation of the electrical socket in accordance with the regulations of the region and the needs of the project.

#### 5. Voice & data sockets and weak signals

Possibility of installing RJ45 Cat. 5/6/6A/7/7A sockets, RJ12 sockets and RJ11 sockets.

Possibility of installation of hospital-compatible call systems, either from own supply, or provision and adaptation of modules supplied by third parties.

Possibility of installing relays, remote switches and a 24V control system for switching and manipulation of the lighting via the call system.

#### 6. Protection mechanisms and land

Earthing and equipotential bonding busbars can be installed.

#### 7. Video & audio & data sockets

HDMI, S-VIDEO, 3G BNC, 4K SDI, VGA and DisplayPort sockets can be installed.

USB 2.0/3.0/3.1 sockets can be installed.

Possibility of installing USB chargers for recharging mobile devices and *tablets*.

#### 8. Future forecasts and/or enlargements

Possibility of installing blind covers to provide for elements and their future expansion.

#### 9. Gas intakes

Possibility of installation and supply of gas inlets with ISO and USA standards. ISO standards include the following types: DIN 13260-2, AFNOR NF S 90-116, SS 875 24 30, BS 5682:2015, CM, CZ, ENV 737-6 EN 15908, UNI 9507, SDEGA EN ISO 9170-2.

Within the US standards are the following standards: ALLIED/CHEMETRON, DISS, OHIO/OHMEDA, PURITAN/BENNETT and OXEQUIP/MEDSTAR.

Possibility of installation of different gas intakes: O<sub>2</sub>, Medical Air, Vacuum, N<sub>2</sub>O, CO<sub>2</sub>, Air 800, N<sub>2</sub>, Motive Air, Heliox and EGA intakes (Passive or with Venturi system).



See the instructions for use of the gas inlets installed.

#### 5.4.3.4 Accessories



When placing electrical devices in the deposition areas of the system head, be sure to maintain a safety distance of at least 20 cm from the power plug and/or on/off switch of the deposited device to the nearest oxygen (O<sub>2</sub>) or nitrous oxide (N<sub>2</sub>O) outlet point on the system head. See Fig.18

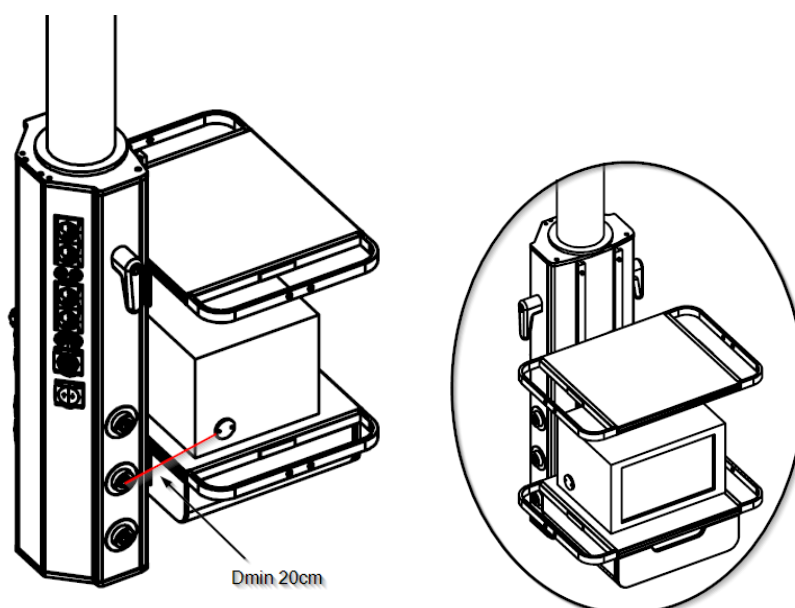




Fig.18 Minimum distance from a stress point



See section 2.2 of this manual.

The service heads of the COLUMN family of devices are equipped with two DIN rails on which various accessories can be attached to support other medical devices.

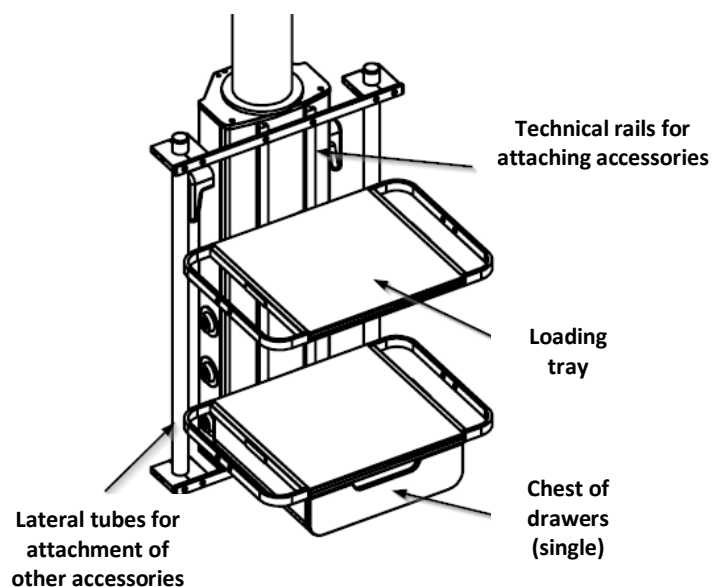


Fig.19 Accessories on vertical service head

Fig.19 shows an example of an element tray and another tray with individual drawer units and two vertical tubes which, in turn, will hold more accessories.

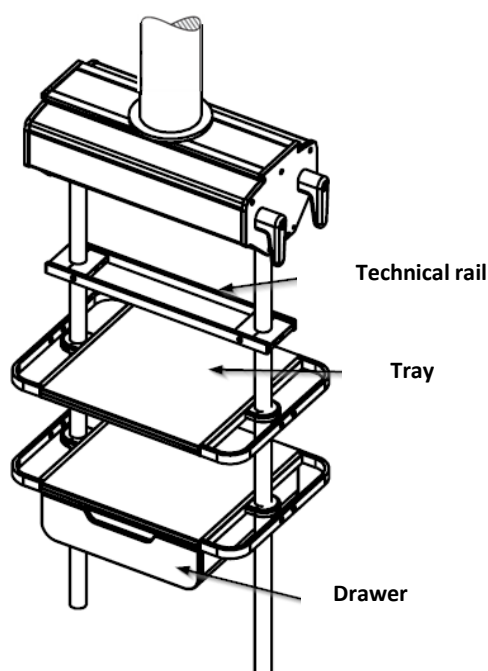


Fig.20 Fittings on horizontal service head

Fig. 20 shows an example of an element tray, a tray with individual drawer unit and two technical rails for further accessories.



See Tedisel accessories catalogue for service head COLUMN

### 5.5. Maximum load capacity of the structural part

The maximum load capacity is the maximum weight that can be supported by the arm or set of arms, in the case of the example shown in Figure 21 a configuration with one extension arm (2) and one motorised arm (3) is shown. The maximum load is counted as applied on the vertical axis about which the service head will rotate.

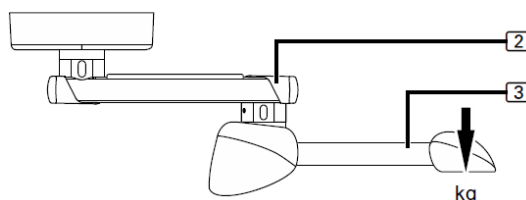


Fig.21 Load application point



See section 6.8 of this manual

### 5.6. Maximum payload capacity

The dead weight of the drop tube (4) and the service head (5) must be subtracted from the maximum load capacity of the suspension system. This value corresponds to the maximum load capacity (payload). In the example illustrated in figure 22, there is an extension arm and motorised arm assembly with a load capacity of 180 kg, the maximum payload is 100 kg after subtraction of the dead weight of the service head and is indicated on the sticker (1) on the service head.

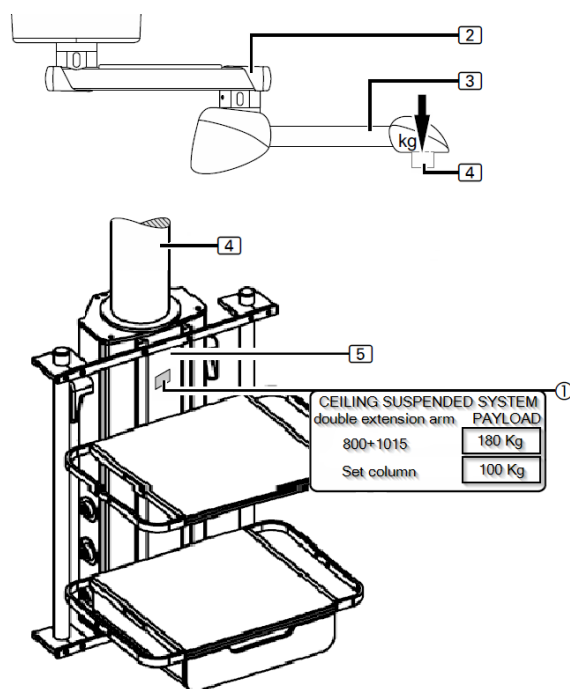


Fig.22 Location of the payload label

NOTA

If the drop tube (4) or the service head (5) is replaced, the maximum load capacity (payload) must be recalculated and indicated on the label (1) on the service head (5).

## 6. Technical data

### 6.1. Drop tubes

A diagram of the drop tubes is shown below. A friction brake is used to lock the rotation of the service head. Please note that the configuration of your hanging system may differ from this illustration.

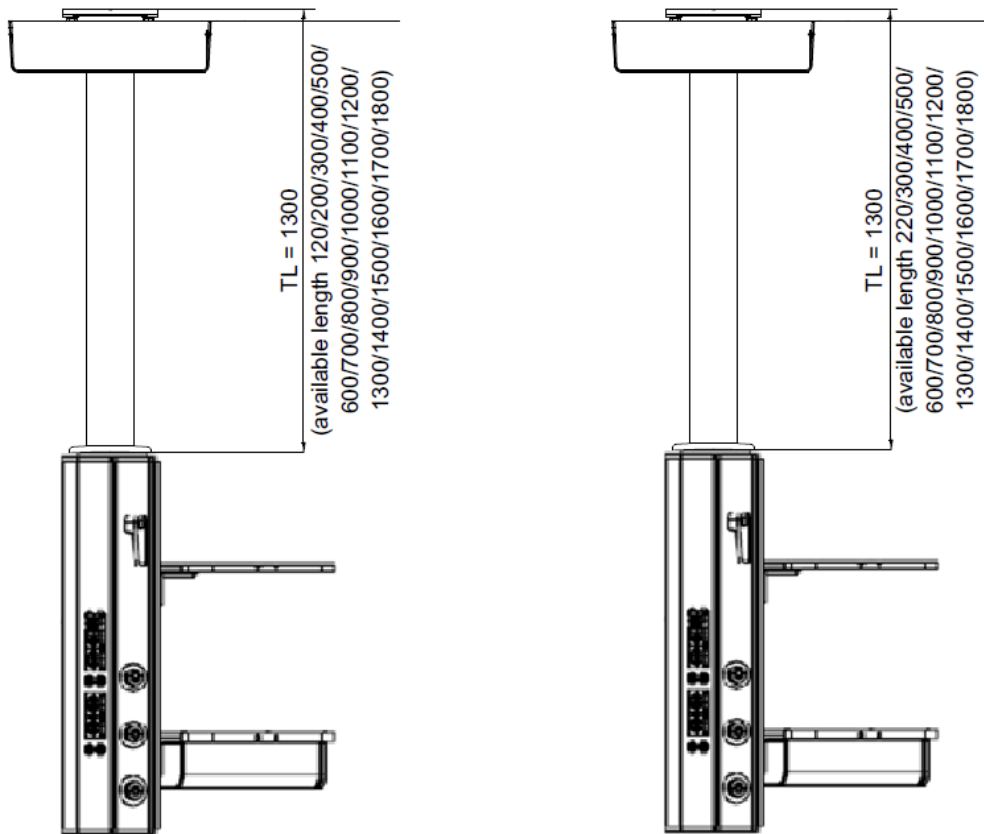


Fig.23 COLUMN ROTATION CD (left) AND COLUMN ROTATION RR (right): Friction brake

## 6.2. Non-motorised arms

The following shows various diagrams of non-motorised arms depending on their load capacity and the type of brake used to stop the arms from rotating. A friction brake is used to lock the rotation of the service head. Please note that the configuration of your pendant system may differ from this illustration.

