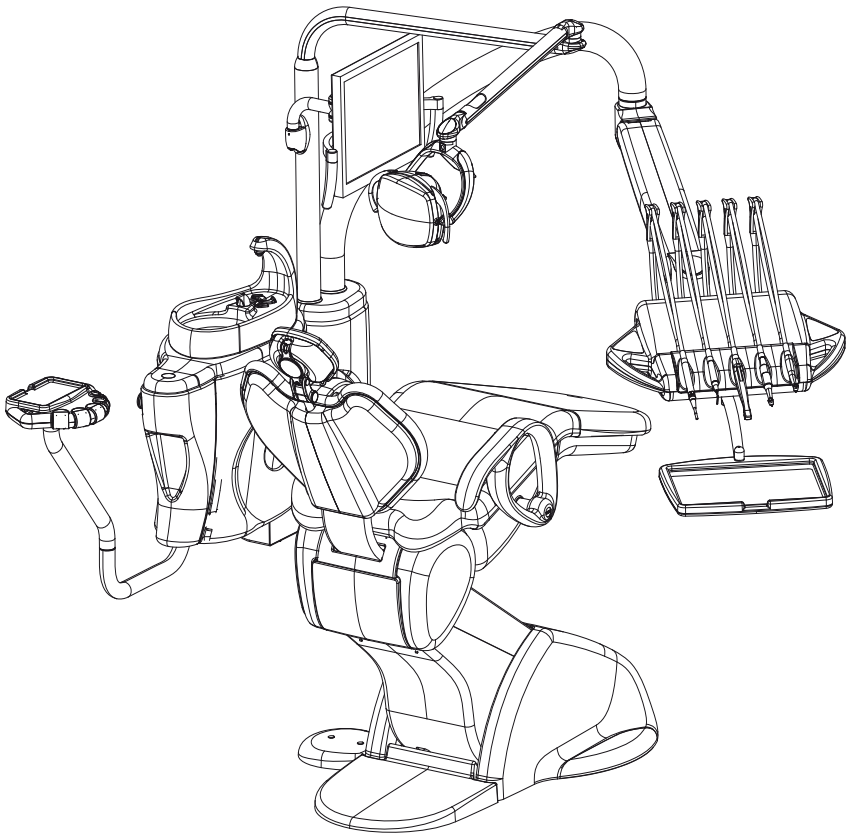
VITALI DENTAL UNITS & CHAIRS

T5 Evo Dental Units T5 Evo / V8e



EN Technical Manual

VITALI DENTAL UNITS & CHAIRS

TECHNICAL MANUAL
DENTAL UNIT Mod. T5 Evo / V8e

(COD. 66000024-EN - UPG. 27/05/2013)

Foreword

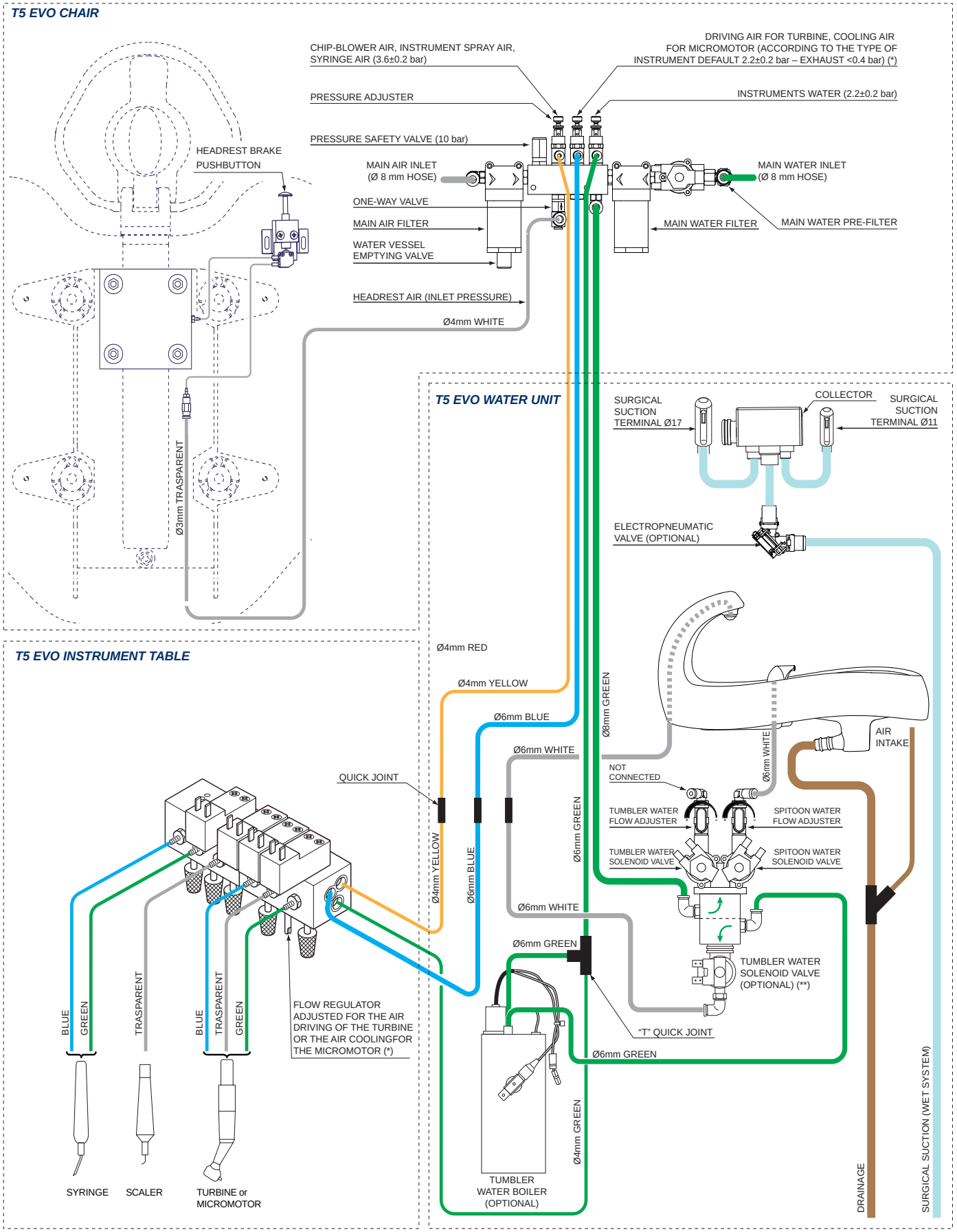
This technical manual, which is provided to VITALI distributors, includes the information necessary for the execution of operations which can be carried out by appropriately trained and authorized technical staff.

The document is divided into sections identified by a number and by a colour. Each section contains several explanatory chapters of the issue being discussed.
The manual is structured in such a way as to allow for the inclusion of additional sections/chapters.

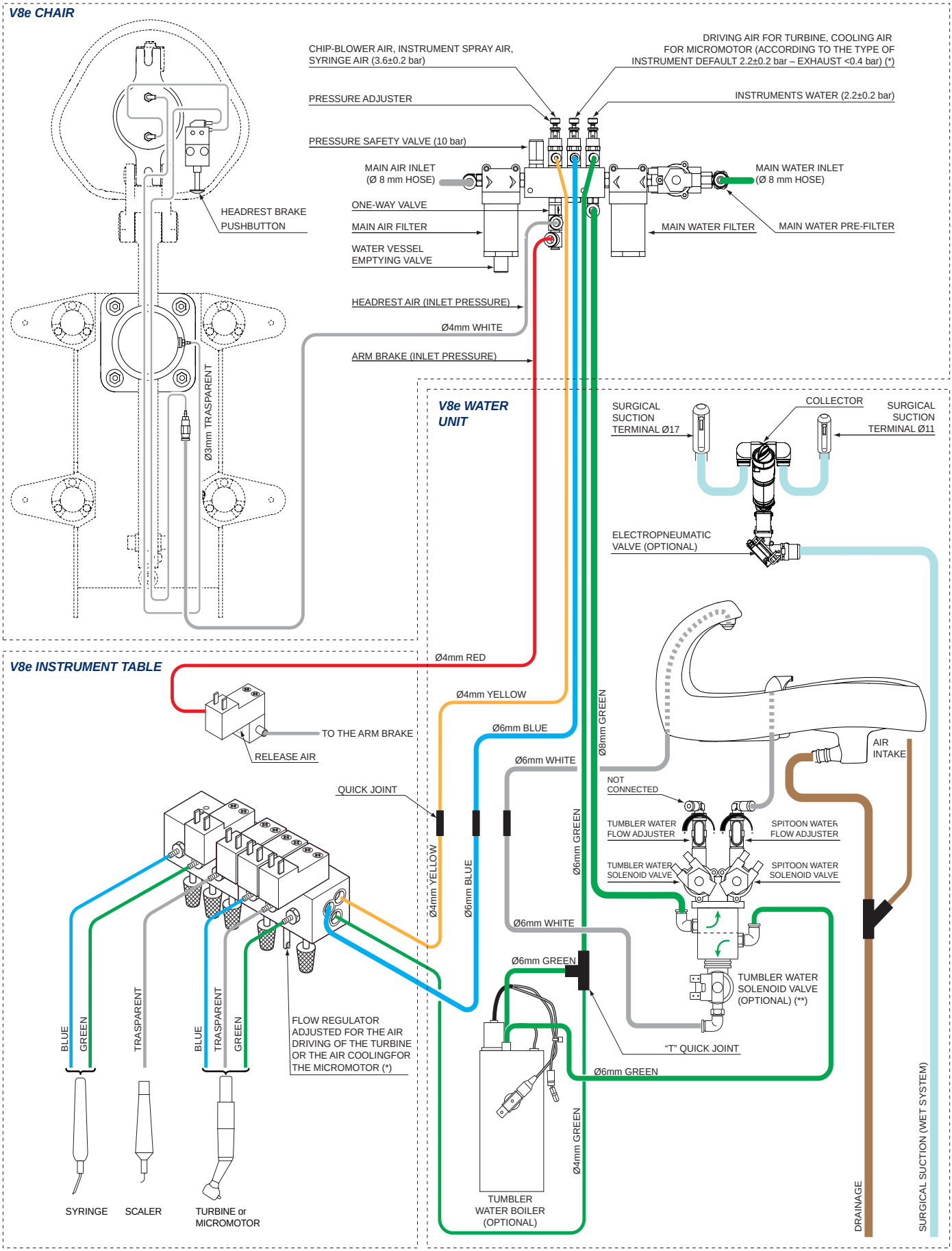
The first letter used in the identification code of connectors, fuses and LEDs present on the electronic cards indicates their position: P = chair power card and motherboard, R = cuspidor card, S = instrument preselection card (e.g., SC1 connector, SF2 fuse, etc.).

Whenever assistance/maintenance work involves the equipment, the MAINTENANCE CARD contained in the Operator's Manual relating to the maintained device must be filled out.
WARNING: DO NOT FILL OUT THE MAINTENANCE CARD CONTAINED IN THE ATTACHED OPERATOR'S MANUAL.

WARNING: after switching off the equipment by pressing the main switch, ,power may still be supplied to some parts of the equipment. Therefore, in case of access to parts under tension, it is always necessary to disconnect the supply plug or to act on the general disconnecting switch of the electric plant.

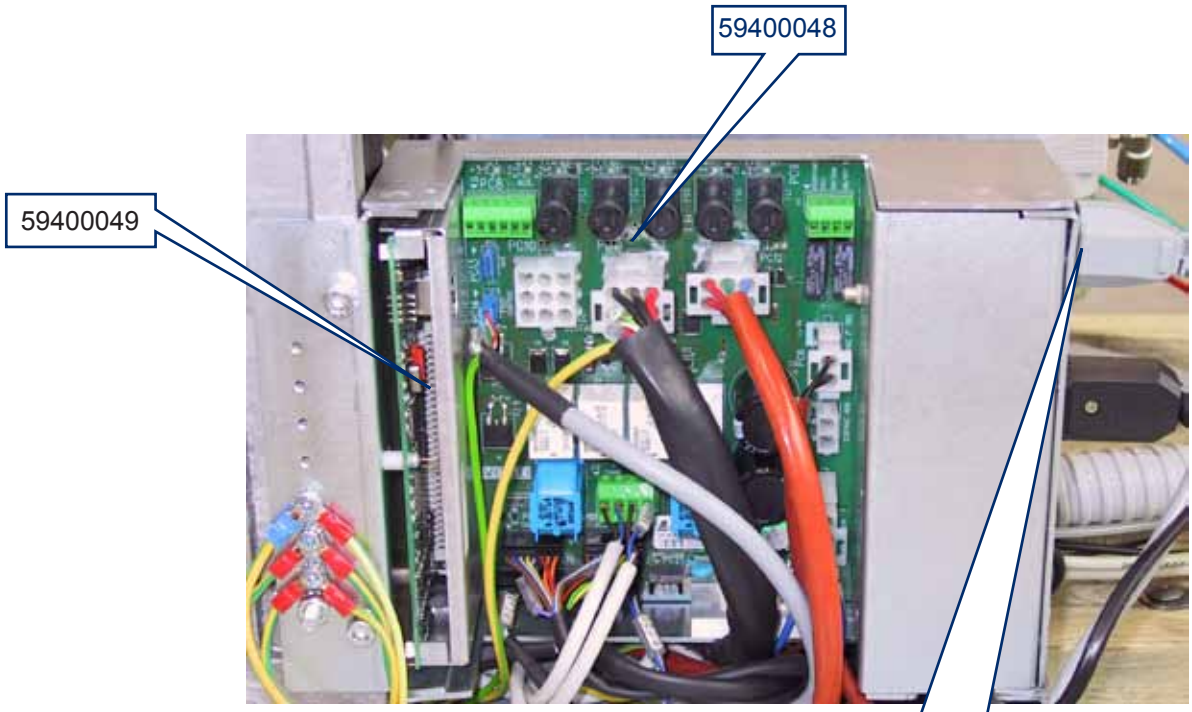


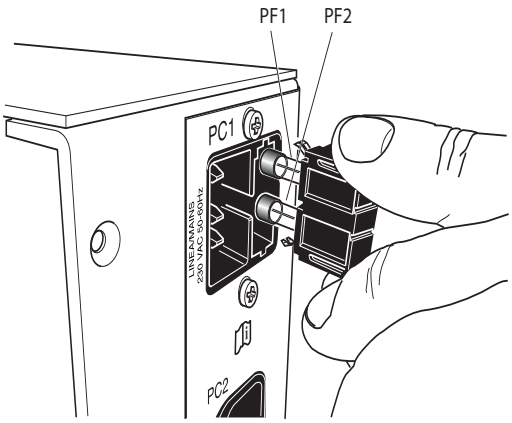
WARNING:
(*) the pressure adjuster must be calibrated according to the instrument that needs The highest pressure.the flow adjusters must be calibrated to ensure the proper working pressure to instruments with a lower pressure/consumption of air.
(**) if there is the water boiler, the flow of water to the tumbler cannot be changed



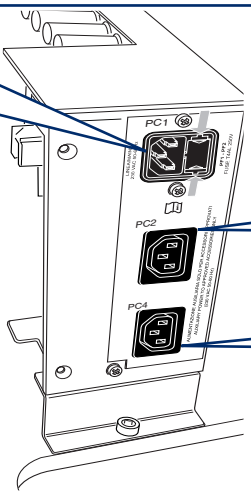
WARNING:
(*) the pressure adjuster must be calibrated according to the instrument that needs The highest pressure.the flow adjusters must be calibrated to ensure the proper working pressure to instruments with a lower pressure/consumption of air.
(**) if there is the water boiler, the flow of water to the tumbler cannot be changed

To have access to the electric unit, take away the transparent guard as indicated in the T5 EVO Installation Manual (cap. ELECTRIC, WATER AND PNEUMATIC CONNECTIONS).





