

**Technical Manual**

# ***Sprint***

5409257 | Rev. 01

**2021**



**/// Olsen**

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## WELCOME TO SPRINT TECHNICAL MANUAL

Dear technician:

> The main objective of this manual is to facilitate communication between technicians and the factory with regard to the correct identification of parts and components of dental sets.

> The main parts and their components are presented with exploded drawings, showing the smaller parts in detail.

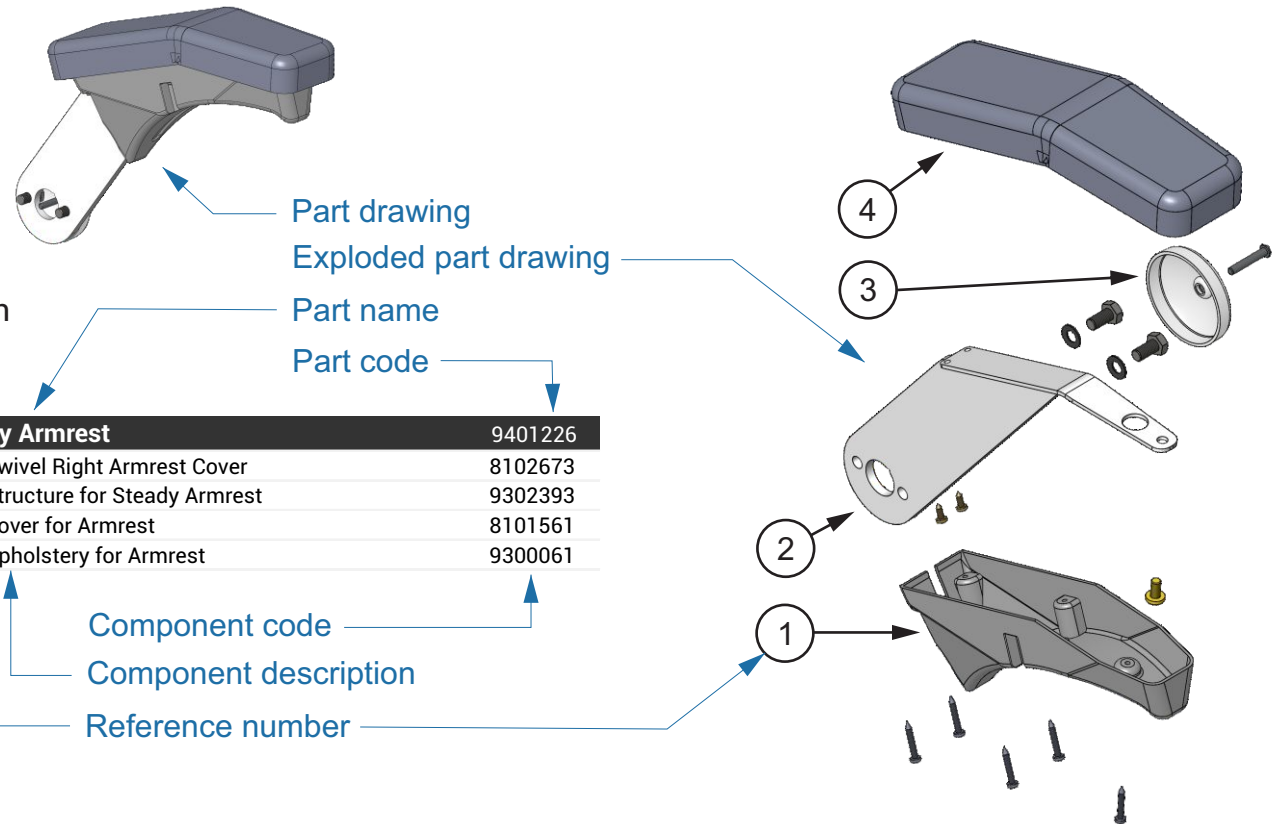
> For correct use of this manual, observe the presentation pattern of the parts and components described in the example below.

> Additional supporting documents can be found in the download section of the website.


The main title bar has links to facilitate navigation between pages. Touch or click on the house icon to return to the table of contents and over the title to return to the main page of the section.




Return to the main page of the section  
Return to the table of contents

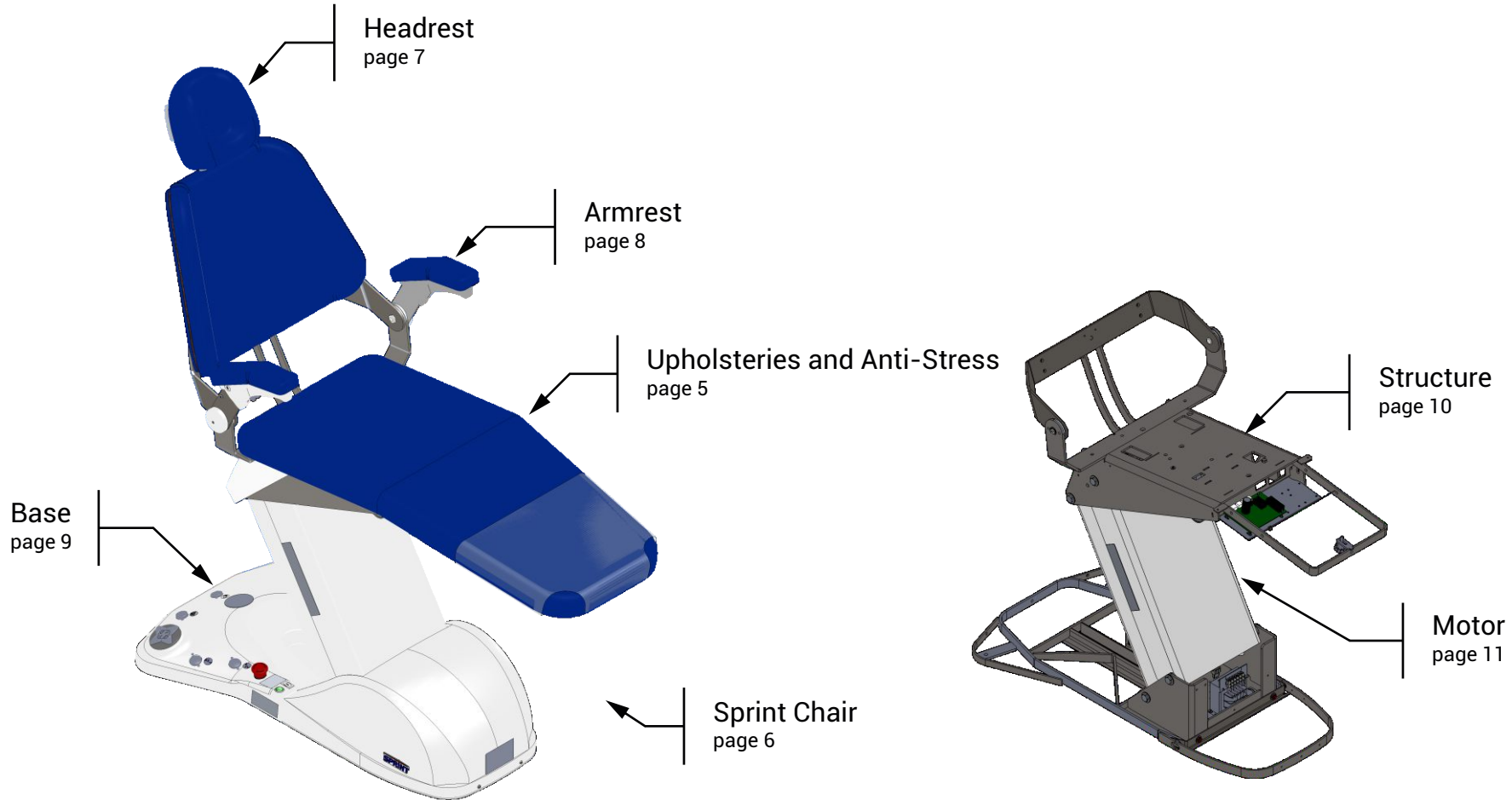


Indicative symbols

 - Optional Item

 - Note

# INTRODUCTION TO THE PARTS PRESENTED IN THIS SECTION





SOFT LAMINATE

ANTI-STRESS

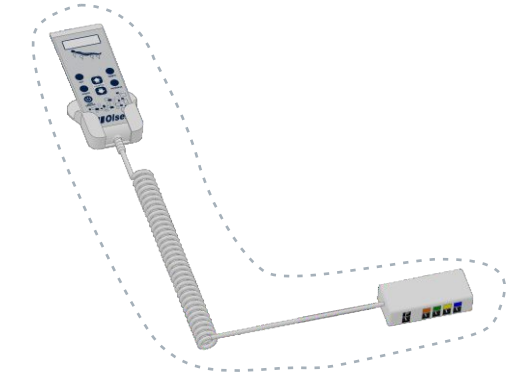
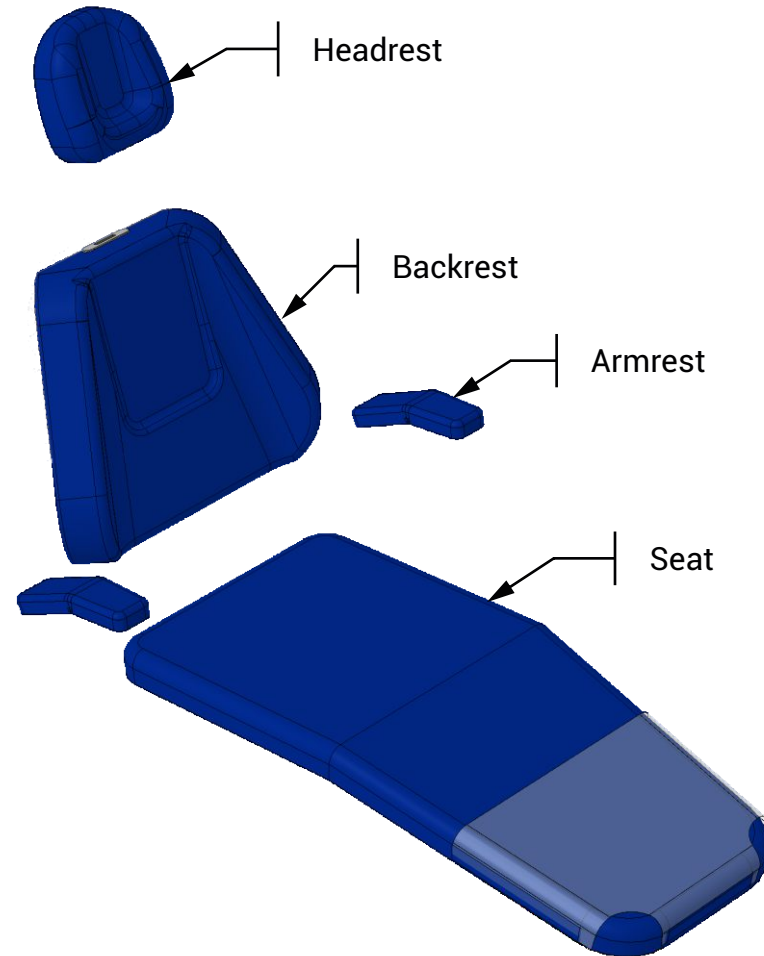
Command for Anti-Stress System

2200792

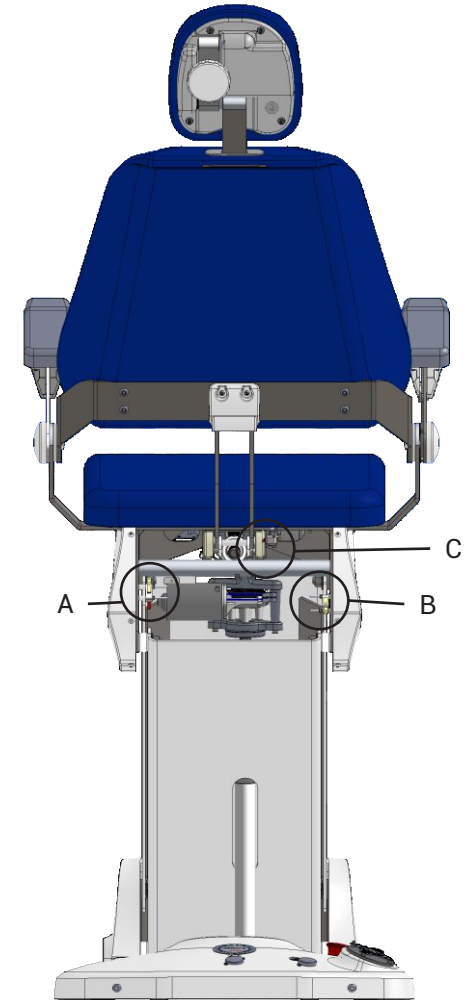
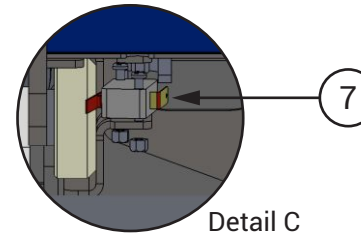
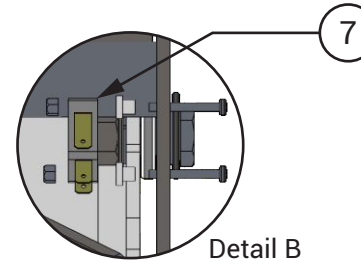
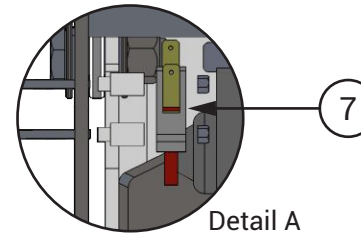
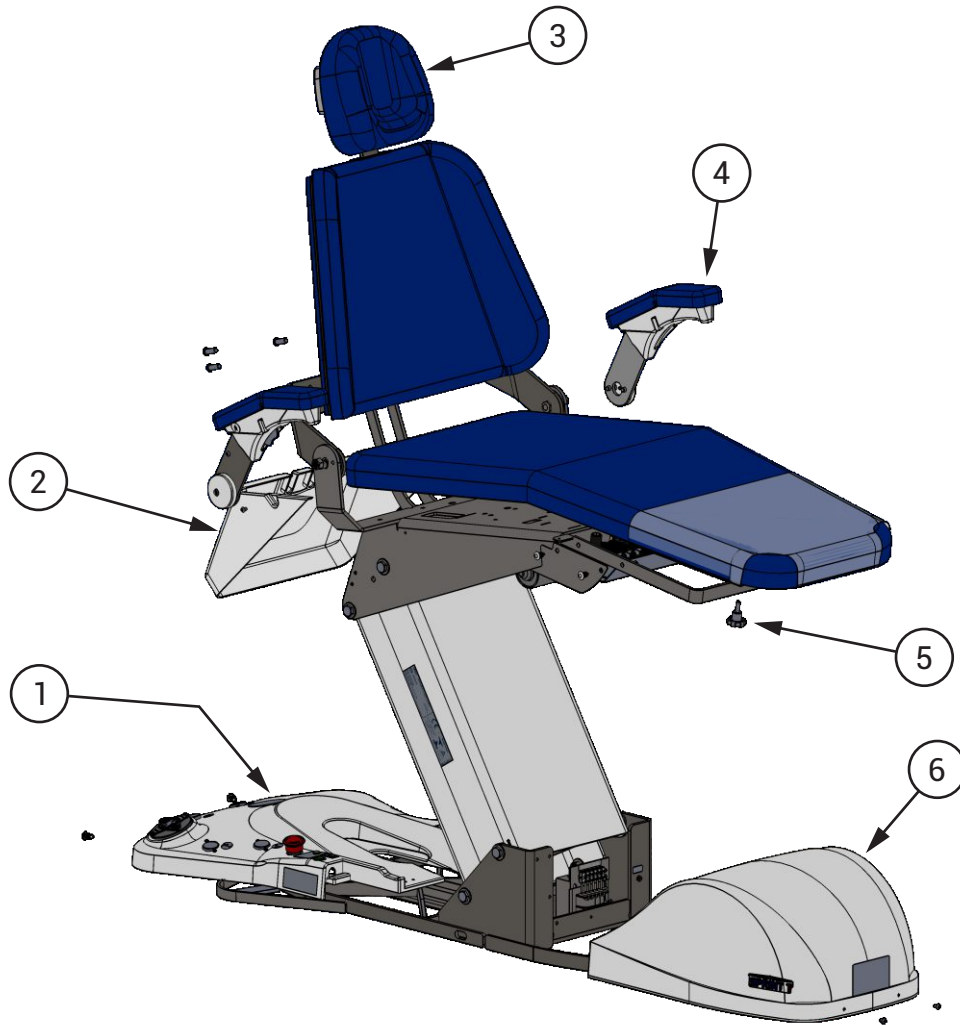
Leather Upholstery Colors		
Description	Ref	Code
Leather W Wine	CRVINHO	4100832
Leather W Black	CRPRETO	4100832
Leather W SW4 Brown	CRMARRO	4100832
Leather W Hilux Gray	CRCINZA	4100832
Ivory Beige Leather	CRBEGE	4100832
Royal Blue Leather	CRAZULR	4100832

PVC Upholstery Colors		
Description	Ref	Code
White 3D	BRAN 3D	4100699
Gray 3D	CINZ 3D	4100704
Black 3D	PRET 3D	4100708
Cappuccino 3D	CAPC 3D	4100706
Pearl 3D	PERL 3D	4100705
Wine 3D	VINHO 3	4100795
Royal Blue 3D	AZUL 3D	4100794
Royal blue	AZUL MH	4100715
Blue Fact	AZUL FC	4100713
Gray Fact	CINZ FC	4100710
Citrus Green	V 11DVC	4100756
Emerald	ESMERAL	4100711
Champagne	CHAMPAG	4100709
Sepia	SEPIA	4100776
Coffee	CAFE	4100771
Red	VERMELH	4100700
Wine	VINHO	4100701
Light green	VER 5DV	4100755
Pink 3D Mini Bling	ROSA 3D	4100838

Upholstery	PVC	Leather	Anti-Stress + PVC	Anti-Stress + Leather
Multiarticulated Headrest	4100824	9401230	-	-
Armrest	9300061	9401470	-	-
Seat	9400863	9401413	9303052	9401478
Backrest	9500698	9500820	9500832	9500837

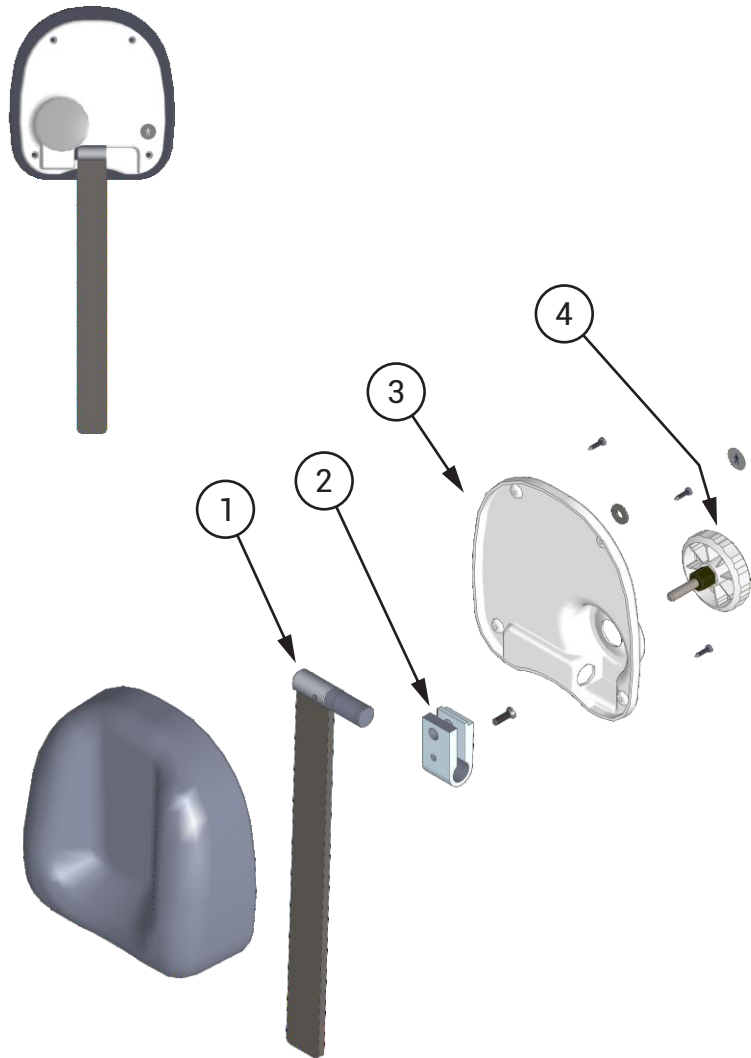


SPRINT CHAIR



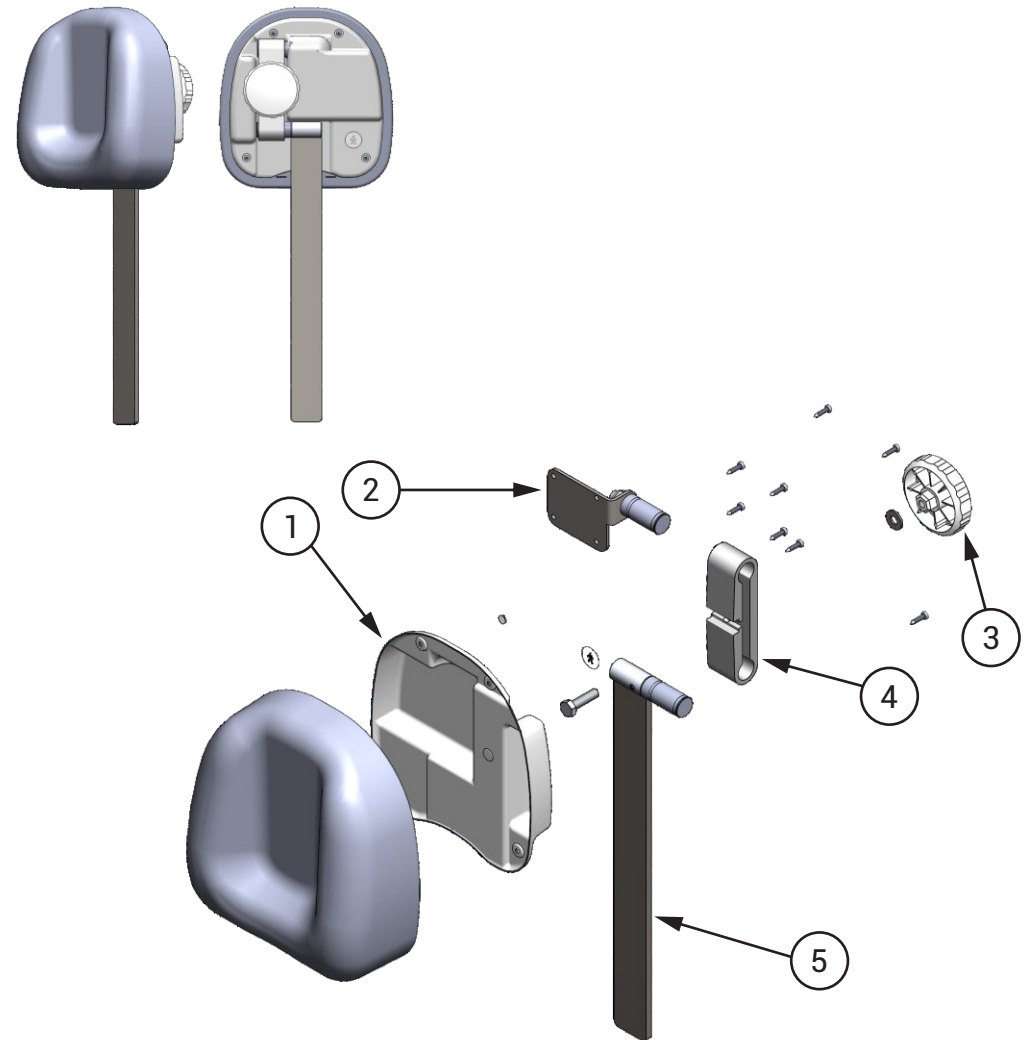
Chair		
1	SPS 20 Base Cover	9401464
2	Seat Cover Siena 2016	9302191
3	Multiarticulate Head Rest	970020003
4	Right-handed Armrest Set Swivel + Steady	970040015
5	Handle MTM 3522 M6 x 20 Gray	9301031
6	Pre-Assembly Bubble Cover SPS 19	9401438
7	Gray Micro Switch with Pick CX-FL8-40	999500089

## ARTICULATED HEADREST



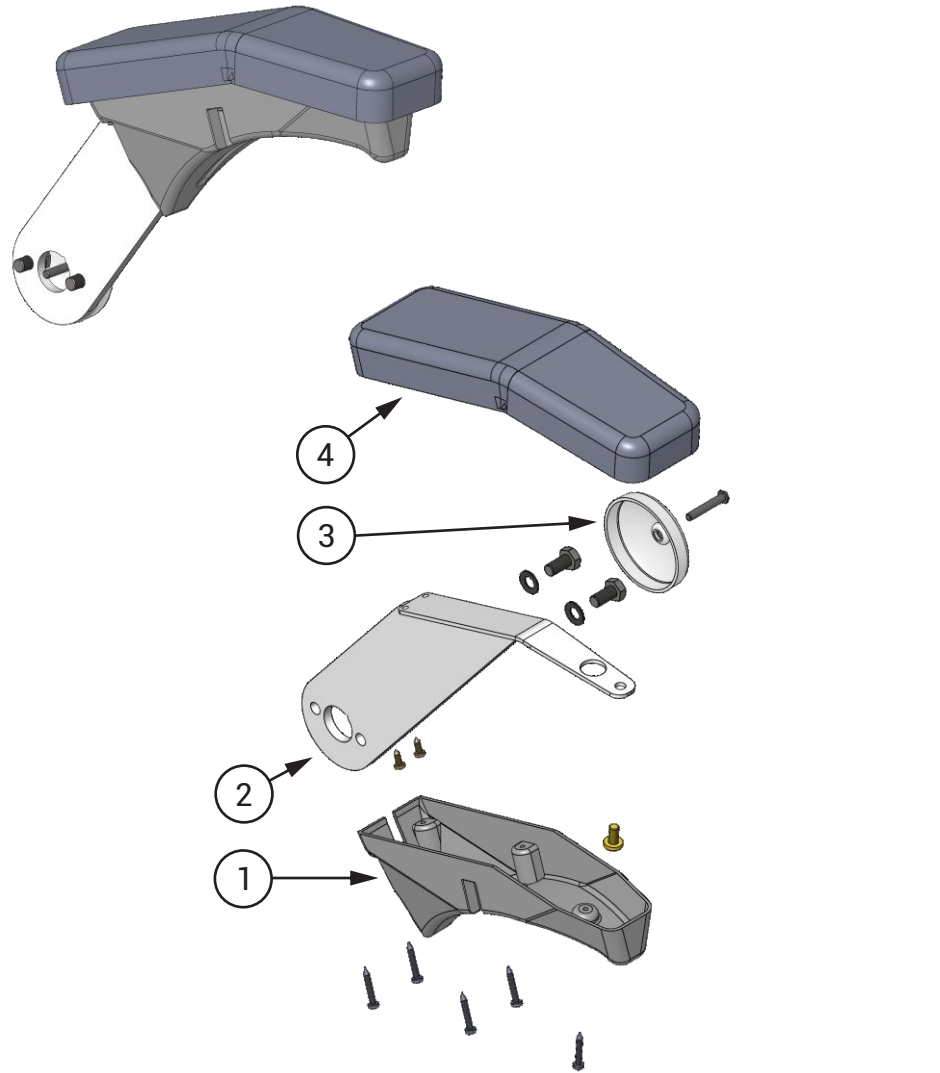
Articulated Headrest		970020002
1	Headrest Lever	9401402
2	Headrest Holder	8200755
3	Articulated Headrest Cover	8101633
4	Articulated Headrest Handle	9301070

## MULTIARTICULATED HEADREST



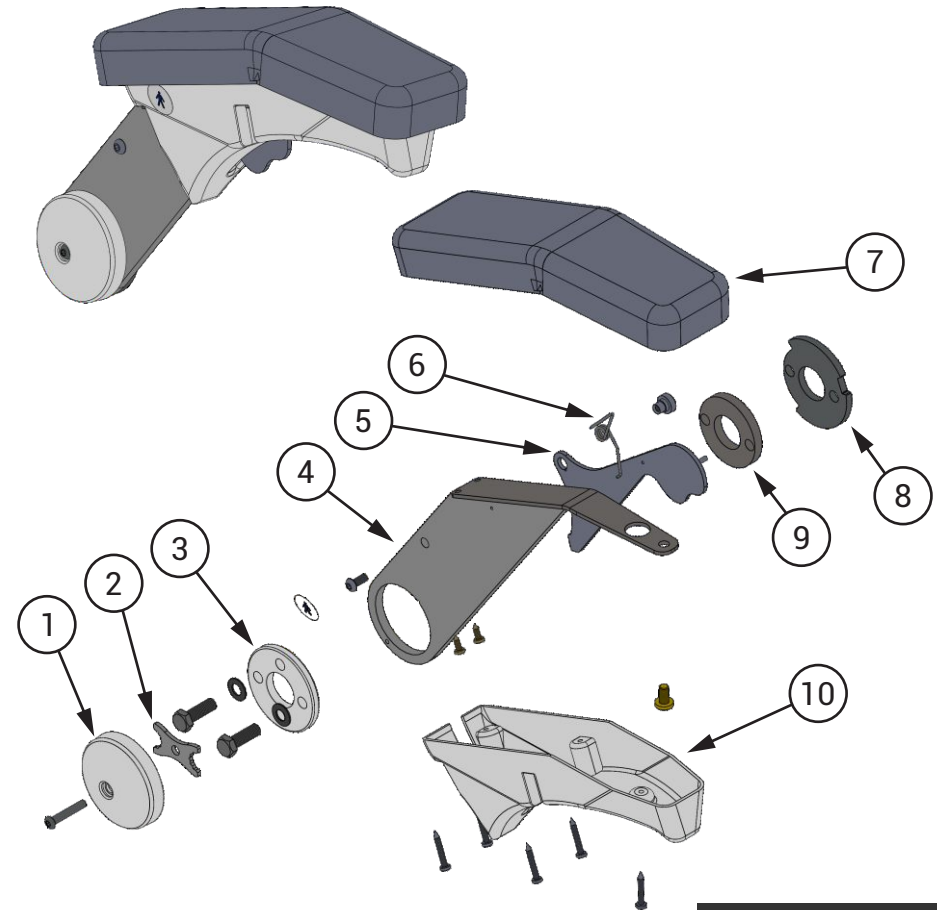
Multiarticulated Headrest		970020003
1	Multiarticulated Headrest Cover	8101631
2	Headrest Support	9302815
3	Headrest Handle Screw	9300925
4	Headrest Holder	8200512
5	Headrest Lever	9401402

### STEADY ARMREST



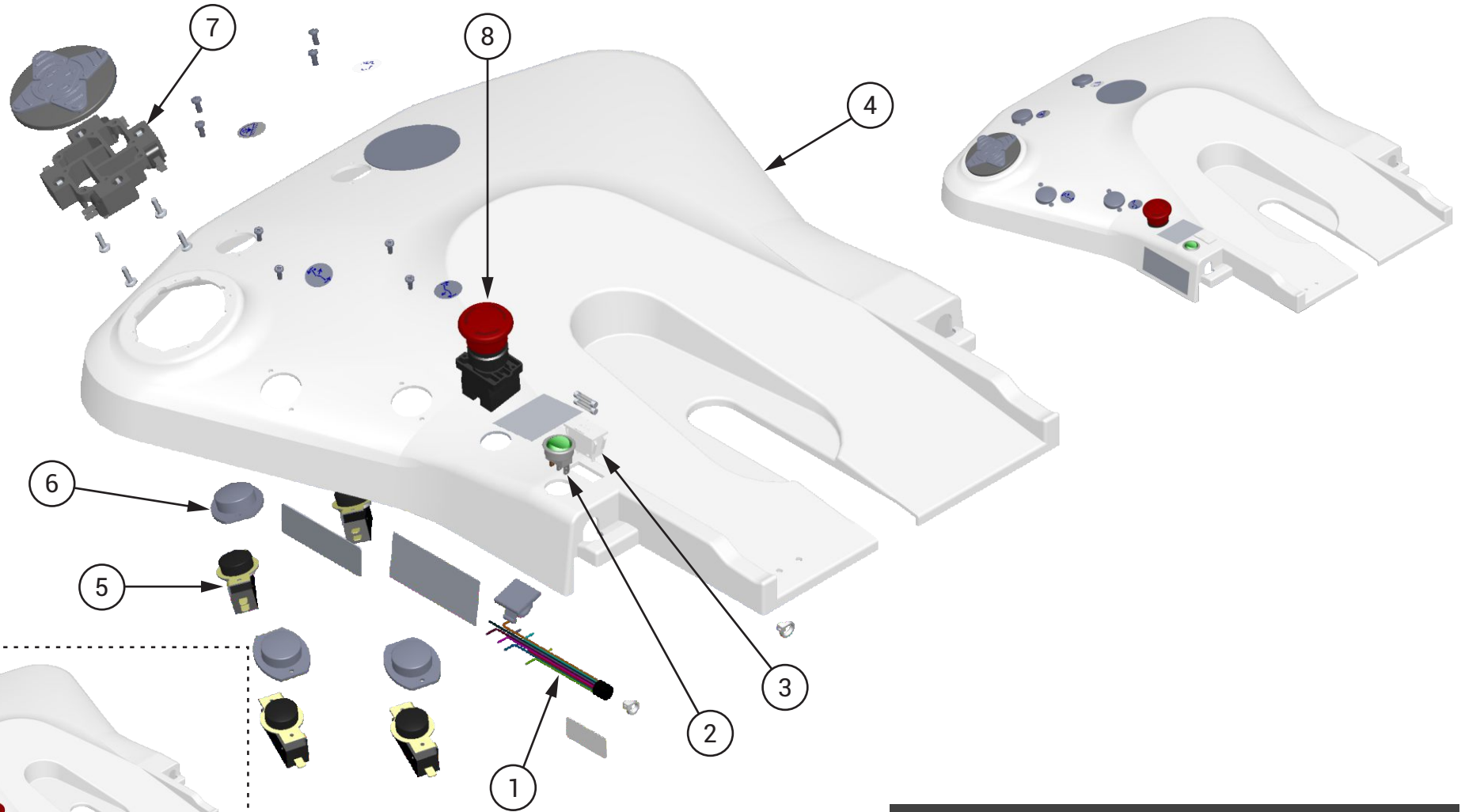
	Right-handed	Left-handed
<b>Steady Armrest</b>	9401226	9401244
1 Steady Right Armrest Cover	8102673	8101241
2 Steady Armrest Structure	9302393	
3 Cover for Armrest	8101561	
4 Upholstery for Armrest	9300061	

### SWIVEL ARMREST



	Right-handed	Left-handed
<b>Swivel Armrest</b>	9401264	9401362
1 Cover for Armrest	8101561	
2 Swivel Armrest Screw Lock	8002699	
3 Swivel Armrest Fixed Flange	8102342	
4 Swivel Armrest Structure	9302394	
5 Long Arm Trigger	8003197	
6 Trigger Spring	5200069	5201724
7 Upholstery for Armrest	9300061	
8 Swivel Armrest Flange	8002930	
9 Inner Armrest Flange	8002838	
10 Swivel Right Armrest Cover	8102672	8101147

BASE COVER

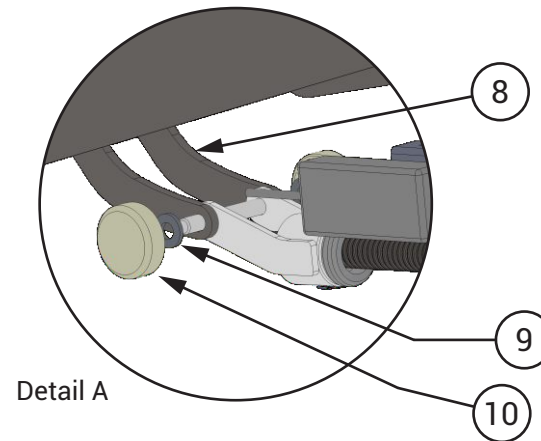
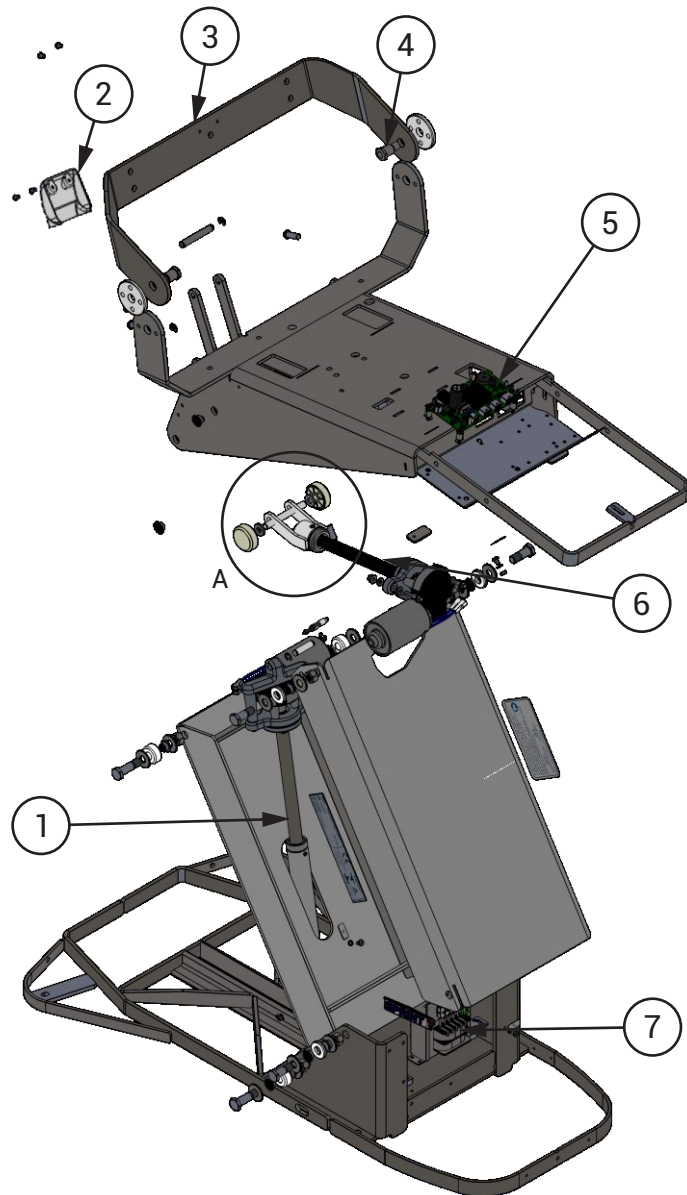


⚠️ Cover used when equipped with the optional Remote Foot Pedal

Base Cover Without Joystick SPS 20 9401465

Base Cover with Joystick SPS 20		9401464
1	SPS Electric Cable with Bowl and Cup Holder 20	9303021
2	Round Switch with Lamp 16123 M9BT10DE2S	2200714
3	Rectangular Fuse Holder - White MBTBW1	2200911
4	Base Cover SPS 19	8102771
5	Microswitch MG-2608 IR / E3G 20A	2200186
6	Button Cover	8101533
7	Electric Drive Pedal	9302557
8	Emergency Switch	2200396

CHAIR STRUCTURE



Chair Structure		
1	Chair Lift Motor SPSL PPG 19	9401281
2	Cover for Upper Joint Logic/IN	8102436
3	Upper Backrest Joint Siena/Sprint 2016	9302189
4	Backrest Pivot Axle Siena	8002362
5	SPS Dental CPU Board with Integrated LED Drive (without Touch)	2200909
6	Backrest Tilt Motor SPSLI 19	9401188
7	SMC Transformer 124,2VA 0/118V/127V/220V/230V 0,6KV 50/60HZ	2200914
8	Backrest Movement Rod 17	8002893
9	Backrest Motor Spacer	8102406
10	Pulley	8100051



### SEAT SPINDLE MOTOR



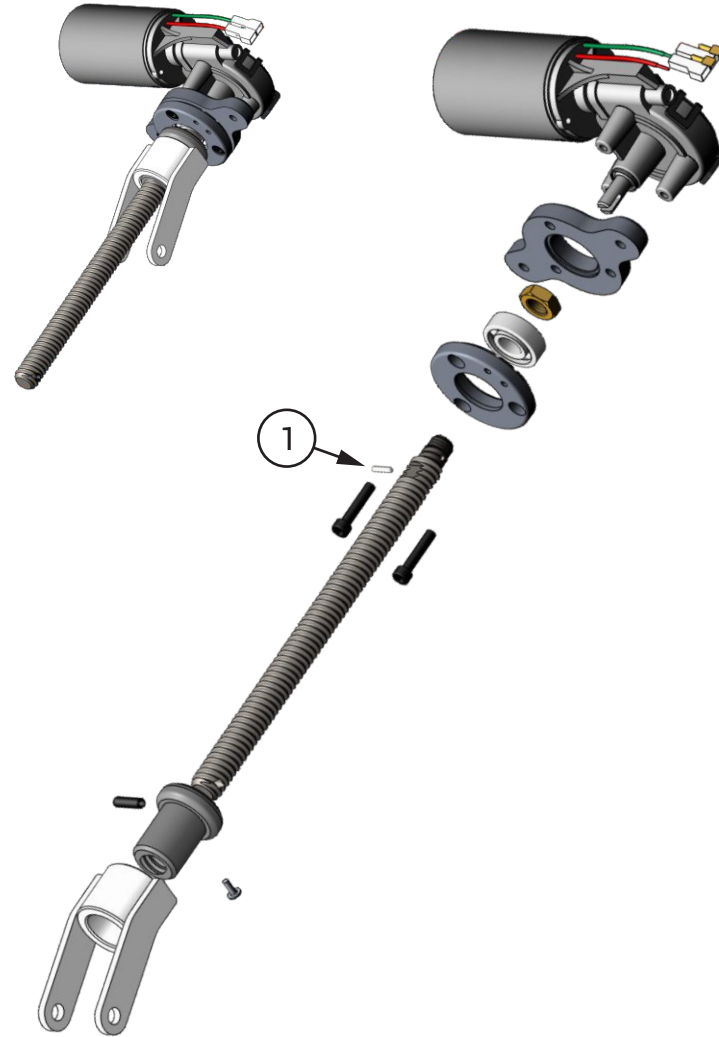
Seat Spindle Motor

9401281

1 DIN Pin 7

5201408

### BACKREST SPINDLE MOTOR



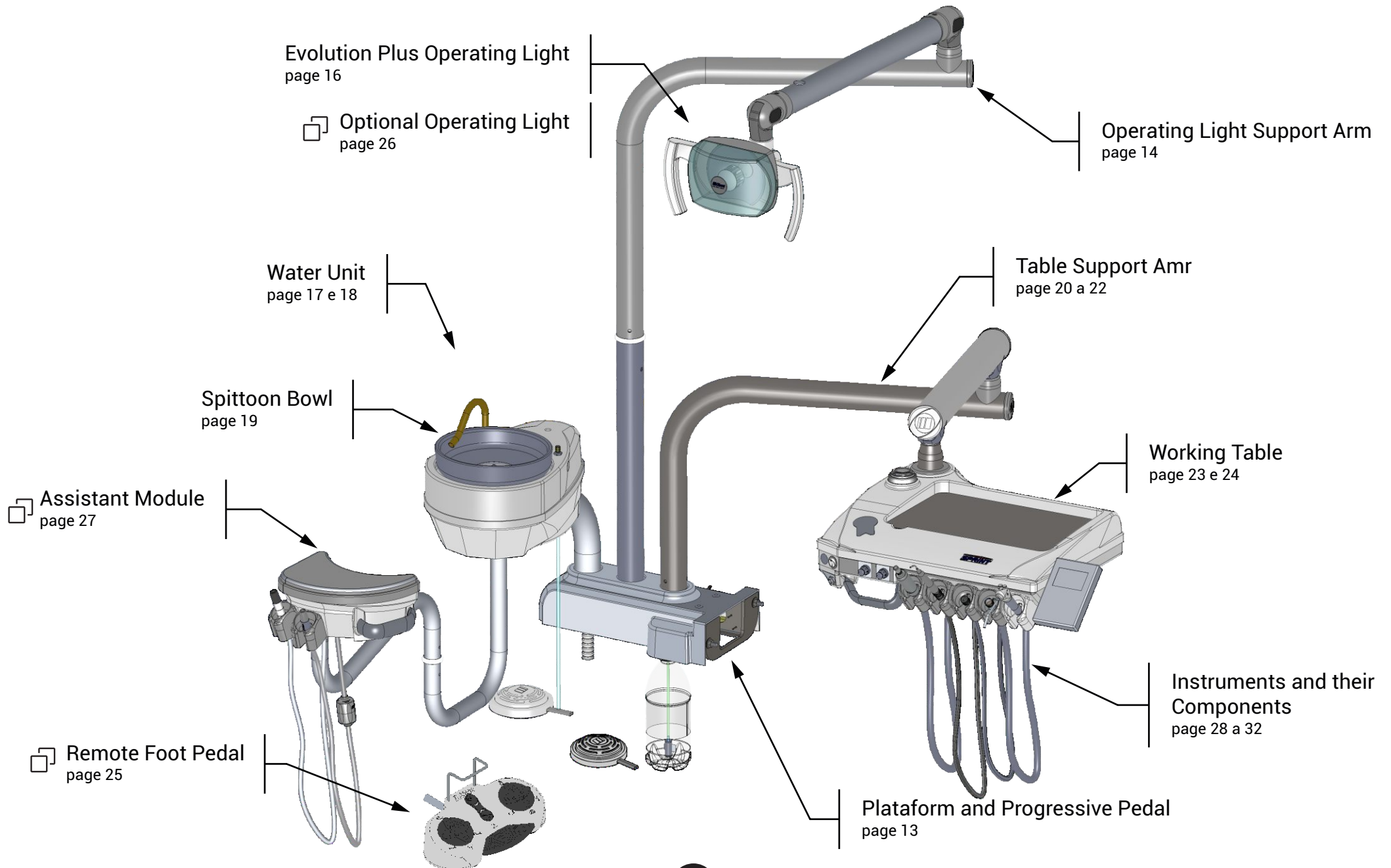
Backrest Spindle Motor

9401188

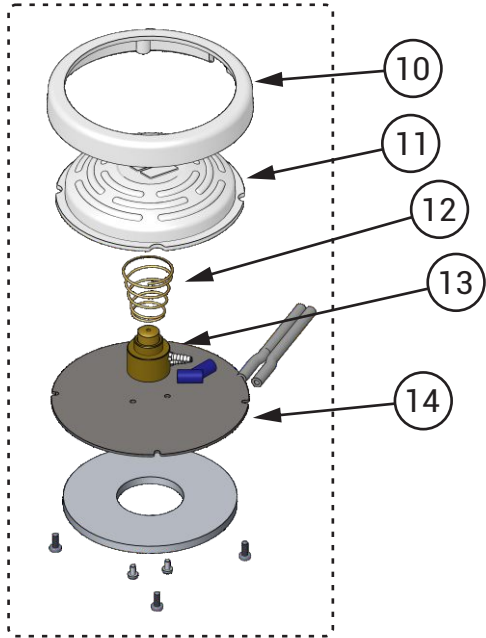
1 DIN Pin 7

5201408

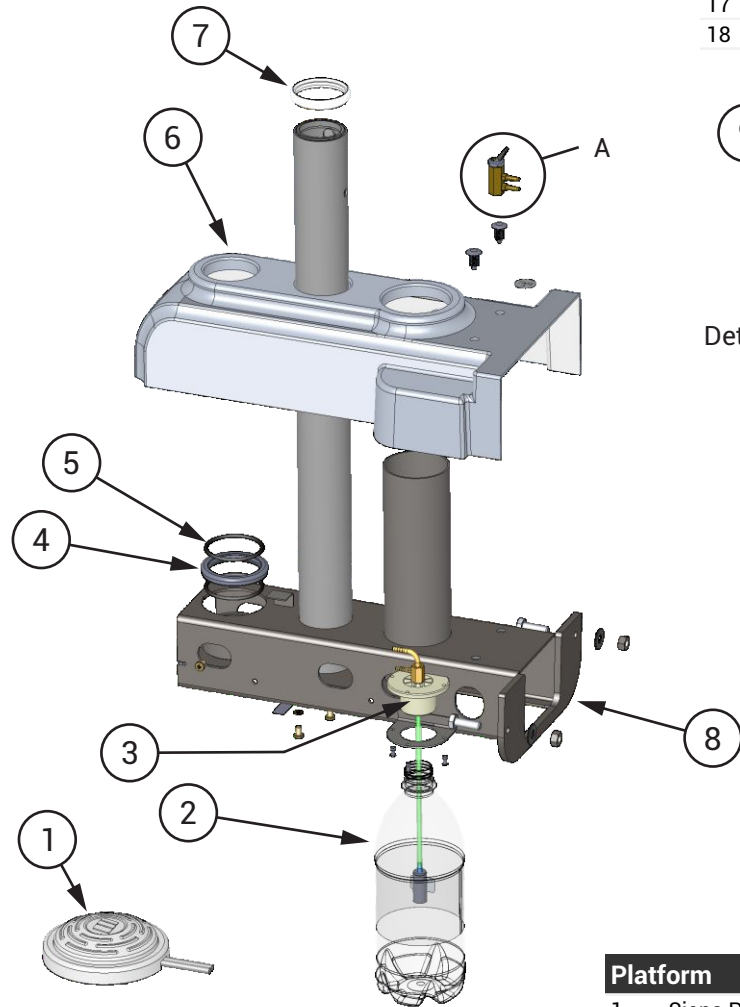
# INTRODUCTION TO THE PARTS PRESENTED IN THIS SECTION



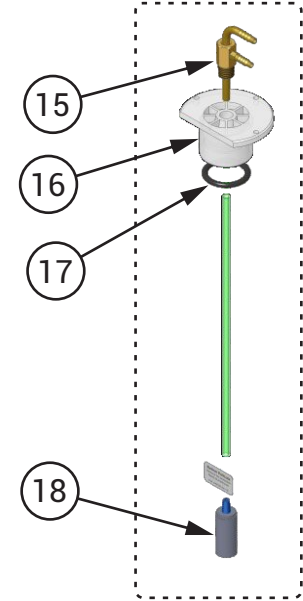
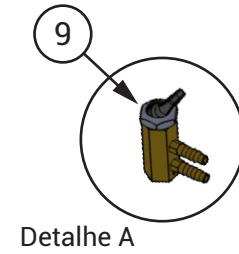
PLATFORM