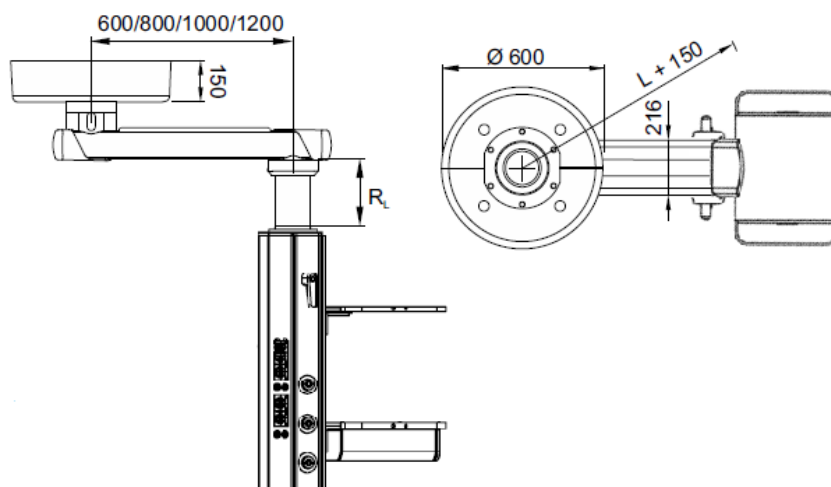


Fig.24 COLUMN: single arm, low load capacity, electromagnetic brake

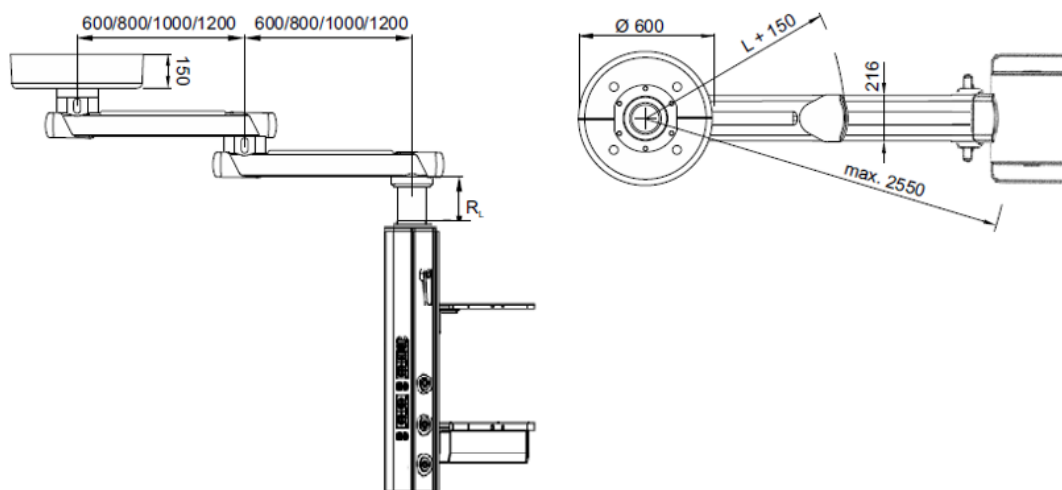


Fig.25 COLUMN: double arm, low load capacity, electromagnetic brake

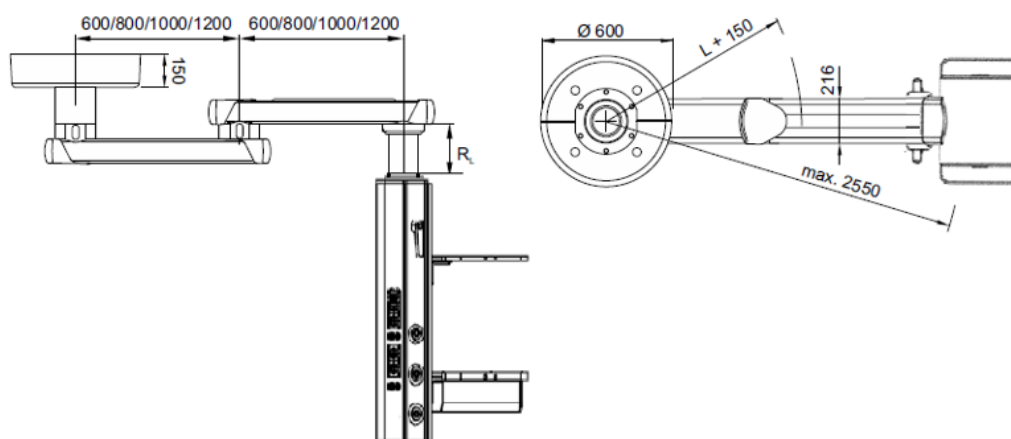


Fig.26 COLUMN-INVERTED: inverted double arm, low load capacity, electromagnetic brake