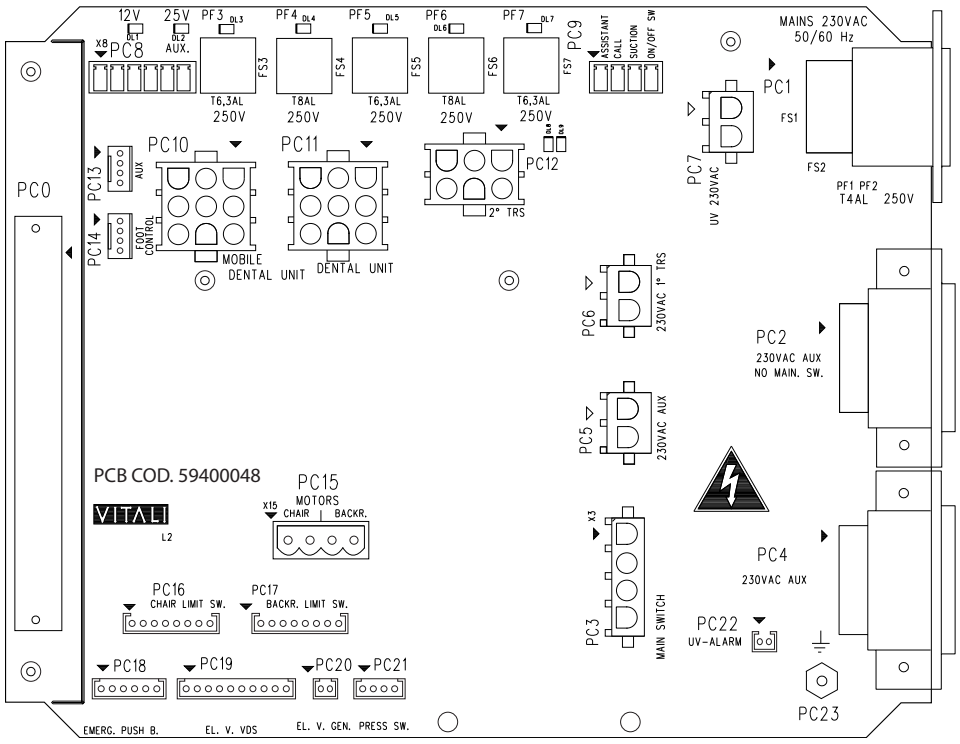
To replace fuses PF1 and PF2, draw out the fuse-holder tray by using a flathead screwdriver in the points shown with the arrows (see image on the side).



230VAC 50-60 Hz outlet present also with disconnected network switch.

230VAC 50-60 Hz outlet not present also with disconnected network switch.

PC2, PC3: auxiliary connections whose use is meant only for the connection of additional devices approved by VITALI.



CONNECTORS	
N°	DESCRIPTION
PC0	Connection for logic unit cod.59400049
PC1	1 - IN 230 Vac 2 - IN 230 Vac 3 - Earth
PC2	1 - 230 Vac (AUX - no interrupted by main switch) 2 - 230 Vac (AUX - no interrupted by main switch) 3 - Earth
PC3	1 - IN 230 Vac (main switch) 2 - IN 230 Vac (main switch) 3 - OUT 230 Vac (main switch) 4 - OUT 230 Vac (main switch)
PC4	1 - 230 Vac (AUX) 2 - 230 Vac (AUX) 3 - Earth
PC5	1 - 230 Vac (AUX) 2 - 230 Vac (AUX)
PC6	1 - 230 Vac (1st TRS) 2 - 230 Vac (1st TRS)
PC7	1 - 230 Vac (UV-Osmo) 2 - 230 Vac (UV-Osmo)
PC8	1 - +25 Vdc (AUX) 2 - CAN H (serial communication) 3 - CANL (serial communication) 4 - Ground 5 - 24Vac (AUX) 6 - 24Vac (AUX)
PC9	1 - Normal Open contact assistant call 2 - N.O. contact a.c. (24Vac/dc, 3A, resistive load) 3 - Normal Open contact suction motor 4 - N.O. contact s.m. (24Vac/dc, 3A, resistive load)
PC10	1 - 24 Vac (instrument selection card) 2 - 21 Vac (instrument selection card) 3 - 21 Vac (instrument selection card) 4 - 24 Vac (instrument selection card) 5 - CAN H (serial comunication instr. selec. card) 6 - CAN L (serial comunication instr. selec. card) 7 - +34 Vdc (instrument selection card) 8 - +25 Vdc (instrument selection card) 9 - Ground

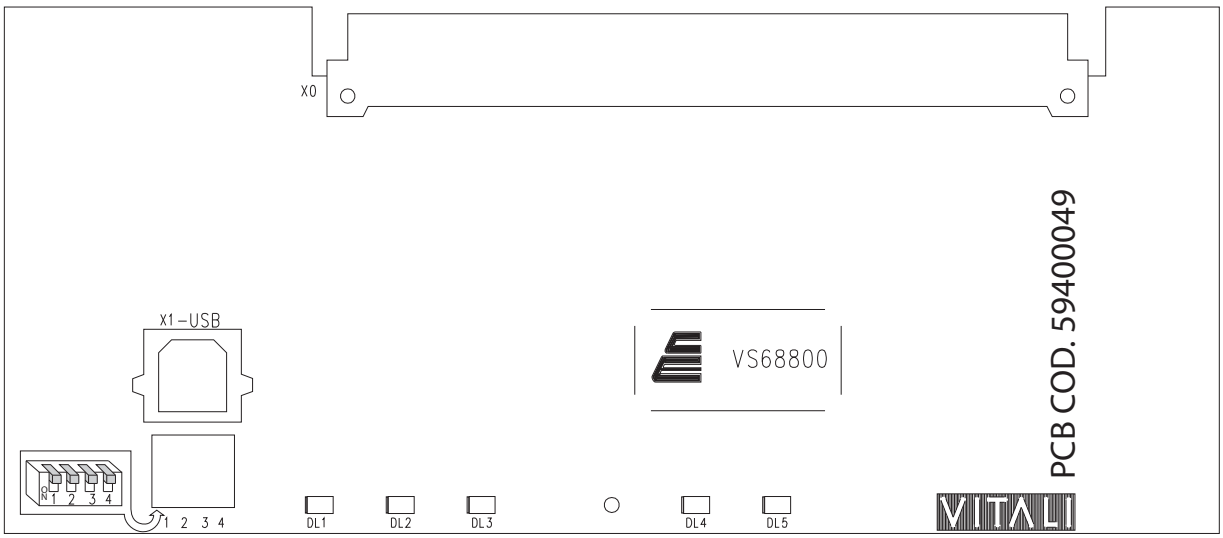
CONNECTORS	
N°	DESCRIPTION
PC11	1 - 24 Vac (instrument selection card Clip6) 2 - 21 Vac (instrument selection card Clip6) 3 - 21 Vac (instrument selection card Clip6) 4 - 24 Vac (instrument selection card Clip6) 5 - CAN H (serial comm. for instr. sel. card Clip6) 6 - CAN L (serial comm. for instr. sel. card Clip6) 7 - +34 Vdc (instrument selection card Clip6) 8 - +25 Vdc (instrument selection card Clip6) 9 - Ground
PC12	1 - 25 Vac (2nd TRS) 2 - 21 Vac (2nd TRS) 3 - 24 Vac (2nd TRS) 4 - 25 Vac (2nd TRS) 5 - 21 Vac (2nd TRS) 6 - 24 Vac (2nd TRS)
PC13	1 - +25 Vdc 2 - CAN H (serial communication VDS keyboard) 3 - CAN L (serial communication VDS keyboard) 4 - Ground
PC14	1 - +25 Vdc 2 - CAN H (serial communication foot control) 3 - CAN L (serial communication foot control) 4 - Ground
PC15	1 - 34 Vdc (chair motor power supply) (+/-) 2 - 34 Vdc (chair motor power supply) (-/+) 3 - 34 Vdc (backrest motor power supply) (+/-) 4 - 34 Vdc (backrest motor power supply) (-/+)
PC16	1 - + (10 kΩ chair potentiometer) (*) 2 - Cursor (10 kΩ chair potentiometer) 3 - - (10 kΩ chair potentiometer) 4 - Chair descent limit microswitch 5 - Common micro. descent and chair safety 6 - Chair safety microswitch 7 - Chair rise limit microswitch 8 - Chair rise limit microswitch

CONNECTORS	
N°	DESCRIPTION
PC17	1 - + (backrest potentiometer 10 KΩ) (**) 2 - Cursor (backrest potentiometer 10 KΩ) 3 - - (backrest potentiometer 10 KΩ) 4 - Backrest descent limit microswitch 5 - Common micro. descent and backrest safety 6 - Backrest rise limit microswitch 7 - Common micro. rise and backrest safety 8 - N.C.
PC18	1 - Emergency stop button (N.O.) 2 - Emergency stop button (N.O.) 3 - Red LED (maintenance or emergency) 4 - Green LED (ordinary operation) 5 - Common LED 6 - N.C.
PC19	1 - + Solenoid valve N.A. 1 (instruments water) (VDS) 2 - - Solenoid valve N.C. 1 (VDS) 3 - + Sol. valve N.C. 2 (Multiclean drawing) (VDS) 4 - - Solenoid valve N.C. 2 (VDS) 5 - + Sol. v. N.C. 3 (air for Multiclean pressurized bottle) (VDS) 6 - - Solenoid valve N.C. 3 (VDS) 7 - + Sol. v. N.C. 4 (sterile liquid) (VDS) 8 - - Solenoid valve N.C. 4 (VDS) 9 - + Sol. v. N.C. 5 (sterile liquid air) (VDS) 10 - - Solenoid valve N.C. 5 (VDS)
PC20	1 - + Main water inlet solenoid valve 2 - - Main water inlet solenoid valve
PC21	1 - Common pressure switch (+25Vdc) 2 - Water pressure switch (for VDS only) 3 - Air pressure switch (for VDS only) 4 - Ground (not used)
PC22	1 - UV lamp alarm (for UV-Osmo or VDS only) 2 - UV lamp alarm (for UV-Osmo or VDS only)
PC23	1 - Earth

(*) chair rise = 10 KΩ between 2 and 3, chair descent = 10 KΩ between 1 and 2.
(**) backrest rise = 10 KΩ between 2 and 3, backrest descent= 10 KΩ between 1 and 2.

FUSES				
N°	PROTECTED PARTS	VALUE AND TYPE	ANOMALIES THAT CAN BE DETECTED AFTER INTERRUPTION	
			FUNCTIONS	LIGHTS
PF1	230Vac line	T. 4AL (5x20) DELAYED	Nothing works.	Main switch off.
PF2	230Vac line	T. 4AL (5x20) DELAYED	Nothing works.	Main switch off.
PF3	Auxiliary 24 Vac line (PC8)	T. 6.3AL (5x20) DELAYED	The relay for suction motor control (optional) and any users connected to PC8 are not working.	DL3 off.
PF4	24 Vac line	T. 8AL (5x20) DELAYED	The users fed in alternating mode are not working (amalgam separators, 6F syringe, polymeriser, etc.).	DL4 off.
PF5	21 Vac line	T. 6.3A (5x20) DELAYED	The operating light is not working.	DL5 off.
PF6	Feeder power supply 34 Vcc	T. 8A (5x20) DELAYED	Nothing works.	DL6, DL7, emergency button ring off.
PF7	34 Vac line	T. 6.3A (5x20) DELAYED	The driving air and instrument cooling solenoid valves are not working. The micromotor and the turbine are not running.	DL6, DL7, emergency button ring off.

LED	
N°	INDICATION
DL1	Presence of 12 Vcc voltage
DL2	Presence of 25 Vcc voltage
DL3	Integrity fuse PF3
DL4	Integrity fuse PF4
DL5	Integrity fuse PF5
DL6	Integrity fuse PF6
DL7	Integrity fuse PF7
DL8	Nurse call activation
DL9	Surgical aspirator activation



CONNECTORS	
N°	**DESCRIPTION**
X0	BUS FOR CONNECTION TO THE CHAIR CARD CODE 59400048
X1-USB	USB SWITCH FOR CONNECTION TO PC

LED	
N°	**INDICATION**
DL1	Active USB connection.
DL2	If all the dip-switches of SW1 are turned off (OFF), it indicates the proper functioning of the serial connection. With the dip-switch 1 of SW1 on (ON), the LED is dedicated to the calibration of potentiometers (see below, description of Dip-Switch SW1).
DL3	Reserved.
DL4	Chair movement in progress.
DL5	Presence of card power supply.

DIP-SWITCH SW1		
N°	**ON**	**OFF**
1	Adjustment of limit switch and potentiometers (see procedures "Adjusting limit switch and potentiometer for T5 Evo chair rise" and "Adjusting limit switch and potentiometer for T5 Evo backrest").	Standard operation.
2	Transfer of firmware to peripheral devices (see under "Software update") and visualization/ reset of maintenance timer (see under "Adjusting the maintenance timer").	Standard operation.
3	Not used.	Not used.
4	USB connection (see under procedure "Software update").	Standard operation.

FIRMWARE UPDATE

You can update the firmwares of the cards of the chair (code 59400049), cuspidor (code 59400056) or instrument preselection (code 59400052), by following the procedure described below.

Required components: personal computer with Microsoft Windows XP® (or latest) operating system, A/B-type USB cable (male/male).

Procedure:

1. turn on the PC that contains the files of updated firmwares;
2. turn off the main switch of the equipment;
3. if you wish (this is not essential), you can remove the chair card from its housing (N.B: do not remove other cards);
4. put the switch 4 of SW1 of the chair card on ON;
5. connect the type-B USB plug to the X1-USB connector;
6. if the chair card is in its housing, turn on the main switch of the equipment;
7. connect the type-A USB cable to the PC;
8. in “My Computer”, go to “VITALI_Disk” to display the files on the chair card:

DESCRIPTION	FILE NAME (FIRMWARE)	DATE OF LAST CHANGE (REVISION) (*)
Firmware for chair card cod. 59400049	SP33001000V0 Chair 1.cry	08/09/2011 14.00
Firmware for cuspidor card cod. 59400056	SP33006000v0 Riuni 1.cry	08/06/2011 14.00
Firmware for 1st instrument preselection card cod. 59400052 present in instrument table	SP33009000v0 Selec 1.cry	05/05/2011 12.00
Firmware for 2nd instrument preselection card cod. 59400052 if present in water unit.	SP33009000v0 Selec 2.cry	05/05/2011 12.00

(*) non-real data, example of date/hour format.

9. drag&drop or cut&paste the new firmware into the “VITALI_Disk” (the file of the new firmware may have different names, this is irrelevant for updating purposes);
10. carry out the “Safe Hardware Removal” and disconnect the USB cable from the PC when the system so allows;
11. if necessary, update the other cards, repeat steps 7 to 10 for each new firmware you want to load.
12. if the chair card is in its housing, turn off the main switch of the equipment;
13. place the switch 4 of SW1 on OFF;
14. put the chair card back into its housing (if necessary);
15. wait for about 10 seconds and turn on the main switch of the equipment;
16. the chair card has been updated;
17. if the firmwares of other cards have been loaded on the chair card, you need to follow the procedure “Uploading firmwares to peripheral devices” to complete the update process.

N.B: the data on the settings of the equipment is in the chair motherboard; however, the updating of the firmware of this card does not alter stored data.

UPLOADING FIRMWARES TO PERIPHERAL DEVICES

This procedure is required to transfer updated firmwares from the chair card to cuspidor/instrument preselection cards.

Procedure:

1. put the dip-switch 2 of SW1 on ON;
2. the ignition of the LEDs of storable positions identify which peripheral devices are connected; more specifically:
   - = card cod. 59400056 (water unit)
   - = card cod. 59400052 (1° instrument selection card present in the instrument table)
   - = card cod. 59400052 (2° instrument selection card, if present in the water unit)
3. keep the key pressed and, without releasing it, press the key that identifies the peripheral device that you want to update for 5 uninterrupted seconds (e.g. + to update the instrument table selection card);
4. the corresponding LED (1, 2 or 3) starts to flash, indicating that the firmware transfer is underway;
5. 5. release both keys, wait for the LED to light up and stop flashing, and for a long confirmation beep;
6. 6. if required, repeat steps 3 to 5 for the other cards that require updating;
7. 7. put the dip-switch 2 of SW1 on OFF;
8. 8. turn the equipment off and then on again;
9. 9. wait for about 10 seconds for the system to overwrite the old firmware.

N.B. if you upload the firmware of the card code 59400056, the restarting of the equipment will be accompanied by an intermittent sound. The tonality of the last sound of the series indicates whether or not overwriting has been effective (low/deep sound = failure).

