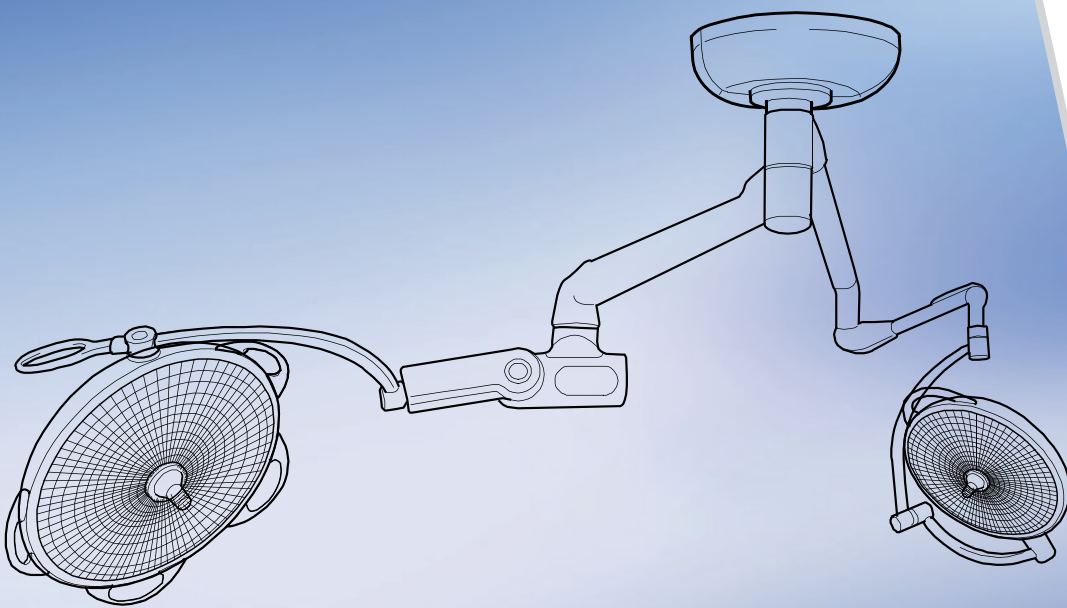


TECHNICAL MANUAL - EN

**MAQUET**  
GETINGE GROUP

*Prismalix*



### Copyright

All rights reserved. This document may not be copied, adapted or translated without prior written permission, except as permitted under copyright law.

© Copyright Maquet S.A.S

### Subject to technical changes.

The illustrations and technical specifications provided in this manual may, on account of future product developments, differ slightly from the actual product supplied.

05.05.2017 | Ed04







# CONTENTS











<b>Contents</b>	<b>3</b>
<b>1</b> Symbols used in this manual	<b>4</b>
<b>2</b> Symbols used on the product	<b>5</b>
<b>3</b> Quality standards compliance	<b>6</b>
<b>4</b> General specifications	
5 Description	8
5.1 S series	8
5.2 SA series	8
5.3 ACS series	9
<b>6</b> Coding principle	<b>10</b>
<b>7</b> Technical specifications	<b>12</b>
7.1 Technical sheets of models	14
<b>8</b> Installation	<b>27</b>
8.1 Installation recommendations	27
8.2 S series installation manual	27
8.3 SA series installation manual	27
8.4 ACS series installation manual	27
8.5 Installation manual for ENERGIX Power supply unit	27
<b>9</b> Cleaning / Disinfection / Sterilisation	<b>28</b>
9.1 Cleaning and disinfecting the surgical light	28
9.2 Cleaning and sterilising the handles	29
<b>10</b> General maintenance	<b>31</b>
10.1 Preventive maintenance	31
10.2 Basic maintenance	31
10.3 Remplacement de la coupole	37
10.4 Replacement of electrical socket (410) on closing plate	42
10.5 ReplacING rotating contact on 6000 cupola:	
MPRX No. 008	43
10.6 Replacing brake on ACS cupola arm: MPRX No. 009	43
10.7 Replacing ACS cupola arm: MPRX No. 010	44
10.8 Replacing ACS compensation unit braket: MPRX No. 011	44
10.9 Replacing brake on ACS main arm: MPRX No. 012	44
10.10 Replacing bearing subassembly (505) on 6000 or 8000 cupola: MPRX No. 013	45
10.11 Replacing the hinge (210) of 4000/6000/80000 cupolas	45
10.12 ReplacIng the mini contact breaker (690) of 6000/80000 cupolas	45
10.13 Replacing brake on main arm, compensation unit side: MPRX No. 013	46
10.14 Replacing the video cable of the PRX 4000	46
10.15 Replacing the video cable of the PRX 4000	46
10.16 Repair kits and subassemblies	47

	10.17 Recommended spare parts and consumables	48
	10.18 (OPM) Maintenance tool	48
<b>11</b>	<b>Part lists and drawings</b>	<b>  50</b>
	Checking list	99

# 1 SYMBOLS USED IN THIS MANUAL

Symbols	Meaning
	<b>Mandatory</b> May affect patient or user safety
	<b>Recommendation</b> Risk of damage to device or accessories
	<b>CE label</b> The device bears the CE mark and complies with the requirements of European directive 93/42/EEC relating to medical devices
	<b>Medical equipment</b> classification for electric shocks, mechanical hazards and fire risks in accordance with the standard UL 60601-1, UL 60601-2-41 and CSA C22.2 No. 601-M90

## 2 SYMBOLS USED ON THE PRODUCT

Symbols	Meaning
	<b>Caution</b> Read the documentation for the unit thoroughly
	Alternating current
	Direct current
REF. SN.	Technical designation and serial numbers
23,5 V <sup>EFF</sup> (V <sup>TRMS</sup> <sub>AC+DC</sub> )	True RMS AC * output voltage
	Metal envelope protection type. The unit comes under class 1, type B
	Do not aim cupola toward ceiling with the surgical light operating
	Caution: Hot surface
	Comply with the applicable handling precautions for products that are sensitive to electrostatic discharges
	<b>CE label</b> The device complies with the requirements of European directive 93/42/EEC relating to medical devices
	<b>Medical equipment</b> Classified with respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, IEC 60601-2-41 and CSA C22.2 No. 601-M90
	This equipment must not be disposed of with household waste as it is subject to separate collection for value enhancement, reuse or recycling.

\* rms voltage: see installation manual of ENERGIX units

## 3 QUALITY STANDARDS COMPLIANCE

### 3.1 CERTIFICATION OF MAQUET SA'S QUALITY SYSTEM

LNE/G-MED certifies that the quality system developed by MAQUET SA for design, implementation, sales, installation and after-sales service of surgical lights complies with the requirements of the following international standards:

- ISO 9001:2008
- EN ISO 13485:2012

### 3.2 CE MARKING

Compliance with the requirements of European Directive 93/42/EEC of 14 June 1993 relating to medical devices has been assessed in accordance with Annex VII of the Directive. PowerLED surgical lights belong to Class I as described in Annex IX of the Directive.

## 4 GENERAL SPECIFICATIONS

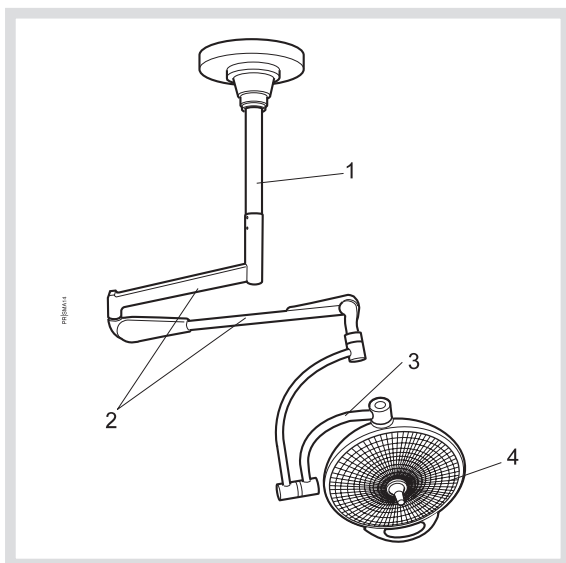
(IN ACCORDANCE WITH STANDARD IEC 60 601-2-41 AND IEC 60601-1)

Specifications		Unit	4000	6000	8000
Nominal illumination (Ec)		lx	100,000	110,000	120,000
Diameter d10		cm (inch)	14	17	20
Diameter d50		cm (inch)	10	12	13
Illumination depth		cm (inch)	130 (40 à 170)	125 (55 à 180)	120 (40 à 160)
Colour temperature (Ra)		K	3,300 ±200	3,300 ±200	3,300 ±200
Colour rendering index		NA	95 ±2	95 ±2	95 ±2
Shadow dilution	With one mask	%	16	65	70
	With two masks	%	45	50	55
	At base of tube	%	99	90	75
	With one mask, at base of tube	%	15	55	40
	With two masks, at base of tube	%	40	40	40
Radiant energy		mW.m <sup>-2</sup> . lx <sup>-1</sup>	5.5	4.5	4.5
Irradiance (Ee)		W/m <sup>2</sup>	550	495	540
Degree of protection against harmful ingress of water		-	Ordinary		
Methods of sterilization or disinfection		-	See Section 9		
Mode of operation		-	Continuous operation		



## 5 DESCRIPTION

### 5.1 S SERIES



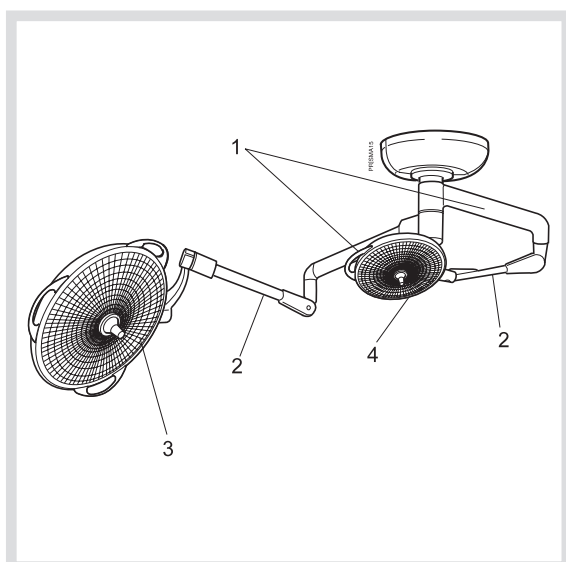
■ The S series surgical light (Standard Suspension) comprises the following :

- Spacer tube (1).
- Main arm (2) with balancing arm.
- Coupola arm (3).
- Type 4000 cupola (4).

■ The S series comprises the following models:

PRX 4001 S, 4401 S (ceiling-mounted), PRX 4002 S (wall-mounted), PRX 4003 S (mobile).

### 5.2 SA SERIES



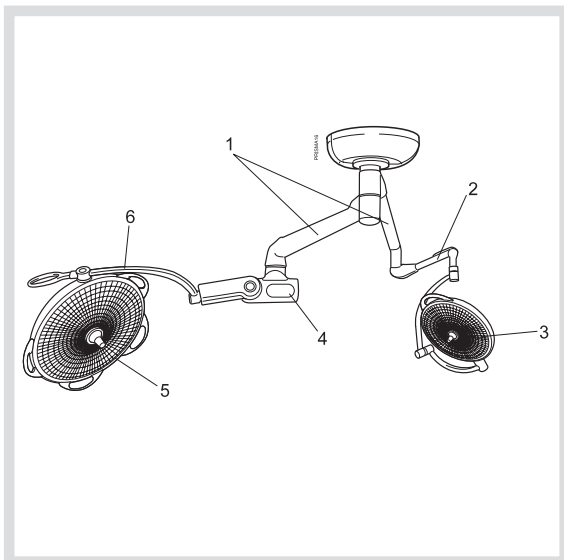
■ The S.A. series surgical light (Enhanced Suspension) comprises (Fig. 5.2):

- A single, double or triple suspension comprising one, two or three main arms (1), slanted or straight.
- One or two spring-compensated balancing arms (2).
- A combination of type 6000 (3) and type 4000 (4) cupolas.

■ The S.A. series comprises the following models:

- PRX 2001 SA, PRX 3001 SA, PRX 4001 SA,
- PRX 4101 SA, PRX 4201 SA, PRX 4301 SA,
- PRX 4401 SA, PRX 4411 SA, PRX 4421 SA,
- PRX 4431 SA, PRX 4441 SA, PRX 6001 SA,
- PRX 6101 SA, PRX 6201 SA, PRX 6301 SA,
- PRX 6401 SA, PRX 6411 SA, PRX 6421 SA,
- PRX 6431 SA, PRX 6441 SA, PRX 6601 SA.

### 5.3 LA SERIE ACS



■ The A.C.S. series (Automatic Compensated Suspension) comprises (Fig. 5.3):

- A single, double or triple suspension comprising one, two or three main arms (1).
- One or two compensation units (4).
- A balancing arm (2) when the light carries a 4000 satellite (3).
- One or two cupola arms (6) used to secure the 6000 or 8000 cupolas (5).

■ The A.C.S. series comprises the following models:

- PRX 6001 ACS, PRX 6101 ACS,
- PRX 6201 ACS, PRX 6401 ACS, PRX 6411 ACS, PRX 6421 ACS, PRX 6441 ACS,
- PRX 6601 ACS, PRX 8001 ACS,
- PRX 8101 ACS, PRX 8201 ACS,
- PRX 8401 ACS, PRX 8411 ACS,
- PRX 8421 ACS, PRX 8431 ACS,
- PRX 8441 ACS, PRX 8601 ACS.

■ The A.C.S. series comprises the following models:

- PRX 4001 SAX, PPX 4401 SAX,
- PRX 4441 SAX.

## 6 CODING PRINCIPLE

- Codes used with PRISMALIX surgical lighting system:
  - The code for a surgical light model is formed as follows:
  - 3-letter symbol + 4 numbers + a combination of 3 to 8 letters
  - For example: PRX 6601 ACS / DF /CFF
- Interpretation:
  - Symbol: PRX (contraction of PRISMALIX)
  - Numbers

### CODING OF PRISMALIX SURGICAL LIGHTING SYSTEMS (MNEMONIC)

THE PRODUCTS CAN BE DESCRIBED BY A CODED COMMERCIAL NAME

**PRX 0000 000 00 000**

1 - CONTRACTION OF PRISMALIX

2 - FIRST CUPOLA (CENTRAL)

3 - SECOND CUPOLA (PERIPHERAL)

4 - THIRD CUPOLA (PERIPHERAL)

5 - TYPE OF FASTENING SYSTEM

- 1 = Ceiling
- 2 = Wall
- 3 = Mobile base

6 - TYPE OF SUSPENSION (ACS, SAI or SAD, S)

- ACS (Compensated Automatic Suspension)
- SAI (Enhanced inclined suspension for conventional ceiling)
- SAD (Enhanced straight suspension for low ceilings)
- S (Standard suspension)

7 - TYPE OF CUPULA ARM

- SF = Single Fork
- DF = Double Fork

8 - CUPOLA OPTION

- T, cupola with light volume variation
- CFF, cupola with built-in camera (CFF = Caméra Focale Fixe)
- VZ, cupola (and suspension) pre-wired for video

## CLASSIFICATION OF PRISMALIX CONFIGURATIONS BY FAMILY

## S SERIES

4001 S/DF/T  
 4001 S/SF/T  
 4002 S/DF/T  
 4002 S/SF/T  
 4003 S/SF/T  
 4003 S/SF/T/US  
 4401 S/DF/T  
 4401 S/SF/T

## SAX SERIES

4001 SAX/DF/T  
 4001 SAX/SF/T  
 4401 SAX/DF/T  
 4401 SAX/SF/T  
 4441 SAX/DF/T  
 4441 SAX/SF/T

## SA SERIES

2001  
 3001 SA  
 4001 SAI/DF/T  
 4001 SAI/SF/T  
 4001 SAD/DF/T  
 4001 SAD/SF/T  
 4101 SAI/DF/SUP  
 4201 SAI/DF/T  
 4301 SAI/DF/CFF  
 4401 SAI/DF/CFF  
 4401 SAI/SF/CFF  
 4401 SAI/DF/VZ  
 4401 SAI/SF/VZ  
 4401 SAD/DF/CFF  
 4401 SAD/DF/VZ  
 4401 SAD/SF/CFF  
 4401 SAD/SF/VZ  
 4411 SAI/DF/SUP  
 4421 SAI/DF/CFF  
 4421 SAI/DF/VZ  
 4431 SAI/DF/CFF  
 4431 SAI/DF/VZ  
 4441 SAI/DF/CFF  
 4441 SAI/DF/VZ  
 4441 SAI/SF/CFF  
 4441 SAI/SF/VZ  
 4441 SAD/DF/CFF  
 4441 SAD/DF/VZ  
 4441 SAD/SF/CFF  
 4441 SAD/SF/VZ  
 6001 SAL/T  
 6101 SAL/SUP  
 6201 SAL/T  
 6301 SAL/T  
 6401 SAL/DF/T  
 6401 SAL/SF/T  
 6401 SAL/DF/CFF  
 6401 SAL/SF/CFF  
 6401 SAL/DF/VZ  
 6401 SAL/SF/VZ  
 6411 SAL/DF/SUP  
 6421 SAL/DF/CFF  
 6421 SAL/DF/VZ  
 6431 SAL/DF/CFF  
 6431 SAL/DF/VZ  
 6441 SAL/SF/CFF  
 6441 SAL/SF/VZ  
 6601 SA/T

## ACS SERIES

6001 ACS/T  
 6101 ACS/SUP  
 6201 ACS/T  
 6401 ACS/DF/CFF  
 6401 ACS/SF/CFF  
 6401 ACS/DF/VZ  
 6401 ACS/SF/VZ  
 6411 ACS/DF/SUP  
 6421 ACS/DF/CFF  
 6421 ACS/DF/VZ  
 6441 ACS/DF/CFF  
 6441 ACS/DF/VZ  
 6441 ACS/SF/CFF  
 6441 ACS/SF/VZ  
 6601 ACS/CFF  
 6601 ACS/VZ  
 8001 ACS/T  
 8101 ACS/SUP  
 8201 ACS/T  
 8401 ACS/DF/CFF  
 8401 ACS/DF/VZ  
 8401 ACS/SF/CFF  
 8401 ACS/SF/VZ  
 8411 ACS/DF/SUP  
 8421 ACS/DF/CFF  
 8421 ACS/DF/VZ  
 8431 ACS/DF/CFF  
 8431 ACS/DF/VZ  
 8441 ACS/DF/CFF  
 8441 ACS/DF/VZ  
 8601 ACS/CFF  
 8601 ACS/VZ

## 7 TECHNICAL SPECIFICATIONS

### PHOTOMETRIC CHARACTERISTICS

Specifications		Cupola 4000	Cupola 6000	Cupola 8000
Illumination (**)	lux	50000 to 100000	55000 to 110000	60000 to 120000
Number of bulbs	-	1	2	3
Type of bulb	-	100W/23V	100W/23V	100W/23V
Diameter of light spot (*) (***)	cm	14-17	17-21	25-30
Depth of light volume	cm	80	80	80
Number of prisms	-	2184	3055	4355
Illuminating area	cm <sup>2</sup>	1264	2770	4997
Cupola diameter	mm	510	700	900
Température de couleur	k	3300 ±200	3300 ±200	3000 ±200
IRC	-	95±2	95±2	95±2
Integrated filtration	-	Absorbent	Absorbent + dichroic	
Energy radiant	mW/m <sup>2</sup> .lux	5.5	4.5	4.5

(\*) Diameter of field given for 10% of central illumination at 1 meter below the cupola

(\*\*) By variation of electrical supply

(\*\*\*) For cupola with caméra, use minimum diameter of light spot la valeur minimale.

### ELECTRICAL CHARACTERISTICS

Specifications		Cupola 4000	Cupola 6000	Cupola 8000
Input power	VA	125	250	375
Low voltage consumption	A	4	8	12
Voltage at bulb terminals (RMS)	V	23	23	23
Number of MAQUET SA 23V/100 W halogen bulbs ***	23V/100W(***)	1	2	3

Class 1 - type B

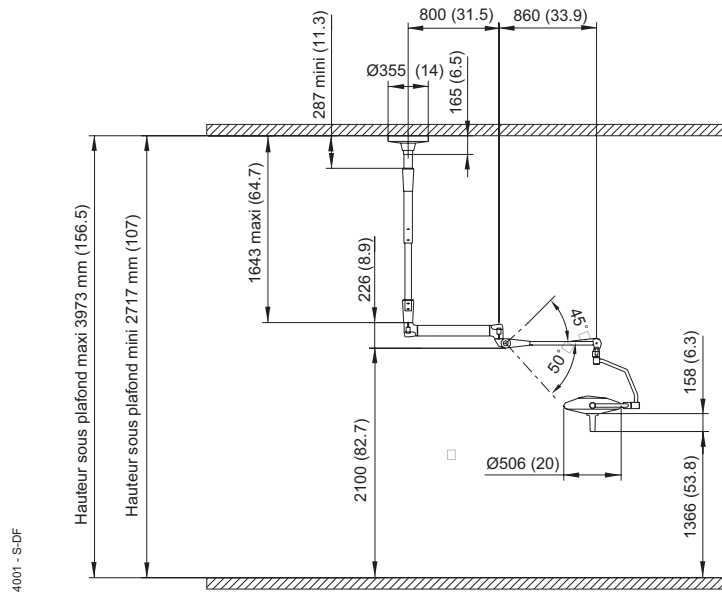
(\*\*\*) Bulbs specially designed for MAQUET SA.

**ELECTRICAL CONNECTIONS**

Connection from :	to :	Voltage	Type of connection
Electrical cabinet	ENERGIX power module	100/120 V or 220/230 V	3 x 2,5 mm <sup>2</sup> , per module
Electrical cabinet	Cupola	23 Veff. ajustable	Refer to NTR ENERGIX ref. 0612301
ENERGIX power module	Control knob/pilot light	-	7 - 14 or 21 wires (telephonic type)

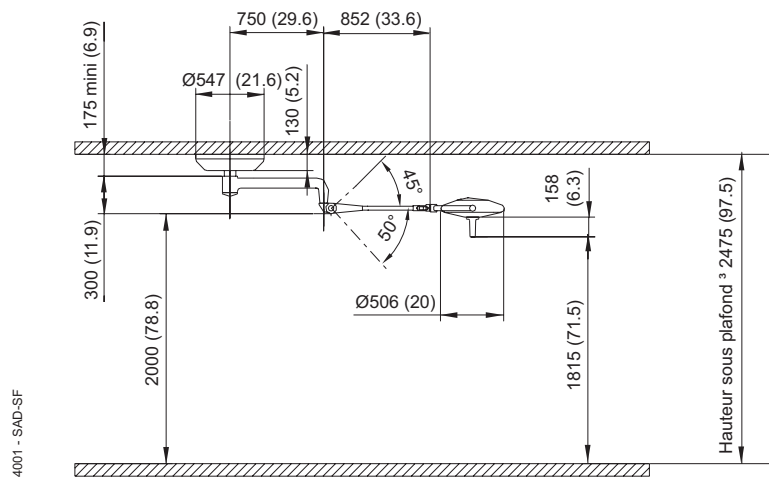
## 7.1 TECHNICAL SHEETS OF MODELS

### 7.1.1 PRISMALIX 4001 S/DF/T



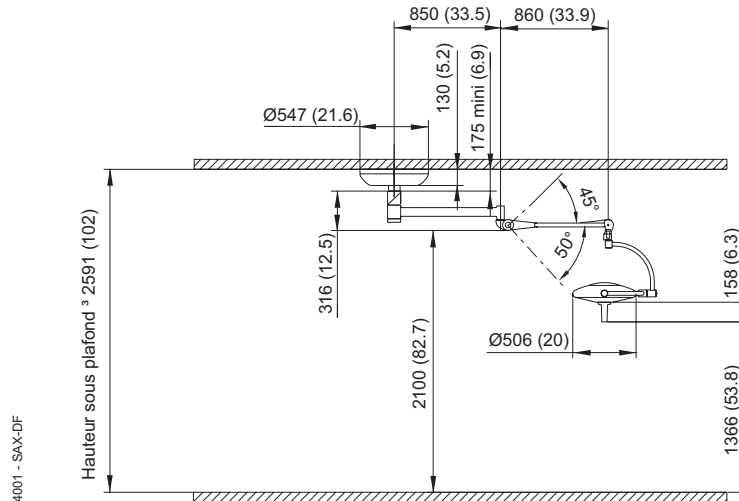
Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2717
Position range of cupola	mm	2045
Maximum reaction torque of the configuration	m.DaN	32
Weight (without suspension tube)	kg	21

### 7.1.2 PRISMALIX 4001 SAD/SF



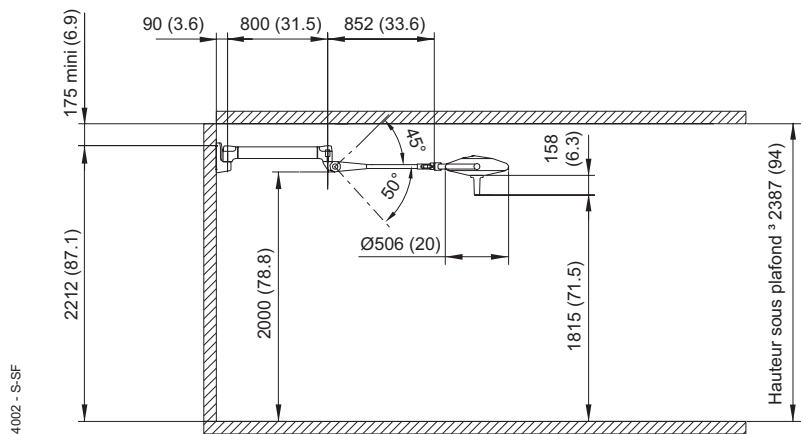
Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2475
Position range of cupola	mm	2191
Maximum reaction torque of the configuration	m.DaN	29
Weight (without suspension tube)	kg	26

7.1.3 PRISMALIX 4001 SAX/DF



Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2591
Position range of cupola	mm	2095
Maximum reaction torque of the configuration	m.DaN	30
Weight (without suspension tube)	kg	31

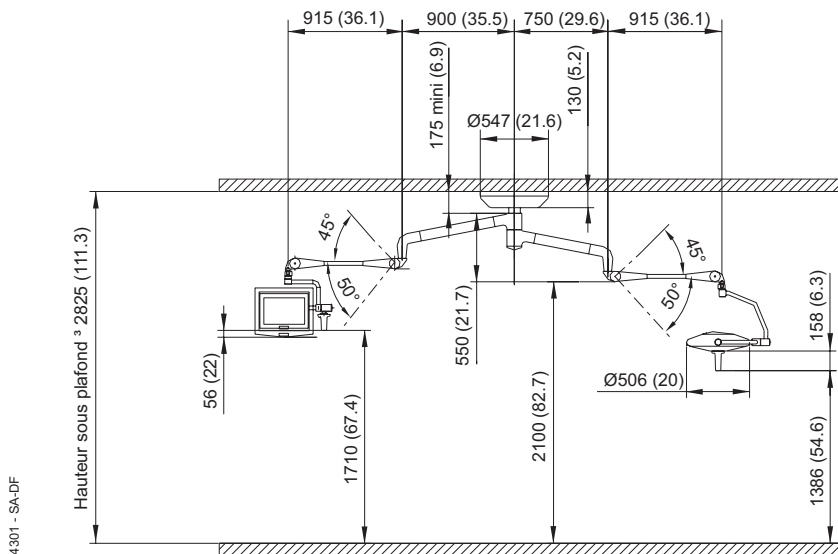
7.1.4 PRISMALIX 4002 S/SF



Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2387
Position range of cupola	mm	2240
Maximum reaction torque of the configuration	m.DaN	25
Weight (without suspension tube)	kg	20

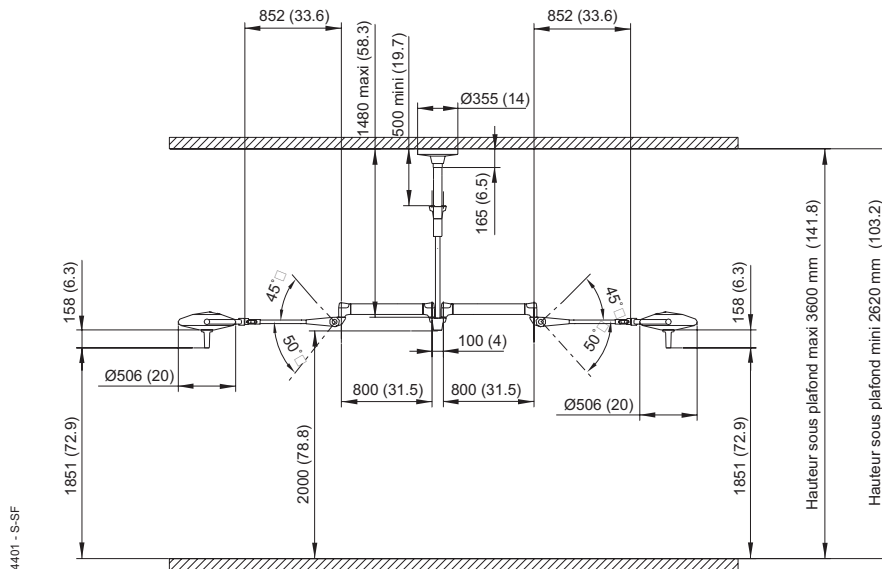


7.1.5 PRISMALIX 4301 SA/DF



Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2825
Position range of cupola	mm	2169
Maximum reaction torque of the configuration	m.DaN	56
Weight (without suspension tube)	kg	40