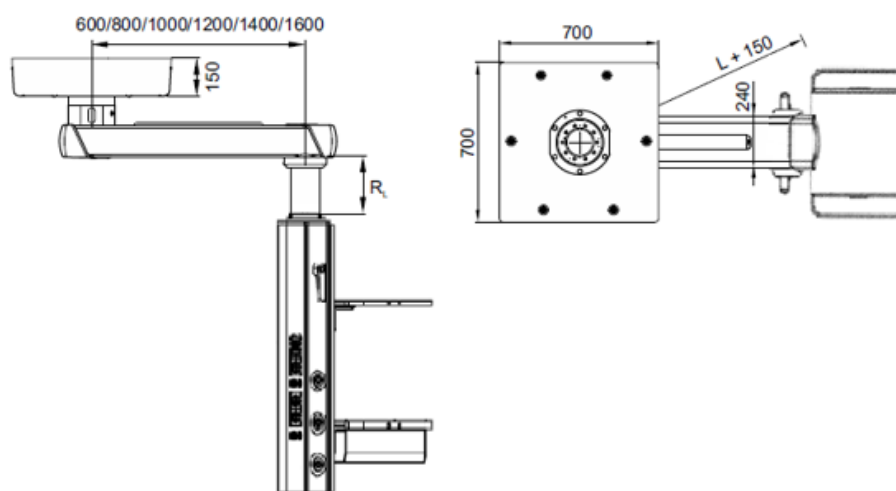


Fig.27 COLUMN XL: single arm, medium load capacity, electromagnetic brake

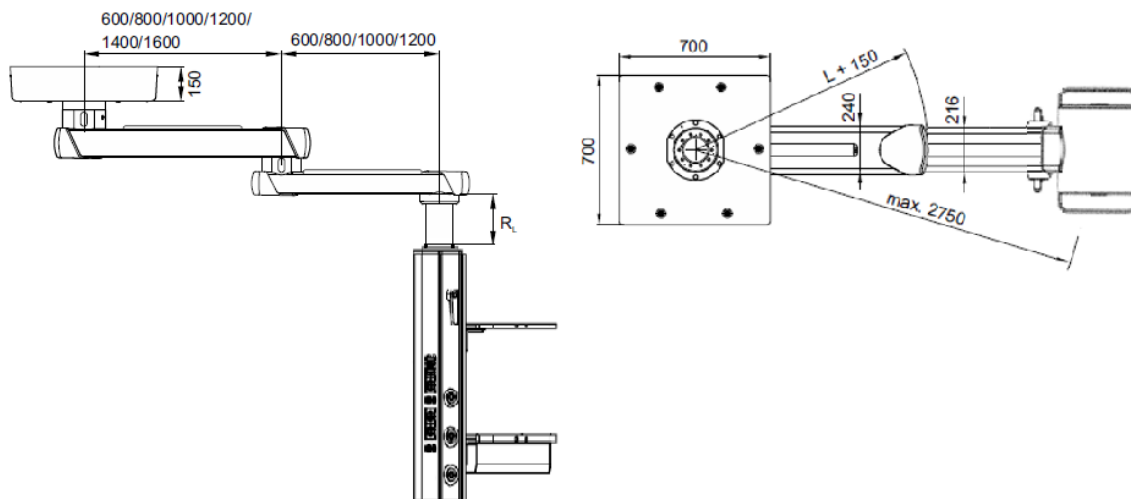


Fig.28 COLUMN XL: double arm, medium load capacity, electromagnetic brake

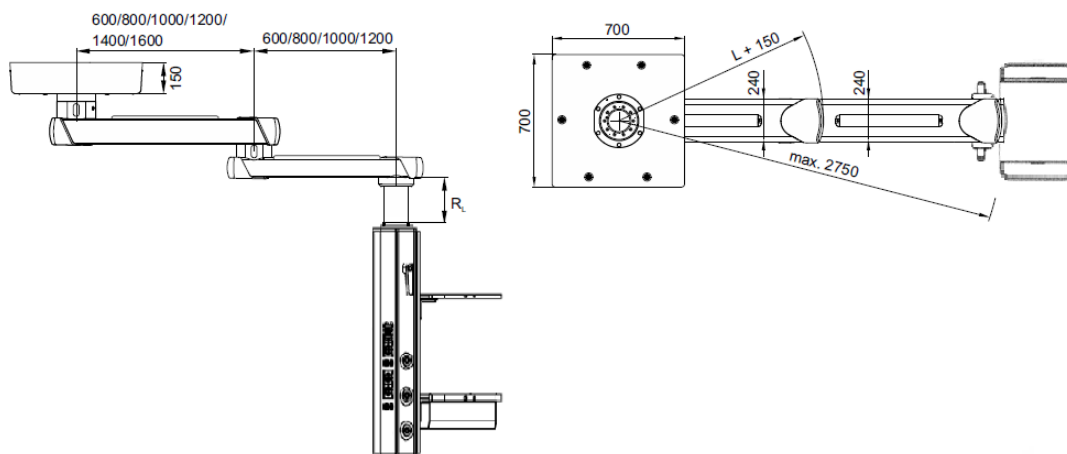


Fig.29 COLUMN XXL: double arm, high load capacity, electromagnetic brake

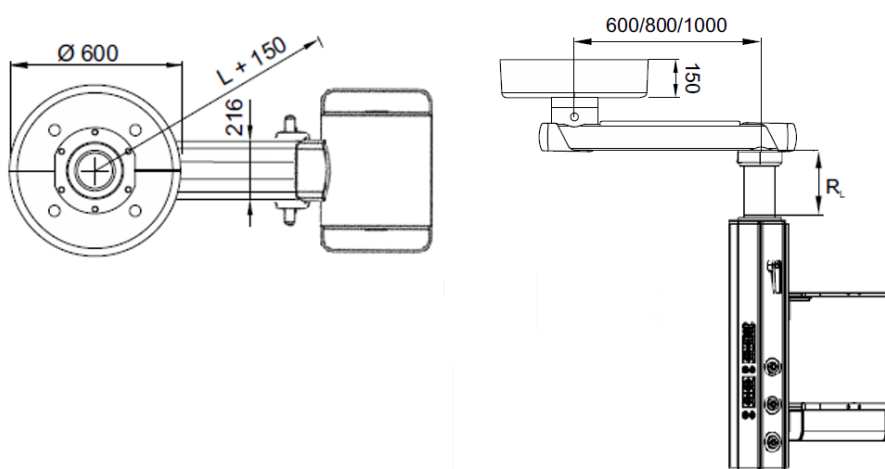


Fig.30 COLUMN AIR/AIRPLUS: single arm, low/medium load capacity, air brake

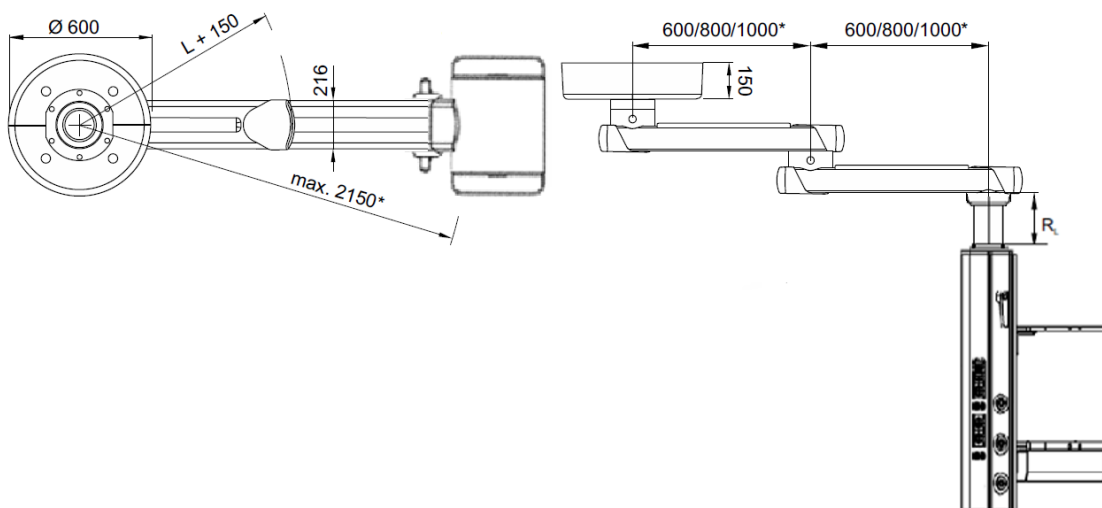


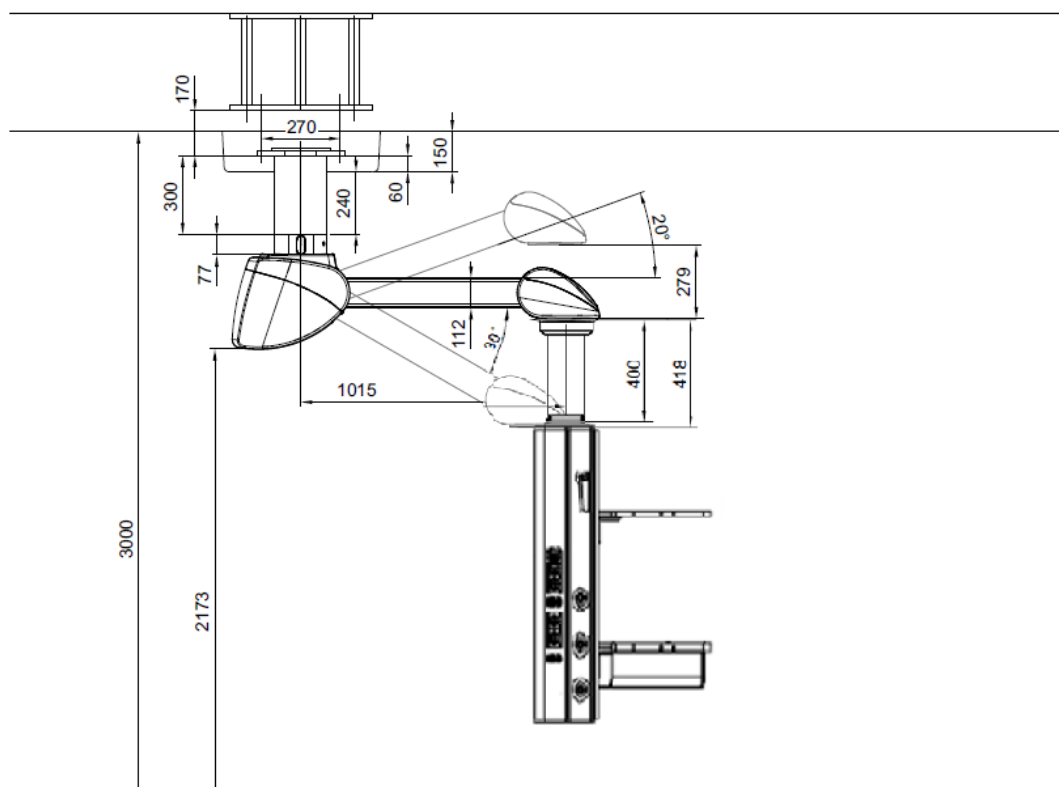
Fig.31 COLUMN AIR/AIRPLUS: double arm, low/medium load capacity, pneumatic brake

NOTA

The maximum length for COLUMN Air will be 1800 or 1900 mm, for Air Plus it will be 2000 or 2150 mm (as shown in the figure).

### 6.3. Motorised arms

Various motorised arm schemes are shown below, depending on their load capacity and the type of brake used to stop the arms from rotating. A friction brake is used to lock the rotation of the service head. Please note that the configuration of your pendant system may differ from this illustration.









# COLUMN

User and cleaning manual

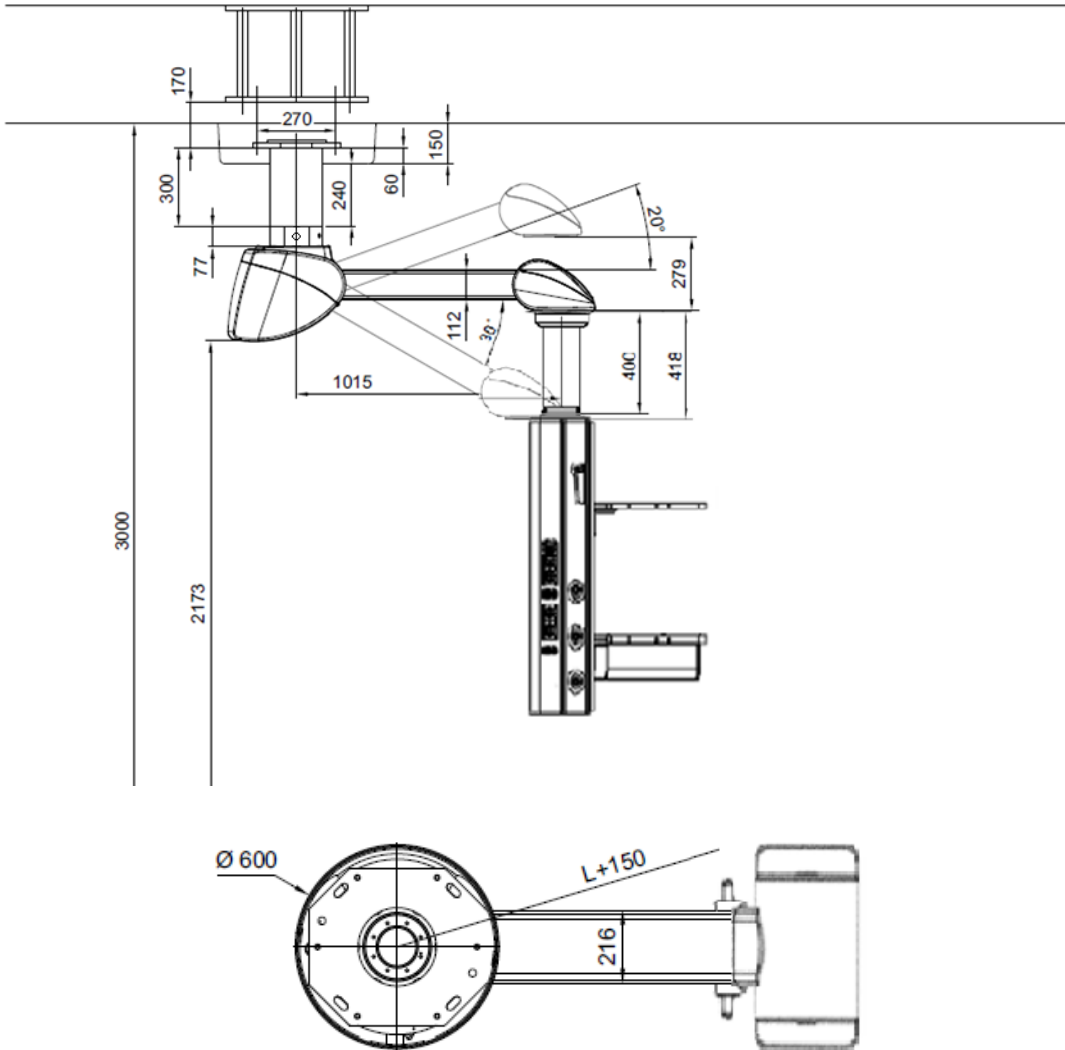


Fig.35 COLUMN MOTOR FRICTION and COLUMN MOTOR AIRPLUS: single arm, low load capacity, friction brake or pneumatic brake



#### 6.4. Spring-loaded arms

The following shows various diagrams of spring-loaded arms depending on their load capacity and the type of brake used to stop the arms from rotating. A friction brake is used to lock the rotation of the service head. Please note that the configuration of your pendant system may differ from this illustration.

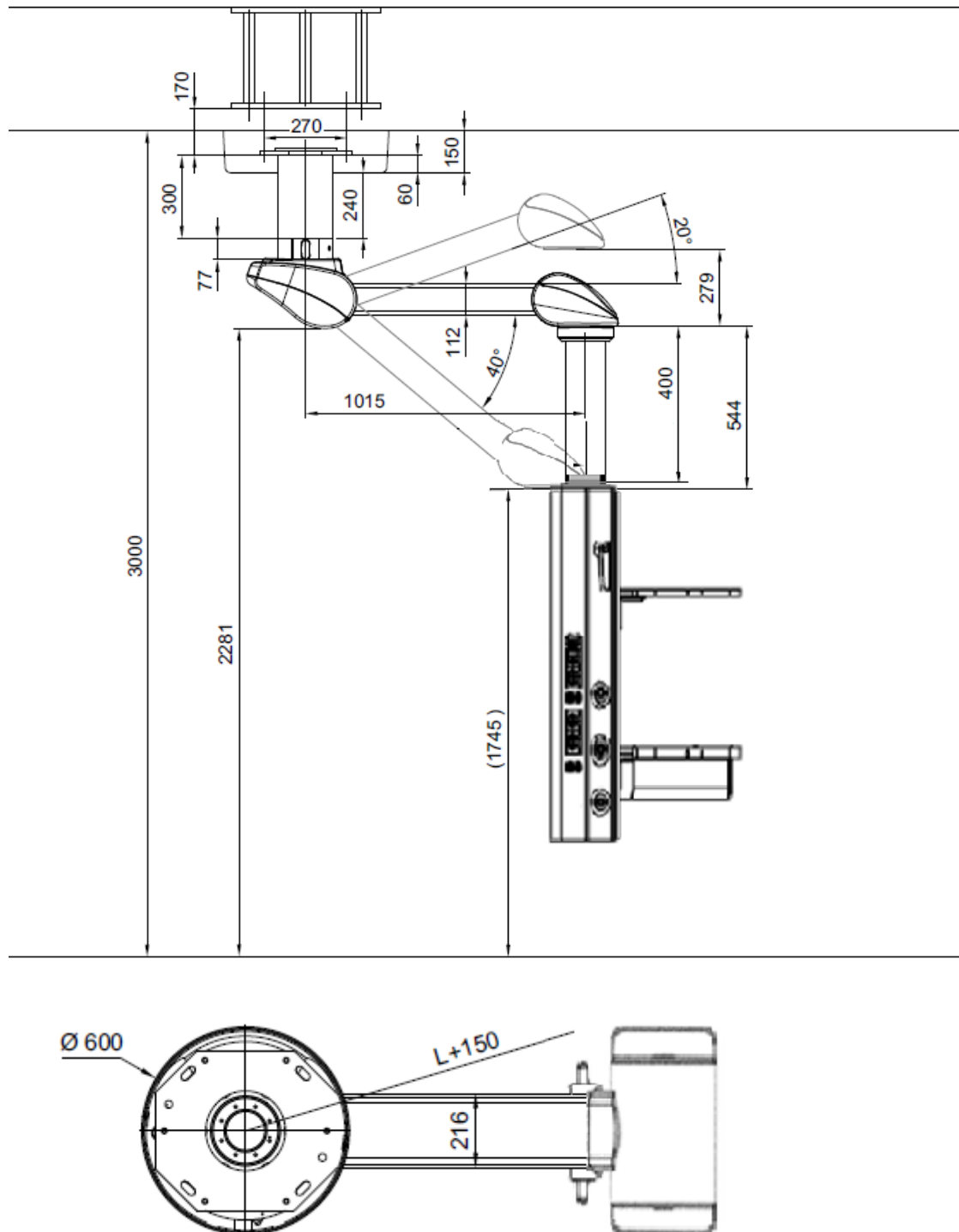


Fig.37 COLUMN SPRING: single arm, low load capacity, electromagnetic brake

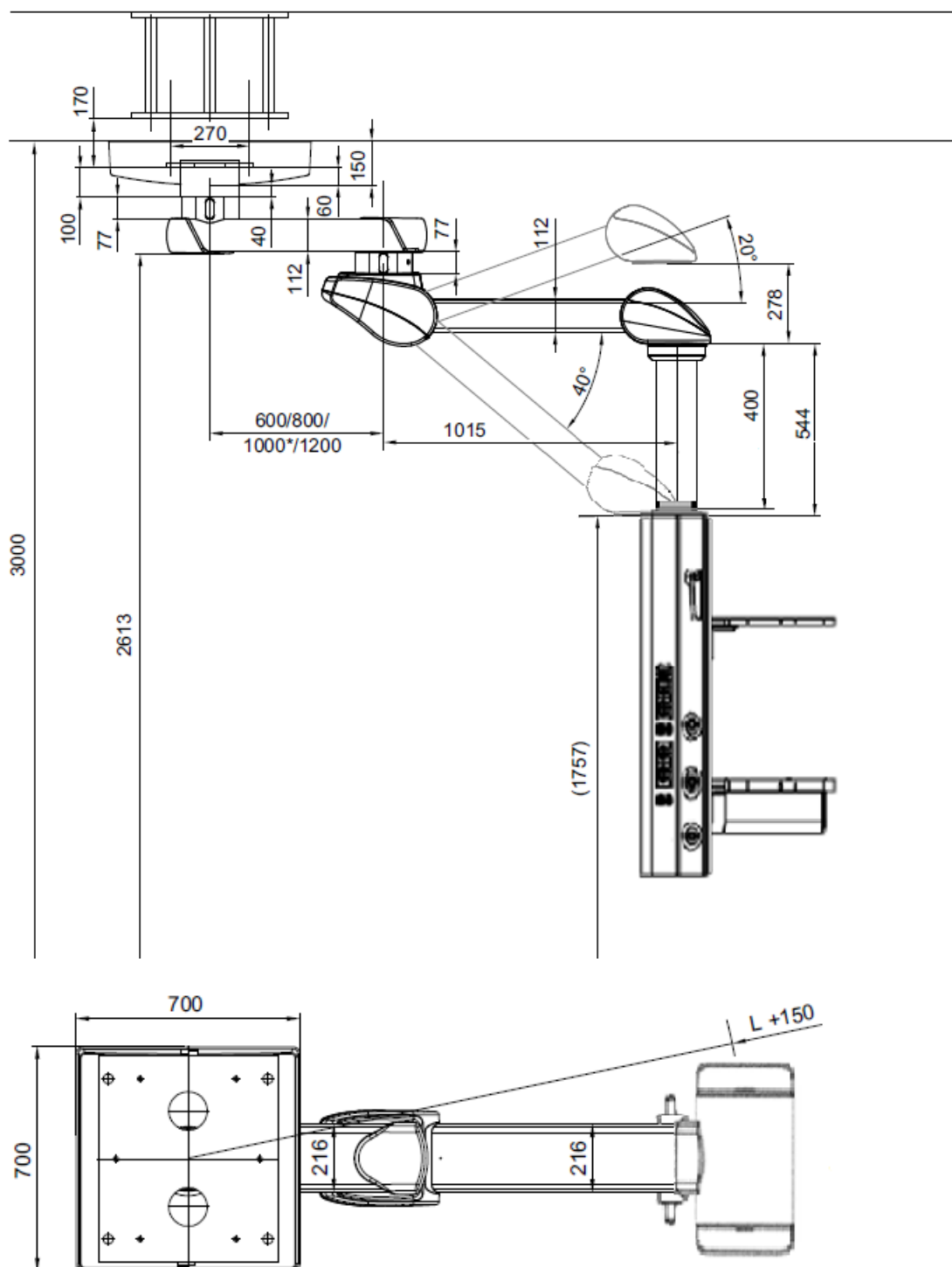


Fig.38 COLUMN SPRING: double arm, low load capacity, electromagnetic brake

NOTA

The maximum length of the low load extension arm for COLUMN SPRING shall be 1000mm (\*).