Siena Progressive Pedal		9500619
10	Injected Pedal Rim	8101763
11	Injected Pedal Trigger Button	8101764
12	Progressive Pedal Conical Spring	5201710
13	Olsen Progressive Actuation Valve	9401021
14	Pedal Base Cover	8002180

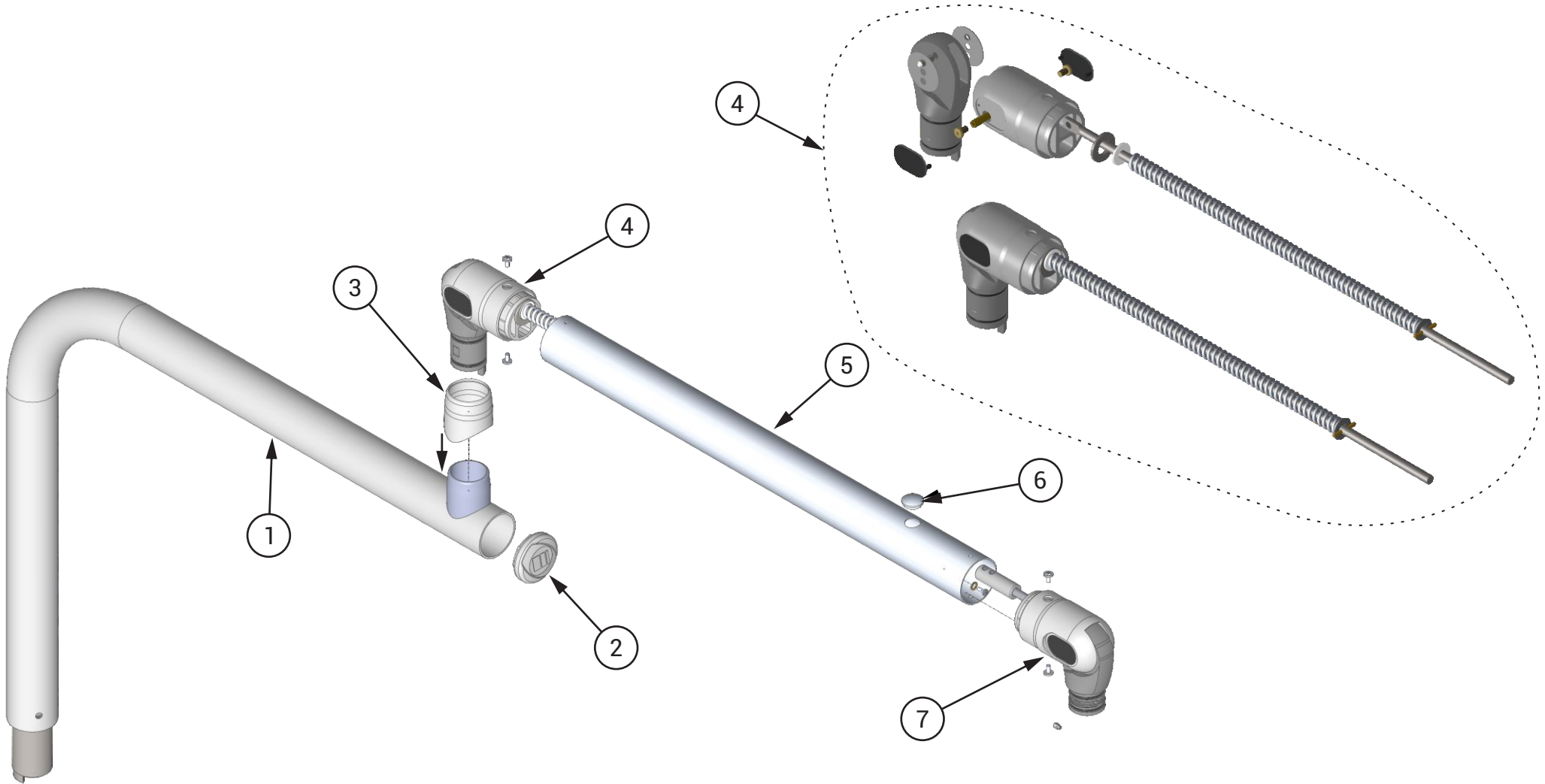


Siena / Sprint Tank Filter Kit		9401202
15	Tank Cover Connection 1.4 Kart	9300285
16	Tank Cap w / Cut	8101138
17	O'ring ref. 2213	3000110
18	Tank Water Filter	3100162



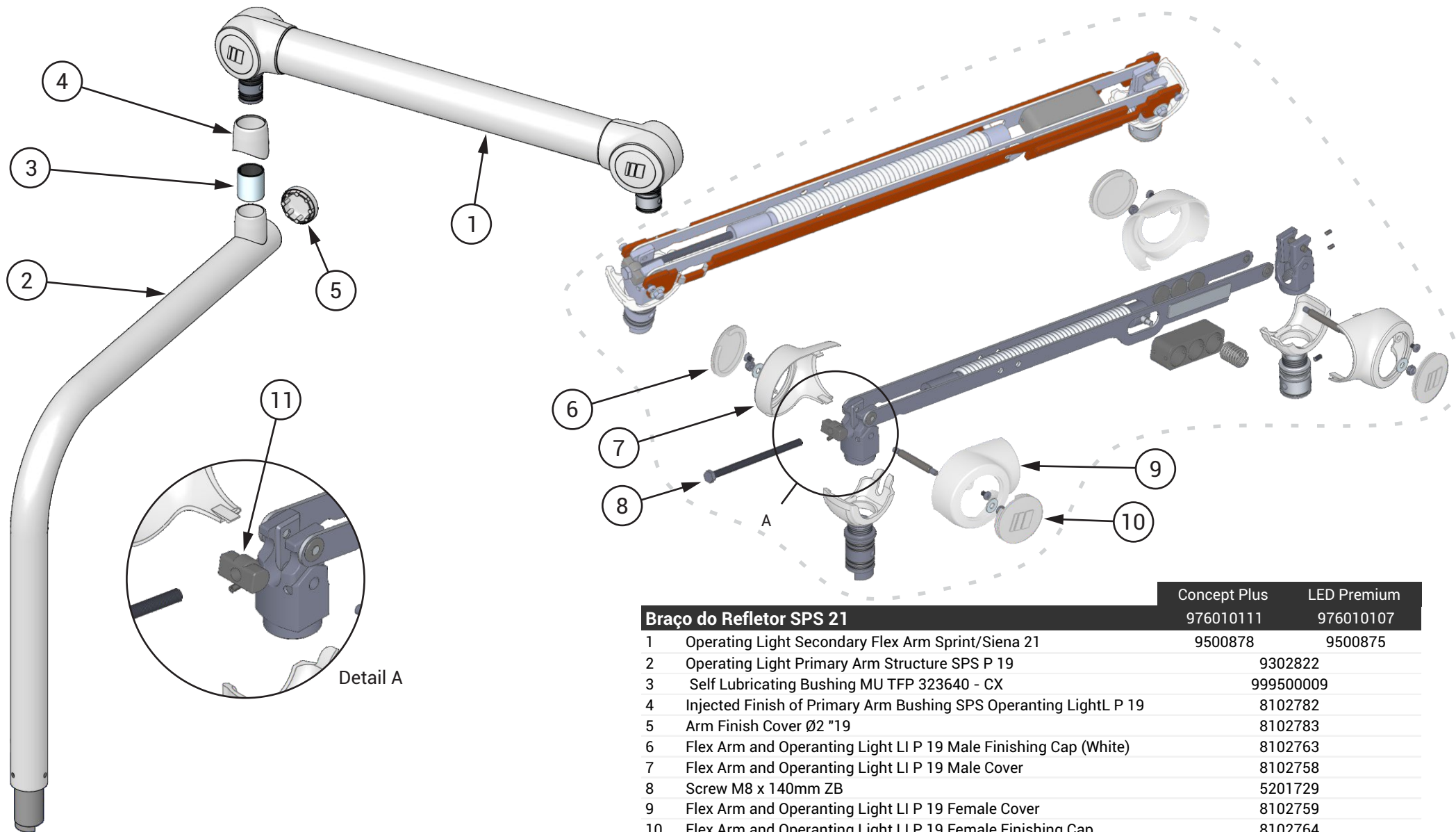
Platform		
1	Siena Progressive Pedal	9500619
2	Tank with Adhesive	9302295
3	Tank Filter Kit Siena / Sprin	9401202
4	UNA Sprint 18 Arm Flange	8102451
5	O'Ring Ref. 2-226 Ø50.39 x W3.5	3100210
6	Platic Cover Platform Angled Arm SP 19	8102755
7	White Finish Ring	8101389
8	Angled Arm Platform Structure SP 19	9401381
9	Air Valve Click	9302478

EVOLUTION PLUS OPERATING LIGHT SUPPORT ARM



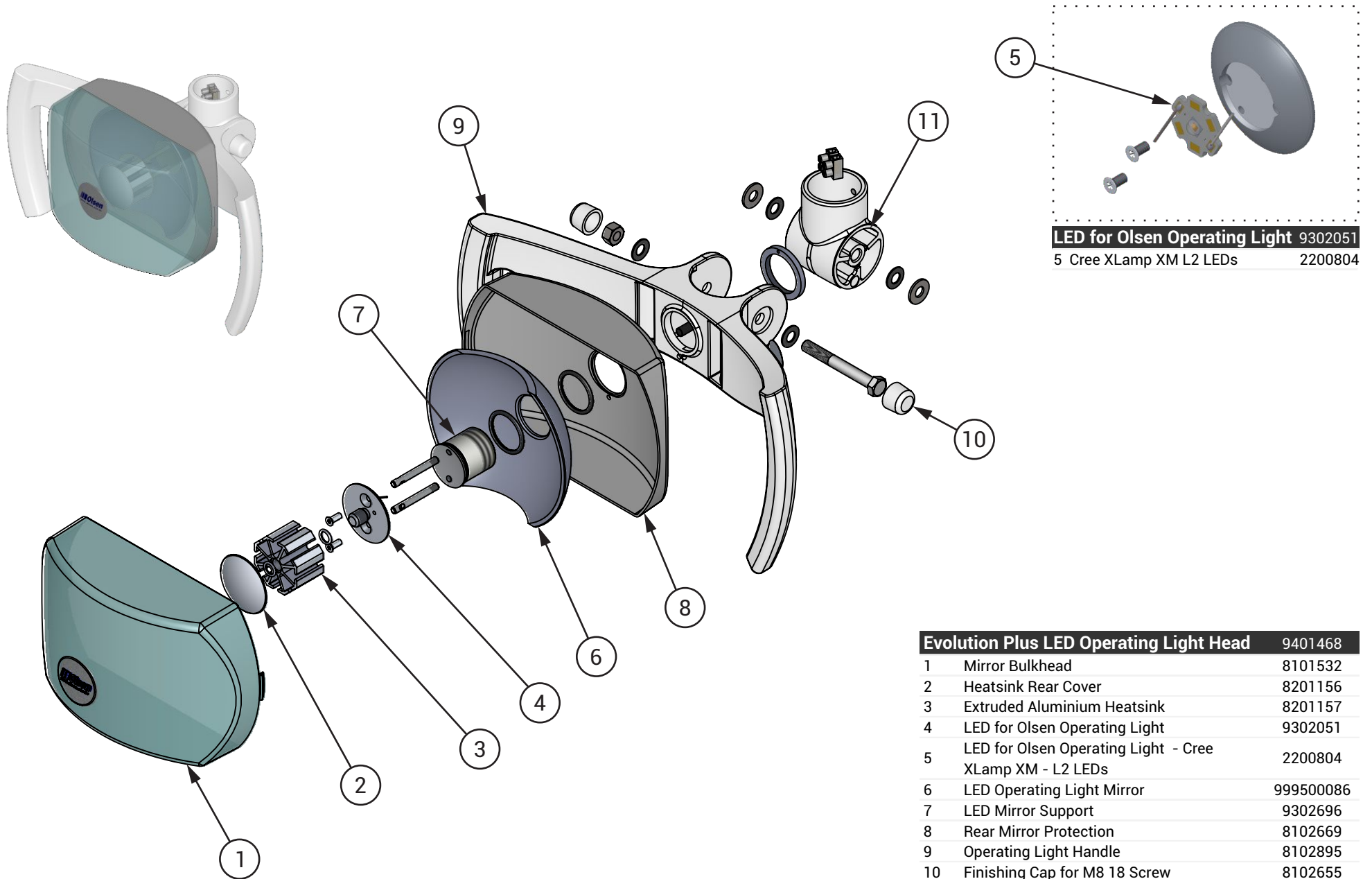
Operating Light LED Evolution Plus		976010086
1	Operating Light Primary Arm Structure SPS P 19	9302822
2	Arm Finish Fairing Ø2 "19	8102783
3	Bushing Injected Finish of Primary Arm SPSL P 19	8102782
4	Back Articulator Set E 20	9303026
5	Operating Light Secondary Arm Structure E 20	9303048
6	Finishing Cap for Ø16 holes	8101758
7	Frontal Articulator Set E 20	9401461

# LED PREMIUM AND CONCEPT PLUS OPERATING LIGHT SUPPORT ARM



Braço do Refletor SPS 21		Concept Plus 976010111	LED Premium 976010107
1	Operating Light Secondary Flex Arm Sprint/Siena 21	9500878	9500875
2	Operating Light Primary Arm Structure SPS P 19		9302822
3	Self Lubricating Bushing MU TFP 323640 - CX		999500009
4	Injected Finish of Primary Arm Bushing SPS Operating LightL P 19		8102782
5	Arm Finish Cover Ø2 "19		8102783
6	Flex Arm and Operating Light LI P 19 Male Finishing Cap (White)		8102763
7	Flex Arm and Operating Light LI P 19 Male Cover		8102758
8	Screw M8 x 140mm ZB		5201729
9	Flex Arm and Operating Light LI P 19 Female Cover		8102759
10	Flex Arm and Operating Light LI P 19 Female Finishing Cap		8102764
11	Spring Adjuster 18		8102296

EVOLUTION PLUS OPERATING LIGHT

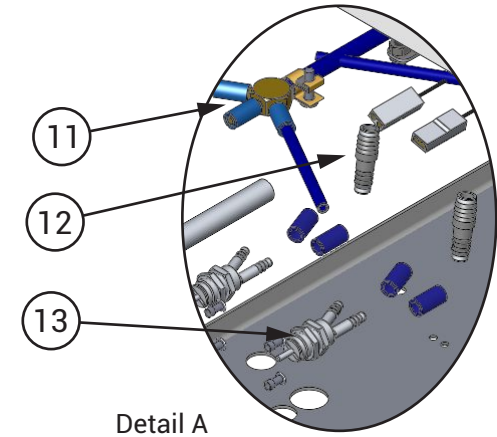
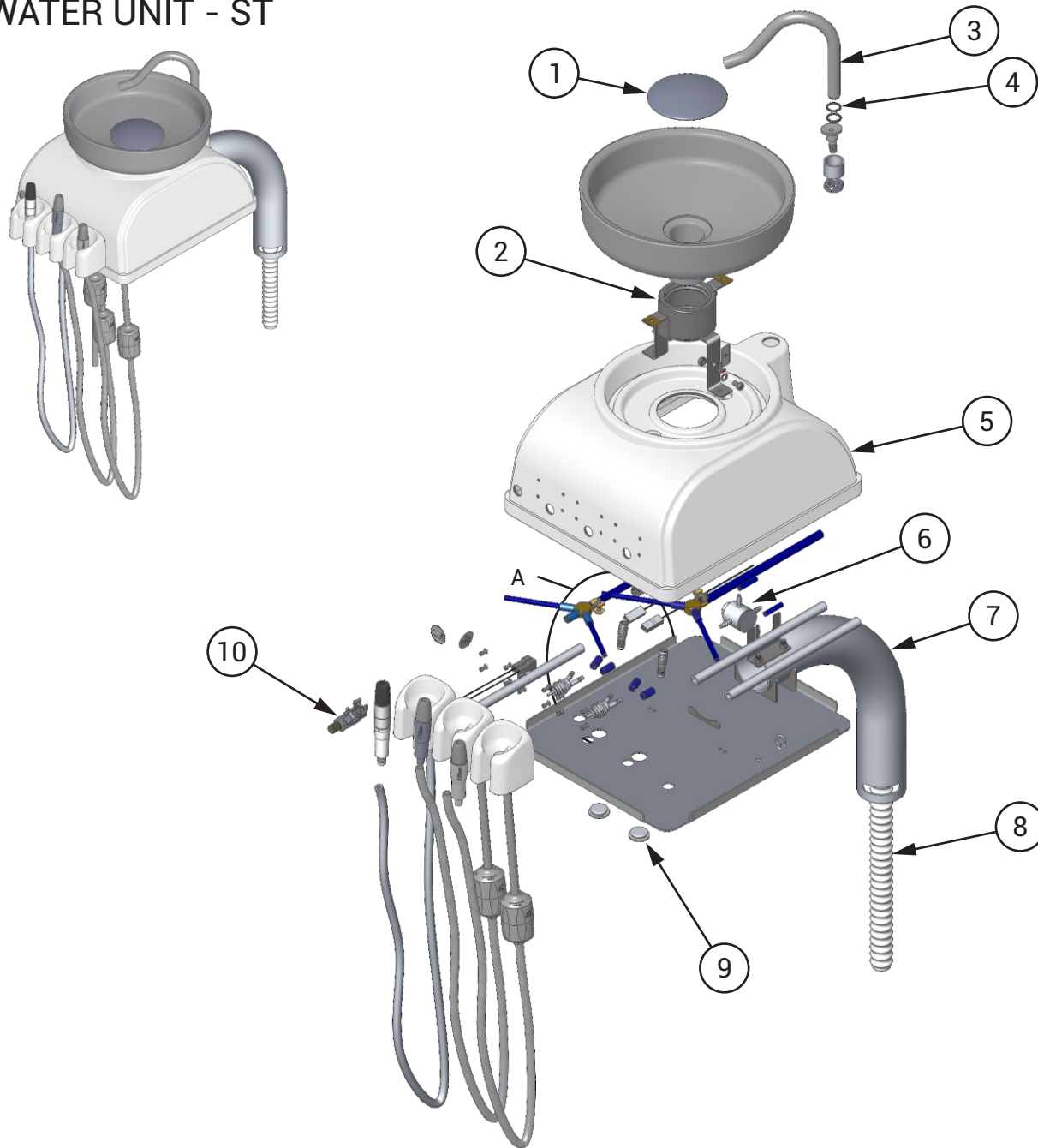


**LED for Olsen Operating Light 9302051**  
 5 Cree XLamp XM L2 LEDs 2200804

<b>Evolution Plus LED Operating Light Head</b>		<b>9401468</b>
1	Mirror Bulkhead	8101532
2	Heatsink Rear Cover	8201156
3	Extruded Aluminium Heatsink	8201157
4	LED for Olsen Operating Light	9302051
5	LED for Olsen Operating Light - Cree XLamp XM - L2 LEDs	2200804
6	LED Operating Light Mirror	999500086
7	LED Mirror Support	9302696
8	Rear Mirror Protection	8102669
9	Operating Light Handle	8102895
10	Finishing Cap for M8 18 Screw	8102655
11	Operating Light Support	8102896



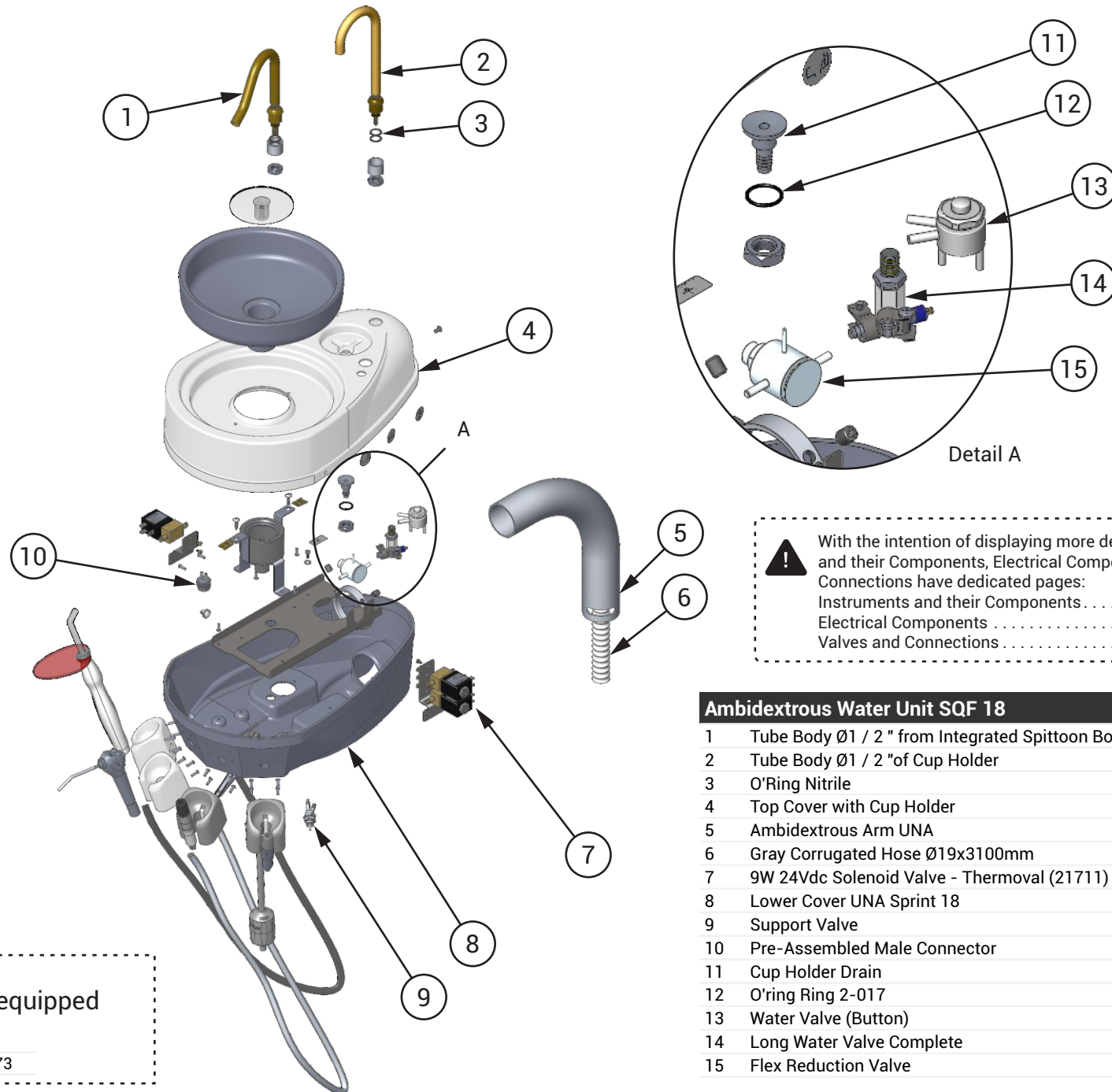
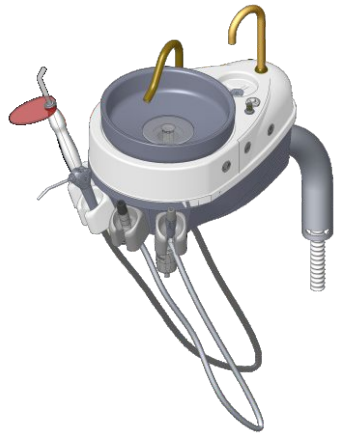
WATER UNIT - ST



⚠ With the intention of displaying more details, the Instruments and their Components, Electrical Components and Valves and Connections have dedicated pages:  
 Instruments and their Components ..... 28 to 32  
 Electrical Components ..... 35  
 Valves and Connections ..... 36 to 37

Water Unit ST 18		UNA-ST 002
1	Injected Bowl Finish	8102176
2	Spittoon Bowl support with Tower Sprint 18	9302507
3	Tube Body Ø1 / 2 " from Integrated Spittoon Bowl	8200725
4	O'Ring Nitrile	3000122
5	Water Unit Cover Sprint T 19	8102776
6	Reduction Valve	3100121
7	Structure UNA Sprint 18	9302506
8	Gray Corrugated Hose Ø19x3100mm	8102457
9	Finishing Cap for Ø16 holes	8101758
10	Complete Water Valve	9400077
11	1x3 Way Distributor	9300111
12	Double Spike	8200895
13	Support Valve	3200121

WATER UNIT - SQF



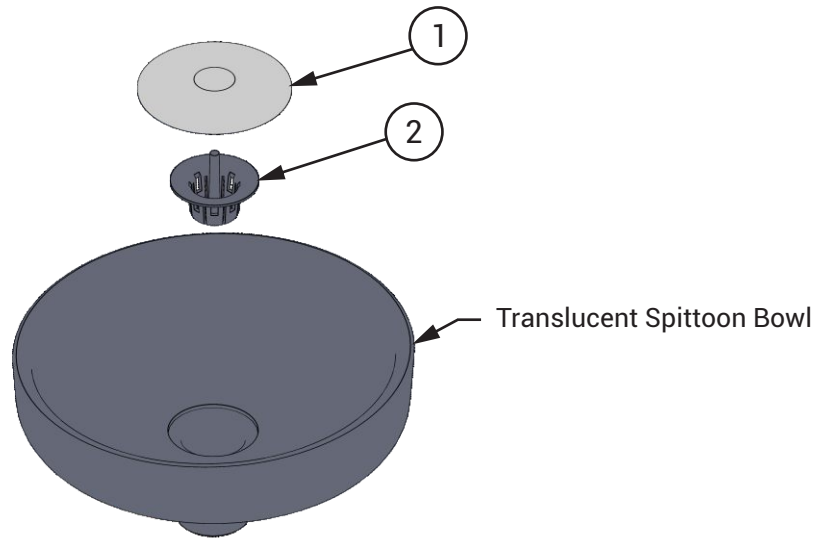
**!** With the intention of displaying more details, the Instruments and their Components, Electrical Components and Valves and Connections have dedicated pages:  
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 Valves and Connections ..... 36 to 37

**!** Cover used when it is not equipped with the cup holder.  
 Top Cover Water Unit Siena 8101473

**Ambidextrous Water Unit SQF 18** UNA-SQF 003

1	Tube Body Ø1 / 2 " from Integrated Spittoon Bowl	8200725
2	Tube Body Ø1 / 2 "of Cup Holder	8201036
3	O'Ring Nitrile	3000122
4	Top Cover with Cup Holder	8101474
5	Ambidextrous Arm UNA	8002923
6	Gray Corrugated Hose Ø19x3100mm	8102457
7	9W 24Vdc Solenoid Valve - Thermoval (21711)	3100202
8	Lower Cover UNA Sprint 18	8102448
9	Support Valve	3200121
10	Pre-Assembled Male Connector	9301477
11	Cup Holder Drain	8200120
12	O'ring Ring 2-017	3000101
13	Water Valve (Button)	3100136
14	Long Water Valve Complete	9400557
15	Flex Reduction Valve	3100160

## TRANSLUCENT SPITTOON BOWL



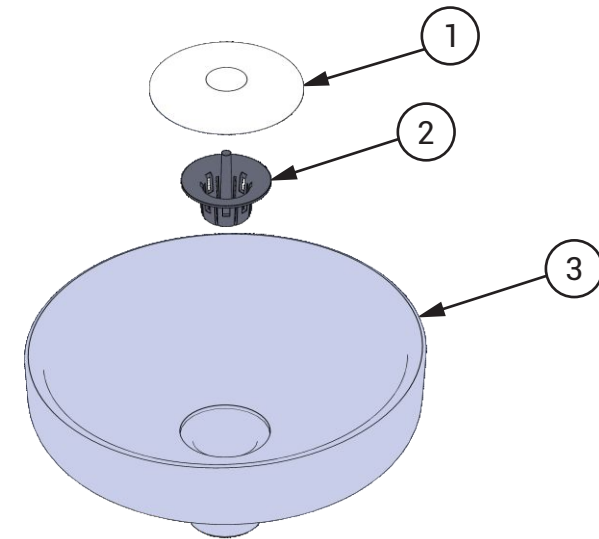
### Translucent Spittoon Bowl Color Code

Polyester / Translucent Brown	1600379
Polyester / Translucent Green	1600165
Polyester / Translucent Citrus Green	1600240
Polyester / Translucent Crystal	1600360
Polyester / Translucent Wine	1600359
Polyester / Translucent Gray	1600166
Polyester / Translucent Emerald Green	1600349
Polyester / Translucent Royal Blue	1600170
Polyester / Translucent Salmon	1600168

### Components of Translucent Spittoon Bowl

1	Injected Bowl Finish	8102176
2	Spittoon Bowl Drain 18	8102649

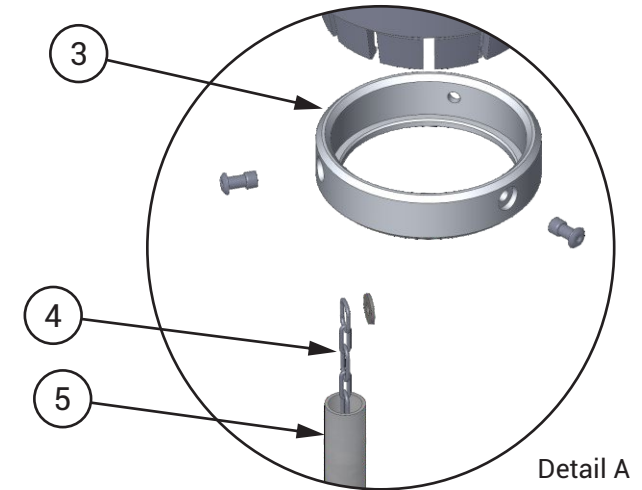
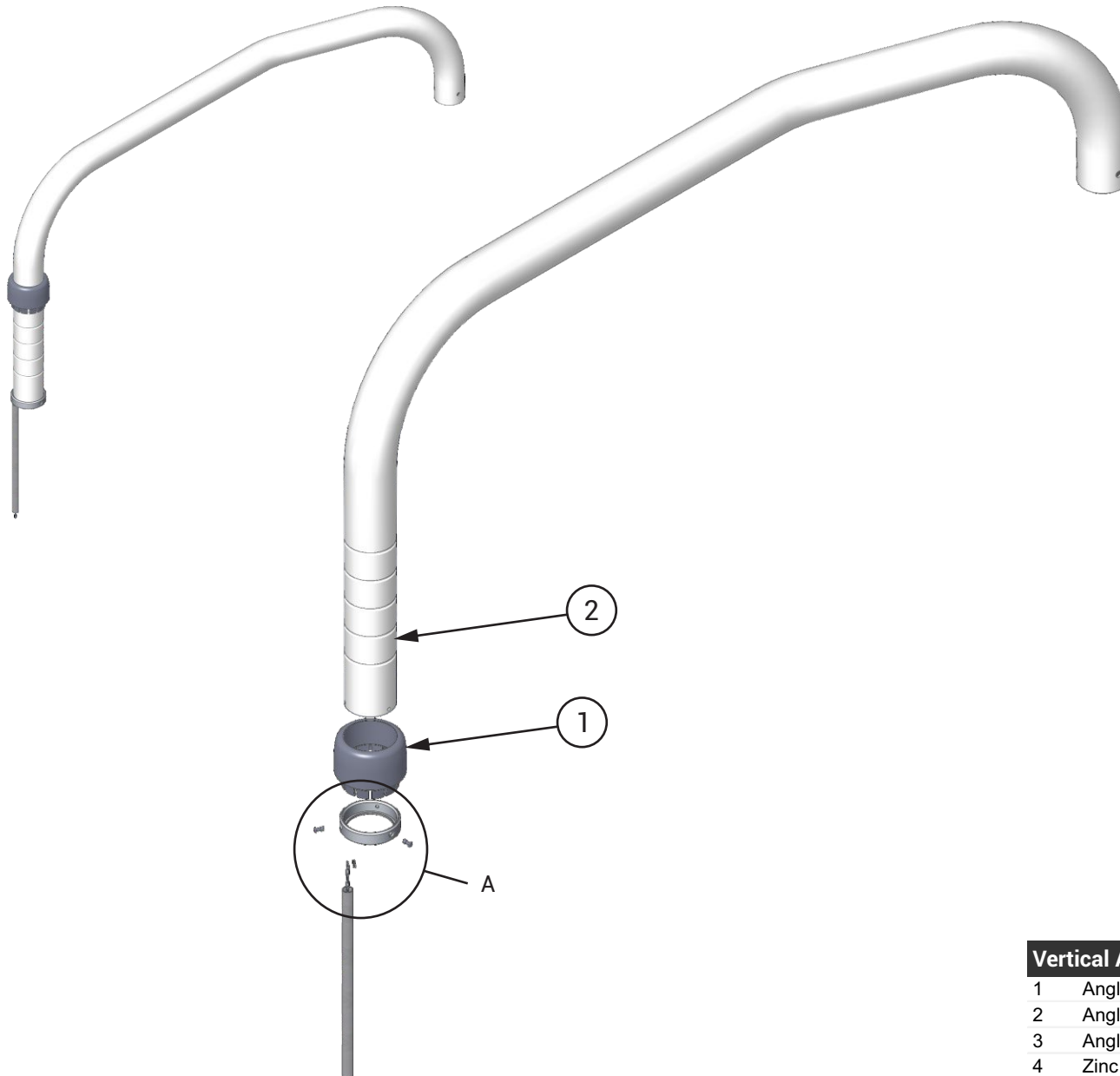
## PORCELAIN SPITTOON BOWL



### Porcelain Spittoon Bowl

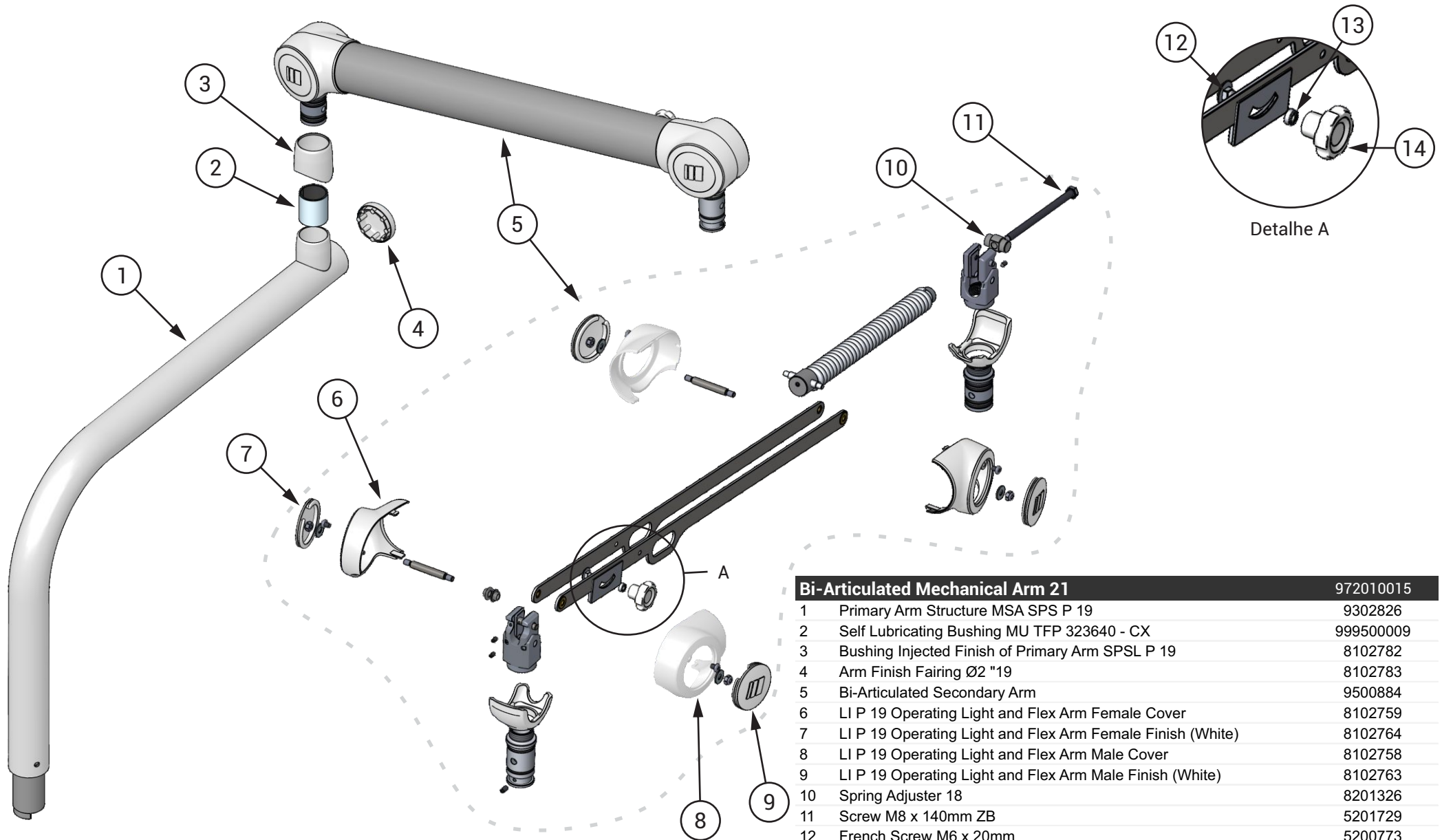
1	Injected Bowl Finish	8102176
2	Drain for Porcelain Spittoon Bowl	8102853
3	Porcelain Spittoon Bowl	1600078

TABLE SUPPORT ARM - ANGLED



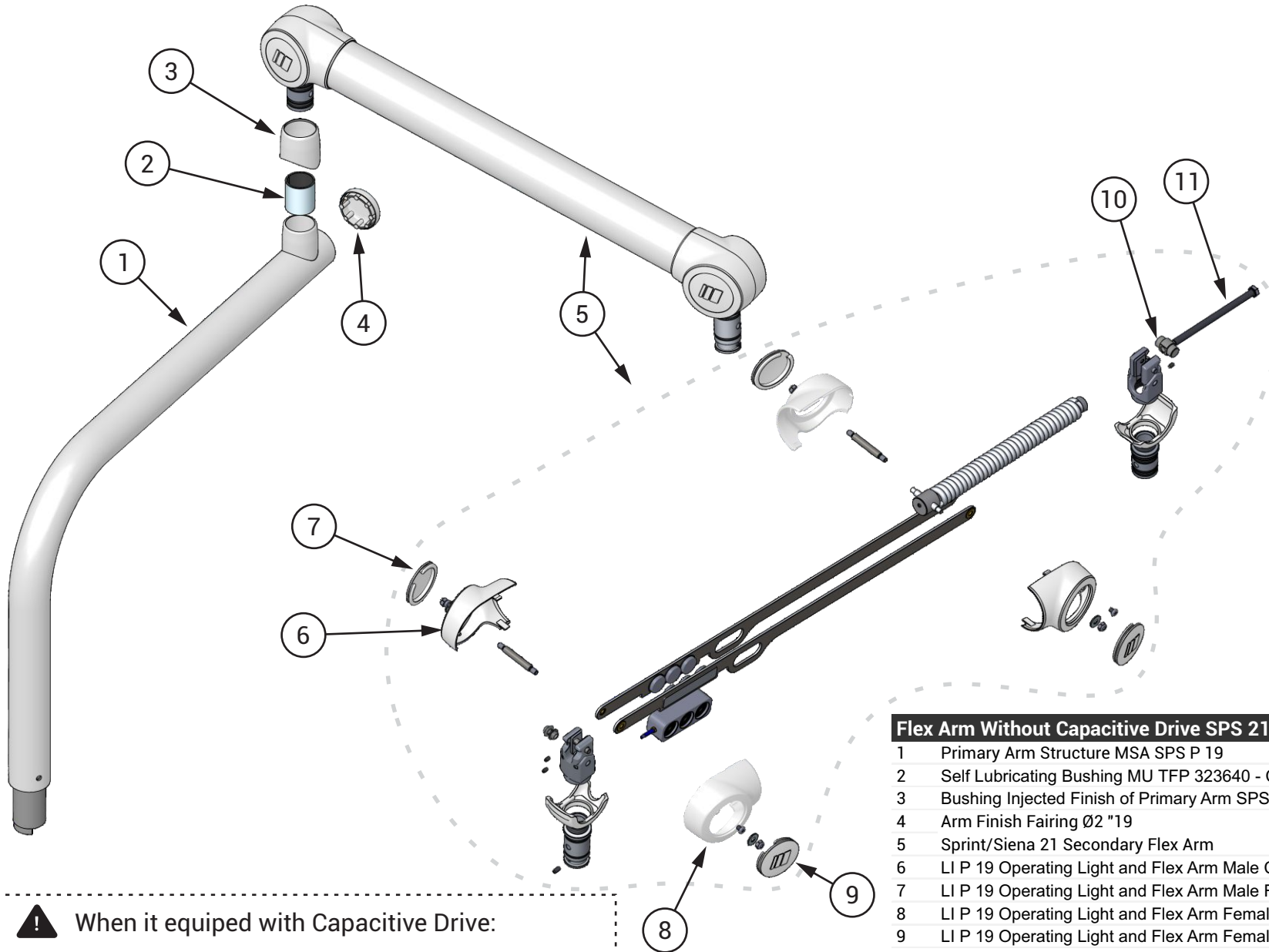
Vertical Adjusted Angled Arm Sprint 19		972010021
1	Angled Arm Lock Clamp SP 19	8102800
2	Angled Arm Table MSA 19	9302799
3	Angled Arm Guide Ring MSA SP 19	8102752
4	Zinc Plated Chain Angled Arm	8003342
5	Gray PVC Hose Ø9 x 0.85 x 220mm	8102806

TABLE SUPPORT ARM - BI-ARTICULATED MECHANICAL



Bi-Articulated Mechanical Arm 21		972010015
1	Primary Arm Structure MSA SPS P 19	9302826
2	Self Lubricating Bushing MU TFP 323640 - CX	999500009
3	Bushing Injected Finish of Primary Arm SPSL P 19	8102782
4	Arm Finish Fairing Ø2 "19	8102783
5	Bi-Articulated Secondary Arm	9500884
6	LI P 19 Operating Light and Flex Arm Female Cover	8102759
7	LI P 19 Operating Light and Flex Arm Female Finish (White)	8102764
8	LI P 19 Operating Light and Flex Arm Male Cover	8102758
9	LI P 19 Operating Light and Flex Arm Male Finish (White)	8102763
10	Spring Adjuster 18	8201326
11	Screw M8 x 140mm ZB	5201729
12	French Screw M6 x 20mm	5200773
13	Screw Lockof the Bi-Articulated Arm Brake	8102903
14	CZ Handle	1700079