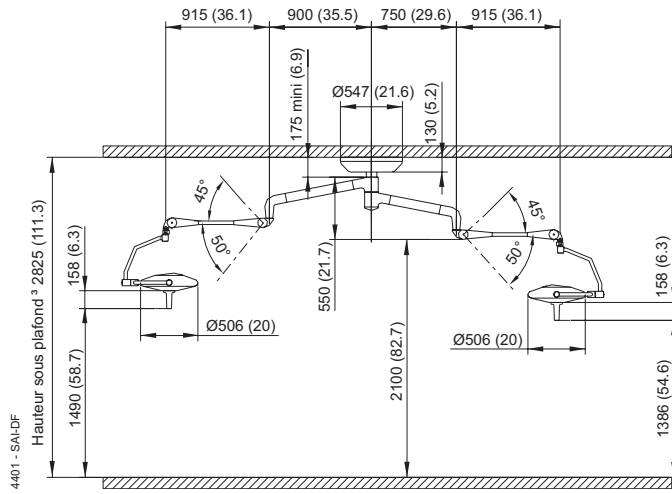
7.1.6 PRISMALIX 4401 S/SF



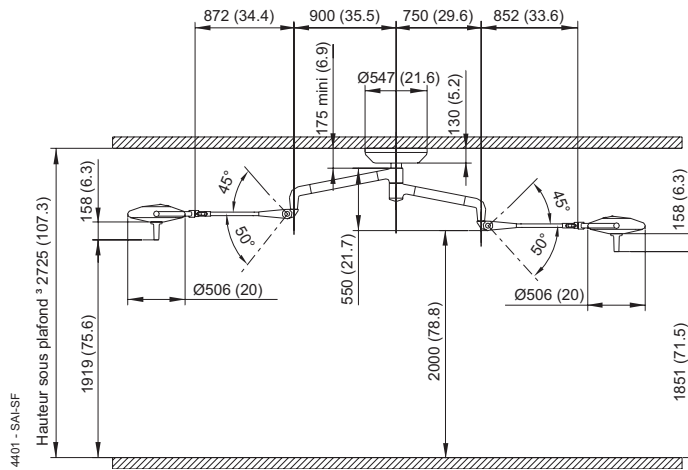
Specifications		Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2620
Position range of cupola	mm	2241
Maximum reaction torque of the configuration	m.DaN	56
Weight (without suspension tube)	kg	39

7.1.7 PRISMALIX 4401 SAI

DOUBLE FORK

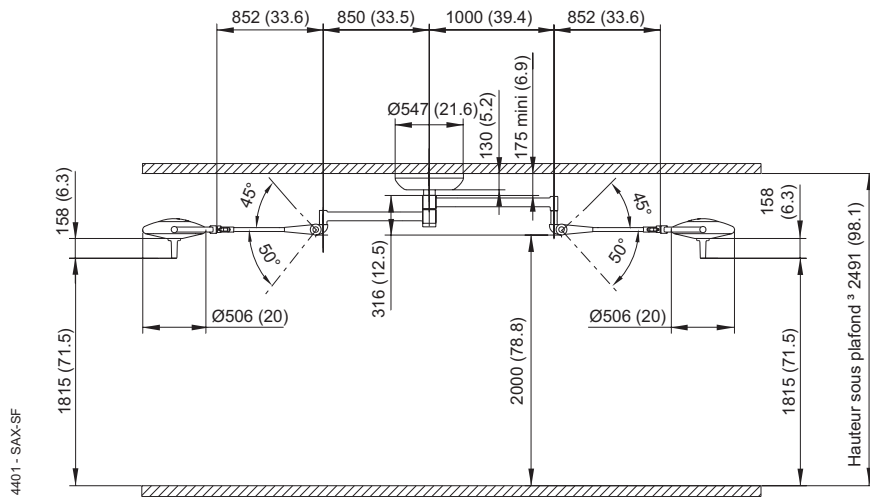


SINGLE FORK



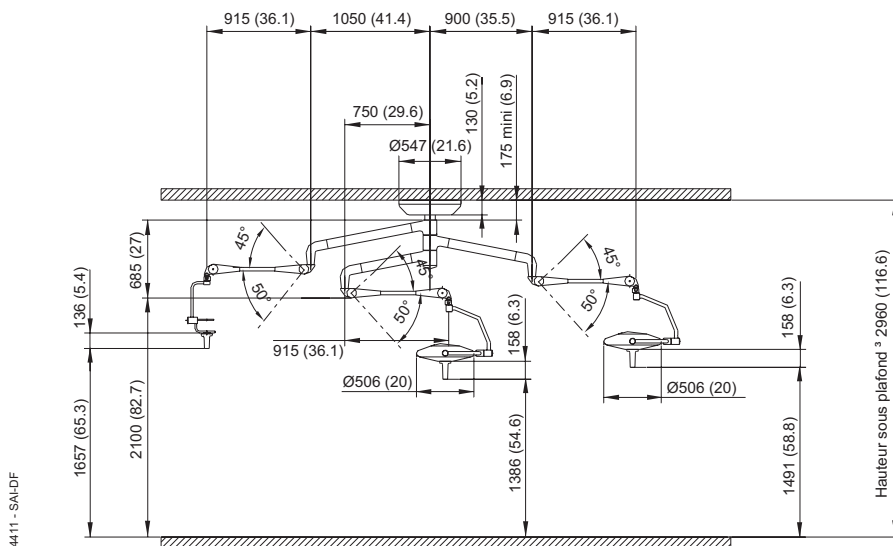
Specifications		Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	-	DF : 2825 SF : 2725
Position range of cupola	mm	DF : 2200 SF : 2360	DF : 2050 SF : 2191
Maximum reaction torque of the configuration	m.DaN	-	DF : 65 SF : 64
Weight (without suspension tube)	kg	-	DF : 54 SF : 51

7.1.8 PRISMALIX 4401 SAX/SF



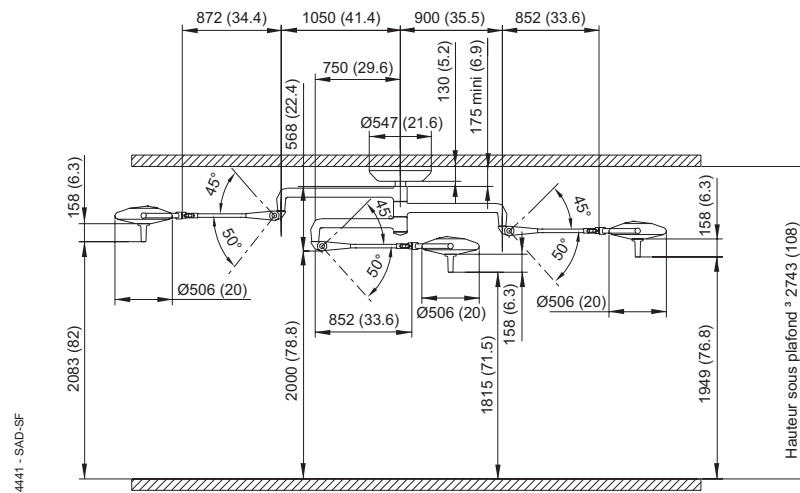
Specifications		Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2491	
Position range of cupola	mm	2291	2441
Maximum reaction torque of the configuration	m.DaN	59	
Weight (without suspension tube)	kg	49	

7.1.9 PRISMALIX 4411 SAI/DF



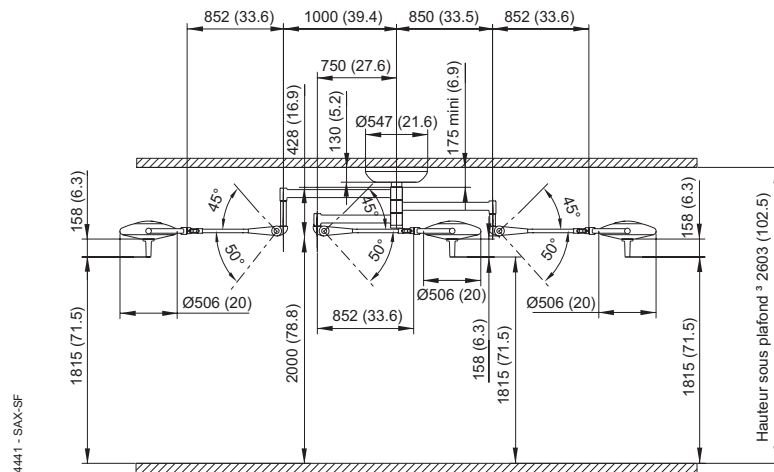
Specifications		Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2960	
Position range of cupola	mm	2050	2200
Maximum reaction torque of the configuration	m.DaN	90	
Weight (without suspension tube)	kg	76	

7.1.10 PRISMALIX 4441 SAD/SF



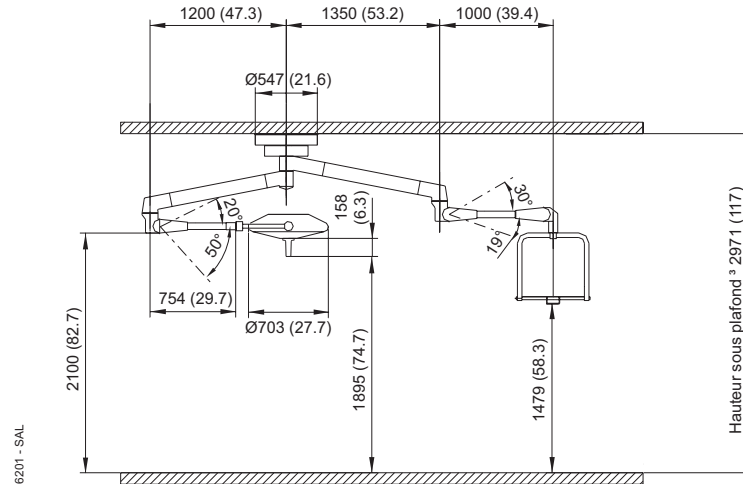
Specifications		Cupola 4000	Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2743		
Position range of cupola	mm	2510	2190	2340
Maximum reaction torque of the configuration	m.DaN	90		
Weight (without suspension tube)	kg	76		

7.1.11 PRISMALIX 4441 SAX/SF



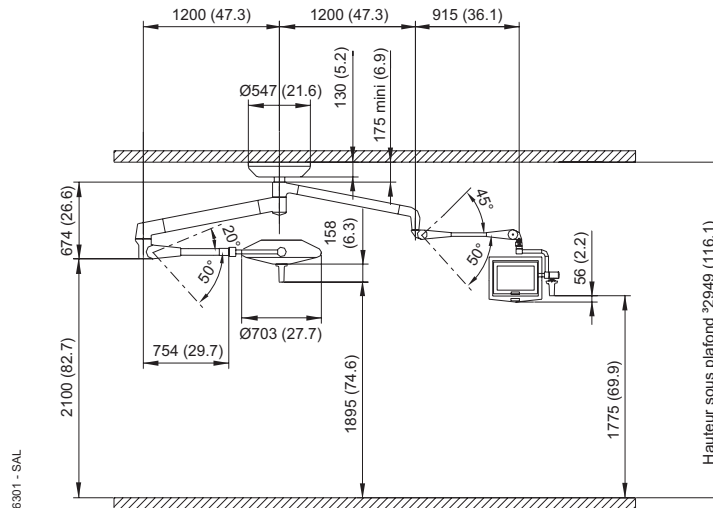
Specifications		Cupola 4000	Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2603		
Position range of cupola	mm	2441	2141	2291
Maximum reaction torque of the configuration	m.DaN	83		
Weight (without suspension tube)	kg	75		

7.1.12 PRISMALIX 6201 SAL



Specifications		Cupola 6000
Minimum height of room for clearance of 2000 mm	mm	2971
Position range of cupola	mm	2867
Maximum reaction torque of the configuration (with 34 kg load)	m.DaN	205
Weight (with 34 kg load)	kg	175

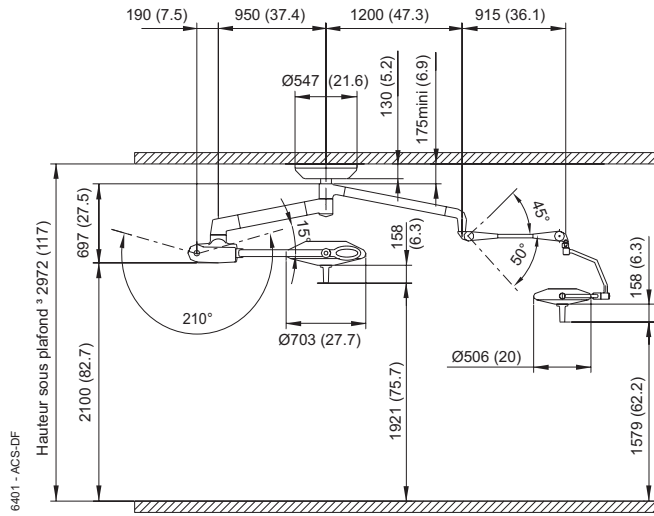
7.1.13 PRISMALIX 6301 SAL



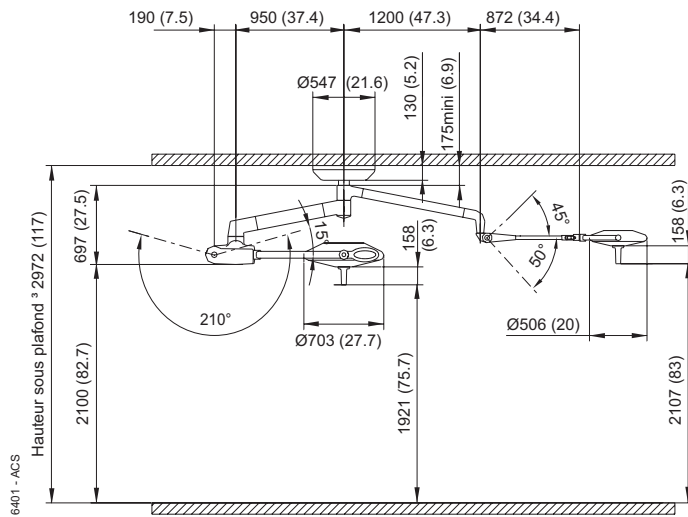
Specifications		Cupola 6000
Minimum height of room for clearance of 2000 mm	mm	2949
Position range of cupola	mm	2867
Maximum reaction torque of the configuration	m.DaN	134
Weight (without suspension tube)	kg	34

7.1.14 PRISMALIX 6401 ACS

DOUBLE FORK

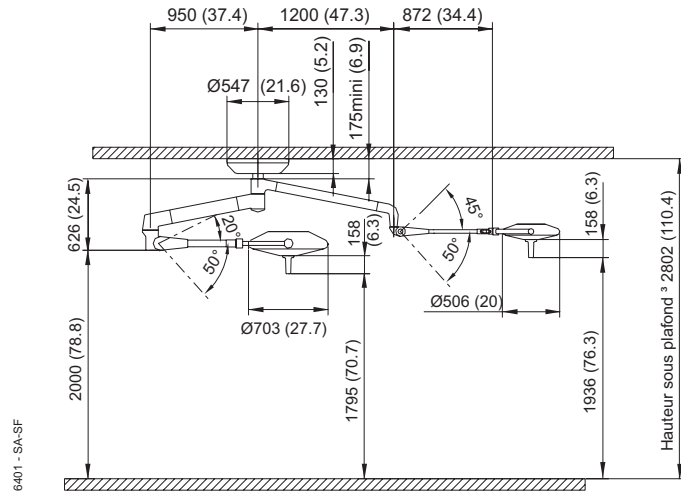


SINGLE FORK



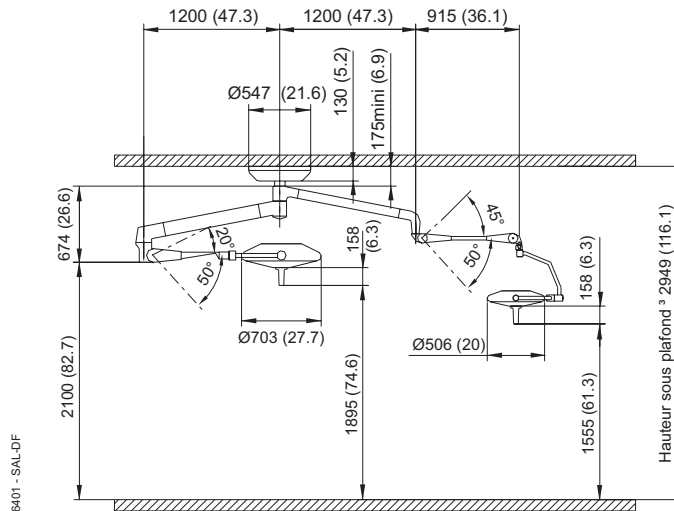
Specifications		Cupola 6000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2972	
Position range of cupola	mm	2693	SF : 2660 DF : 2500
Maximum reaction torque of the configuration	m.DaN	SF : 121 - DF : 128	
Weight (without suspension tube)	kg	SF : 89 - DF : 92	

7.1.15 PRISMALIX 6401 SA/SF



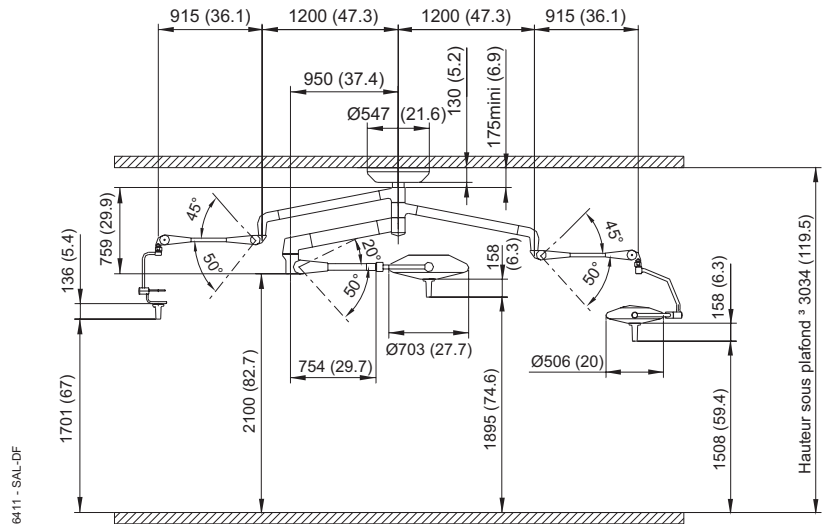
Specifications		Cupola 6000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2802	
Position range of cupola	mm	2617	2660
Maximum reaction torque of the configuration	m.DaN	103	
Weight (without suspension tube)	kg	75	

7.1.16 PRISMALIX 6401 SA/SF



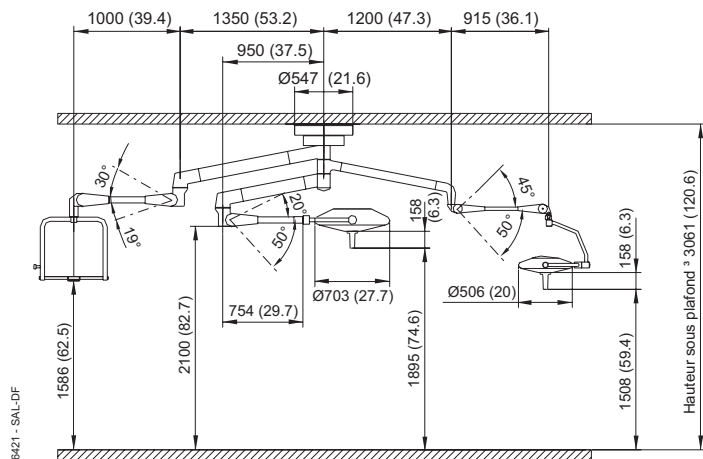
Specifications		Cupola 6000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2949	
Position range of cupola	mm	2867	2500
Maximum reaction torque of the configuration	m.DaN	119	
Weight (without suspension tube)	kg	79	

7.1.17 PRISMALIX 6411 SAL/DF



Specifications		Cupola 6000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	3034	
Position range of cupola	mm	2617	2500
Maximum reaction torque of the configuration	m.DaN	136	
Weight (without suspension tube)	kg	99	

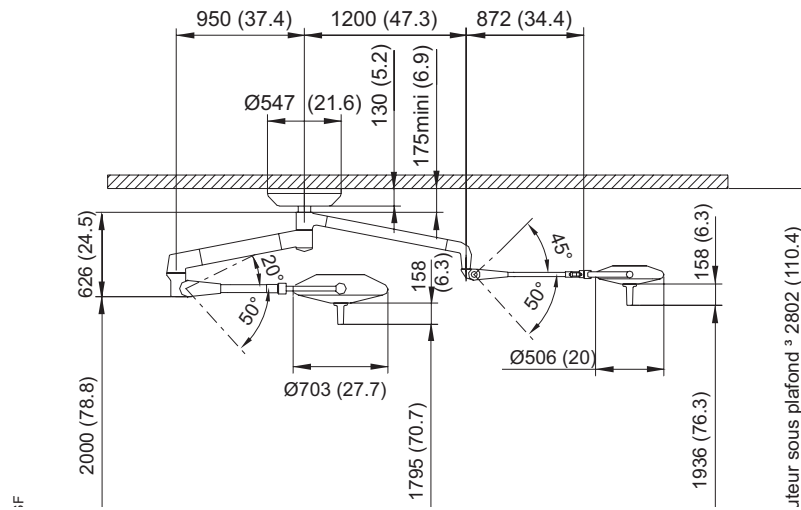
7.1.18 PRISMALIX 6421 SAL/DF



Specifications		Cupola 6000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	3061	
Position range of cupola	mm	2617	2500
Maximum reaction torque of the configuration	m.DaN	245	
Weight (without suspension tube)	kg	200	

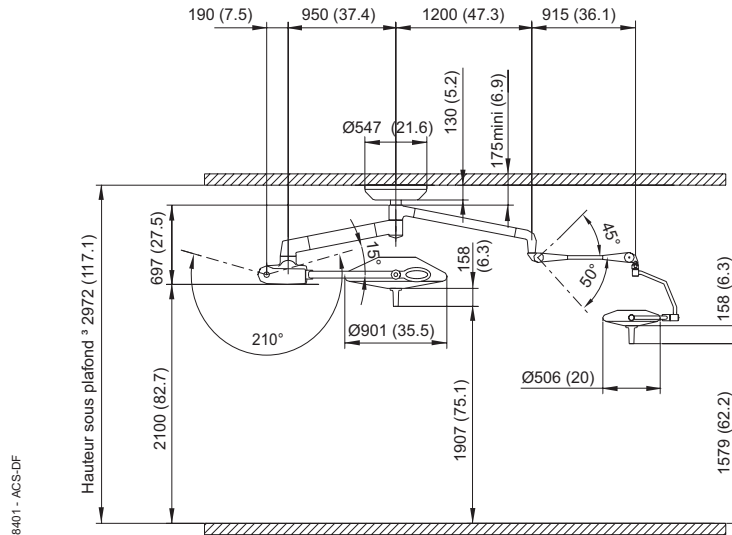


7.1.19 PRISMALIX 6441 SA/SF



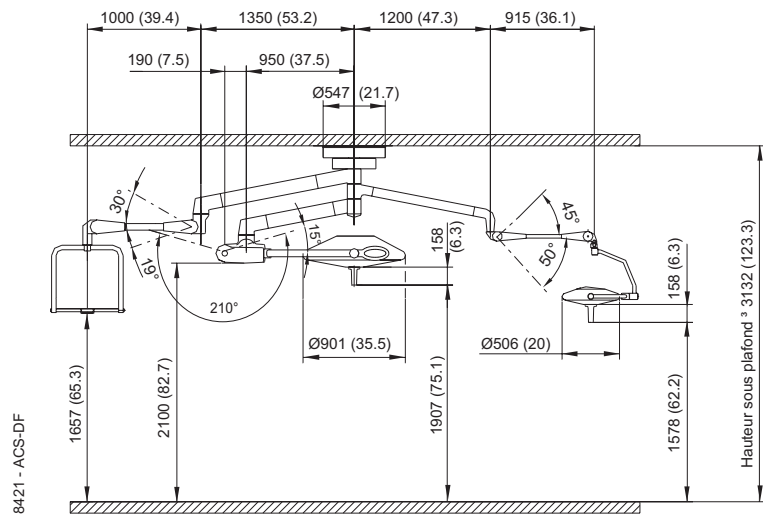
Specifications		Cupola 6000	Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2934		
Position range of cupola	mm	2617	2660	2660
Maximum reaction torque of the configuration	m.DaN	140		
Weight (without suspension tube)	kg	100		

7.1.20 PRISMALIX 8401 ACS/DF



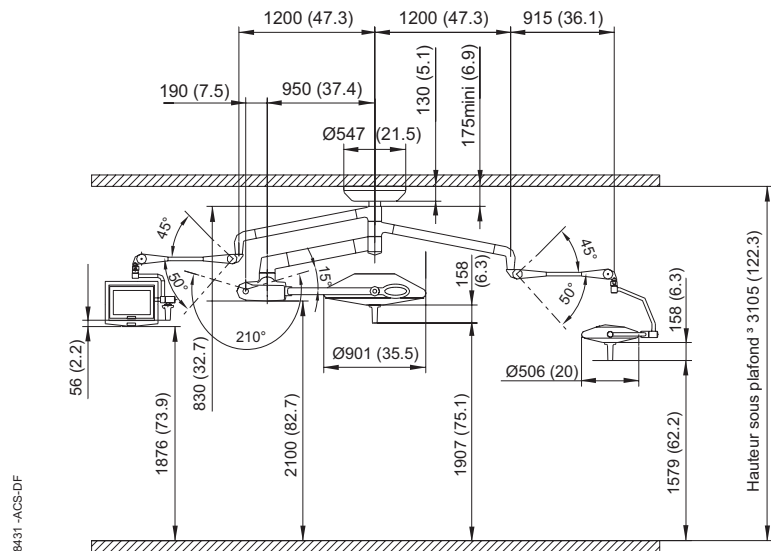
Specifications		Cupola 8000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	2972	
Position range of cupola	mm	2774	2500
Maximum reaction torque of the configuration	m.DaN	144	
Weight (without suspension tube)	kg	100	

7.1.21 PRISMALIX 8421 ACS/DF



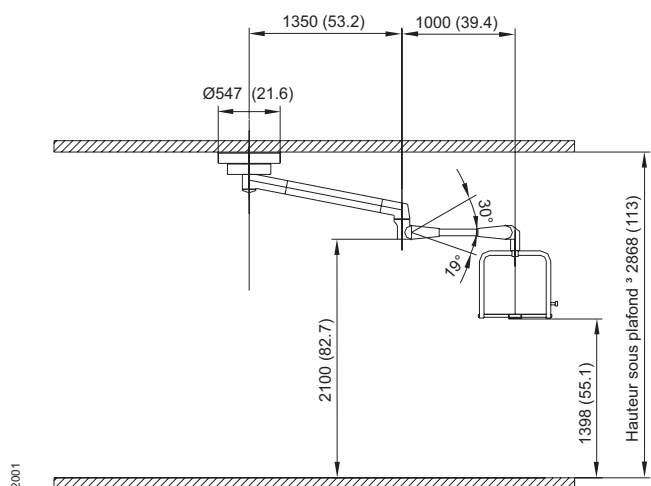
Specifications		Cupola 8000	Cupola 4000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	3132		
Position range of cupola	mm	2774	2500	
Maximum reaction torque of the configuration (with 34 kg load)	m.DaN	289	255	
Weight (with 34 kg load)	kg	199	215	

7.1.22 PRISMALIX 8431 ACS/DF



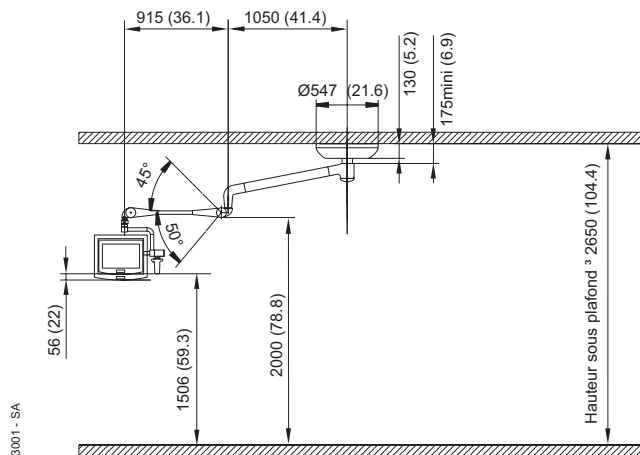
Specifications		Cupola 8000	Cupola 4000
Minimum height of room for clearance of 2000 mm	mm	3105	
Position range of cupola	mm	2774	2500
Maximum reaction torque of the configuration	m.DaN	184	
Weight (without suspension tube)	kg	126	

7.1.23 PRISMALIX 2001



Specifications		2001
Minimum height of room for clearance of 2000 mm	mm	2868
Position range of cupola	mm	2801
Maximum reaction torque of the configuration (with 34 kg load)	m.DaN	145
Weight (with 34 kg load)	kg	80

7.1.24 PRISMALIX 3001 SA



Specifications		2001
Minimum height of room for clearance of 2000 mm	mm	2650
Position range of cupola	mm	2319
Maximum reaction torque of the configuration (with 34 kg load)	m.DaN	29
Weight (with 34 kg load)	kg	26

## **8      INSTALLATION**

### **8.1    INSTALLATION RECOMMENDATIONS**

Refer to the installation recommendations manual for the PRX surgical lighting systems Ref. 011363001.