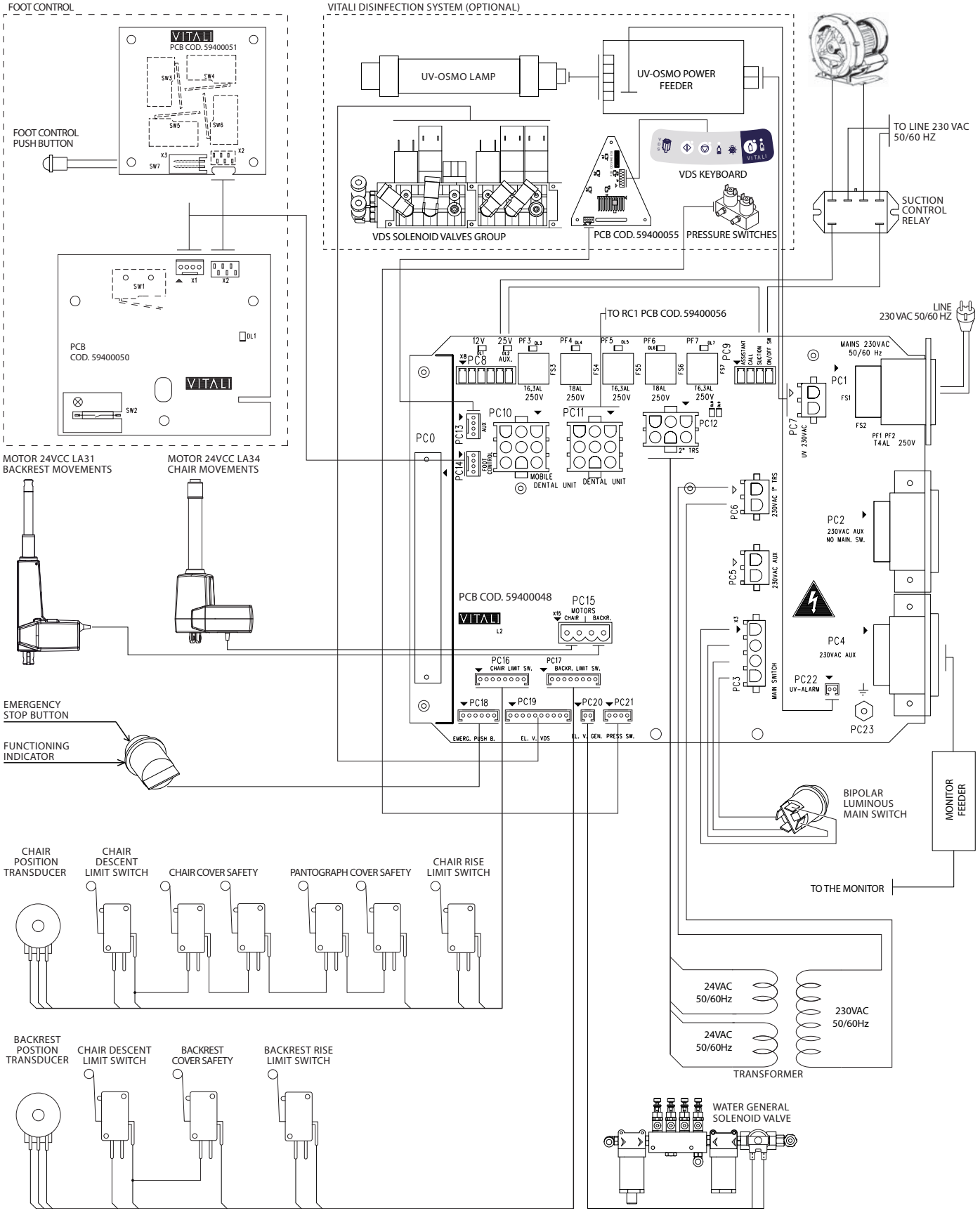
ADJUSTING THE MAINTENANCE TIMER

After about 1,000 hours of operation, the FUNCTIONING INDICATOR starts flashing for about 1 minute when the equipment is started (see chapter 9.0).
To change the number of hours counted:

10. Put the dip-switch 2 of SW1 on ON .
11. The LEDs from 1 to 10 of the unit's keyboard display the remaining time.
    (all the LEDs ≈ 1,000 hours, e.g. 1 2 3 4 5 6 7 8 9 10 ≈ 300 hours).
    The figure is viewable even in DIAGNOSTIC mode (see chapter 6.6: Group 0.9).
12. Press and, without releasing it, to set the timer at 1,000 hours or press and, without releasing it, to set the timer at 0 hours. Wait for the acoustic signal and release both keys.
13. Put the dip-switch 2 of SW1 on OFF.

WARNING: the dip-switch 2 of SW1 can also be used to update the firmwares of peripheral devices (see chapter UPLOADING FIRMWARES TO PERIPHERAL DEVICES).

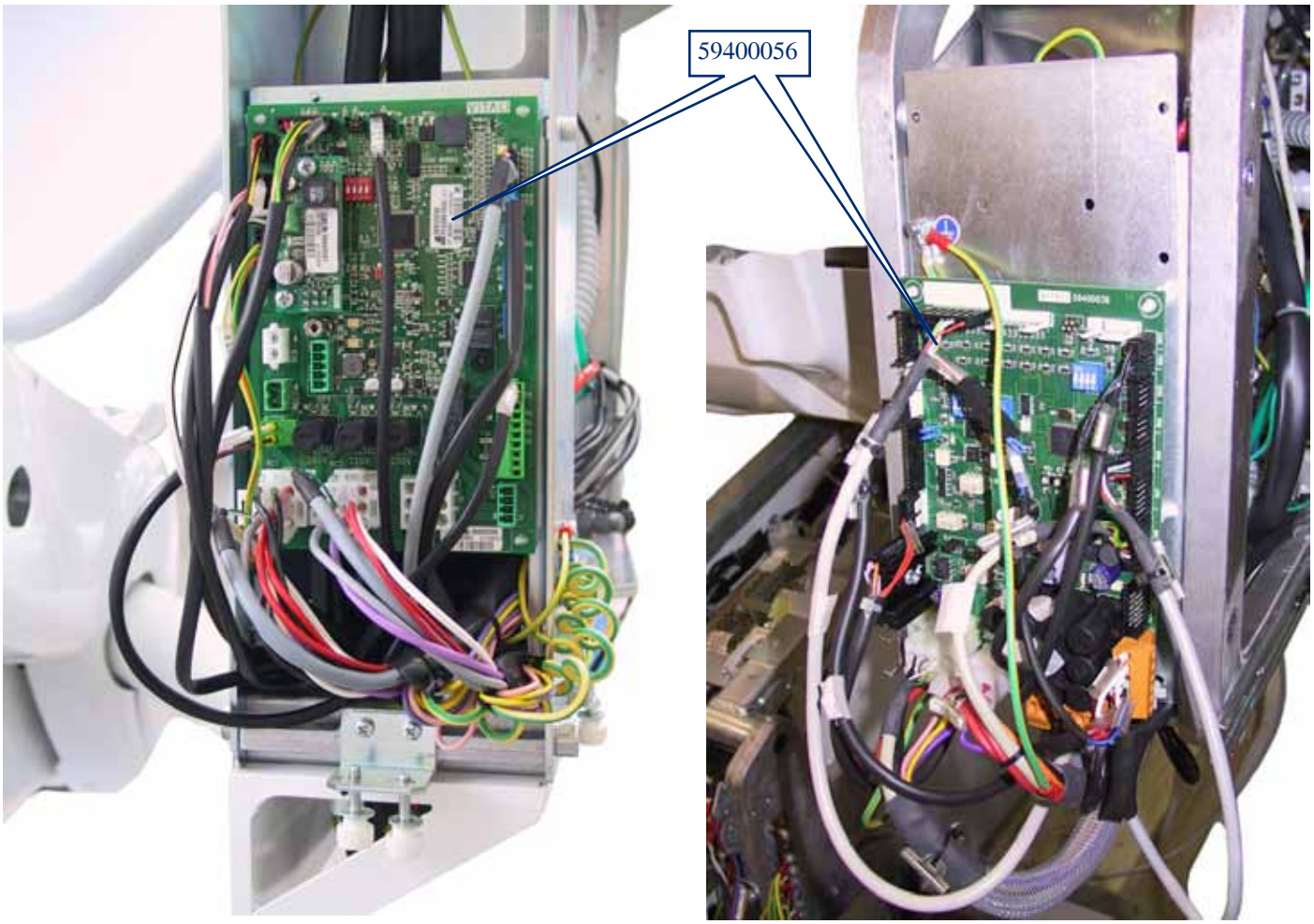
N.B: if the chair motherboard is replaced, it is necessary to repeat every customization previously made to the equipment (see chapter 6.7).


FOOT CONTROL
PCB COD. 59400051
FOOT CONTROL PUSH BUTTON
PCB COD. 59400050
VITALI DISINFECTION SYSTEM (OPTIONAL)
UV-OSMO LAMP
UV-OSMO POWER FEEDER
VDS KEYBOARD
VDS SOLENOID VALVES GROUP
PCB COD. 59400055
PRESSURE SWITCHES
TO LINE 230 VAC 50/60 HZ
SUCTION CONTROL RELAY
TO RC1 PCB COD. 59400056
LINE 230 VAC 50/60 HZ
MOTOR 24VCC LA31 BACKREST MOVEMENTS
MOTOR 24VCC LA34 CHAIR MOVEMENTS
PCB COD. 59400048
EMERGENCY STOP BUTTON
FUNCTIONING INDICATOR
BIPOLAR LUMINOUS MAIN SWITCH
MONITOR FEEDER
TO THE MONITOR
CHAIR POSITION TRANSDUCER
CHAIR DESCENT LIMIT SWITCH
CHAIR COVER SAFETY
PANTOGRAPH COVER SAFETY
CHAIR RISE LIMIT SWITCH
BACKREST POSTION TRANSDUCER
CHAIR DESCENT LIMIT SWITCH
BACKREST COVER SAFETY
BACKREST RISE LIMIT SWITCH
24VAC 50/60Hz
24VAC 50/60Hz
230VAC 50/60Hz
TRANSFORMER
WATER GENERAL SOLENOID VALVE

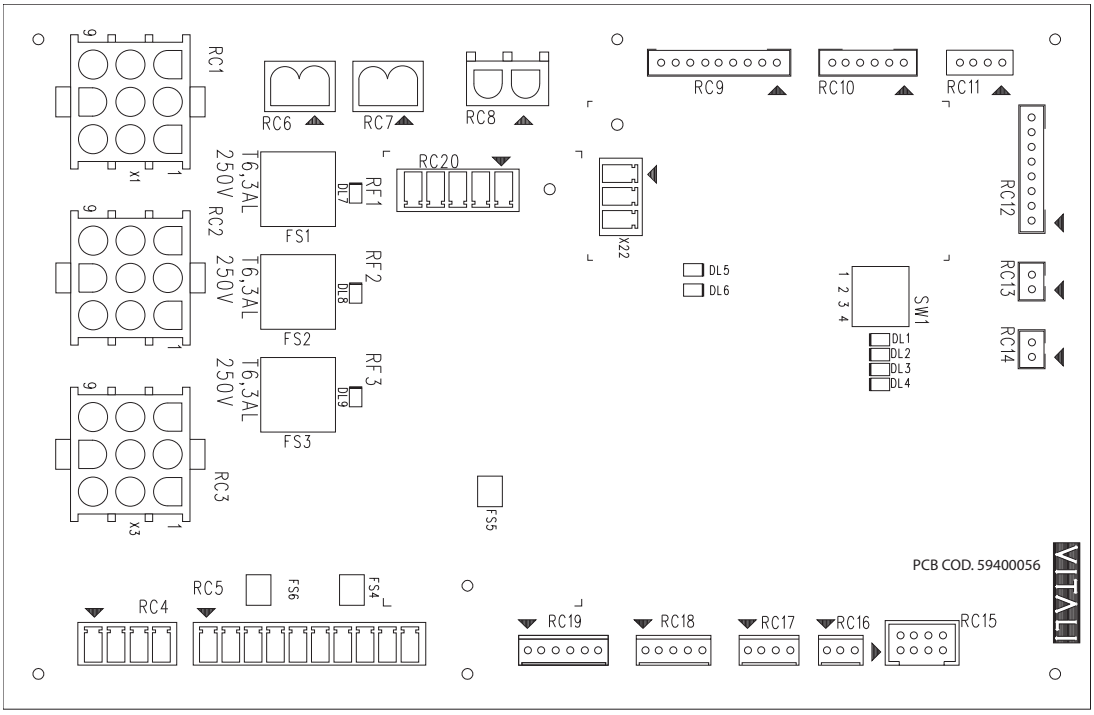
To have access to the cuspidor column, remove the covers as indicated in the T5 Evo or V8e Installation Manual.

T5 EVO

V8e



Water unit card ref. 59400048



CONNECTORS	
N°	**DESCRIPTION**
RC1	1 - IN 24 Vac 2 - IN 21 Vac (phase) 3 - IN 21 Vac 4 - IN 24 Vac (phase) 5 - CAN H (SERIAL COMMUNICATION) 6 - CAN L (SERIAL COMMUNICATION) 7 - IN + 34 Vdc 8 - IN +25 Vdc 9 - Ground
RC2	1 - 24 Vac 2 - 21 Vac (phase) 3 - 21 Vac 4 - 24 Vac (phase) 5 - CAN H (SERIAL COMMUNICATION) 6 - CAN L (SERIAL COMMUNICATION) 7 - + 34 Vdc 8 - +25 Vdc 9 - Ground
RC3	1 - 24 Vac 2 - 21 Vac (phase) 3 - 21 Vac 4 - 24 Vac (phase) 5 - CAN H (SERIAL COMMUNICATION) 6 - CAN L (SERIAL COMMUNICATION) 7 - + 34 Vdc 8 - +25 Vdc 9 - Ground
RC4	1 - AUX 24 Vac 2 - AUX 24 Vac (phase) 3 - 24 Vac phase 4 - 24 Vac (phase) Curing light
RC5	1 - Ground 2 - +25 Vdc 3 - + 34 Vdc 4 - Reserved 5 - Reserved 6 - Reserved 7 - + 24Vcc instrument spray water sol. valve 8- Ground instrument spray water sol. valve 9 - +24 Vcc instrument spray air sol. valve 10 - Ground instrument spray air sol. valve

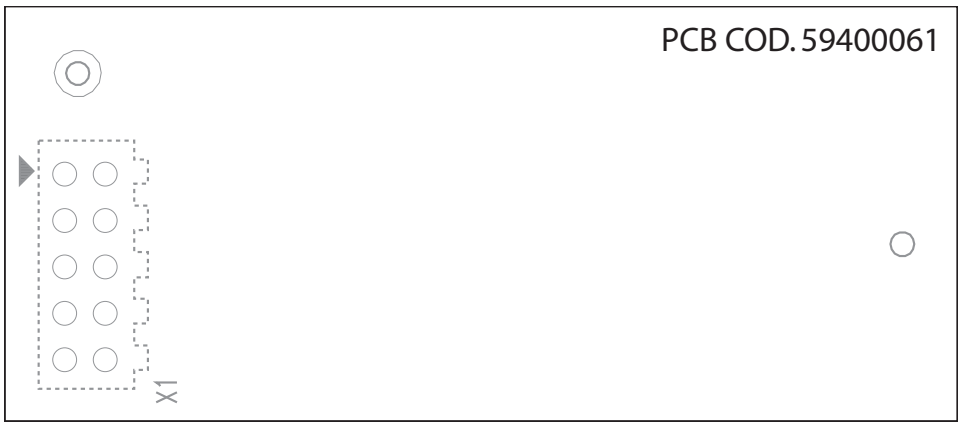
CONNECTORS	
N°	**DESCRIPTION**
RC6	1 - 24 Vac Glass water heater 2 - 24 Vac (phase) Glass water heater
RC7	1 - 24 Vac Amalgam separator 2 - 24 Vac (phase) Amalgam separator
RC8	1 - 24 Vac Halogen lamp 2 - 24 Vac (phase) Halogen lamp
RC9	1 - +25Vdc Spittoon drainage contact 2 - IN Spittoon drainage contact 3 - Probe A for miniseparator max level 4 - Probe B for miniseparator min level 5 - Probe C for miniseparator common levels 6 - Minicaster rinsing solenoid valve 7 - Minicaster rinsing solenoid valve 8 - Electropneumatic valve 9 - Electropneumatic valve
RC10	1 - Reserved 2 - Clean water system level control 3 - Ground clean water system level control 4 - Reserved 5 - Clean water syst. lev. contr. (Multiclean) 6 - Ground clean water syst. lev. contr. (Multiclean)
RC11	1 - Glass solenoid valve 2 - Ground glass solenoid valve 3 - Spittoon solenoid valve 4 - Ground spittoon solenoid valve
RC12	1 - Clean water syst. start button (+25Vdc) 2 - Clean water syst. start button 3 - Common LED 4 - Red LED clean water system level 5 - Green LED clean water system level 6 - Clean water syst. start solenoid valve 7 - Ground Solenoid valve 8 - Disconnected
RC13	1 - Microswitch for spittoon security (+25Vdc) 2 - Microswitch for spittoon security Short it if unused
RC14	1 - Security microswitch for instrument arm on assistant's console (+25Vdc) 2 - Security microswitch for instrument arm on assistant's console