TABLE SUPPORT ARM - FLEX



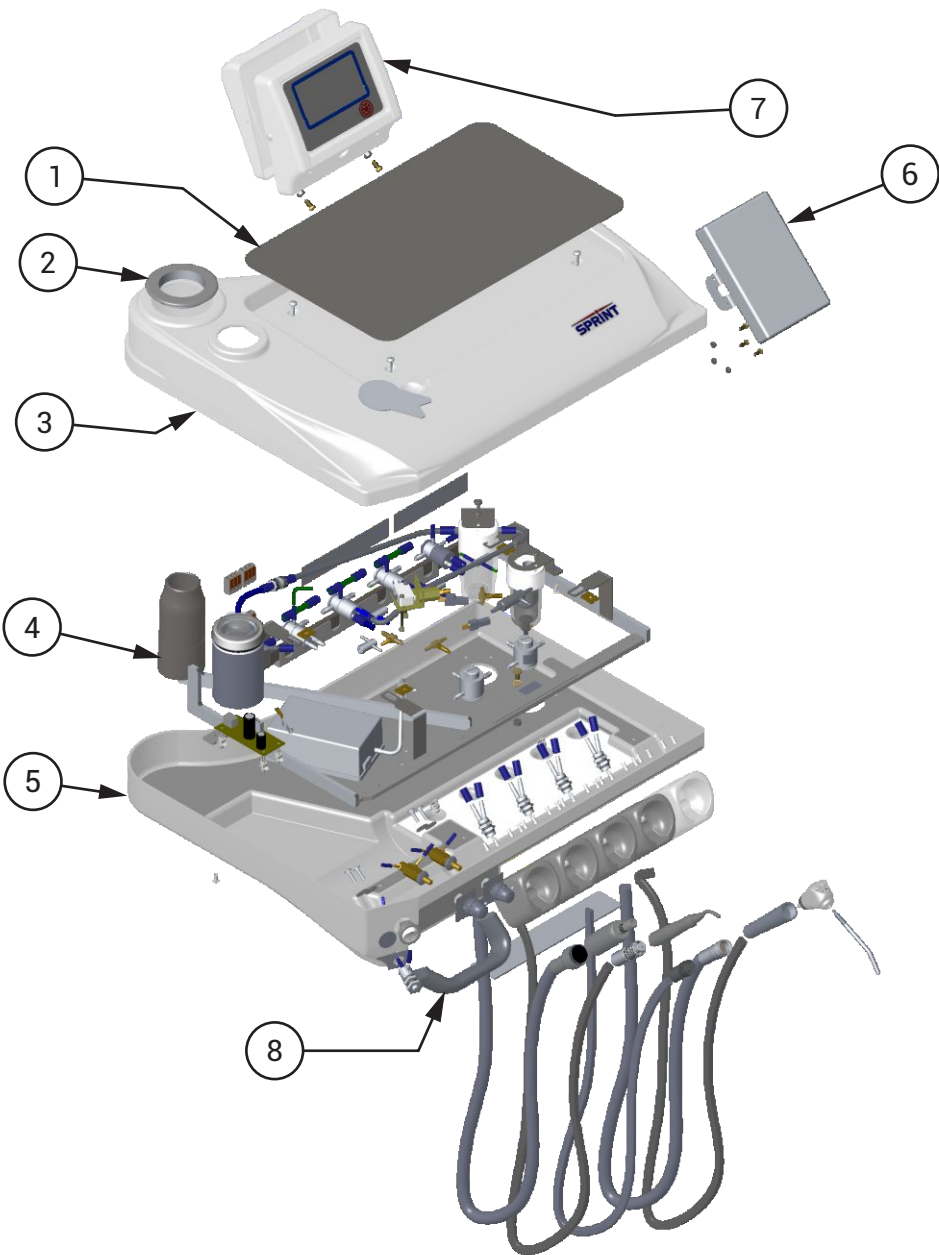
**!** When it equipped with Capacitive Drive:

**Flex Arm With Capacitive Drive SPS 21 Flex S** 972010029

Flex Arm Without Capacitive Drive SPS 21 Flex S		972010027
1	Primary Arm Structure MSA SPS P 19	9302826
2	Self Lubricating Bushing MU TFP 323640 - CX	999500009
3	Bushing Injected Finish of Primary Arm SPSL P 19	8102782
4	Arm Finish Fairing Ø2 "19	8102783
5	Sprint/Siena 21 Secondary Flex Arm	9500882
6	LI P 19 Operating Light and Flex Arm Male Cover	8102758
7	LI P 19 Operating Light and Flex Arm Male Finish (White)	8102763
8	LI P 19 Operating Light and Flex Arm Female Cover	8102759
9	LI P 19 Operating Light and Flex Arm Female Finish (White)	8102764
10	Spring Adjuster 18	8201326
11	Screw M8 x 140mm ZB	5201729



WORKING TABLE - PART I



With the intention of displaying more details, the Instruments and their Components, Electrical Components and Valves and Connections have dedicated pages:  
 Instruments and their Components ..... 28 to 32  
 Electrical Components ..... 35  
 Valves and Connections ..... 36 to 37



Use the following codes when:

- When the working table support arm is angled 972010021;

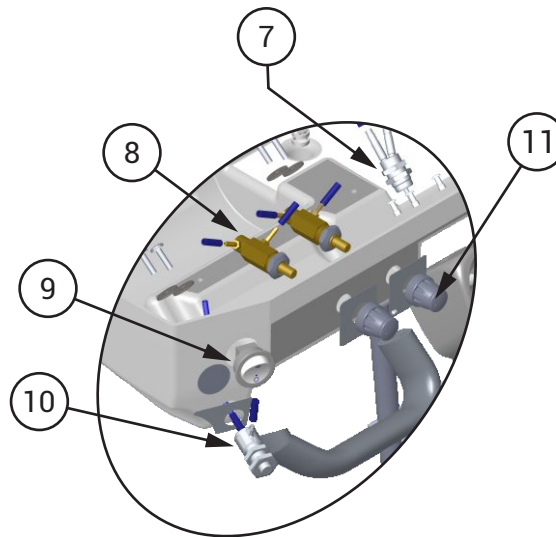
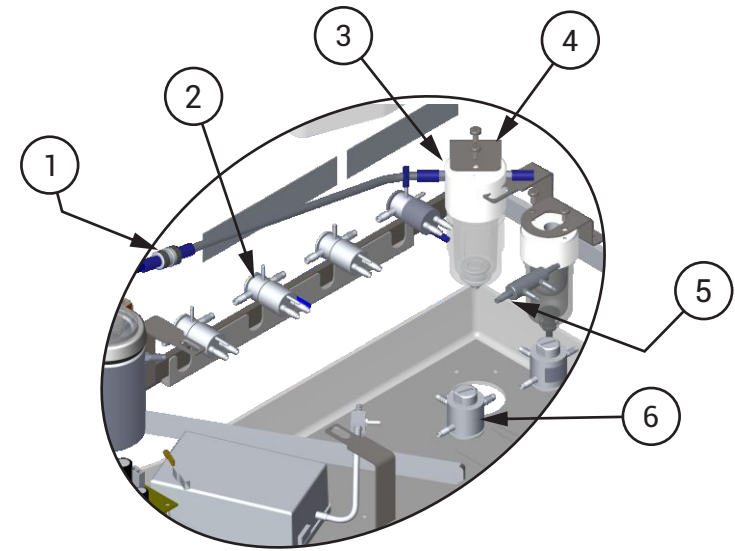
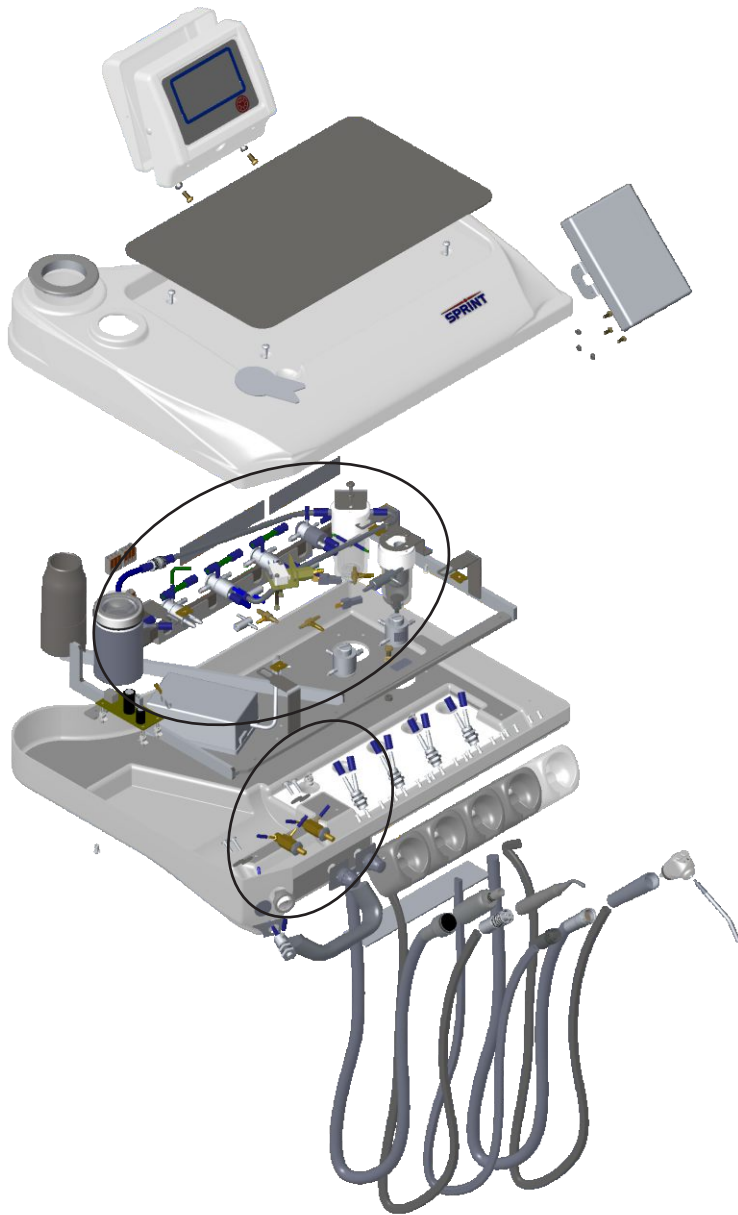
2	White Machined Finishing Flange	8101251
4	Simple Coupled Tray Structure	9300109

- When without prophylaxis.

3	MSA SP 20 Upper Cover without Prophylaxis	8102906
---	---	---------

Sprint Working Table		MSA-SP
1	SP 20 Tray	8201362
2	White Injected Finishing Flange	8101578
3	MSA SP 20 Upper Cover with Prophylaxis	8102907
4	MSA SP 20 Structure	9303013
5	MSA SP 20 Lower Cover	8102908
6	Portable Brushless Micromotor	999500107
7	Coupled X-ray View LED	9400785
8	Table Handle	8102003

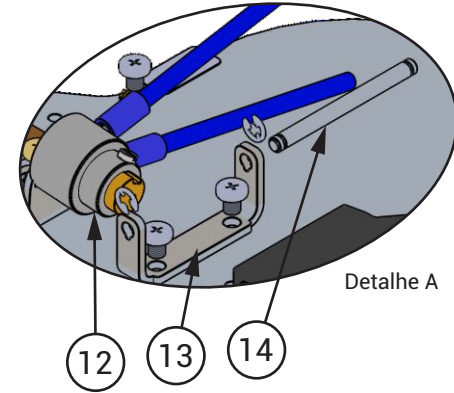
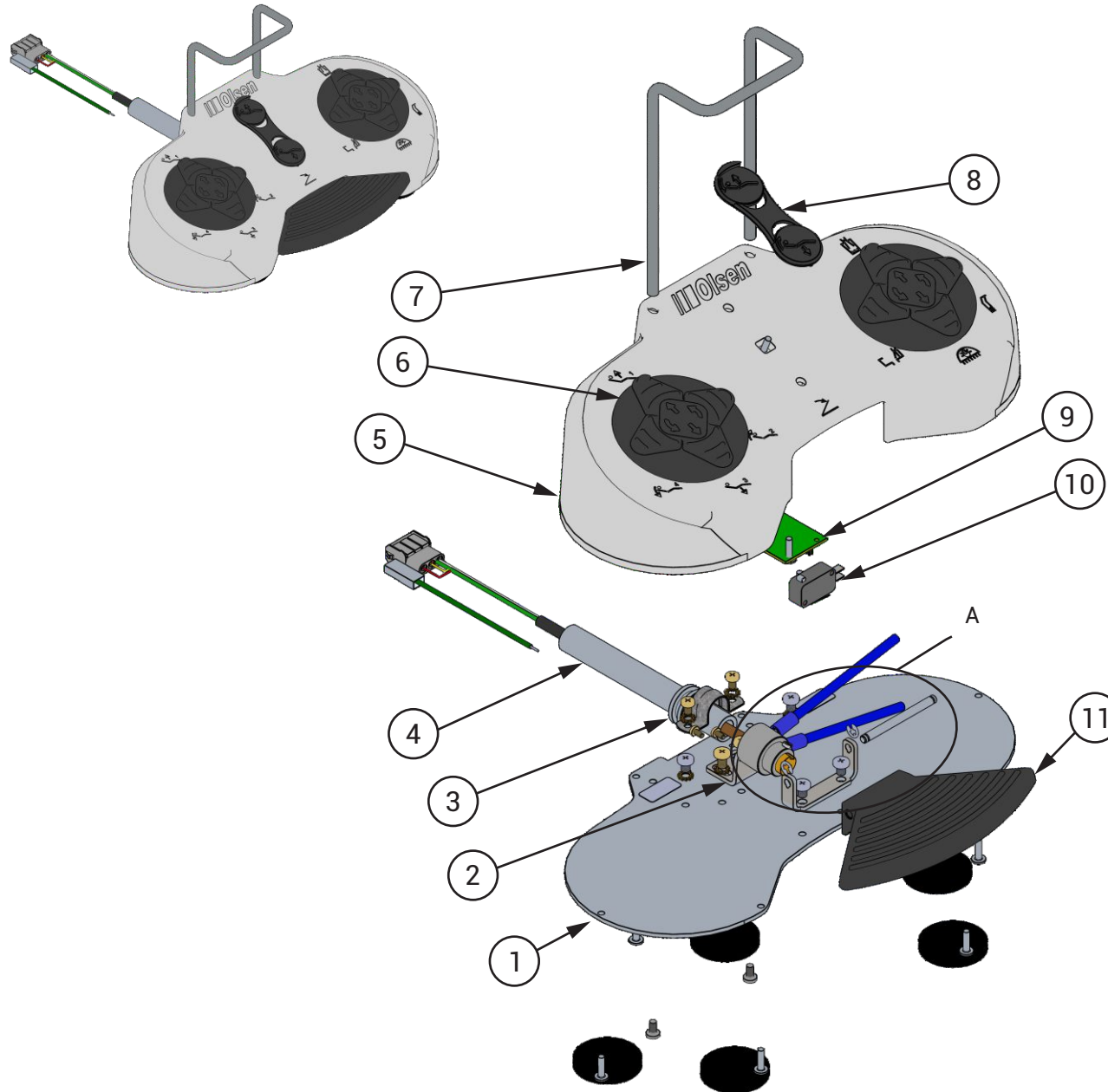
WORKING TABLE - PART II



**!** With the intention of displaying more details, the Instruments and their Components, Electrical Components and Valves and Connections have dedicated pages:  
 Instruments and their Components ..... 28 to 32  
 Electrical Components ..... 35  
 Valves and Connections ..... 36 to 37

Sprint Working Table		MSA-SP
1	Retention valve	7000185
2	Suction Valve 2008	3100171
3	Prophylaxis Filter 20	9303124
4	Filter Holder Prophylaxis Siena Tray	8002005
5	4 Way Multiple Flow Adjustable Valve	3100140
6	Reduction Valve	3100121
7	Support Valve	3200121
8	Logic Table / Scaler Water Regulator Valve	9401118
9	Round Key Switch	2200860
10	Flex Arm Brake Button	9301344
11	Water Valve Button	8201160

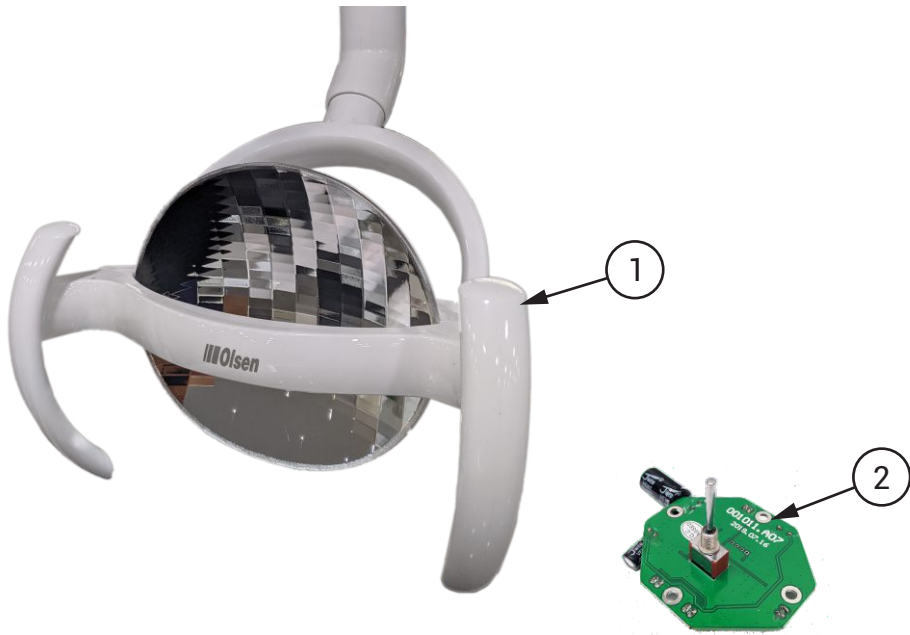
📄 REMOTE FOOT PEDAL



**Dental Remote Foot Pedal Sprint/Siena/Quality 19500808**

1	Injected Pedal Base	8002686
2	Injected Pedal Valve Support	8002687
3	Pedal Finishing Ring	8102377
4	Pedal Finishing Hose	8100226
5	Injected Cover Pedal	8102299
6	Electric Drive Pedal	9302557
7	Painted Handle Injected Pedal	8002864
8	Automatic Pedal Adjustment Actuator	8102308
9	Pedal PC Board Serial R 232	2200781
10	Micro Switch Gray CX-FL8-39	999500090
11	Injected Pedal Propulsion Driver	9302355
12	Logic Progressive Valve	9400635
13	Shaft Propulsion Support	8002688
14	Propulsion Shaft	8201240

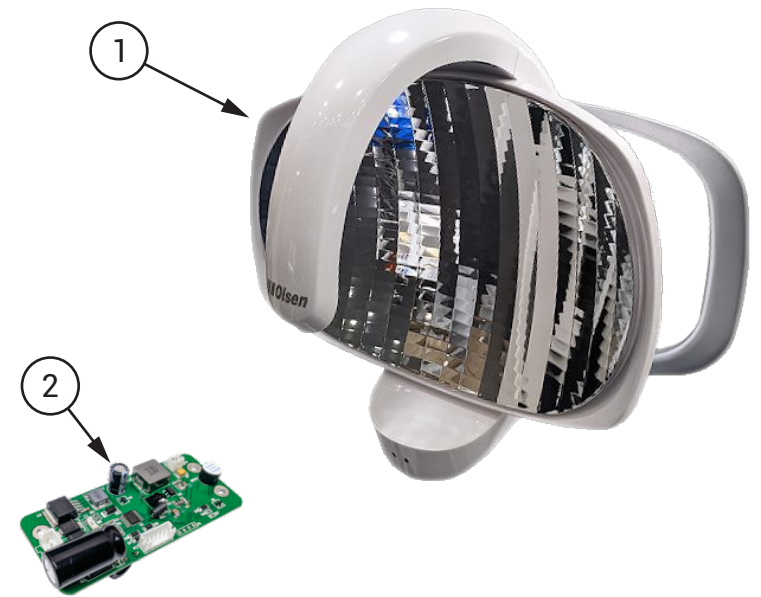
📄 CONCEPT PLUS OPERATING LIGHT



**Concept Plus Operating Light**

- 1 Concept Plus Operating Light Head CX249-21 999500095
- 2 Concept Plus Operating Light Board 999500145

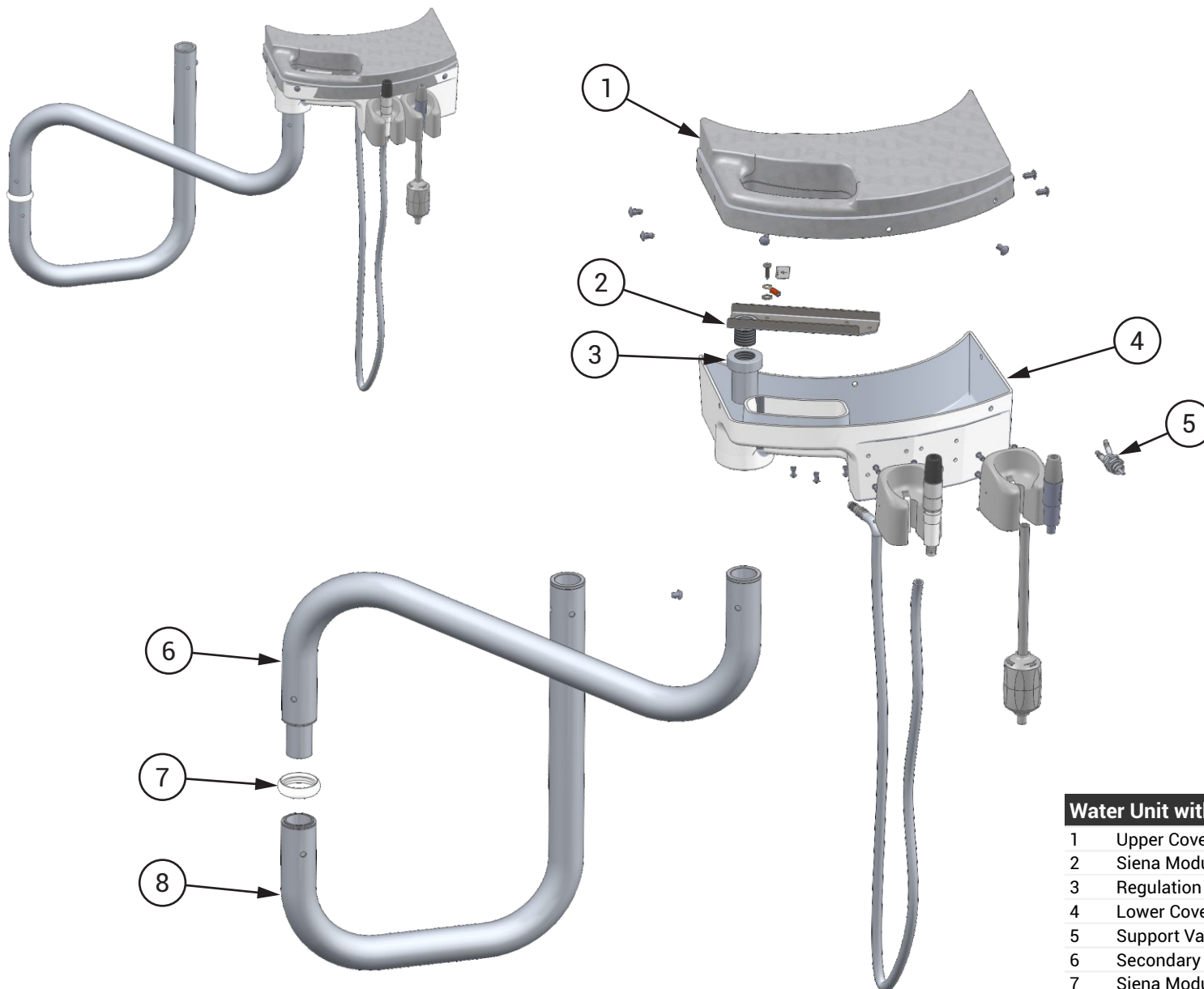
PREMIUM OPERATING LIGHT 📄



**Premium Operating Light**

- 1 Premium Operating Light Head CX-249-22 999500039
- 2 Electronic PC Board for Operating Light CX249-22 999500023

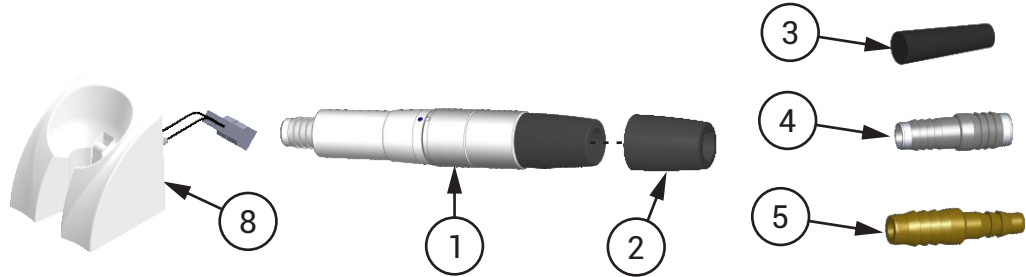
📄 WATER UNIT WITH ASSISTANT MODULE



Water Unit with Assistant Module SQ 16		UNA-SQF 004
1	Upper Cover of Module III	8101507
2	Siena Module Structure	9302214
3	Regulation Bushing Modulo Siena	8102246
4	Lower Cover of Module III	8101506
5	Support Valve	3200121
6	Secondary Arm Siena Module	9302203
7	Siena Module Finishing Ring	8102249
8	Primary Arm of the Siena Module	9302202

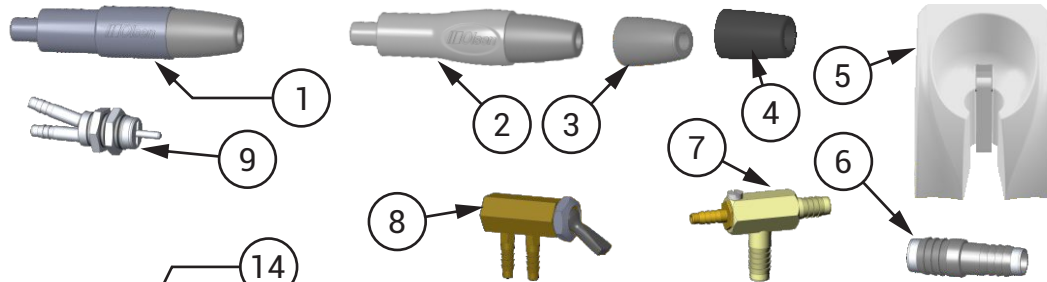
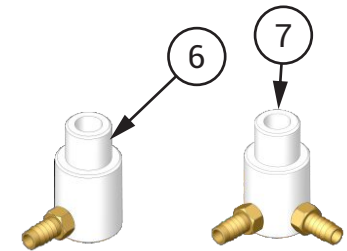


## INSTRUMENTS AND THEIR COMPONENTS - PART I



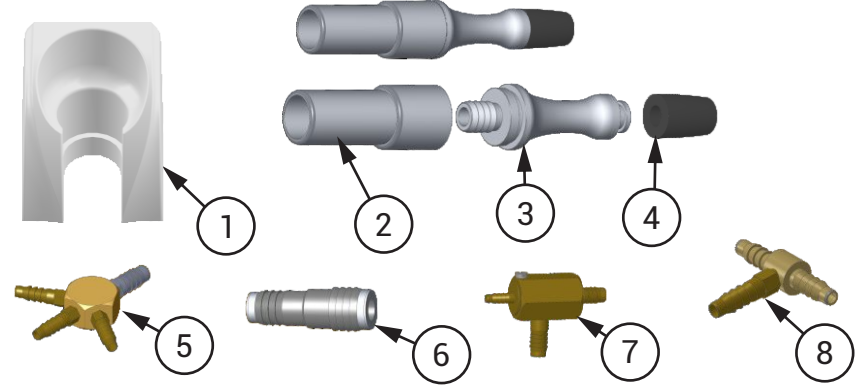
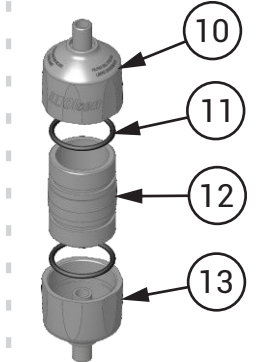
### Vacuum Pump Ejector

1	Olsen Vacuum Cleaner	9400672
2	Ejector Canula Connector	8101775
3	Sewer Cap	8102818
4	Double Spike	8200895
5	Union Terminal	8201272
6	Vacuum Pump Adapter 1 Ejector	9301466
7	Vacuum Pump Adapter 2 Ejectors	9301467
8	Scaler and Vacuum Pump Instrument Holder	9401291



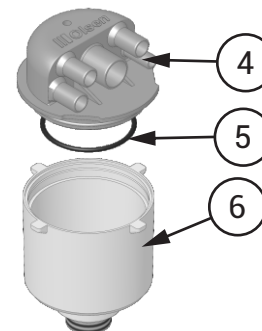
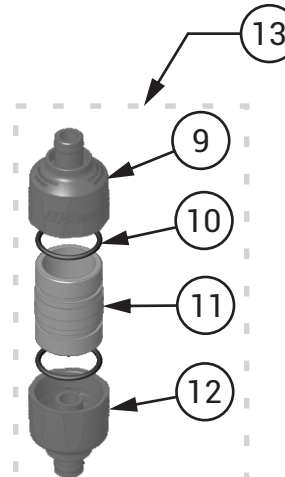
### Venturi Ejector

1	Venturi Suction Connector	9301670
2	Venturi Suction Connector (High Power)	9301669
3	Ejector Canula Connector Ø6,3mm	8101776
4	Ejector Canula Connector Ø9,5mm	8101775
5	Instrument Holder with Reed	9302573
6	Double Spike	8200895
7	Venturi 18 Suction Set	9401334
8	Air Valve Click	9302478
9	Tip Support Valve	3200121
10	Venturi Suction Filter Cover	8102854
11	Oring	3100221
12	Filter Body	8100001
13	Venturi Suction Filter Cover	8102778
14	Venturi Suction Filter	9300339



### Vórtice Ejector

1	Vórtice Ejector Instrument Holder	8102510
2	Ejector Female Body	8201232
3	Ejector Male Body	8201233
4	Ejector Canula Connector	8101775
5	1 x 3 Way Distributor	9300111
6	HVE post	8201229
7	Vórtice Ejector Suction Set 18	9401335
8	3 Way Distributor - 3/16"	9302704
9	Injected Vórtice Ejector Filter Cover 19	8102855
10	Oring ring	3100221
11	Filter Body	8100001
12	Injected Vórtice Suction Filter Cover 19	8102779
13	Vórtice Suction Filter	9302298



### Sewer Connector

1	Sewer Connector Cover 18	8102645
2	Oring	3100220
3	Sewer Connector Body 18	8102647



## INSTRUMENTS AND THEIR COMPONENTS - PART II

**3-way Syringe**

1	3-Way Syringe	9303092
2	3-way Syringe Instrument Holder	8102383
3	Aluminum Tube of 3-way Syringe	999500017
4	Hydropneumatic Metal Valve	999500019
5	Hydropneumatic Metal Tube	999500018

**Prophy-Jet** 999500042

**Curing Light**

1	Olsen G LED Light Curing Light	999500006
2	3-way Syringe Instrument Holder	8102383
3	Pre-Assembled Connector	9301477

**Electrical Micromotor**

1	Scaler and Vacuum Pump Instrument Holder	9401291
2	PCB Mounted Speed Control	8200754
3	Micromotor Potentiometer	999500072
4	Electropneumatic Switch Imp.	9301457
5	Push Button Switch CS-390 NF E3	9301039
6	Micromotor Inverter Switch Set	9301459
7	Electropneumatic Switch Imp.	999500073
8	Push Button Switch CS-390 NF E3	2200686

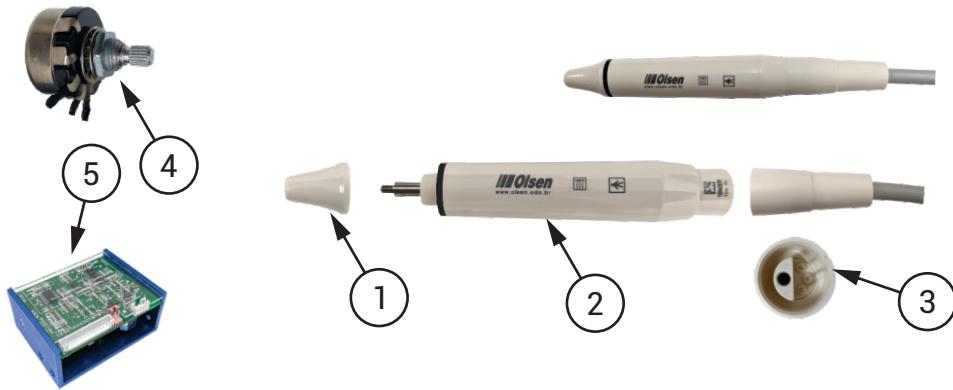
**Separate Brushless Micromotor**

1	Brushless Motor Glove	8201258
2	Brushelles Portable Micromotor	999500107
3	Suction Valve 2008	3100171
4	Tip Support Valve	3200121
5	Instrument Holder with Reed	9302573

**Brushless Micromotor**

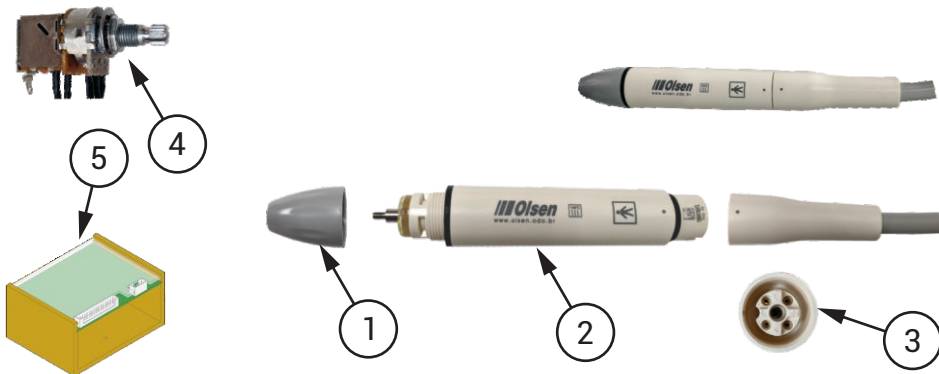
1	Electric Motor for Densist Chair - C-Puma	999500035
2	Panel Electronic PC Board - C-Puma	999500034
3	Main Electronic PC Board - C-Puma	999500033

## INSTRUMENTS AND THEIR COMPONENTS - PART III



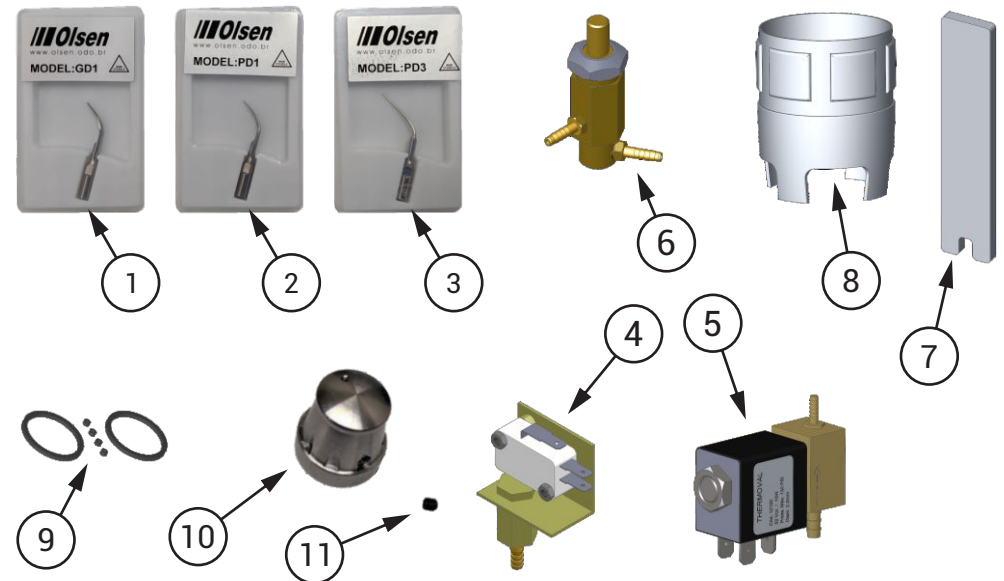
### Scaler without LED

1	Finishing Tip (Hand Piece For V2 Led)	999500129
2	Main Body V2 (Handi piece For V2)	999500127
3	Plastic water passage pipe (Water Pipe For V2)	999500126
4	Potentiometer for V2 (Power Wrench For V2)	9303008
5	Olsen Scaler V2 LED Electronic Board	999500111



### Scaler with LED

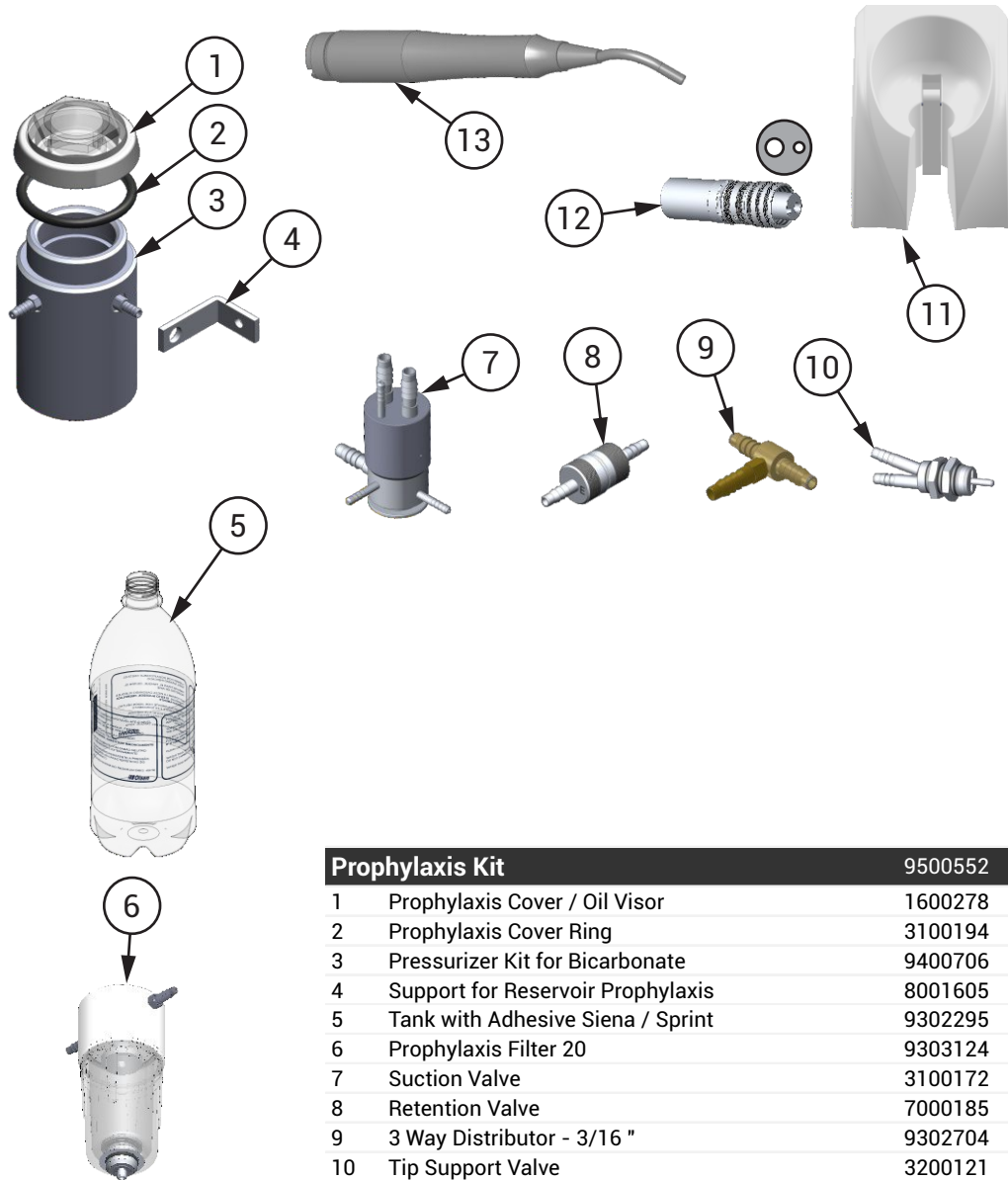
1	Finishing Tip (Hand Piece For V3 Led)	999500026
2	Main Body (Hand Piece For V3 Led)	999500021
3	Plastic Pipe for Water Passage (Water Pipe For V3 and V2)	999500020
4	Scaler Pot	9302153
5	Printed Circuit with Led (PCB For V3 Led)	999500025



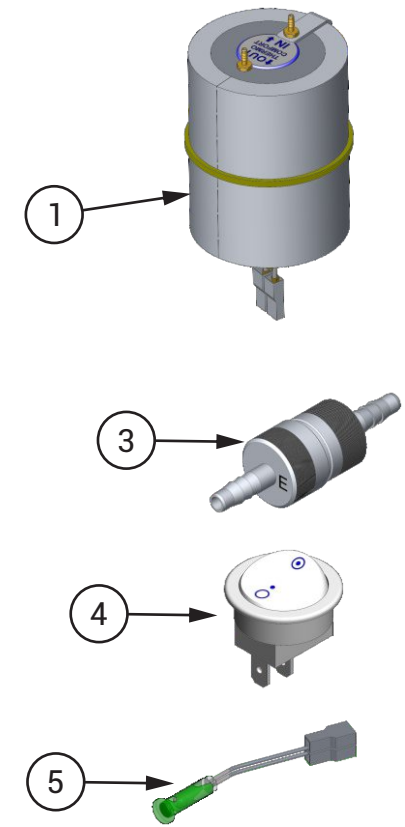
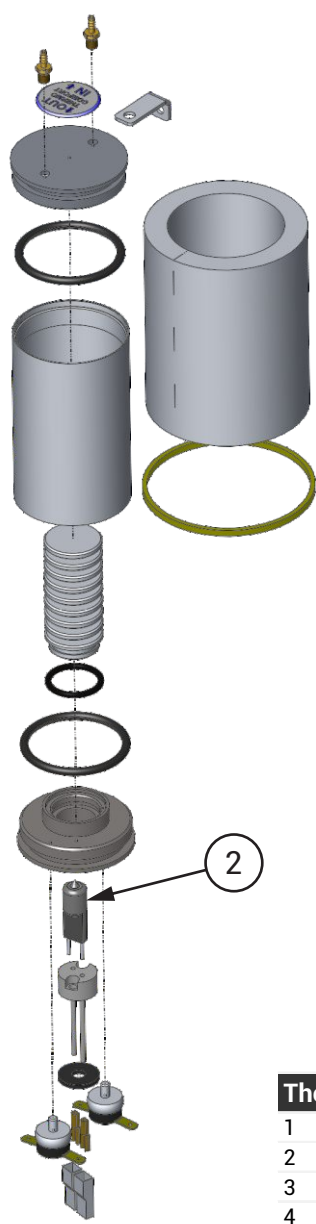
### Scaler Accessories with LED

1	Tip for Piezo TIP GD1 - (US1)	999400009
2	PD1 Chiseling Tip for Piezo Light	999400013
3	PD3 Chiseling Tip for Piezo Light	999400024
4	Electro-Pneumatic Switch Imp.	999500073
5	Solenoid Valve 10W 32Vdc - Thermoval (12,100)	3100212
6	Ultrasonic Water Regulator Record / Logic Table	9401118
7	Nut Tight Hand Tool (Endo Wrench For V3 Led)	999500022
8	Screw Grip Hand Tool (Torque Wrench For V3 Led)	999500097
9	V3 Led Repair Kit	999500027
10	Water Adjustment Valve Button	8201160
11	Hexagon screw	5200729
12	Scaler and Vacuum Pump Instrument Holder	9401291

## INSTRUMENTS AND THEIR COMPONENTS - PART IV

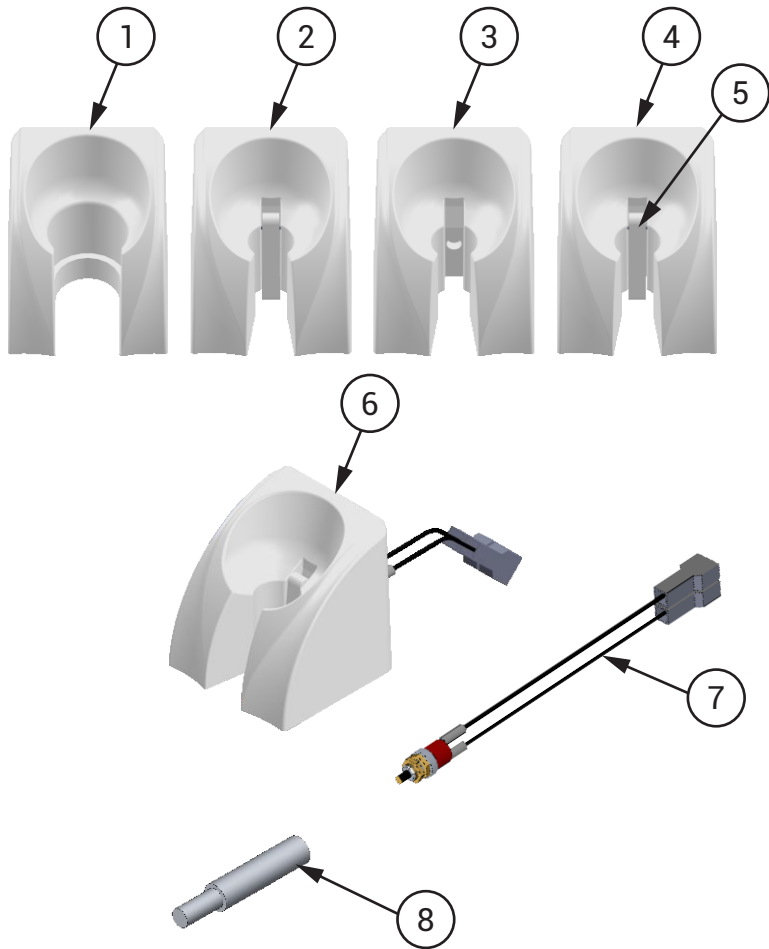


Prophylaxis Kit		9500552
1	Prophylaxis Cover / Oil Visor	1600278
2	Prophylaxis Cover Ring	3100194
3	Pressurizer Kit for Bicarbonate	9400706
4	Support for Reservoir Prophylaxis	8001605
5	Tank with Adhesive Siena / Sprint	9302295
6	Prophylaxis Filter 20	9303124
7	Suction Valve	3100172
8	Retention Valve	7000185
9	3 Way Distributor - 3/16 "	9302704
10	Tip Support Valve	3200121
11	Instrument Holder with Reed	9302573
12	Borden Terminal with Refrigeration	7000122
13	Olsen Prophylaxis Pen	7000334



Thermo Comfort		9302156
1	Thermo Comfort Inox	9302156
2	Halostar lamp OSRAM 12V 50 W	2200685
3	Retention valve	7000185
4	Round Key Switch	2200860
5	LED TM13ST 12V	2200813

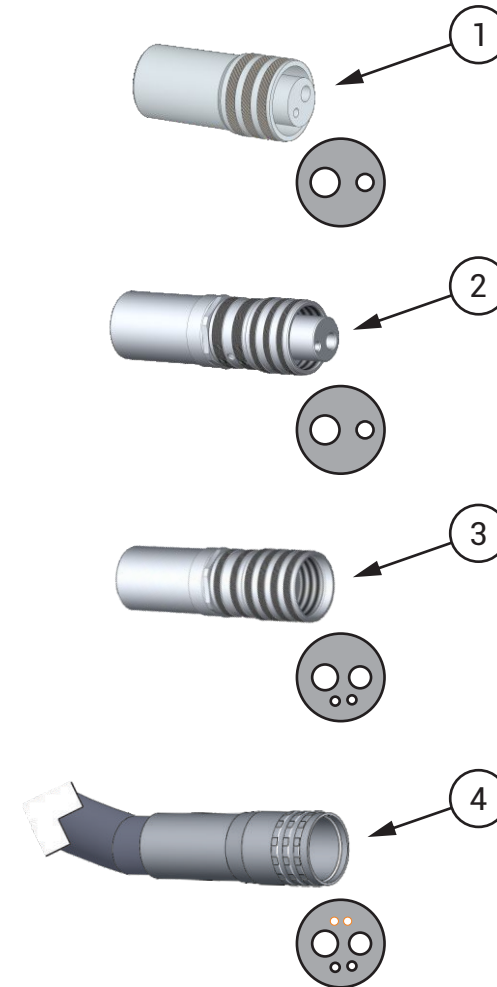
## INSTRUMENTS HOLDER



### Instruments Holder

1	Vórtice Ejector Instrument Holder	8102510
2	Air Jet Instrument Holder	9302579
3	3-way Syringe Instrument Holder	8102383
4	Instrument Holder with Reed	9302573
5	Instrument Holder Reed	8100106
6	Scaler and Vacuum Pump Instrument Holder	9401291
7	Micro Switch for Scaler and Vacuum Pump	9300612
8	Air Jet Drive Pin	8101605

## COUPLING TERMINALS



### Coupling Terminals for Instruments

1	Borden Terminal without Refrigeration	7000121
2	Borden Terminal with Refrigeration	7000122
3	Midwest Terminal	7000159
4	Midwest Fiber Optics Set	999500069

## INTRODUCTION TO THE PARTS PRESENTED IN THIS SECTION

› **Parts**

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Valves and Connections	
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Valves and Connections - Part II .....	37

The tables below show the main hoses of the equipment.