### **8.2    S SERIES INSTALLATION MANUAL**

For installation of an S series surgical lighting system, refer to the installation manual for simplified suspensions Ref. 011443001.

### **8.3    SA SERIES INSTALLATION MANUAL**

For installation of an SA series surgical lighting system, refer to the installation manual for enhanced suspensions Ref. 011643001.

### **8.4    ACS SERIES INSTALLATION MANUAL**

For installation of an ACS series surgical lighting system, refer to the installation manual for compensated automatic suspensions. Ref. 011543001.

### **8.5    INSTALLATION MANUAL FOR ENERGIX POWER SUPPLY UNIT**

Refer to the technical manual for the ENERGIX power supply unit Ref. 060123001.

## 9 CLEANING / DISINFECTION / STERILISATION

Users must contact their hospital's sanitary specialists. The recommended products and procedures must be applied. Should there be any doubt concerning the compatibility of active agents to be used, contact the local Maquet customer service department.

### 9.1 CLEANING AND DISINFECTING THE SURGICAL LIGHT



#### RECOMMENDATION

Check that the power is switched off and the light has cooled down before starting cleaning.

---

#### 9.1.1 GENERAL INSTRUCTIONS CONCERNING CLEANING, DISINFECTION AND SAFETY

- Remove the sterilisable handles.
- Wipe the equipment with a cloth moistened with a surface cleaner. Follow the manufacturer's dilution, application time, and temperature recommendations.
- Use a cloth to rinse the unit with clean water and wipe dry.
- Wipe evenly with a cloth moistened with disinfectant. Follow the manufacturer's recommendations.
- Remove residues (in particular products containing aldehydes, quaternary ammonium or surfactants) by wiping with a cloth dipped in clean water.
- Wipe with a dry cloth.
- Make sure no liquid residue is left on the device after cleaning.

#### 9.1.2 EXAMPLES OF RECOMMENDED PRODUCTS

**Getinge USA product:** TEC-QUAT 256.

**Anios products:** Surfa'Safe, 0.5% Hexanios G + R, Aniosyme P.L.A., Salvaios pH10, Anios DDSH.

**Schülke & Mayr products:** Antifect Plus.

#### 9.1.3 EXAMPLES OF PROHIBITED PRODUCTS



#### WARNING

- Solutions containing glutaraldehyde, phenol, iodine, bleach, alcohol or chloride ions must not be used.
  - Fumigation methods are unsuitable for disinfecting the unit and must not be used.
-

## 9.2 CLEANING AND STERILISING THE HANDLES

### 9.2.1 BEFORE CLEANING

- Use a soft cloth immediately after use to wipe away soiling from the handle surface.
- Store handles in a place that keeps them moist to make further cleaning easier.
- Take care to store them in such a way that the inside does not get soiled.

### 9.2.2 CLEANING

- Immerse the handles in a detergent solution.<sup>1</sup>
- Soak for 15 minutes to allow the solution to act, then clean by hand with a soft brush and a lint-free cloth.
- During cleaning, check regularly that the handles are fully clean and that no soiling remains on the inside or outside.
- If any soiling remains, repeat cleaning or use an ultrasonic cleaning process.
- Rinsing: Rinse thoroughly in clean water to completely eliminate the detergent solution.
- Drying: Wipe with a clean lint-free cloth.

### 9.2.3 DISINFECTION

Handles may be disinfected by machine (e.g. Getinge) and rinsed at a maximum temperature of 93°.

Typical recommended cycles:

Step	Temperature	Time
Pre-wash	18 - 35°C	60 sec
Wash	46 - 50°C	5 min
Neutralisation	41 - 43°C	30 sec
Wash 2	24 - 28°C	30 sec
Rinse	92 - 93°C	10 min
Dry		20 min

<sup>1</sup> A non-enzyme-based detergent is recommended. Enzymatic detergents may damage the handles. Never soak the handles in these detergents for prolonged periods. Rinse thoroughly.

## 9.2.4 STERILISATION

After cleaning, the handles must be steam sterilised as set out below:

Countries	Sterilisation cycle	Temperature [ °C ]	Time [min]	Drying [ min ]
USA & Canada	Prevacuum <sup>1</sup>	132 - 135	10	16
France	ATNC (Prion) (Prevacuum)	134	18	
Other countries	Prevacuum <sup>1</sup>	Comply with national regulations		

- Check that each handle is clean before continuing the process.
- Wrap the handles with sterilisation wrapper material (double wrapper or equivalent). Handles may also be placed in paper or plastic sterilisation bags<sup>2</sup>, for easier identification and reuse.
- Place the handles on steriliser trays with the opening downwards.<sup>3</sup>
- Package with biological and/or chemical indicators for monitoring the sterilisation process, in accordance with applicable regulations.
- Run the sterilisation cycle according to the steriliser manufacturer's instructions.



### RECOMMENDATION

- To ensure correct sterilisation do not allow any soiling to penetrate inside the handle.
- Handles are guaranteed for no more than 50 sterilisation cycles when the above sterilisation parameters are used.
- Dispose of sterilisable handles in the same way as other hazardous products in a hospital environment.

<sup>1</sup> This handle is made of a porous material.

<sup>2</sup> Possible sterilisation bag suppliers:

Medical Action Industries

SBW Medical

Baxter International

<sup>3</sup> For air removal and faster drying.

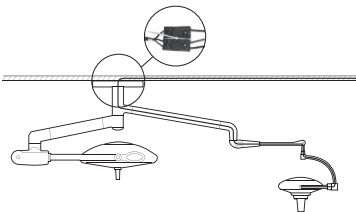
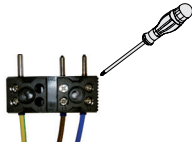

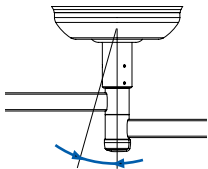
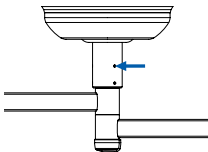
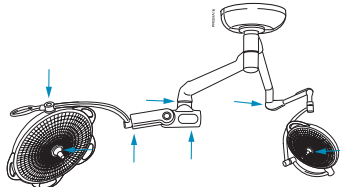
## 10 GENERAL MAINTENANCE

### 10.1 PREVENTIVE MAINTENANCE

To preserve your surgical light's original performance and reliability, annual maintenance and inspections should be performed as follows:

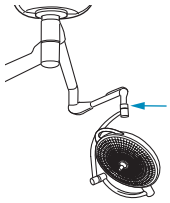
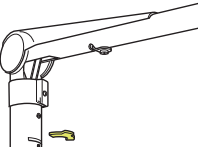
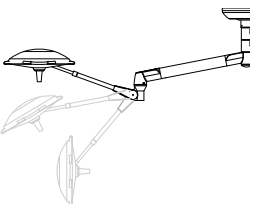
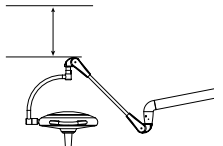
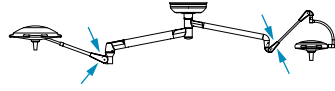
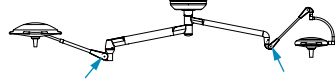
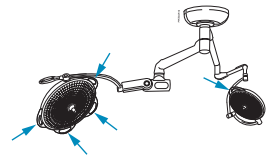
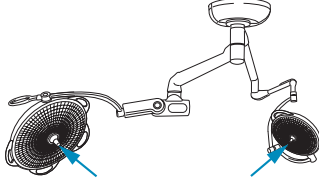
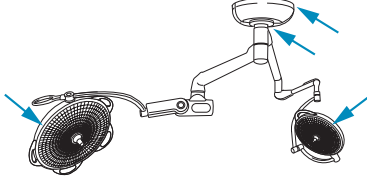
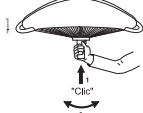
- By a MAQUET technician or MAQUET-approved distributor during the guarantee period.
- By a MAQUET technician or MAQUET-approved distributor or by the hospital's technical maintenance department outside the guarantee period (Contact your dealer to arrange the required technical training.)

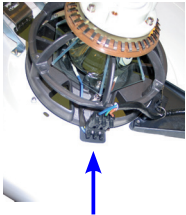
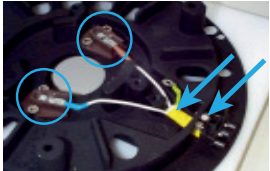
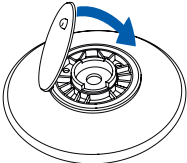
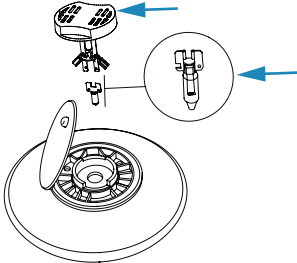
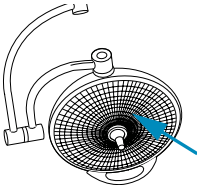
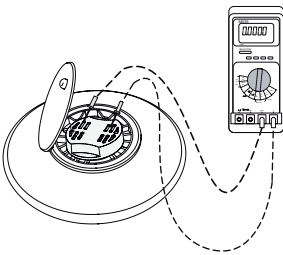

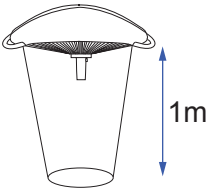
### 10.2 BASIC MAINTENANCE

Checks	
	<ul style="list-style-type: none"> <li>■ Check that the clip is tightly fastened around the electrical power supply connector inside the false ceiling.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the wires are tightly fastened to the connector.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the suspension is firmly attached by shaking the configuration.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the suspension tube is vertical</li> </ul>
	<ul style="list-style-type: none"> <li>■ Every six years, as a preventive measure, replace the mounting screws holding the suspension tube to the anchor point with new pre-glued screws, and tighten to torque (refer to the appendix in the technical manual).</li> <li>■ Check that the seals are correctly located.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that all other visible screws are tightly fastened</li> </ul>

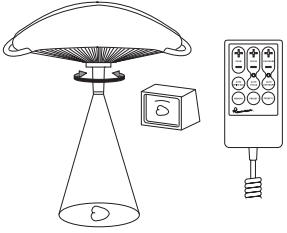


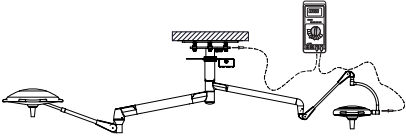
## Checks

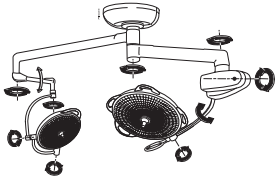
	<ul style="list-style-type: none"> <li>■ Check that the retaining ring is present and in the correct position on the lighthouse spring arm.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that spring ring is not worn and is in the correct position (remove and lubricate if necessary).</li> </ul>
	<ul style="list-style-type: none"> <li>■ Adjust the balance of the spring arm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Adjust the vertical stop on the spring arm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that all blanking plates are firmly attached to the spring arm.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that all plastic covers are firmly attached</li> <li>■ Check the general appearance of the plastic covers on the spring arm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the lighthouse external handles are not worn or damaged</li> <li>■ Check that the lighthouse external handles are firmly attached.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the sterilisable handle mount is firmly attached.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that all the seals are correctly in place and are not worn.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that sterilisable handle is correctly inserted and remains in place.</li> </ul>

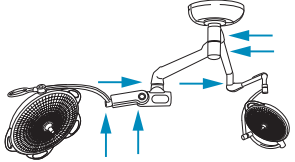
Checks	
	<ul style="list-style-type: none"> <li>■ Check the condition of the terminal block (not burnt) in the lighthouse.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the proper insertion of the female plugs on the male plugs.</li> <li>■ Check the condition of the complete electrical wiring.</li> <li>■ Tightening of the terminal block screws.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the lamp cover opens and closes correctly.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Replace the lamp brackets.</li> <li>■ Replace the bulbs.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the overall appearance of the of underside (no scratches or cracks).</li> </ul>
	<ul style="list-style-type: none"> <li>■ Measure the voltage at the lamp bracket terminal for maximum illumination.</li> <li>■ Check that: <math>V = 23\text{ V} \pm 1\text{ V (AC+DC)}</math></li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the light beam where applicable (concentrated/diffuse beam).</li> </ul>
	<ul style="list-style-type: none"> <li>■ Measure the maximum illumination at 1 m (concentrated beam)</li> <li>- PRX 4000 : 100,000 lux</li> <li>- PRX 6000 : 110,000 lux</li> <li>- PRX 8000 : 120,000 lux</li> </ul>

**Checks**


	<ul style="list-style-type: none"> <li>■ Check that the camera operates correctly (image and functions on VZ).</li> </ul>
---	---

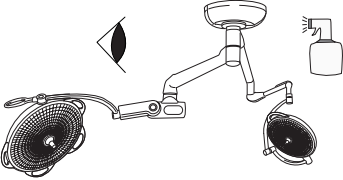
	<ul style="list-style-type: none"> <li>■ Measure the earth bonding on all visible conductive metal parts with the earth bonding tester: <math>R \leq 0.1 \text{ Ohm}</math></li> </ul>
---	--

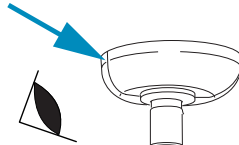
	<ul style="list-style-type: none"> <li>■ Check that there are no sticky points when the main arm, ACS enclosure, spring arm and lighthouse are moved.</li> </ul>
---	--

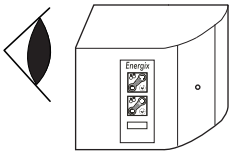
	<ul style="list-style-type: none"> <li>■ Check that the equipment is easily manoeuvred and that the lighthouse is stable in all positions, then adjust the brakes if necessary.</li> </ul>
--	--

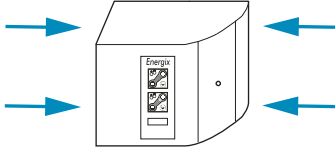
	<ul style="list-style-type: none"> <li>■ Clean the entire system with ECL NET or with soap and water.</li> </ul>
--	--

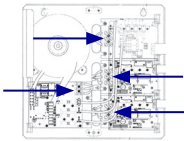
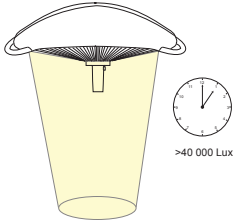
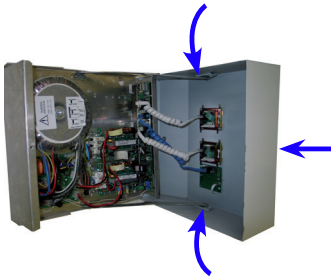
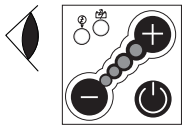
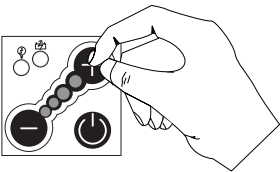
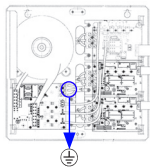
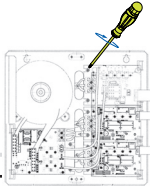
	<p><b>WARNING</b></p> <p>Do not use an alcohol solution to clean the interior.</p>
---	--

	<ul style="list-style-type: none"> <li>■ Check that there are no signs of corrosion on the system, and in particular on the main arm (inside the retaining ring).</li> <li>■ Check that there is no flaking paintwork on the system.</li> </ul>
---	---

	<ul style="list-style-type: none"> <li>■ Check that the ceiling covers are tightly fastened and correctly positioned.</li> </ul>
---	--

	<ul style="list-style-type: none"> <li>■ Check the overall appearance of the ENERGIX power supply enclosure cover (no signs of corrosion or flaking paintwork).</li> </ul>
---	--

	<ul style="list-style-type: none"> <li>■ Check that the ENERGIX power supply enclosure is firmly attached to the wall.</li> </ul>
---	---

Checks	
	<ul style="list-style-type: none"> <li>■ Open the ENERGIX power supply enclosure and check that the connection terminal heads are tightly fastened.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Turn on the lighthouse.</li> <li>■ Simulate a power cut and check that the lighthouse continues to operate, either on a UPS backup system or on batteries.</li> <li>■ In both cases, the illumination should remain greater than 40,000 lux for at least one hour.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the cover bracket and hinges.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the condition of the control keypad.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check the dimmer function on the control keypad.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that the ENERGIX power supply enclosure is connected to earth.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Check that all boards are firmly fastened in the ENERGIX power supply enclosure.</li> </ul>
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p><b>ENERGIX SOFTWARE VERSION :</b> Vx.xx</p> </div>	<ul style="list-style-type: none"> <li>■ In START UP menu, check the software version of the Microcontroller Board. If the software version is before 5.40 (2.05;2.06 for example), inform the customer that this version is obsolete. See NIT 188 for more informations.</li> </ul>

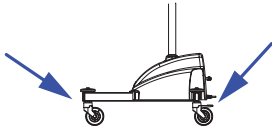
## Checks



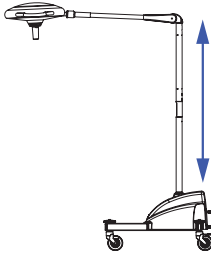
- Check that the lighting is correctly configured on the control boards.



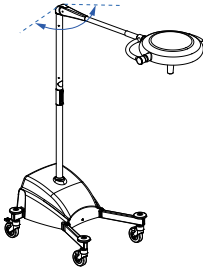
- Check that the battery module wires are tightly fastened.



- For PRX 4003, check that the casters are tightly fastened.



- For PRX 4003, the lamp must be vertical and stable.



- For PRX 4003, check the rotation of the spring arm.

## 10.3 REMPLACEMENT DE LA COUPOLE

### 10.3.1 CLEANING THE 4000 CUPOLA: MPRX NO. 001

**See drawing No.1**

- Before starting any repair operation, ensure the cupola has cooled down.
- The following operations can be performed with the cupola mounted on its arm .
- Cut off the circuit breaker situated upstream from output module.

■ **Tools required:**

4 mm Allen wrench, 3 mm Allen wrench, 2.5 Allen wrench, flat tip screwdriver.

- Secure the cupola in the low position using the transport lock.
- Remove the sterilizable handle.
- Place the cupola with the prisms upward.
- Remove the 3 screws (20) securing the lower cover (30) and remove the cover.
- Remove the 3 CHC screws (80) securing the tilt system or camera bracket and remove it.
- For the video version: Remove the spacer. Disconnect the power supply from the camera and remove the cable grommet screw.
- Turn over the cupola and open the upper cover (160).
- Remove the lamp holder (330).
- Remove the 4 countersunk head screws (350) and carefully remove the optical core.
- Lightly clear the optical core, turn it from a quarter turn to the right and disconnect the plug.
- Set down the optical core and remove the 3 CHC screws (360) and washers (370) in order to remove the closing plate (380).
- Remove the condenser (580) and clean it using hot water.
- Clean the mirror (430).
- Clean the athermal belt (600).
- Ensure the electrical links and the connector on the closing plate (380) are properly tightened.
- Check the condition of the three tilt system springs (620) depending on the model.
- Reassemble the components by performing the disassembly procedure in reverse order.
- For the reassembly procedure, place the fixed connector on the closing plate (380) facing the flat on the lower socket (610).
- Fit the 3 CHC screws (360) with their washers (370) by applying a couple of turns without blocking the screws.

### 10.3.2 CHANGING PRISMS OF 4000 CUPOLA OR UNDERSIDE: MPRX NO. 002

#### See drawing No.1

- The following repair operations are performed with the cupola mounted on its arm.
- **Tools required:**
  - 4 mm Allen wrench, TORX 10 wrench, OPM No. 055, OPM No. 058.
- Remove the sterilizable handle.
- Remove the 3 screws (20) securing the lower cover (30) and remove the cover.
- Remove the 3 CHC screws (80) securing the tilt system or the camera bracket and remove it.
- Remove the underside (570).
- Remove the 6 TORX screws (120) bearing against the spring piece (130) and remove the spring piece.
- Remove the prisms(560), working counter-clockwise.
- Fit the new prisms.



#### WARNING

For this operation, gloves should be worn to avoid soiling the new prisms.

- 
- Fit the spring piece (130).
  - Block the 6 TORX screws.
  - Reinstall the camera bracket or tilt system.



#### WARNING

For the video version, wind the video cable in its bracket, making sure that it allows the camera to rotate on itself. A locator is provided to position the camera bracket or the tilt system.

The rotary movement must be smooth and easy.

- 
- Clean the prisms.
  - When reinstalling the underside, use centering OPM No. 055.
  - Fit the seal using OPM No. 058.

### 10.3.3 CLEANING THE 6000 CUPOLA: MPRX NO. 003

#### See drawing 2

- The following repair operations can be performed with the cupola mounted on its arm.

#### ■ Tools required:

4 mm Allen wrench, 3 mm Allen wrench, 2.5 Allen wrench, flat tip screwdriver.

- Secure the cupola in the low position using the transport screw.
- Remove the sterilizable handle.
- Position the cupola with the prisms facing upward.
- Remove the 3 screws (20) securing the lower cover (30) and remove the lower cover.
- Remove the 3 CHC screws (80) securing the tilt system.
- Turn over the cupola and open the upper cover (160).
- Remove the lamp holder (335).
- Remove the 4 countersunk head screws (350) and carefully remove the optical core.
- Lightly clear the optical core, turn it from a quarter turn to the right and disconnect the plug.
- Set down the optical core and remove the 3 CHC screws (360) and washers (370) to remove the closing plate (380).
- Remove and clean the upper condenser (680).
- Clean the upper mirror (430).
- Clean the upper athermal belt (605).
- Remove the 3 screws (650) and washers (660) and disassemble the lower part.
- Clean the mirror and the lower athermal belt.
- Clean the lower capacitor (580) which is smaller than the other one.
- Ensure the electrical links and the connector on the closing plate (380) are securely tightened.
- Check the condition of the 3 springs of the tilt system (620) depending on model.
- Reassemble the various components by performing the disassembly procedure in reverse order.



#### WARNING

- The smallest condenser is positioned in the lower stage.
- **Important:** When reassembling, line up the flats located on the sockets.

- When assembling each stage, fit the three CHC screws with their washers before blocking them with a 4N.m. tightening torque.
- Position the fixed connector on the closing plate facing the flat on the socket.



### 10.3.4 REPLACING 6000 CUPOLA PRISMS OR UNDERSIDE: MPRX NO. 004

See drawing 2

- The following repair operations can be performed with the cupola mounted on its arm.
- **Tools required:**
  - 4 mm Allen wrench, TORX 10 wrench, OPM No. 055, OPM No. 058.
- Remove the 3 CHC screws (20) securing the lower cover (30) and remove the lower cover.
- Remove the underside.
- Unscrew the 6 TORX screws (120) by a few turns. These screws bear on the spring piece (130) securing the prisms.
- Remove the prisms (565) working counterclockwise.
- Fit the new prisms (565).



#### WARNING

When performing this operation, wear gloves to avoid soiling the new prisms.

- Clean the prisms.
- Block the 6 TORX screws.
- When reassembling the underside, use centering OPM No. 055.
- Fit the seal using OPM No. 058.

### 10.3.5 CLEANING THE 8000 CUPOLA MPRX NO. 005

See drawing 3

- The following repair operations can be performed with the cupola mounted on its arm.
- **Tools required:**
  - 4 mm Allen wrench, 3 mm Allen wrench, 2.5 mm Allen wrench, flat tip screwdriver.
- Secure the cupola in the low position using the transport screw.
- Remove the sterilisable handle.
- Place the cupola with the prisms facing upward.
- Remove the 3 screws (20) securing the lower cover (30) and remove the lower cover.
- Remove the 3 CHC screws (80) securing the tilt system.
- Turn over the cupola and open the upper cover (160).
- Remove the lamp holder (337).
- Remove the 4 countersunk head screws (350) and carefully remove the optical core.
- Lightly clear the optical core, turn it from a quarter turn to the right and disconnect the plug.
- Set down the optical core and remove the 3 CHC screws (360) and washers (370) to remove the closing plate (380).
- Remove and clean the upper condenser (680).
- Clean the upper mirror (430).
- Clean the upper athermal belt (605).
- Remove the 3 screws (650) and washers (660) and disassemble the intermediate part.

- Clean the mirror and the intermediate athermal belt.
- Clean the intermediate condenser (680).
- Remove the 3 screws (650) and washers (660) and disassemble the lower part.
- Clean the mirror and the lower athermal belt.
- Clean the lower condenser (580); this condenser is smaller than the other condensers.
- Check that the electrical links and connector on the closing plate (380) are securely tightened.
- Check the condition of the 3 springs of the tilt system (620) according to model.
- Reassemble the various components by performing the disassembly procedure in reverse order



## WARNING

The smallest condenser is located in the lower stage.

**Important:** when reassembling, align the flats located on the sockets.

- When assembling each stage, position the 3 CHC screws with their washers before blocking them with a 4N.m. tightening torque.
- Position the fixed connector on the closing plate facing the socket flat.

### 10.3.6 REPLACING 8000 CUPOLA PRISMS OR UNDERSIDE: MPRX NO. 006

See drawing 3

- The following repair operations can be performed with the cupola mounted on its arm.
- **Tools required:**  
4 mm Allen wrench, TORX 10 wrench, OPM No. 055, OPM No. 058.
- Remove the 3 CHC screws (20) securing the lower cover (30) and remove the cover.
- Remove the underside.
- Unscrew, by a few turns, the 6 TORX screws (120) bearing against the spring piece (130) securing the prisms.
- Remove the prisms (566) working counterclockwise.
- Fit the new prisms.



## WARNING

For this operation, use gloves to avoid soiling the new prisms.

- Clean the prisms.
- Block the 6 TORX screws.
- When reassembling the underside, use centering OPM No. 055.
- Fit the seal using OPM No. 058.

## 10.4 REPLACEMENT OF ELECTRICAL SOCKET (410) ON CLOSING PLATE (380): MPRX NO. 007

See drawings 1, 2, ou 3

- The following repair operations can be performed with the cupola mounted on its arm.
  
- **Tools required:**
  - 4 mm Allen wrench, 3 mm Allen wrench.
  
- Secure the cupola in the low position using the lock or transport screw.
  
- Open the upper cover (160).
- Remove the lamp holder (330, 335 or 337).
- Remove the 4 countersunk head screws (360).
- Remove the 3 CHC screws (360) and washers (370) to remove the closing plate (380).
- Remove the 3 screws (450).
- Remove the mirror (430) and the 3 springs (440) for access to the 2 sockets (410).
- Remove the 2 lugs.
- Remove the 2 screws (420).
- Replace the 2 sockets.
- Adjust the 2 sockets centerline distance, using the lamp holder.
- Assemble the various components by performing the disassembly procedure in reverse order.



### WARNING

Be sure polarities are connected appropriately as follows:

Brown lead connected to (+) terminal.

Blue lead connected to (-) terminal.

## 10.5 REPLACING ROTATING CONTACT ON 6000 CUPOLA: MPRX NO. 008

### Drawings 7 and 2

#### ■ Tools required:

3 mm Allen wrench, 4 mm Allen wrench, 3 mm Allen driver, 2.5 mm Allen driver, crimping pliers, stripping pliers, centering OPM for seal, Torx screwdriver No. 10, flat tip screwdriver.

#### ■ Cupola arm side: drawing 7A

- Remove the screw (160) and cover (150).
- Remove the 2 screws (170).
- Remove the male rotating contact (110).
- Remove the end pieces (130).

#### ■ Cupola side: drawing 2

- Remove the 3 slotted head screws (20) securing the lower cover (30) and remove the cover.
- Remove the underside (575).
- Unscrew, by a few turns, the 6 TORX screws (120) bearing against the spring piece (130) securing the prisms.
- Remove 2 prism sectors (566), the arm side.
- Disconnect the connector and disconnect the contact breaker.
- Remove the screw (550) and washer (540).
- Remove the cable (495).
- Remove the cable and introduce it inside spring.
- Reassemble the various components by performing the disassembly procedure in reverse order.