CONNECTORS	
N°	**DESCRIPTION**
RC15	1 - Common micro. instr. arm on nurse's side (+25Vdc) 2 - Microswitch instrument 1 3 - Microswitch instrument 2 4 - Microswitch instrument 3 5 - Microswitch instrument 4 6 - Microswitch for suction terminals supports 7 - Microswitch for saliva ejector 8 - Ground
RC16	1 - Common cuspidor control keyboard (+25Vdc) 2 - Glass fill-up button 3 – Spittoon rinsing button
RC17	1 - +25 Vdc 2 - CAN H (serial comm. keyboard on assistant's console) 3 - CAN L (serial comm. keyboard on assistant's console) 4 - Ground
RC18	1 - Start auxiliary instrument (+25Vdc) 2 - Start auxiliary instrument (Ground) 3 - Disconnected 4 - Auxiliary instrument power adj. (0÷5 Vdc) 5 - Auxiliary instrument power adj. (Ground)
RC19	1 - 24 Vac (Videocamera module supply) 2 - 24 Vac (phase) Videocam. module supply 3 - Videocam. freeze control (open norm. contact) 4 - Videocam. freeze control (open norm. contact) 5 - Videocam. start control (open norm. contact) 6 - Videocam. start control (open norm. contact)
RC20	1 - 21 Vac (Halogen lamp supply Code 59400061) 2 - 21 Vac (phase) Halogen lamp supply Code 59400061 3 - Common remote controls for LED lamp (brown) 4 - Common UP remote controls for LED lamp (white) 5 - Common DOWN remote controls for LED lamp (green)
RC21	Reserved
RC22	1 - +34 Vdc (Drainage pump card supply Code 59400062) 2 - Pump start 3 – Ground

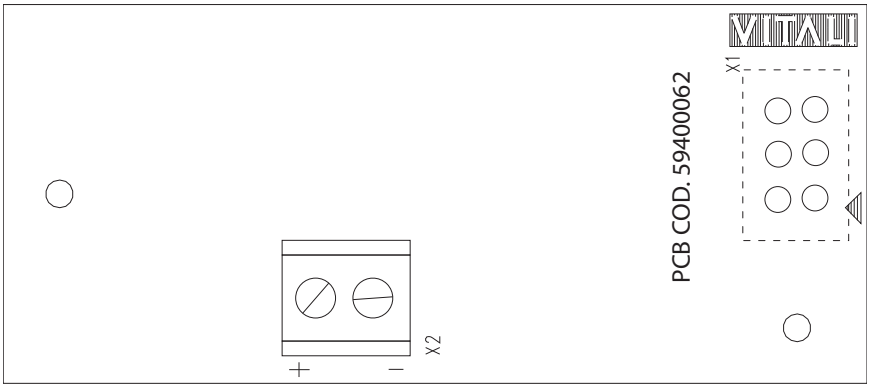
FUSES				
N°	PROTECTED PARTS	VALUE AND TYPE	ANOMALIES THAT CAN BE DETECTED AFTER INTERRUPTION	
			FUNCTIONS	LED
RF1	Glass water heater.	T. 6.3AL (5x20) DELAYED	The hot water glass function is not working (optional).	DL7 switched off.
RF2	Amalgam separator.	T. 6.3AL (5x20) DELAYED	The amalgam separator is not working (optional).	DL8 switched off.
RF3	Curing light. Intraoral camera. AUX output on RC4.	T. 6.3AL (5x20) DELAYED	The curing light is not working. The intraoral camera is not working. An eventual user connected to the AUX output of RC4 is not working (pin 1 and 2 RC4).	DL9 switched off.

LED	
N°	INDICATION
DL1	It indicates the proper operation of the serial connection.
DL2	It indicates when a direct (non-serial) input changes status.
DL3	It indicates when a direct (non-serial) output changes status.
DL4	Reserved.
DL5	Presence of 25 Vcc voltage
DL6	Presence of 5 Vcc voltage
DL7	Integrity of fuse RF1
DL8	Integrity of fuse RF2
DL9	Integrity of fuse RF3

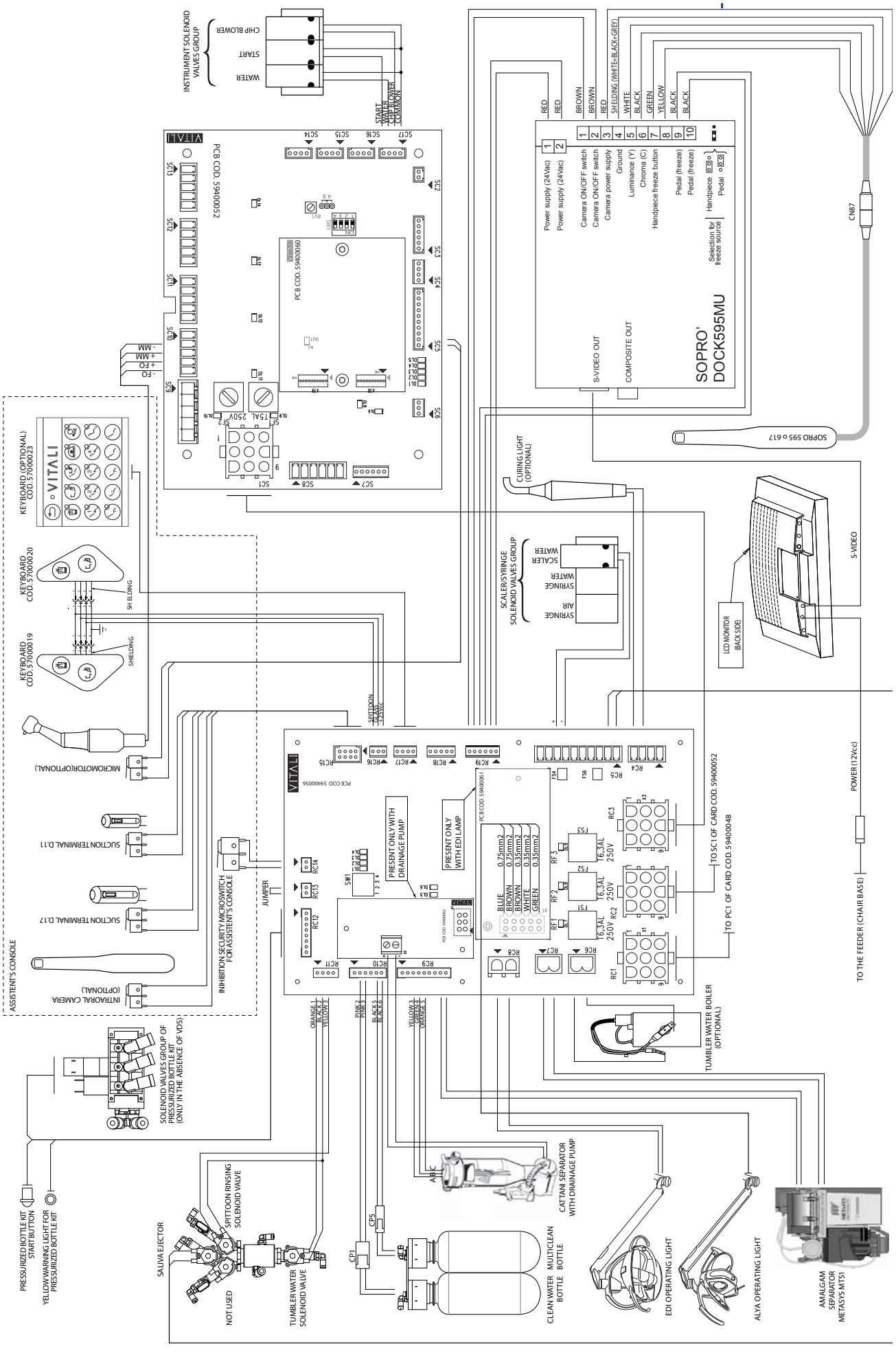
Drainage pump card Code 59400061
Halogen lamp card Code 59400062



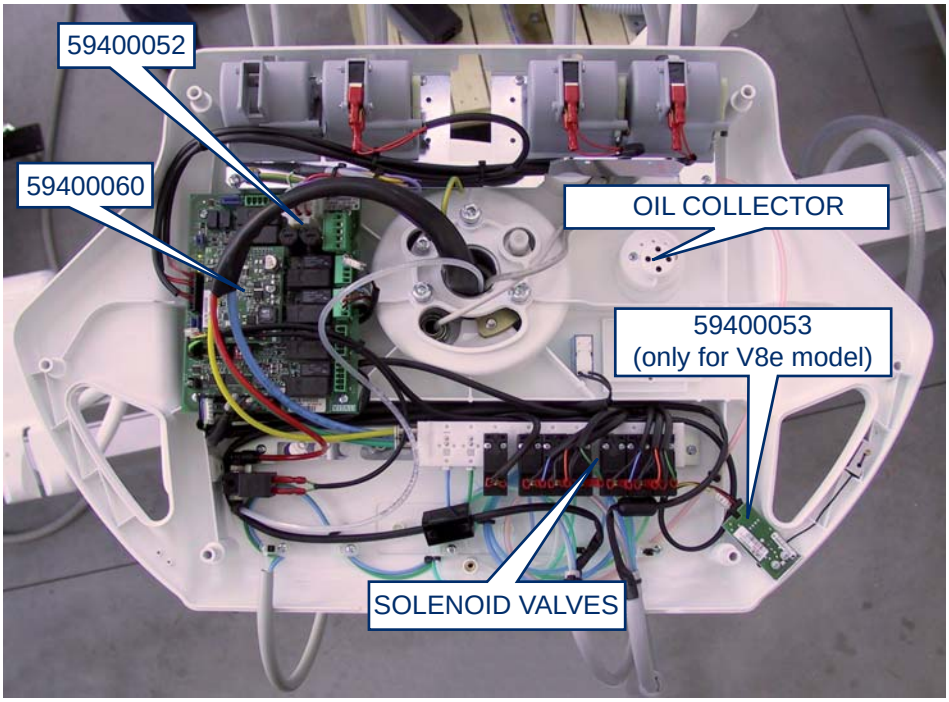
CONNECTORS	
N°	**DESCRIPTION**
X1	Unit card connection cod. 59400056 (RC20)

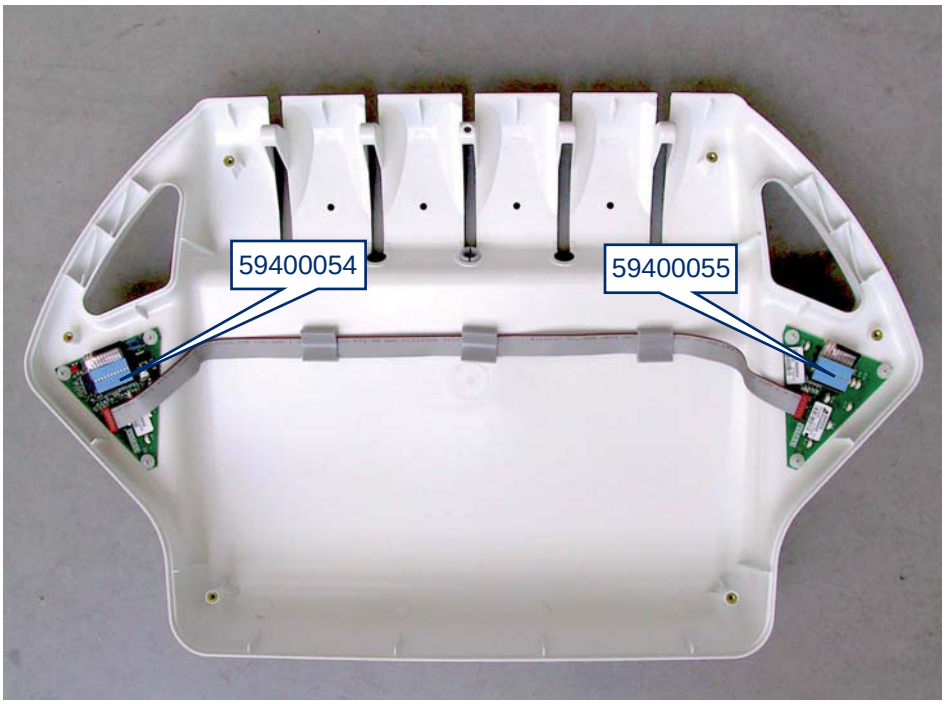


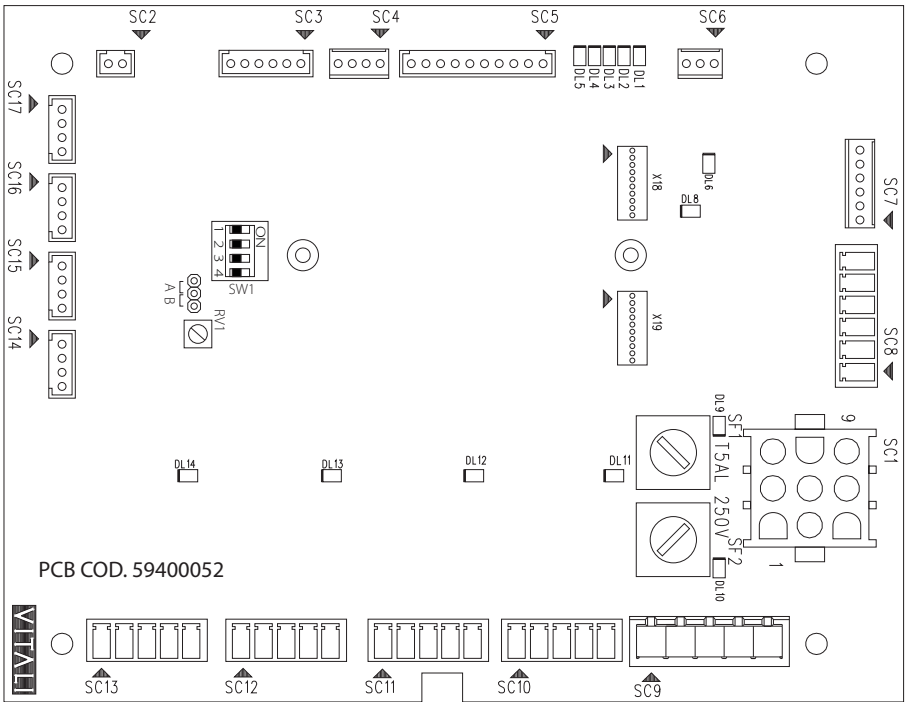
CONNECTORS	
N°	**DESCRIPTION**
X1	Unit card connection cod. 59400056 (RC22)
X2	1 - +12 Vdc (Drainage pump supply) 2 - Ground


INSTRUMENT SOLENOID VALVES GROUP
CHIP BLOWER
START
WATER
START
CHIP BLOWER
COMMON
PCB COD. 59400052
PCB COD. 59400060
SOPRO' DOCK595MU
Power supply (24Vac)
Power supply (24Vac)
Camera ON/OFF switch
Camera ON/OFF switch
Camera power supply
Ground
Luminance (Y)
Chroma (C)
Handpiece freeze button
Pedal (freeze)
Pedal (freeze)
Handpiece
Pedal
Selection for freeze source
S-VIDEO OUT
COMPOSITE OUT
RED
RED
BROWN
BROWN
RED
SHIELDING (WHITE-BLACK-GREY)
WHITE
BLACK
GREEN
YELLOW
BLACK
BLACK
CN87
SOPRO 595 o 617
CURING LIGHT (OPTIONAL)
KEYBOARD (OPTIONAL) COD.57000023
KEYBOARD COD.57000020
KEYBOARD COD.57000019
SH ELDING
SHIELDING
SCALER/SYRINGE SOLENOID VALVES GROUP
SCALER WATER
SYRINGE WATER
SYRINGE AIR
S-VIDEO
LCD MONITOR (BACK SIDE)
SPITTOON
MICROMOTOR(OPTIONAL)
SUCTION TERMINAL D.11
SUCTION TERMINAL D.17
INTRAORAL CAMERA (OPTIONAL)
ASSISTENT'S CONSOLE
INHIBITION SECURITY MICROSWITCH FOR ASSISTENT'S CONSOLE
JUMPER
PRESENT ONLY WITH DRAINAGE PUMP
PRESENT ONLY WITH EDI LAMP
PCB COD. 59400061
PCB COD. 59400056
0.75mm2 BLUE
0.75mm2 BROWN
0.35mm2 WHITE
0.35mm2 GREEN
T6,3AL 250V
TO SC1 OF CARD COD. 59400052
TO PC1 OF CARD COD. 59400048
POWER (12Vc.c)
TO THE FEEDER (CHAIR BASE)
TUMBLER WATER BOILER (OPTIONAL)
SOLENOID VALVES GROUP OF PRESSURIZED BOTTLE KIT (ONLY IN THE ABSENCE OF VDS)
ORANGE 1
BLACK 2
YELLOW 3
PINK 3
BLACK 4
BLACK 5
YELLOW 3
GREEN 4
ORANGE 5
PRESSURIZED BOTTLE KIT START BUTTON
YELLOW WARNING LIGHT FOR PRESSURIZED BOTTLE KIT
SALIVA EJECTOR
SPITTOON RINSING SOLENOID VALVE
NOT USED
TUMBLER WATER SOLENOID VALVE
CP1
CP5
CP8
CP9
CLEAN WATER MULTICLEAN BOTTLE
CATTANI SEPARATOR WITH DRAINAGE PUMP
EDI OPERATING LIGHT
ALYA OPERATING LIGHT
AMALGAM SEPARATOR METASYS MTS1

To have access to the Operator's Table remove the upper cover as shown in the T5 Evo or V8 Installation Manual.