### Air Hoses



Description	Code	Application
PU Blue Hose Ø 4,76 x 2mm	3300004	Main Air Entrance
PU Blue Hose Ø 3,2 x 1mm	3300159	Internal Distribution
PU Blue Hose Ø 3,2 x 0,5mm	3300161	Midwest Coupling
PU Blue Hose Ø 1,6 x 0,8mm	3300122	Flex Arm Brake
PU Blue Hose Ø 2,5 x 0,75mm	3300144	HVE
PU Blue Hose Ø 1,5 x 0,5mm	3300162	Midwest Coupling

### Water Hoses



Description	Code	Application
Green PU Hose Ø 5,7 x 2mm	3300104	Main Water Entrance
Green PU Hose Ø 3,2 x 1mm	3300160	Internal Distribution
Green PU Hose Ø 1,5 x 0,5mm	3300163	Midwest Coupling

### PVC Grey Hoses



Description	Code	Application
Gray Flexible Hose Ø 15.9 x 2mm	3300115	Pedal
PVC Grey Hose Ø 9 x 0,85mm	3300164	Midwest Coupling
Malleable Gray Hose Ø 6.3 x 1mm	3300001	Operating Light
PVC Grey Hose Ø 8 x 1,5mm	3300002	Vacuum Pump
PVC Grey Hose Ø 5,7 x 1,5mm	3300149	Venturi Ejector

### Cristal Hoses



Description	Code	Application
Cable gland Ø 20mm	2200680	Flex Arm
Cristal Hose Ø 6,3 x 2mm	3300109	Sewer Cupfiller / Ejectors
Cristal Hose Ø 3,2 x 0,5mm	3300165	Midwest Coupling
Cristal Hose Ø 12,7 x 2mm	3300112	Midwest Filter

### Corrugated Hoses



Description	Code	Application
Corrugated Hose Ø 31,7mm	3300117	Delivery Unit / Water Unit
Gray Corrugated Hose Ø 38.1mm	3300146	Junction Box
Corrugated Grey Hose Ø 19mm	3300147	S. Bowl Sewer / Steady Arm
Corrugated Beige Hose Ø 12,7mm	3300131	HVE

### Special Hoses



Description	Code	Application
Double Grey Hose for Pedal	3300123	Propulsion Pedal
Triple Pedal Hose Gray L.	3300124	Pedal Duplo
3-way Grey Hose	3300142	Borden Coupling
4-way Hose (Midwest)	3300151	Midwest Coupling Olde Model



Below is a list with the drawings, codes and description of the Electrical Components


	2200371 Micro Switch PushButton 0.5 INF		2200396 Emergency Switch		2200914 SMC Transformer 124.2VA 0 / 118V / 127V / 220V / 230V 0.6KV 50 / 60HZ		9302218 Cup holder activation button Siena / Quality 2016
	2200186 Microswitch MG-2608 IR / E3G 20A		2200804 LED for Operating Light Olsen - Cree XLamp XM- L2 Leds		9300612 Vacuum Pump Micro Switch		9302328 Water activation button Siena / Quality 2016
	2200373 Inverter Micro Switch		2200813 LED TM13ST 12V LED		9301039 PCB Mounted Speed Control		9302557 Electric Drive Pedal
	2200714 Round Switch with Lamp 16123 M9BT10DE2S 16123 M9BT10DE2S		2200840 Board for Cup Holder / Spittoon Bowl Siena/Quality		9301457 Micromotor Inverter Switch Set		999500025 Printed Circuit with Led (PCB For V3 Led)
	2200767 Touch Sensor 24VAC (Olsen)		2200848 Pushbutton switch CS-392 NA / E1BB 0.5A		9301459 Micromotor Potentiometer		2200277 Micro Switch BR15IL - QACF
	2200779 CPU Board Infinity / Logic RS 232 (with Touch)		2200857 X-ray Board with Coupling for Touch 24Vac		9301460 Micromotor Micro Switch		2200194 Micro Switch BR15IL - QAAA
	2200796 Fiber Optics Convert Board 24 / 3.3 AC / DC		2200860 Round Key Switch		9302153 Scaler Potentiometer		
	2200798 Capacitive Touch Board Table Logic		2200909 SPS Dental CPU Board with Integrated LED Operating Light Drive (without Touch)		9302156 Thermo Comfort Inox		


## VALVES AND CONNECTIONS - PART I

Below is a list with the drawings, codes and description of the Valves and Connections that appear in the hydropneumatic diagrams.


	3100121 Reduction Valve		3100213 Solenoid Valve 32Vdc 10W - Thermoal (21,711)		8201232 Ejector Female Body		9301866 Distributor Thermo Comfort Syringe / Scaler
	3100136 Water Valve (Button)		3200113 Spray Flow Adjustable Valve		8201233 Ejector Male Body		9302156 Thermo Comfort Inox
	3100140 4 Way Multiple Flow Adjustable Valve		3200121 Tip Support Valve		9300111 1 x 3 Way Distributor		9302256 3 Way Distributor - 3/16 "x 3/16" x 3/32 "
	3100159 3 Way Multiple Flow Adjustable Valve		7000121 Sleeve and Terminal for Micromotor		9300137 1 x 2 Way Distributor		9302478 Air Valve Click
	3100171 Suction Valve 2008		7000122 3-way hose for High Speed		9301344 Brake Pushbutton for Flex Arm Single Tray		9302704 3 Way Distributor - 3/16 "
	3100172 Suction Valve 2008 with Terminal		7000185 Retention valve		9303124 Prophylaxis Filter 20		9303053 Filter for Midwest and Fiber Optics
	3100211 Solenoid Valve 32Vdc 10W (21710) w / Muffler for Capacitive System		7000334 Olsen Prophylaxis Pen (Meditec)		9301669 Venturi Ejector Connector (High Power)		9400077 Complete Water Valve
	3100212 Solenoid Valve 32Vdc 10W - Thermoal (12,100)		8101775 Cannula Ejector Connector Ø 9.5mm		9301670 Venturi Ejector Connector		9400635 Logic Progressive Valve


VALVES AND CONNECTIONS - PART II


 9400672  
Olsen Vacuum Ejector


 999500017  
Aluminum Tube Ø 16 x 82 mm  
(for Syringe)


 7000185  
Retention valve


 8101776  
Cannula Suction Connector

 9400706  
Pressurizer Kit for Bicarbonate

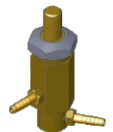
 999500018  
Hydropneumatic Metal Tube (for  
Syringe)


 8201043  
Connection Ø 4 x 20mm

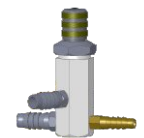
 9401020  
Water Unit Inlet Valve

 999500019  
Hydropneumatic Metal Valve (for  
Syringe)


 9301147  
1 x 3 Way Distributor Ø 3/16


 9401118  
Scaler Water Adjustment Valve /  
Logic Table


 999500020  
Plastic Pipe for Water Passage  
(Water Pipe For V3 and V2)


 9400557  
Long Water Valve Complete

 9401202  
Tank Filter Kit Siena / Sprint


 999500025  
Printed Circuit with Led (PCB For  
V3 Led)


 9401021  
Olsen Progressive Actuation  
Valve


 9401247  
Valve Adjustment for Fiber Optics


 999500069  
Fiber Optics Hose Assembly Imp.


 9401369  
SPSLI 18 Scaler Connection Set


 9401334  
Ejector Set Venturi 18

 999500073  
Electro-Pneumatic Switch Imp.

 3100162  
Tank Water Filter

 9401335  
Ejector Set Vórtice 18

 3100143  
Pneumatic Brake Valve

 999500070  
Air Regulator with Imp Filter..

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Below is a list of the electrical and hydropneumatic diagrams contained in the attachments section.

**ELECTRICAL DIAGRAMS**

› **5401149 - SPS 20 Electrical Diagram**

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 Operating Light Connection ..... 66  
 Fiber Optics and Air-Jet Connection ..... 67  
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 Brushless Micromotor and Scaler Connection ..... 69

› **5401153 - SPS 20 With Foot Pedal Electrical Diagram**

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 Foot Pedal ..... 81

































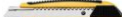











**HYDROPNEUMATIC DIAGRAMS**

› **5406088 - Hydropneumatic Diagram Operating Line**

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 Prophy-Jet ..... 98  
 Chronolub ..... 99

## TOOL LIST

Below is the list of recommended tools to installation and maintenance Olsen Medical and Dental Units.

 Universal Plier with Electrical Insulation	 Cutting Plier with Electrical Insulation	 Long Nose Plier with Electrical Insulation	 Retaining Rings Plier	 Jaw Plier
 Riveter	 Flat Blade Screw Driver: 1/8 x 2" - 1/8 x 4" - 1/4 x 6" - 3/8 x 10" - 3/16 x 4"	 Philips Screwdriver: 3/16 x 4" - 3/16 x 6"	 Short Handle Flat Blade Screwdriver: 1/4" x 1.1/2"	 Short Handle Philips: 1/4" x 1.1/2"
 L Wrench: 10 x 10 e 11 x 11mm	 L Wrench with Hole 11 x 11mm	 Open End Wrenches: from 6mm to 23mm	 Combination Wrenches Set: from 6mm to 24mm	 Adjustable Wrench
 Chaves Allen Curta: 1,5 - 2,0 - 2,5 - 3,0 - 4,0 - 5,0 - 6,0 - 7,0 - 8,0 - 9,0 - 10,0mm	 Long Hex Keys: 1,5 - 2,0 - 2,5 - 3,0mm	 Bal Point Hex Keys: 5 and 6mm	 T Handle Ball Pointed Hex Key: 2,5 and 3 mm	 Nail Remover Screwdriver 7.3/8"
 Cabinet Rasp 9"	 Cabinet File, Smooth Cut 8"	 Hammer	 Nylon's Hammer	 Measuring Tape 3 meters
 Hammer Drill 1" - 550 Watts	 Hole Saw Set for Wood	 Concrete Drill Set from 4,00 to 10mm	 Steel Drill Set from 1,0 to 13,0 mm	 Extension Cord 3 meters
 Magnetic Level	 Hacksaw	 Small Cutter	 Universal Scissors	 Insulated Tweezer with Narrow Tip
 Testing Screwdriver	 Digital Multimeter	 Soldering Iron 70 Watts	 Manometer 0 to 6 BAR for Borden Coupling	 Manometer 0 to 6 BAR fo Midwest Coupling
 Caliper Rule 150mm	 Tool Center 18 Irwin	 Tool Case	 Cart for Boxes	



## PRE-INSTALLATION

- › **Compressed Air:** Dental compressor should form the basic technical characteristics, pressure between 5.5 and 7.0 (80 to 100 psi), minimum displacement of 150 l / min. and 30-liter tank, oil-free. Recommend use of coalescing filter in the air inlet of the equipment. Pipes: - Up to 10 meters: use hose ¼ "- 10 to 20 meters: use hose 5 / 16" Use specific woven hose for compressed air. For longer stretches, it is recommended project of distribution with specific rigid pipe.
- › **Piping:** - Up to 10 meters: 1/4 "hose; - From 10 to 20 meters: use a 5/16 "hose; Use a woven hose specifically for compressed air. For greater distances, a distribution design with specific rigid tubing is recommended.
- › **Water to Spittoon Bowl and Cup-filler:** install easy access key which will be used to stop the supply of water to the equipment at the end of the day and also to limit the water pressure, if necessary. The water pressure must be between 2.8 and 6.0 bar and ideal pH between 6.5 and 8. If the water pressure is insufficient, we recommend consulting an experienced professional for hydraulic systems. We recommend the use of water filter in the input line of equipment.
- › **Sewage System:** the sewage net must present good hydraulic declivity and should preferably be installed underground. The nominal diameter of the tubing must be of 40 mm. Use independent branches for the sewage of the Water Unit.
- › **Power Supply:** the power net must be single phase, specifically grounded and must have thermal circuit breaker exclusive for the dental set. Should the power net present tension variations a power stabilizer must be installed. The circuit braker must be turned off everyday after work hours.
- › **Chair Fixation Points:** The chair must be fixed to the floor, except when using the optional rubber mat. Not observing this instruction will result in loosing the warranty.

## CUSTOMER INSTRUCTIONS

- › **Able Professional Operation:** this equipment must be operated by professional who have the ability to work on dental procedures.
- › **Storage:** before the first operation or after long stop periods (weekends, holidays, vacations), the user must eliminate all air and water stuck inside the hoses, shut off the water-cocks, depressurize and empty the water tank, turn the general switch and the general circuit breaker off. For reactivation of the unit, verify the funtioning of the entire set before starting operation.
- › **Direct Exposure to Sunlight:** the equipment must not be exposed directly to solar light to prevent from the plastic covers and/or the upholstery to wear out precociously.
- › **Environmental Awareness:** the organic residues, the contaminated materials and disposable items must be properly eliminated according to the rules of the local law.
- › **Daily Cares:**
  - Replace the bottle water.
  - Daily cleaning of the venturi saliva ejector systems, vacuum pump and / or HVE hoses.
  - Cleaning of the debris collector, bowl and its finish.
  - Close water and compressed air records and turn off the equipment's power supply breaker after expedient.
  - Check the compressor before using the dental set.
  - Drain the compressor's moisture filter before using the dental set.

## TROUBLESHOOTING TABLE - PART I

	Problems	Tests	Causes	Solutions
Chair	The chair does not carry out any commands	Check mains voltage	Off	Connect the mains
		Check the mains voltage rating	Electric voltage selected in the transformer is not selected according to the rated mains voltage	select the electrical voltage of the transformer, according to the mains electrical voltage
		Low mains voltage	Varying the input voltage in the equipment	Stabilize the mains voltage
		There is no electrical voltage in the transformer	Blown fuse	Replace the fuse, compatible with the mains electrical current.
		PC board does not light the LED indicators	There is no output voltage from the transformer to the board	Replacing the chair transformer
		Check pedal switches	Poor contact in the control micro switch	Replace control switch
		Measure Chair PC board input and output voltage	There is no output voltage from the PC board to the motors	Replacing the chair PC board
		Measure pedal PC board input voltage	Pedal PC board does not send commands to chair's PC board	Replace the pedal PC board
Chair	Chair seat or backrest does not move	Check fuse	Broken fuse	Replace the fuse as specified for the gearmotor
	Burning seat or back fuse	Check the current of the motor	Electric current above the rated fuse current	Lubricate the geared motor spindle. If not, replace the part.
		Check limit switch	When the motor reaches the limit switch, the limit switch is not activated	Troubleshoot poor contact between connectors and micro keys, align the micro key palette or replace a defective micro key.
Operating Light	Operanting light does not turn on the lamp	Check electrical contact of the switch	Poor contact of the micro switch	Reconnect electrical cable or replace micro switch if it is not closing contact.
		Check PC board output voltage	There is no voltage at the operanting light output on the PC board	Replace the chair PC board
			Broken operanting light fuse	Check equipment wiring harness and replace the operanting light fuse on the board
		Electric voltage of the PC board does not reach the operanting light head	Broken cable	Connect the electrical cable.
		Check chair PC board tension selection mode	Chair PC board has the operanting light output in a mode that is not suitable with the operanting light voltage.	Select the operanting light output according to the head LED's rated voltage
Water Unit and Assistant Module	Cuspidor does not come out water	Electric voltage does not reach the head PC board	Broken fuse	Replace fuse as specified for operanting light.
		Check mains water valve	Closed water supply.	Open mains water record
		Check mains water supply	Lack of water or air in the pipeline	Wait for water supply or remove air from the pipeline, releasing the flow.
		Open the cuspidor water valve	Dirt in the sieve and solenoid valve tubing	Clean the solenoid valve sieve and tubing
		Check electrical output voltage of the board	Electric voltage does not reach the solenoid coil of the valve	Reconnect electrical cables and establish rated electrical voltage to the solenoid valve
	Check voltage and current of the solenoid switch	Burnt solenoid valve	Replace the valve solenoid	

## TROUBLESHOOTING TABLE - PART II

	Problems	Tests	Causes	Solutions
Water Unit and Assistant Module	Curing light does not work	Check transformer output voltage and cables	No electrical voltage reaches the curing light PC board	Reconnect electrical cable from light curing harness
	Curing light does not work, does not turn on the LED	Check input voltage on the curing PC board	Nominal electrical voltage arrives from the transformer, but does not turn on the light curing LED	Replace curing PC board
	Ejector doesn't work	Check compressor air pressure	Lack of air pressure from the compressor	Start the compressor, open the valve and establish the air flow
		Check venturi ejector	Dirt in the ejector tip	Clean the suction air nozzle
		Check instrument support valve	Locked valve plunger	Open the valve and repair the plunger
	Ejector does not close	Check instrument support valve	Valve does not close when the suction connector is attached to the holder	Adjust instrument support valve
		Check instrument holder reed	Support vane broken. Does not close the air passage when the suction device is placed in the holder	Replace vane and adjust the suction support valve
	Ejector is weak or losing suction during use	Check ejector filter	Clogged filter	Clean the ejector filter
		Check air pressure	Pressure below specification coming from the compressor	Adjust the air pressure of the compressor and chair filter
		Check ejector sewer draining hose	Clogged hose	Clean sewer suction hose from ejector
	Ejector exiting air through the connector instead of suck	Check venturi ejector in the sewer connection box	Clogged sewer	Unclog sewer, clean ejector and connection box
		Check venturi ejector in the sewer connection box	Sucker outlet hose bent or obstructed	Unfold and clean the venturi ejector hose
	Bicarbonate jet (prophylaxis) does not work	Check reservoir air pressure	No air pressure at the powder tank inlet	Adjust VRP2 air pressure
		Check bicarbonate powder reservoir	Reservoir outlet clogged	Unclog bicarbonate output valve
		Check triple hose	Hose clogged with baking powder	Unclog triple hose
		Check instrument support valve	Support valve with plunger locked	Adjusting the instrument support valve plunger
	Bicarbonate jet (prophylaxis) working at the same time as another hand instrument	Check pedal valve	Pedal valve without air pressure	Replace progressive pedal valve plunger
		Check instrument support valve	Instrument support valve does not close fully	Adjust instrument support valve
Bicarbonate jet (prophylaxis) leaving water after use	Check suction valve	Suction valve plunger takes a long time to return	Clean and lubricate rubber rings on the suction valve	
Vortex suction does not work	Check chair's electrical tension	Chair on / off button off	Turn on / off button of the chair base	
	Check chair board input and output voltage	Chair PC board does not release the rated voltage for the vortex air solenoid valve	Replace the chair PC board or the timed vortex suction PC board if it is not the same model.	
	Check the air solenoid valve of the vortex system	Solenoid coil receives the nominal voltage from the PC board, but does not open the valve plunger	Replacing the vortex suction air solenoid valve	
Vortex suction does not turn off, after placing in the holder	Check trigger button	On / off button has not been turned off	Step on the chair base button or joystick to turn the vortex system off	

## TROUBLESHOOTING TABLE - PART III

	Problems	Tests	Causes	Solutions
Delivery Unit Platform	Flex arm does not lock the tray in the working position	Check air pressure of the equipment	Team without air pressure or with insufficient pressure	Start the compressor, open the regulator to regulate the air pressure of the equipment
		Check flex arm brake	Air leak in the flex arm brake	Replace flex arm brake
		Check the brake arm spring pressure	Low pressure on the flex arm brake spring	Adjust the brake arm spring pressure
		Check the (capacitive) touch sensor	Capacitive sensor sending direct electrical voltage to the sensor solenoid valve	Replacing the (capacitive) touch sensor
	Flex arm brake touch sensor does not trigger	Check the touch sensor solenoid valve	Touch sensor valve is not closing the air flow	Replacing the touch sensor solenoid valve
		Check input voltage on the touch (capacitive) sensor PC board	The rated voltage does not reach the touch (capacitive) sensor board	Connect electrical cable and establish the nominal electrical voltage of the PC board.
		Check equipment electrical ground	Poor sizing or lack of grounding in the electrical network	Resize or install the electrical ground in the Equipment outlet / connector
	Equipment does not respond to commands from the Touch Panel	Check touch (capacitive) sensor PC board	Touch (capacitive) sensor does not respond when receiving electrical voltage	Replacing the (capacitive) touch sensor
		Check electrical harness contacts	Touch PC board does not receive electrical voltage from the chair PC board	Reconnect cables and establish electrical voltage from the chair PC board to the touch
	Equipo operating light and tray do not stop at work positions	Check working table touch PC board or assistant module	Chair PC board does not receive commands from the Touch PC board.	Replace the touch PC board of the chair or assistant module
Check the leveling of the equipment structure		Operating light arm column and Equipo are out of level in the vertical position	Retighten the fixing screws of the Equipo to the chair to level the structure	
Working Table	Air leakage through the Equipo water tank cover	Check tank cap rubber ring	Tank cover rubber ring is worn, causing air leak	Replace O'ring on the delivery unit water tank cap
		Check tank cap connection	Connection with broken weld	Replacing the Water Tank Cover Connection
	Scaler does not work	Check mains voltage	Mains voltage is not connected or is below 10% nominal	Establish electrical voltage from the mains to the equipment
		Check electrical supply voltage of the board	Electrical voltage below the nominal scaler PC board or poor electrical contact	Establish rated electrical voltage to the scaler board, check connectors and reconnect electrical cables
		Check electropneumatic valve	Electropneumatic valve is not operating.	Check and restore sufficient air pressure to activate the valve and / or check whether the valve closes the electrical contact. Replace valve.
		Check scaler PC board	Scaler board receives the nominal voltage from the transformer, but no electrical voltage is output to the transducer (pen)	Replace the PC board's fuse. And when there is no fuse, replace the scaler PC board
		Check scaler hose	Electric scaler hose cable is broken	Replace the scaler hose
		Check scaler instrument holder NC switch	Switch is locked does not release electrical control when the pen is removed from the holder	Unlock the button or replace the scaler holder microswitch
		Check scaler transducer (pen)	Nominal electrical voltage reaches the transducer, but the insert (tip) does not vibrate	Check that the insert is firmly attached to the transducer. If the problem persists, replace the transducer.
		Check scaler potentiometer	No voltage reaches the scaler transducer	Replace scaler potentiometer

## TROUBLESHOOTING TABLE - PART IV

	Problems	Tests	Causes	Solutions
Working Table	Weak scaler	Check electrical voltage of the scaler PC board	Electrical voltage is below the nominal	Replacing the scaler PC board
		Check potentiometer	Potentiometer does not select the power for that insert model (tip)	Replace scaler potentiometer
		Check scaler tip	Insert (tip) was not threaded until the end of the transducer shaft thread	Use the torque wrench to thread the insert on the scaler transducer (pen) shaft
			Internal thread of the insert (tip) is not compatible with the external thread of the scaler transducer (pen)	Replace the insert (tip), using the compatible model the thread of the scaler transducer
	Check scaler tip	scaler insert is worn	Replace the scaler insert (tip)	
	Scaler does not come out of water	Check scaler water valve	Scaler water valve closed or dirty obstructing the water outlet	Open the scaler water valve and do internal cleaning
		Check the scaler PC board	The scaler PC board is not receiving rated voltage from the transformer	Repair electrical connection between transformer and scaler PC board
			scaler PC board does not release rated voltage to the solenoid valve	Replacing the scaler PC board
	Check scaler water solenoid valve	Scaler solenoid valve receives nominal voltage from the PC board, but does not open the plunger of the water valve	Replacing the scaler water solenoid valve	
	Electric micromotor does not work	Check the equipment's electrical input network	Mains disconnected or destabilized	Turn on equipment or stabilize power grid
		Check micromotor rotation switch	Inverter switch (FWD / REV) is in the OFF position	Select the key for the desired rotation FWD or REV
		Check air pressure of the electropneumatic valve	No air pressure or insufficient pressure in the electropneumatic valve	Adjust air pressure in the electropneumatic valve
		Check electropneumatic valve switch	No electrical voltage arrives in the electropneumatic valve micro switch	Reconnect cables and establish rated voltage in the electropneumatic micro switch
		Check electric micromotor PC board	Nominal voltage does not reach the electric micromotor board	Connecting cables and establishing nominal input voltage on the electric micromotor board
The board receives electrical voltage but does not send to the electric micromotor			Replacing the electric micromotor PC board	
Check micromotor rotation switch		Inverter switch (FWD / OFF / REV) with poor contact	Replacing the electric micromotor inverter switch	
Check electric micromotor potentiometer		Potentiometer with poor contact	Replace electric micromotor potentiometer	
Check micromotor cable		Electrical cable with bad contact or broken	Repair or replace the electric micromotor cable	
Check electric micromotor		Micromotor rotor (handpiece) is locked	Replace electric micromotor	
Check contra-angle or straight handpiece	Contra-angle with the cartridge locked or straight handpiece with the drive shaft locked	Repair or replace contra-angle cartridge or transmission shaft of straight handpiece		
	Contra-angle or straight handpiece with crushed turbine head	Repair or replace contra-angle or straight handpiece		

## TROUBLESHOOTING TABLE - PART V

Problems	Tests	Causes	Solutions
Weak electric micromotor, low speed or failing	Check the electrical voltage of the micromotor PC board	Electric voltage is below the nominal for the micromotor operation	Establish rated electrical voltage of the equipment
	Check air pressure of the electropneumatic valve	Lack or low air pressure in the electropneumatic valve	Adjust air pressure in the electropneumatic valve
	Check electric micromotor potentiometer	Potentiometer is set to minimum power	Adjust the potentiometer to the desired RPM speed
		Selector switch power variation failure	Replacing the micromotor power adjustment switch
Thermo Comfort does not heat the syringe water	Check electrical voltage in the water heater	Nominal electrical voltage does not reach the heater	Reconnect cable and establish the rated electrical voltage of Thermo Comfort
	Check water heater lamp (Boiler)	Boiler halogen lamp is burned out	Replacing the water tank lamp
	Check on / off switch	Switch off	Turn on heater switch
Low and high speed pneumatic turbines are weak	Check compressed air compressor	Compressor off	Check the sizing and condition of the compressor power supply circuit breaker. Turn on the circuit breaker.
		Insufficient pressure at the compressor outlet	Adjust the outlet pressure of the compressor air filter
		Starting the engine with dynamic pressure below the minimum recommended in the equipment user manual	Adjust the pressure switch to start the compressor motor with dynamic pressure reaching 5.5 bar (80 psi)
		Compressor with low power and displacement below the recommended for the type of equipment	The compressor must have a minimum displacement of 150 l / min.
		Inadequate compressed air piping the distance between the equipment and the compressor	The air tubing must have the diameter according to the measures specified in the equipment user manual.
Low and high speed pneumatic turbines are weak	Check air filter	Air filter near the equipment has a static pressure below 5.5 bar (80 psi)	Adjust the air filter to 5.5 bar (80 psi) next to the equipment
	Check the pressure regulating valve (VRP1)	The regulating valve (VRP1) has low pressure	Adjust the valve (VRP1) so that the dynamic working pressure of the low speed is 2.4 bar (35 psi) using the gauge on the turbine
		Valve (VRP1) does not regulate	Replacing the air reduction valve seal
	Check the pressure regulating valve (VRP1) and air choke for the high speed turbine	The regulating valve (VRP1) has low pressure and a choke with little air flow	Set the working pressure of the handpieces.
	Check adjustment of the valves of the instrument holder	Valves on the instrument supports are out of order	Adjust the valves so that the vanes close the air of the instruments when they are in the supports
Check the air propulsion pedal	Progressive pedal valve losing pressure or low air flow	Replacing the progressive pedal valve	

Working Table



## TRUBLESHOOTING TABLE - PART VI

Problems	Tests	Causes	Solutions
Lack of water spray on the turbines	Check compressor	Low air pressure at the filter outlet	Adjust the air filter to the rated working pressure
	Check equipment air valve	Closed tank air valve	Open the air valve to pressurize the water tank
	Check the Equipo air pressure regulating valves	Low air pressure in the tank	Adjust the Equipo's VRP1 valve and the high-speed turbine air choke with the pressure gauge. Then the tank VRP2 and the spray choke
	Check triple tap	Triple tap with closed water valve	Open the triple tap water valve
	Check turbine (pen)	Turbine (pen) with the spray outlet clogged	Unclog outlets of turbine water spray (pen)
Instruments on the stand start when the propulsion pedal is depressed or when using another handpiece	Check instruments holder valves on the delivery system	Support valves or microswitches do not close completely when they are with the instruments	Adjust the valves of the instrument holders so that the vanes close the valves fully when they are with the handpieces
Turbine drips after use or when in the tip holder (Cross)	Check the water suction valve	The internal plunger of the water suction valve is locking	Open the water suction valve and lubricate the sealing rings. If not, replace the valve
Syringe does not come out air and water	Check compressor air pressure	Compressor air flow interrupted	Establish air flow by turning on the compressor or adjusting the filter.
	Check air pressure of the equipment	Air valve of the water tank is closed	Open the water tank air valve
Syringe locking air and water buttons	Check 3-way syringe	3-way syringe head with stroke marks / dented	Rectify the button fittings, if not resolved, replace the 3-way syringe
		Lack of lubrication on the buttons	Lubricate the 3-way syringe buttons, if not resolved, replace the syringe
Syringe leaving water when pressing the air button	Check compressed air compressor	Water in the compressor air tank	Drain the reservoir, replace or replace the air filter. If the compressor is too far from the equipment, place a filter on the chair.
Leakage of water through the fitting of the 3-way syringe tip	Check the 3-way syringe	Clearance in the metal ring of the syringe tip	Tighten the metallic ring on the tip of the 3-way syringe
		The base of the 3-way syringe tip is broken	Replacing the 3-way syringe tip
Brushless electronic micromotor will not start	Check electrical network	Mains disconnected or with voltage below that specified for the equipment	Connect or stabilize the equipment's electrical network
	Check fuse and electrical voltage of the base of the chair	Blown chair base fuse	Replace fuse according to the mains voltage. Test electrical harness
Brushless electronic micromotor will not start	Check equipment harness	Nominal electrical voltage of the transformer does not reach the electronic micromotor PC board	Retighten connectors and establish nominal electrical voltage between the transformer and the electronic micromotor PC board
	Check equipment air pressure	Compressor off or low air pressure in the Equipo, not activating the electronic micromotor PC board sensor	Switch on the compressor and regulate the air pressure of the equipment
	Check instrument support valve	Delivery system air does not reach the electronic micromotor PC board pressure sensor	Check the air pressure of the Delivery System, reduction valve (VRP1), pedal valve and instrument holder

Working Table

## TRUBLESHOOTING TABLE - PART VII

	Problems	Tests	Causes	Solutions	
Working Table	Brushless electronic micromotor failing the turbine or turning the drill	Check electronic micromotor PC board	Electronic PC board does not release rated voltage to the micromotor (handpiece)	Replacing the electronic micromotor PC board	
		Check the selection mode of the electronic micromotor control panel	The selection mode is not suitable for the contra-angle in use	Select the working mode and RPM for the contra-angle in use 1: 1, 1: 5 or 20: 1 on the control panel	
		Check contra-angle	Contra-angle with hit / hit mark on the turbine head	Rectify the part, if not resolved, replace the contra-angle	
	Brushless electronic micromotor does not come out of water	Check electrical voltage of the electronic micromotor PC board	Low nominal voltage from the electronic PC board output to the micromotor	Replacing the electronic micromotor PC board	
		Check reservoir and air valve of the delivery system	Tank air valve is closed	Open air valve of the delivery system tank	
	Brushless electronic micromotor heating the contra-angle head	Check water record of electronic micromotor	Dirt inside the water register of the electronic micromotor	Open the water register of the micromotor and perform cleaning	
		Check the selection mode of the electronic micromotor control panel	The selection mode is not suitable for the contra-angle in use	Select the working mode and RPM for the contra-angle in use 1: 1, 1: 5 or 20: 1 on the control panel	
	ChronoLub system remains beeping continuously	Check ChronoLub PC board programming	Check contra-angle	Lack of lubrication of the drive shaft and cartridge	Lubricate the contra-angle after each service
			ChronoLub system has not been rebooted (RESET / ESC button) after instrument lubrication	After lubricating the pen, press the RESET / ESC button on the ChronoLub panel	

Revisions Program - Chair and Delivery Unit - Part I	180d	360d	540d	720d	900d
<b>CHAIR</b>					
Checking of all movements	✓	✓	✓	✓	✓
Headrest checking	✓	✓	✓	✓	✓
Armrest checking	✓	✓	✓	✓	✓
Checking the valve and pedal handle	✓	✓	✓	✓	✓
Articulation axes lubrication	✓		✓		✓
Electrical motor/ spindle drive lubrication		✓		✓	✓
<b>WATER UNIT / ASSISTANTE MODULE</b>					
Articulation axes verification / lubrication	✓	✓	✓	✓	✓
Castors checking (Kart)	✓	✓	✓	✓	✓
Handpieces pressure checking	✓	✓	✓	✓	✓
O´rings coupling for handpieces checking and lubrication	✓	✓	✓	✓	✓
Micropilot valve of the handpiece holder checking	✓	✓	✓	✓	✓
Electric-pneumatic valves cheaning and lubrication	✓	✓	✓	✓	✓
Instrument Articulators (Cross) Checking	✓	✓	✓	✓	✓
Touch Commands Checking	✓	✓	✓	✓	✓
Disassembles and lubrication the syringe buttons		✓		✓	✓
Handpieces' Hoses Checking		✓		✓	✓
Wear out of Scaler Tips control		✓		✓	✓
Flex Arm movements and Brake checking		✓		✓	✓
X-ray viewer activation button checking		✓		✓	✓
Checking the prophylaxis reservoir lid ring		✓		✓	✓
Checking the prophylaxis hose	✓		✓		✓
Checking the trim of the prophylaxis pen		✓		✓	✓
<b>OPERATING LIGHT</b>					
Verification of joint movements	✓	✓	✓	✓	✓
Verification of available intensities	✓	✓	✓	✓	✓
Focus check	✓	✓	✓	✓	✓
Lamp / LED Rating		✓		✓	✓
Screen / mirror check			✓		✓

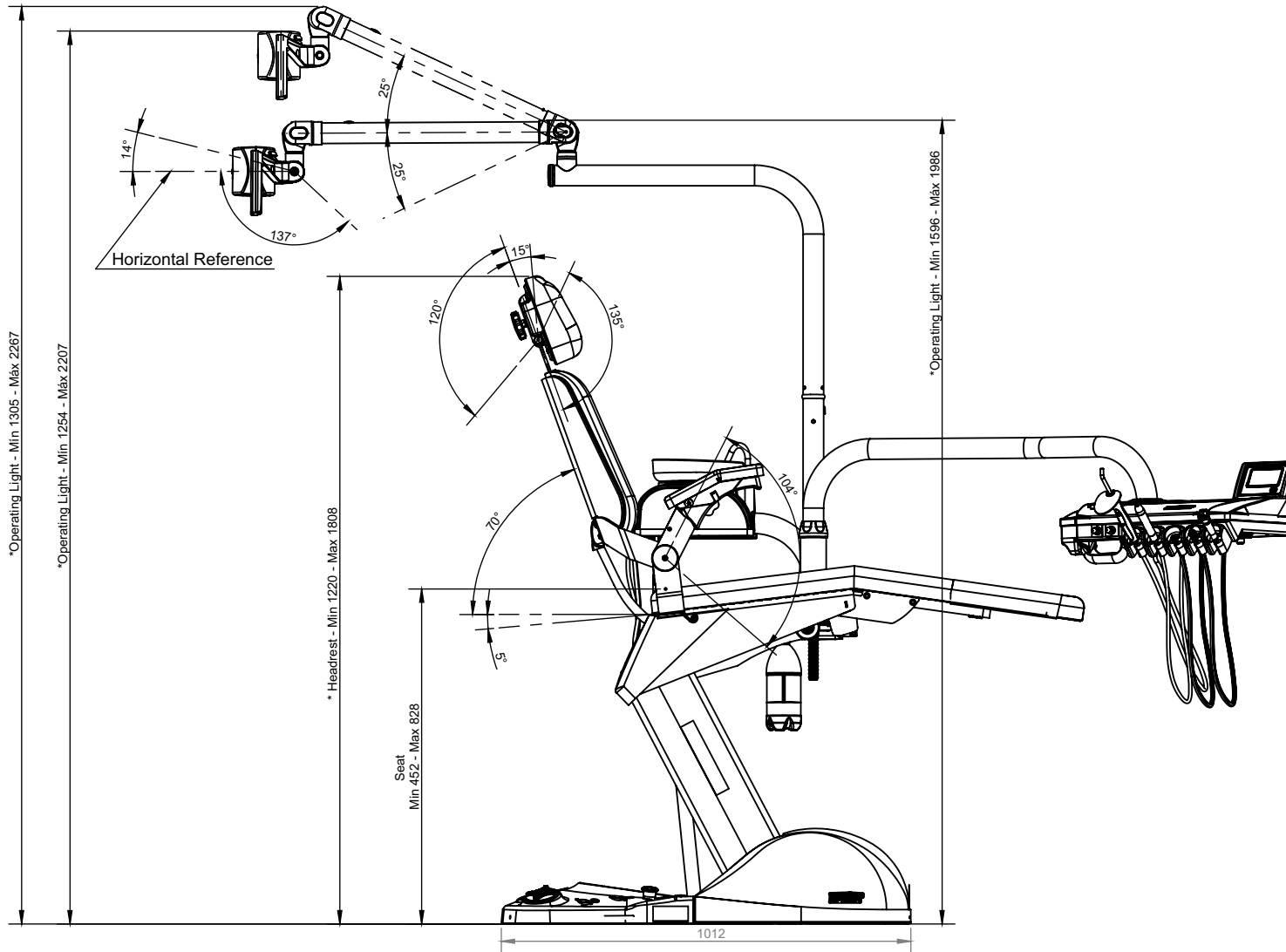
Revisions Program - Chair and Delivery Unit - Part II	180d	360d	540d	720d	900d
<b>WATER UNIT / ASSISTANTE MODULE</b>					
Movements checking	✓	✓	✓	✓	✓
Suction 250 to 300 mm/hg checking	✓	✓	✓	✓	✓
Lubrication of the saliva ejector´s filter O´rings	✓	✓	✓	✓	✓
Disassembles, cleaing and lubricating of the bowl O´ring	✓	✓	✓	✓	✓
Strainer Checking	✓	✓	✓	✓	✓
Blade for instruments holder checking	✓	✓	✓	✓	✓
Articulation Lubrication	✓	✓	✓	✓	✓
Prophylaxis' Hose checking	✓		✓		✓
Disassemble and lubricating the syringe buttons		✓		✓	✓
Checking of guarnition for prophylaxis' instrument		✓		✓	✓
Prophylaxis' System Reservoir O´ring checking		✓		✓	✓
Air vaccum tubes checking		✓		✓	✓
<b>STOOL</b>					
Castors checking	✓	✓	✓	✓	✓
Checking the piston and movements	✓	✓	✓	✓	✓
<b>CURING LIGHT</b>					
Verification of intensity and operating programs	✓	✓	✓	✓	✓
Checking tip and support ring	✓		✓		✓
<b>JUNCTION BOX</b>					
Air, Water and Vacuum hose checking	✓	✓	✓	✓	✓
Sewer Connector Checking and Cleaning	✓	✓	✓	✓	✓

Features - Chair	
<b>Electrical</b>	
Power supply	118, 127, 220 and 230 VAC; The voltage must be selected at installation. <b>Note:</b> All equipment leaves the factory set to 220VAC.
Number of phases	Single phase
Frequency	50/60 Hz
Power	124,2 VA
Maximum Equipment Voltage	24V
Chair and Equipment Fuses	Fast Acting Fuses
- F1 Chair	1.5A to 220VAC / 230VAC 3A to 118VAC / 127VAC
- F2 Connection Box	10A
PC Board Fuses	
- F1 and F2	3,5A Delayed Fuse
- F3 Operating Light	3,15A Fast Acting Fuse
<b>Mechanical</b>	
Protection type against electric shock	Class I equipment according to IEC 60601-1-1 and IEC 60601-1-2
Protection Degree	Type B
Operation mode	Intermittent
Protection against harmful water penetration	IPX0
Transformer thermal protection	Aperture at 130°C ±3%
Lifting capacity	According to ISO 6875 - 135 Kg
Water tank capacity	1000ml
Operation light's intensities	8.000 to 30.000 Lux;
Seat height in relation to the floor	Minimum 44 cm; Maximum 72cm
Gross weight	200Kg
Storage temperatures	-30°C to 45°C
Working temperatures	2°C to 45°C
Mechanical Structure	Laminated steel strip SAE 1020
Welding	MIG
Painting	Electrostatic Painting with Polyurethane
Plastic Covers	High Impact Pigmented Polystyrene
Painting of other plastic parts	ABS, PP, Polyacetal and TPE

Features - Accessories	
<b>Connections</b>	
Electric	Flexible tube ¾"
Pneumatic	Flexible tube ¾"
Sewer connection	DN 40mm
Water tubing	Welding ø 25mm rigid PVC tube with the L/R 25 x ½" terminal
<b>Curing Light</b>	
Power supply	24VAC - 50Hz/60Hz
Power	8W
Operation mode	Continuous, ramp and pulsed
Light power	Fiber Optics probe (tip) 1000-1200 mW/cm <sup>2</sup>
Wave length	420-480 nm
Timer	20 seconds
<b>Scaler</b>	
Power supply	24VAC - 50Hz/60Hz
Frequency	28kHz ±3kHz
Power	3 to 20 W
<b>Electrical Micromotor</b>	
Power supply	24VAC - 50Hz/60Hz
RPM	0-35.000 RPM
Max. Power	60W
Torque	270g-cm
<b>Brushless Micromotor</b>	
Light's intensities	25.000Lux
	20:1: -- 100-2.500 RPM
RPM	1:1: -- 2.000-40.000 RPM
	1:5: -- 10.000-200.000 RPM
Max. Power	120W
Torque	~3,5Ncm
<b>High Speed Turbine with Fiber Optics</b>	
Power supply	24VAC - 50Hz/60Hz
LED Voltage	3,3VCC
LED power	2W
<b>X-Ray</b>	
Power supply	24VAC - 50Hz/60Hz
Power	4W
<b>Thermo Comfort</b>	
Power supply	12VAC - 50Hz/60Hz
Power	50W
<b>Anti-Stress</b>	
Power supply	12VCC
Power	15W