## 10.6 REPLACING BRAKE ON ACS CUPOLA ARM: MPRX NO. 009

### Drawing 11

#### ■ Tools required:

4 mm Allen wrench, 3 mm Allen wrench, pliers

- Remove the 2 screws (500).
- Remove the inspection door (480).
- Loosen the brake by loosening the screw (210).
- Remove the 2 screws (420) to release the mounting bracket (410).
- Disengage the assembly formed by the bracket and the rotating contact.
- Remove the 2 screws (100) securing the male rotating contact (450).
- Remove the bracket with its brake.
- Remove the retaining ring (440).
- Remove the brake (30).
- Replace the brake (30).
- Fit a new retaining ring (440).
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.7 REPLACING ACS CUPOLA ARM: MPRX NO. 010

### Drawings 11 and 7

- The female rotating contact (item 70, drawing 7A) of cupola arm cannot be repaired on site.
- **Tools required:**
  - 3 mm Allen wrench, 4 mm Allen wrench.
- Secure the compensation unit in the low position using the transport screw (160).
- Remove the cover (150, drawing 7) for access to the screws securing the cupola to the cupola arm.
- Remove the 3 cupola mounting screws.
- Remove the cupola.
- Remove the inspection door (480) by removing the 2 screws (500).
- Loosen the brake by loosening the screw (210).
- Remove the 2 screws (420) to release the mounting bracket (410).
- Disengage the assembly formed by the mounting bracket and rotating contacts.
- Remove the screw (140) and remove the lock (80).
- Remove and replace the cupola arm.
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.8 REPLACING ACS COMPENSATION UNIT BRAKET: MPRX NO. 011

### Drawing11

- **Tools required:**
  - 4 mm Allen wrench, flat tip screwdriver, pliers.
- Remove the 2 screws (370) and the cover (360).
- Fully loosen the brake adjustment screw (210).
- Remove the retaining ring (440) using a screwdriver.
- Unscrew and remove the 2 locknuts (250).
- Remove the assembly formed by parts (210, 220, 230, 240).
- Remove and replace the 2 brake shoes (430).
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.9 REPLACING BRAKE ON ACS MAIN ARM: MPRX NO. 012

### Drawing 12

- **Tools required:**
  - 4 mm Allen wrench, flat tip screwdriver.
- Remove the cover (300).
- Fully loosen the brake adjustment screw (210).
- Remove the retaining ring (270) using a screwdriver.
- Remove and replace the 2 brake shoes (430).
- Assemble the components by performing the disassembly procedure in reverse order.

## 10.10 REPLACING BEARING SUBASSEMBLY (505) ON 6000 OR 8000 CUPO- LA: MPRX NO. 013

### Drawing 2 or 3

#### ■ Tools required:

4 mm Allen wrench, flat tip screwdriver.

#### ■ Disassembly of cupola (drawing 7):

- Secure the compensation unit in the low position using the transport screw (160, Drawing 11).
- Remove the screw (160).
- Remove the cover (150).
- Remove the 3 screws (140).

#### ■ Disassembly of bearing (not video):

- Remove a portion of the prisms as instructed in procedure MPRX No. 006.
- Remove the set screw (720).
- Remove the 6 screws (810) securing the bearing assembly.
- Remove the bearing subassembly.
- Install the new bearing.
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.11 REPLACING THE HINGE (210) OF 4000/6000/80000 CUPOLAS

### ■ Drawings 1,2,3

#### ■ Tools required:

4 mm and 3mm Allen wrenches

- Remove the 4 countersunk head screws (350) of optical core.
- Remove the optical core.
- Remove the 2 CHC screws of hinge
- Replace hinge
- Reassemble the components by performing the disassembly procedure in reverse order

## 10.12 REPLACING THE MINI CONTACT BREAKER (690) OF 6000/80000 CUPOLAS

### Drawings 2,3

#### ■ Tools required:

3 mm and 2,5mm Allen wrenches

- Remove the 4 countersunk head screws (350) of optical core.
- Remove the optical core.
- Disconnect the cable (495) of the mini contact breaker.
- Remove the 2 contact breaker screws
- Replace contact breaker.
- Reassemble the components by performing the disassembly procedure in reverse order

## 10.13 REPLACING BRAKE ON MAIN ARM, COMPENSATION UNIT SIDE: MPRX NO. 013

### Drawing 13

#### ■ Tools:

4 mm Allen wrench, flat tip screwdriver.

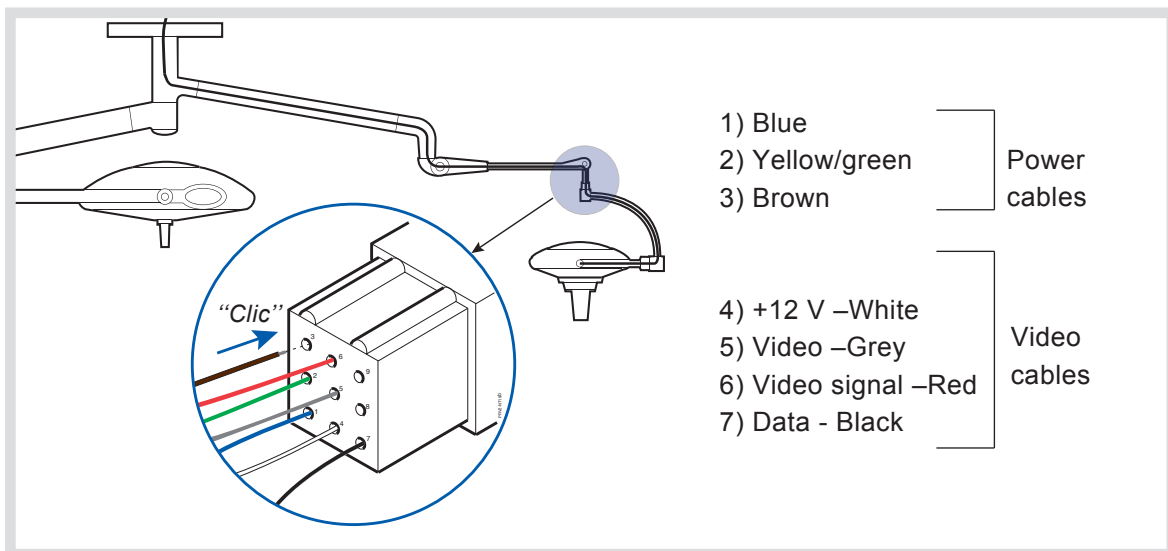


### RECOMMANDATION

Disassemble the cupola, the cupola arm and the compensation unit referring to the installation manual 011543001, chapters 6 to 8

- Loosen the brake adjustment screw (290).
- Remove the retaining ring (270) using a screwdriver.
- Remove and replace the two brake shoes (430) .
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.14 REPLACING THE VIDEO CABLE OF THE PRX 4000



- Connect the cable of the PRX 4000 flexible video kit to the 9-pin connector provided.

## 10.15 REPLACING THE VIDEO CABLE OF THE PRX 4000

### Drawing 12

#### ■ Tools required:

4 mm Allen wrench.

- Remove the 2 screws (180).
- Remove the plate (170).
- Disconnect the 2 «Molex» connectors.
- Replace the PCB.
- Reassemble the components by performing the disassembly procedure in reverse order.

## 10.16 REPAIR KITS AND SUBASSEMBLIES

Description	Quantity	References
<b>MAQUET SA logo repair kit</b>		<b>3 672 01 555</b>
MAQUET SA cupola label	1	
Arm and housing label	2	
Label	1	
6000/8000 cupola band	3	
<b>Cover and stop segment repair kit</b>		<b>3 672 02 555</b>
Cupola stop segment	1	
Stop ring	1	
Ring screw	1	
Cover	1	
Arm stop segment	1	
<b>4000 DF arm rotating contact repair kit</b>		<b>3 672 03 998</b>
Male contact assembly	1	
Crimp sleeve	3	
Male contact assembly	1	
<b>4000 SF arm rotating contact repair kit</b>		<b>3 672 04 998</b>
Male contact assembly	1	
Crimp sleeve	3	
Male contact assembly	1	
<b>32 mm diameter brake repair subassembly</b>		<b>3 672 01 998</b>
32 dia. brake assembly	1	
Ring	1	
Nylon spacer	1	
<b>50 diameter brake repair subassembly</b>		<b>3 672 02 998</b>
50 dia. brake subassembly	1	
Ring	1	
Nylon spacer	1	
<b>Repair kit for rotating contact, Ondal 6000 arm</b>		<b>3 672 06 998</b>
Male contact assembly	1	
Crimp sleeve	3	
Male contact assembly	1	
<b>Repair kit for rotating contact, 6000/8000 arm</b>		<b>3 672 07 998</b>
Male contact assembly	1	
Crimp sleeve	3	
Male contact assembly	1	
<b>Repair kit for rotating contact, balancing arm</b>		<b>3 672 08 555</b>
Male contact	1	
Female contact	1	
<b>Repair kit for cable cupola 6000/8000</b>		<b>3 672 67 555</b>
Cable assembly 6/8000 without resistance Module HAN	1	
Cable assembly shutting plate Module HAN	1	
<b>Repair kit for cable cupola 6000 video</b>		<b>3 672 68 555</b>
Cable video 6000 Module HAN	1	
Cable assembly shutting plate Module HAN	1	



## 10.17 RECOMMENDED SPARE PARTS AND CONSUMABLES

Description	Quantity	References
Kit with 10 halogen bulbs 23V/100W ECL 0001	1	3 672 02 038
Lamp support for 4000 cupola	1	3 672 02 489
Lamp support for 6000 cupola	1	3 672 02 488
Lamp support for 8000 cupola	1	3 672 02 487
1-liter can of antistatic cleaning product, ECL NET	1	6 062 01 001
500 ml spray can, ECL NET	1	6 062 01 002
Kit with 5 sterilizable handles for cupola without camera	1	3 672 45 998
Kit with 5 reinforced sterilizable handles for cupola without camera	1	3 672 03 976
Kit with 5 reinforced sterilizable handles for cupola with CFF camera	1	3 672 03 975
Paint spray can, 150 ml	1	6 585 30 007
Special grease for electrical contact	1	6 590 00 004

## 10.18 (OPM) MAINTENANCE TOOL

Description	Quantity	References
OPM 039 Luxmeter	1	5 720 34 999
OPM 043 Molex pliers	1	5 720 38 999
OPM 045 Crimping and stripping pliers for BNC connector	1	5 720 40 999
OPM 055 Underside centering device	1	5 720 54 999
OPM 056 Adjustment wrench for 4000 cupola	1	5 720 50 999
OPM 058 Cupola seal spreader	1	5 720 56 999
OPM 059 Multimeter MX54 RMS	1	5 720 59 999

# 11 PARTS LISTS AND DRAWINGS

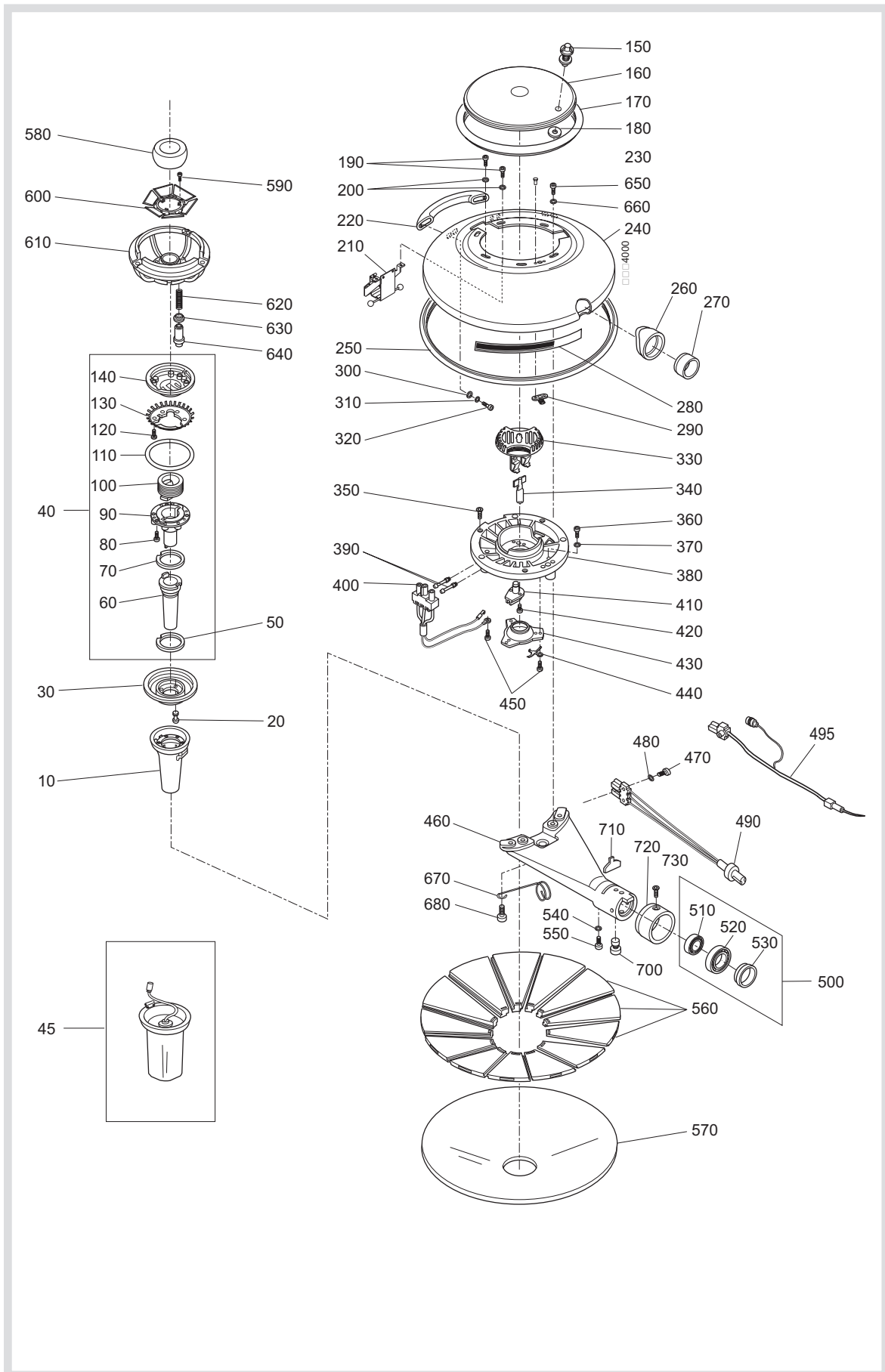
## PARTS LIST 1

## 4000 CUPOLA

DR. REF.	Reference	Description	Qty
1A	567236998	4000 cupola with SF arm	1
1B	567236993	4000 cupola with DF arm	1
10A	567202041	Sterilizable handle sleeve	1
30A	567202257	Lower cover assembly	1
40A	567202514	Tilt control S/A	1
45A	567203998	NTSC camera S/A	1
45B	567203996	PAL camera S/A	1
145A	567240998	Equipped cover S/A, comprising (items 150A, 160A, 170A and 180A)	1
210A	567202251	Hinge	1
220A	367202367	4000 cupola handle S/A	1
280A	367201555	Logo S/A	1
300A	602252462	Washer L6, st. stl A2E27611	2
310A	602420611	Washer dia. 6, st. stl	2
320A	600530612	CHc screw M6x12, st. stl A2	2
330A	367202489	4000 lamp holder	1
340A	567202038	Bulb, 100W 23V	1
410A	567202023	Female plug assembly	2
420A	600530510	CHc screw M5x10, st. stl A2	8
430A	567202021	Condenser spring	3
490A	567202046	4000 cable assembly	1
495A	567202290	Video cable assembly	1
496A	691400052	Connector	1
560A	567202083	4000 prism sector	13
570A	567202025	4000 underside	1
580A	567202017	Spherical condenser	1
600A	367217555	4000 AC lens S/A	1
620A	632500072	Tilt control spring	1
670A	567202359	Spring	1
710A	657700001	Lock	1

DRAWING 1

4000 CUPOLA



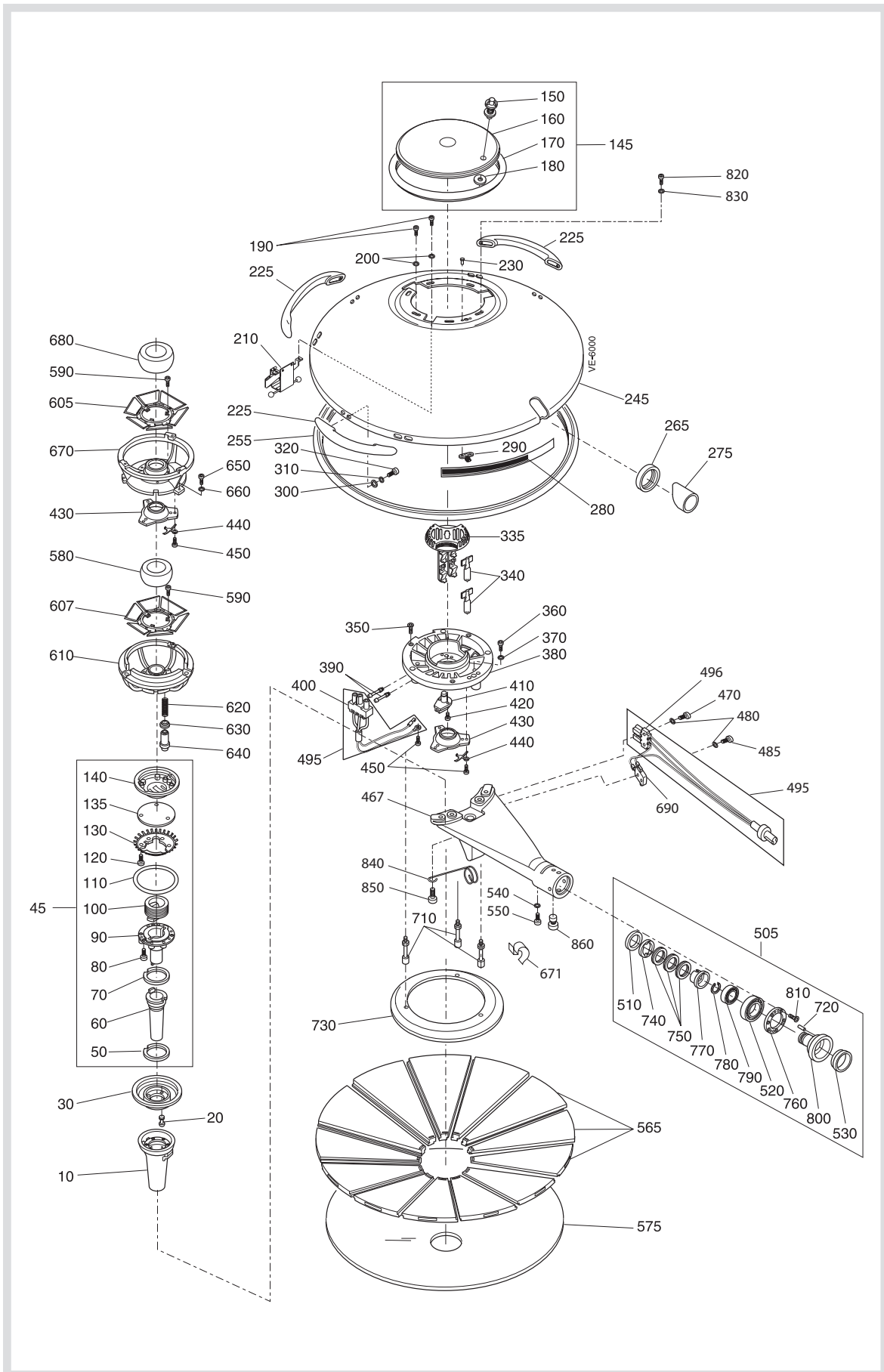
## PARTS LIST 2

## 6000 CUPOLA

DR. REF.	Reference	Description	Qty
1A	567237998	6000 cupola	1
10A	567202041	Sterilisable handle sleeve	1
30A	567202257	Equipped lower cover S/A	1
45A	567202516	Tilt control S/A	1
145A	567240998	Equipped cover S/A, comprend (rep.150A, 160A, 170A et 180A)	1
210A	567202251	Hinge	1
225A	367202374	6000 cupola handle S/A	1
255A	567202060	6000 cupola seal	1
265A	567202067	Cupola hub joint	1
275A	567202264	Hub mask	1
280A	567201555	Logo S/A	1
300A	602252462	Washer L6 st. stl A2 E27611	2
310A	602420611	Washer dia. 6 st. stl	6
320A	600530616	Chc screw M6x16 st. stl A2	6
335A	367202488	6000 lamp holder	1
340A	567202038	Bulb 100W 23 V	2
410A	567202023	Female plug assembly	2
420A	600530510	CHc screw M5x10 st. stl A2	8
495A	367211555	Cable assembly S/A 6000/8000	1
495B	367260555	Cable assembly S/A 6000 video	1
496A	691400052	Connector	1
505A	567254997	Equipped hub S/A video	1
505B	567298702	Standard hub subassembly	1
565A	567202084	6000 prism sector	13
575A	567202056	6000 underside	1
580A	567202017	Spherical capacitor	1
605A	367218555	6/8000 AC lens S/A, upper	1
607A	367217555	6/8000 AC lens S/A, lower	1
620A	632500072	Tilt control spring	1
671A	696100011	Cable grommet clip	1
680A	567202055	Aspherical condenser	1
690A	69700024	Mini contact breaker	1
840A	567202359	Guide spring	1

DRAWING 2

6000 CUPOLA



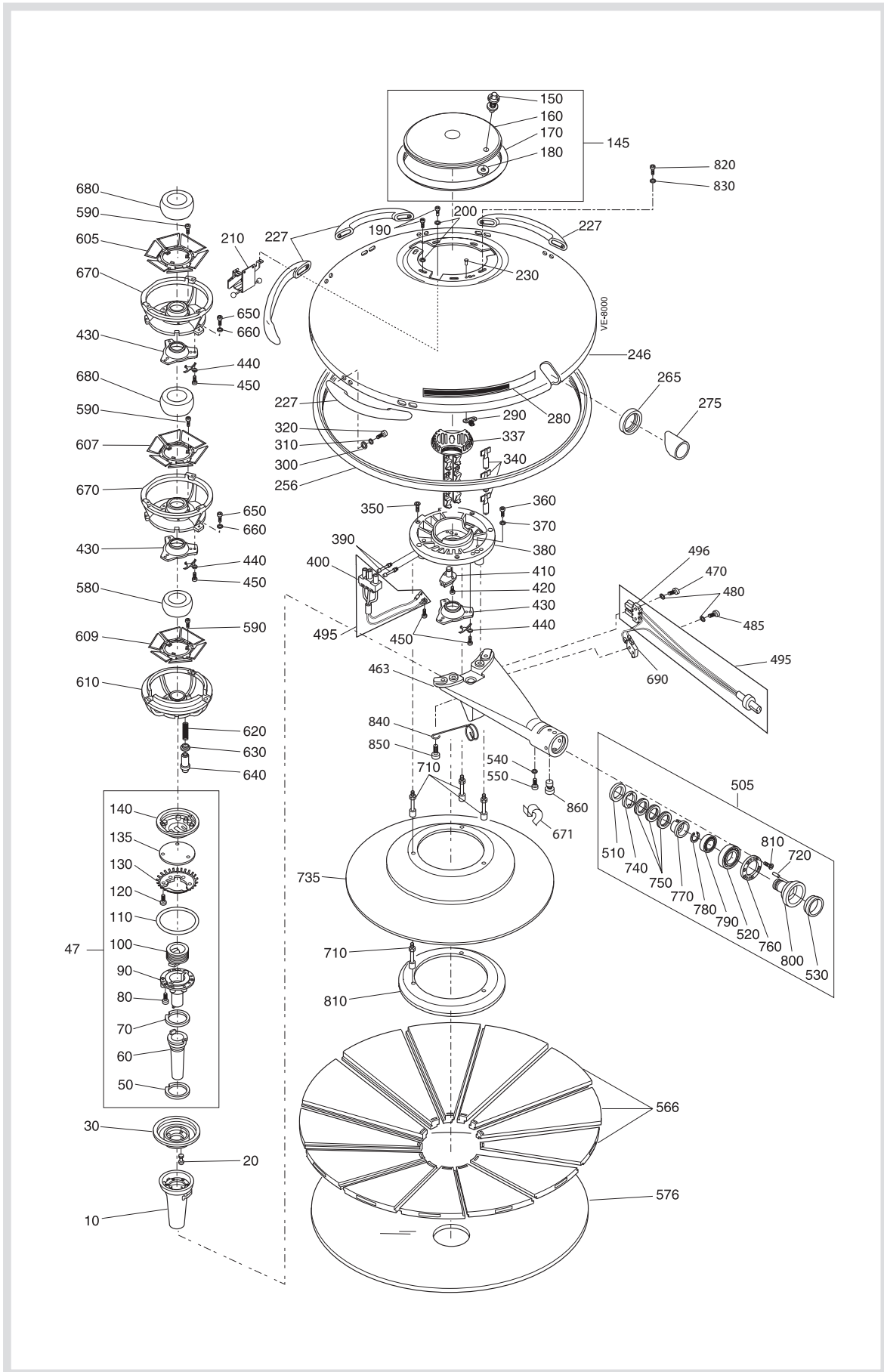
## PARTS LIST 3

## 8000 CUPOLA

DR. REF.	Reference	Description	Qty
1A	567238998	8000 cupola	1
10A	567202041	Sterilisable handle sleeve	1
30A	567202257	Equipped lower cover S/A	1
47A	567202515	Tilt control S/A	1
145A	567240998	Equipped cover S/A comprising (items 150 A, 160A, 170A and 180A)	1
210A	567202251	Hinge	1
227A	367202375	8000 cupola handle S/A	1
256A	567202073	8000 cupola seal	1
265A	567202067	Cupola hub joint	1
275A	567202264	Hub mask	1
280A	567201555	Logo S/A	1
300A	602252462	Washer L6 st. stl. A2 E27611	2
310A	602420611	Washer dia. 6 st. stl	6
320A	600530616	CHc screw M6x16 st. stl A2	6
337A	367202487	8000 lamp holder	1
340A	567202038	Bulb 100W 23 V	3
410A	567202023	Female plug assembly	2
420A	600530510	CHc screw M5x10 st. stl A2	8
430A	567202020	Mirror	2
495A	367211555	6000/8000 S/A cable assembly	1
496A	691400052	Connector	1
505A	567298702	Standard hub subassembly	1
566A	567202125	8000 prism sector	13
576A	567202069	8000 underside	1
580A	567202017	Spherical condenser	1
605A	367218555	6/8000 AC lens S/A, upper	1
607A	367218555	6/8000 AC lens S/A, interm.	1
609A	367217555	6/8000 AC lens S/A, lower	1
620A	632500072	Tilt control spring	1
671A	696100011	Cable grommet clip	1
680A	567202055	Aspherical condenser	2
690A	691700024	Mini contact breaker	1
840A	567202359	Guide spring	1

DRAWING 3

8000 CUPOLA



## PARTS LIST 4

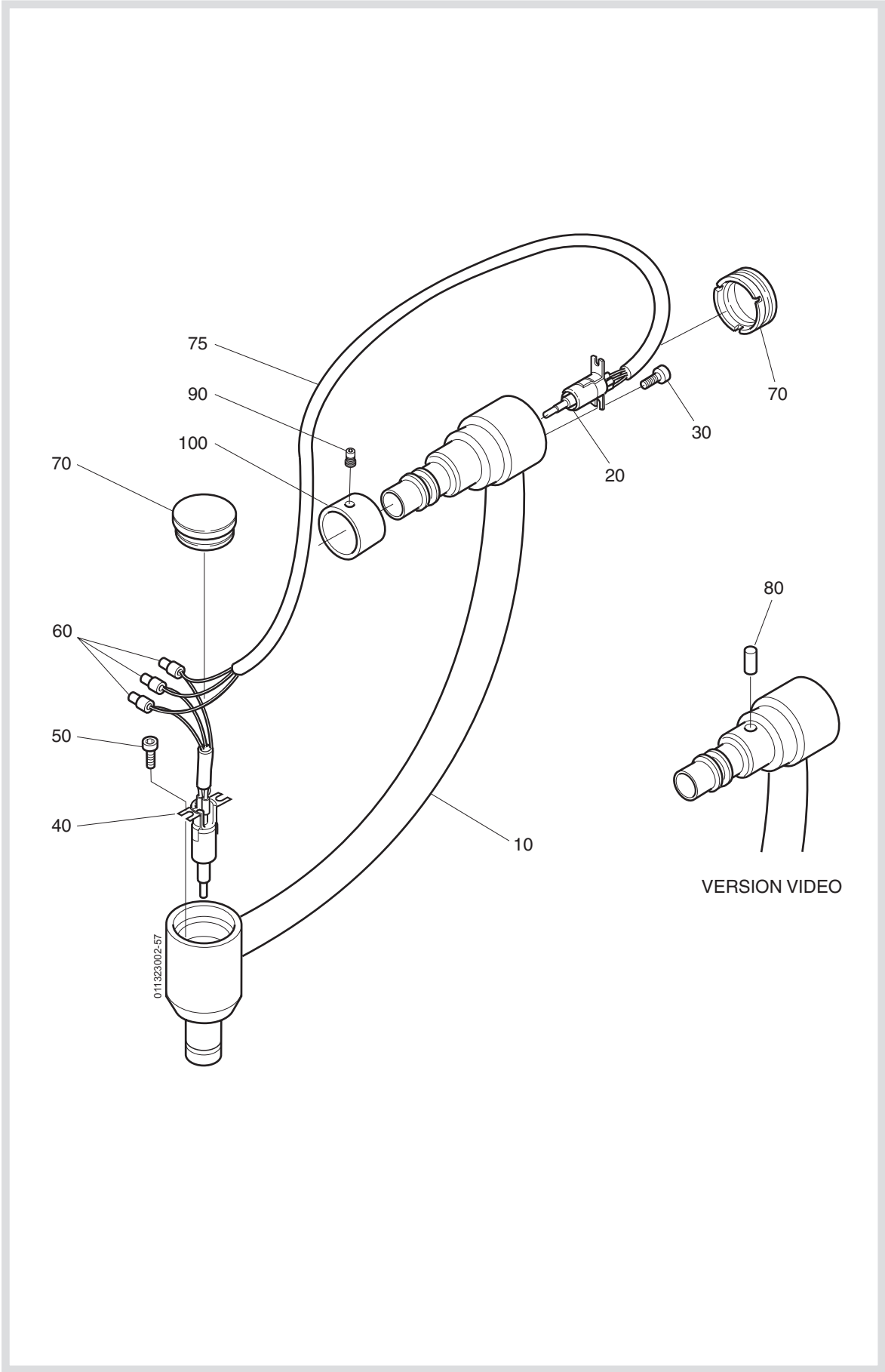
## 4000 SF CUPOLA ARM

DR. REF.	Reference	Description	Qty
1A	567235998	4000 SF cupola arm	1
70A	567202351	Stopper	1
75A	567204998	Repair S/A Cable assembly, comprising (items 20A, 40A and 60A)	1
90A	657700001	Lock screw	1
100A	567202048	Stop ring	1