# COLUMN

User and cleaning manual

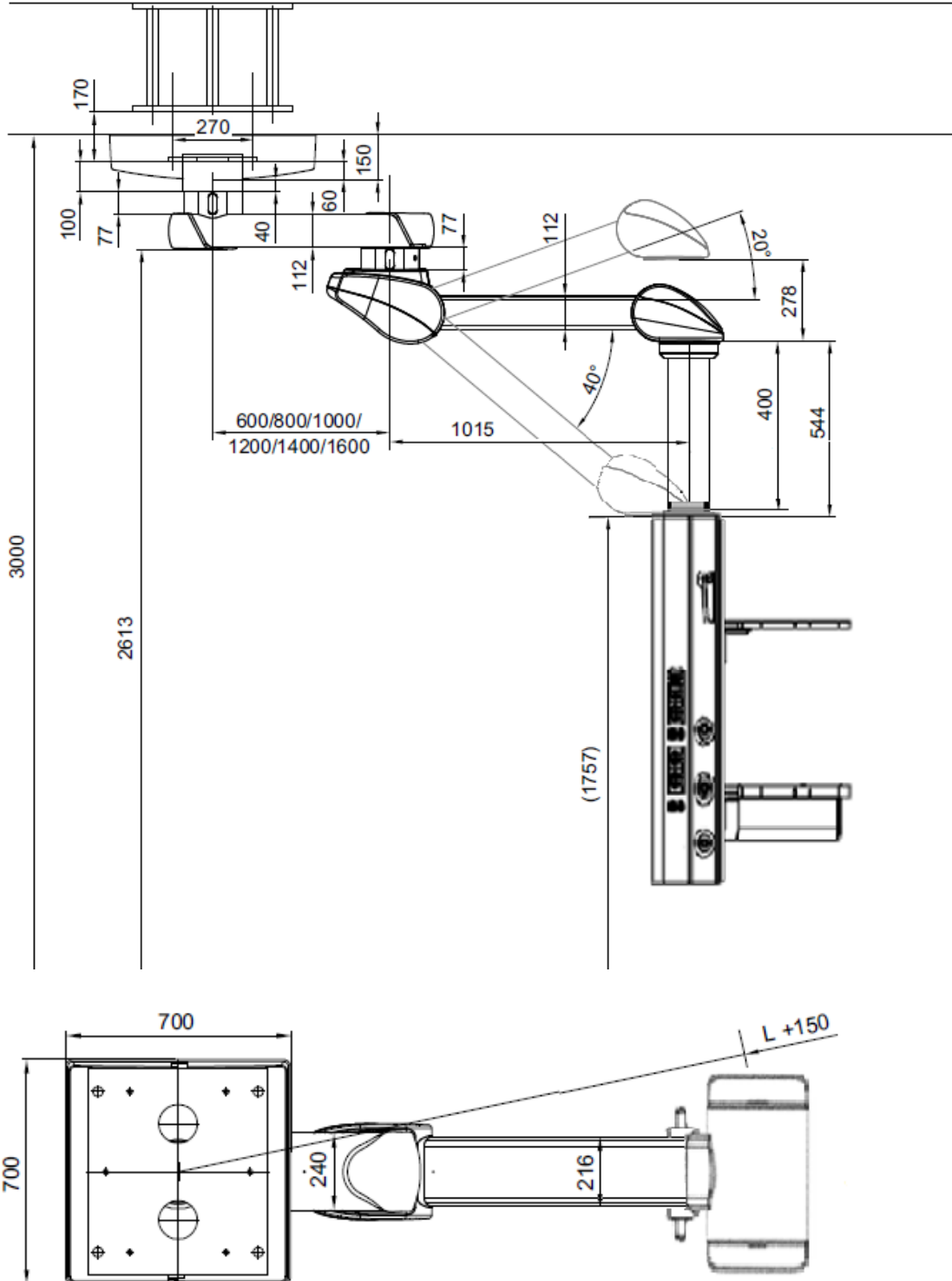


Fig.39 COLUMN SPRING XL: double arm, medium load capacity, electromagnetic brake

## 6.5. Duty cycle of electromagnetic brakes

- The maximum duty cycle of electromagnetic brakes shall not exceed 1 minute.
- If the electromagnetic brakes are operated for a longer period of time, the power supply may automatically switch off as a protective measure against overheating.
- Once the power supply has been switched off, it should cool down for 10 minutes and then be disconnected from the mains for 10 seconds before being switched on again.

Normal operation of the system can only be resumed afterwards.

## 6.6. Duty cycle of the height adjustment mechanism

For motor-driven systems, the maximum duty cycle of the height adjustment mechanism on the motor arm must exceed 3 minutes.

- If the height adjustment mechanism is operated for a prolonged period of time, the electric motor of the motor arm may automatically switch off as a protective measure against overheating.
- To avoid overloading the electric motor, be sure to wait at least 30 minutes after operating the height adjustment mechanism before operating the height adjustment mechanism. Subsequently, the height adjustment mechanism can be operated once more for 3 minutes.

## 6.7. Weight of the hanging system

The weight of the system does not include gas hoses, inserted power cables, ceiling plates, drop pipes and optional accessories.

### 6.7.1. COLUMN ROTATION CD and COLUMN ROTATION RR System

Flange, fasteners and mounting plate .....	4.3kg
Option Friction bearing (COLUMN CD) .....	6.7kg
Option Roller bearing with adaptor (COLUMN RR) .....	12.5kg
Aluminium tube.....	11.7kg/m
Length - 55 = Aluminium tube length (see nameplate)	

### 6.7.2. COLUMN and COLUMN AIR single-arm system

Extension arm 600mm.....	26.0kg
Extension arm 800mm.....	29.0kg

Extension arm 1000mm.....	32.0kg
Extension arm 1200mm.....	35.0kg (*)

(\*) NOT available for AIR and AIRPLUS (pneumatic brake) or FRICTION variants.

### 6.7.3. COLUMN and COLUMN AIR normal or inverted double arm system

Extension arm 600/600mm.....	50.0kg
Extension arm 600/800mm or 800/600mm .....	53.0kg
Extension arm 800/800mm.....	56.0kg
Extension arm 1000/600mm or 600/1000mm .....	56.0kg
Extension arm 1000/800mm or 800/1000mm .....	59.0kg
Extension arm 1000/1000mm.....	62.0kg (*A)
Extension arm 1200/600mm or 600/1200mm .....	59.0kg (*)
Extension arm 1200/800mm or 800/1200mm .....	62.0kg (*)
Extension arm 1200/1000mm or 1000/1200mm .....	65.0kg (*)
Extension arm 1200/1200mm.....	68.0kg (*)

NOTA

(\*) NOT available for AIR and AIRPLUS (pneumatic brake) or FRICTION variants.

(\*A) YES Available for AIRPLUS.

### 6.7.4. COLUMN XL single-arm system

Extension arm 600 mm .....	40.1kg
Extension arm 800 mm .....	45.1kg
Extension Arm 1000 mm .....	50.1kg
Extension arm 1200 mm .....	55.1kg
Extension Arm 1400 mm .....	60.1kg
Extension arm 1600 mm .....	65.1kg

### 6.7.5. COLUMN XL double arm system

Extension arm 600/600 mm .....	64.4kg
Extension arm 600/800 mm .....	67.4kg
Extension arm 600/1000 mm .....	70.5kg
Extension arm 600/1200 mm .....	73.5kg
Extension arm 800/600 mm .....	69.4kg
Extension arm 800/800 mm .....	72.4kg



Extension arm 800/1000 mm .....	75.5kg
Extension Arm 800/1200 mm .....	78.5kg
Extension arm 1000/600 mm .....	74.4kg
Extension arm 1000/800 mm .....	77.4kg
Extension arm 1000/1000 mm .....	80.5kg
Extension arm 1000/1200 mm .....	83.5kg
Extension arm 1200/600 mm .....	79.4kg
Extension arm 1200/800 mm .....	82.4kg
Extension Arm 1200/1000 mm .....	85.5kg
Extension arm 1200/1200 mm .....	88.5kg
Extension Arm 1400/600 mm .....	84.4kg
Extension Arm 1400/800 mm .....	87.4kg
Extension arm 1400/1000 mm .....	90.5kg
Extension arm 1400/1200 mm .....	93.5kg
Extension arm 1600/600 mm .....	89.4kg
Extension arm 1600/800 mm .....	92.4kg
Extension arm 1600/1000 mm .....	95.5kg

#### 6.7.6. COLUMN XXL double arm system

Extension arm 600/600 mm .....	80.2kg
Extension arm 600/800 mm or 800/600 mm .....	85.2kg
Extension arm 600/1000 mm or 1000/600 mm .....	90.2kg
Extension arm 600/1200 mm or 1200/600 mm .....	95.2kg
Extension arm 1400/600 mm .....	100.2kg
Extension arm 1600/600 mm .....	105.2kg
Extension arm 800/800 mm .....	90.2kg
Extension arm 800/1000 mm or 1000/800 mm .....	95.2kg
Extension arm 800/1200 mm or 1200/800 mm .....	100.2kg
Extension arm 800/1400 mm or 1400/800 mm .....	105.2kg
Extension arm 1600/800 mm .....	110.2kg
Extension arm 1000/1000 mm .....	100.2kg
Extension arm 1000/1200 mm or 1200/1000 mm .....	105.2kg
Extension arm 1000/1400 mm or 1400/1000 mm .....	110.2kg
Extension arm 1000/1600 mm or 1600/1000 mm .....	115.2kg
Extension arm 1200/1200 mm .....	110.2kg
Extension arm 1200/1400mm or 1400/1200mm .....	115.2kg

### 6.7.7. COLUMN MOTOR and COLUMN MOTOR XL System

Motorised arm (1015 mm) .....	58kg
Extension arm, 600mm, with motorised arm (1015mm) .....	83kg
Extension arm, 800mm, with motorised arm (1015mm) .....	86kg
Extension arm, 1000mm, with motorised arm (1015mm) .....	89kg
Extension arm, 1200mm, with motorised arm (1015mm) .....	92kg

### 6.7.8. COLUMN MOTOR XXL System

Extension Arm XL, 600mm, with motorised arm (1015mm) .....	99kg
Extension Arm XL, 800mm, with motorised arm (1015mm) .....	104kg
Extension arm XL, 1000mm, with motorised arm (1015mm) .....	109kg
Extension arm XL, 1200mm, with motorised arm (1015mm) .....	114kg
Extension arm XL, 1400mm, with motorised arm (1015mm) .....	119kg
Extension arm XL, 1600mm, with motorised arm (1015mm) .....	124kg

Extension arm, 1200mm, with motorised arm (1015mm) .....	92kg
--	------

### 6.7.1. COLUMN MOTOR XXL System

Extension Arm XL, 600mm, with motorised arm (1015mm) .....	99kg
Extension Arm XL, 800mm, with motorised arm (1015mm) .....	104kg
Extension arm XL, 1000mm, with motorised arm (1015mm) .....	109kg
Extension arm XL, 1200mm, with motorised arm (1015mm) .....	114kg
Extension arm XL, 1400mm, with motorised arm (1015mm) .....	119kg
Extension arm XL, 1600mm, with motorised arm (1015mm) .....	124kg

### 6.7.2. COLUMN SPRING and COLUMN SPRING XL System

Shock absorber arm (1015mm) .....	71kg
Extension arm 600mm with shock absorber arm (1015mm) .....	96kg
Extension arm 800mm with shock absorber arm (1015mm) .....	99kg
Extension arm 1000mm with shock absorber arm (1015mm) .....	102kg
Extension arm 1200mm with shock absorber arm (1015mm) .....	105kg
Extension arm XL 600mm with shock absorber arm (1015mm) .....	112kg
Extension arm XL 800mm with shock absorber arm (1015mm) .....	117kg

Extension arm XL 1000mm with shock absorber arm (1015mm) .....	122kg
Extension arm XL 1200mm with shock absorber arm (1015mm).....	127kg
Extension arm XL 1400mm with shock absorber arm (1015mm) .....	132kg
Extension arm XL 1600mm with shock absorber arm (1015mm) .....	137kg

### 6.7.3. Roof connection

COLUMN	
Flange .....	6.0kg
Steel tube .....	24 kg/m

COLUMN XL and XXL	
Flange .....	7.5kg
Steel tube .....	31.7kg/m

### 6.7.4. Turning units and drop tube

Friction slewing unit (sliding bearing) .....	5kg
Friction slewing unit (roller bearing) .....	13kg
E-Brake (electromagnetic brake) swivel unit .....	14kg
Drop tube .....	8kg/m

### 6.7.5. Service head

TDSHV vertical service head (500mm) .....	14kg
TDSHV vertical service head (750mm) .....	18kg
TDSHV vertical service head (1000mm) .....	21kg
TDSHV vertical service head (1250mm) .....	25kg
TDSHV vertical service head (*) for special dimensions please contact the manufacturer.	
Horizontal service head TDSHH (600mm) .....	18kg
Horizontal service head TDSHH (750mm) .....	20kg
Horizontal service head TDSHH (1000mm) .....	23kg
Horizontal service head TDSHH (*) for special dimensions please contact the manufacturer.	