# SPRINT T - SIDE VIEW

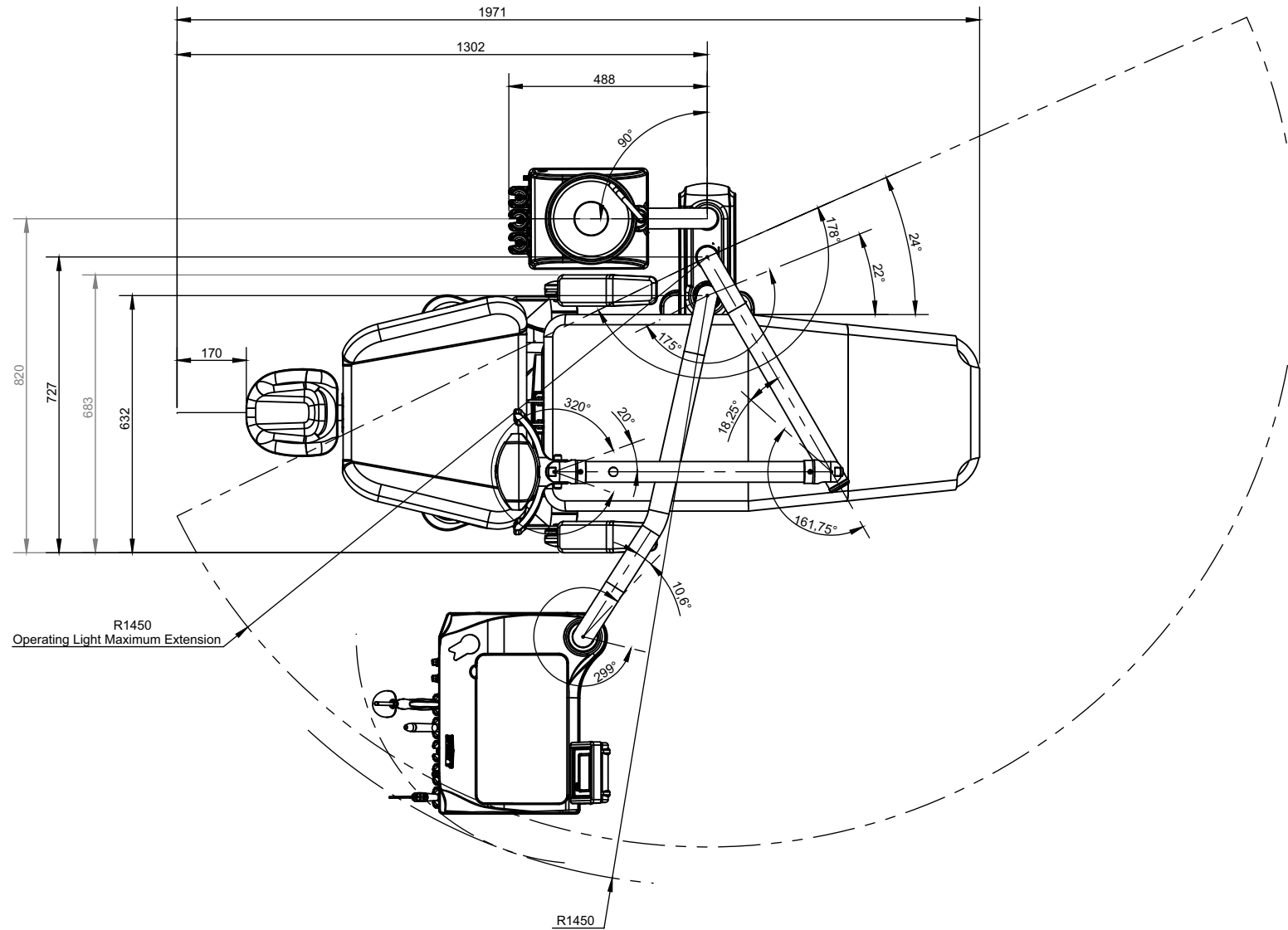
Measures in millimeters





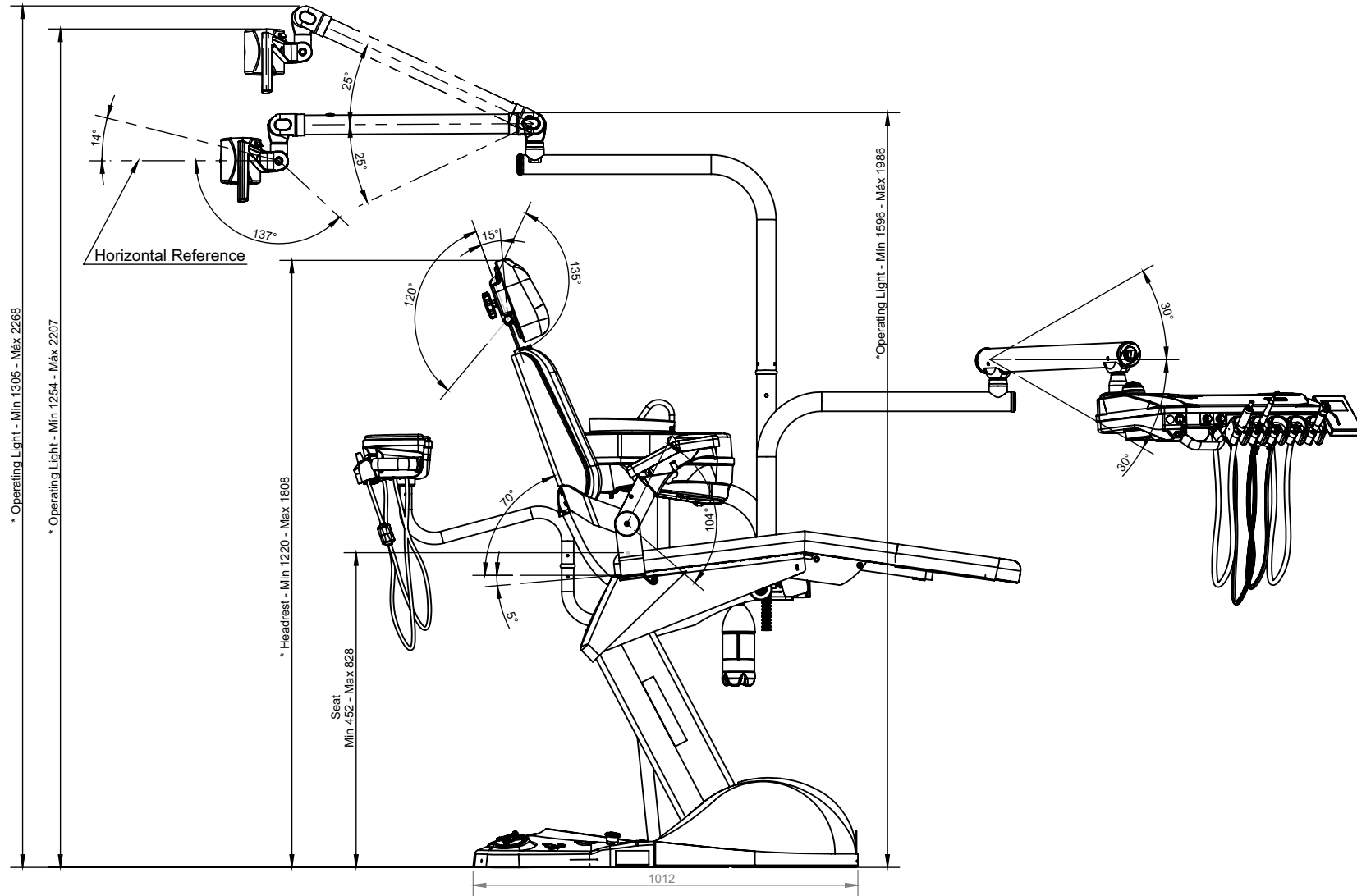
# SPRINT T - UPPER VIEW

Measures in millimeters



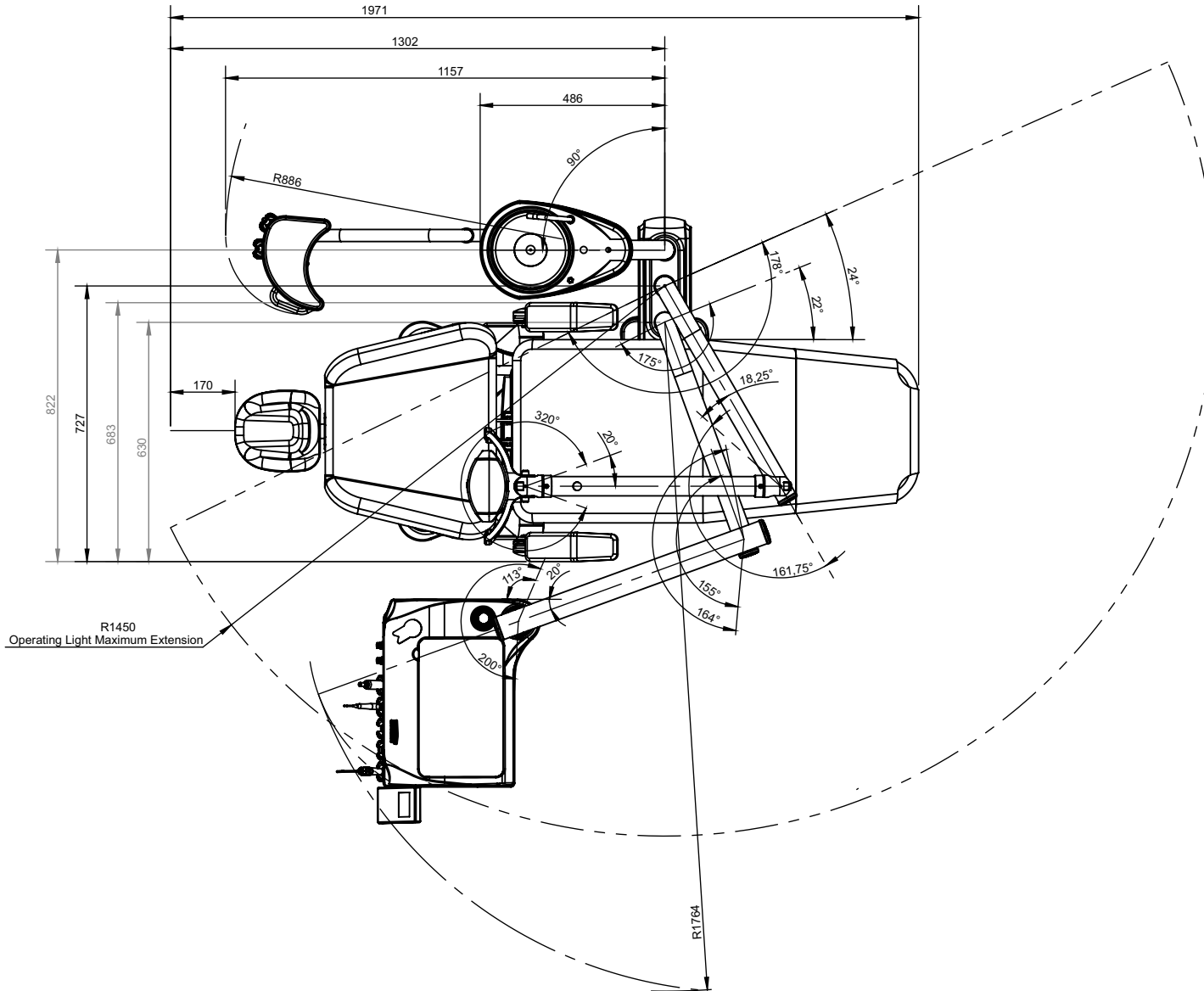
SPRINT - SIDE VIEW

Measures in Millimeters



# SPRINT - UPPER VIEW

Measures in Millimeters



## START OF ATTACHMENT SECTION

### › 5401149 - SPS 20 Electrical Diagram

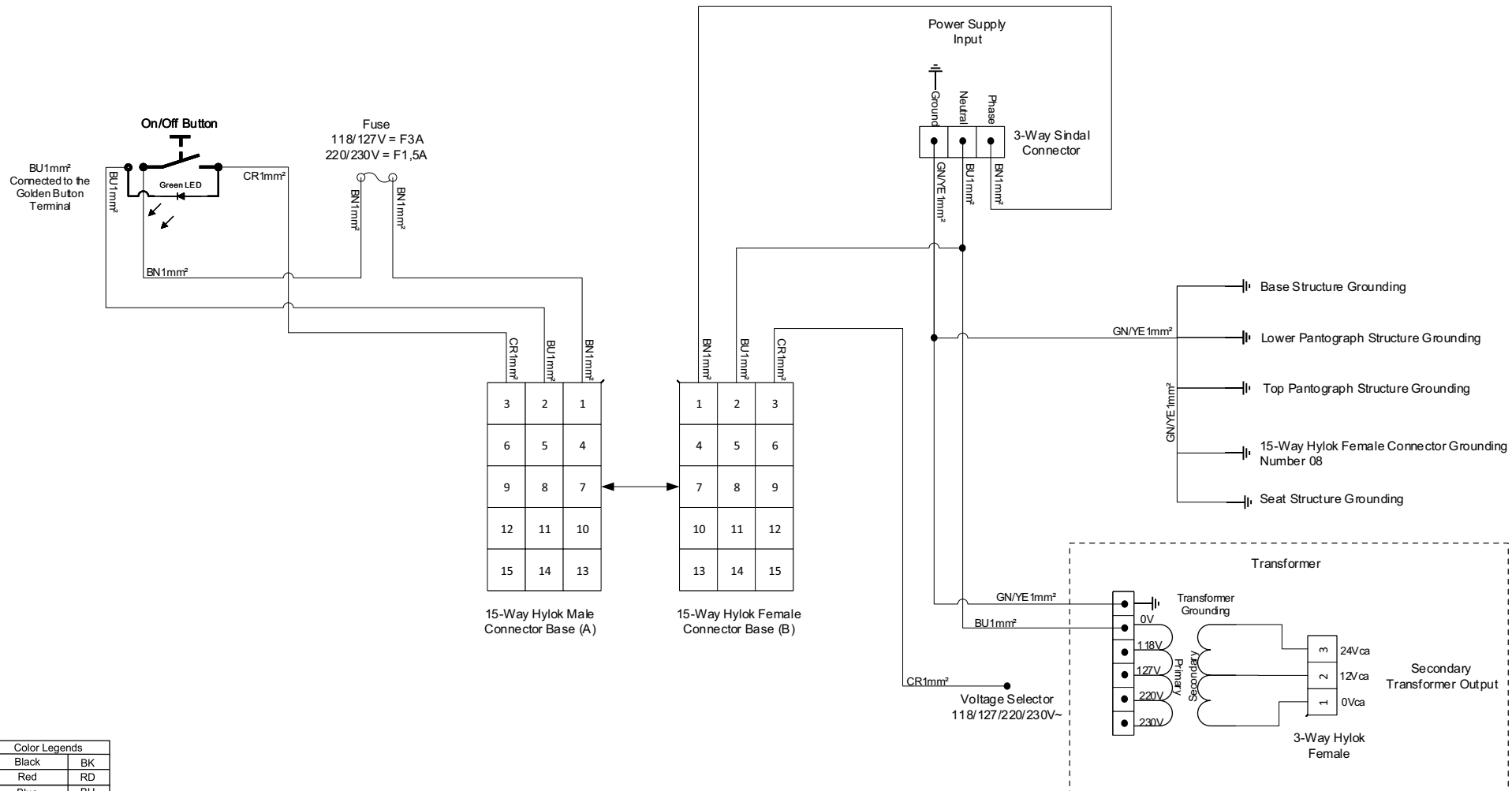
Chair	57
Chair With Emergency Switch	58
Connection of Base Chair Controls	59
Connection of the Base Chair on the Board	60
Connection of CPU Board and Motors	61
Connection of Board in Spittoon Bowl, Cup Holder and Vórtice	62
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Touch Sensor, Light Curing, X-ray and Thermo Comfort Connection	65
Operating Light Connection	66
Fiber Optics and Air-Jet Connection	67
Scaler and Electric Micromotor Connection	68
Brushless Micromotor and Scaler Connection	69

### › 5401153 - SPS 20 With Foot Pedal Electrical Diagram

Chair	70
Chair With Emergency Switch	71
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Solenoid Connection in the Equipment	74
Anti-Stress	75
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Operating Light Connection	77
Fiber Optics and Air-Jet Connection	78
Scaler and Electric Micromotor Connection	79
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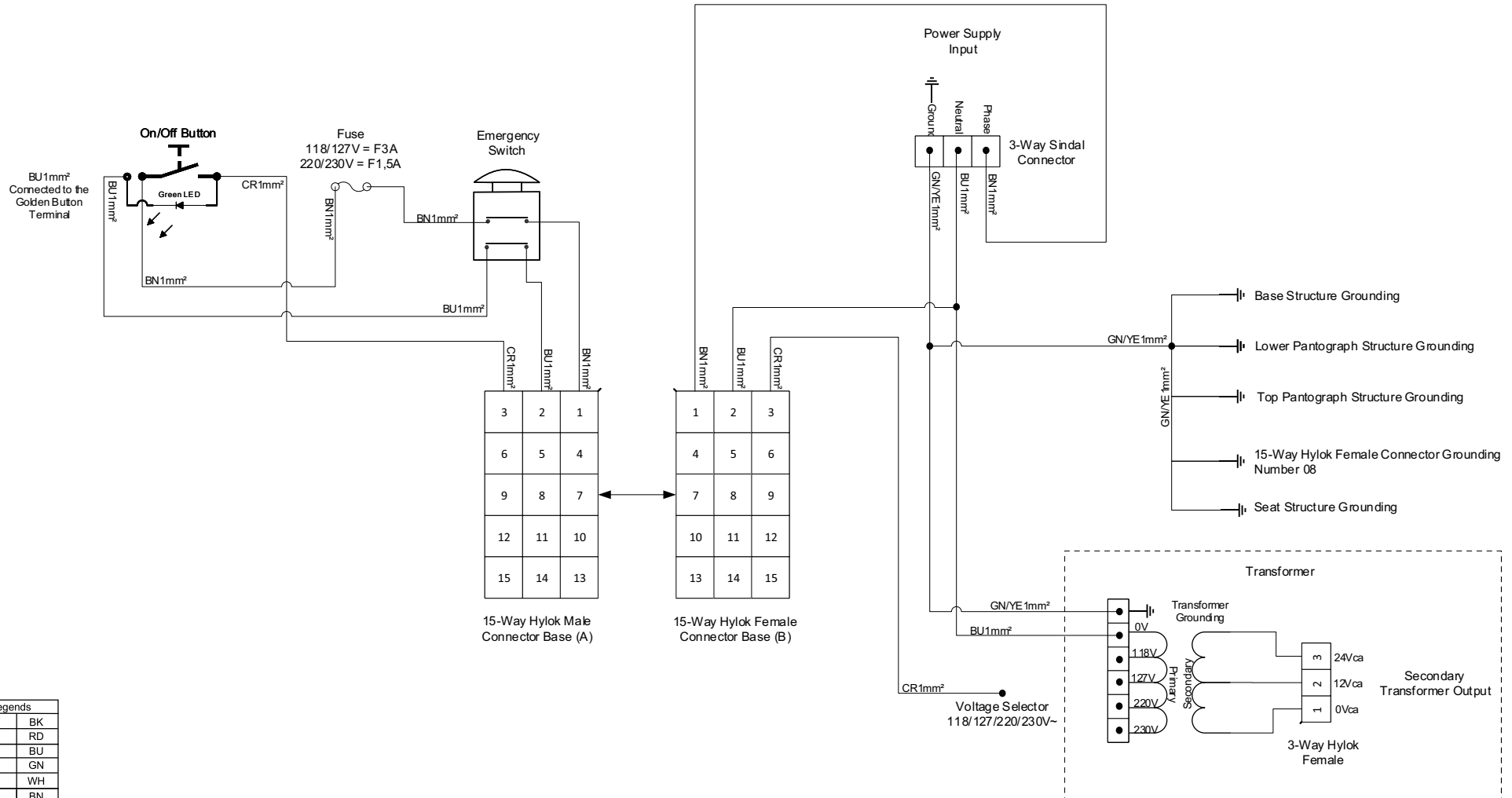
### › 5406088 - Hydropneumatic Diagram Operating Line

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Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

**CHAIR**  
- Electrical part + Grounding.

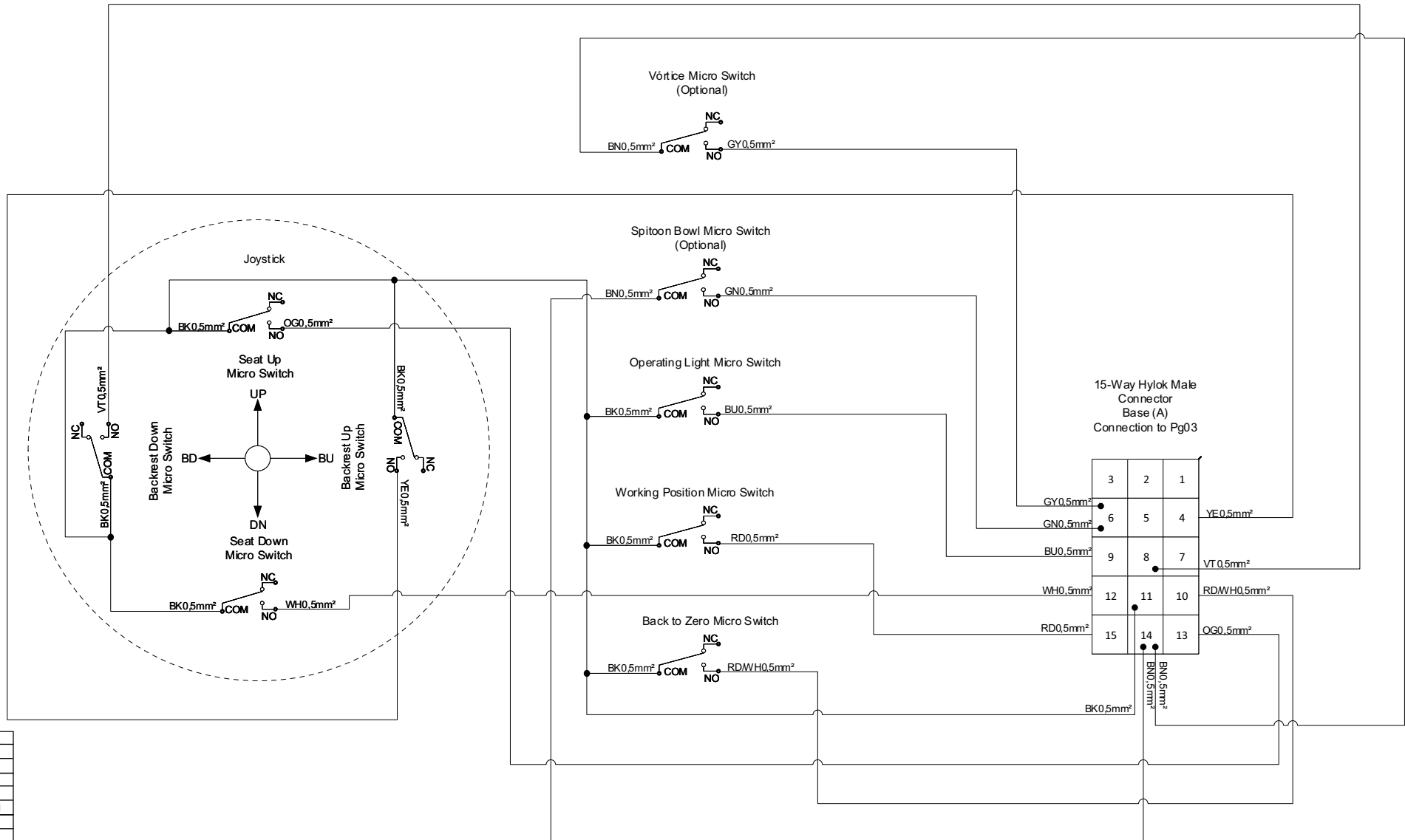


Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## CHAIR

- Electrical part + Emergency Switch + Grounding.

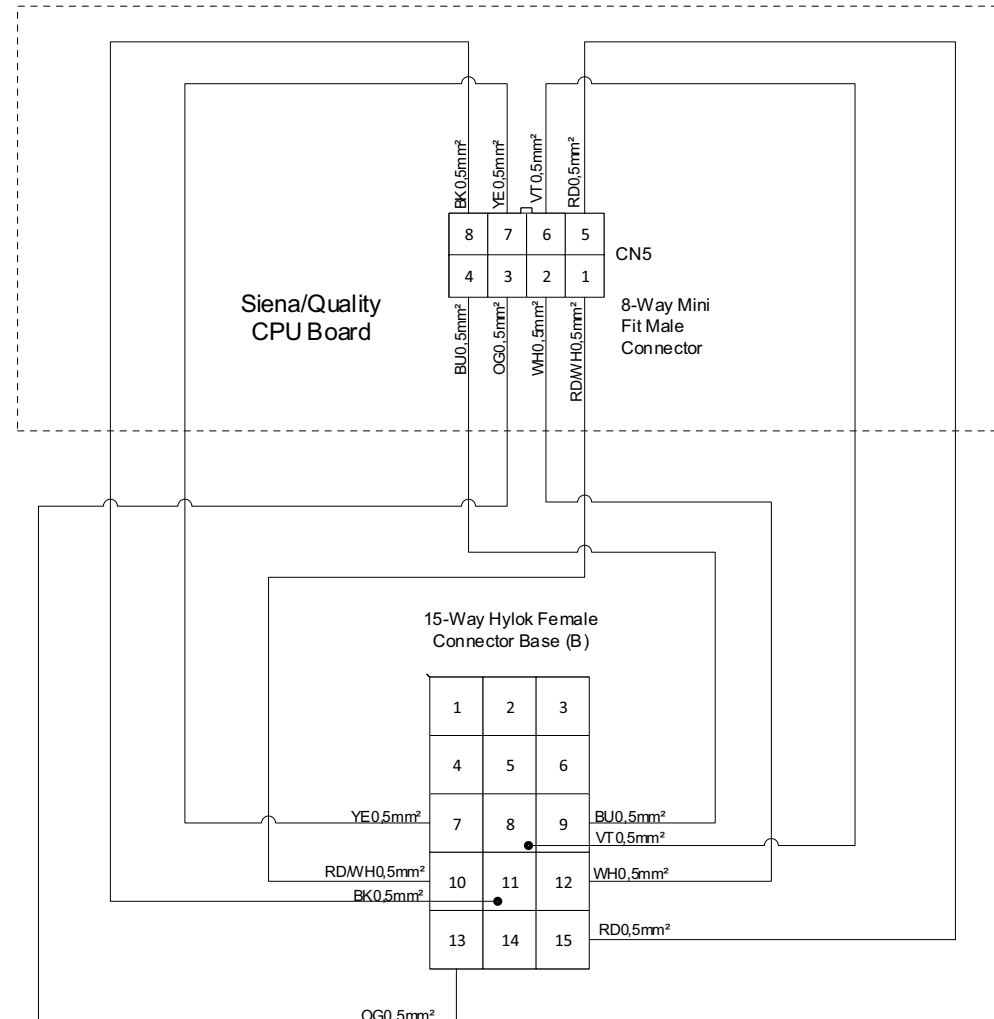




Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### CONNECTION OF BASE CHAIR CONTROLS

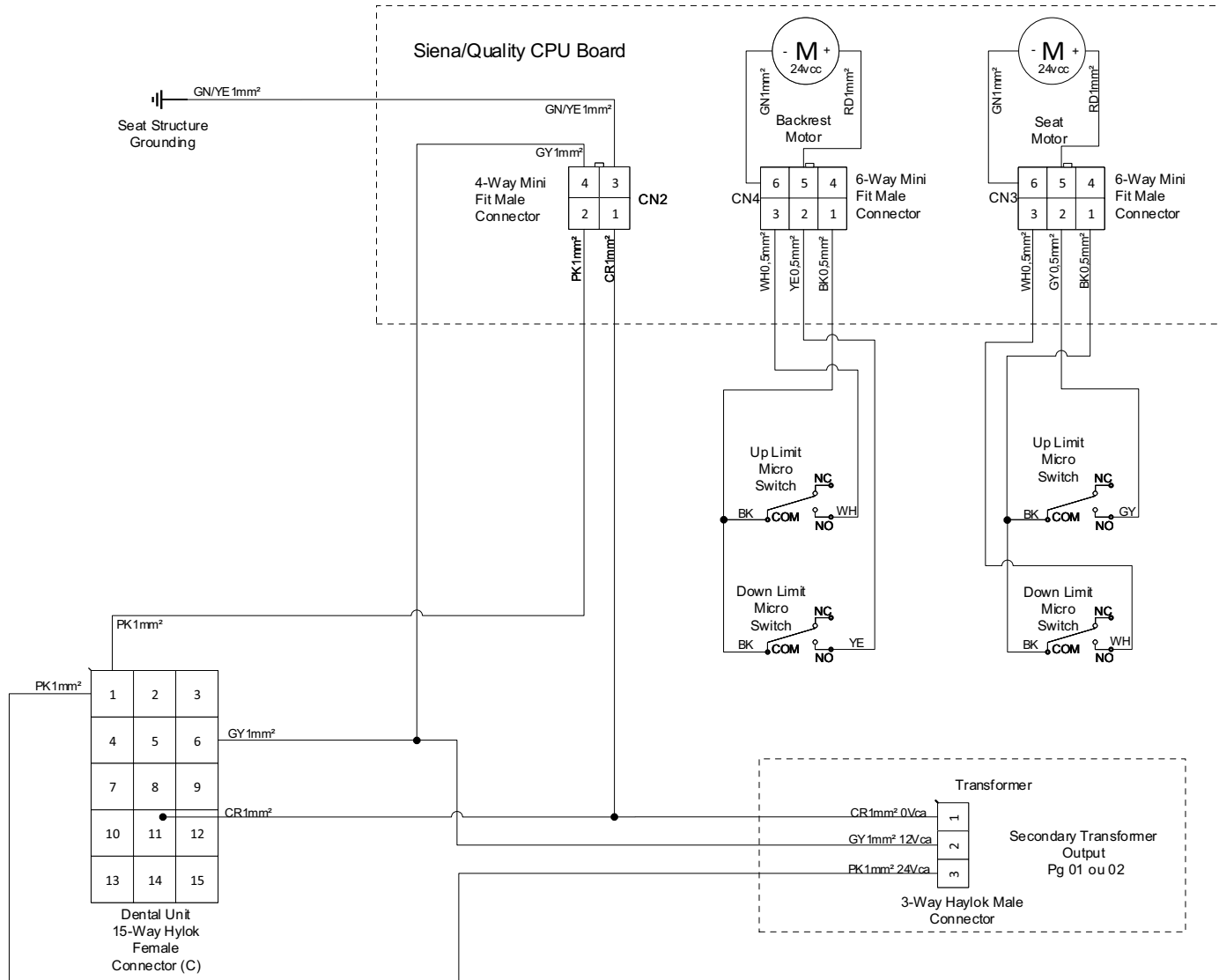
- Optional according to the equipment configuration grid.
- When using Vértice the Spittoon Bowl command passes for the Base to the Water Unit.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

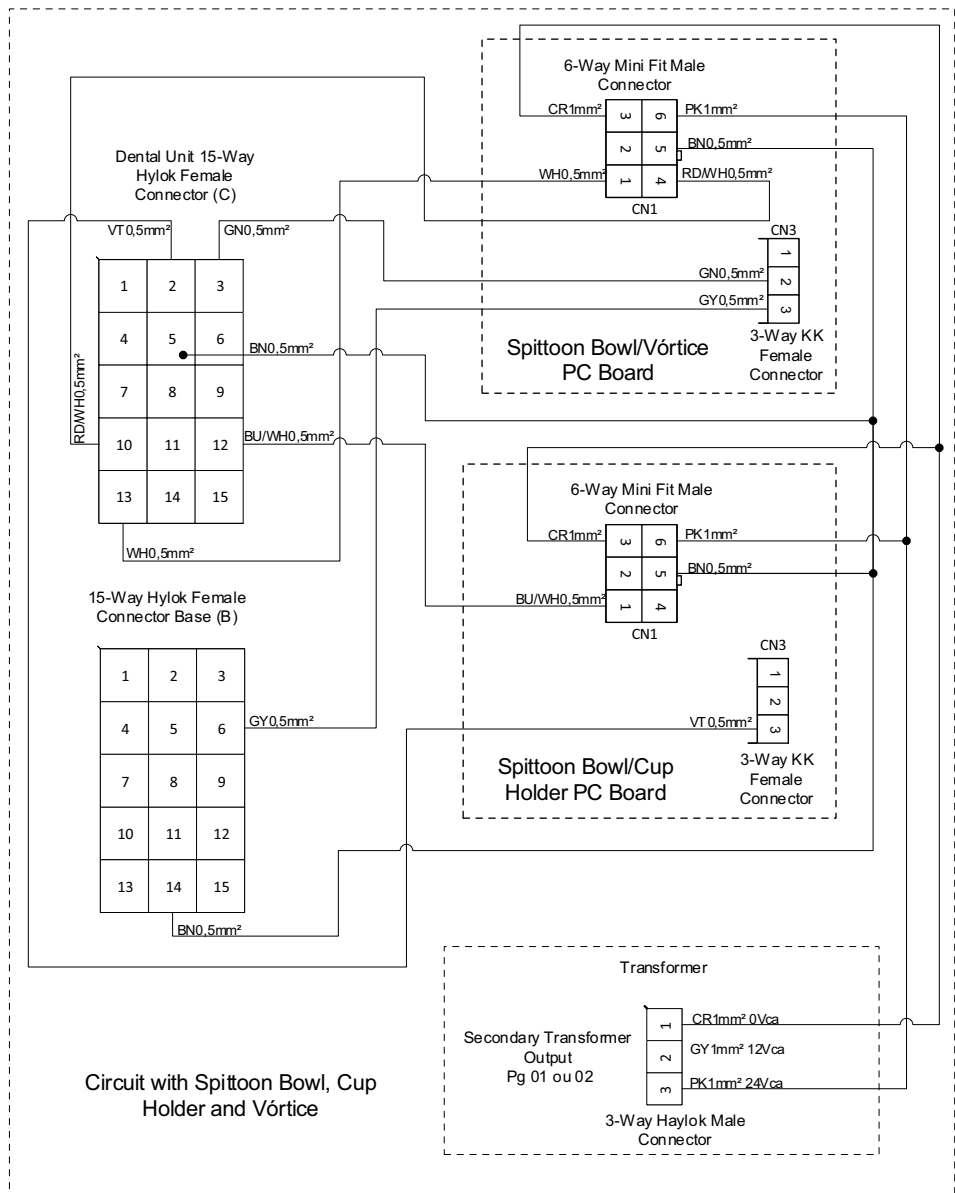
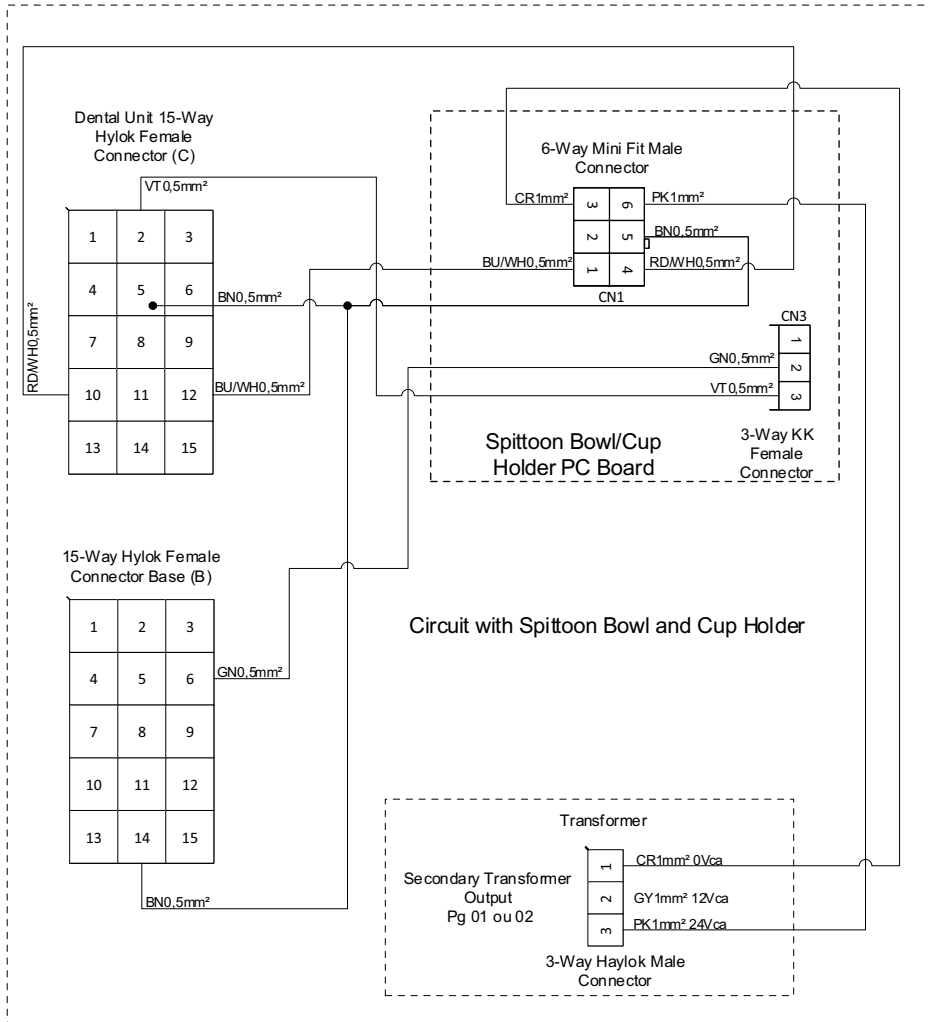
### CONNECTION OF THE BASE CHAIR ON THE BOARD

- Optional according to the equipment configuration grid.
- When using Vórtice the Spittoon Bowl command passes for the Base to the Water Unit.



### CONNECTION OF CPU BOARD AND MOTORS

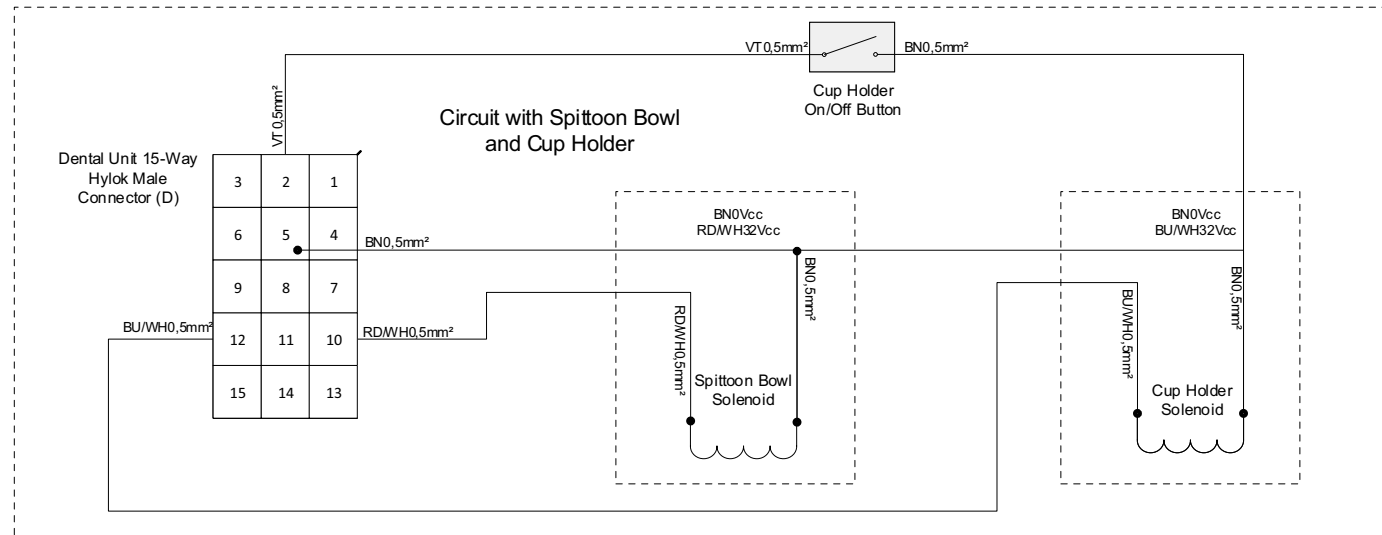
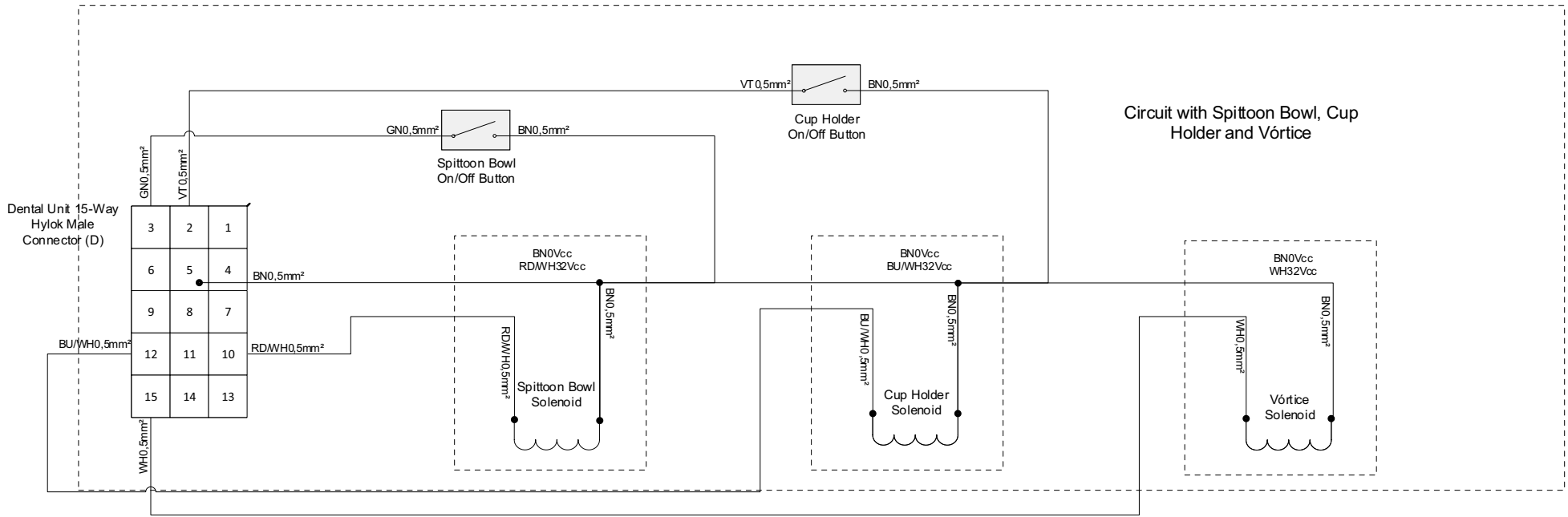
- Optional according to the equipment configuration grid.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## CONNECTION OF BOARD IN SPITTOON BOWL, CUP HOLDER AND VÓRTICE

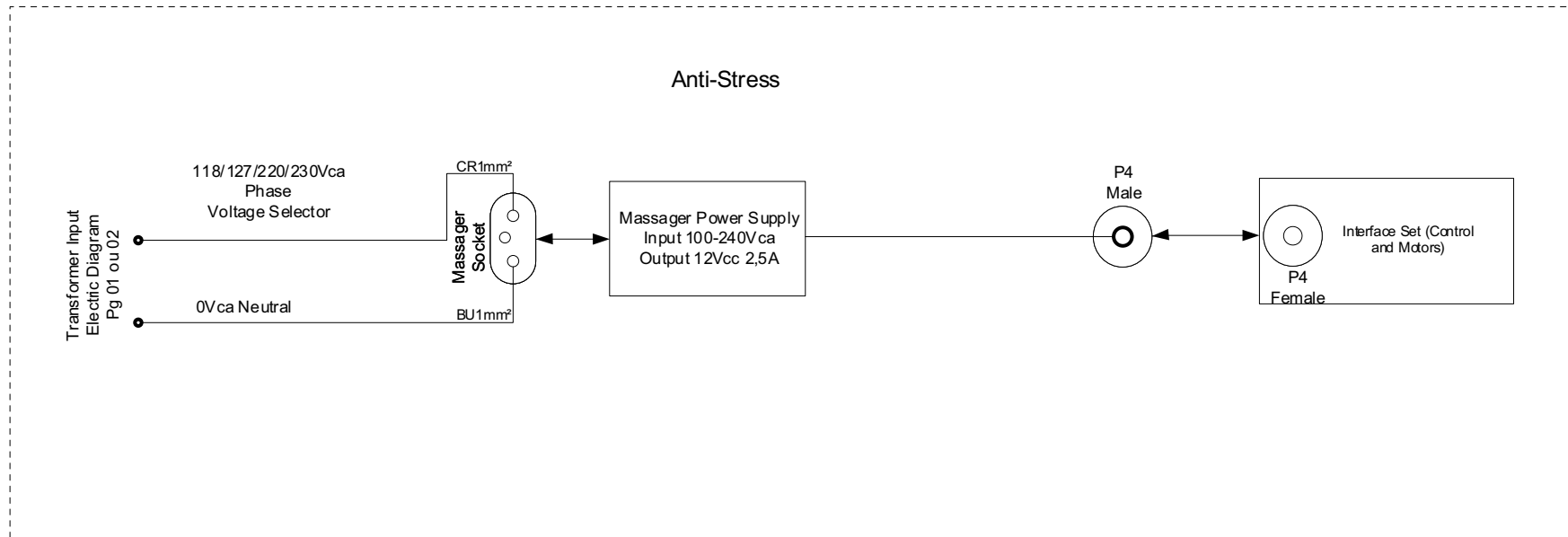
- Optional according to the equipment configuration grid.
- When using Vórtice the Spittoon Bowl command passes for the Base to the Water Unit.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### SOLENOID CONNECTION IN THE EQUIPMENT

- Optional according to the equipment configuration grid.
- When using Vórtice the Spittoon Bowl command passes for the Base to the Water Unit.

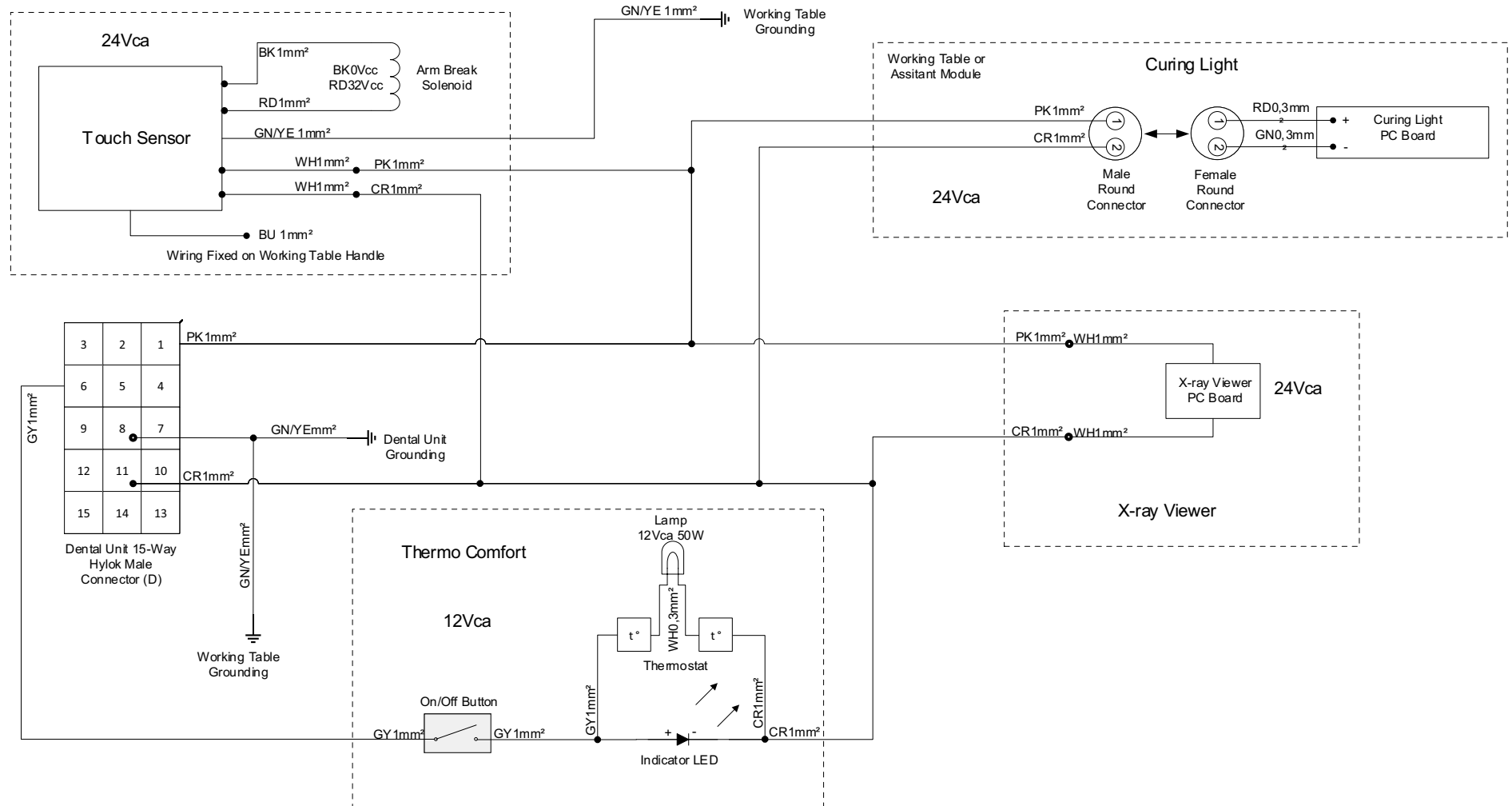


Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### ANTI-STRESS CONNECTION

- Optional according to the equipment configuration grid.