DRAWING 4

4000 SF CUPOLA ARM



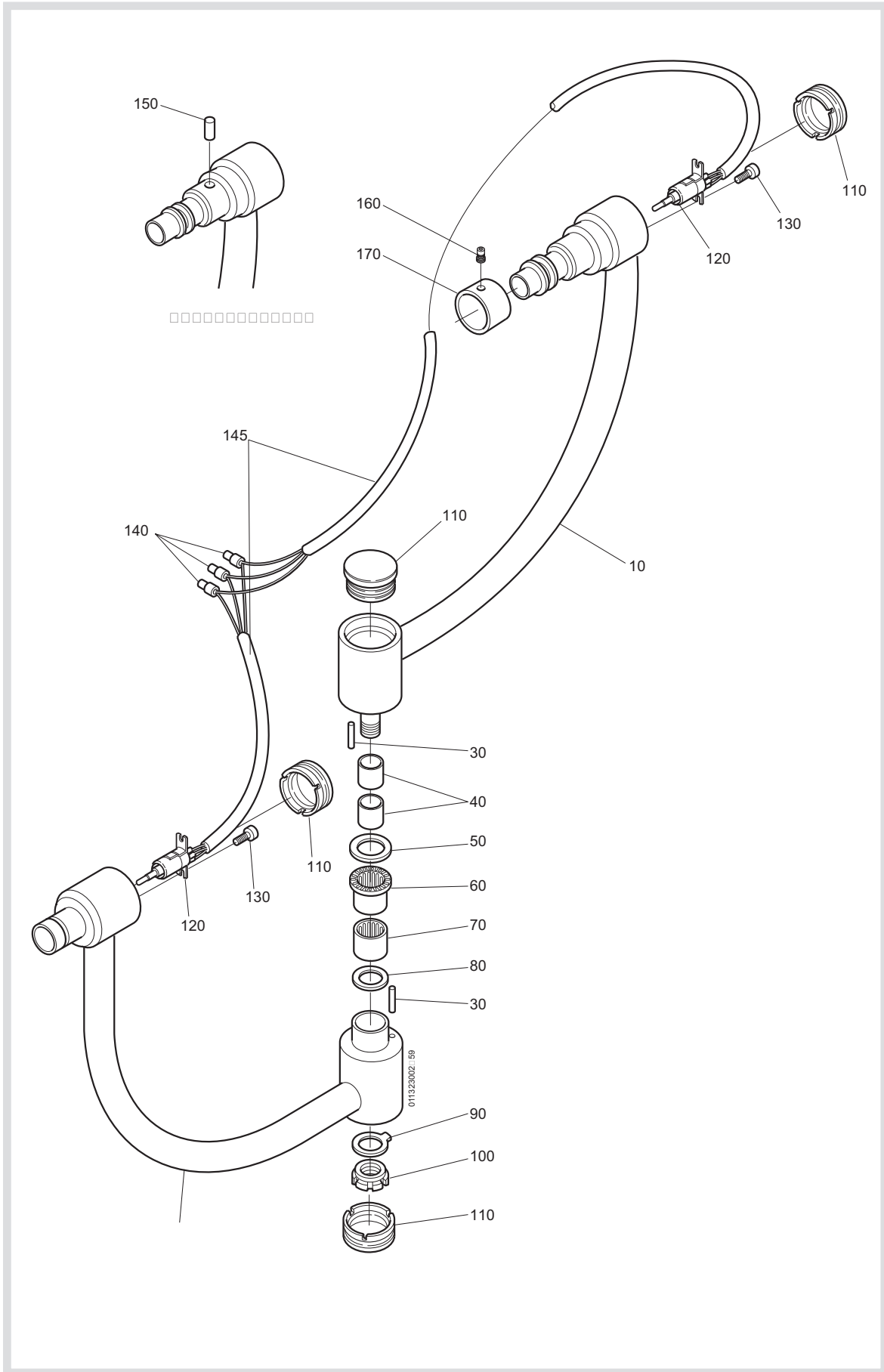
## PARTS LIST 5

## 4000 DF CUPOLA ARM

DR. REF.	Reference	Description	Qty
1A	567234998	4000 DF cupola arm	1
110A	567202351	Stopper	1
145A	367203998	Repair S/A Cable assembly, comprising (items 120A and 140A)	1
160A	657700001	Lock screw	1
170A	567202048	Stop ring	1

DRAWING 5

4000 DF CUPOLA ARM



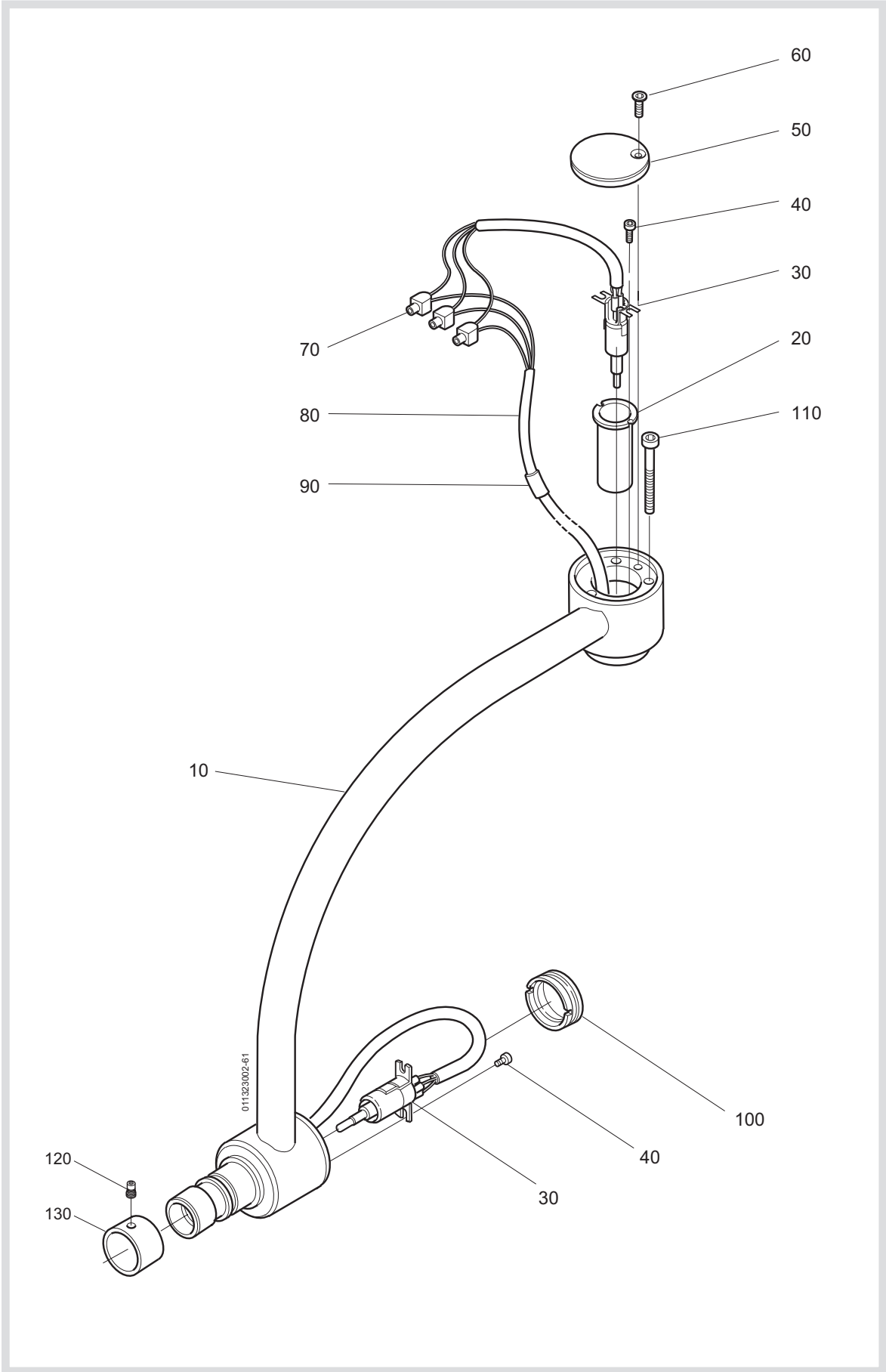
## PARTS LIST 6

## 6000 SA CUPOLA SWIVEL ARM

DR. REF.	Reference	Description	Qty
1A	567232996	6000 SA cupola swivel arm	1
75A	367206998	Repair S/A Rotating contact, comprising (items 20A, 40A, 60A and 75A)	1
100A	567202351	Stopper	1

DRAWING 6

6000 SA CUPOLA SWIVEL ARM



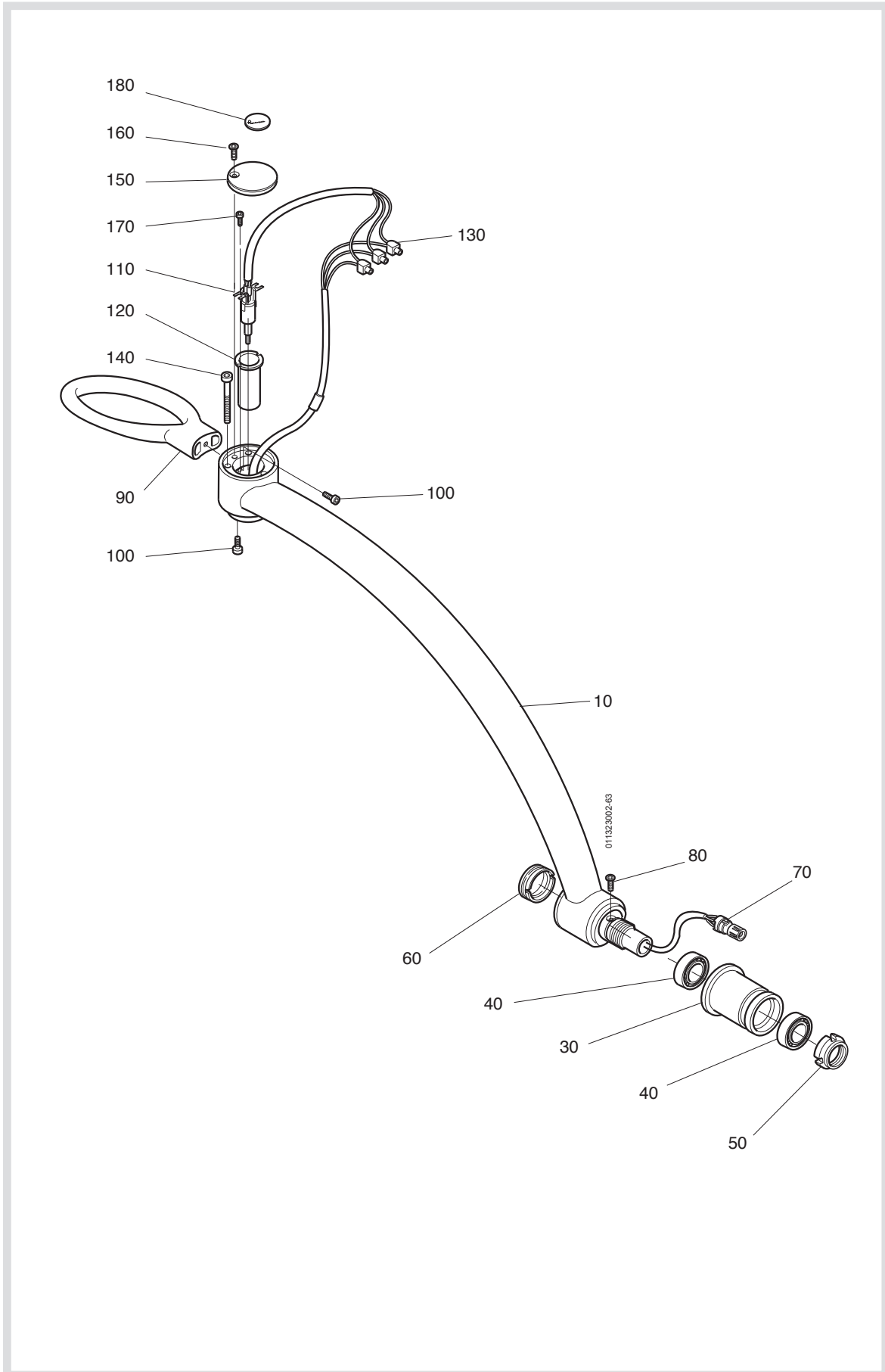
## PARTS LIST 7

## ACS 6000/8000 CUPOLA ARM

DR. REF.	Reference	Description	Qty
1A	567232998	ACS 6000 cupola	1
1B	567233998	ACS 8000 cupola	1
60A	567202351	End piece	1
90A	567201263	Cupola arm handle	1
100A	600780616	Thin-head CHc screw M6x16	2
115A	367207998	Repair S/A Rotating contact, comprising (Items 110A, 130A and 70A)	1
180A	367201555	Logo S/A	1

DRAWING 7

BRAS DE COUPOLE 6000/8000 ACS



## PARTS LIST 8

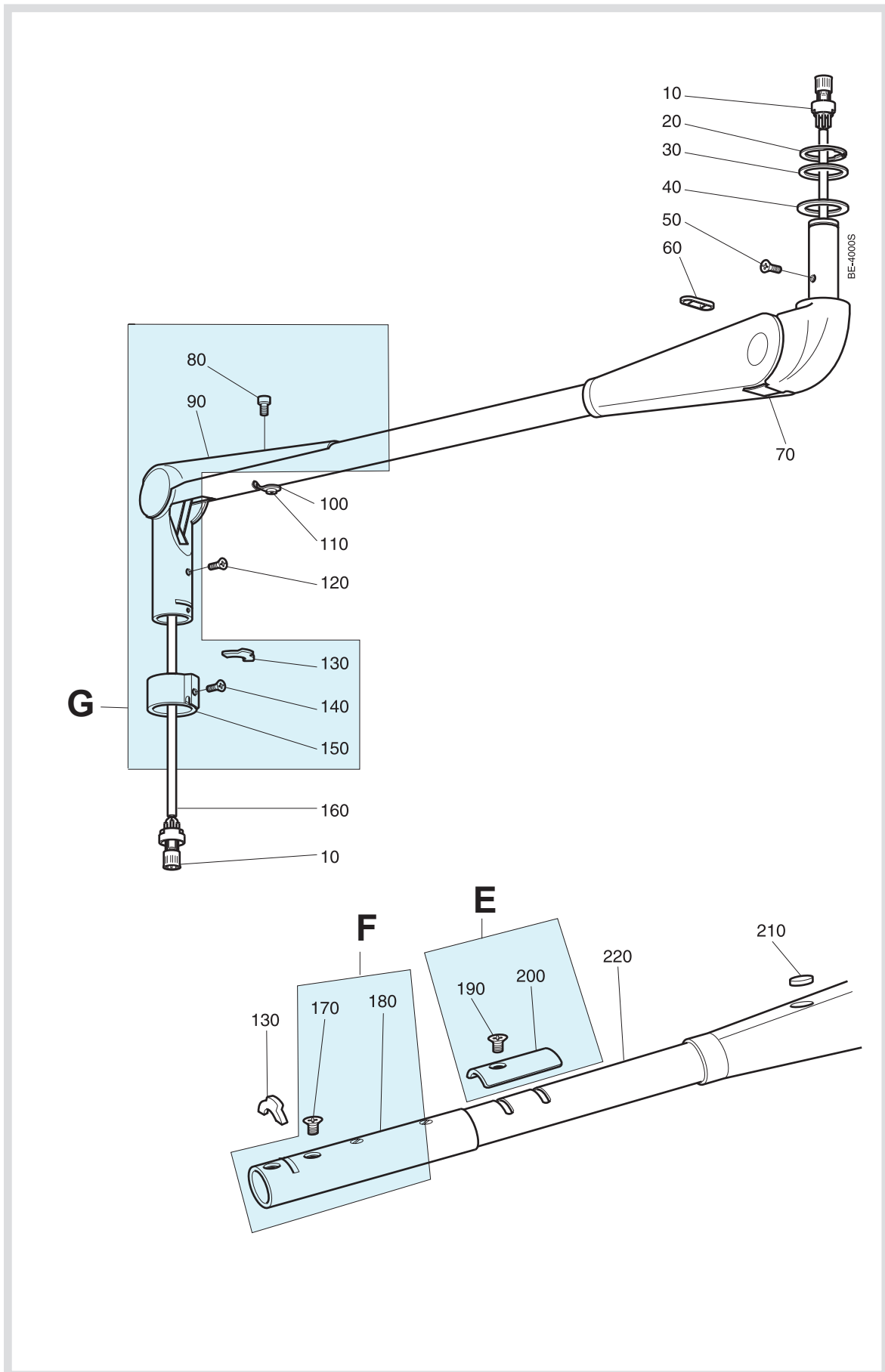
## 4000 S CUPOLA BALANCING ARM

DR. REF.	Reference	Description	Qty
1A	567214995	4000 S DF balancing arm	1
1B	567207995	4000 S SF balancing arm	1
10A	367208555	Repair S/A Rotating contact comprising (items 110A, 130A and 70A)	1
E	940000177	Arm cover (comprising items 190A and 200A)	1
F	367246555	End piece arm cover (comprising items 170A and 180A)	1
G	367202555	Repair kit (cover + segment) Comprising (items 130A, 140A, 150A, 90A, 80A)	1



DRAWING 8

4000 S CUPOLA BALANCING ARM



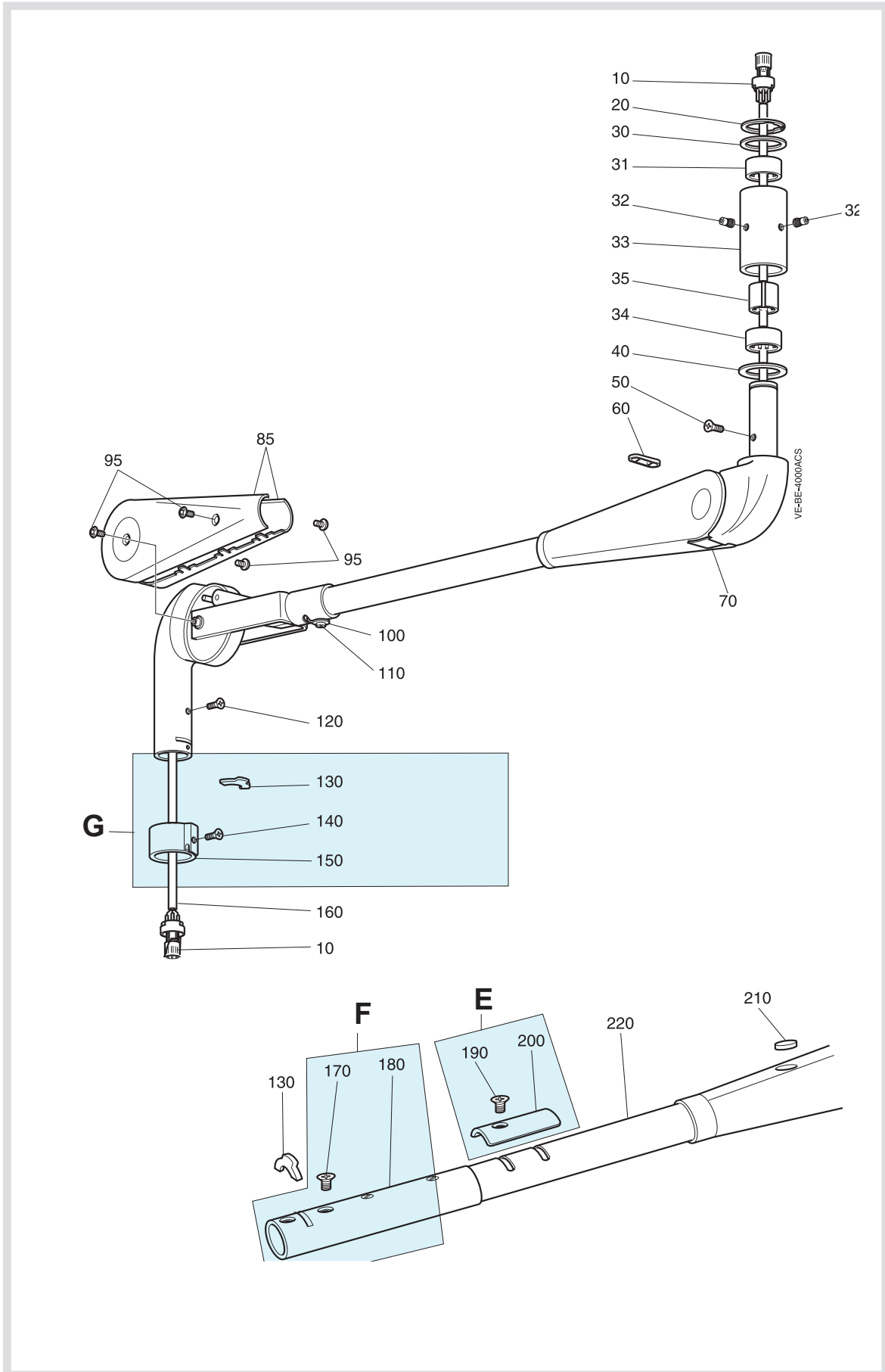
## PARTS LIST 9

## BALANCING ARM, SA/ACS 4000 CUPOLA

DR. REF.	Reference	Description	Qty
1A	567214995 367222995	4000 SA/ACS DF Bushing (to order)	1
1B	567211995	Video 4000 DF	1
1C	567218995	4000 SA/ACS SF	1
1D	567212995	Video 4000 SF	1
35A	567008002	Brake	1
60A	9204850	Reach adjustment cover	1
70A	940000047	Bottom metal plate ref. 18336	2
85A	367241998	Balance arm cover half blanking plate	1
95A		Balance arm cover half blanking plate	2
		Screw	4
E	940000177	Arm cover (comprising items 190A and 200A)	1
F	367246555	End piece arm cover (comprising items 170A and 180A)	1
G	367202555	Repair kit (cover + segment) Comprising (items 130A, 140A, 150A)	1

DRAWING 9

BALANCING ARM, SA/ACS 4000 CUPOLA



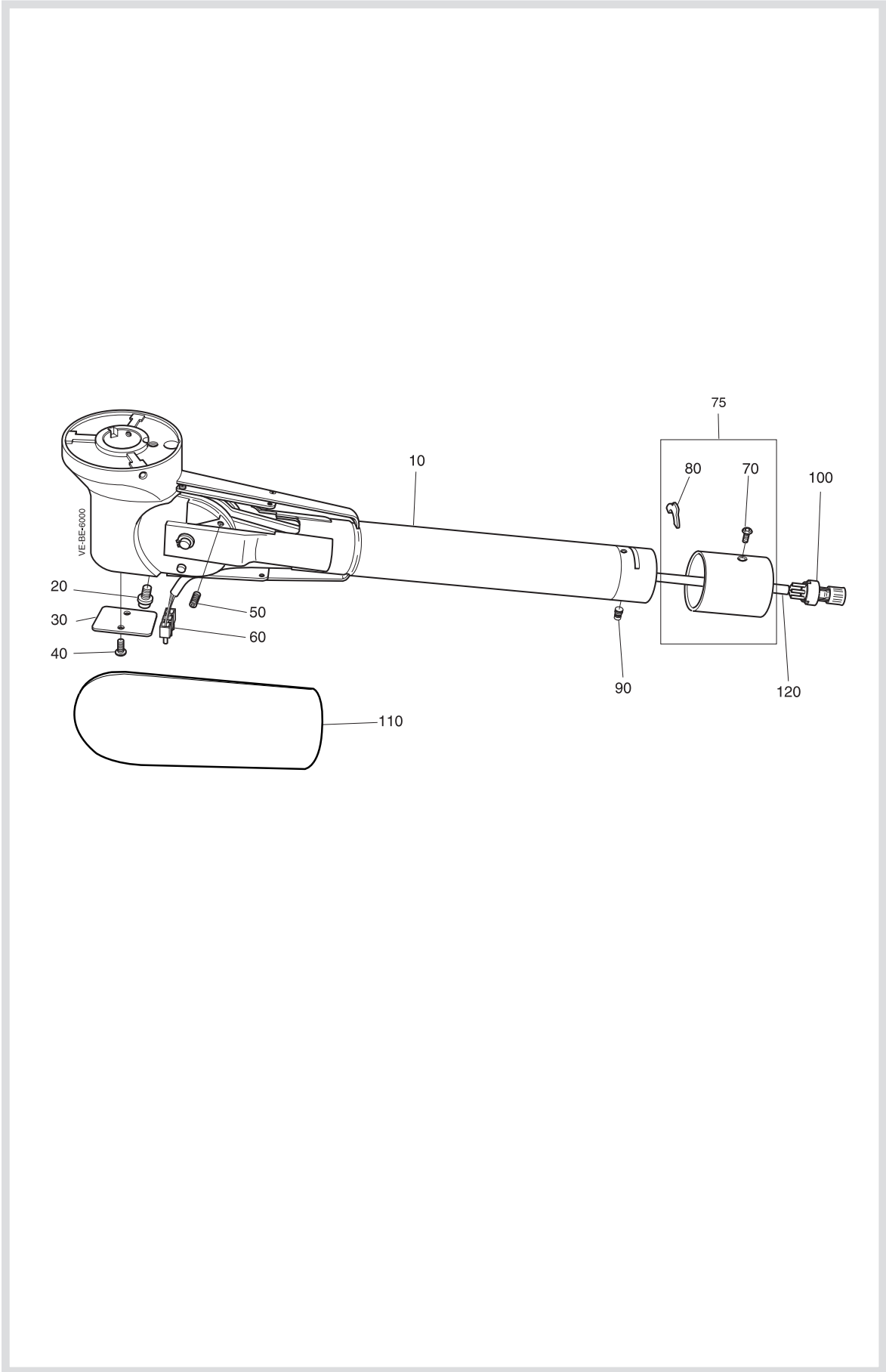
## PARTS LIST 10

## 6000 CUPOLA BALANCING ARM

DR. REF.	Reference	Description	Qty
1A	567216995	6000 cupola balancing arm	1
30A 40A 50A	367233555	Kit of spring arm lower inspection cover	1
75A	367245555	Repair kit (Stop segment + cover)	1
90A	367237555	Kit of 5 spring arm brakes	1
100A	567201084	Rotating contact wire bundle assembly	1
110A	688000005	Articulation cover	1