### 6.7.6. Accessories

Tray on vertical service head .....	9kg
Drawer in vertical service head .....	16,5kg
1m 38mm diameter tube set for attachment of accessories.....	3kg
Tray on horizontal service head .....	6kg

Drawer in horizontal service head .....	14kg
Flange assembly for 38mm diameter pipe.....	0,35kg
Stainless steel double technical rail set on 38mm diameter tube (L=500mm) .....	1,6kg
Double technical stainless steel rail set on 38mm diameter tube (L=700mm) .....	2kg
Technical aluminium double rail set on 38mm diameter tube (L=500mm) .....	1,4kg
Double technical aluminium rail set on 38mm diameter tube (L=700mm) .....	1,7kg

## 6.8. Load-bearing capacity of the suspension system

### 6.8.1. COLUMN ROTATION CD and COLUMN ROTATION RR System

Maximum load on rotating shaft.....	415Kg
-------------------------------------	-------

### 6.8.2. COLUMN single-arm system

Extension Arm 600mm.....	640kg
Extension arm 800mm.....	470kg
Extension arm 1000mm.....	370kg
Extension arm 1200mm.....	300kg

### 6.8.3. Normal or inverted double arm COLUMN system

Extension arm 600/600mm.....	300kg
Extension arm 600/800mm or 800/600mm .....	260kg
Extension arm 800/800mm.....	220kg
Extension arm 1000/600mm or 600/1000mm .....	220kg
Extension arm 1000/800mm or 800/1000mm .....	190kg
Extension Arm 1000/1000mm.....	170kg
Extension arm 1200/600mm or 600/1200mm .....	190kg
Extension arm 1200/800mm or 800/1200mm .....	170kg
Extension arm 1200/1000mm or 1000/1200mm .....	150kg
Extension arm 1200/1200mm.....	130kg

### 6.8.4. COLUMN XL single-arm system

Extension arm 600mm .....	1,000kg
Extension arm 800mm .....	820kg
Extension arm 1000mm .....	650kg
Extension arm 1200mm .....	540kg
Extension arm 1400mm .....	480kg

Extension arm 1600mm ..... 400kg

#### 6.8.5. COLUMN XL double arm system

Extension arm 600mm ..... 1,000kg  
 Extension arm 800mm ..... 820kg  
 Extension arm 1000mm ..... 650kg  
 Extension arm 1200mm ..... 540kg  
 Extension arm 1400mm ..... 480kg  
 Extension arm 1600mm ..... 400kg  
 Extension arm 600/600mm ..... 530kg  
 Extension arm 600/800mm or 800/600mm ..... 470kg  
 Extension arm 800/800mm ..... 390kg  
 Extension arm 600/1000mm..... 370kg  
 Extension arm 1000/600mm..... 390kg  
 Extension arm 800/1000mm or 1000/800mm..... 330kg  
 Extension arm 600/1200mm or 1200/600mm..... 300kg  
 Extension arm 800/1200mm or 1200/800mm..... 300kg  
 Extension arm 1000/1000mm ..... 300kg  
 Extension arm 1000/1200mm or 1200/1000mm..... 270kg  
 Extension arm 1200/1200mm ..... 240kg  
 Extension Arm 1400/600mm ..... 300kg  
 Extension arm 1400/800mm ..... 270kg  
 Extension arm 1400/1000mm ..... 240kg  
 Extension arm 1400/1200mm ..... 200kg  
 Extension arm 1600/600mm ..... 270kg  
 Extension arm 1600/800mm ..... 240kg  
 Extension arm 1600/1000mm ..... 200kg

#### 6.8.6. COLUMN XXL double arm system

Extension arm 600/600mm ..... 540kg  
 Extension arm 600/800mm or 800/600mm..... 480kg  
 Extension arm 800/800mm ..... 400kg  
 Extension arm 600/1000mm or 1000/600mm ..... 400kg  
 Extension arm 800/1000mm or 1000/800mm..... 340kg  
 Extension Arm 600/1200mm or 1200/600mm ..... 340kg  
 Extension arm 800/1200mm or 1200/800mm ..... 310kg  
 Extension arm 800/1400mm or 1400/800mm ..... 280kg

Extension Arm 1000/1000mm .....	310kg
Extension arm 1000/1200mm or 1200/1000mm .....	280kg
Extension arm 1000/1400mm or 1400/1000mm .....	250kg
Extension arm 1000/1600mm .....	210kg
Extension arm 1200/1200mm .....	250kg
Extension arm 1200/1400mm or 1400/1200mm .....	210kg
Extension arm 1400/600mm .....	310kg
Extension arm 1600/600mm.....	280kg
Extension arm 1600/800mm.....	250kg
Extension arm 1600/1000mm.....	210kg

#### 6.8.7. COLUMN AIR single arm system

Extension arm 600mm.....	580kg
Extension arm 800mm.....	420kg
Extension arm 1000mm.....	320kg

#### 6.8.8. COLUMN AIR double arm system

Extension arm 600/600mm.....	260kg
Extension arm 600/800mm or 800/600mm.....	220kg
Extension Arm 800/800mm.....	180kg
Extension arm 600/1000mm or 1000/600mm.....	180kg
Extension arm 800/1000mm or 1000/800mm.....	150kg

#### 6.8.9. COLUMN AIRPLUS and FRICTION single arm system

Extension Arm 600mm.....	640kg
Extension arm 800mm.....	470kg
Extension arm 1000mm.....	370kg

#### 6.8.10. COLUMN AIRPLUS and double arm FRICTION system

Extension arm 600/600mm.....	300kg
Extension arm 600/800mm or 800/600mm.....	260kg
Extension arm 800/800mm.....	220kg
Extension arm 600/1000mm or 1000/600mm.....	220kg
Extension arm 800/1000mm or 1000/800mm.....	190kg
Extension arm 1000/1000mm.....	170kg

### 6.8.11. COLUMN MOTOR System

Motor arm (1015 mm) .....	150kg
Extension arm, 600mm, with motor arm (1015 mm) .....	150kg
Extension arm, 800mm, with motor arm (1015 mm) .....	150kg
Extension arm, 1000mm, with motor arm (1015 mm) .....	150kg
Extension arm, 1200mm, with motor arm (1015 mm) .....	140kg

### 6.8.12. COLUMN MOTOR XL System

Motor arm XL (1015 mm) .....	210Lkg
Extension arm, 600mm, with XL motor arm (1015mm) .....	210Lkg
Extension arm, 800mm, with XL motor arm (1015mm) .....	180kg
Extension arm, 1000mm, with XL motor arm (1015mm) .....	160kg
Extension arm, 1200mm, with XL motor arm (1015mm) .....	140kg

### 6.8.13. COLUMN MOTOR XXL System

XXL motor arm (1015 mm) .....	250kg
Extension arm XL, 600mm, with motor arm XXL (1015mm) .....	250kg
Extension arm XL, 800mm, with motor arm XXL (1015mm) .....	250kg
Extension arm XL, 1000mm, with motor arm XXL (1015 mm) .....	250kg
Extension arm XL, 1200mm, with motor arm XXL (1015mm) .....	250kg
Extension arm XL, 1400mm, with motor arm XXL (1015mm) .....	240kg
Extension arm XL, 1600mm, with motor arm XXL (1015 mm) .....	200kg

### 6.8.14. COLUMN SPRING System

Shock absorber arm (1015mm) .....	180kg
Extension arm 600mm with shock absorber arm (1015mm) .....	180kg
Extension arm 800mm with shock absorber arm (1015mm) .....	170kg
Extension arm 1000mm with shock absorber arm (1015mm) .....	150kg
Extension arm 1200mm with shock absorber arm (1015mm) .....	130kg
Extension arm XL 600mm with shock absorber arm (1015mm) .....	180kg
Extension arm XL 800mm with shock absorber arm (1015mm) .....	180kg
Extension arm XL 1000mm with shock absorber arm (1015mm) .....	180kg
Extension arm XL 1200mm with shock absorber arm (1015mm) .....	180kg
Extension arm XL 1400mm with shock absorber arm (1015mm) .....	180kg

Extension arm XL 1600mm with shock absorber arm (1015mm) .....180kg

NOTA

There are different versions of spring units with different load ranges, 22 - 40Kg, 30 - 60Kg, 50 - 80Kg, 70 - 110Kg, 80 - 135Kg, 120 -180kg.

#### 6.8.15. Service head

Vertical service head TDSHV.....100kg

Vertical service head TDSHV XL.....160kg

Horizontal service head TDSHH.....100kg

#### 6.8.16. Accessories

Tray on vertical service head .....50kg

Drawer in vertical service head .....40kg

1m 38mm diameter tube set for attachment of accessories.....150kg

Tray on horizontal service head .....50kg

Drawer in horizontal service head .....40kg

Stainless steel double technical rail set on 38mm diameter tube (L=300mm) .....25kg

Stainless steel double technical rail set on 38mm diameter tube (L=500mm) .....25kg

Stainless steel double technical rail set on 38mm diameter tube (L=700mm) .....25kg

### 6.9. Electrical data

#### 6.9.1. COLUMN, COLUMN XL, COLUMN XXL and COLUMN SPRING System

Rated voltage.....AC 230V

Nominal frequency ..... 50Hz

Rated power ..... up to 220W

Indirect light extension arm .....DC 12V

2 / 4 lighting modules (supply voltage 12 V DC, 2 lighting boards each connected in series at 24 V DC)

#### 6.9.2. COLUMN MOTOR, COLUMN MOTOR XL and COLUMN MOTOR XXL System

Rated voltage..... AC 230V

Nominal frequency ..... 50Hz

Nominal current at AC 230V..... 5A



Indirect light extension arm .....DC 12V

2 / 4 lighting boards (supply voltage 12 V DC, 2 lighting boards each connected in series to 24 V DC)

#### 6.10. Noise level

Noise energy level .....65db(A) (EN ISO 3746) not exceeded

#### 6.11. Brakes

Brake torque with pneumatic brake applied ..... approx. 50Nm

Brake torque (electromagnetic brake actuated on motor arm) ..... approx. 70Nm

Brake torque (electromagnetic brake actuated on extension arm) .....approx. 70 Nm

Brake torque (electromagnetic brake actuated on XL extension arm).....approx. 150 Nm

#### 6.12. Dynamic torque (with brake released)

DYNAMIC TORQUE (with brake released) .....3,5 to 40 Nm

NOTA

Depending on position and payload.

## 7. Intended use

UMOS is a ceiling pendant system designed for the supply of medical gases, electrical power and access communication points from the ceiling to the workstation of medical specialists. It is used especially for equipping operating theatres, ARD and ICU.

## 8. Use of equipment

COLUMN devices are intended for continuous operation. The specifications of the individual functional elements of the device must be observed when using the device.

**(G)** Electrical, voice and data circuits.

**(H)** Nurse call

**(I)** Lighting

**(J)** Gas intakes

NOTA

There may be actuators for switching on modules of the lighting modules in the room in which the equipment is installed.



See product and installation drawing supplied with the equipment.



NOTICE: Details of the elements and their characteristics can be found in the product

definition drawing.

### 8.1. Product preparation

Before COMMISSIONING, during MAINTENANCE, INSPECTION, SERVICE and after REPAIR, a functional test must be carried out at the installation site. This functional test must be carried out by the operator or a person authorised by the operator, and persons authorised by the operator must be properly instructed.

This requirement is considered fulfilled if:

1. The functional reliability of the suspension system and the service head is ensured.
2. The maximum permissible load capacity (payload) has been safely determined and is indicated on a label attached to the service head.
3. The correct functioning of the device has been approved by the operator during the first commissioning and documented by signing a test report according to Appendix G EN 62353.



See point 3 of this manual.



**WARNING:** To prevent unintentional actuation of the control elements, ensure that all cables and hoses are sufficiently far away from the control elements.