CONNECTORS	
N°	**DESCRIPTION**
SC1	1 - IN 24 Vac 2 - Not connected 3 - Not connected 4 - IN 24 Vac (phase) 5 - CAN H (SERIAL COMMUNICATION) 6 - CAN L (SERIAL COMMUNICATION) 7 - IN + 34 Vdc 8 - IN +25 Vdc 9 - Ground
SC2	1 - Reserved 2 - Reserved
SC3	1 - +25 Vdc (Arm brake module supply cod. 59400053) 2 - Enable signal for arm brake (Connection to arm brake module cod. 59400053) 3 - Ground (Arm brake module supply cod. 59400053) 4 - Not connected 5 - +24 Vdc arm brake solenoid valve 6 - Ground arm brake solenoid valve
SC4	1 - +25 Vdc 2 - CAN H (serial communication operator's table keyboard) 3 - CAN L (serial communication operator's table keyboard) 4 - Ground
SC5	1 - IN microswitch of instrument arm 1 2 - IN microswitch of instrument arm 1 3 - IN microswitch of instrument arm 2 4 - IN microswitch of instrument arm 2 5 - IN microswitch of instrument arm 3 6 - IN microswitch of instrument arm 3 7 - IN microswitch of instrument arm 4 8 - IN microswitch of instrument arm 4 9 - IN microswitch of instrument arm 5 10 - IN microswitch of instrument arm 5
SC6	1 - +25 Vdc 2 - 0÷5 Vdc (scaler power adjustment) 3 - Ground

CONNECTORS	
N°	**DESCRIPTION**
SC7	1 - Cont. normally open activation of brushless micromotor 2 - Cont. normally open activation of brushless micromotor 3 - 0÷5 Vdc (micromotor speed adjustment) 4 - Ground 5 - Serial communication brushless module (RX) 6 - Serial communication brushless module (TX)
SC8	1 - +34 Vdc (Brushless module supply) 2 - Ground 3 - Disconnected 4 - IN phase W brushless micromotor 5 - IN phase V brushless micromotor 6 - IN phase U brushless micromotor
SC9	1 - +34 Vdc AUX 2 - +25 Vdc AUX 3 - Ground 4 - 24 Vac (phase) AUX (e.g. syringe 6F) 5 - 24 Vac - AUX (e.g. syringe 6F)
SC10	1 - phase W brushless micromotor 1 2 - - electric micromotor 1 (phase V brushless micromotor) 3 - + electric micromotor 1 (phase U brushless micromotor) 4 - + illumination of instrument 1 (FO) 5 - - illumination of instrument 1 (FO)
SC11	1 - phase W brushless micromotor 2 2 - - electric micromotor 2 (phase V brushless micromotor) 3 - + electric micromotor 2 (phase U brushless micromotor) 4 - + illumination of instrument 2 (FO) 5 - - illumination of instrument 2 (FO)
SC12	1 - phase W brushless micromotor 3 2 - - electric micromotor 3 (phase V brushless micromotor) 3 - + electric micromotor 3 (phase U brushless micromotor) 4 - + illumination of instrument 3 (FO) 5 - - illumination of instrument 3 (FO)

CONNECTORS	
N°	**DESCRIPTION**
SC13	1 - phase W brushless micromotor 4 2 - - electric micromotor 4 (phase V brushless micromotor) 3 - + electric micromotor 4 (phase U brushless micromotor) 4 - + illumination of instrument 4 (FO) 5 - - illumination of instrument 4 (FO)
SC14	1 - Ground solenoid valves instrument 1 2 - Solenoid valve of chip blower instrument 1 3 - Solenoid valve of instrument spray 1 4 - Driving air/cooling solenoid valve instrument 1
SC15	1 - Ground solenoid valves instrument 2 2 - Solenoid valve of chip blower instrument 2 3 - Solenoid valve of instrument spray 2 4 - Driving air/cooling solenoid valve instrument 2
SC16	1 - Ground solenoid valves instrument 3 2 - Solenoid valve of chip blower instrument 3 3 - Solenoid valve of instrument spray 3 4 - Driving air/cooling solenoid valve instrument 3
SC17	1 - Ground solenoid valves instrument 4 2 - Solenoid valve of chip blower instrument 4 3 - Solenoid valve of instrument spray 4 4 - Driving air/cooling solenoid valve instrument 4
X18	Connection micromotor module cod.59400060
X19	Connection micromotor module cod.59400060

FUSES				
N°	PROTECTED PARTS	VALUE AND TYPE	ANOMALIES THAT CAN BE DETECTED AFTER INTERRUPTION	
			FUNCTIONS	LED
SF1	Parts 34 Vdc powered	T. 5AL (5x20) DELAYED	Any eventual parts connected to pins 1 and 3 of SC9 are not working. The micromotor or turbine that can be modulated is not working.	DL9 switched off.
SF2	Parts 24 Vac powered	T. 5AL (5x20) DELAYED	Any eventual users connected to pins 4 and 5 of SC9 are not working.	DL10 switched off.

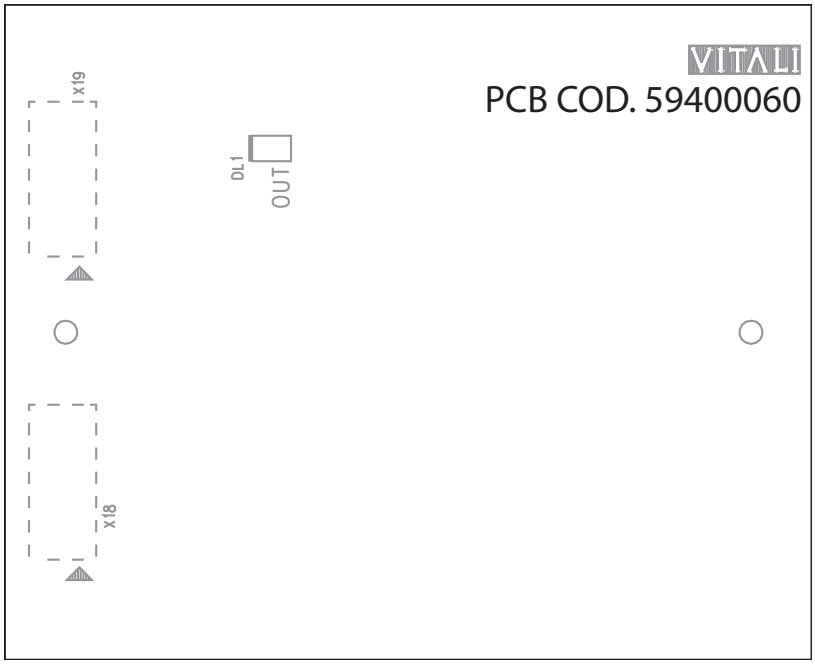
LED	
N°	INDICATION
DL1	It indicates the proper operation of the serial connection
DL2	It indicates when a direct (non-serial) input changes status
DL3	It indicates when a direct (non-serial) output changes status
DL4	It indicates the updating of the flash memory, flashing when the equipment is restarted after a new firmware is uploaded
DL5	Presence of 5 Vcc voltage
DL6	Activation of brushless micromotor
DL7	Activation of external circuit management of brushless micromotor (micromotor module Code 59400060 off)
DL8	Activated reverse rotation of micromotor
DL9	Integrity of fuse SF1
DL10	Integrity of fuse SF2
DL11	Activation of instrument 1
DL12	Activation of instrument 2
DL13	Activation of instrument 3
DL14	Activation of instrument 4

JUMPER			
N°	FUNCTION	STATUS	
		A	B
J1	Reserved	Reserved	Normal operation (standard position)

DIP-SWITCH PSW1		
N°	ON	OFF
1	It identifies the card as secondary to the one that is present in the operator's table (e.g. an additional card for additional instruments in the nurse's console).	Standard position (card in the operator's table).
2	Reserved	Reserved (standard position)
3	Reserved	Reserved (standard position)
4	Reserved	Reserved (standard position)

TRIMMER	
N°	FUNCTION
RV1	Maximum voltage adjustment for handpieces illumination (FO) (standard ≈ 3.2 ± 0.1 Vcc, 0.700 mA)

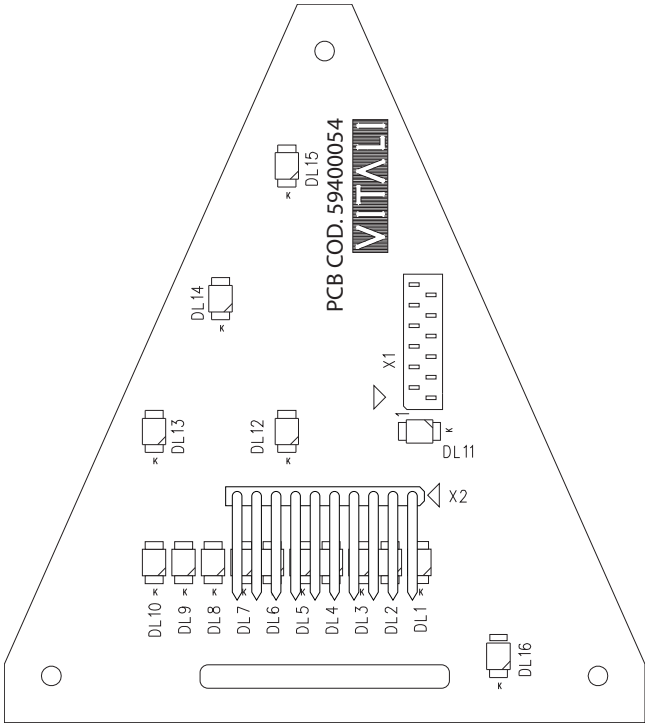
N.B: for the proper operation of the card, each instrument must be properly configured (see chapter 6.7).



CONNECTORS	
N°	**DESCRIPTION**
X18	X18 Selection card connection Code 59400052 (X18)
X19	X19 Selection card connection Code 59400052 (X19)

LED	
N°	**INDICATION**
DL1	It indicates the activation of the micromotor, its brightness is directly proportional to the speed of rotation.

Unit keyboard card Cod. 59400054
Unit keyboard lexan Cod. 57000016

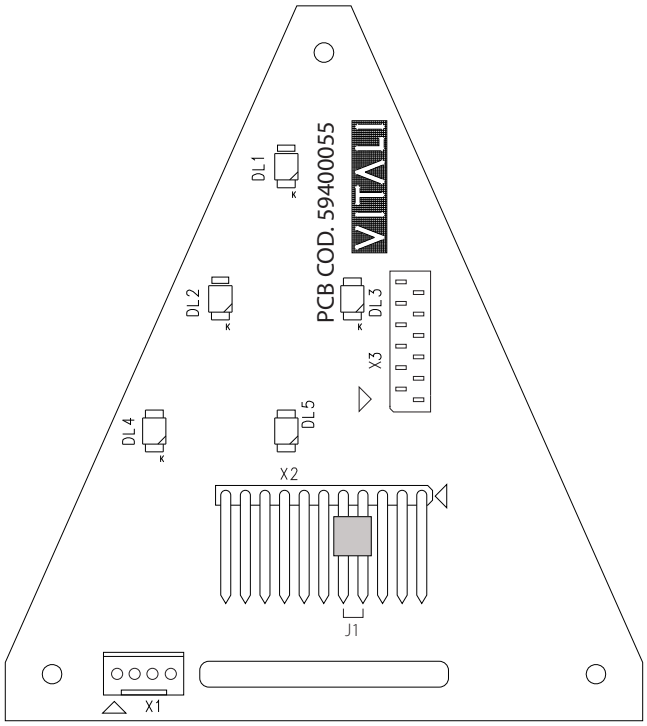


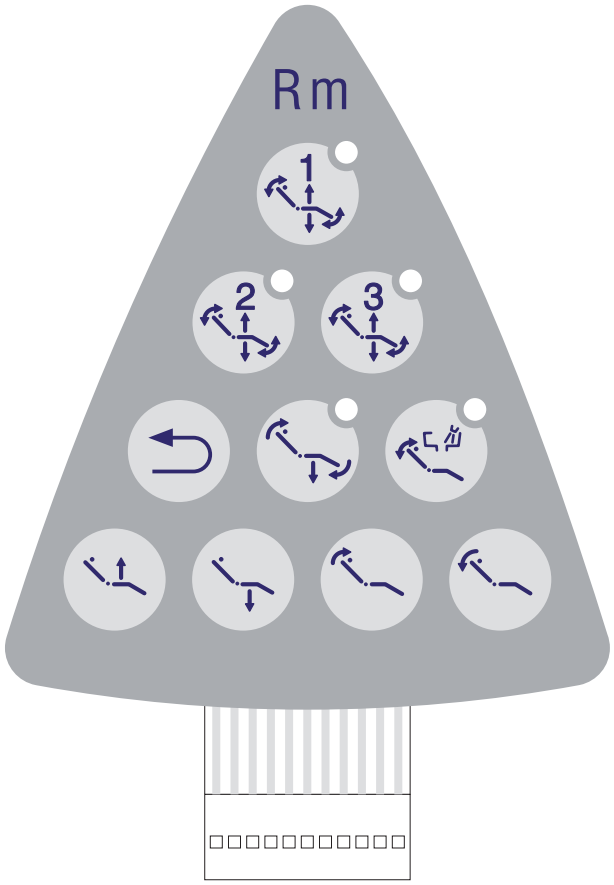
CONNECTORS	
N°	**DESCRIPTION**
X1	Keyboard card connection Code 59400055 (X3)
X2	Keyboard connection Code 57000016

LED	
N°	**INDICATION**
DL1-DL10	Instrument rotation speed
DL11	Activation of glass solenoid valve
DL12	Activation of spittoon solenoid valve
DL13	Activation of emergency position
DL14	Operating light is switched on
DL15	Activation of reverse rotation direction of micromotor
DL16	Presence of supply voltage

N.B: the functions of the keys are described in the T5 Evo Operator's Manual. The keys and corresponding LEDs may have other meanings during the DIAGNOSTICS and/or SETTINGS stages.