DRAWING 10

6000 CUPOLA BALANCING ARM



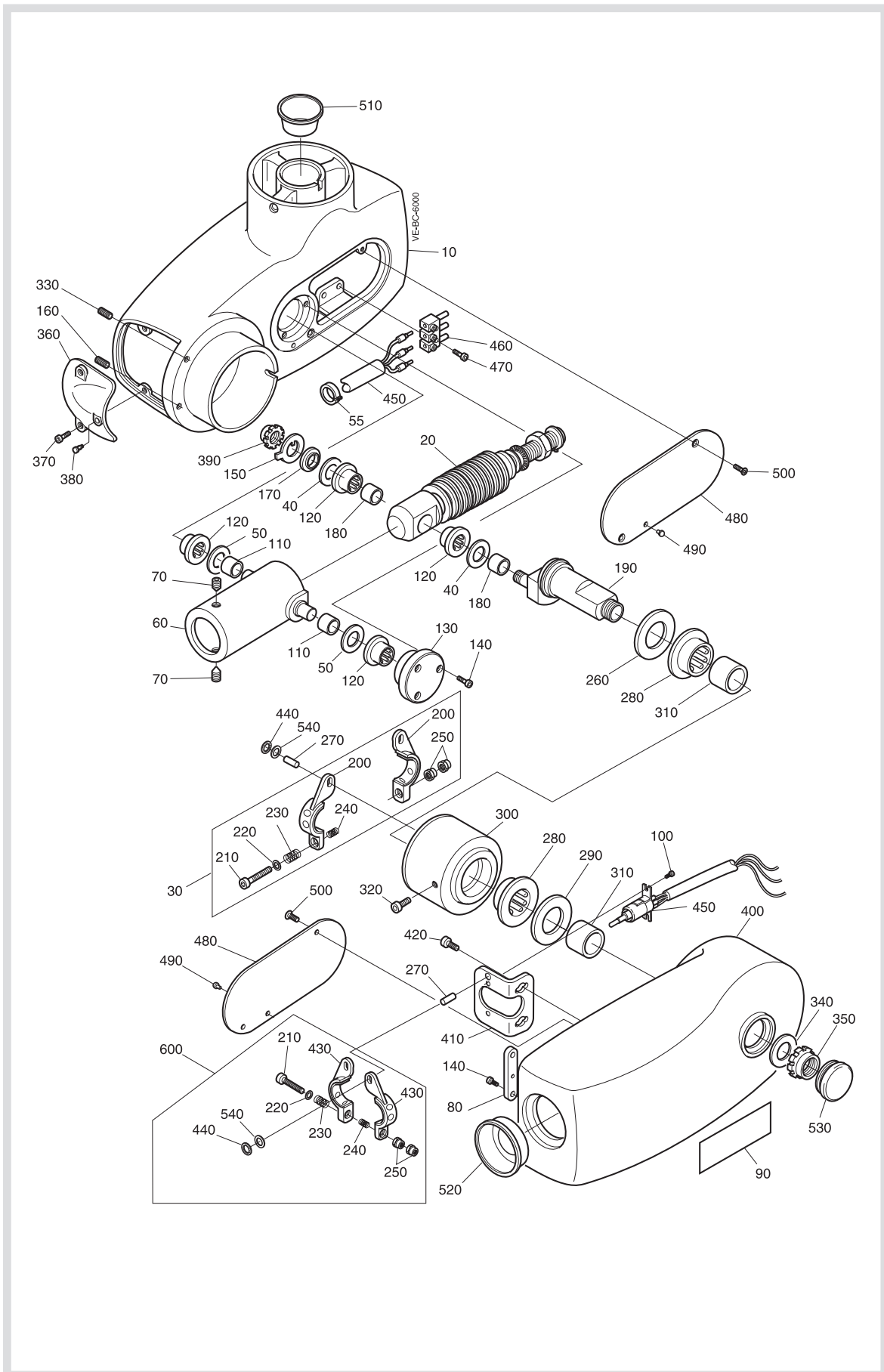
## PARTS LIST 11

## 6000/8000 COMPENSATION UNIT

DR. REF.	Reference	Description	Qty
1A	567230996	6000 cupola compensation	1
1B	567231996	8000 cupola compensation	1
1C	567230995	6000 video cupola	1
30A	367202998	Dia. 50 brake repair S/A (comprising items 30A, 440A and 540A)	1
90A	567201555	Logo S/A	1
160A	600560835	CHc screw, flat tip	1
450A	567201070	Cable assembly	1
600A	367201998	Dia. 32 brake repair S/A comprising (items 440A and 540A)	1

DRAWING 11

6000/8000 COMPENSATION UNIT



## PARTS LIST 12

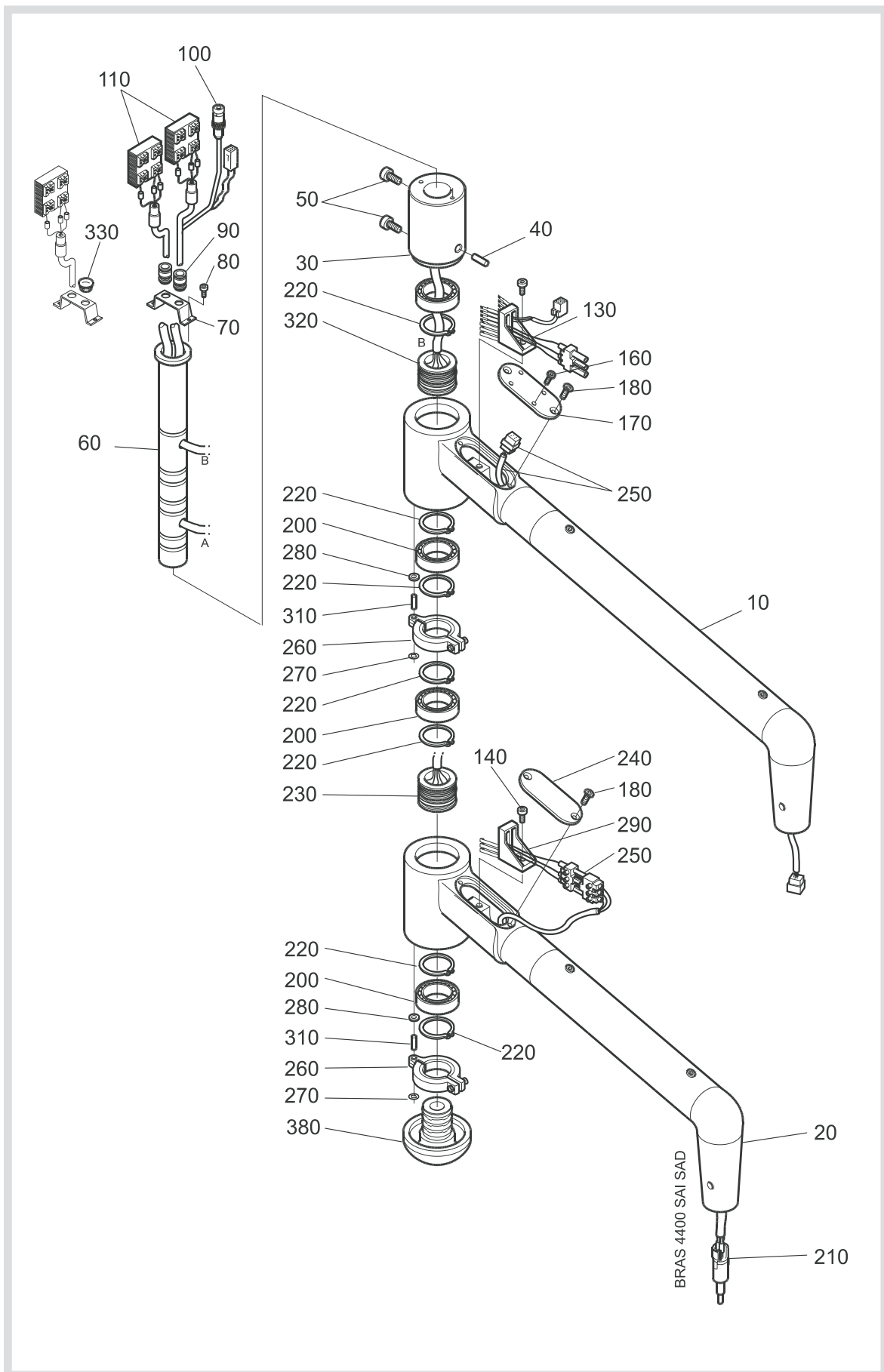
## SAI/SAD 4400 ARM

DR. REF.	Reference	Description	Qty
1A	567266998	SAI 4400 arm	1
1B	567288998	SAD 4400 arm	1
130A	567201045	7-track brush D50	1
150A	567203973	CFF camera power sply S/A	1
210A	567201102	4000 main arm cable assembly (male)	1
220A	639404502	Retaining ring T81 D50	7
260A	367202998	Brake dia. 50 repair S/A	2
290A	567201023	3-track brush D50	1
380A	567201011	Stopper	1



DRAWING 12

BRAS 4400 SAI/SAD



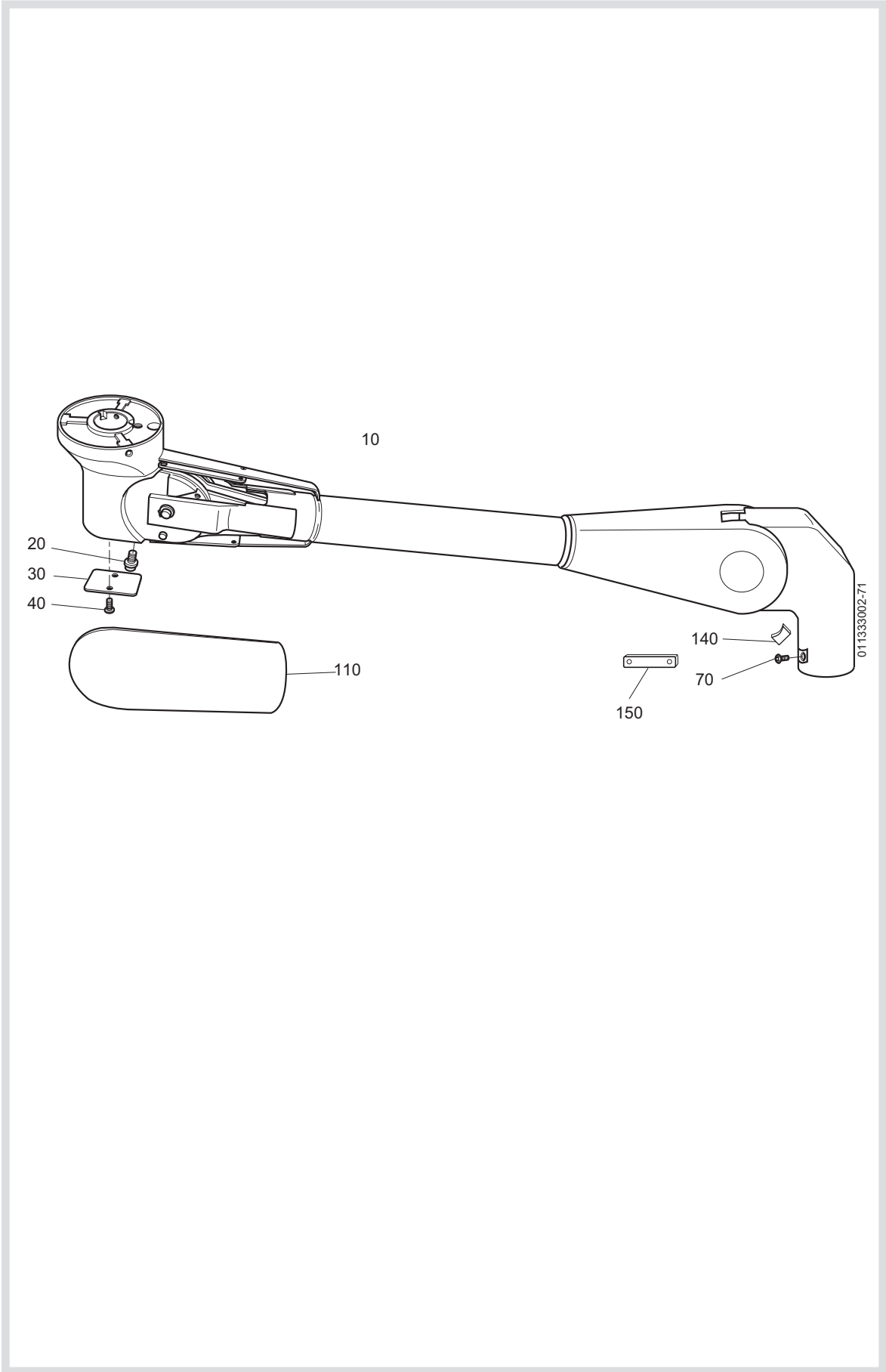
## PARTS LIST 13

## SUPPORT SPRING ARM

DR. REF.	Reference	Description	Qty
1A	567226995	Support spring arm	1
110A	688000005	Articulation mask	1
140A		Stop segment	1
150A		Segment mask	1

DRAWING 13

SUPPORT SPRING ARM



## PARTS LIST 14

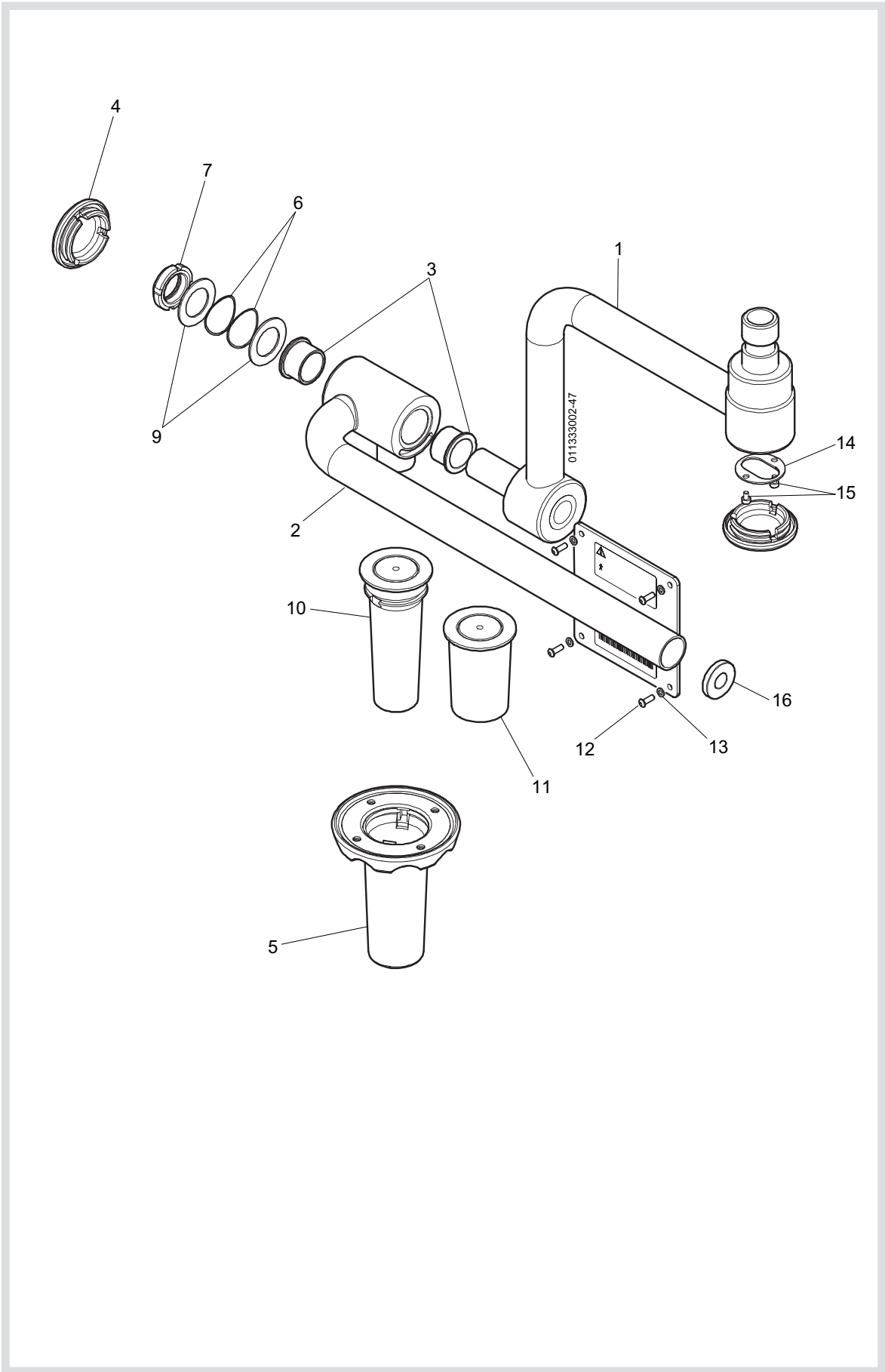
## FLAT PANEL MONITOR HOLDER

DR. REF.	Reference	Description	Qty
1	567206001	Upper frame	1
2	567206002	Lower frame	1
3	625025202	Friction ring	2
4	567202351	Bumper	2
5	567203976	Sterilizable handle PRX	1
6	602980021	Spring washer	3
7	601860051	Notched nut	1
8	567206003	Flat panel cable*	1
9	622302503	Thin washer	2
10	567208001	Handle support	1
11	567206004	DEVON handle adapter	1
12	600990029	Screw ULF M 4 X 12 Stainless steel	4
13	602420408	Grower washer	4
14	567203067	Driving washer	1
15	600530406	Screw CHc M 4 X 6 Stainless steel	2
16	696700012	Stuffing box	1

\* Not shown

DRAWING 14

FLAT PANEL MONITOR HOLDER



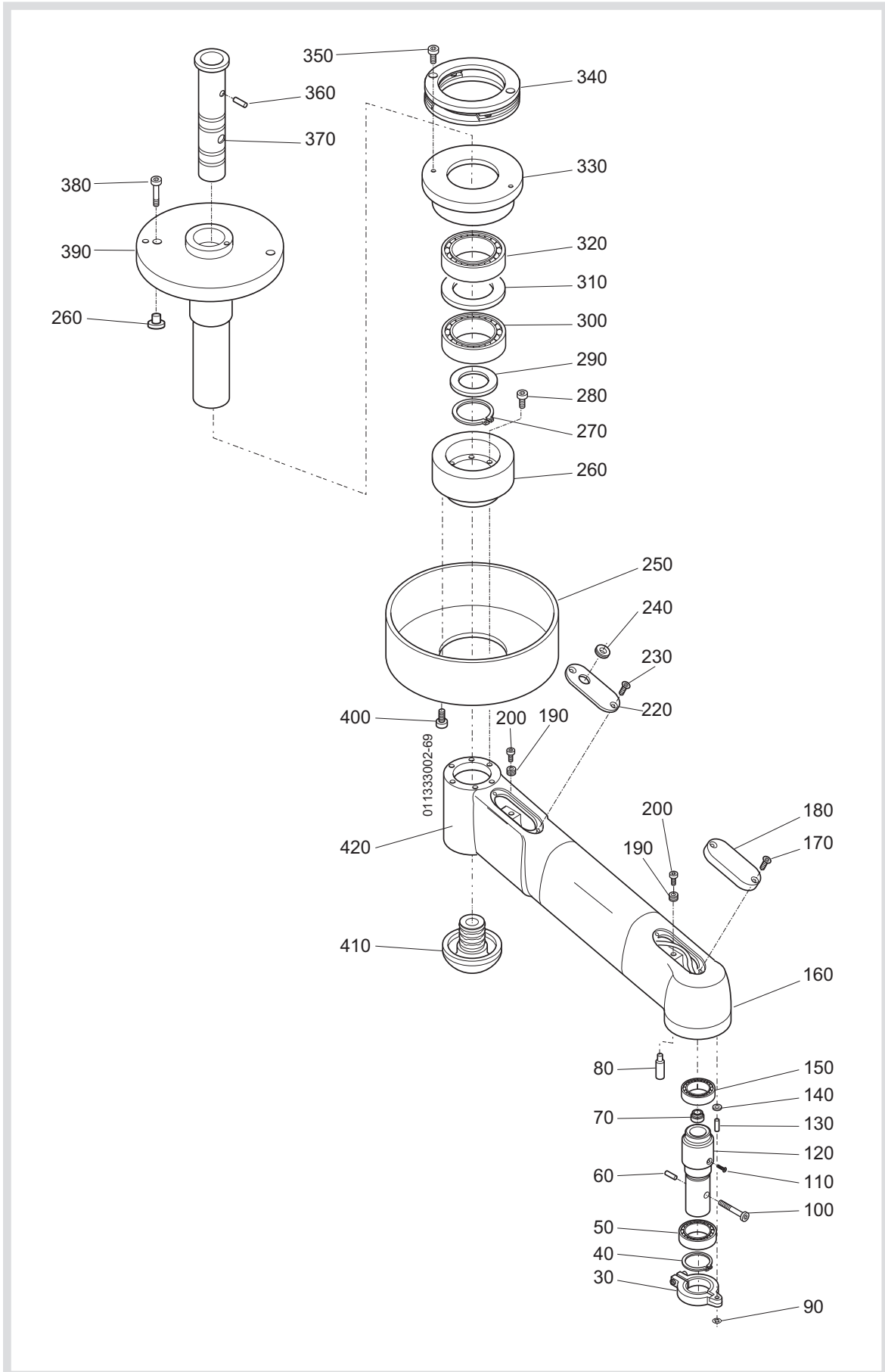
## PARTS LIST 15

## SUPPORT MAIN ARM

DR. REF.	Reference	Description	Qty
1A	567277994	Main arm	1
30A	567201154	50mm dia. brake	1
250A	567226008	Cover (two parts)	1
260A	567226017	Shaft stop	1
340A	513601803	Set PMC brake	1
410A	567201011	Plug	1
420A	567226024	Stop label	1

DRAWING 15

SUPPORT MAIN ARM



## PARTS LIST 16

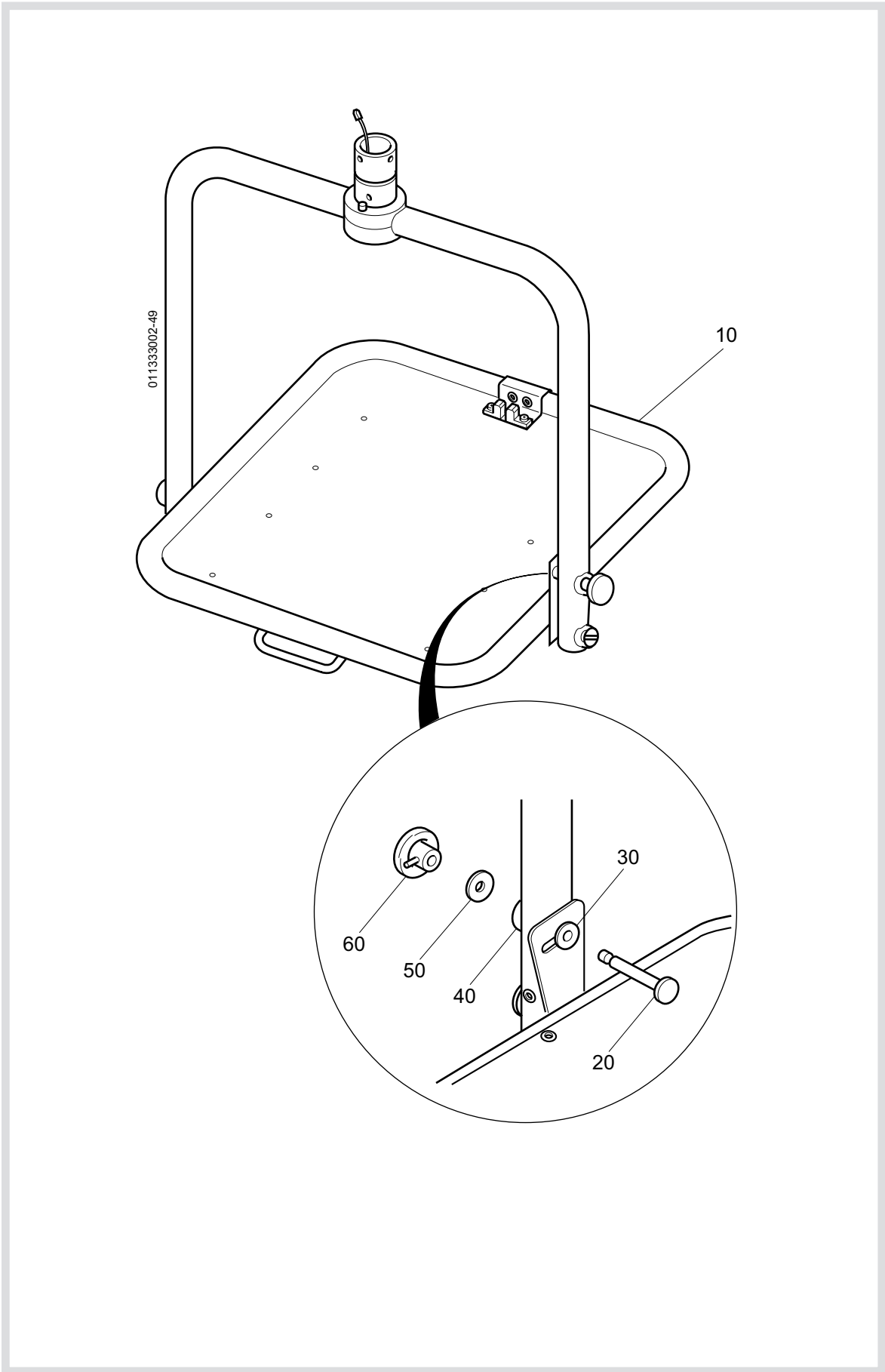
## EQUIPMENT SUPPORT

DR. REF.	Reference	Description	Qty
1A	567226994	Equipment support	1
10A	567206001	Tray	1
20A	567206002	Plastic washer	1
30A	625025202	Plastic support	1
40A	567202351	Washer 25	1
50A	567203976	Handle	1



DRAWING 16

EQUIPMENT SUPPORT



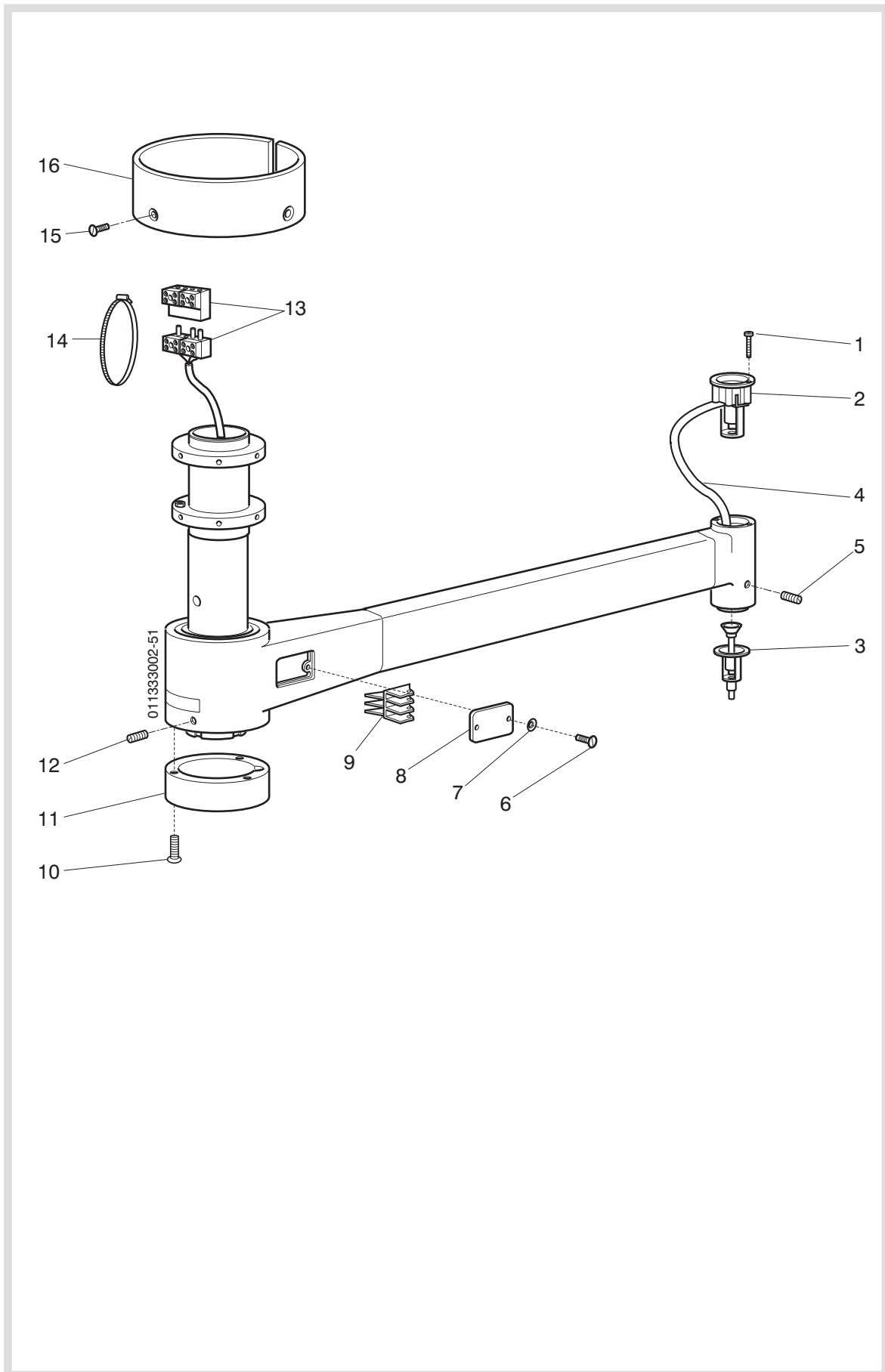
## PARTS LIST 17

## S/A SINGLE MAIN ARM SAX

DR. REF.	Reference	Description	Qty
1	204820	Male contact fixation screw	2
2	204815	Male contact support	1
3	180362	Male contact	1
4	204823	Arm cable harness	1
5	204855	Spring arm brake	1
6	204862	Access plate fixation screw	2
7	204858	Washer	1
8	204826	Brush assy access plate	1
9	204821	Brush assembly	1
10	204824	Protective cover fixation screw	3
11	204825	Protective cover	1
12	189489	Central axis brake	2
13	179111	Supply connector	1
14	188396	Collar	1
15	981328	Retaining screws	3
16	274240	Cover plate	1