### 8.2. Environment. Environmental conditions



See section 5.2 of this manual.

### 8.3. Training

Personnel using the equipment must be properly trained and qualified by the customer. The equipment must only be USED by authorised personnel. Persons who:

1. have undergone medical training and are duly registered (at those levels where legal provisions make such registration necessary).
2. have been instructed in the use of this device by means of this instruction manual as a basis.
3. are able to assess the tasks they perform on the basis of their own professional experience and training in relevant safety standards and can recognise the potential hazards involved in the work.

## 8.4. Adjustments



Disconnect the equipment electrically, as well as any equipment supplied through the service head, before making adjustments to prevent live wires from the installation coming into contact with live parts of the system.

### 8.4.1. Adjustment of the mechanical brake on the arms

In case of failure of the pneumatic (compressed air operated) brakes, additional mechanical brakes (friction brakes) keep the extension arm and motor arm stable. Adjust the braking force in such a way that the **Non-motorised arms** arm remains **Motorised arms** and car **Spring-loaded arms** conveniently.

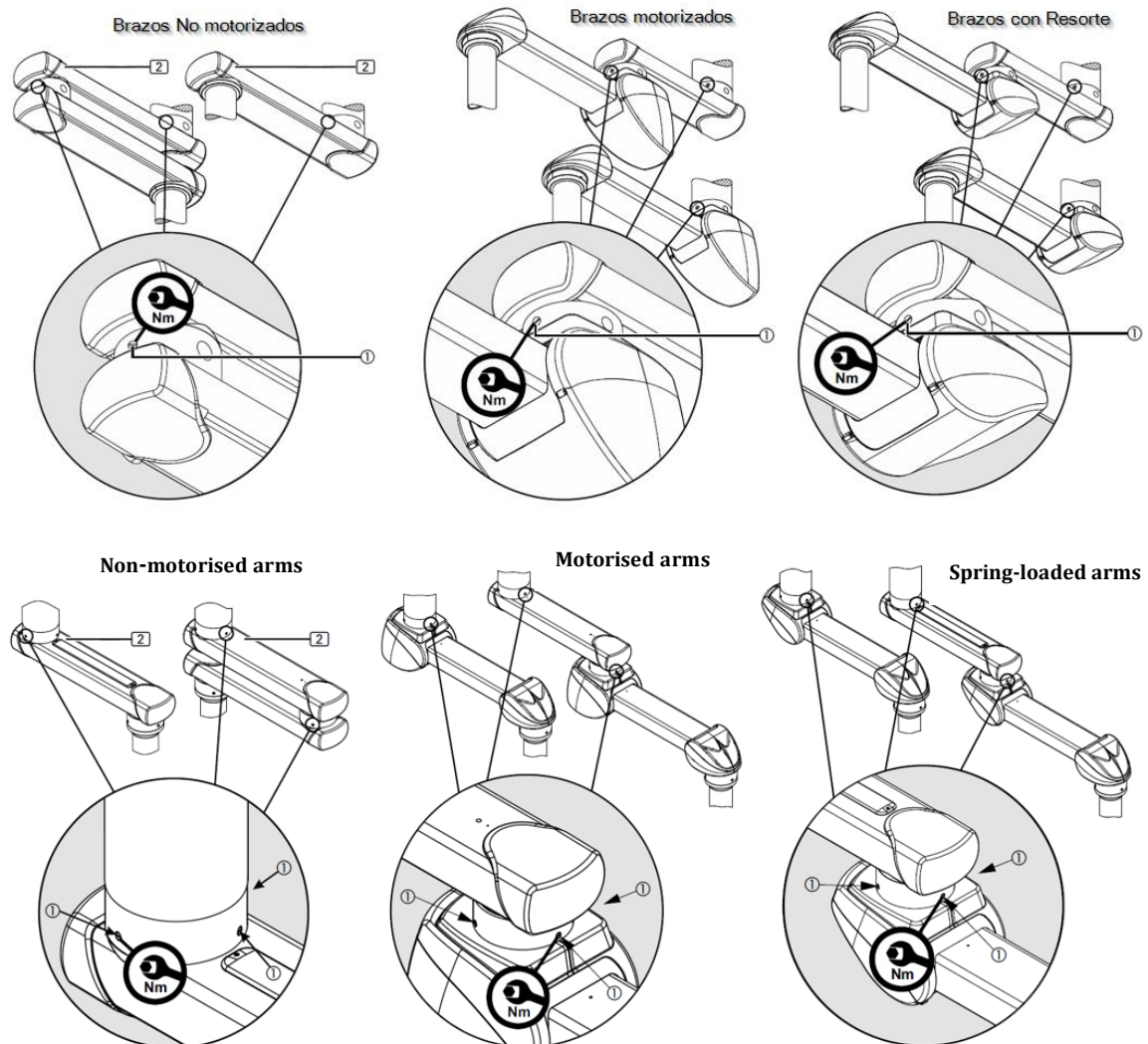


Fig.40 Friction brake adjustment

The mechanical brakes (friction brakes) hold the extension arm (2) in any set position. Adjust the braking force in such a way that the extension arm (2) remains stable in any position and can still be

adjusted conveniently. If the brakes are not adjusted correctly, the extension arm may automatically move in an uncontrolled manner.

NOTA

Observe the end stop recommendation in chapter 8 and make sure to tighten the brake bolts of the Unit on the roof tube more than at the bearing point of the lower extension arm. This facilitates the bending of the lower extension arm and allows the bearing unit on the lower extension arm to rotate freely.



See section 8.4.4 of this manual.

Use a suitable torque spanner to adjust the brake.

- To increase the braking force, tighten the slotted brake screws (1) by turning them evenly to the right (clockwise). Tighten to 1.6 Nm.
- To reduce the braking force, unscrew the slotted brake screws (1) by turning them evenly to the left (counterclockwise).
- Carrying out a test run

#### 8.4.2. Adjustment of the mechanical brake on the drop tube (with bearing)

The brake screw (friction brake) is adjusted in the same way for all different versions of the suspension system. Adjust the braking force of the respective end device so that the end device remains stable in any set position and can still be adjusted comfortably. In the figure below you can see the adjustment scheme for the service head.

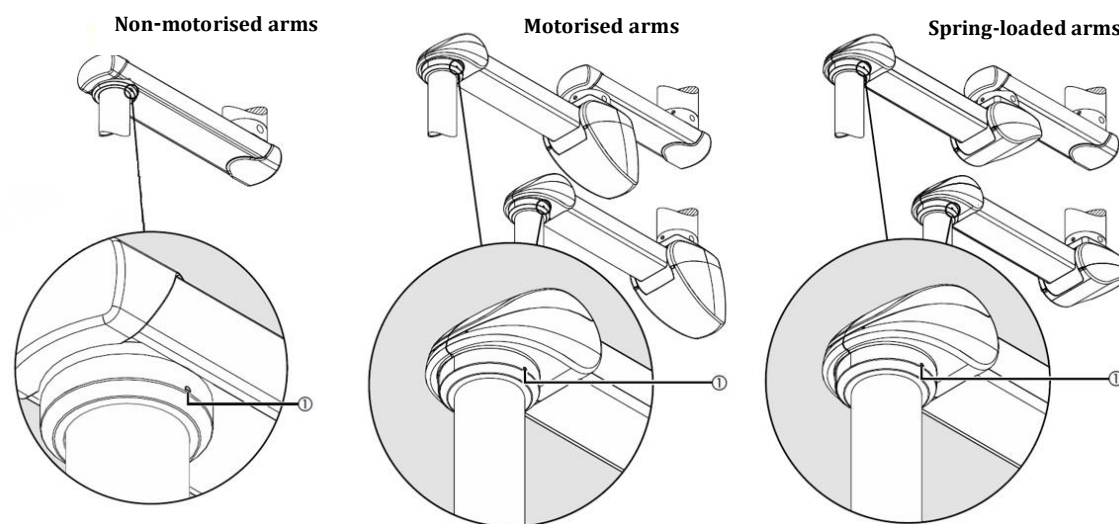


Fig.41 Friction brake adjustment on drop tube with bearing

Use a suitable flat-blade screwdriver.

- To increase the braking force, insert the flat screwdriver into the brake screws (1) and turn it clockwise to the right.
- To reduce the braking force, insert the flat screwdriver into the brake screws (1) and turn it to the left (counterclockwise).
- Carry out a test run.

#### 8.4.3. Adjustment of the mechanical brake on the drop tube (with bearing)

The brake screws (friction brakes) are adjusted in the same way for all different versions of the suspension system. In the case of the drop tube with friction bearing unit, the mechanical brakes (1) (3 friction brakes) hold the end device (e.g. the service head) in the set position. Adjust the braking force in such a way that the corresponding end device (e.g. service head) remains stable in any set position and can still be adjusted comfortably.

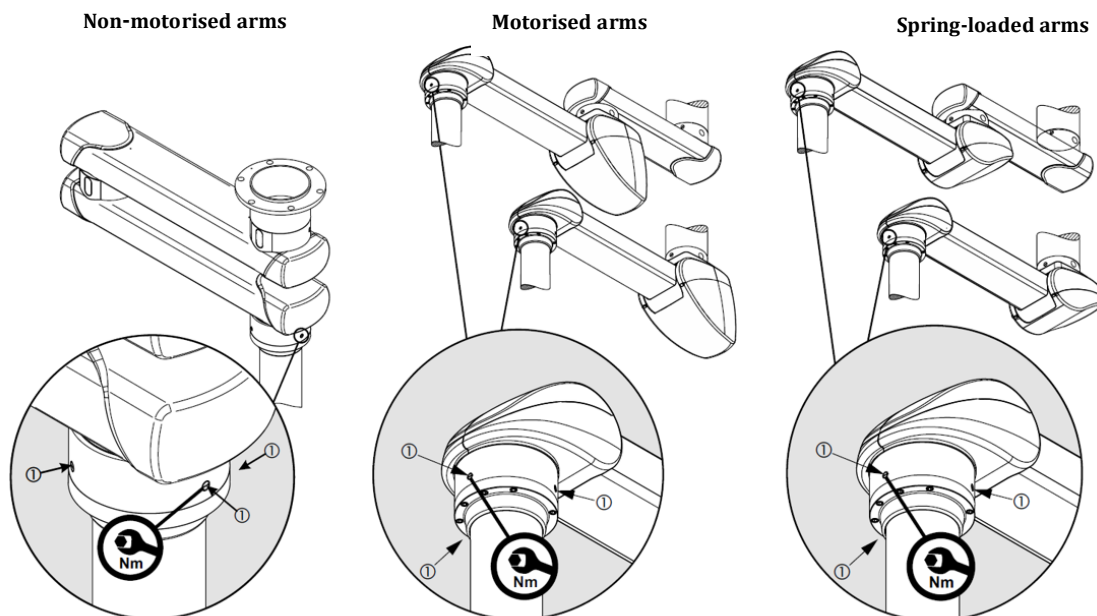


Fig.42 Friction brake adjustment on drop tube with bearing

Use a suitable torque spanner to adjust the brake.

- To increase the braking force, tighten the slotted brake screws (1) by turning them evenly to the right (clockwise). Tighten to 1.6 Nm.
- To reduce the braking force, unscrew the slotted brake screws (1) by turning them evenly to the left (counterclockwise).
- Carrying out a test run

#### 8.4.4. Adjustment of the rotary stops

The extension arm and drop tube are equipped with at least 1 ball stop that prevents the internal cables from being destroyed. With 1 ball stop installed, the swivel range is restricted to a maximum of 340 degrees. With 2 ball stops installed, the swivel range can be further restricted.

NOTA

For the version with an inverted arm, 2 ball stops must always be mounted between the extension arms to prevent the extension arms from hitting each other.