Chair keyboard card Cod. 59400055
Chair keyboard lexan Cod. 57000018



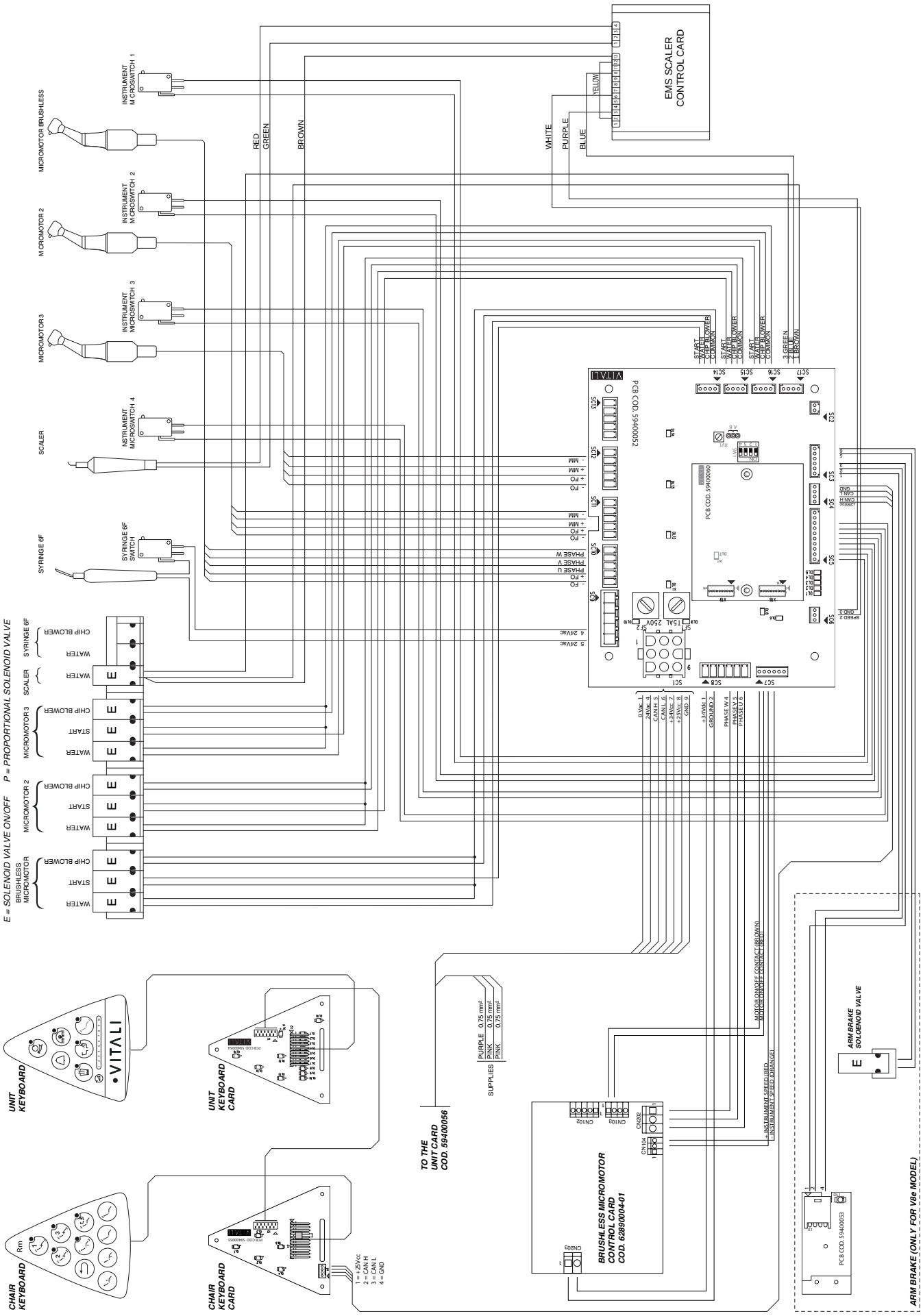


CONNECTORS	
N°	**DESCRIPTION**
X1	1 - +25 Vdc 2 - CAN H (serial communication instrument selection card) 3 - CAN L (serial communication instrument selection card) 4 - Ground
X2	Keyboard connection cod. 57000018
X3	Keyboard card connection cod. 59400054 (X1)

LED	
N°	**INDICATION**
DL1	Activation of storable position 1
DL2	Activation of storable position 3
DL3	Activation of storable position 2
DL4	Activation of rinsing position
DL5	Activation of zero-setting position

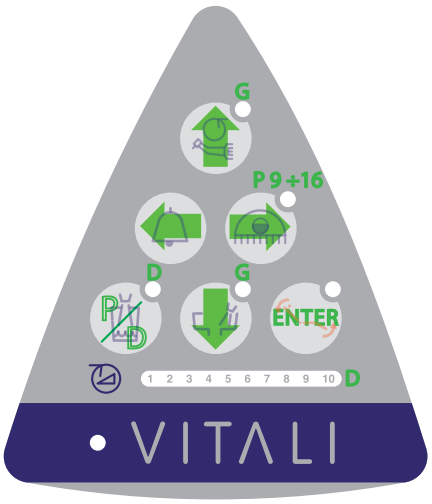
JUMPER			
N°	**FUNCTION**	**STATUS**	
		OPEN	**CLOSED**
J1	It identifies the card as secondary to the one that is present in the operator's table	Standard position (card in the operator's table).	Disinfection keyboard interface card Cod. 57000022 (optional).

N.B: the functions of the keys are described in the T5 Evo Operator's Manual. The keys and corresponding LEDs may have other meanings during the DIAGNOSTICS and/or SETTINGS stages.


EMS SCALER CONTROL CARD
INSTRUMENT M.CROSWITCH 1
INSTRUMENT M.CROSWITCH 2
INSTRUMENT MICROSWITCH 3
NSTRUMENT MICROSWITCH 4
SYRINGE 6F SWITCH
MICROMOTOR BRUSHLESS
M.CROMOTOR 2
MICROMOTOR3
SCALER
SYRINGE 6F
RED
GREEN
BROWN
WHITE
PURPLE
BLUE
YELLOW
PCB COD. 59400052
PCB COD. 59400060
E = SOLENOID VALVE ON/OFF P = PROPORTIONAL SOLENOID VALVE
BRUSHLESS MICROMOTOR
MICROMOTOR 2
MICROMOTOR 3
SCALER
SYRINGE 6F
CHIP BLOWER
START
WATER
UNIT KEYBOARD
UNIT KEYBOARD CARD
CHAIR KEYBOARD
CHAIR KEYBOARD CARD
TO THE UNIT CARD COD. 59400056
SUPPLIES
PURPLE 0,75 mm²
PINK 0,75 mm²
PINK 0,75 mm²
BRUSHLESS MICROMOTOR CONTROL CARD COD. 62890004-01
ARM BRAKE SOLENOID VALVE
ARM BRAKE (ONLY FOR V8e MODEL)
PCB COD. 59400053

DIAGNOSTICS

DIAGNOSTICS allows you to visualize all the inlets and outlets of the equipment and thus check their operation.
The data displayed cannot be changed.
All settings can be made only from the operator's keyboard Code 57000016.



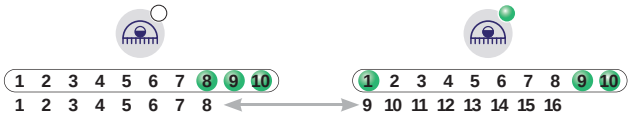
To enter DIAGNOSTICS , press and, without releasing it, , , wait for 5 sec. and, after the acoustic signal, release both keys. LEDs 9 and 10 will turn on to indicate that you have entered DIAGNOSTICS. LED 1 turns on to indicate that parameter 1 (1 2 3 4 5 6 7 8 9 10) of GROUP 0 has been selected.

By using the keys (increase) and (decrease), you can select the group of parameters to be checked:

GROUP 0	GROUP 1	GROUP 2	GROUP 3
CHAIR	UNIT	OPERATOR'S TABLE	KEYBOARDS AND FOOT CONTROL

16 parameters correspond to each group. By using the keys and , you can move to the left and to the right, respectively, along the LED-bar to select the parameter in a 1 to 16 range. Moving to the right beyond LED 8, LED turns on to indicate that the parameters displayed are those from 9 to 16.

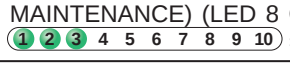
By pressing the key , you can alternatively switch from the indication of the parameter number (PARAMETER DISPLAY) to the visualization of the data contained in it (DATA DISPLAY), signalled by the LED turning on.



In DATA DISPLAY, LEDs 9 and 10 have a different meaning and take on the specific value of the data displayed.

In PARAMETER DISPLAY ( ) all functions are disabled including those indicated on the keys used for navigation ( ). In DATA DISPLAY, ( ) all functions are active, with the exception of those indicated on the navigation keys.

Press the key to leave the DIAGNOSTICS mode.
The DIAGNOSTICS mode is automatically abandoned after about 10 minutes of inactivity.
N.B: in the rest of this document, the wording "GROUP 1.6.3" (for example) refers to GROUP 0, Parameter 6, LED 3.

DIAGNOSTICS			
GROUP	**PARAMETER**	**MEANING**	
0 CHAIR	1 OFF LINE Each LED that is lit corresponds to a peripheral device that is off line according to the node numbers.	1	Unit Code 59400056
		2	Operator's table selection Code 59400056
		3	Cuspidor selection (optional) Code 59400056
		4	Foot control Code 59400050
		5	Card Code 59400055 with chair keyboard Code 57000018
		6	Console keyboard card Code 59400057
		7	Card Code 59400055 with disinfection keyboard Code 57000022
		8	Reserved
	2 LIMIT SWITCH AND SECURITIES (active with LED off)	1	Chair rise limit microswitch
		2	Chair descent limit microswitch
		3	Chair anti-crushing safety microswitch
		4	Backrest rise limit microswitch
		5	Backrest descent limit microswitch
		6	Backrest anti-crushing safety microswitch
		7	Reception of security signal from unit card Code 59400056(activation of security microswitch for instrument arm on nurse's side)
		8	Not used
	3 MOTOR RELAYS AND SOLENOID VALVES	1	Chair rise relay
		2	Chair descent relay
		3	Backrest rise relay
		4	Backrest descent relay
		5	Nurse call (not verified from unit keyboard Code 57000016)
		6	Green lighting of emergency button ring
		7	Suction control relay (surgical suction)
		8	Water general solenoid valve
	4 DISINFECTION	1	Solenoid valve 1 VDS group (optional)
		2	Solenoid valve 2 VDS group (optional)
		3	Solenoid valve 3 VDS group (optional)
		4	Solenoid valve 4 VDS group (optional)
		5	Solenoid valve 5 VDS group (optional)
		6	Water pressure gauge VDS (optional)
		7	Air pressure gauge VDS (optional)
		8	UV-Osmo lamp operation (optional)
	5 CHAIR POTENTIOMETER	LED 1 = chair low, LED 8 = chair high	
	6 BACKREST POTENTIOMETER	LED 1 = backrest low, LED 8 = backrest high	
	7 SOLENOID VALVES (active with LED on)	1	Short-circuit on solenoid valves group VDS (optional)
		2	Short-circuit on cuspidor solenoid valves: instrument water or instrument spray water (RC5) or scaler supply (RC18) or clean water system (RC12)
		3	Short-circuit on cuspidor solenoid valves: glass fill-up or spittoon rinsing (RC11) or separator rinsing (RC9) or electropneumatic valve (RC9)
		4÷8	Not used
	8 STARTING CHAIR MOTORS	Last error code detected during the piloting of chair movement motors (see chapter ALARMS).	
	9 MAINTENANCE (1 LED = 100 hours)	Hours remaining before the call for technical assistance (see chapter 9.0: MAINTENANCE) (LED 8 ON = >800 hours, MAX = 1000 hours, e.g.  = 300 hours)	

DIAGNOSTICS			
GROUP	**PARAMETER**	**MEANING**	
1 WATER UNIT	1 INLETS	1	Safety anti-crushing microswitch for instrument arm on assistant's console
		2	Not used
		3	Clean water system level control for solution
		4	Clean water system level control for Multiclean (optional)
		5	(keyboard on assistant's console model T5)
		6	(keyboard on assistant's console model T5)
		7	Reserved
		8	Suction terminals microswitch
	2 INSTRUMENTS	1	Intraoral camera start relay
		2	Curing light supply
		3	Glass solenoid valve
		4	Spittoon solenoid valve
		5	Instrument 1 microswitch on assistant's console
		6	Instrument 2 microswitch on assistant's console
		7	Instrument 3 microswitch on assistant's console
		8	Instrument 4 microswitch on assistant's console
2 OPERATOR'S TABLE	1 OPERATOR'S TABLE INSTRUMENTS	1	Microswitch instrument 1
		2	Microswitch instrument 2
		3	Microswitch instrument 3
		4	Microswitch instrument 4
		5	Microswitch instrument 5
		6	Not used
		7	Short-circuit of solenoid valves of instruments (OK if ON)
		8	Not used
	2 INSTRUMENTS 2nd SELECTION CARD ON CUSPIDOR	1	Microswitch instrument 1
		2	Microswitch instrument 2
		3	Microswitch instrument 3
		4	Microswitch instrument 4
		5	Microswitch instrument 5
		6	Not used
		7	Short-circuit of solenoid valves of instruments (OK if ON)
		8	Not used

DIAGNOSTICS			
GROUP	PARAMETER	MEANING	
3 KEYBOARDS AND FOOT CONTROL	1 OPERATOR'S TABLE KEYBOARD	1	
		2	
		3	
		4	
		5	Not used
		6	Not used
		7	Not used
		8	Not used
	2 OPERATOR'S TABLE KEYBOARD	1	
		2	
		3	
		4	
		5	
		6	
		7	
		8	
	3 OPERATOR'S TABLE KEYBOARD	1	
		2	
		3	
		4	
		5	
		6	Not used
		7	Not used
		8	Not used

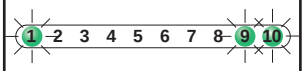
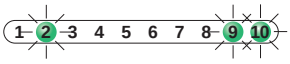
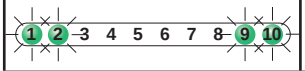
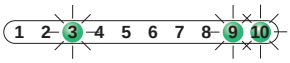
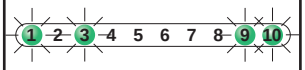
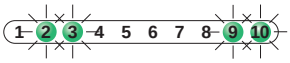
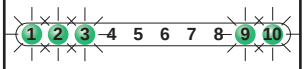
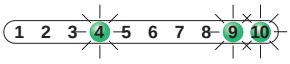
DIAGNOSTICS			
GROUP	PARAMETER	MEANING	
	4 KEYBOARD ON NURSE'S SIDE BYTE 1	1	
		2	
		3	
		4	
		5	Not used
		6	Not used
		7	Not used
		8	Not used
	5 KEYBOARD ON NURSE'S SIDE BYTE 2	1	
		2	
		3	
		4	
		5	
		6	
		7	
		8	
	6 KEYBOARD ON NURSE'S SIDE BYTE 3	1	
		2	
		3	
		4	
		5	
		6	Not used
		7	Not used
		8	Not used

DIAGNOSTICS			
GROUP	PARAMETER	MEANING	
	7 FOOT CONTROL	1	
		2	
		3	
		4	
		5	P4
		6	P1
		7	P3
		8	P2
	8 FOOT CONTROL LEVEL POTENTIOMETER	Binary-coded value	

Alarms with inactive instruments

Any anomalies are notified by an intermittent, acoustic signal followed by the flashing of LEDs 9 and 10 of the LED-bar on the keyboard Code 57000016.

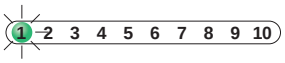
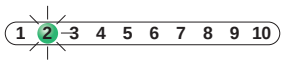
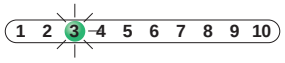
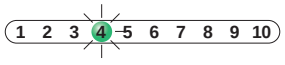
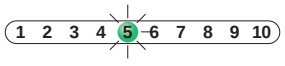
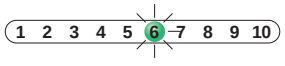
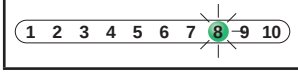
Such alert may be muted by pressing the key  .
In some cases (see Table below), the error code is detailed in diagnostics. This indication is cancelled when the equipment is turned off.