DRAWING 17

S/A SINGLE MAIN ARM SAX



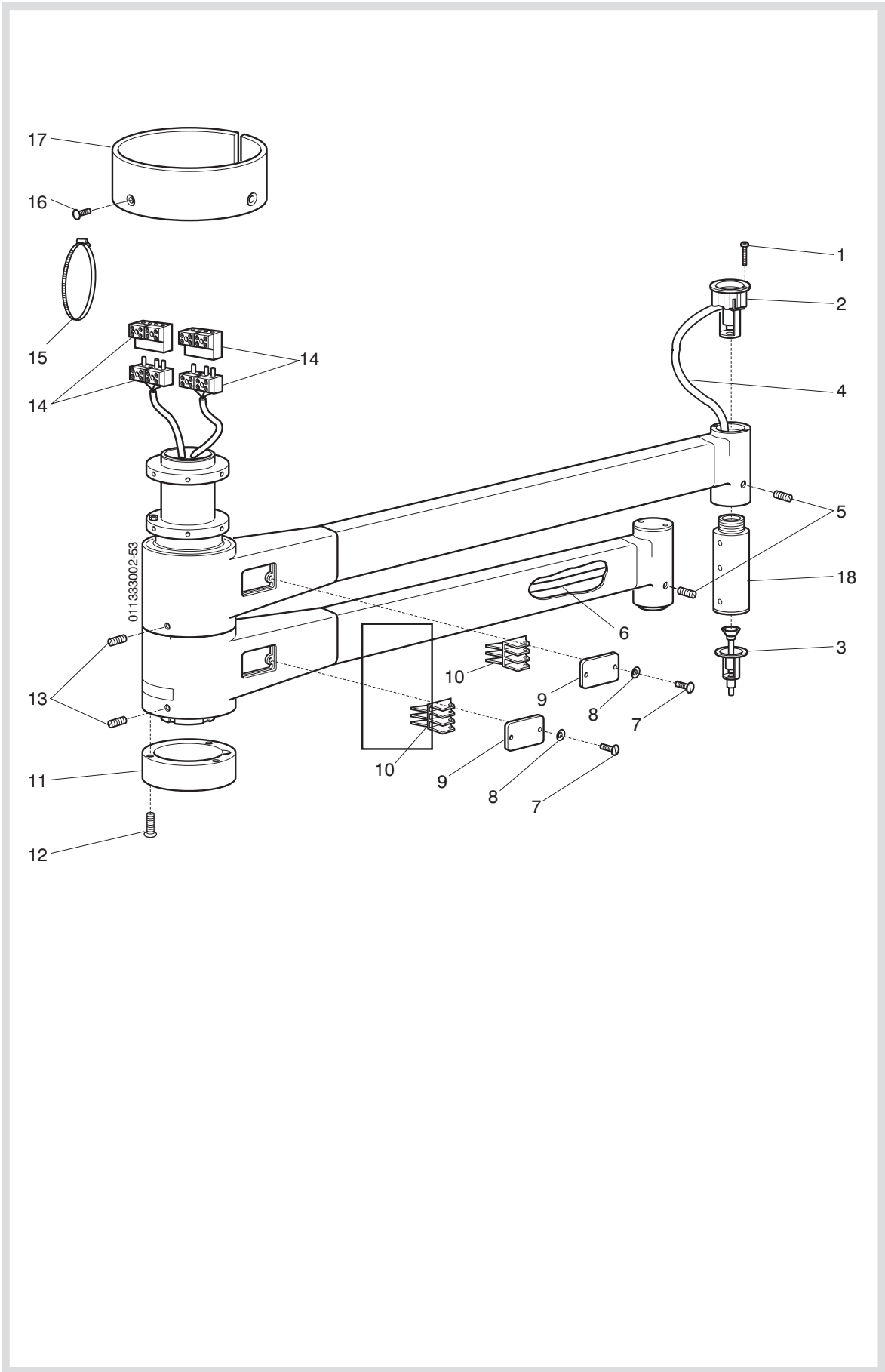
## PARTS LIST 18

## S/A DOUBLE MAIN ARM SAX

DR. REF.	Reference	Description	Qty
1	204820	Male contact fixation screw	4
2	204815	Male contact support	2
3	180362	Male contact	2
4	204823	Outer arm cable harness	1
5	204855	Spring arm brake	2
6	204822	Center arm cable harness	1
7	204862	Access plate fixation screw	4
8	204858	Washer	2
9	204826	Brush assy access plate	2
10	204821	Brush assembly	2
11	204825	Protective cover	1
12	204824	Protective cover fixation screw	3
13	189489	Central axis brake	4
14	179111	Supply connector	2
15	188396	Collar	2
16	981328	Retaining screws	3
17	274240	Cover plate	1
18	187594	Extender 110mm	1

DRAWING 18

S/A DOUBLE MAIN ARM SAX



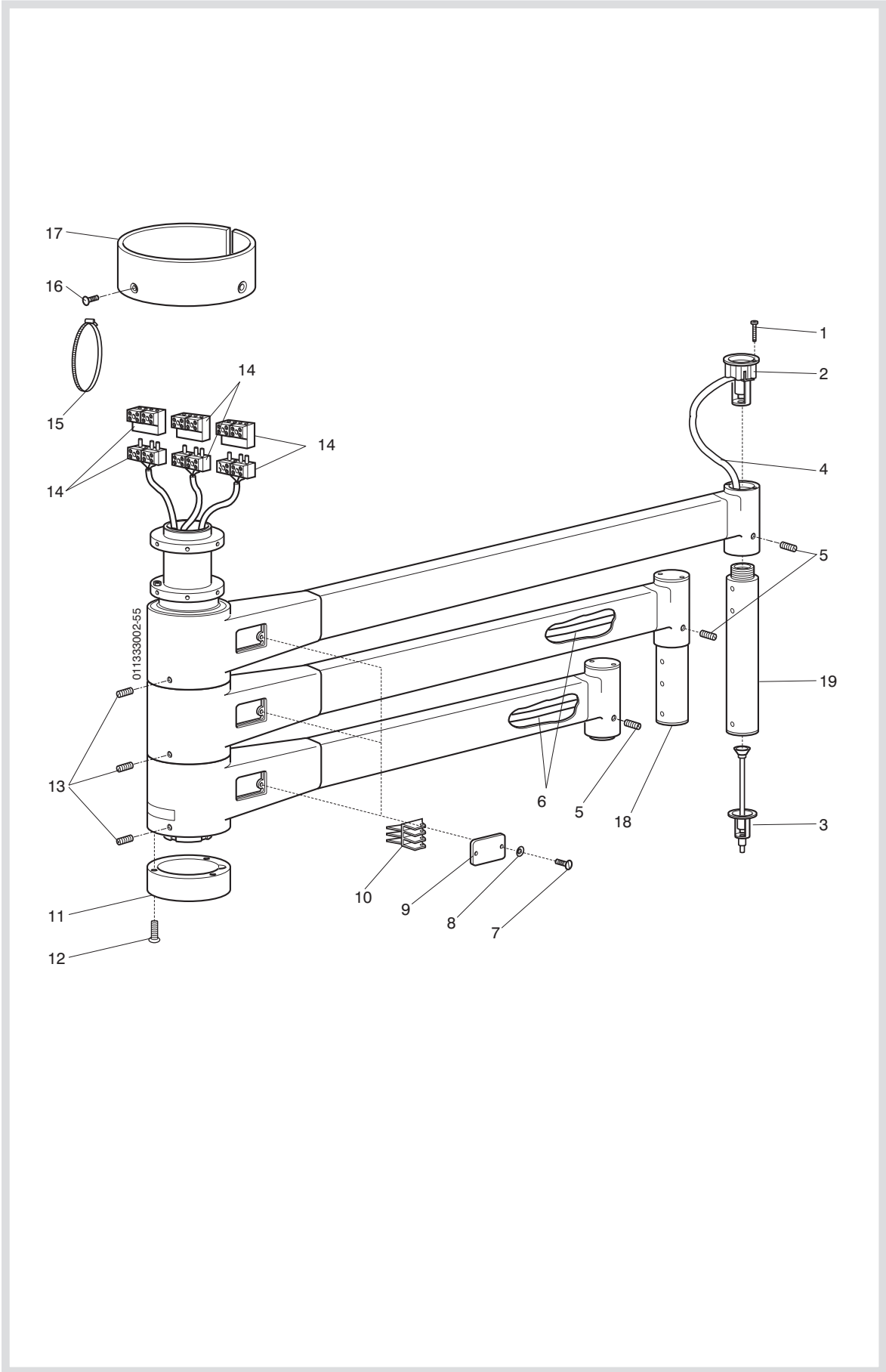
## PARTS LIST 19

## S/A TRIPLE MAIN ARM SAX

DR. REF.	Reference	Description	Qty
1	204820	Male contact fixation screw	4
2	204815	Male contact support	2
3	180362	Male contact	2
4	204823	Outer arm cable harness	1
5	204855	Spring arm brake	2
6	204822	Center arm cable harness	1
7	204862	Access plate fixation screw	4
8	204858	Washer	2
9	204826	Brush assy access plate	2
10	204821	Brush assembly	2
11	204825	Protective cover	1
12	204824	Protective cover fixation screw	3
13	189489	Central axis brake	4
14	179111	Supply connector	2
15	188396	Collar	2
16	981328	Retaining screws	3
17	274240	Cover plate	1
18	187594	Extender 110mm	1
19	187597	Extender 220mm	1

DRAWING 19

S/A TRIPLE MAIN ARM SAX



## PARTS LIST 20

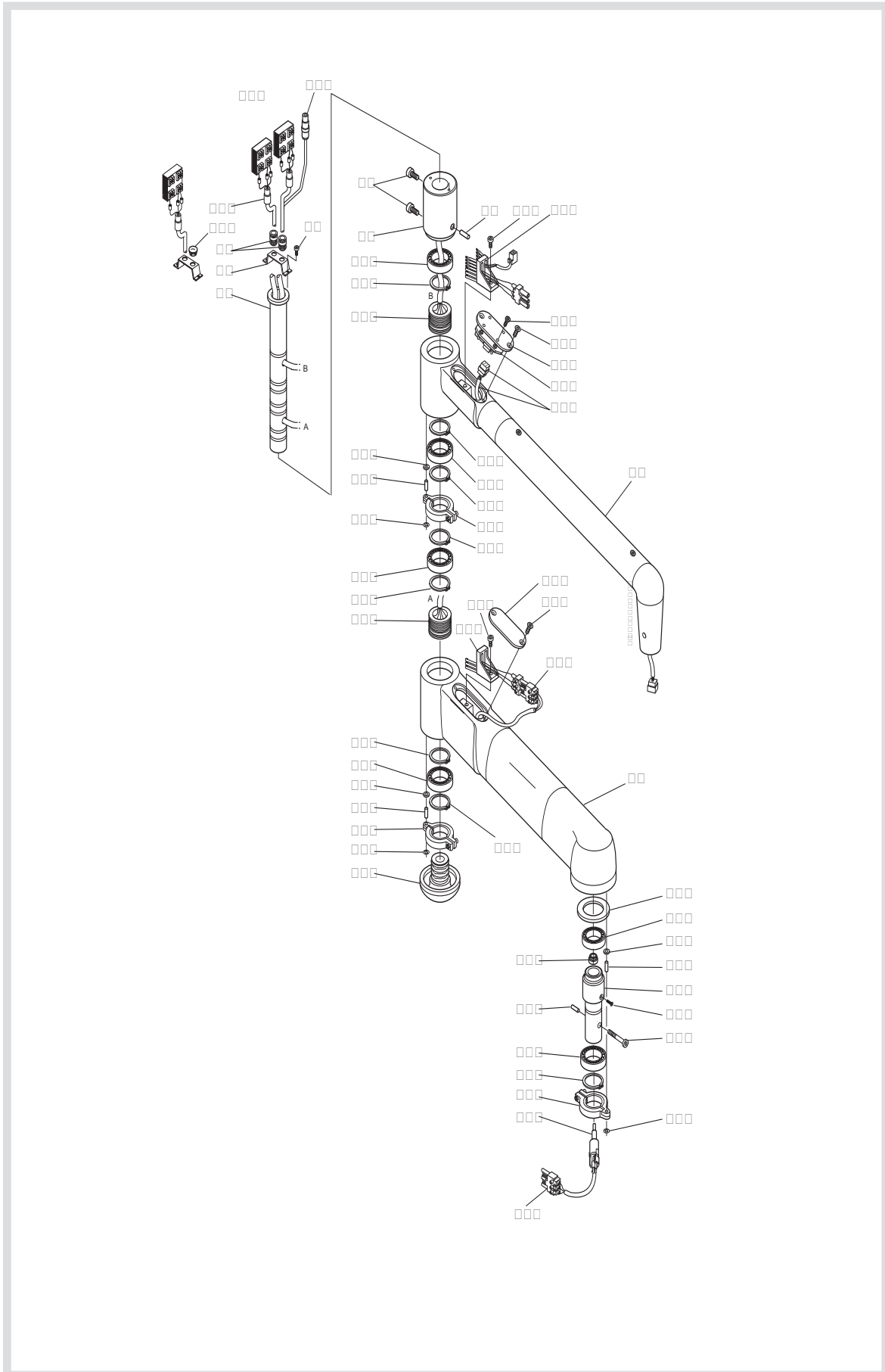
## 6400 MAIN ARM

DR. REF.	Reference	Description	Qty
1A	567264998	6400 main arm	1
130A	567201045	7-track brush D50	1
150A	567203991	CFF camera power sply S/A	1
190A	567203058	VD 4000 arm cable	1
220A	639404502	Retaining ring T81 D50	7
290A	367202998	50mm dia. brake repair S/A	1
370A	567201104	Cable assembly for rotating contact	1
380A	567201011	Stopper	1
390A	567201150	Cable assembly with female rotating contact	1
410A	567201023	3-track brush, dia 50	1



DRAWING 20

6400 MAIN ARM



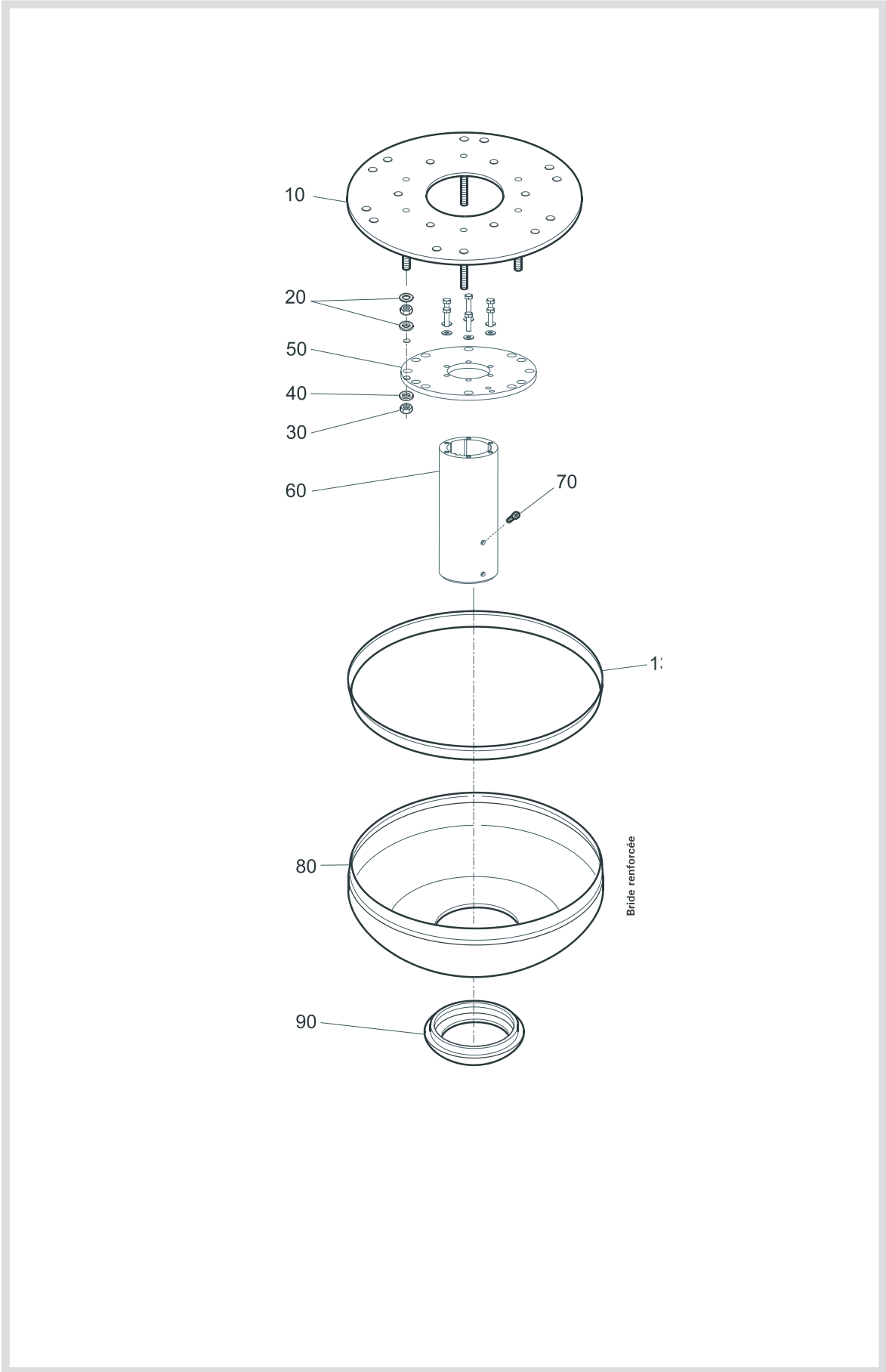
## PARTS LIST 21

## REINFORCED FLANGE

DR. REF.	Reference	Description	Qty
10	513899999	Anchoring plate (ECL 016)	1
50	567260998	Flange (ECL 2001)	1
60	567201348 à 567201361	Suspension tube	1
80	568037999	Curved cover - 2 items (ECL 1011)	1
	568038999	Flat cover - 2 items (ECL 1012)	1
	567260999	Curved cover - 1 item (ECL 1013)	1
	567260997	Flat cover - 1 item (ECL 1014)	1
90	567201327	Tube seal diam. 105 mm	1
130	568009016	Ceiling cover seal	1

DRAWING 21

BRIDE RENFORCÉE



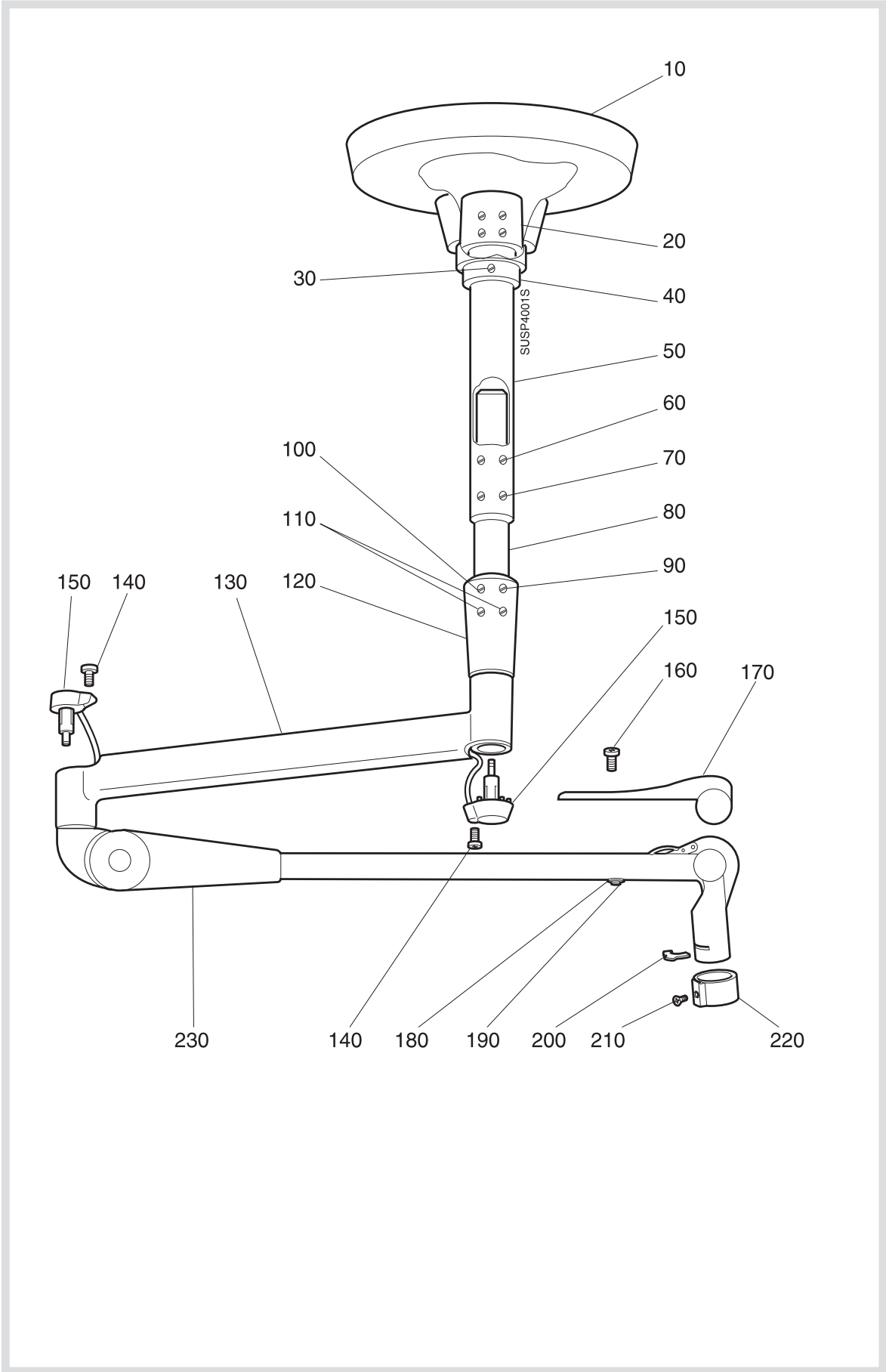
## PARTS LIST 22

## SUSPENSION FOR 4001 S

DR. REF.	Reference	Description	Qty
1A	567211111	Suspension arm for 4001 S, SF (See drawing 9)	
1B	567211211	Suspension arm for 4001 S, DF (see drawing 9)	
10A à 120A	567203995	Spacer	
130A à 150A	567205995	Main arm	
160A à 230A	567214995	PRX balancing arm	
160A à 230A	567214995	AX balancing arm	
150A	367208555	Repair kit for rotating contact balancing arm	

DRAWING 22

SUSPENSION FOR 4001 S



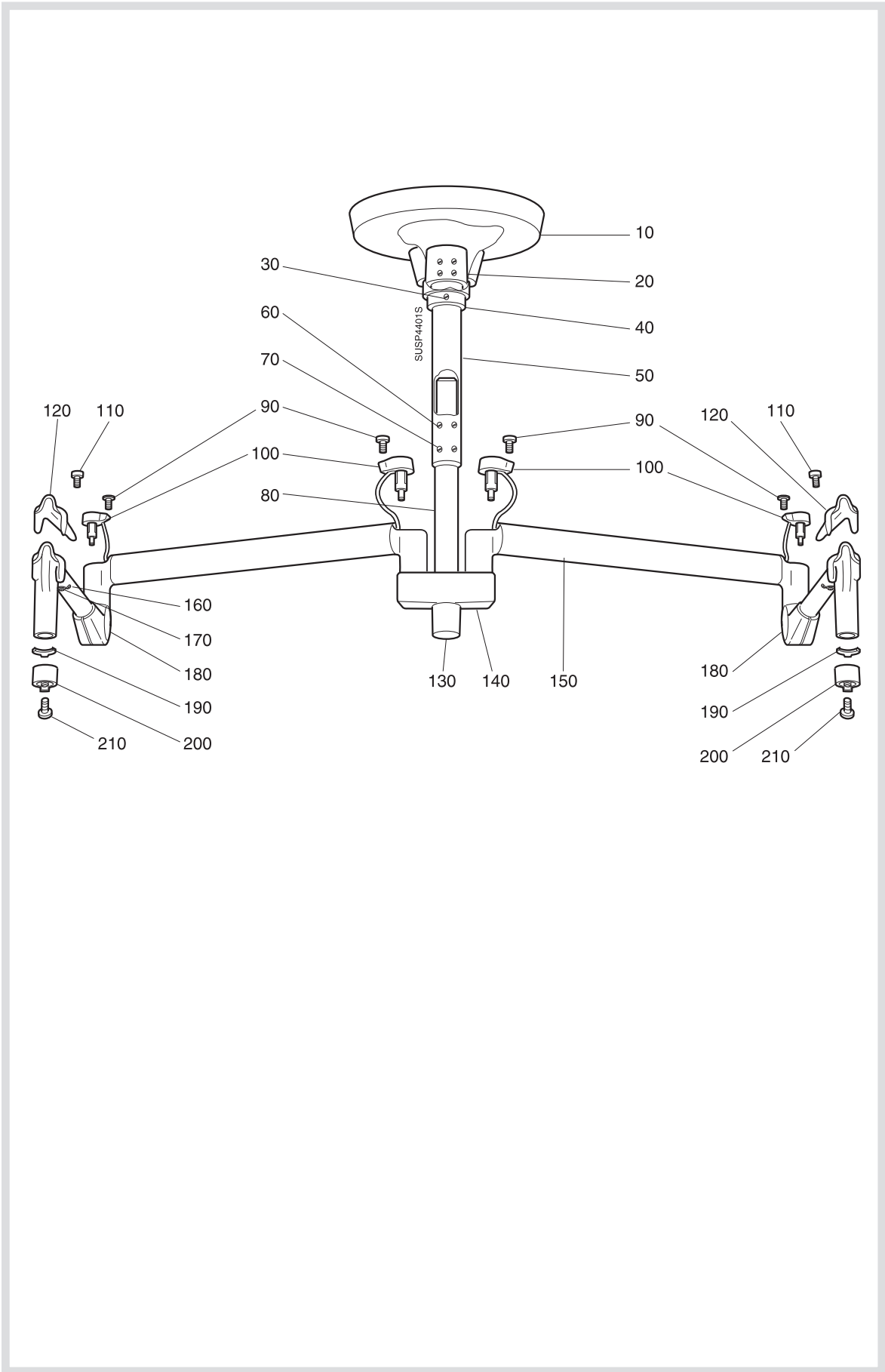
## PARTS LIST 23

## SUSPENSION FOR 4401S

DR. REF.	Reference	Description	Qty
1A	567212111	Suspension arm for 4401S, SF (see drawing 9)	
1B	567212211	Suspension arm for 4401S, DF (see drawing 9)	
10A, 80A, 130A, 140A	567219995	Spacer	
90A, 100A, 150A	567206995	Main arm	
180A,110A,120A, 210A	567214995	PRX balancing arm	
180A,110A,120A, 210A	567214995	AX balancing arm	
100A	367208555	Repair kit for rotating contact balancing arm	

DRAWING 23

SUSPENSION FOR 4401S



## PARTS LIST 24

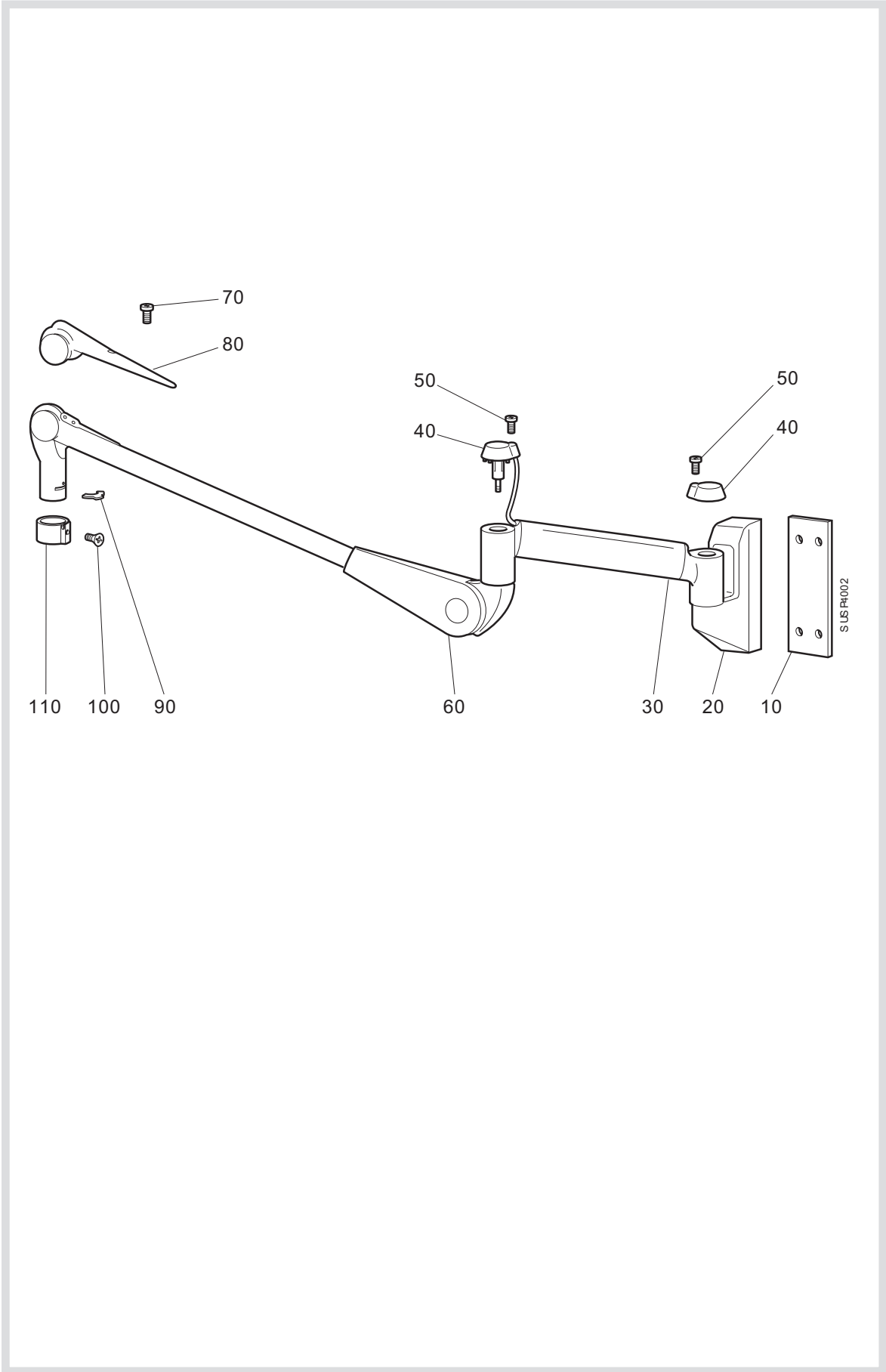
## SUSPENSION FOR 4002 SF OR DF

DR. REF.	Reference	Description	Qty
1A	567213111	Suspension arm for 4002 SF, S, (see drawing 9)	
1B	567213211	Suspension arm for 4002 DF, S, (see drawing 9)	
10A, 20A	567201995	Spacer	
30A, 40A, 50A	567202995	Main arm	
60A à 110A	567214995	PRX balancing arm	
60A à 110A	567214995	AX 10 balancing arm	
40A	67208555	Repair kit for rotating contact balancing arm	



DRAWING 24

SUSPENSION FOR 4002 SF OR DF





CHECKLIST

RETAIN THIS COPY

SERVICE PROTOCOL	
For use during Installation / Servicing	
<h1 style="margin: 0;">Prismalix</h1>	<input type="checkbox"/> Contract    Order n°..... <input type="checkbox"/> Chargeable <input type="checkbox"/> Other:.....
<input type="checkbox"/> <b>Installation</b> Delivery date: ..... Installation date: ..... Commissioning date: .....	
<input type="checkbox"/> <b>Servicing</b> Preventive / Curative                      Valid until: .....	
Hospital: .....	
Building: .....	Floor level: .....
Service: .....	Operating room: .....
Product(s) identification	
Cupola n°1	Ref. number: ..... S/N: .....
Cupola n°2	Ref. number: ..... S/N: .....
Cupola n°3	Ref. number: ..... S/N: .....
Overall assessment	
<input checked="" type="checkbox"/> Configuration fully operational  <input type="checkbox"/> Free of direct risk but deficiencies detected. May be corrected on short term.	<input type="checkbox"/> Configuration shall not be used until all deficiencies are corrected  <input type="checkbox"/> Configuration no longer safe. Taking out of service is recommended.
Remarks	
..... ..... ..... .....	
Signature	
Name: .....	Name: .....
Date: .....	Function: .....
Installer/Technician authorized by MAQUET	Customer

Measuring equipment used

IEC 62353 compatible control units

Type: **Voltmeter**

S/N: .....