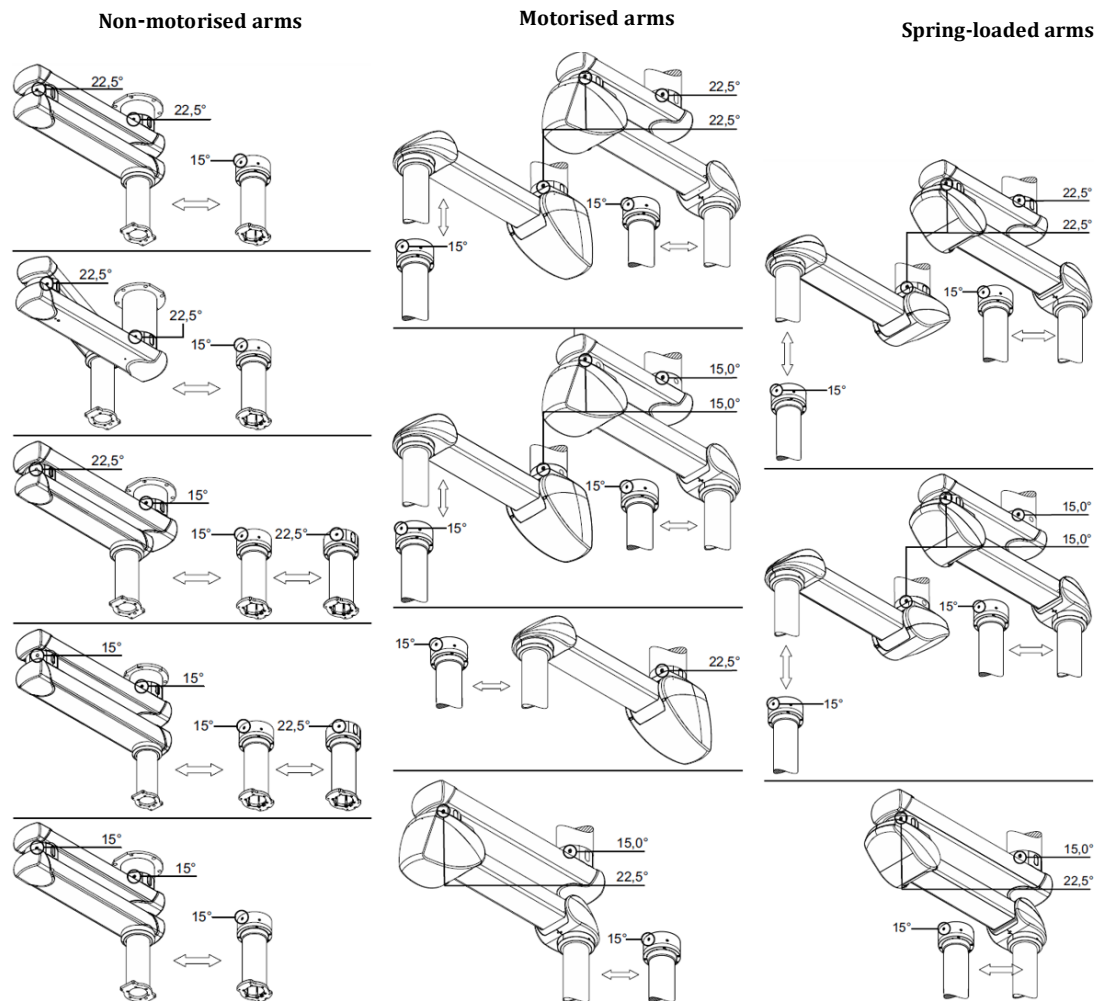


Fig.43 Adjustment of the rotary stops

The swivel ranges of the drop tube and arm versions are different:

- For versions with low load capacity adjust the swivel range of the upper and lower extension arms in increments of 22.5 degrees. Use one M16 fixing screw and two  $\varnothing$  12.7 mm ball stops for each extension arm or motorised arm.
- For versions with medium load capacity set the swivel range of the upper extension arm to 15.0 degree graduations and the swivel range of the lower extension arm to 22.5 degree

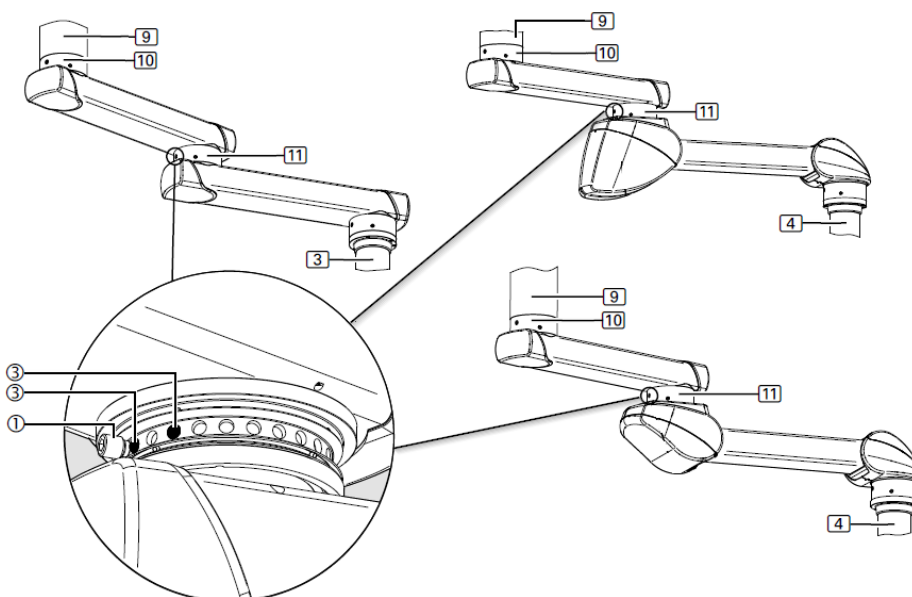
graduations. Use 1 M20 fixing screw and 2 ball stops  $\varnothing$  16 mm for the upper extension arm. Use 1 M16 set screw and 2 ball stops  $\varnothing$  12.7 mm for the lower extension arm.

- For high load capacity versions, set the swivel range of the upper and lower arms in 15.0 degree increments. Use 1 M20 fixing screw and 2 ball stops  $\varnothing$  16 mm for each arm.
- For versions with pneumatic and friction brake adjust the swivel range of the upper and lower extension arms in 15.0 degree increments. Use 1 M16 fixing screw and 2 ball stops  $\varnothing$  10 mm for each extension arm.
- For versions with drop tube with friction bearing unit (roller bearing) set the swivel range of the console tube in increments of 15.0 degrees. Use 1 M16 fixing screw and 2 ball stops  $\varnothing$  10 mm for each drop tube.
- For versions with electromagnetically braked drop tube, set the swivel range of the bracket tube in increments of 22.5 degrees. Use 1 M16 fixing screw and 2 ball stops  $\varnothing$  12.7 mm for each drop tube.

NOTA

A magnetic pin or similar tool is required to displace the ball stop. Telescopic magnet pick-up tool kit is available as an option.

- For double arm versions with friction bearing in between, it is recommended to fit 2 ball stops (3) (see Fig. 25). The detailed illustration shows the intermediate bearing (11) (without outer ring) and the position of the stop screw (1) in the ball stops (3).



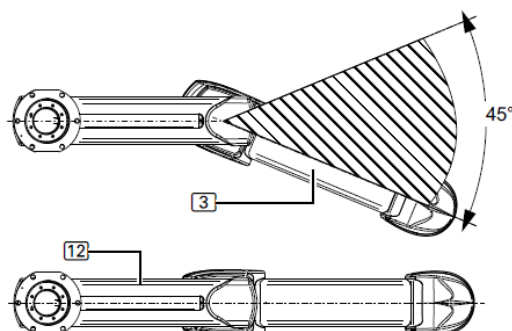


Fig.44 Double double arm system and friction bearing between arms

When adjusting the end stop as illustrated in Figure 40, the dead centre area is  $45^\circ$ . This means that the spring arm (3) has a maximum range of movement of approx.  $315^\circ$ . If the minimum setting on the end stop is not defined while adjusting the brakes on the intermediate bearing (11) and the ceiling bearing (10), it is quite difficult to bend the suspension system from the stretched position (12) and turn it on the intermediate bearing (11) of the spring arm (3).

When moving the adapter on the drop tube (4) from the extended position (12), there is a risk that the extension arm and spring arm will rotate around the ceiling bearing (10) although it would be desirable to bend in the area of the intermediate bearing (11).

#### 8.4.5. Replacement or disassembly of the rotary stops

The following section describes how to adjust the end stop on the drop tube with friction bearing unit (roller bearing) and on the arms. The procedure for adjusting the end stop is identical for the drop tube with electromagnetic brake unit.

**Non-motorised arms**

**Motorised arms**

**Spring-loaded arms**



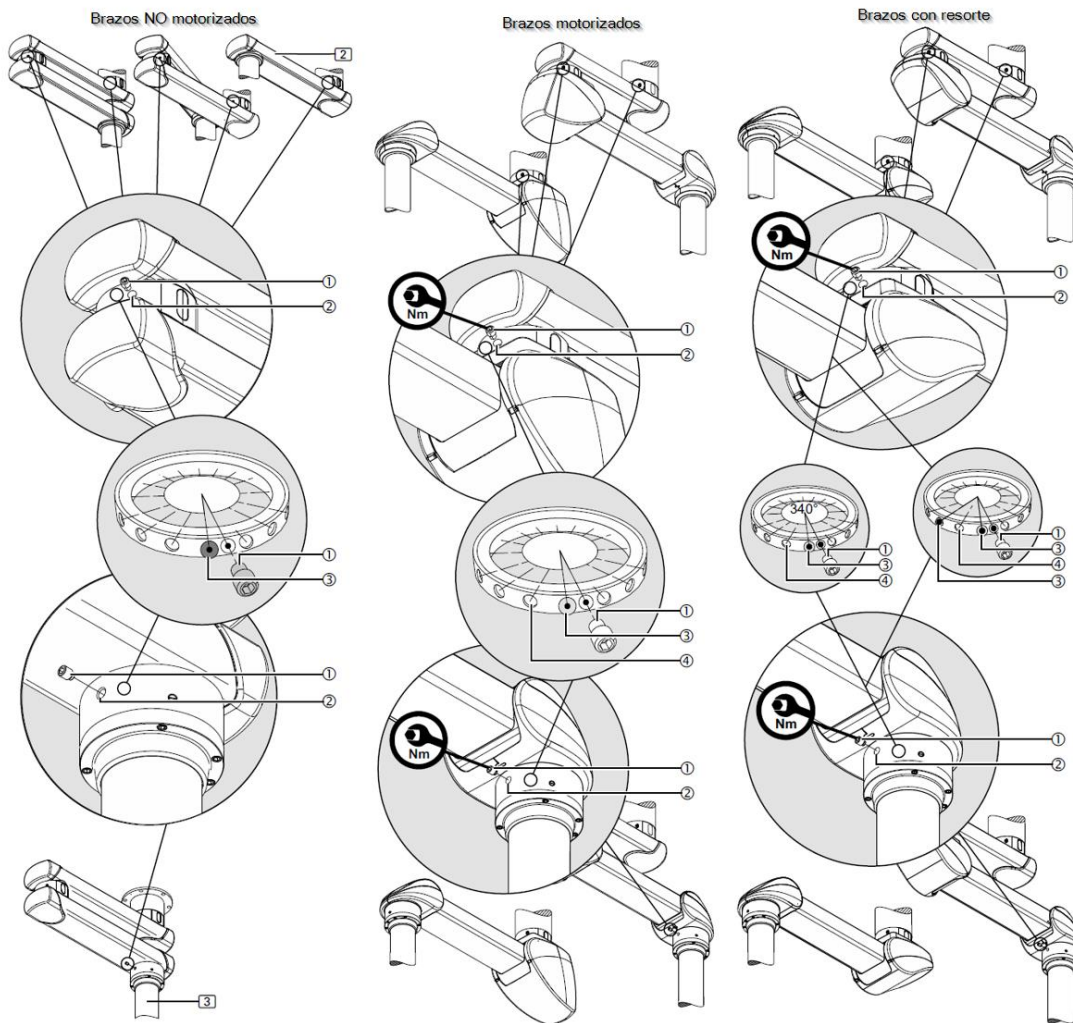


Fig.45 Disassembling the rotary stops

- Unscrew the fixing screw (1) from the threaded hole (2).
- Rotate the drop arm or drop tube until the ball stop (3) is visible in the threaded hole (2).
- Using a telescopic magnet pick-up tool, remove the ball stop (3) from the threaded hole (2) and store it in a safe place.

#### 8.4.6. Assembly of the rotary stops

NOTA

For the inverted arm version, the ball stops must always be mounted between the extension arms to prevent the extension arms from hitting each other.