LED	DESCRIPTION
	Activation of anti-crushing safety device 1 (backrest)
	Activation of anti-crushing safety device 2 or 3 (seat or pantograph)
	Activation of anti-crushing safety device 4 (instrument arm on assistant's console)
	Activation of anti-crushing safety device 5 (spittoon - only available on V8e model)
	Generic error in chair movement. The alarm may be due to the temporary overloading of one of the motors. If the alarm continues, please contact Vitali and report the corresponding error code (see DIAGNOSTICS group 0.8).
	The instrument that has been lifted has been configured with an erroneous code.
	Data transfer error.
	Failure in the piloting of solenoid valves (see DIAGNOSTICS, group 0.7, 2.1.7 or 2.2.7)

N.B: when the alert is active, the automatic movement controls of the chair are inhibited.

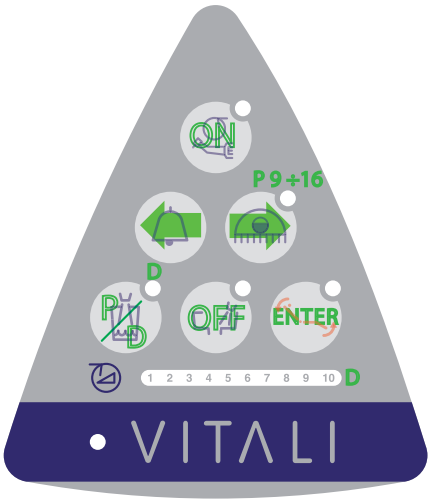
Alarms with instruments lifted

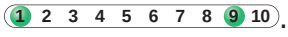
Any anomalies are notified by a flashing LED on the keyboard Code 57000016.
To mute the alarm, the equipment must be turned off.

LED	DESCRIPTION
	General error.
	Excessive load on the instrument. The selected instrument may have been temporarily blocked or may have operated to the limit of its performances (power protection). If the problem continues, please contact Vitali
	Interruption of a power supply phase of the micromotor (motor phase missing)
	Communication error (serial communication timeout)
	EEPROM damaged or invalid writing (invalid EEPROM)
	Over temperature
	Supply voltage too low (under voltage)
	Supply voltage too high (over voltage)

SETTINGS

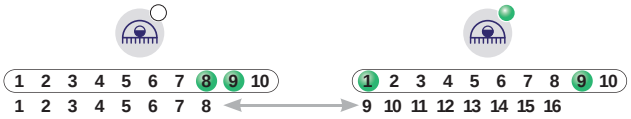
In SETTINGS, you can customize some aspects of the equipment and configure any new instruments that you might have installed. All settings can be executed exclusively from the operator's keyboard Code 57000016.



To enter SETTINGS, press  and, without releasing it,  , wait for 5 sec. and, after the acoustic signal, release both keys. LED 9 turns on to indicate that you have entered SETTINGS. LED 1 turns on to signal that parameter 1 has been selected  .

By using the keys  and  , you can move to the left and to the right, respectively, along the LED-bar to select the parameter in a 1 to 16 range.

Moving to the right beyond LED 8, LED  turns on to indicate that the parameters displayed are those from 9 to 16.



By pressing the key  , you can alternatively switch from the indication of the parameter number (PARAMETER DISPLAY) to the visualization of the data contained in it (DATA DISPLAY), signalled by the LED  turning on. In DATA DISPLAY, LED 9 has a different meaning and takes on the specific value of the data displayed.
Data can be displayed as:

1. BIT

Each single LED (bit) indicates the activation of a specific function.

The keys  (left) and  (right) allow you to move the cursor  (flashing LED) along the LED-bar to select single bits in the range from 1 to 8.

The keys  (ON) and  (OFF) allow you to activate (e.g. = ) or disable (e.g. = ) the selected function. The LEDs related to the two keys allow you to identify the status of the LED currently selected on the bar

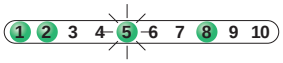
even if hidden by the cursor (ON =  or OFF = ).

Example:

activation of functions 1, 6 and 9 =  +  .

1. BYTE

The selected function is defined by the combination of the entire group of 8 LEDs.
The management procedures are identical to those used for the BIT-type value.
This kind of value is currently used only for instrument programming. By lifting an instrument, in this mode the type of instrument attributed to the channel selected is displayed.

Example: turbine (ON = 1, 2 ad 8) =  + 

N.B: if the assistant's console has a bushing, though empty, equipped with a microswitch (preset), the figure attributed to it is 0 (see Parameter 1). Before programming any instrument, it is necessary to maintain the microswitch of this bushing operated before entering DATA DISPLAY.

2. VALUE

The set value is defined by the number of LEDs lit consecutively.

The keys  (decrease) and  (increase) allow you to vary the preset value in the range from 1 to 8.

The keys  ,  , and the corresponding LEDs are not used.
Example:
time of 5 sec. = 

3. DEFAULT

By pressing the key  , all data and settings of the equipment are replaced by the default values and you return to the PARAMETER DISPLAY mode (WARNING: the function cannot be reversed).

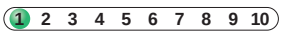
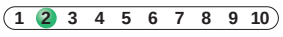
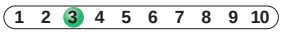
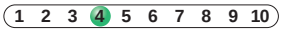
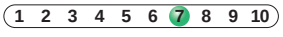
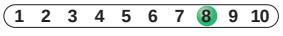
- Dfault values:
-  = predefined values
- Programmable functions of foot control: P1 =  , P2 =  , P3 =  , P4 = 
- Settings: ON (2.4, 2.6, 3.4, 3.5, 3.6), 4 (5 sec.), 5 (2.5 sec.), 6 (3 sec.), 7 (3 sec.)
- Instruments: all OFF
- Speed, lighting and power of instruments to the maximum.
- Glass fill-up = 5 sec.
- Spittoon rinsing = 30 sec.

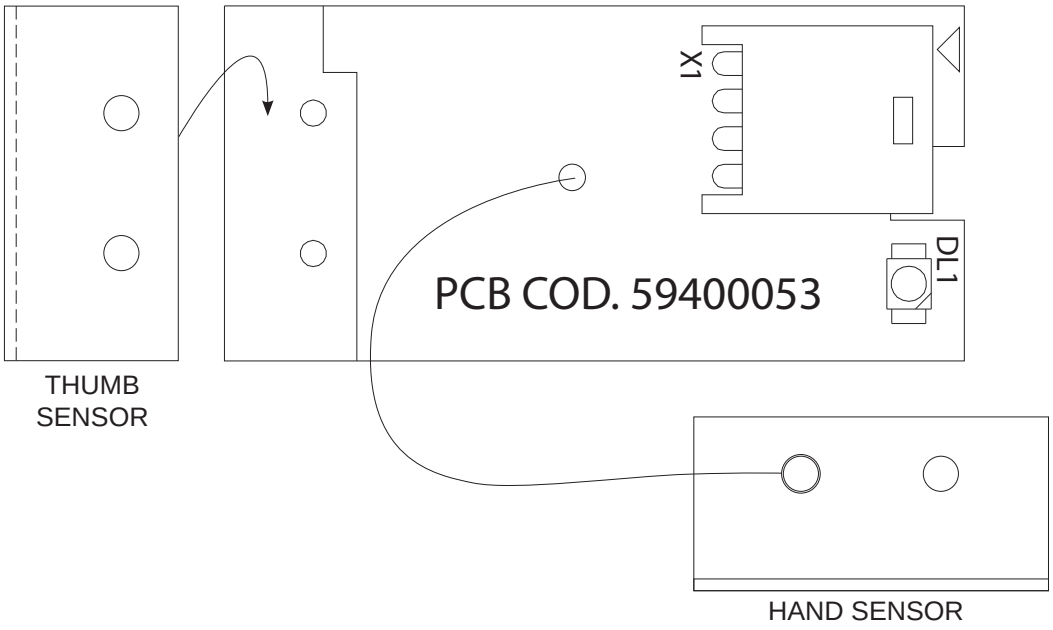
In PARAMETER DISPLAY () all functions are disabled including those indicated on the keys used for navigation (). In DATA DISPLAY, () all functions are active, with the exception of those indicated on the navigation keys.

By pressing the key  , the value displayed is stored and you go back to PARAMETER DISPLAY. As confirmation of storage, the corresponding LED lights up for about 1 second and an acoustic signal is let out at the same time, lasting 1 sec itself.

By pressing the key  in DATA DISPLAY, you go back to PARAMETER DISPLAY, cancelling any change made.
The mode SETTINGS is automatically abandoned after about 10 minutes of inactivity.

SETTINGS			
PARAMETER	**TYPE**	**LED**	**MEANING**
1	BYTE	1 2 3 4 5 6 7 8 9 10	No instrument present (presetting)
		1 2 3 4 5 6 7 8 9 10	Intraoral camera
		1 2 3 4 5 6 7 8 9 10	Scaler
		1 2 3 4 5 6 7 8 9 10	Turbine ON/OFF
		1 2 3 4 5 6 7 8 9 10	Curing light
		1 2 3 4 5 6 7 8 9 10	Turbine with proportional solenoid valve
		1 2 3 4 5 6 7 8 9 10	Generic traditional micromotor
		1 2 3 4 5 6 7 8 9 10	Brushless motor (analogue control)
		1 2 3 4 5 6 7 8 9 10	BienAir brushless micromotor (serial control)
		1 2 3 4 5 6 7 8 9 10	NSK brushless micromotor (serial control)
		1 2 3 4 5 6 7 8 9 10	BienAir MC2 traditional micromotor
		1 2 3 4 5 6 7 8 9 10	BienAir MC3 traditional micromotor
		1 2 3 4 5 6 7 8 9 10	NSK traditional micromotor
		1 2 3 4 5 6 7 8 9 10	Faro traditional micromotor
2	BIT	1 2 3 4 5 6 7 8 9 10	● Air suction with (with air/water separator and draining pump) ○ Suction with liquid/wet ring (even 2.2 must be ○)
		1 2 3 4 5 6 7 8 9 10	● Suction with air ring (with air/water separator, without drainage pump) ○ Suction with liquid/wet ring (even 2.1 must be ○)
		1 2 3 4 5 6 7 8 9 10	○ Reserved (do not activate)
		1 2 3 4 5 6 7 8 9 10	● Automatic spittoon rinsing at the end of glass fill-up ○ Glass fill-up and spittoon rinsing are independent
		1 2 3 4 5 6 7 8 9 10	● Glass fill-up at the end of rinsing position (if 2.4 is active, the spitto-on also starts) ○ Once the rinsing position is reached, the glass does not fill up
		1 2 3 4 5 6 7 8 9 10	● Once the rinsing position is reached, the spittoon rinsing starts ○ Once the rinsing position is reached, the spittoon rinsing does not start
		1 2 3 4 5 6 7 8 9 10	● Column unit (the rinsing function changes the height of the chair; the chair's movements activate the anti-glare function) ○ Bracket unit (the rinsing function changes only the position of the backrest; the anti-glare function starts only during backrest move-ments)
		1 2 3 4 5 6 7 8 9 10	● By moving the pedal lever to the right, the spray function is activa-ted ○ By moving the pedal lever to the right, the spray function is activa-ted

SETTINGS			
PARAMETER	**TYPE**	**LED**	**MEANING**
3	BIT		○ Reserved (do not activate)
			● Spittoon rinsing can be disabled only manually ○ Spittoon rinsing automatically stops after the preset time (see the T5 EVO operator's handbook para. CONTROLS AND ADJUSTMENTS)
			○ Reserved (do not activate)
			● Activation of anti-glare function (see also parameter 2.7) ○ Anti-glare function disabled
			● Automatic ignition of operating light at the end of automatic movements ○ Manual ignition of operating light
			● Automatic switching off of operating light during zero-setting ○ The zero-setting function does not turn off the operating light
			● Presence of integrated disinfection system (VDS) ○ Integrated disinfection system (VDS) not present
			○ Reserved (do not activate)
4	VALUE	\	Duration of break between glass fill-up and spittoon rinsing (0÷10 seconds)
5	VALUE	\	Duration of air jet at work-end in half seconds (0÷5 seconds)
6	VALUE	\	Delay in handpieces illumination switch off (0÷10 seconds)
7	VALUE	\	Delay in suction motor switch off (0÷10 seconds)
8÷15	\	\	Not used
16	DEFAULT	\	Reset to default parameters



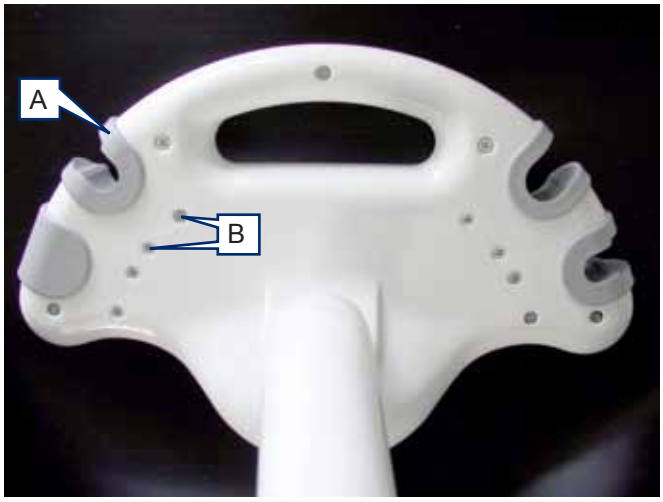
CONNECTORS	
N°	DESCRIPTION
X1	1 - Massa 2 - IN +25 Vdc 3 - IN +25 Vdc 4 - Enable signal for arm brake

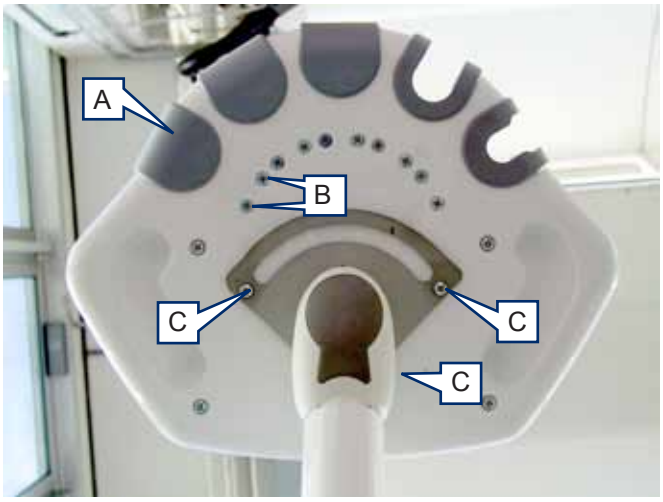
LED	
N°	INDICATION
DL1	Enable signal for arm brake is ON. Thumb and hand sensors are simultanuesly active.

CONSOLE MOD. SD

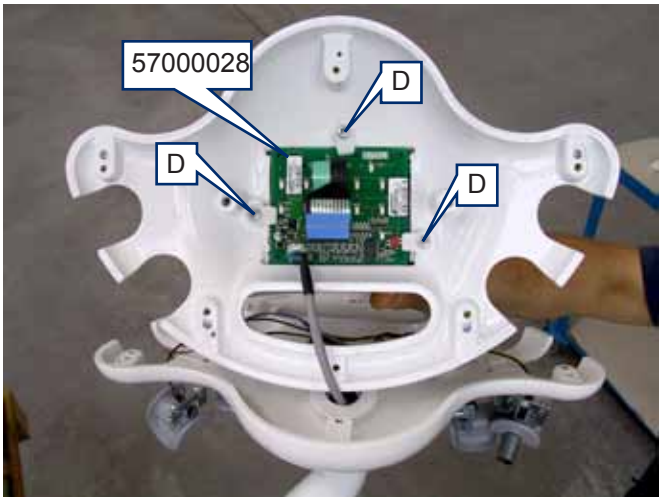
CONSOLE MOD. T5

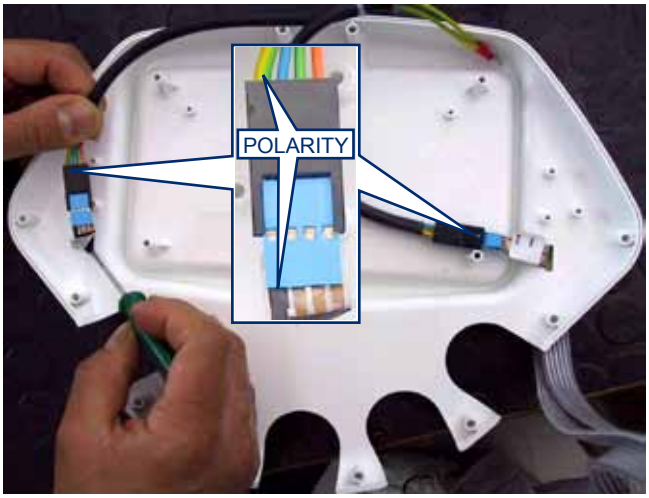
To have access to the inside of the console, remove all M4 screws on the lower side with the exception of “C” screws.
To remove a single instrument seat (e.g. “A”), simply remove the corresponding pair of M4 “B” screws.