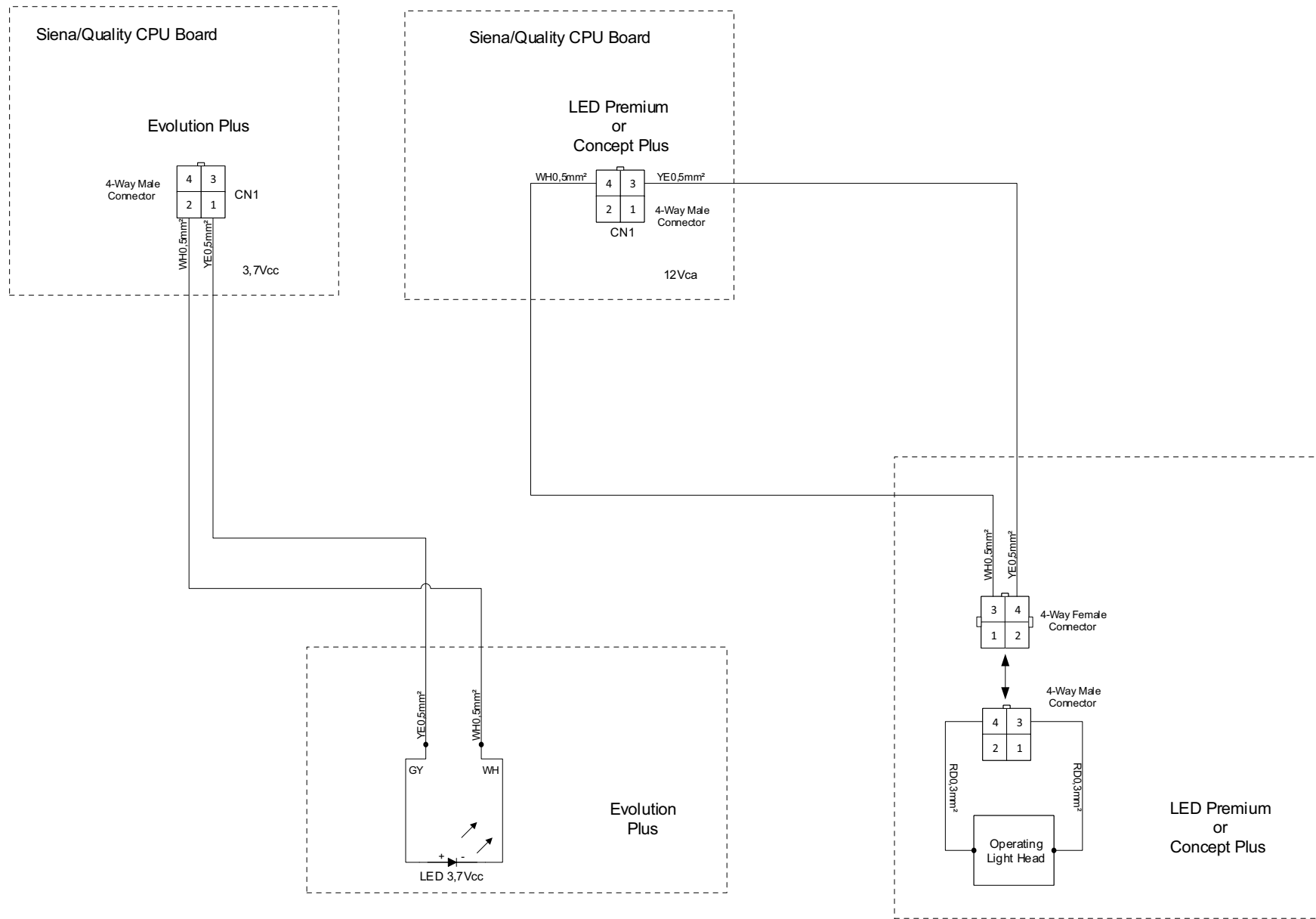




Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## TOUCH SENSOR, LIGHT CURING, X-RAY AND THERMO COMFORT CONNECTION

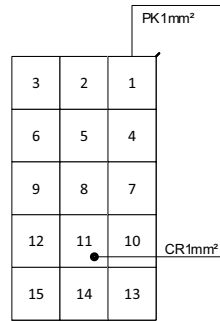
- Optional according to the equipment configuration grid.



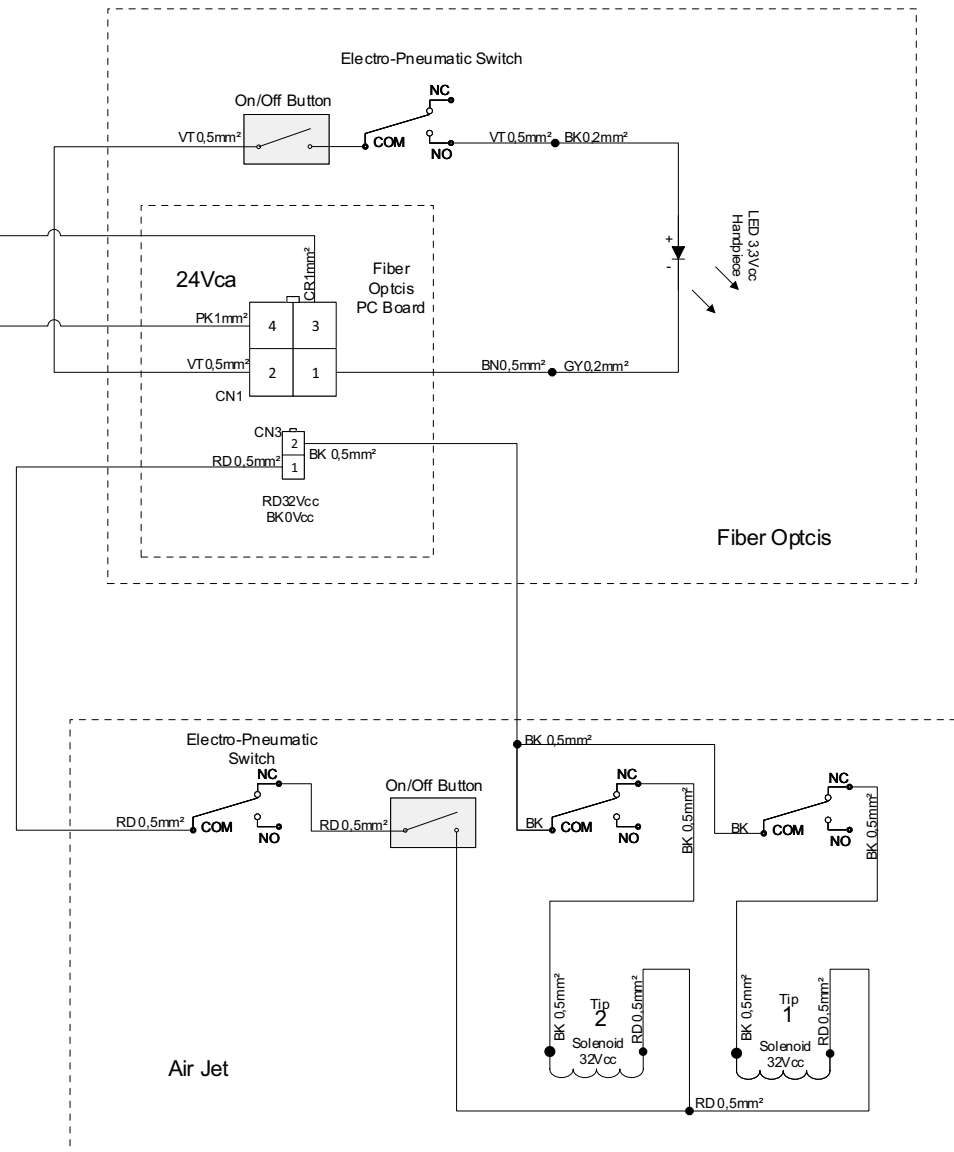
Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### OPERATING LIGHT CONNECTION

- Optional according to the equipment configuration grid.



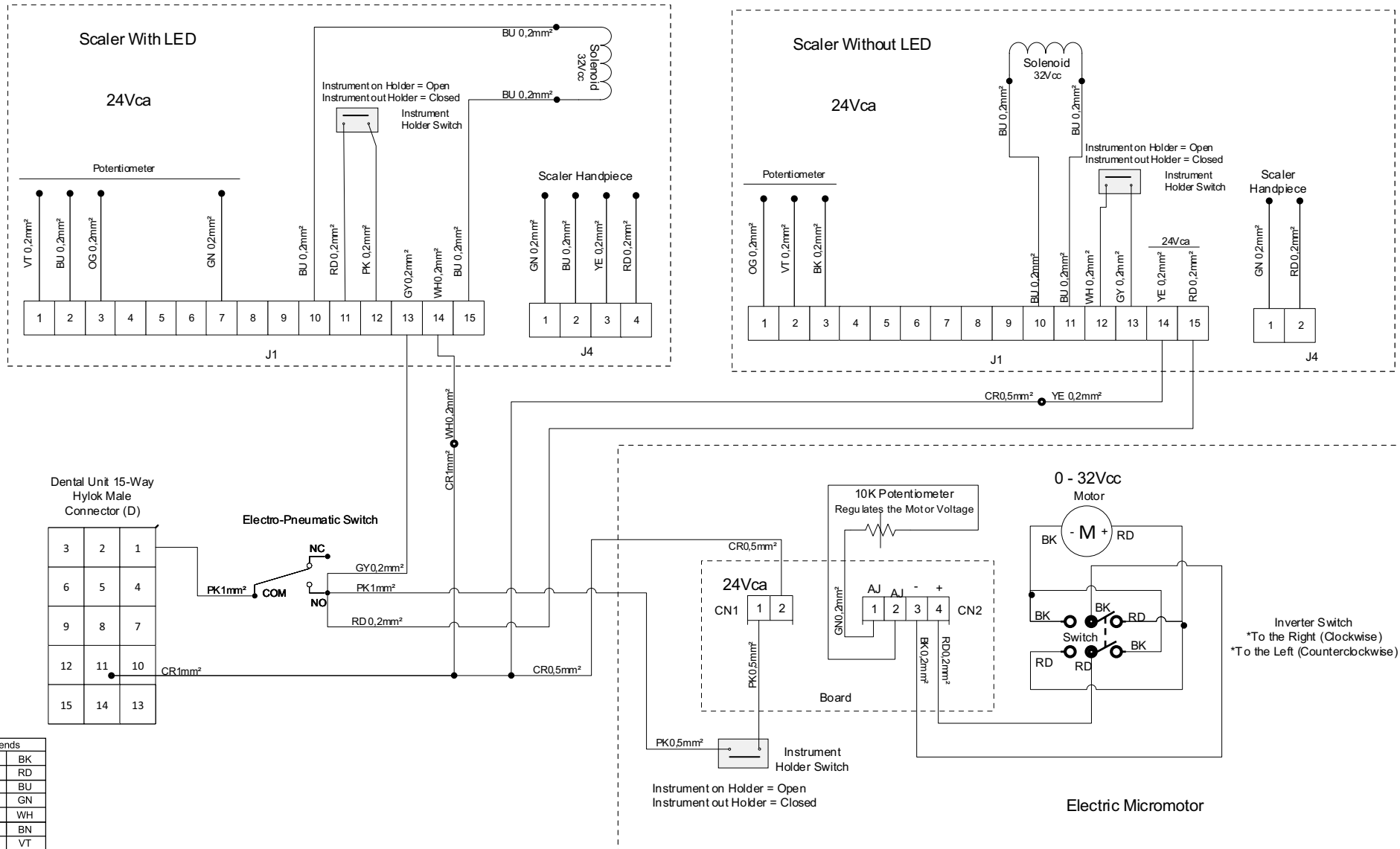
Dental Unit 15-Way Hylok Male Connector (D)



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

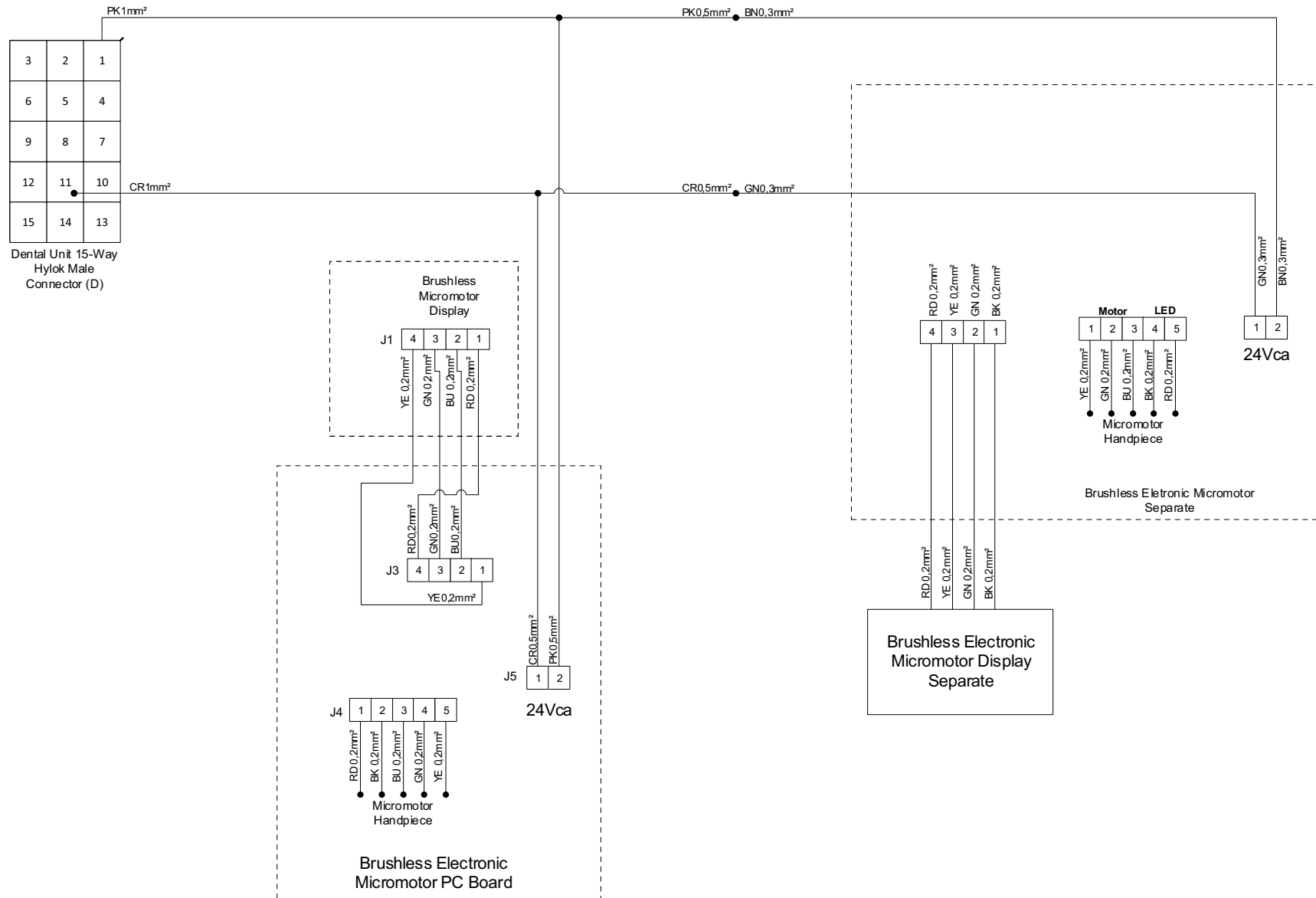
### FIBER OPTICS AND AIR-JET CONNECTION

- Optional according to the equipment configuration grid.
- Only with Air-Jet, use the CN3 output of the Fiber Optics Board.
- If Fiber Optics and Air-Jet are requested, do not use the Fiber Optics on/off button.



## SCALER AND ELECTRIC MICROMOTOR CONNECTION

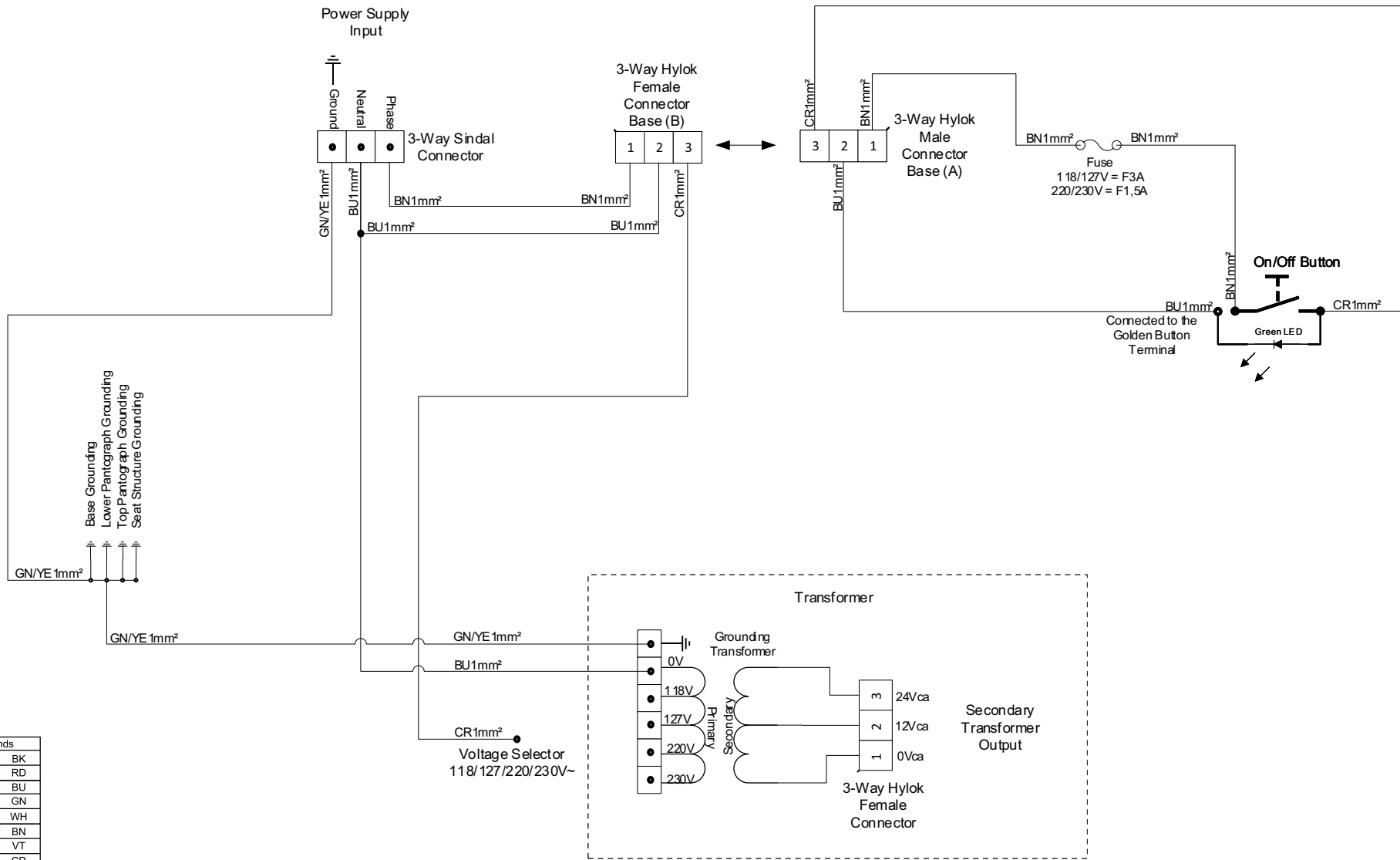
- Optional according to the equipment configuration grid.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## BRUSHLESS MICROMOTOR AND SCALER CONNECTION

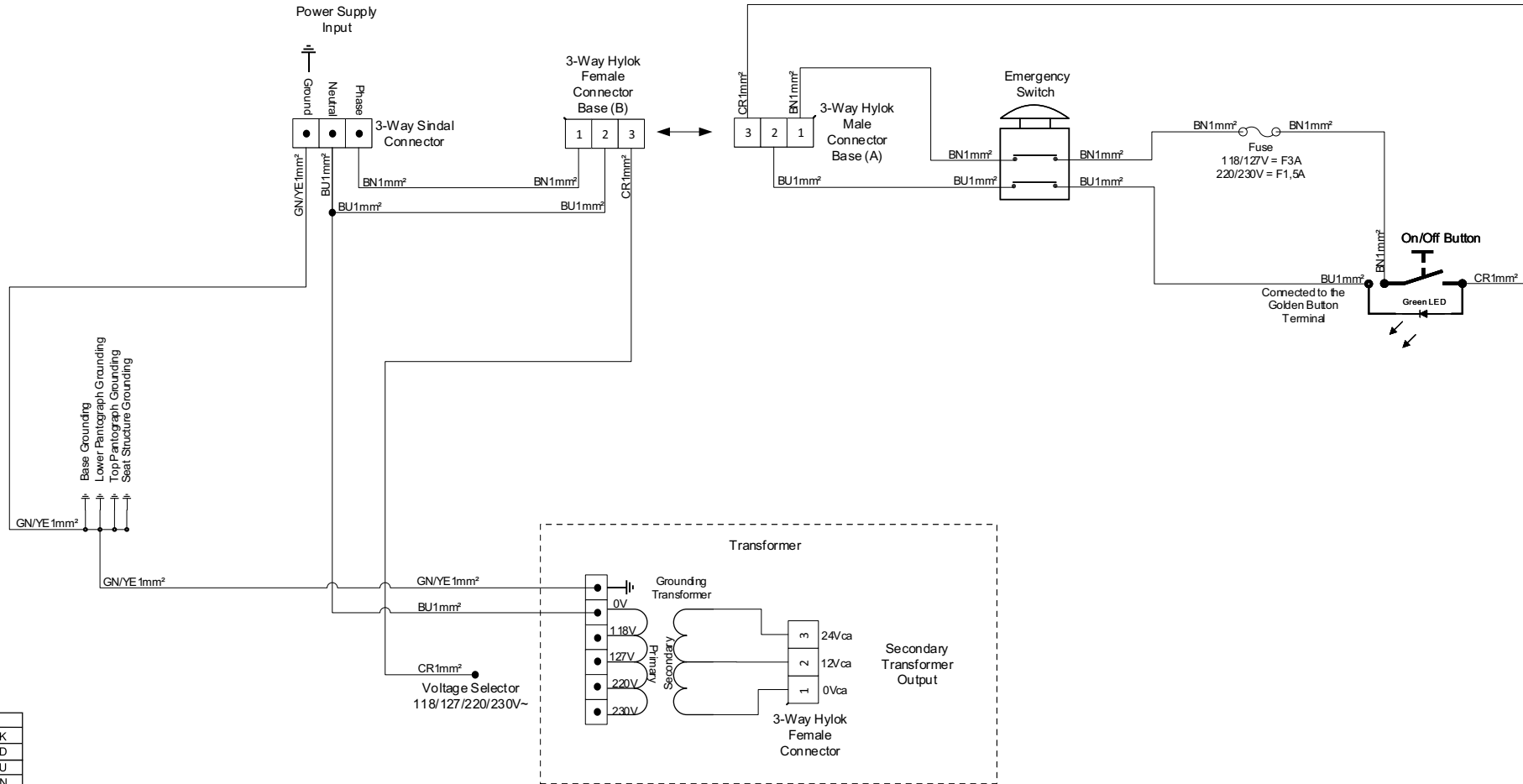
- Optional according to the equipment configuration grid.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

**CHAIR**  
- Electrical part + Grounding.

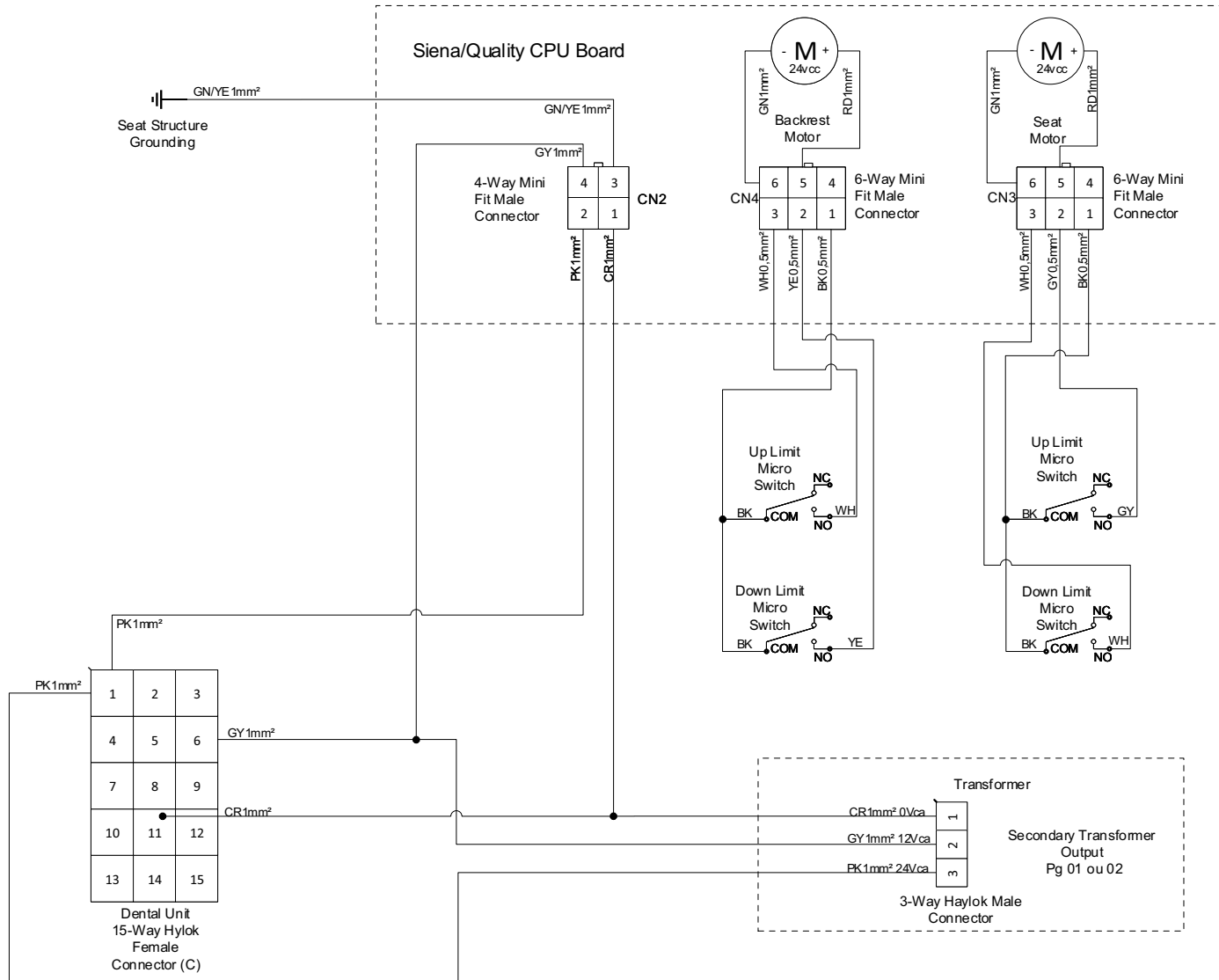




Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

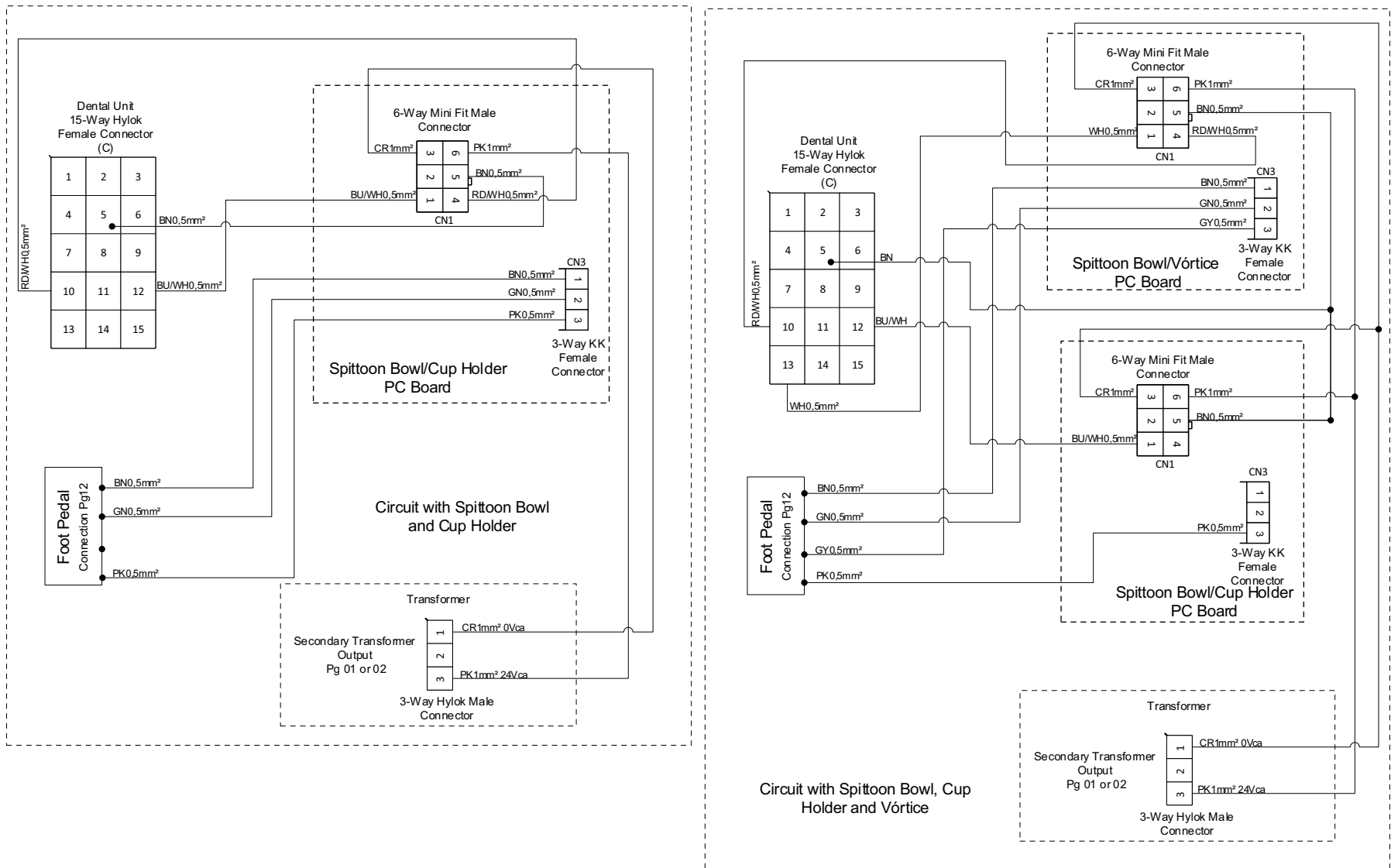
## CHAIR

- Electrical part + Emergency Switch + Grounding.



### CONNECTION OF CPU BOARD AND MOTORS

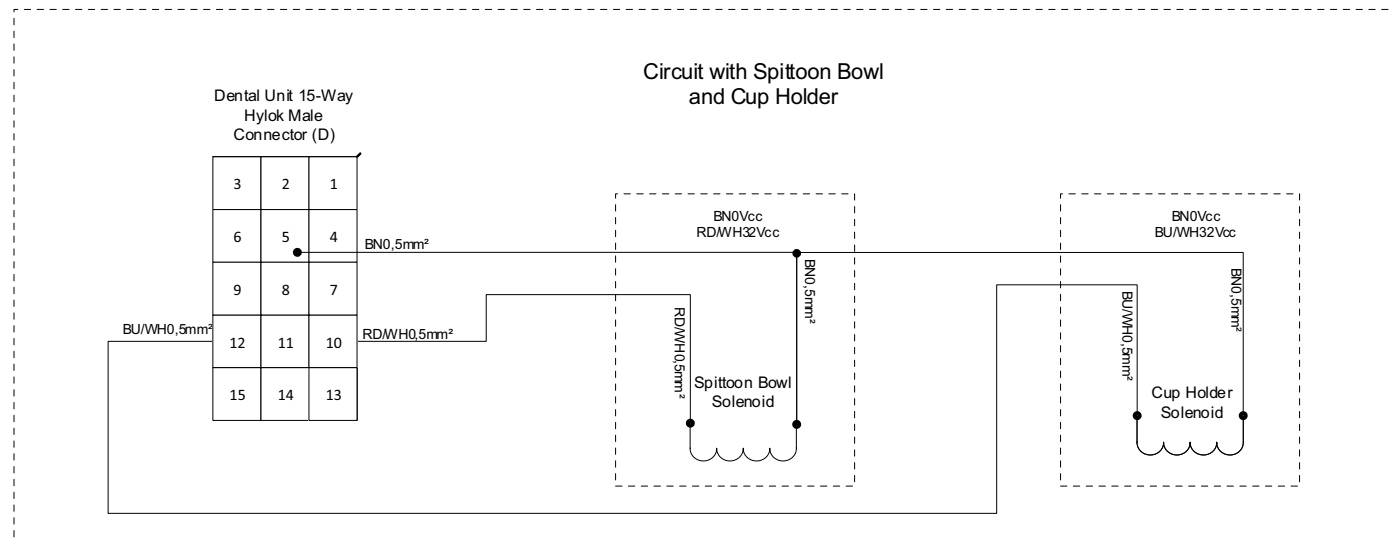
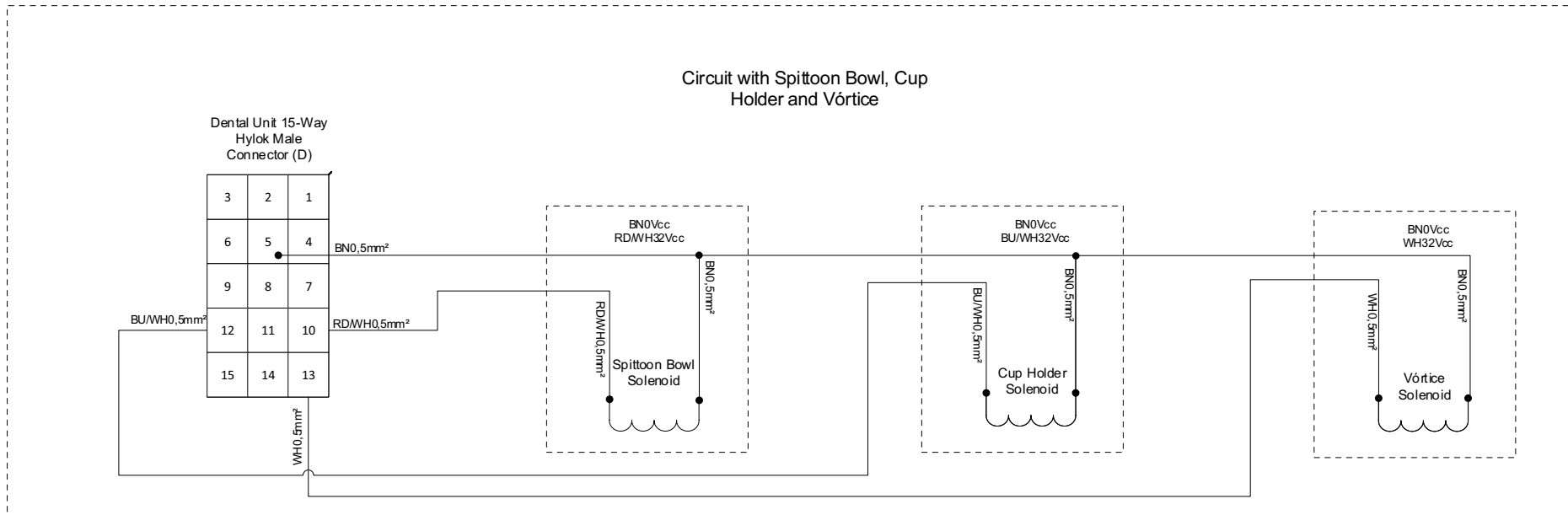
- Optional according to the equipment configuration grid.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## CONNECTION OF BOARD IN SPITTOON BOWL, CUP HOLDER AND VÓRTICE

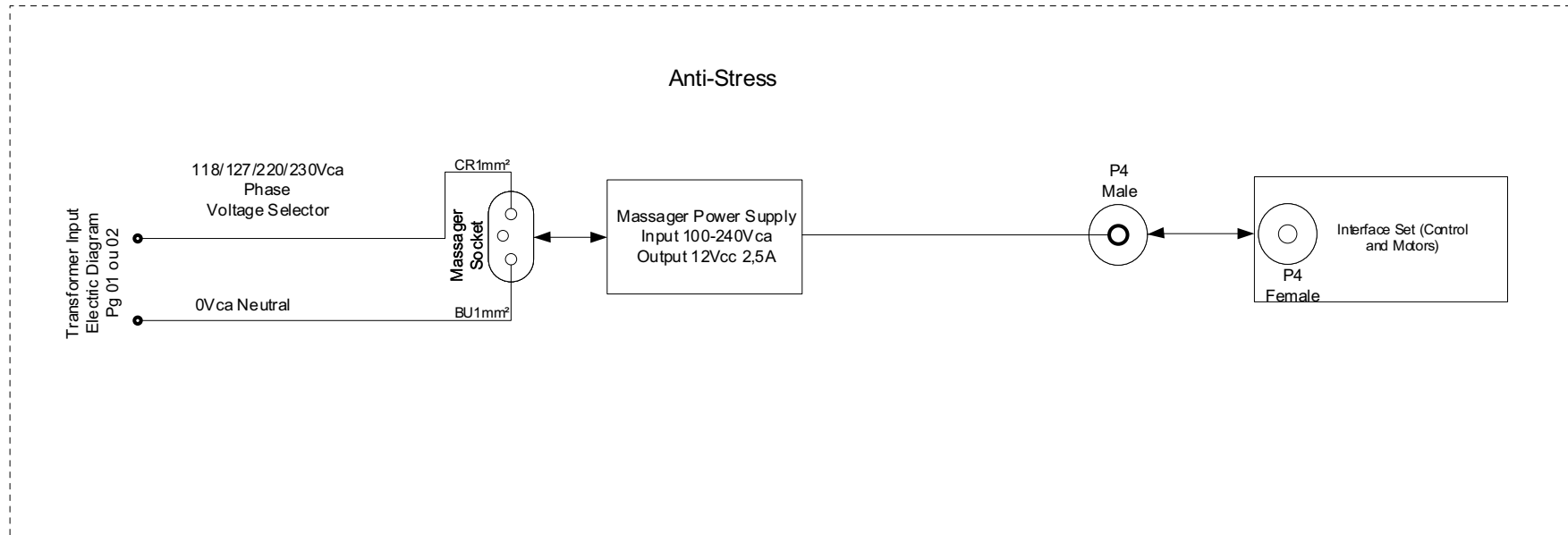
- Optional according to the equipment configuration grid.
- When using Vórtice the Spittoon Bowl command passes for the Base to the Water Unit.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### SOLENOID CONNECTION IN THE EQUIPMENT

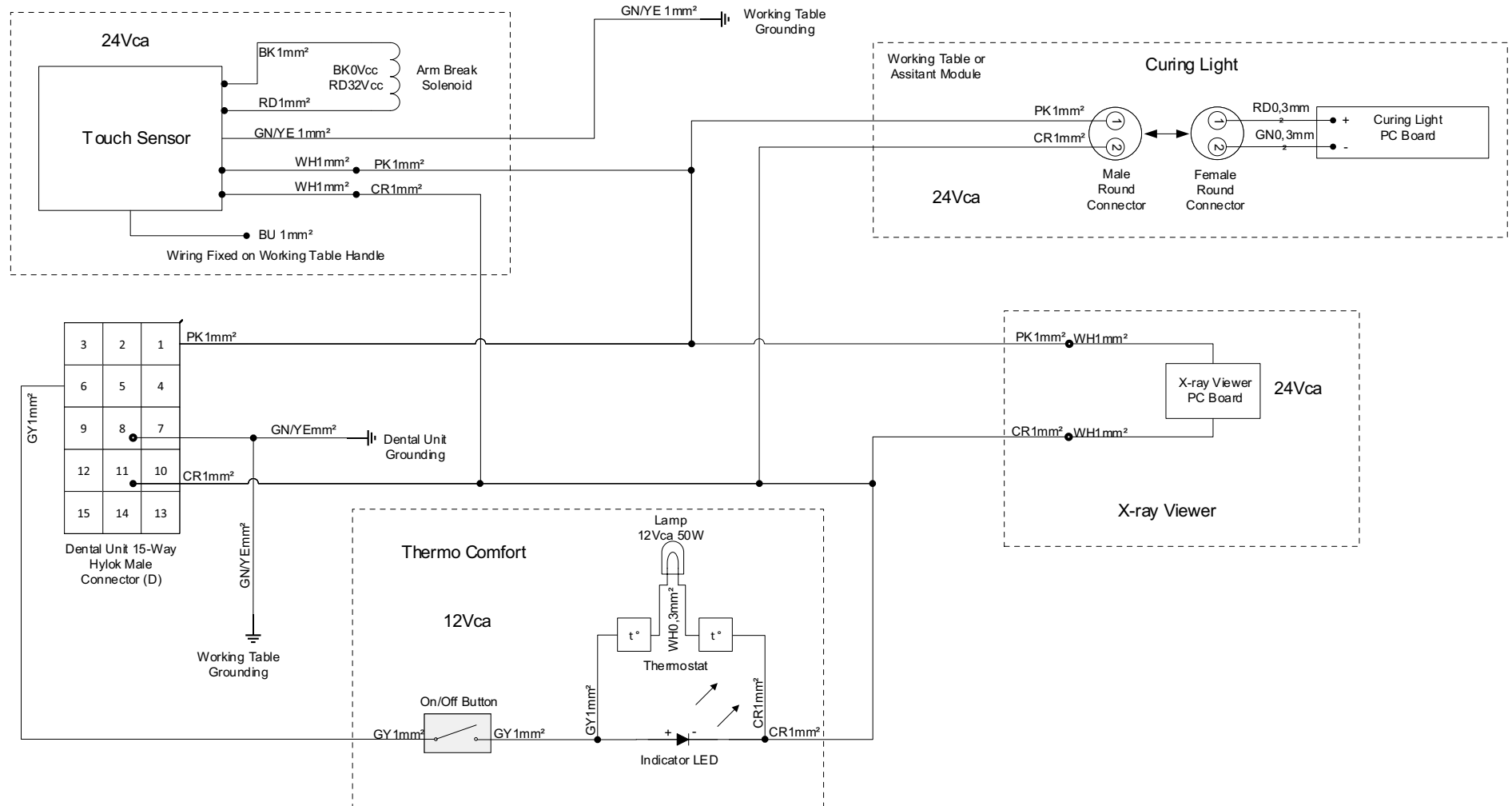
- Optional according to the equipment configuration grid.
- When using Vórtice the Spittoon Bowl command passes for the Base to the Water Unit.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### ANTI-STRESS CONNECTION

- Optional according to the equipment configuration grid.