Non-motorised arms

Motorised arms

Spring-loaded arms

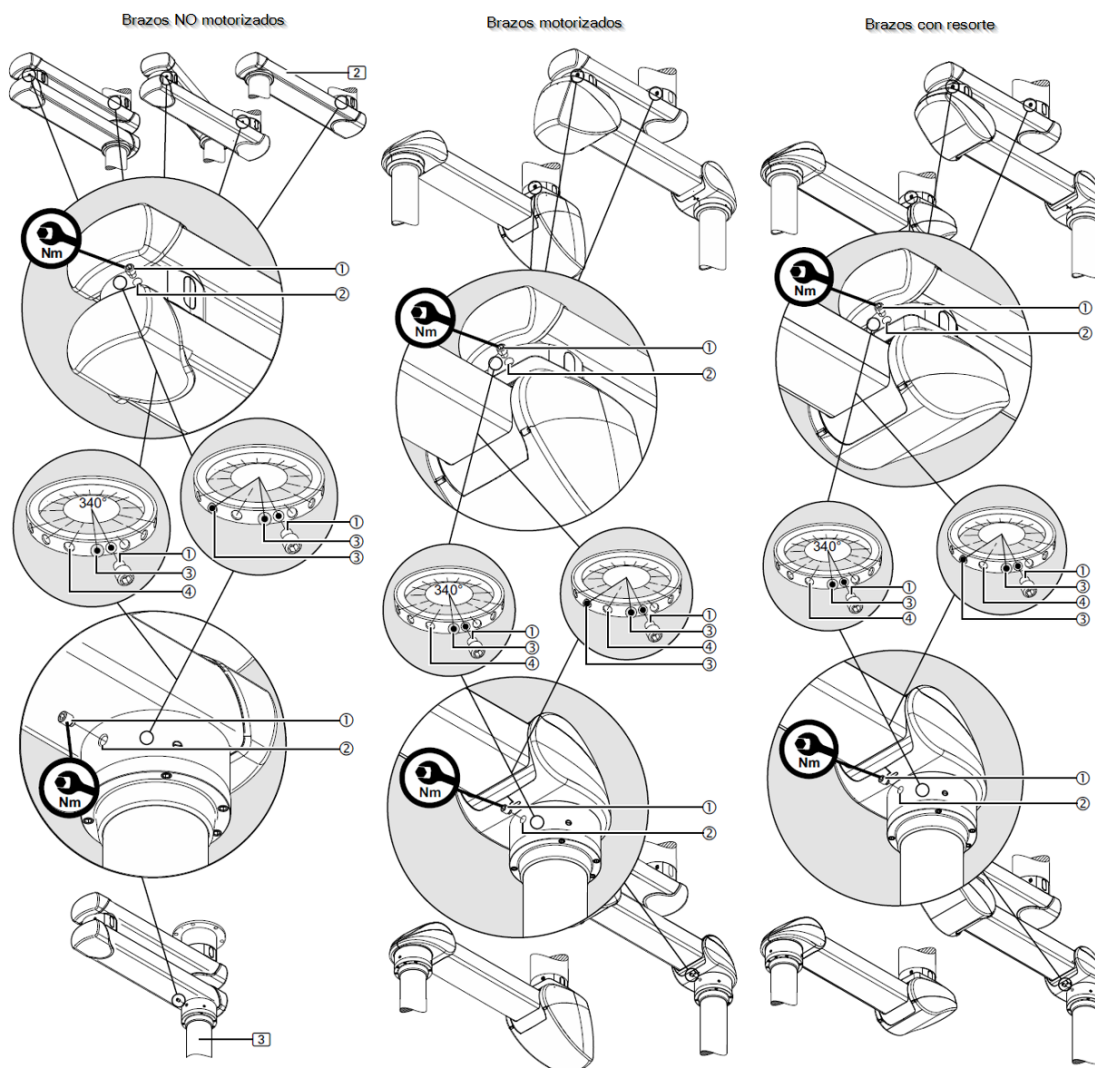


Fig.46 Assembly of the rotary stops

- Rotate the extension arm or console tube to the desired end stop position and then insert 1 ball stop (3) into the threaded hole (2).
- Ensure that the ball stop is firmly in place. The extension arm or drop tube can be rotated once the ball stop (3) has been fully inserted into one of the mounting fittings (4). Otherwise, these lock and the ball stop (3) must be pushed into one of the mounting fittings (4) while gently turning the extension arm or drop tube with a screwdriver.
- Rotate the extension arm or bracket tube to the desired position of the second end stop and then insert 1 additional ball stop (3) into the threaded hole (2).
- Slightly rotate the extension arm or drop tube and then screw the set screw (1) into the threaded hole (2) as far as it will go. The set screw (1) now serves as an end stop for the mounted ball stop (3) and restricts the swivel range of the extension arm or drop tube.
- Tighten the set screw (1) to 40 Nm.

- To check that the swivel stop is working properly the swivel range of the extension arm or drop tube must be limited to less than 360 degrees.

## 9. Cleaning

Perform this operation with slightly moist cleaning instruments to ensure that no liquid enters the equipment. Since no part or component of the system is invasive, sterilisation is not necessary.



Do not use abrasive or very hard cleaning agents that may cause damage to the exterior coatings, such as disinfectants containing sodium hypochlorite, which is highly corrosive to aluminium.



WARNING: Damage to equipment may occur.

The use of **formaldehyde-free** disinfectants such as Proder Pharma's Saint Nebul Ald. or a mild soap solution with a standard dishwashing product is recommended.

Method of application:

- Dilute 4 pulses of the valve supplied by the manufacturer per 5 litres of water.
- Do not spray the compound on the product, wipe the surface with a moderately damp cloth and let it react for 15 minutes.
- Remove with water or soap solution with a clean, wrung out cloth.



WARNING: Parts of the pendant system and adaptations are made of plastic. Solvents can dissolve plastic materials. Strong acids, bases and agents with an alcohol content of more than 60 % can cause plastic materials to become brittle. Dislodged particles may fall into open wounds. If liquid cleaning agents are allowed to penetrate the suspension system and fittings, excess cleaning fluid may drip into open wounds.

Switch off the power supply.



Contact with live parts can cause an electric shock.

- Always disconnect the device from the main power supply before cleaning and disinfecting it.
- Do not insert objects into the openings of the device.

### 9.1. Disinfection

Disinfectants may contain substances hazardous to health which, in contact with skin and eyes, can cause injury or affect the respiratory organs when inhaled. Observe protective measures:

- Observe hygiene rules.
- Follow the instructions of the disinfectant manufacturer.

- Carry out surface disinfection every working day and in case of contamination.

NOTA

Wiping disinfection is the standardised disinfection method prescribed for the pendant system.

The operator must define the hygiene rules and safety instructions related to the disinfection methods to be applied.

- In case of contamination with potentially infectious material (e.g. blood, body secretions or excreta), surfaces must be immediately and specifically disinfected.
- Be sure to apply the disinfectant in the correct concentration.
- For surface disinfection, do not spray, but wipe surfaces.
- Cleaned surfaces may only be used after the disinfectant has dried.

## 10. Waste management

Applies WEE2012/19 and RoHS directive 2011/65/EU, amendment 2015/863/EU. The equipment has electrical and electronic components, so it cannot be disposed of as organic waste, but as electrical/electronic waste.

## 11. User information on warnings



Under no circumstances should the user remove any part of the equipment enclosure to carry out checks.

### 11.1. Lighting problems

In the event of a fault or malfunction in the lighting systems, check the ignition from all intended actuators. If the problem persists, contact maintenance personnel.

### 11.2. Power supply problems

In the event of a fault or malfunction in any equipment connected to the supply unit, check this equipment by plugging it into another point of the equivalent supply unit. If the problem persists, contact service personnel.

### 11.3. Problems with the supply of medical gases

In the event of a failure or malfunction in the medical gas supply system, check the following:

- That you are trying to make the connection at the corresponding gas connection.

- That the gas inlet actuator is working properly and is not blocked.

If the problem persists, contact your service personnel.

## 12. Incident warning information

Any serious incident related to the product must be reported to Tedisel Ibérica and to the competent authority of the member state where the user and/or the patient are established.



See point 1 of this manual.

## 13. Regulations

### 13.1. Team ranking

According to the new **MDD** regulation **93/42/EEC** concerning medical devices, this product family is classified as:

- Class IIb, by Annex II, excluding section 4, regulation 11.
- Protection level IP20 according to IEC 60529.

Equipment intended for continuous operation.

### 13.2. Reference standards

The device complies with the safety requirements of the following standards and directives:

ISO11197: Medical supply units

IEC 60601-1: Medical electrical equipment. General requirements for basic safety and essential performance.

IEC 60601-1-2: Medical electrical equipment. Part 1-2. General requirements for basic safety and essential performance. Collateral standard. Electromagnetic disturbances.

### 13.3. Electromagnetic compatibility

According to EN 60601-1-2:2015 this equipment is intended for use in the electromagnetic environment specified below. The user of this equipment must satisfy himself that it is being used in such an environment.

Interference emission measurements	Compliance	Comment

HF emissions according to CISPR 11 standard	Group 1	The supply unit uses HF energy exclusively for its internal OPERATION. Therefore, its HF emissions are minimal and interference with devices in its vicinity is unlikely.
HF emissions according to CISPR 11 standard	Class A	The roof supply unit is suitable for use in non-domestic installations and in installations that are directly connected to the PUBLIC SUPPLY NETWORK, which also supplies residential buildings.
Harmonic emissions according to the standard IEC 61000-3-2	Class A	
Emissions of voltage fluctuations/transients in accordance with the standard IEC 61000-3-3	In accordance with	

Interference resistance	Test level according to IEC 60601	Level of compliance	Environment/Guidelines
Static Electric Discharge (ESD) in accordance with IEC 61000-4-2	±8 kV contact discharge 15 kV aerial discharge	±8 kV contact discharge 15 kV aerial discharge	Floors should be made of wood, concrete or ceramics. If the floor is covered with a synthetic material, the

			relative air humidity should be at least 30%.
Fast transient electrical interference amplitudes / bursts according to the norm IEC 61000-4-4	±2 kV for power supply cables ±1kV for input and output cables	±2 kV for power supply cables ±1 kV for incoming and outgoing cables	The quality of the supply voltage should be typical for a commercial or hospital environment.
Surges (waves) according to the standard IEC 61000-4- 5	±1 kV phase-to-phase voltage ±2 kV phase to ground voltage	±1 kV phase-to-phase voltage ±2 kV phase to ground voltage	The quality of the supply voltage should be typical for a commercial or hospital environment.
Voltage dips and fluctuations of the supply voltage according to the standard IEC 61000-4- 11	100% of $U_N$ drop for 0.5 period 100% of $U_N$ drop for 1 period 30% of $U_N$ drop for 25 periods  Remark: $U_N$ is the AC mains voltage before applying the test level.	100% $U_N$ drop for 0.5 period 100% of $U_N$ drop for 1 period 30% of $U_N$ drop for 25 periods	The quality of the supply voltage should be typical for a commercial or hospital environment.  If the user of the roof supply unit requires continuous operation even in case of power supply interruptions, it is recommended to supply the roof supply unit from a device with an uninterruptible power supply or a battery.
Short interruptions of the supply voltage according to the standard IEC 61000-4- 11	100% for 5 s  Remark: $U_N$ is the AC mains voltage before applying the test		The quality of the supply voltage should be typical for a commercial or hospital environment.  If the user of the roof supply unit requires continuous

	level.		operation even in case of power supply interruptions, it is recommended to supply the roof supply unit from a device with an uninterruptible power supply or a battery.
Magnetic field for power supply frequencies (50/60 Hz) according to the standard IEC 61000-4-8	30 A/m	30 A/m	The magnetic fields created by the mains frequency should be those of a commercial or hospital environment.

Interference resistance	Level of verification according to IEC 60601	Level of compliance	Environment/Guidelines																																																		
HF interference induced by IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz 6 Vrms ISM band	3 Vrms 6 Vrms	AM 1KHz modulation Depth 80% Depth 80% Depth 80% Depth																																																		
HF interference induced by IEC 61000-4-3	<table border="1"> <thead> <tr> <th>RANGE</th> <th>FREQUENCY</th> <th>MODULATION</th> <th>STEP</th> <th>LEVEL</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>80-1000MHz</td> <td>AM 1 kHz Prof: 80%</td> <td>LOG 1%</td> <td>10 V/m</td> </tr> <tr> <td>B</td> <td>1000-2000MHz</td> <td>AM 1 kHz Prof: 80%</td> <td>LOG 1%</td> <td>10 V/m</td> </tr> <tr> <td>C</td> <td>2000-2700MHz</td> <td>AM 1 kHz Prof: 80%</td> <td>LOG 1%</td> <td>10 V/m</td> </tr> <tr> <td>D</td> <td>385MHz</td> <td>PM 18 Hz Cycle: 50%</td> <td>-</td> <td>27 V/m</td> </tr> <tr> <td>E</td> <td>450MHz</td> <td>FM 1 kHz Desv: ± 5 kHz</td> <td>-</td> <td>28 V/m</td> </tr> <tr> <td>F</td> <td>810-930MHz</td> <td>PM 18 Hz Cycle: 50%</td> <td>-</td> <td>28 V/m</td> </tr> <tr> <td>G</td> <td>1720-1970MHz</td> <td>PM 217 Hz Cycle: 50%</td> <td>-</td> <td>28 V/m</td> </tr> <tr> <td>H</td> <td>2450MHz</td> <td>PM 217 Hz Cycle: 50%</td> <td>-</td> <td>28 V/m</td> </tr> <tr> <td>I</td> <td>5240-5785MHz</td> <td>PM 217 Hz Cycle: 50%</td> <td>-</td> <td>9 V/m</td> </tr> </tbody> </table>	RANGE	FREQUENCY	MODULATION	STEP	LEVEL	A	80-1000MHz	AM 1 kHz Prof: 80%	LOG 1%	10 V/m	B	1000-2000MHz	AM 1 kHz Prof: 80%	LOG 1%	10 V/m	C	2000-2700MHz	AM 1 kHz Prof: 80%	LOG 1%	10 V/m	D	385MHz	PM 18 Hz Cycle: 50%	-	27 V/m	E	450MHz	FM 1 kHz Desv: ± 5 kHz	-	28 V/m	F	810-930MHz	PM 18 Hz Cycle: 50%	-	28 V/m	G	1720-1970MHz	PM 217 Hz Cycle: 50%	-	28 V/m	H	2450MHz	PM 217 Hz Cycle: 50%	-	28 V/m	I	5240-5785MHz	PM 217 Hz Cycle: 50%	-	9 V/m		
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Transmitter power rating	Safety distance depending on emission frequency Environment/Guidelines		
	150 kHz to 80 MHz $D = 1,2 P$	80 MHz up to 800 MHz $D = 1,2 P$	800 MHz up to 2.5 GHz $D = 2, 3 P$



0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

# COLUMN

User and cleaning manual