Calibration valid until: .....

Type: **Luxmeter**

S/N: .....

Calibration valid until: .....

Type: **Megohmmeter**

S/N: .....

Calibration valid until: .....

Type: .....

S/N: .....

Calibration valid until: .....

Electrical safety test

The protective earth resistance is to be measured between point **0** and the point **3**

Pass

Fail

Protective earth resistance  $\leq$  300 m $\Omega$

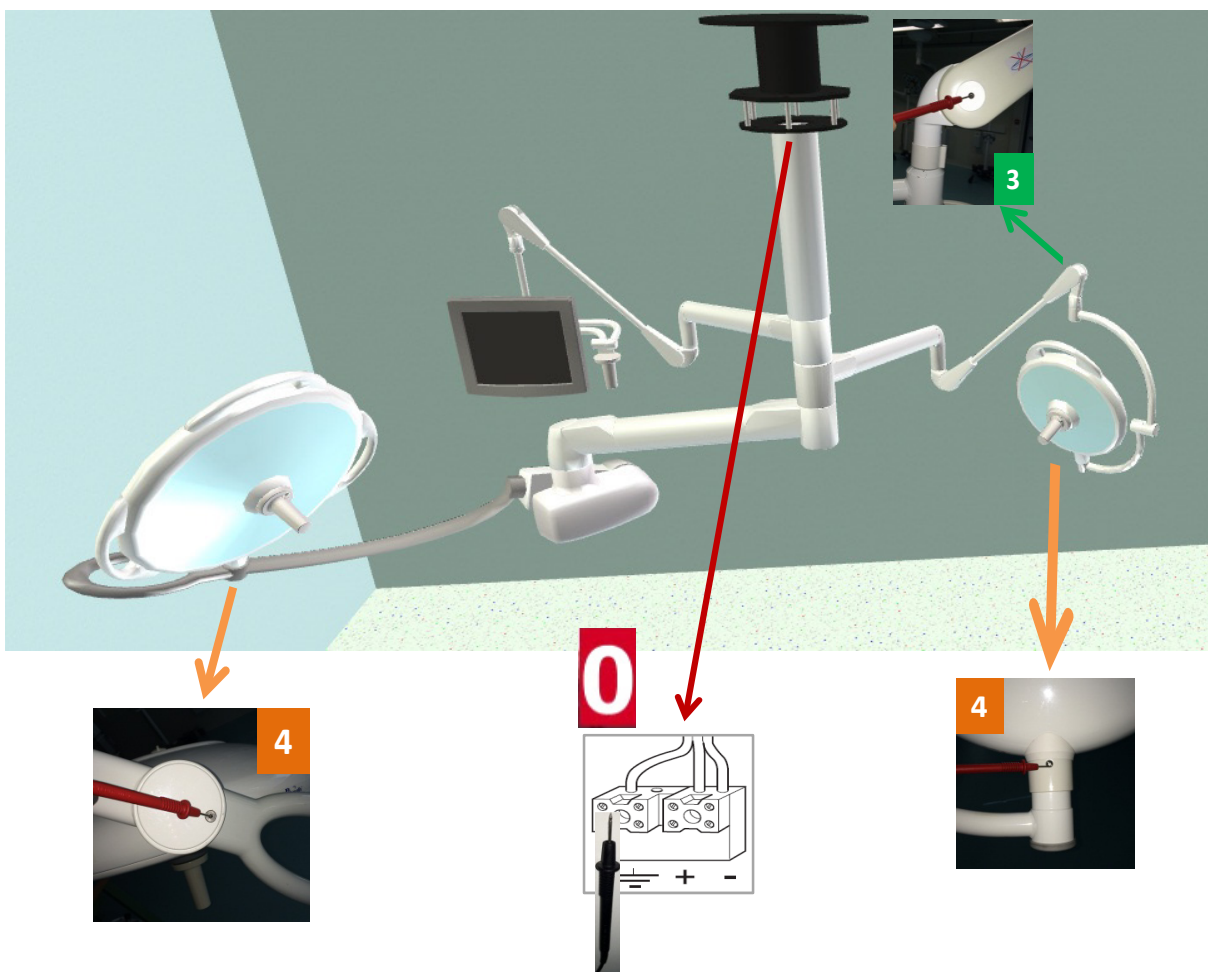
Measured : ..... m $\Omega$

The continuity test is then to be performed between point **3** and the point **4**

Pass

Fail

Continuity test



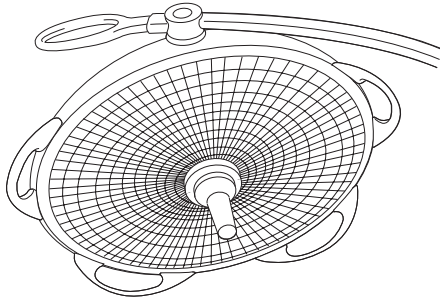
**Ensure proper calibration of your measuring equipment before EACH reading.**

Installation	
Delivery verification	
<input type="checkbox"/> Pass <input type="checkbox"/> Fail	<input type="checkbox"/> Delivery complies with Purchase Order <input type="checkbox"/> Installation manual included <input type="checkbox"/> User manual included
Visual inspection	
<input type="checkbox"/> <input type="checkbox"/>	Rotating contact and circlips
<input type="checkbox"/> <input type="checkbox"/>	General aspect and cleanliness
<input type="checkbox"/> <input type="checkbox"/>	Anchor bolts properly fitted
<input type="checkbox"/> <input type="checkbox"/>	Verticality of the suspension tube
<input type="checkbox"/> <input type="checkbox"/>	WPS is connected to the ground
Functioning	
<input type="checkbox"/> <input type="checkbox"/>	Hardness of the suspension by shaking the configuration
<input type="checkbox"/> <input type="checkbox"/>	Balance of the compensation arm
<input type="checkbox"/> <input type="checkbox"/>	Adjust the brakes
<input type="checkbox"/> <input type="checkbox"/>	Sterilizable handle engages correctly and stays in place
<input type="checkbox"/> <input type="checkbox"/>	Test the equipment is easy to handle
<input type="checkbox"/> <input type="checkbox"/>	Keypad operates correctly
Options	
<input type="checkbox"/> N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Switch over to battery mode and back to mains
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Camera operates correctly (functions and image)
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Flat screen display(s) undamaged and operates correctly.
Remarks	
..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	

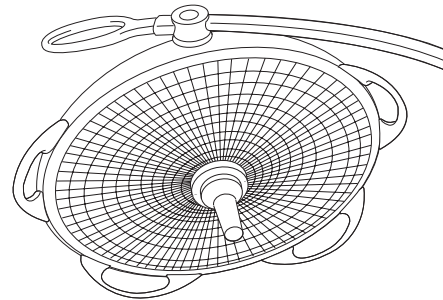
Place sub-assembly stickers here

Please remove the identification sticker from the packaging and place it in one of the below window frame.

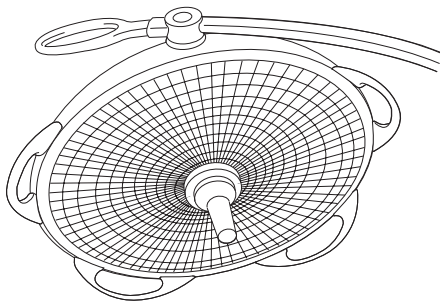
Cupola 1 with S/N



Cupola 2 with S/N



Cupola 3 with S/N



**Note:** if applicable, please staple the delivery note with this document.

**Maintenance**

- Replacement of : ..... S/N : .....
- Replacement of : ..... S/N : .....
- Replacement of : ..... S/N : .....
- Maquet batteries replaced

**Remarks**

.....

.....

.....

.....

**Illumination verification**

→ Minimum value : 40 000 lux, maximum value allowed : 160 000 lux

- Measure the bulb voltage U = .....V  
 U = 23 ± 1V (AC + DC) ou U = 20,7 ± 1V (DC)

PRX 4000 → 100 000 lux      PRX 6000 → 110 000 lux      PRX 8000 → 120 000 lux

Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux
Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux
Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux

## Settings

- Balance of the spring arm
- Vertical stop of the spring arm
- Test the equipment is easy to handle.

## Checkings

- Hardness of the suspension by shaking the configuration
- Verticality of the suspension tube
- 6 fixing screws pre-glued (refer to the appendix in the Technical Manual)
- Fixing of the plastic covers on the spring arm
- Fixing and proper movement of the shutters
- Safety segment present and positioned correctly (dismantle and lubricate if necessary)



**A safety segment wears out in time and should be replaced every 2 years. Replaced ?**

Yes

No

- N/A  Safety sleeve present and positioned with its fixing screw
- Sterilizable handle holder
- Sterilizable handle engages correctly and stays in place
- Fixing of the outer handles
- Remove the fork bumper rubber cap and check the tightening of the nylon stop.
- N/A  Keypad operates correctly
- System switches to battery mode and the ON/OFF button LED on the keypad turns orange and switches back to mains
- N/A  Opening and closing of the lamp cover
- Replace the bulb holder(s)
- Replace the bulb(s)
- N/A  Light patch (tilt function)
- Camera operates correctly (image and functions)
- WPS is connected to the ground
- All boards are properly fixed inside the WPS
- The correct setting on the regulator boards respective to the cupola
- N/A  The (non burned) condition of the terminal block inside the cupola
- Software version in START UP menu. If inferior to V5.40 → obsolete, inform the customer

On 4003 version

- Verticality and stability
- Rotation of displacement of spring arm



## Tightening

- Collar around the power supply connector at the ceiling tube
- Wires on the power supply connector at the ceiling tube
- Ceiling covers + proper positioning
- Wires on the connectors' terminal heads inside the WPS
- Wires on the battery pack
- All visible screws

On 4003 version

- Casters

## Aspect

- All seals hold correctly and are not worn
- General appearance of the underside (no scratches, no cracks)
- No corrosion anywhere
- No paint chip anywhere
- Appearance of the keypad
- Attachment of the WPS on the wall
- Appearance of the WPS cover
- Holding of the cover and the hinges of the WPS
- Cleaning the complete configuration



***We do not recommend the use of alcoholized solution***



CHECKLIST

RETURN THIS COPY  
TO YOUR MAQUET DISTRIBUTOR

SERVICE PROTOCOL	
For use during Installation / Servicing	
<h1 style="margin: 0;">Prismalix</h1>	<input type="checkbox"/> Contract    Order n°..... <input type="checkbox"/> Chargeable <input type="checkbox"/> Other:.....
<input type="checkbox"/> <b>Installation</b> Delivery date: ..... Installation date: ..... Commissioning date: .....	
<input type="checkbox"/> <b>Servicing</b> Preventive / Curative                      Valid until: .....	
Hospital:	
Building: .....	Floor level: .....
Service: .....	Operating room: .....
Product(s) identification	
Cupola n°1	Ref. number: ..... S/N: .....
Cupola n°2	Ref. number: ..... S/N: .....
Cupola n°3	Ref. number: ..... S/N: .....
Overall assessment	
<input checked="" type="checkbox"/> Configuration fully operational	<input type="checkbox"/> Configuration shall not be used until all deficiencies are corrected
<input type="checkbox"/> Free of direct risk but deficiencies detected. May be corrected on short term.	<input type="checkbox"/> Configuration no longer safe. Taking out of service is recommended.
Remarks	
..... ..... ..... .....	
Signature	
Name: .....  Date: .....	Name: .....  Function: .....
Installer/Technician authorized by MAQUET	Customer

Measuring equipment used

IEC 62353 compatible control units

Type: **Voltmeter**

S/N: .....

Calibration valid until: .....

Type: **Luxmeter**

S/N: .....

Calibration valid until: .....

Type: **Megohmmeter**

S/N: .....

Calibration valid until: .....

Type: .....

S/N: .....

Calibration valid until: .....

Electrical safety test

The protective earth resistance is to be measured between point **0** and the point **3**

Pass

Fail

Protective earth resistance  $\leq$  300 m $\Omega$

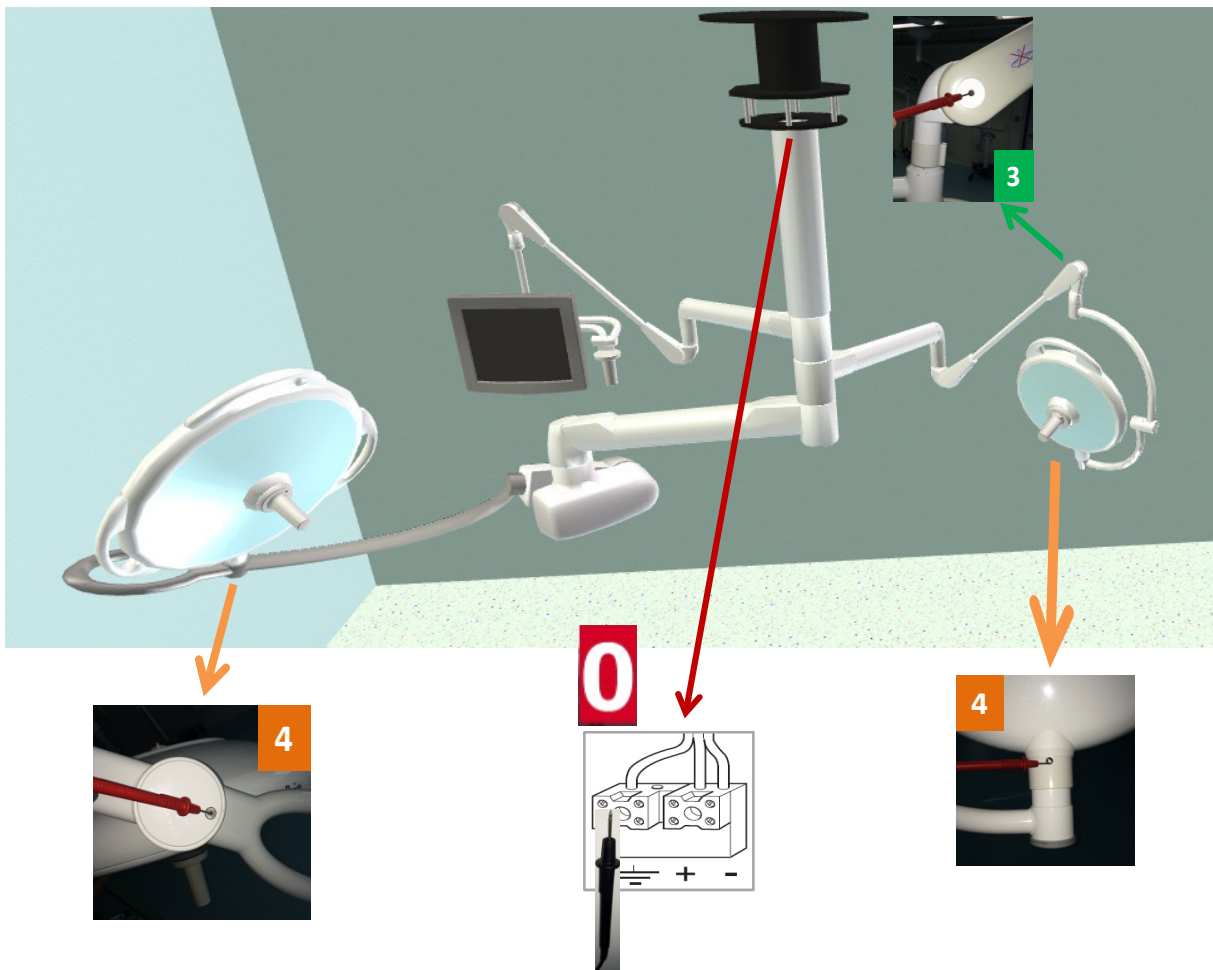
Measured : ..... m $\Omega$

The continuity test is then to be performed between point **3** and the point **4**

Pass

Fail

Continuity test



Ensure proper calibration of your measuring equipment before EACH reading.

### Installation

#### Delivery verification

Pass

Fail

- Delivery complies with Purchase Order
- Installation manual included
- User manual included

#### Visual inspection

- Rotating contact and circlips
- General aspect and cleanliness
- Anchor bolts properly fitted
- Verticality of the suspension tube
- WPS is connected to the ground

#### Functioning

- Hardness of the suspension by shaking the configuration
- Balance of the compensation arm
- Adjust the brakes
- Sterilizable handle engages correctly and stays in place
- Test the equipment is easy to handle
- Keypad operates correctly

#### Options

N/A

- Switch over to battery mode and back to mains
- Camera operates correctly (functions and image)
- Flat screen display(s) undamaged and operates correctly.

#### Remarks

.....

.....

.....

.....

.....

.....

.....

.....

.....

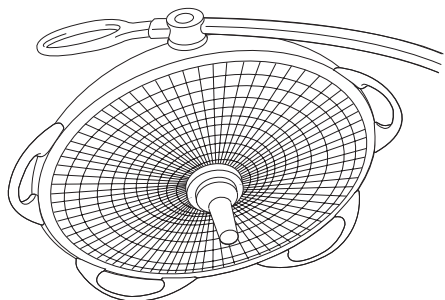
.....

.....

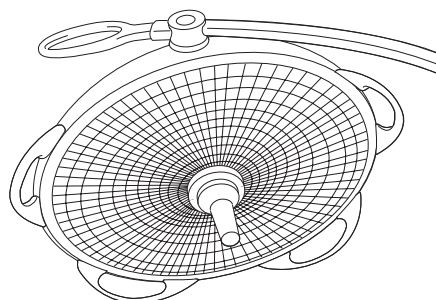
Place sub-assembly stickers here

Please remove the identification sticker from the packaging and place it in one of the below window frame.

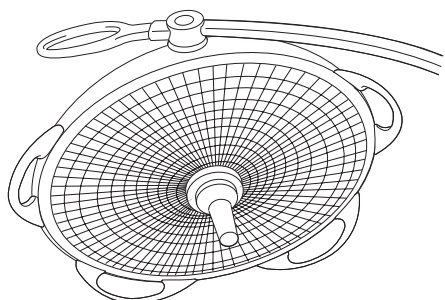
Cupola 1 with S/N



Cupola 2 with S/N



Cupola 3 with S/N



**Note:** if applicable, please staple the delivery note with this document.

Maintenance		
<input type="checkbox"/> Replacement of : .....	S/N : .....	
<input type="checkbox"/> Replacement of : .....	S/N : .....	
<input type="checkbox"/> Replacement of : .....	S/N : .....	
<input type="checkbox"/> Maquet batteries replaced		
Remarks		
<div style="border-bottom: 1px dashed black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px dashed black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px dashed black; margin-bottom: 5px;"></div> <div style="border-bottom: 1px dashed black; margin-bottom: 5px;"></div>		
Illumination verification		
→ Minimum value : 40 000 lux, maximum value allowed : 160 000 lux		
<input type="checkbox"/> Measure the bulb voltage	U = .....V	
U = 23 ± 1V (AC + DC) ou U = 20,7 ± 1V (DC)		
PRX 4000 → 100 000 lux	PRX 6000 → 110 000 lux	PRX 8000 → 120 000 lux
Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux
Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux
Cupola PRX : .....	Cupola S/N : .....	Measured : ..... lux

Settings

- Balance of the spring arm
- Vertical stop of the spring arm
- Test the equipment is easy to handle.

Checkings

- Hardness of the suspension by shaking the configuration
- Verticality of the suspension tube
- 6 fixing screws pre-glued (refer to the appendix in the Technical Manual)
- Fixing of the plastic covers on the spring arm
- Fixing and proper movement of the shutters
- Safety segment present and positioned correctly (dismantle and lubricate if necessary)



**A safety segment wears out in time and should be replaced every 2 years. Replaced ?**



Yes



No

N/A

- Safety sleeve present and positioned with its fixing screw

N/A

- Sterilizable handle holder
- Sterilizable handle engages correctly and stays in place
- Fixing of the outer handles
- Remove the fork bumper rubber cap and check the tightening of the nylon stop.

N/A

- Keypad operates correctly

N/A

- System switches to battery mode and the ON/OFF button LED on the keypad turns orange and switches back to mains

N/A

- Opening and closing of the lamp cover

N/A

- Replace the bulb holder(s)
- Replace the bulb(s)

N/A

- Light patch (tilt function)

N/A

- Camera operates correctly (image and functions)

- WPS is connected to the ground

- All boards are properly fixed inside the WPS

- The correct setting on the regulator boards respective to the cupola

N/A

- The (non burned) condition of the terminal block inside the cupola

N/A

- Software version in START UP menu. If inferior to V5.40 → obsolete, inform the customer

On 4003 version

- Verticality and stability
- Rotation of displacement of spring arm



## Tightening

- Collar around the power supply connector at the ceiling tube
- Wires on the power supply connector at the ceiling tube
- Ceiling covers + proper positioning
- N/A  Wires on the connectors' terminal heads inside the WPS
- Wires on the battery pack
- All visible screws

## On 4003 version

- Casters

## Aspect

- All seals hold correctly and are not worn
- General appearance of the underside (no scratches, no cracks)
- No corrosion anywhere
- No paint chip anywhere
- N/A  Appearance of the keypad
- Attachment of the WPS on the wall
- Appearance of the WPS cover
- Holding of the cover and the hinges of the WPS
- Cleaning the complete configuration

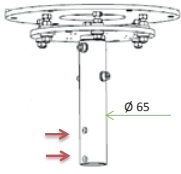
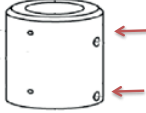
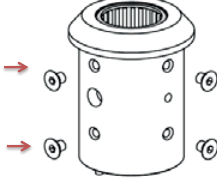
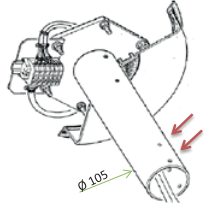
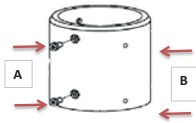
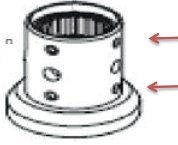
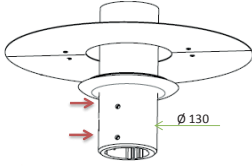

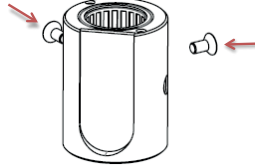
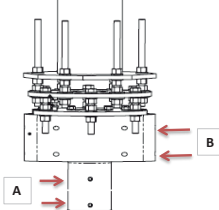
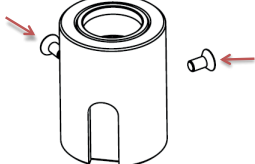


***We do not recommend the use of alcoholized solution***

# SAFETY PARTS TO BE REPLACED EVERY 6 YEARS

## Safety screws:

Maquet recommends replacing the safety screws every six years as a precaution.

TUBES	ADAPTERS	BUSHINGS
<p><b>TUB 60</b></p> <p>SUSP. BLUE 30-80 SUSP. LCA40-50-100 SUSP. VOLISTA ACCESS</p>  <p>Ø 65</p> <p>P/N : ARD36883555 Kit of four pre-glued M6×16 screws</p> <p>⚠ Fastening torque: 17 Nm</p>	<p>ADPT 120 TO 60 ARD515088999</p>  <p>P/N : ARD315027555 Kit of six pre-glued M6×20 low-profile socket head cap screws</p> <p>⚠ Fastening torque: 14 Nm</p>	<p>SA suspension arm cap</p>  <p>P/N : ARD368325556 Kit of four M6×8 socket head countersunk screws</p> <p>⚠ Fastening torque: 7 Nm</p>
<p><b>ECL</b></p> <p>SUSP. PRC SUSP. PRX (Avant Sept. 2002)</p>  <p>Ø 105</p> <p>P/N : ARD367014555 Kit of six pre-glued M6×12 socket head cap screws</p> <p>⚠ Fastening torque: 14 Nm</p>	<p>Adapter kit ADAPT KIT HLX2 ARD567914999</p>  <p>A = P/N : ARD315027555 Kit of six pre-glued M6×20 low-profile socket head cap screws</p> <p>B = P/N : ARD367014555 Kit of six pre-glued M6×12 socket head cap screws</p> <p>⚠ Fastening torque: 14 Nm</p> <p>Not sold in the US</p>	<p>SATELITE-OSP suspension arm cap</p>  <p>P/N : ARD315028555 SAT-Kit of four screws for OSP end cap</p> <p>⚠ Fastening torque: 7 Nm</p>
<p><b>TUB 130</b> SA suspension PRX suspension (after September 2002)</p>  <p>Ø 130</p> <p>P/N : ARD367270555 Kit of six pre-glued M6×20 (class 10.9) socket head cap screws</p> <p>⚠ Fastening torque: 14 Nm</p>	<p>SA suspension adapter on HANAU CITY tube ARD397807555</p> <p>P/N : ARD397808555 Kit of 12 pre-glued socket head cap screws and socket head countersunk screws</p>  <p>⚠ A : Fastening torque: 14 Nm ⚠ B : Fastening torque: 17 Nm</p> <p>Not sold in the US</p>	<p>ACCESS suspension arm end cap</p>  <p>P/N : ARD368840555 Kit of four pre-glued M6×12 socket head countersunk screws</p> <p>⚠ Fastening torque: 17 Nm</p>
<p><b>SATELITE</b> Shaft 1: SA suspension Shaft 2: PRX suspension (after September 2002) Shaft 2/3: ARM SAT</p>  <p>A = P/N : ARD315027555 Kit of six pre-glued M6×20 (class 10.9) low-profile socket head cap screws</p> <p>B = P/N : ARD315026555 Kit of six pre-glued M6×25 socket head cap screws</p> <p>⚠ Fastening torque: 14 Nm</p>	<p>LCA DF suspension arm end cap</p>  <p>P/N : ARD368840555 Kit of four pre-glued M6×12 socket head countersunk screws</p> <p>⚠ Fastening torque: 17 Nm</p>	



# MAQUET

GETINGE GROUP

MAQUET SAS  
Parc de Limère  
Avenue de la Pomme de Pin  
CS 10008 ARDON  
45074 ORLÉANS CEDEX 2, France  
Telephone: +33 (0) 2 38 25 88 88  
Fax: +33 (0) 2 38 25 88 00

**For your local contact:**  
Please visit our website  
[www.maquet.com](http://www.maquet.com)

The Getinge Group is a leading global provider of equipment and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. Equipment, service and technologies are supplied under the brands ArjoHuntleigh for patient handling and hygiene, disinfection, DVT prevention, medical beds, therapeutic surfaces and diagnostics, Getinge for infection control and prevention within Healthcare and Life Science and Maquet for Surgical Workplaces, Cardiovascular and Critical Care.

MAQUET® is a registered trademark of MAQUET GmbH & Co. KG • The Maquet specifications provided herein are for guidance only. Maquet reserves the right to change them without notice. • Technical manual • Reference: 0113203 EN Ed 30 •