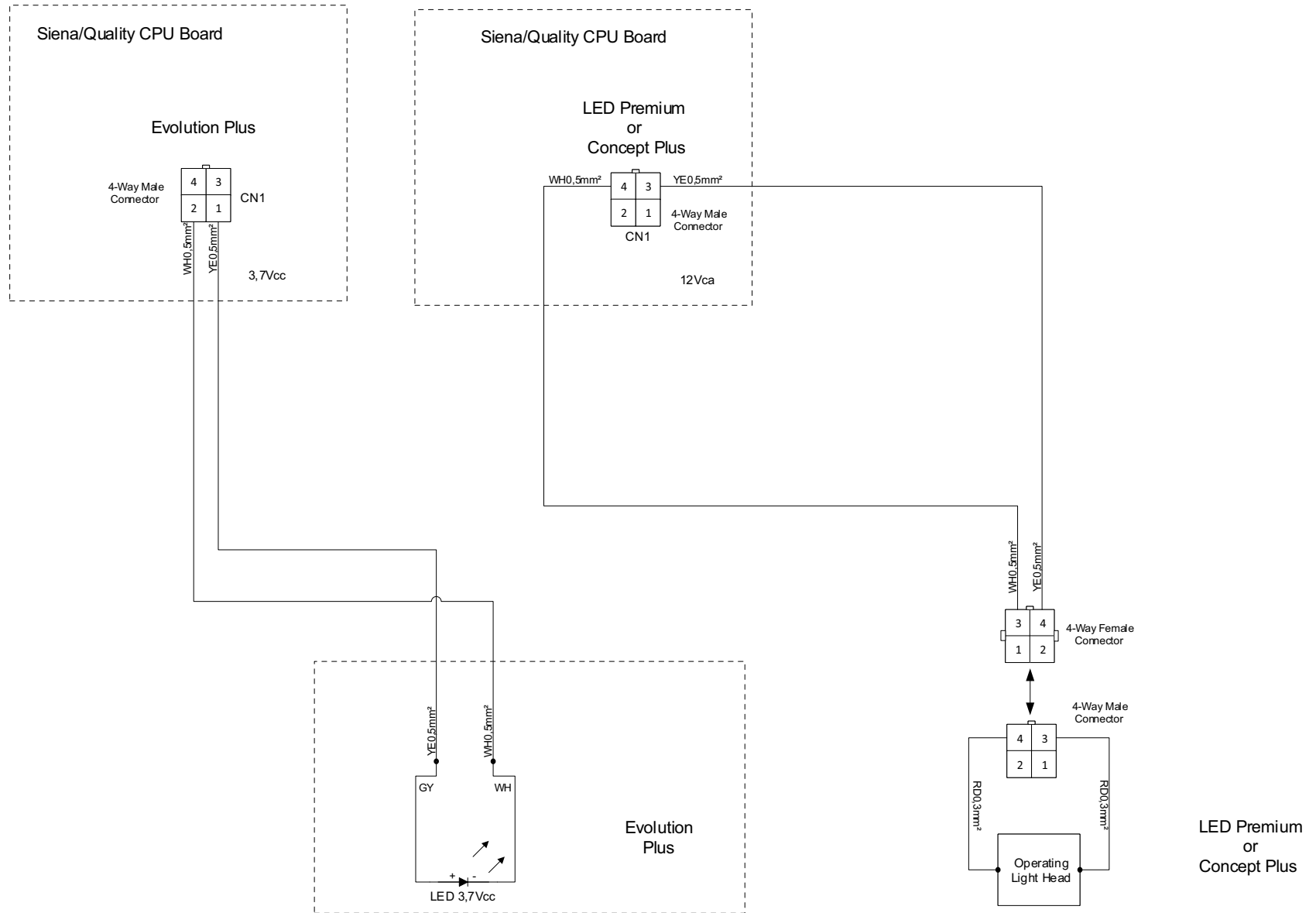


Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

## TOUCH SENSOR, LIGHT CURING, X-RAY AND THERMO COMFORT CONNECTION

- Optional according to the equipment configuration grid.

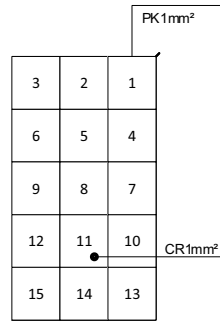




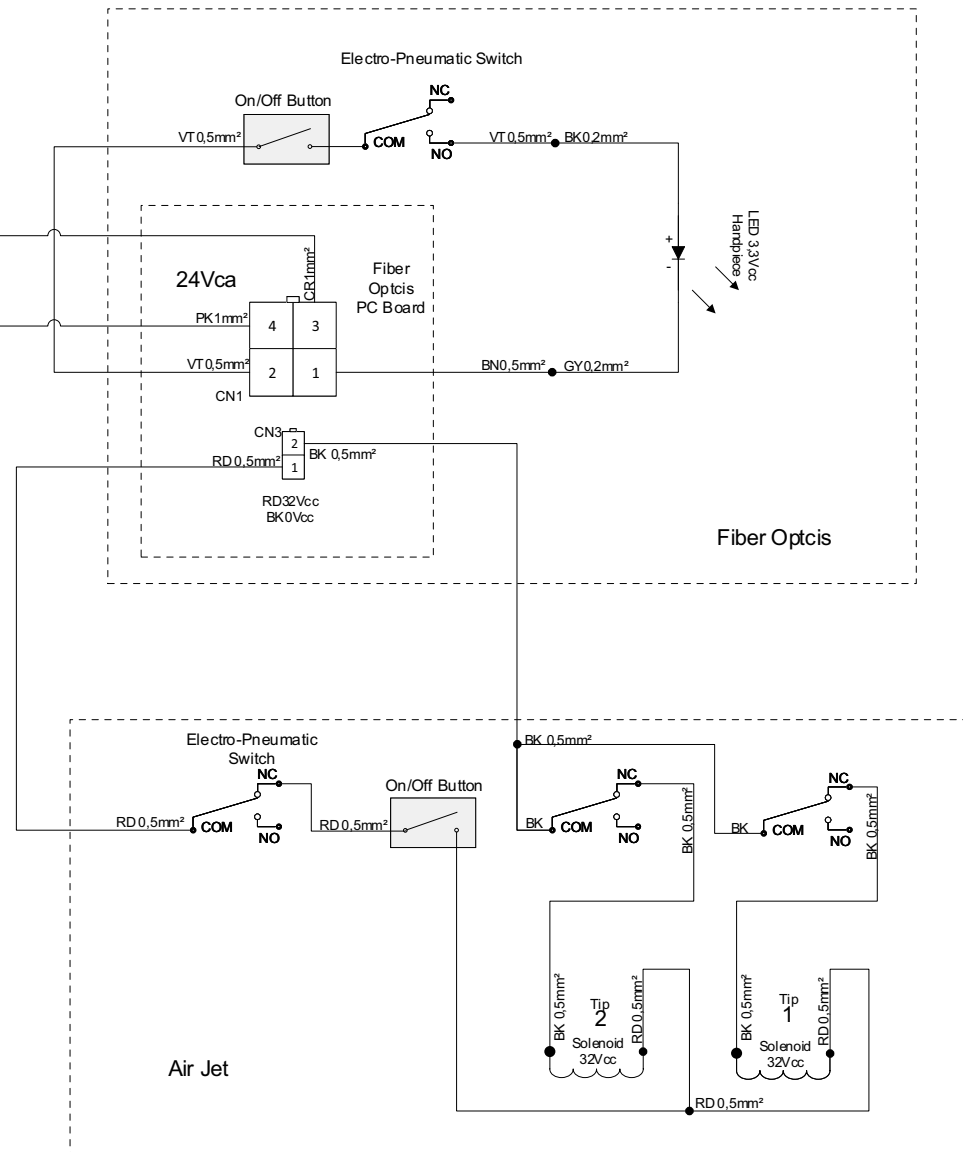
Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

### OPERATING LIGHT CONNECTION

- Optional according to the equipment configuration grid.



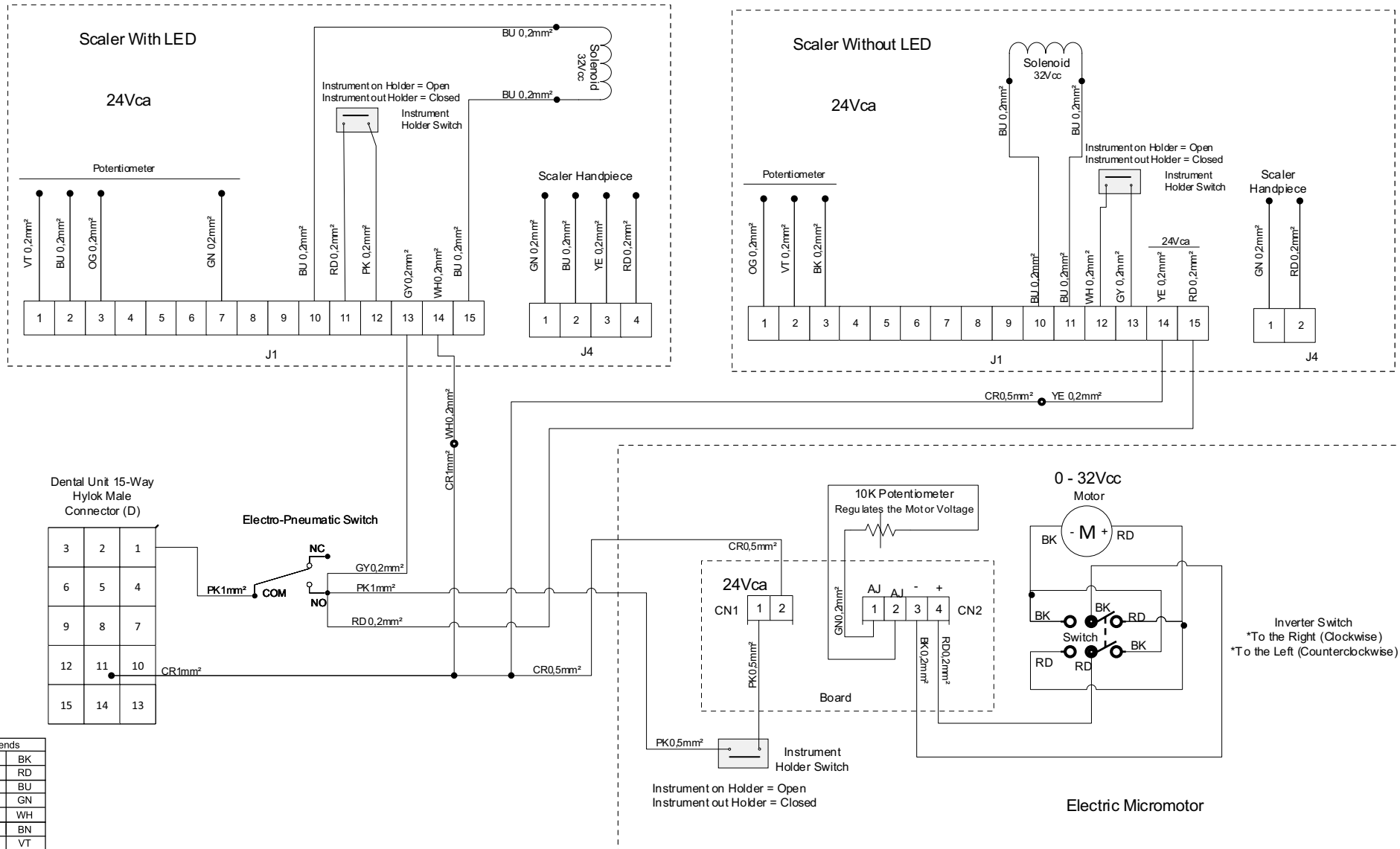
Dental Unit 15-Way Hylok Male Connector (D)



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

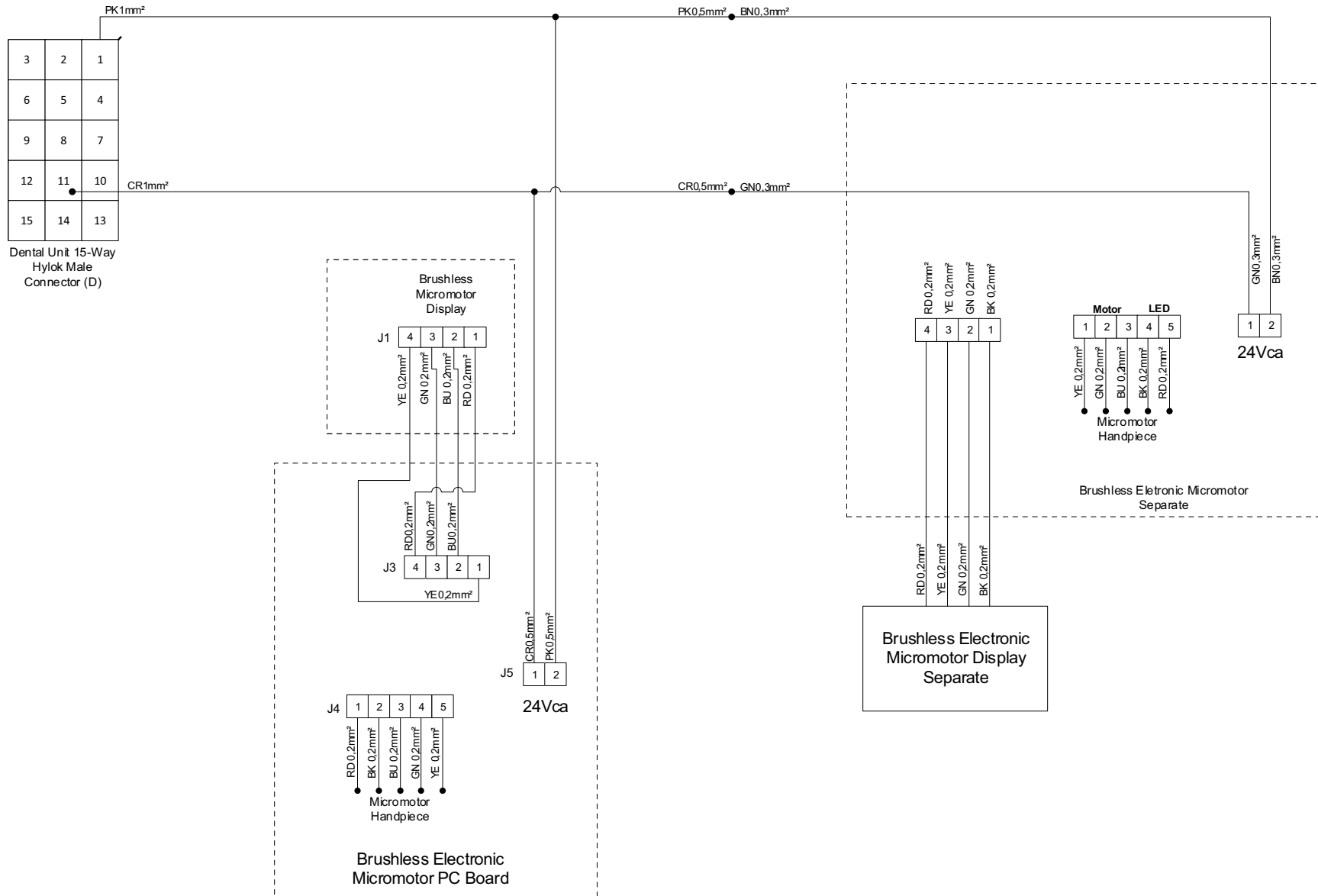
## FIBER OPTICS AND AIR-JET CONNECTION

- Optional according to the equipment configuration grid.
- Only with Air-Jet, use the CN3 output of the Fiber Optics Board.
- If Fiber Optics and Air-Jet are requested, do not use the Fiber Optics on/off button.



## SCALER AND ELECTRIC MICROMOTOR CONNECTION

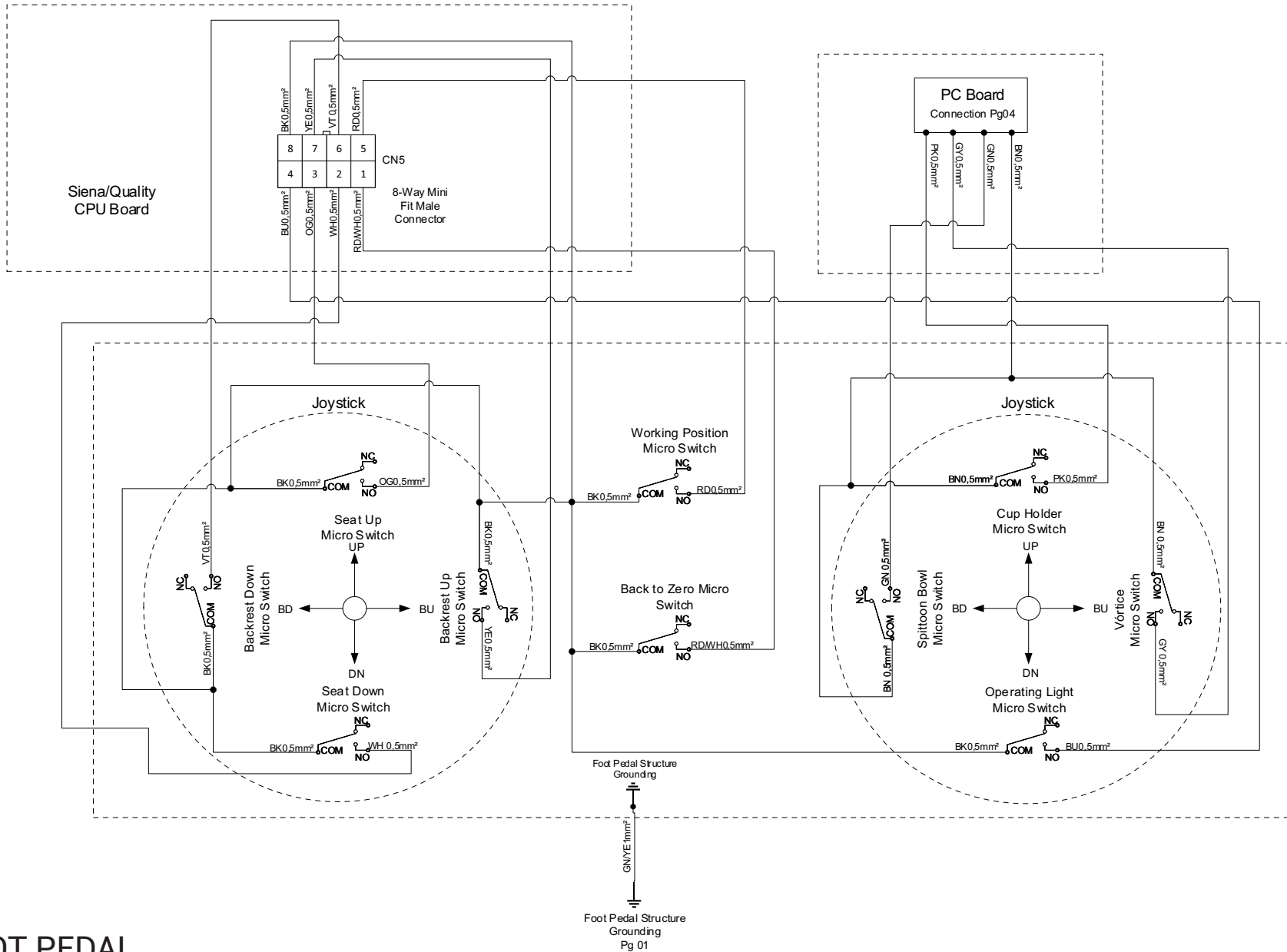
- Optional according to the equipment configuration grid.



Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

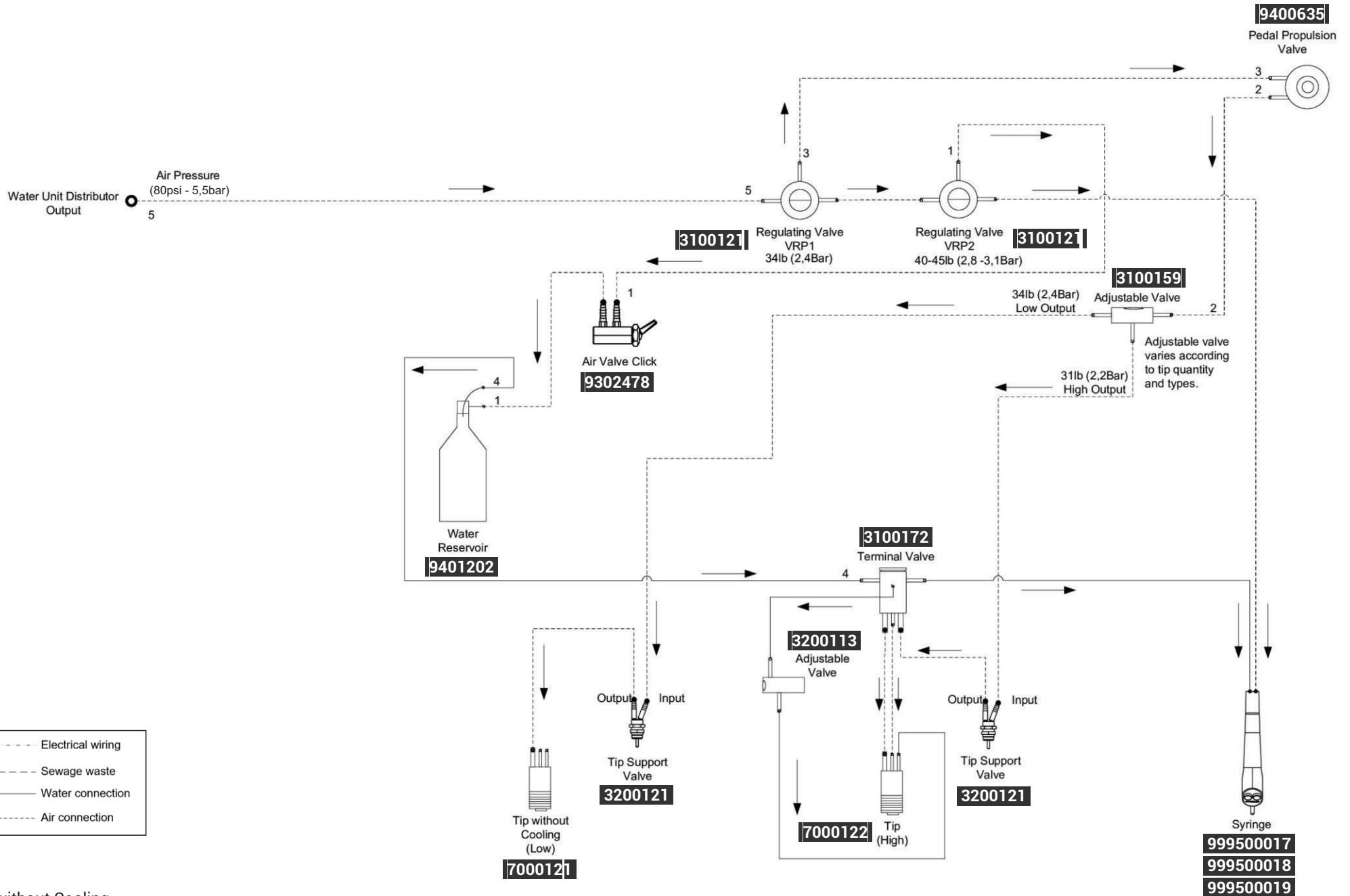
## BRUSHLESS MICROMOTOR AND SCALER CONNECTION

- Optional according to the equipment configuration grid.

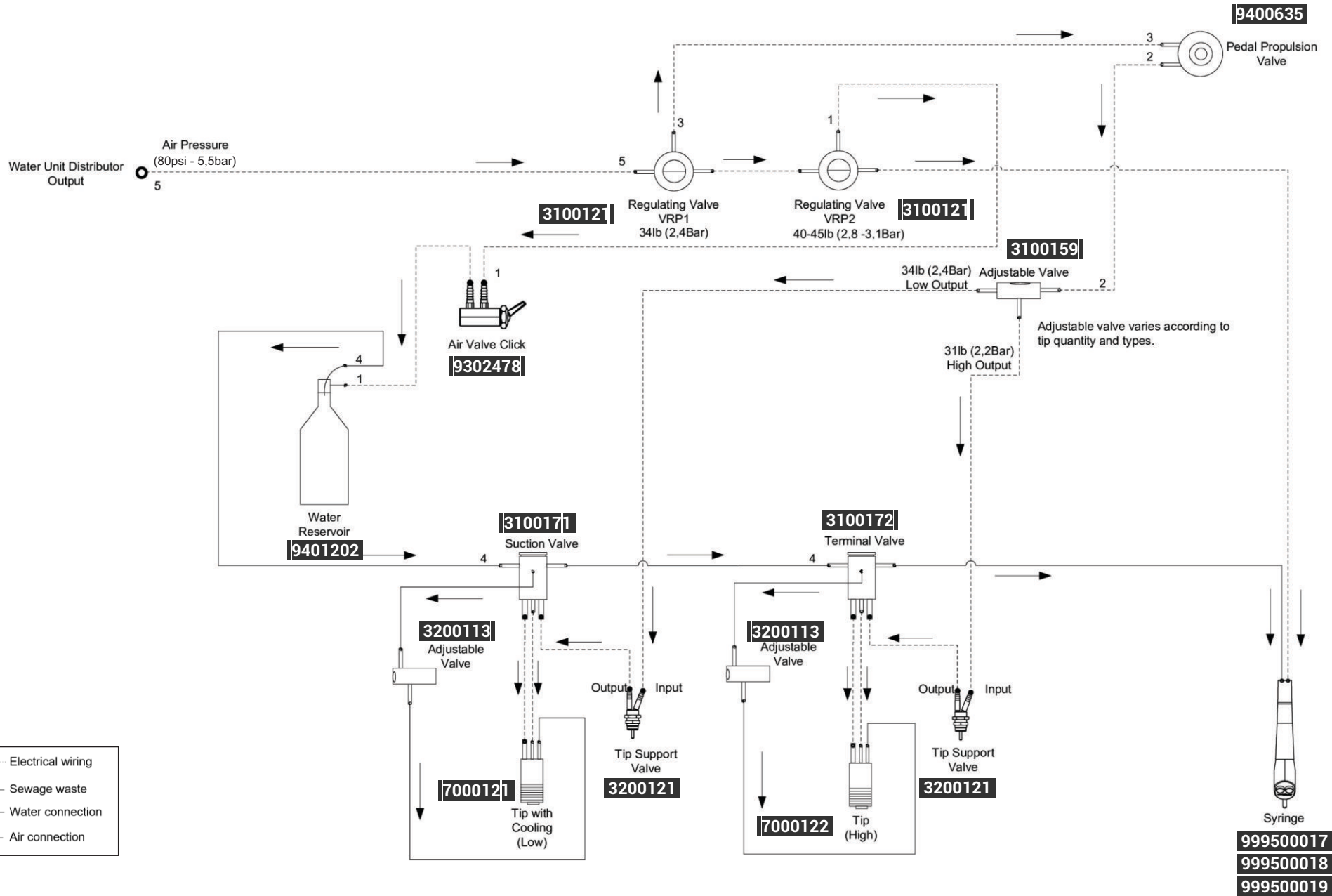


Color Legends	
Black	BK
Red	RD
Blue	BU
Green	GN
White	WH
Brown	BN
Violet	VT
Crystal	CR
Orange	OG
Yellow	YE
Pink	PK
Grey	GY
Green/Yellow	GN/YE
Blue/White	BU/WH
Red/White	RD/WH

**FOOT PEDAL**  
- Optional according to the equipment configuration grid.

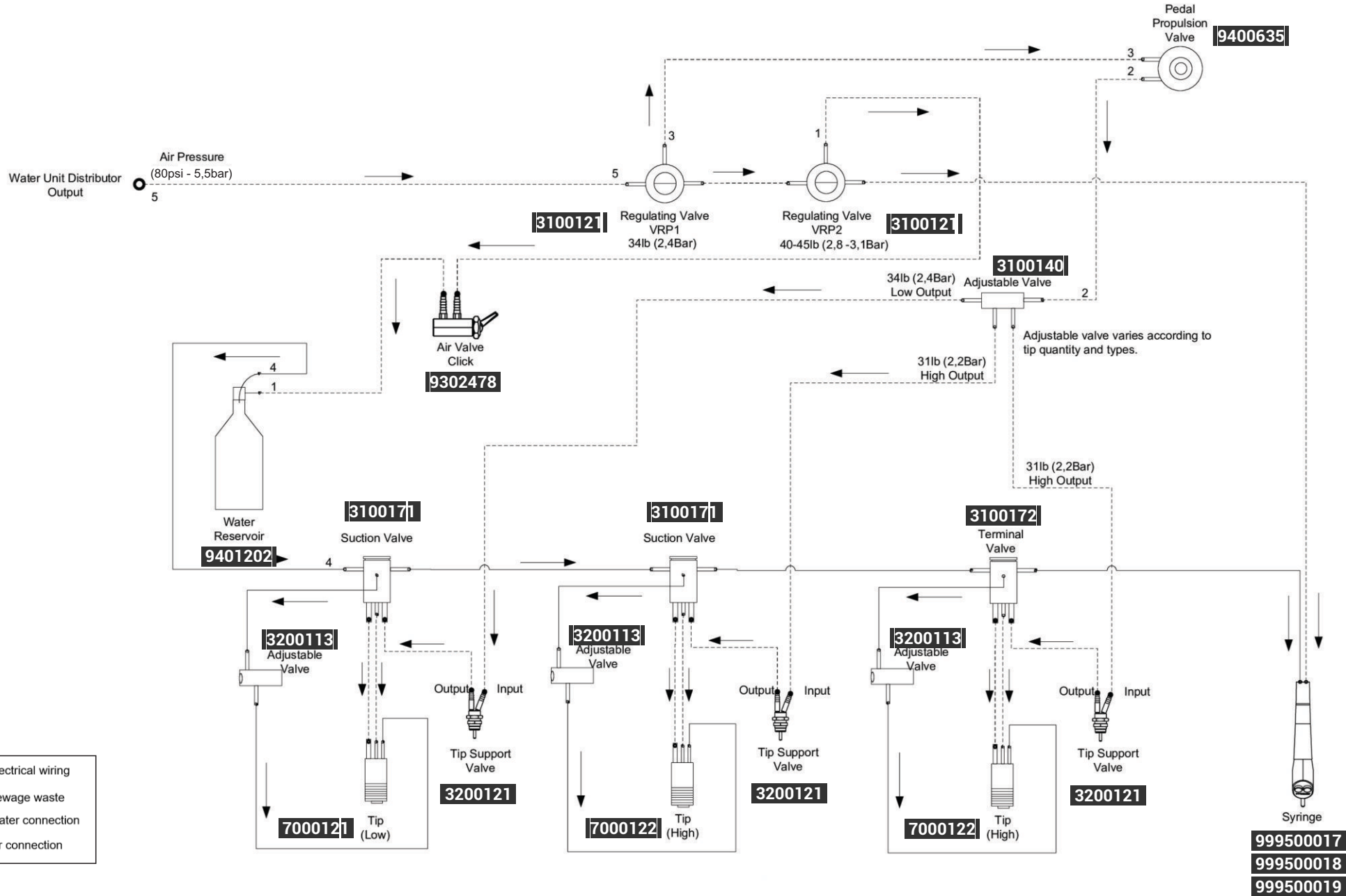


1.3  
Low without Cooling



1.3  
Low with Cooling

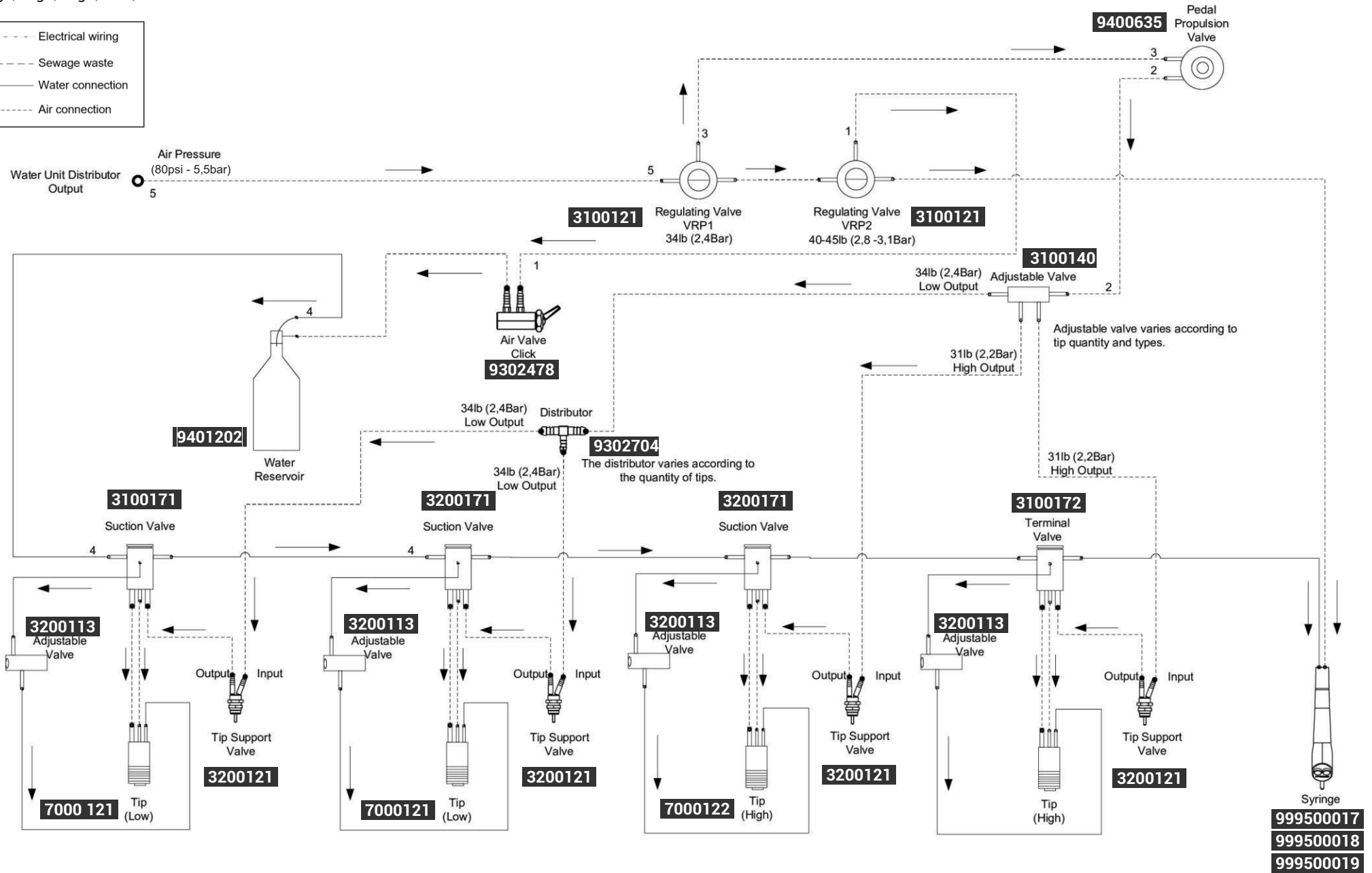
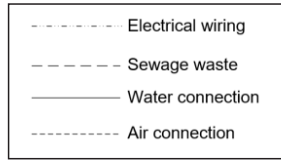


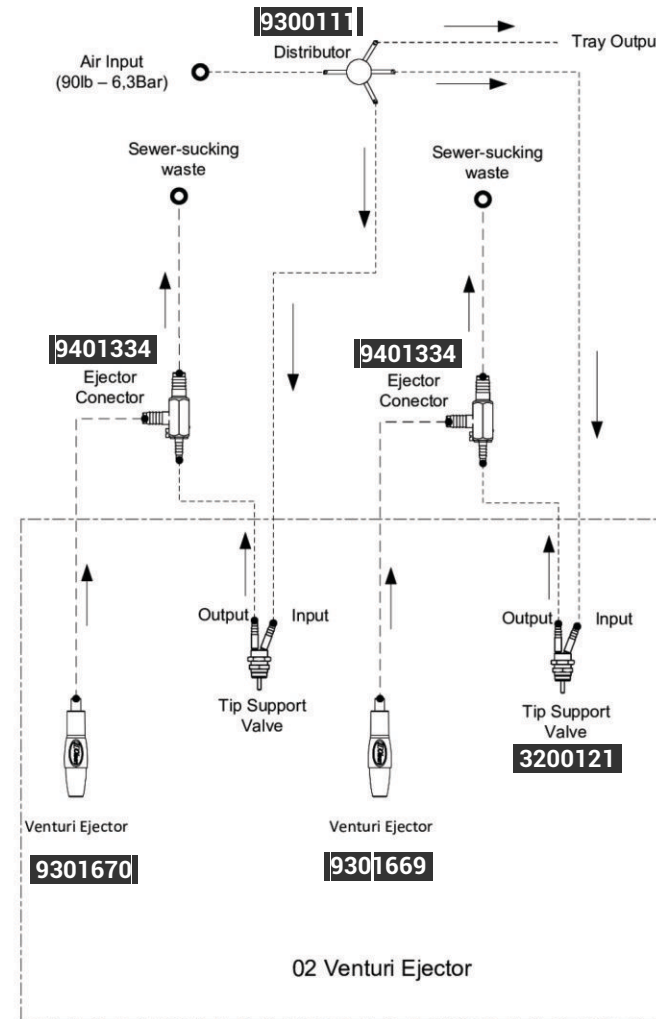
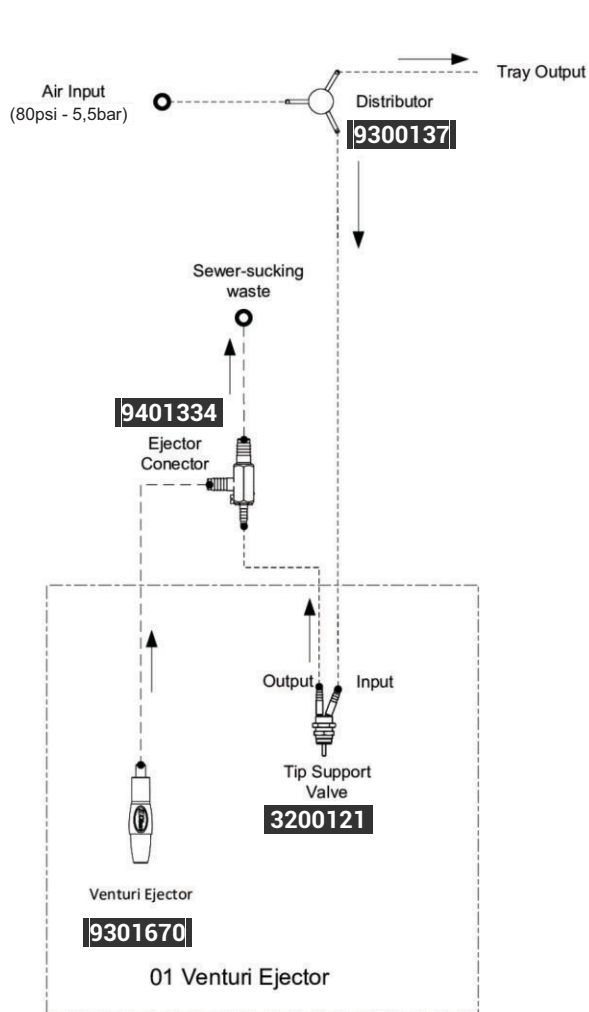


1.4  
Syringe, High, High, Low

# 1.5

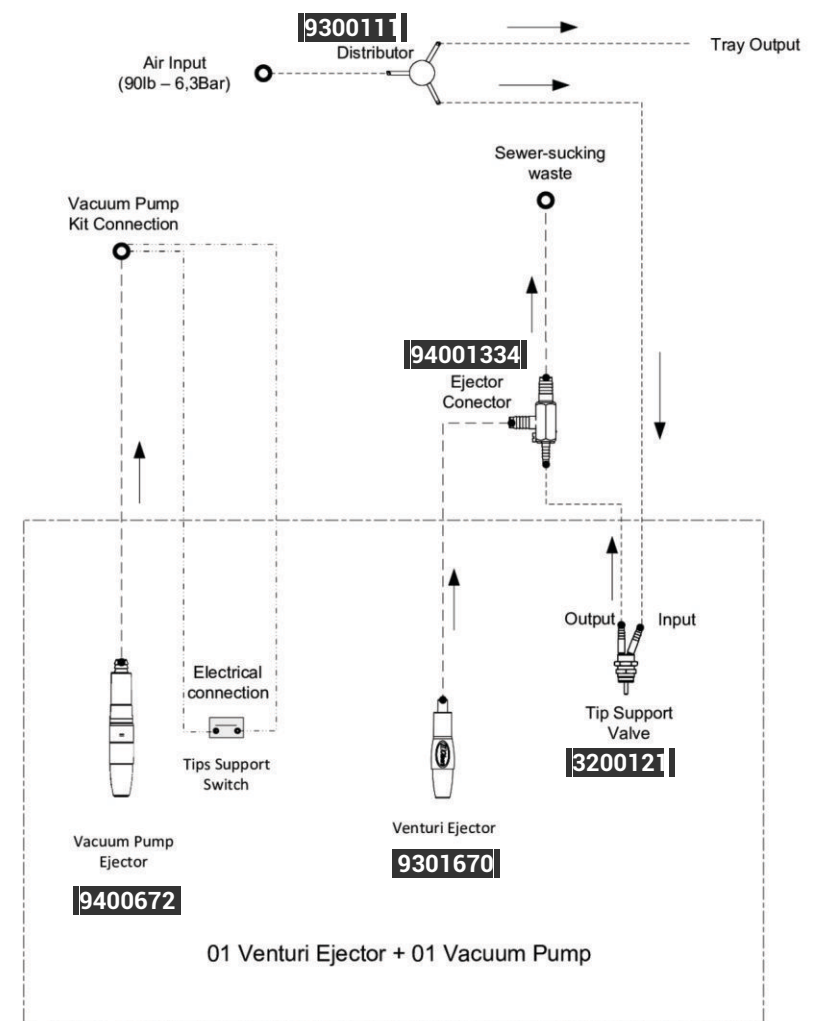
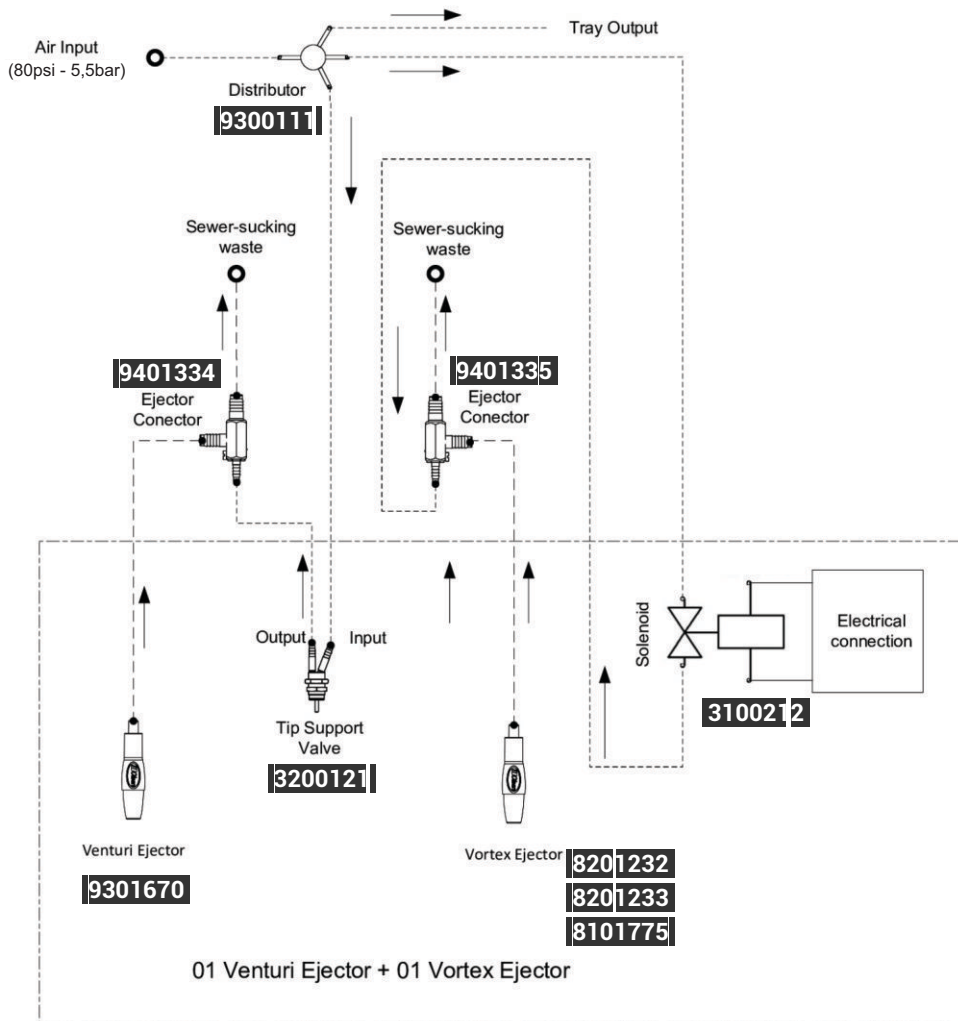
Syringe, High, High, Low, Low





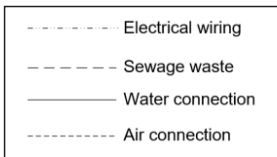
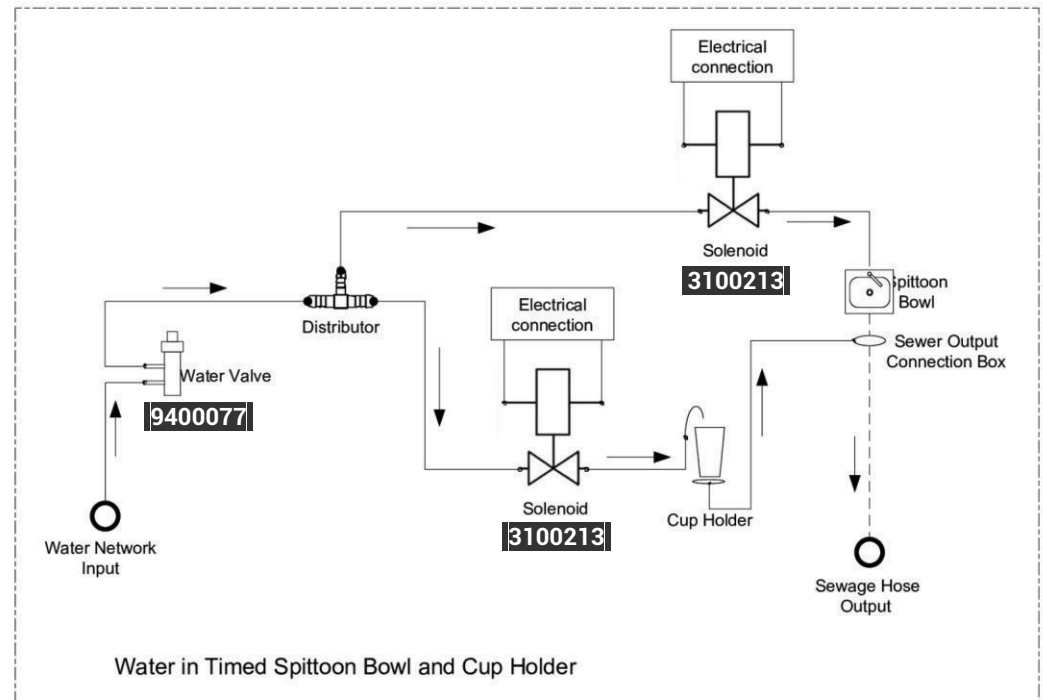
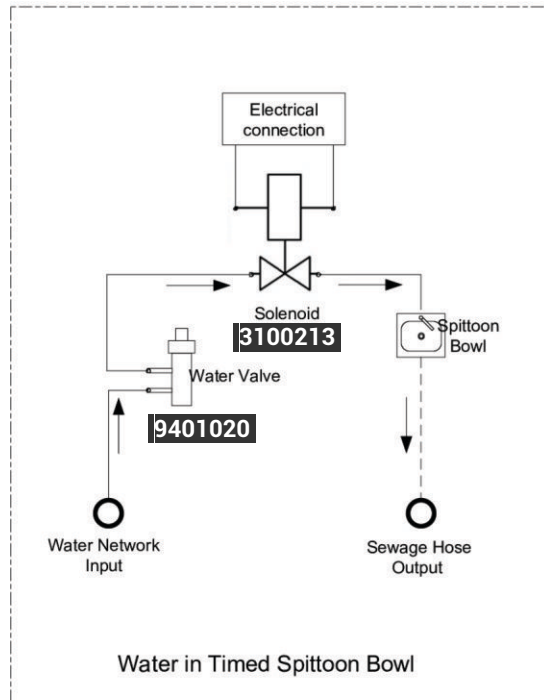
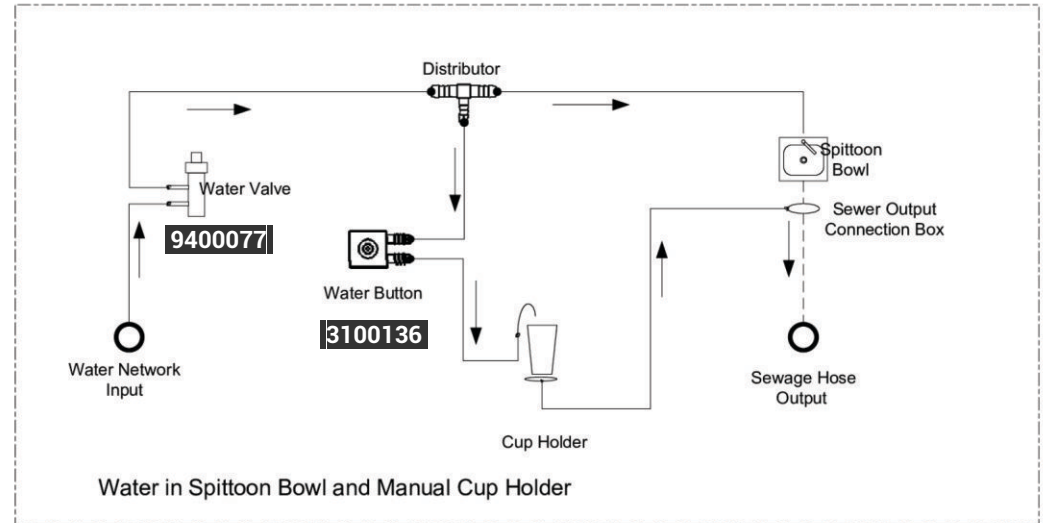
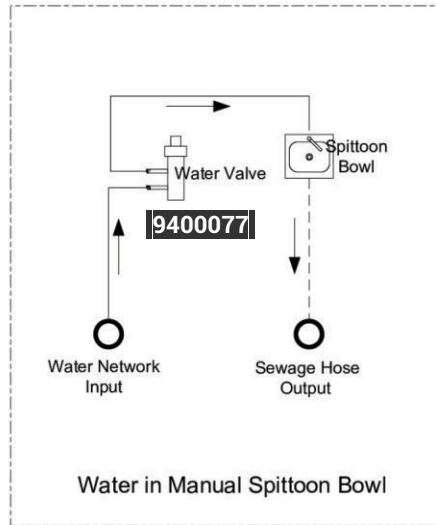
- Electrical wiring
- Sewage waste
- Water connection
- Air connection

WATER UNIT I

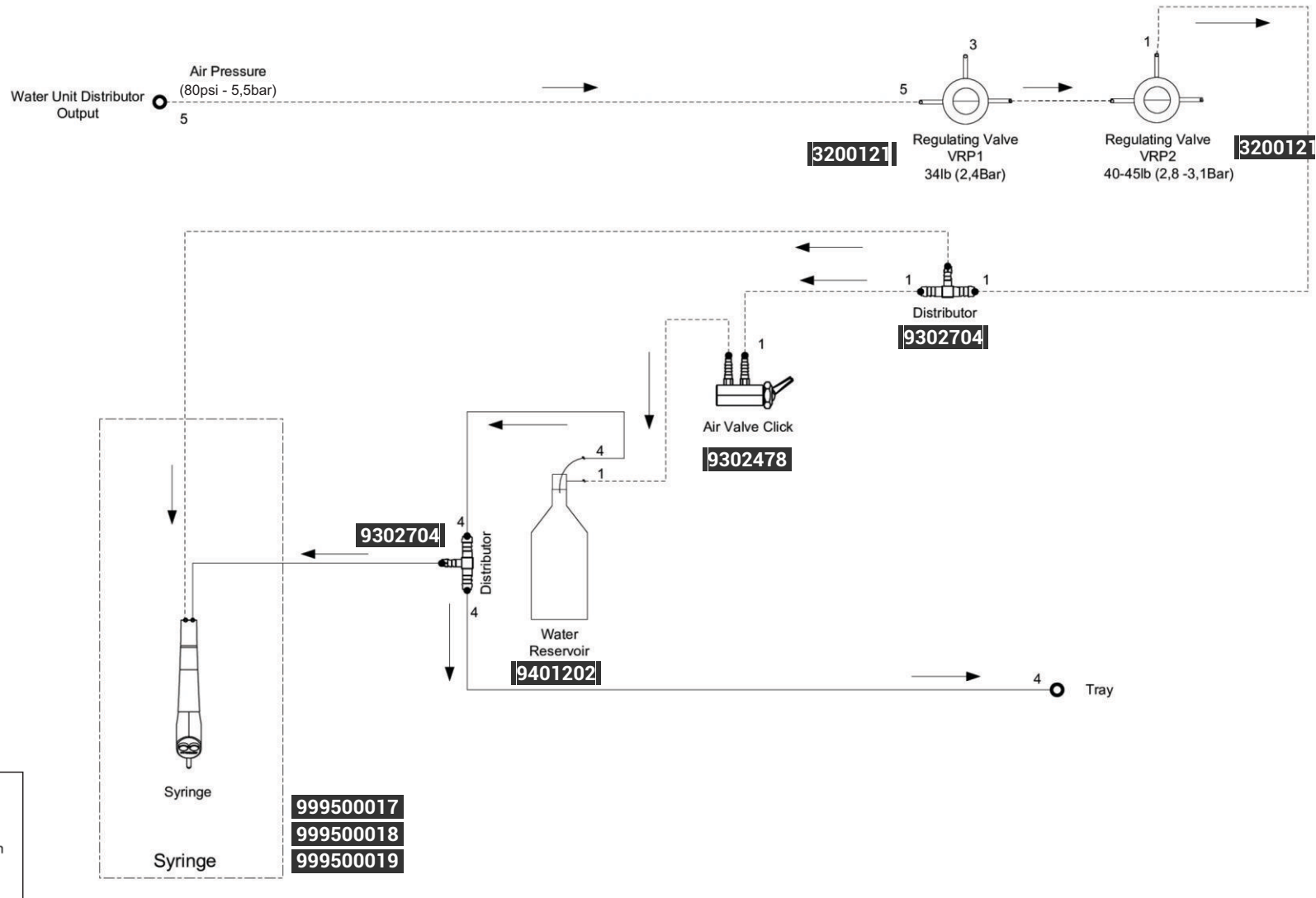


- Electrical wiring
- Sewage waste
- Water connection
- Air connection

WATER UNIT II

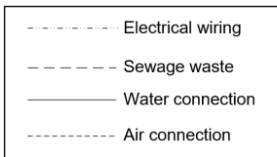
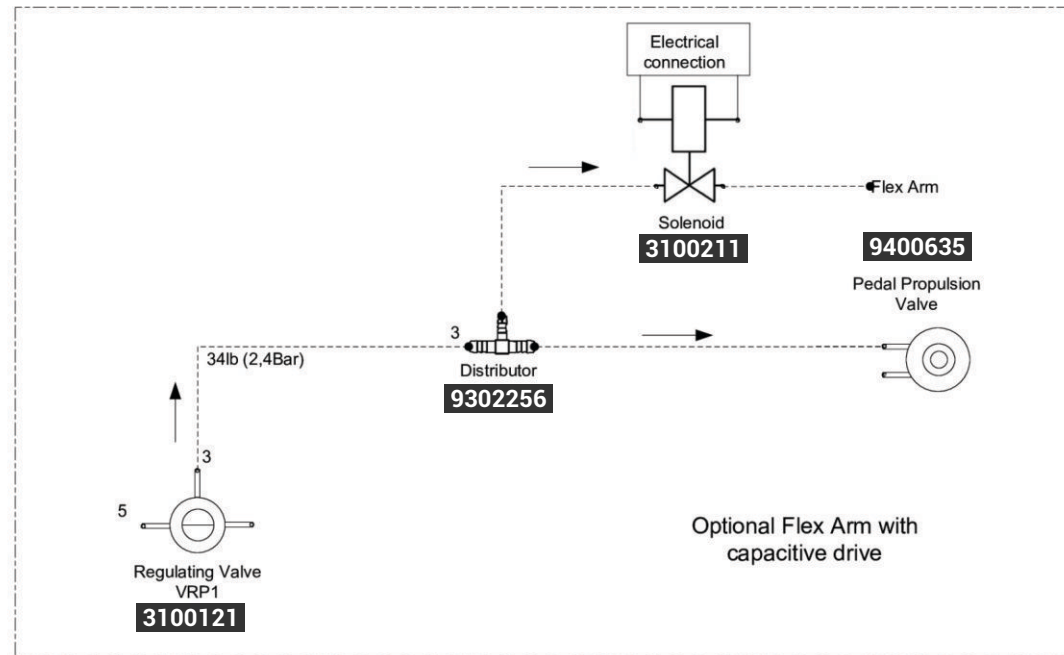
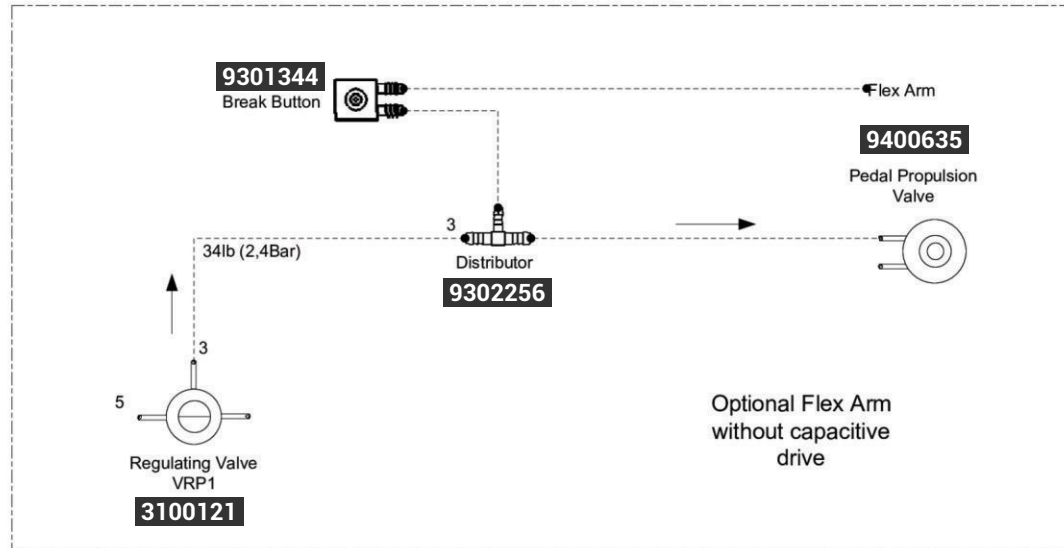


WATER UNIT III

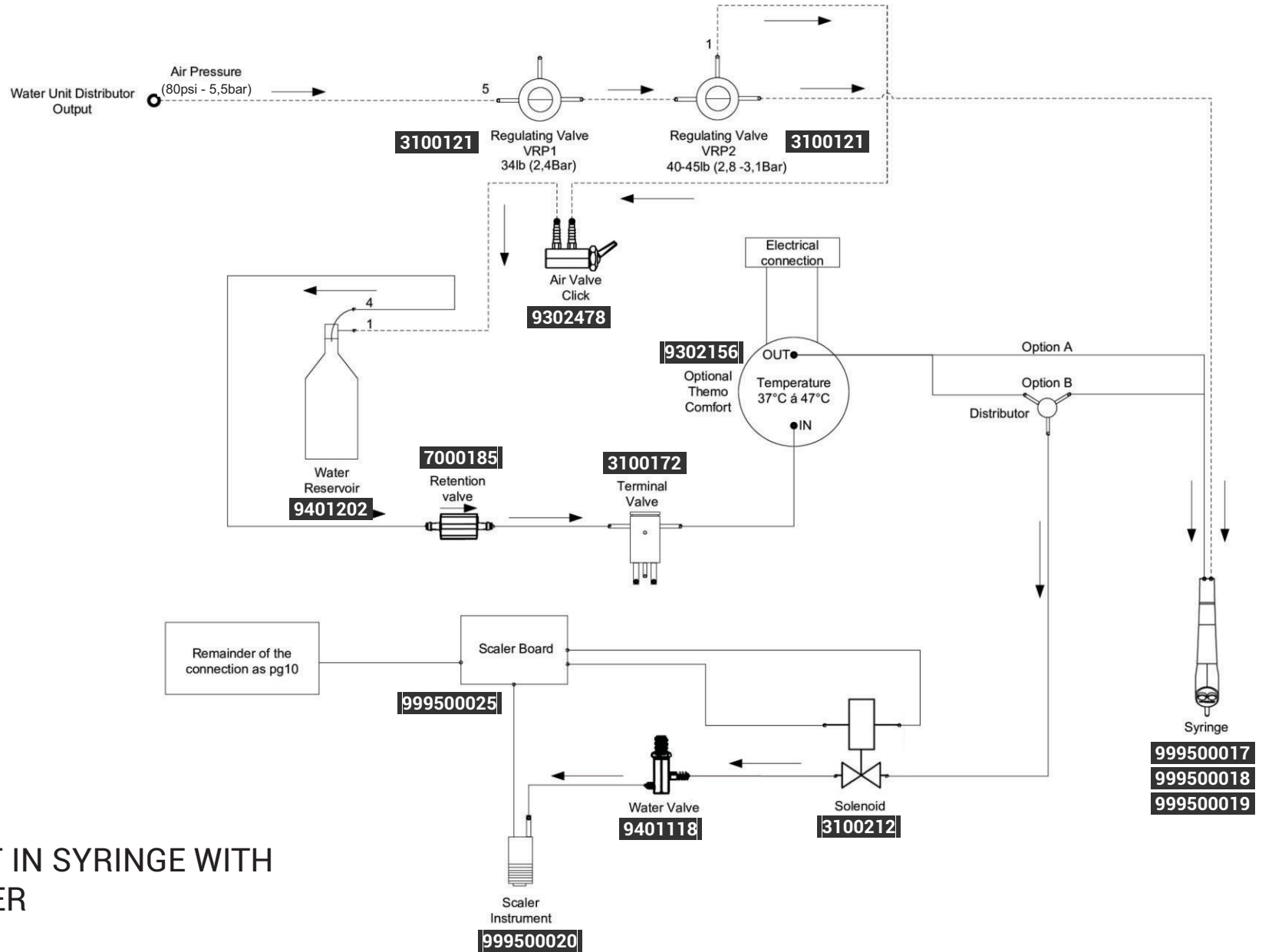


WATER UNIT IV





FLEX ARM



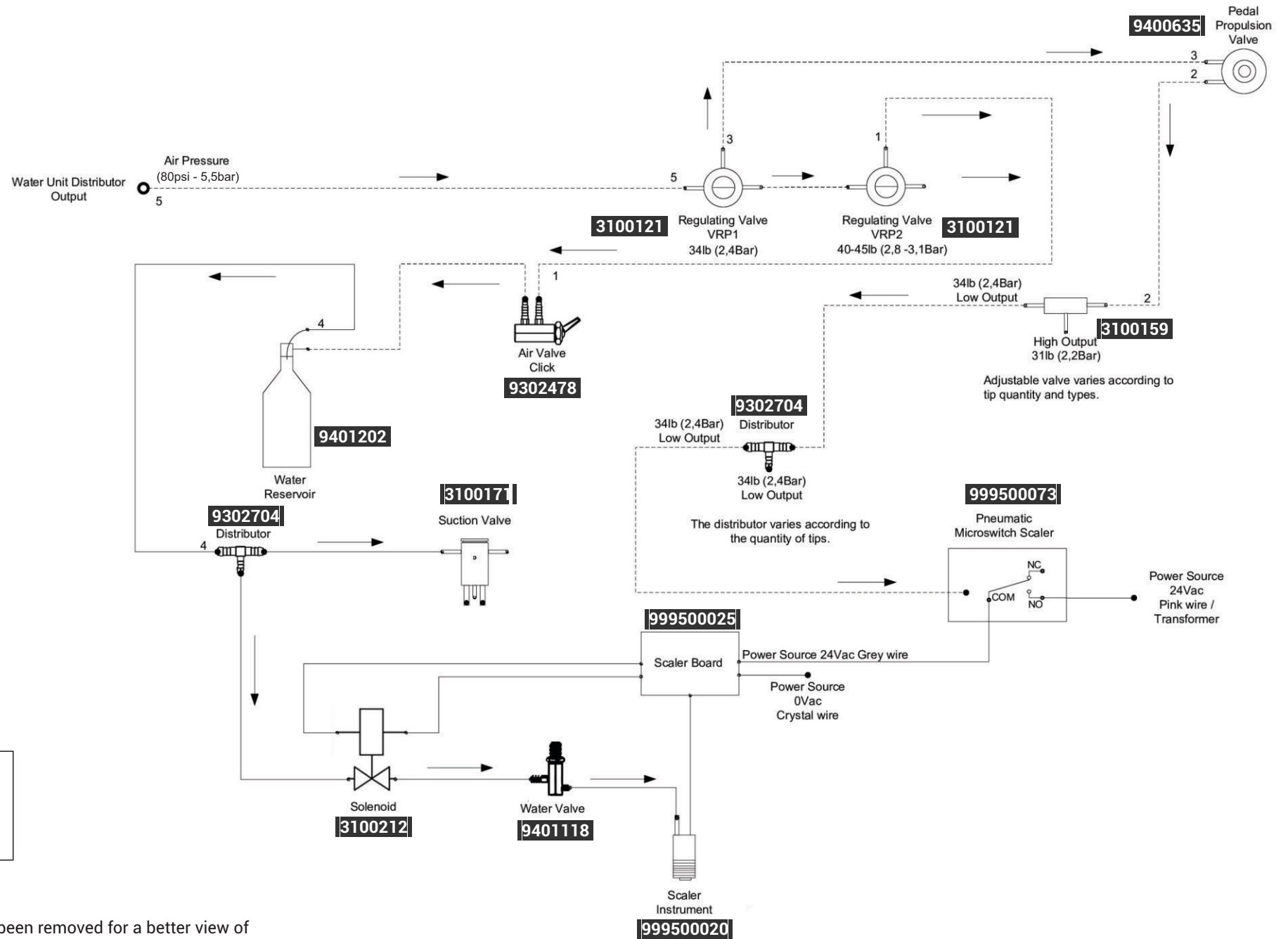
## THERMO COMFORT IN SYRINGE WITH OPTIONAL IN SCALER

Option A: Syringe only

Option B: With Optional Scaler

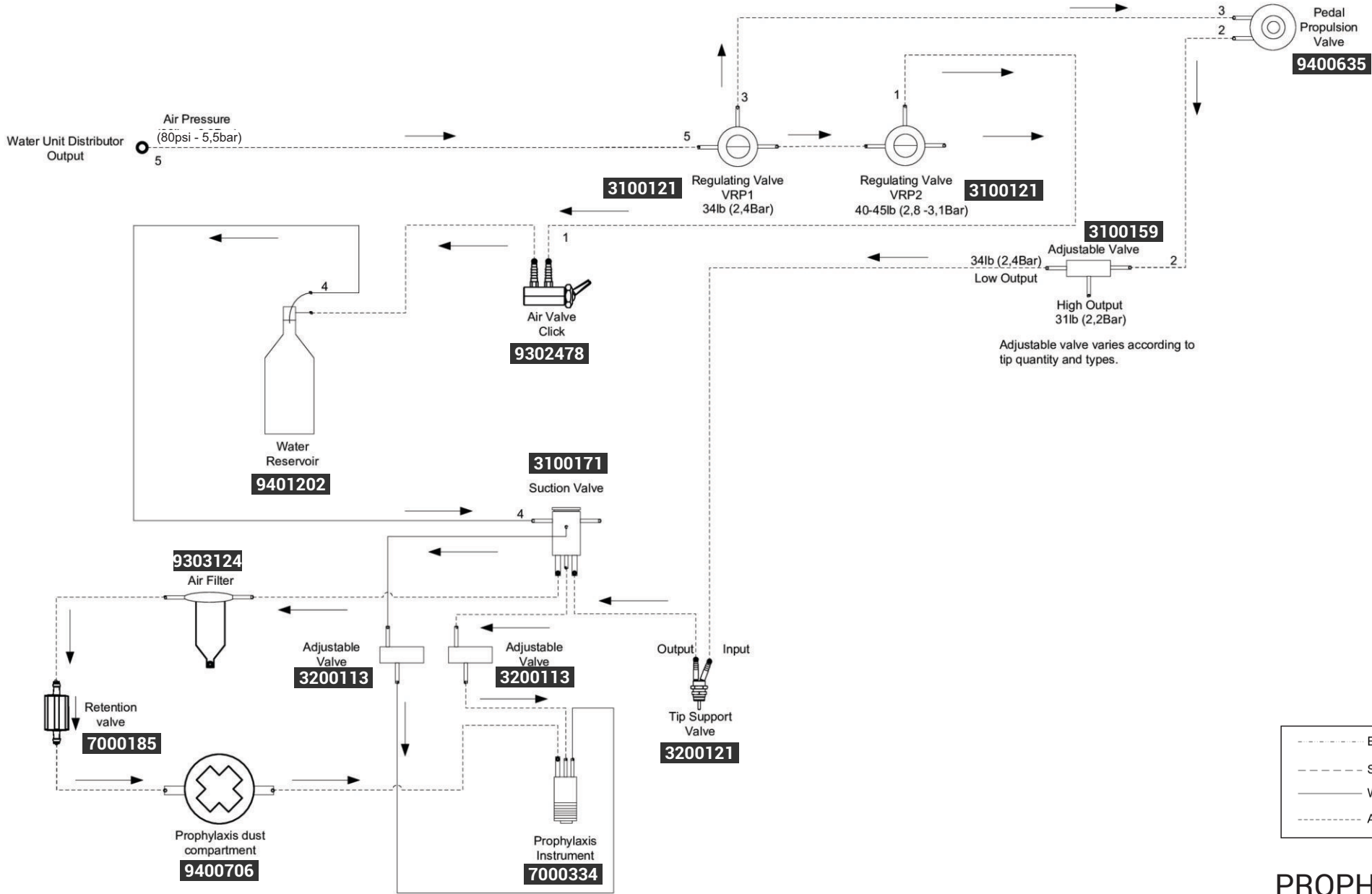
All suction valves have been removed for a better view of the wiring diagram.





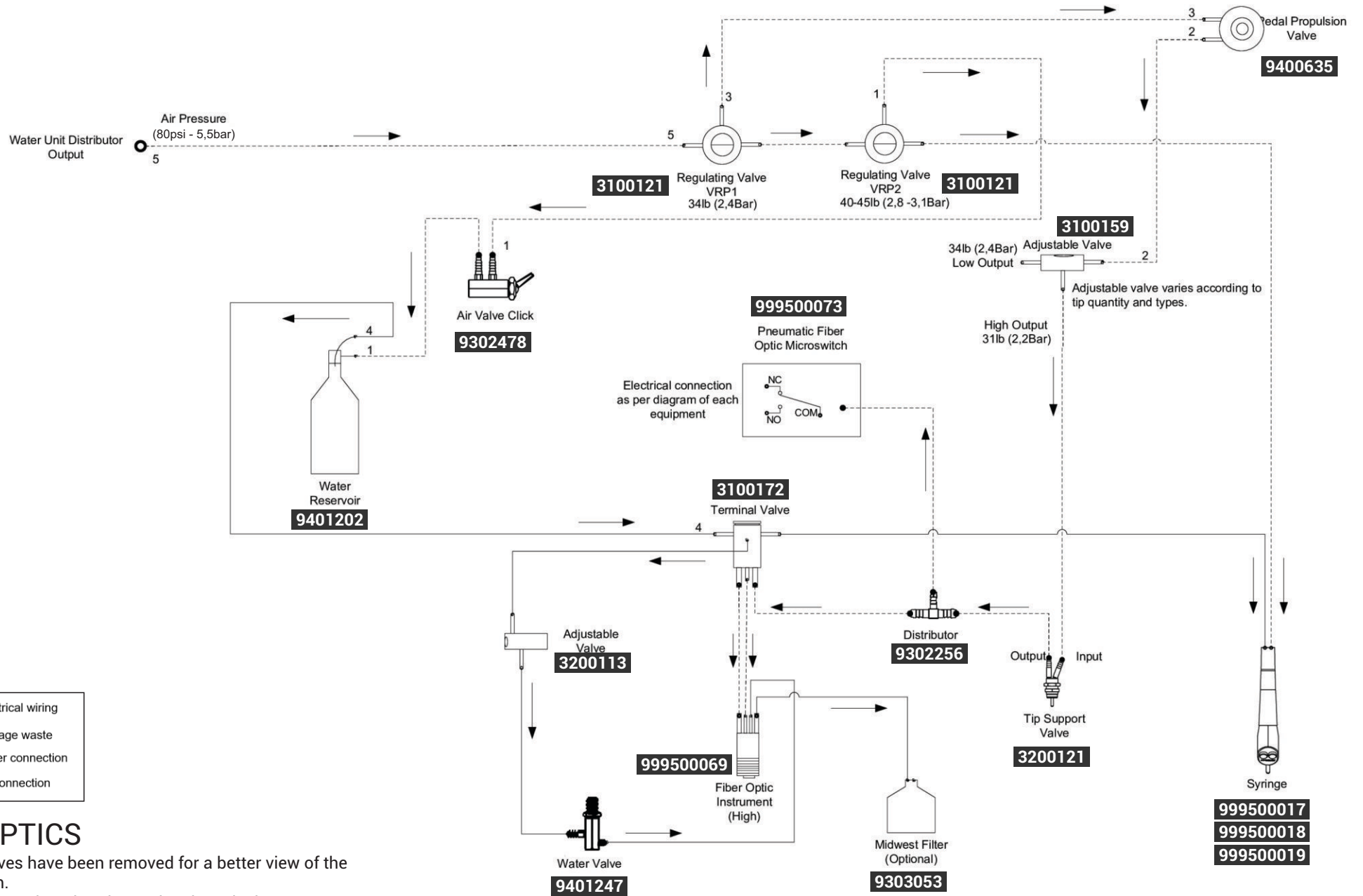
## SCALER

All suction valves have been removed for a better view of the wiring diagram.



## PROPHYLAXIS

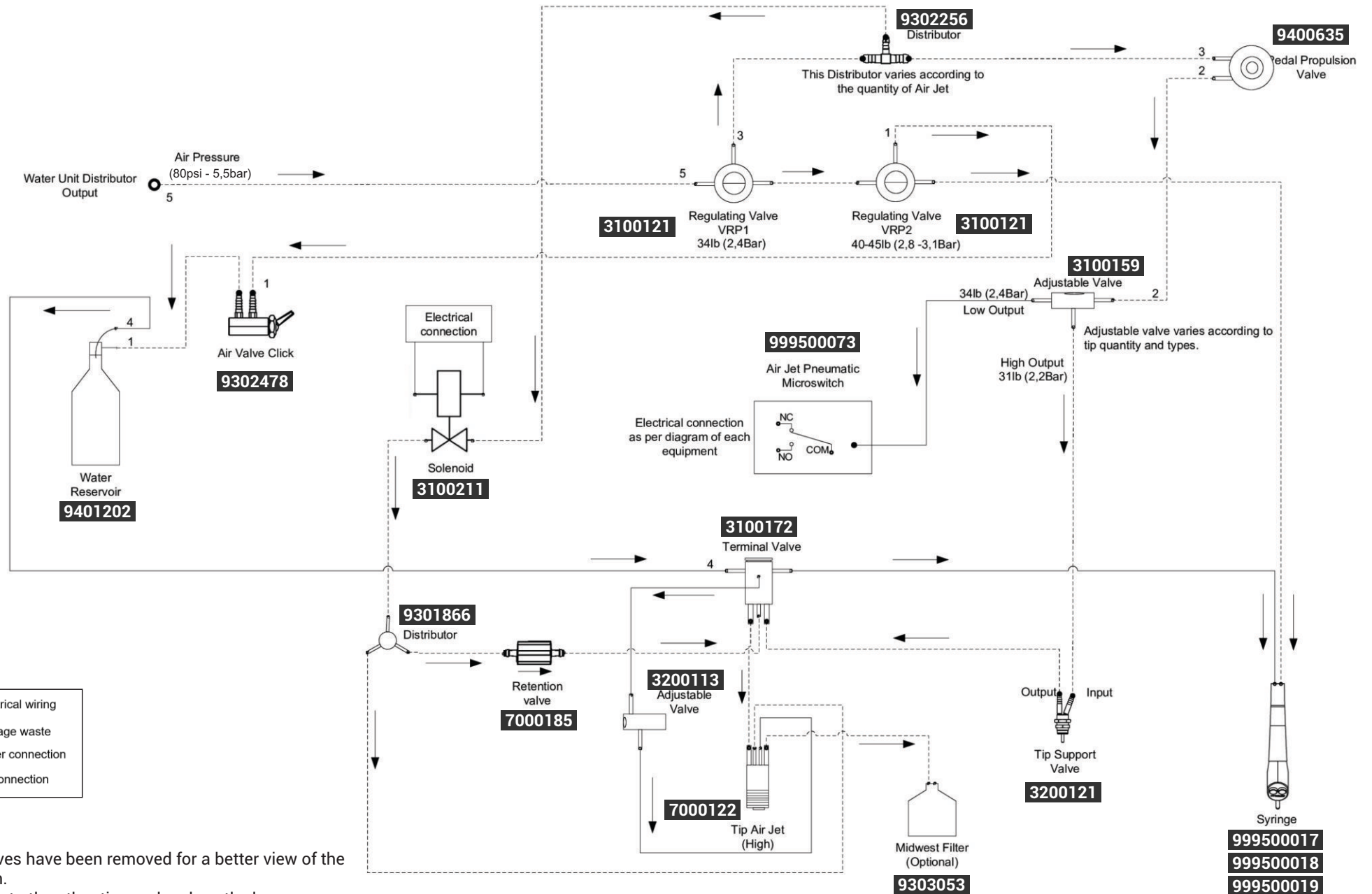
All suction valves have been removed for a better view of the wiring diagram.



## FIBER OPTICS

All suction valves have been removed for a better view of the wiring diagram.

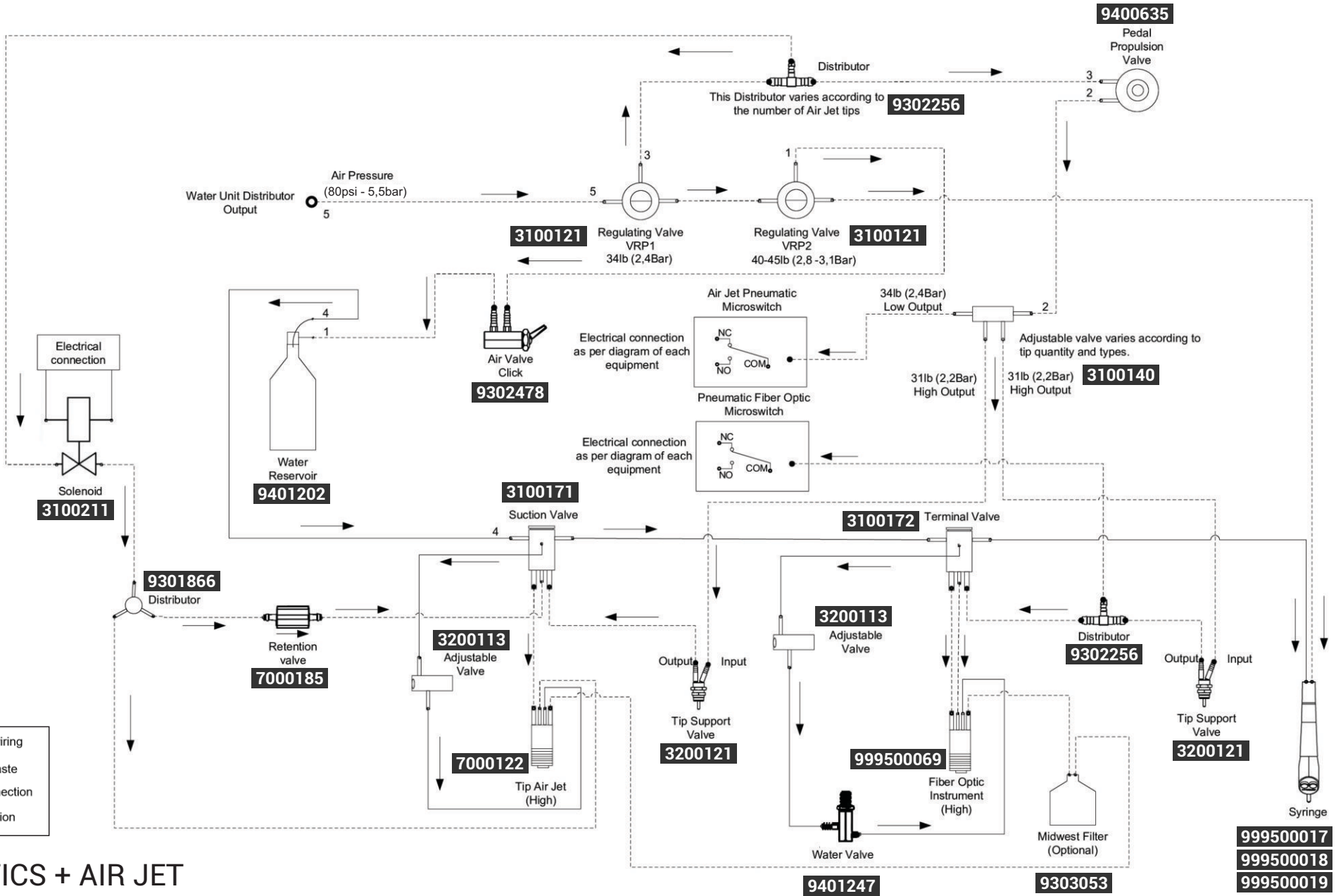
Note: Replicate to the other tips and replace the hose distributor 3 according to the number of tips.



### AIR JET

All suction valves have been removed for a better view of the wiring diagram.

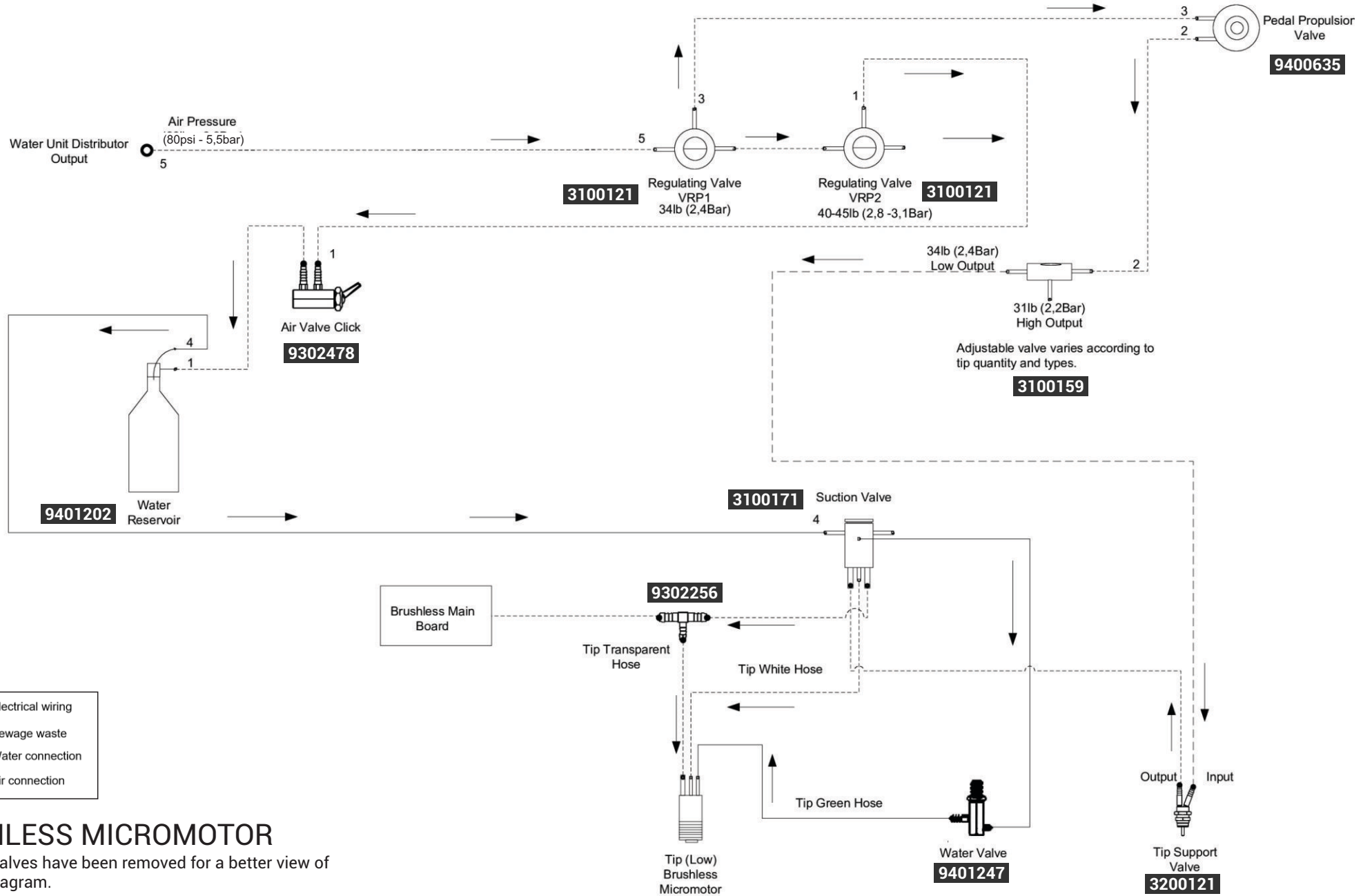
Note: Replicate to the other tips and replace the hose distributor 3 according to the number of tips.



## FIBER OPTICS + AIR JET

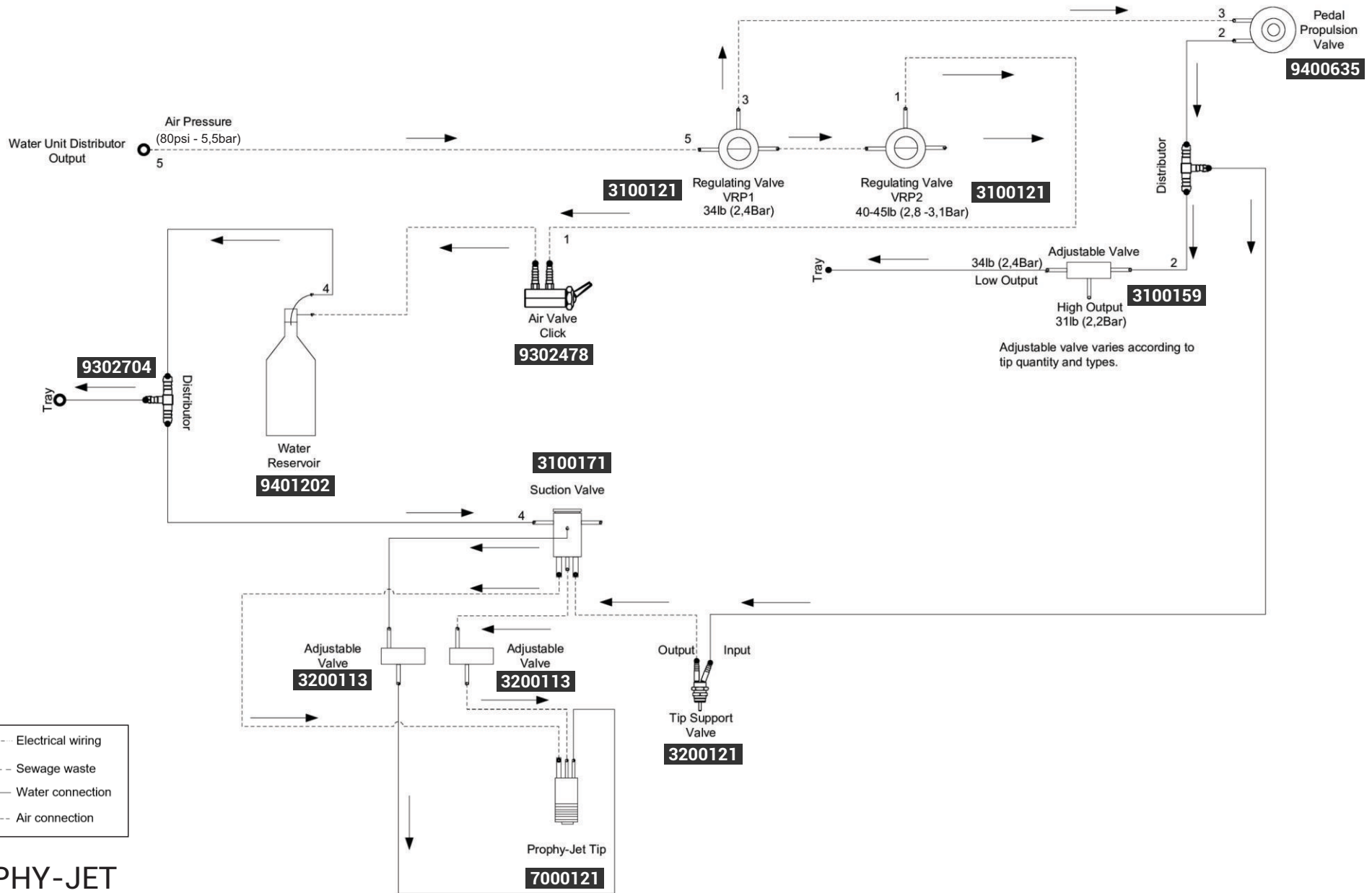
All suction valves have been removed for a better view of the wiring diagram.  
 Note: Replicate to the other tips and replace the hose distributor 3 according to the number of tips.





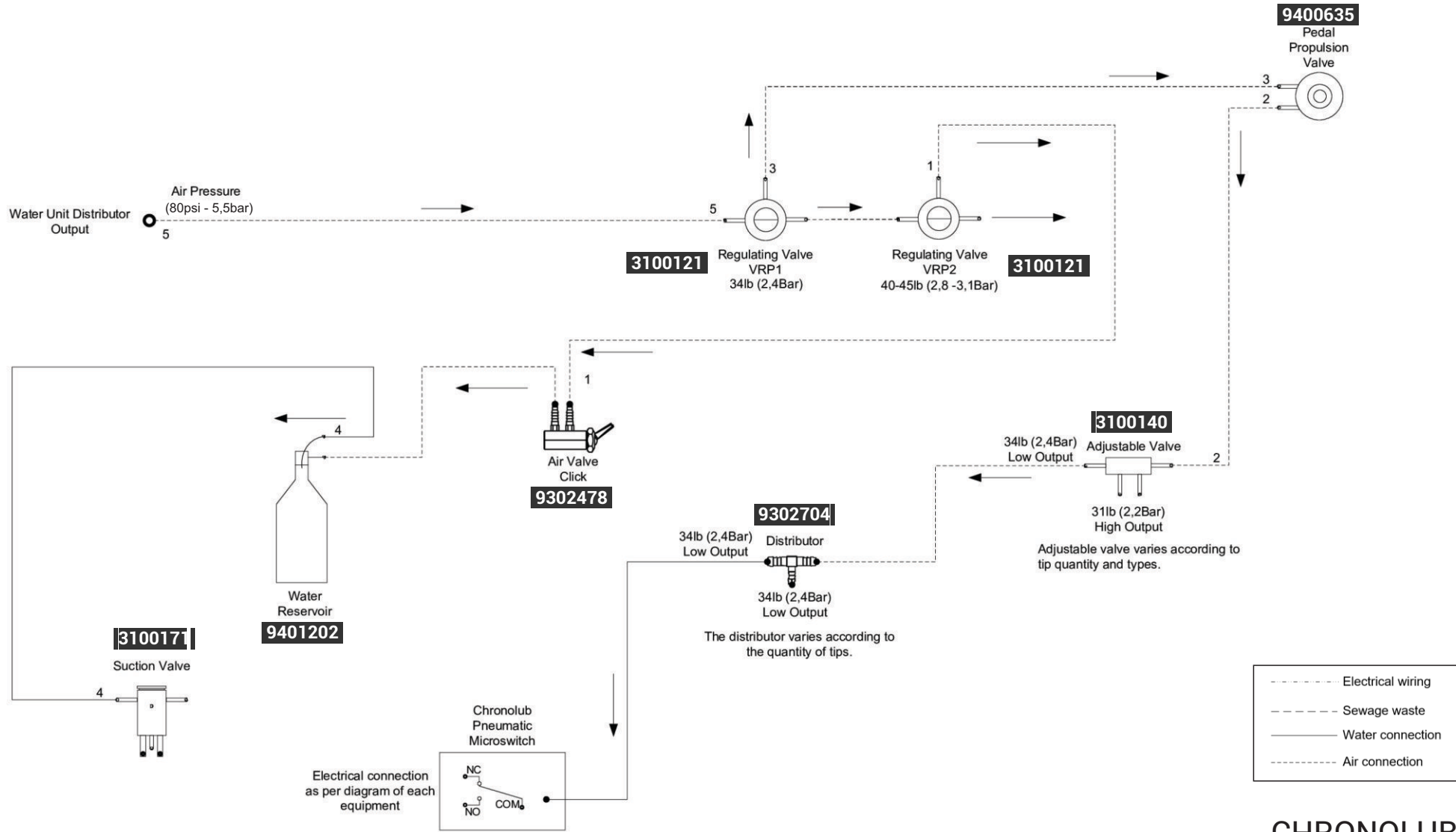
## BRUSHLESS MICROMOTOR

All suction valves have been removed for a better view of the wiring diagram.



## PROPHY-JET

All suction valves have been removed for a better view of the wiring diagram.



## CHRONOLUB

All suction valves have been removed for a better view of the wiring diagram. The low outlet distributor can also be connected to hose 2, depending on the equipment.





Equipament made to last

**OLSEN INDÚSTRIA E COMÉRCIO S.A.**

Av. Ivo Lucchi, 68, Distrito Industrial  
Palhoça/SC - Brazil - CEP 88133-510

Tel: +55 (48) 2106-6000

[www.olsen.odo.br](http://www.olsen.odo.br)

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