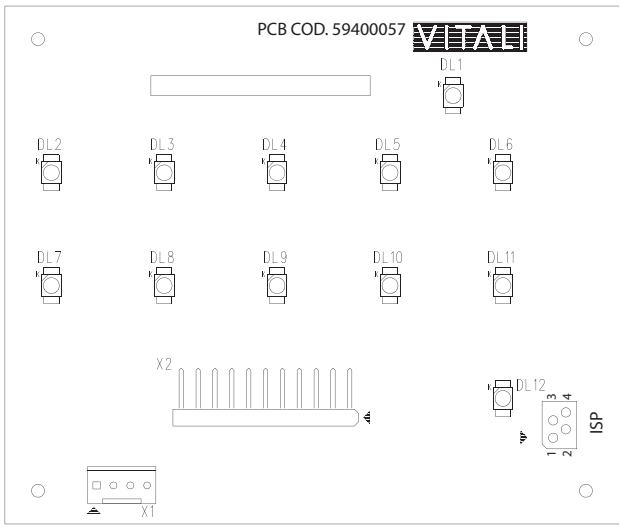


To remove the keyboard on the assistant’s side Code 57000028, loosen the three M4 “D” screws.
The control keyboards on model T5 are adhesive; therefore, to remove them, use a screwdriver acting as shown in the image (WARNING: this might damage the keyboard).
The keyboard connection must be carried out while respecting the polarity indicated in the image.

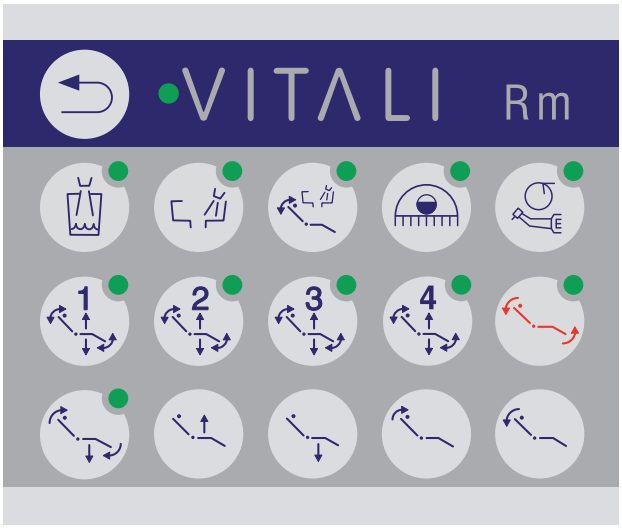




Assistant's console keypad cod. 57000028



COMPONENTS SIDE



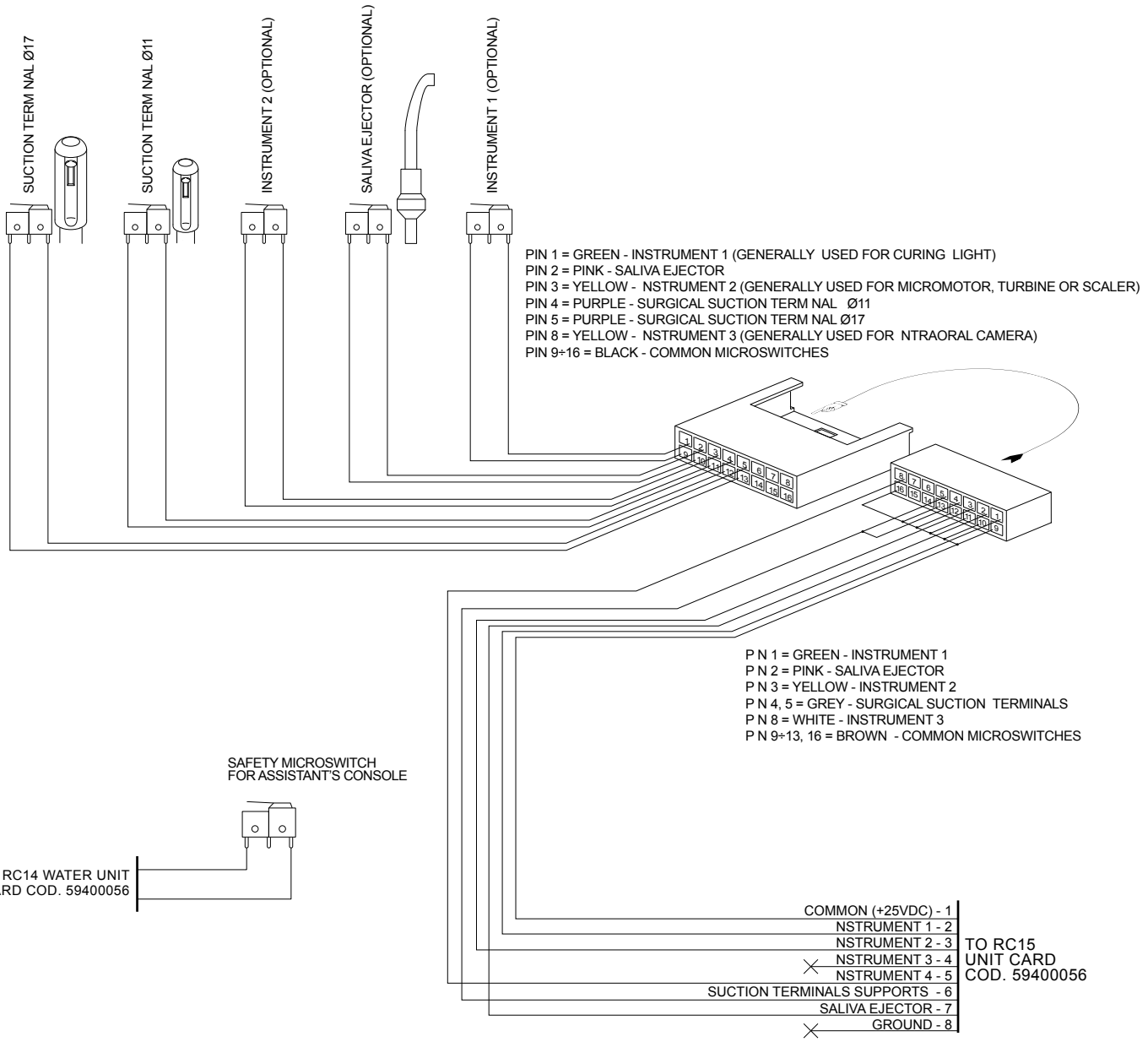
KEYS SIDE

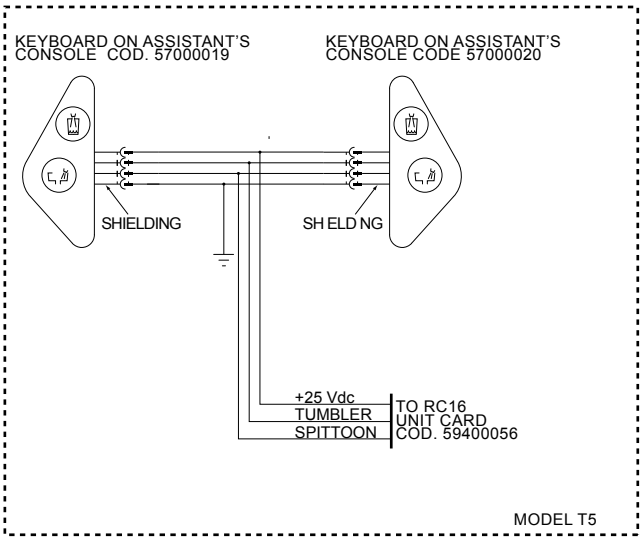
CONNECTORS	
N°	**DESCRIPTION**
X1	1 - +25 Vdc 2 - CAN H (serial communication water unit card) 3 - CAN L (serial communication water unit card) 4 - Ground
X2	Keyboard connection cod. 57000023

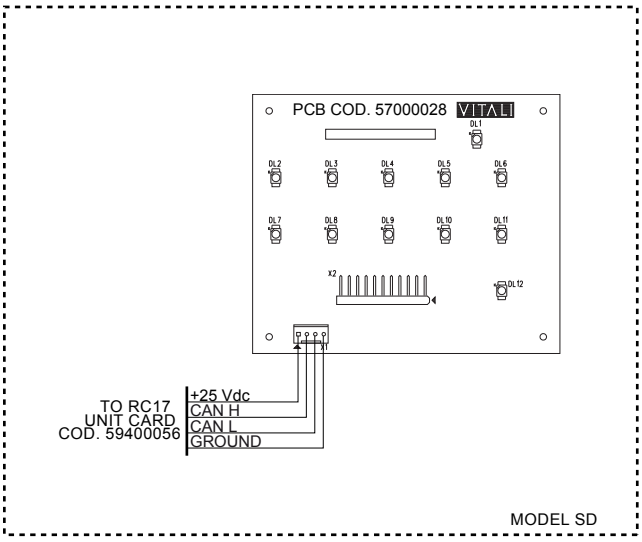
LED	
IDENTIFICATION	**INDICATION**
DL1	Presence of supply voltage
DL2	Activation of reverse rotation direction of micromotor
DL3	Operating light is switched on
DL4	Activation of rinsing position
DL5	Activation of spittoon solenoid valve
DL6	Activation of glass solenoid valve
DL7	Activation of emergency position
DL8	Activation of storable position 4
DL9	Activation of storable position 3
DL10	Activation of storable position 2
DL11	Activation of storable position 1
DL12	Activation of zero-setting storable position

JUMPER			
N°	**FUNCTION**	**STATUS**	
		OPEN	**CLOSED (shortcircuit on PIN 2 e 4 of ISP)**
ISP	Activation PCB cod. 59400054 emulation (master).	Standard position on assistent console (PCB cod. 59400054 is present).	Indipendent functioning (PCB cod. 59400054 is NOT present).

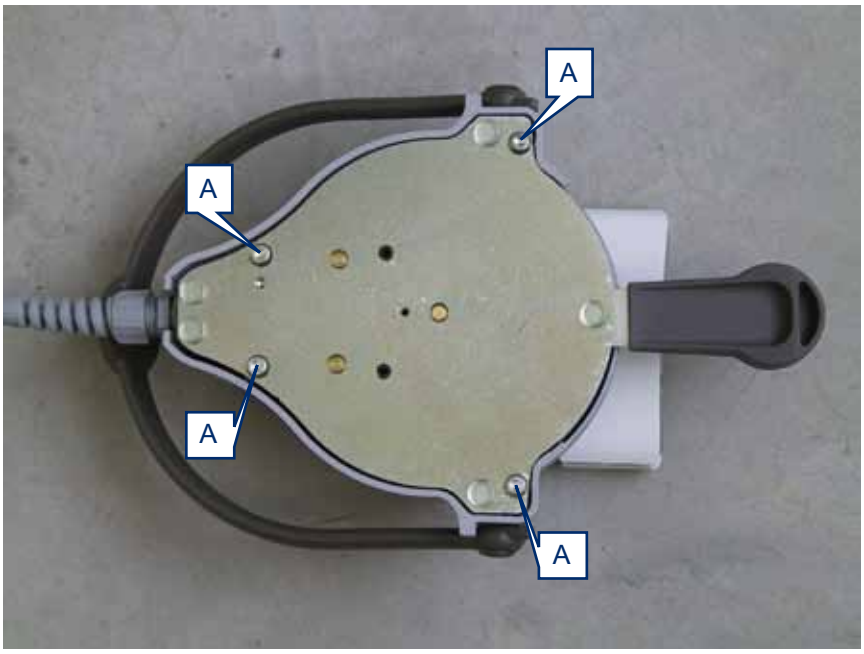
N.B: the functions of the keys are described in the T5 Evo Operator's Manual. The keys and corresponding LEDs may take on other meanings during the DIAGNOSTIC and/or SETTINGS stages of the equipment.

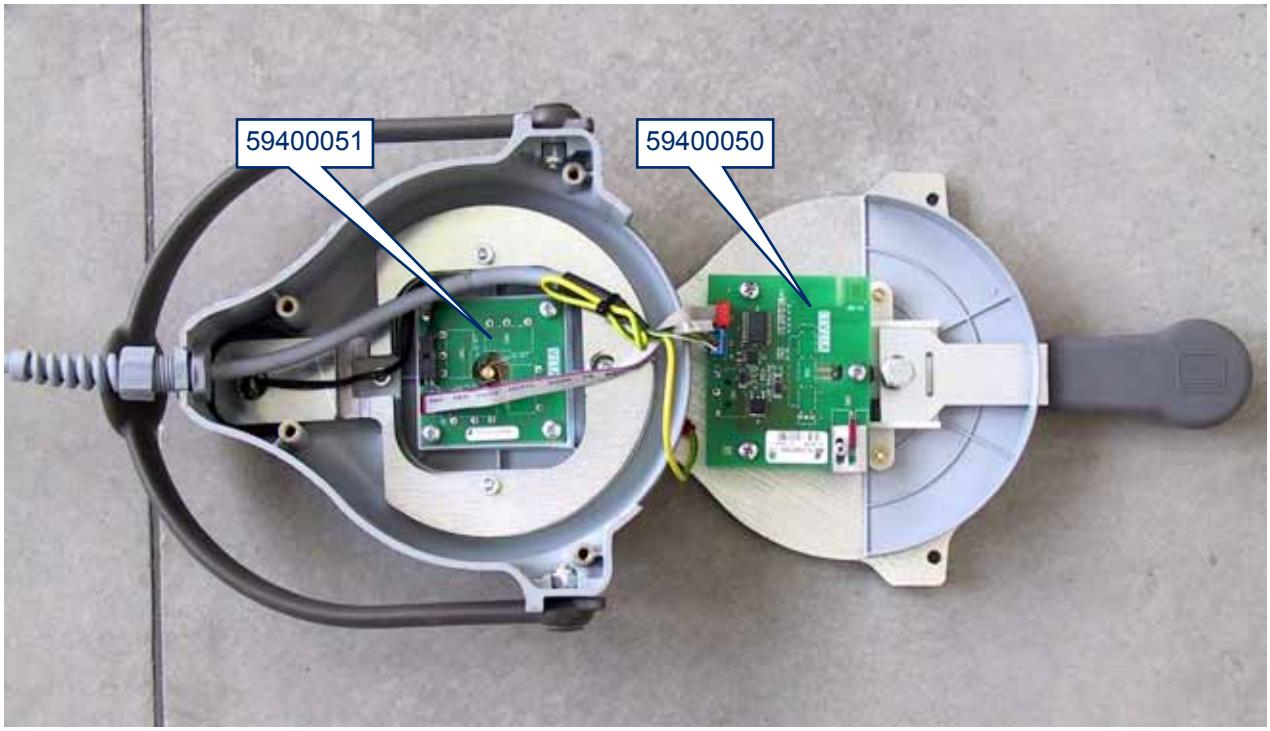

SUCTION TERM NAL Ø17
SUCTION TERM NAL Ø11
INSTRUMENT 2 (OPTIONAL)
SALIVA EJECTOR (OPTIONAL)
INSTRUMENT 1 (OPTIONAL)
PIN 1 = GREEN - INSTRUMENT 1 (GENERALLY USED FOR CURING LIGHT)
PIN 2 = PINK - SALIVA EJECTOR
PIN 3 = YELLOW - NSTRUMENT 2 (GENERALLY USED FOR MICROMOTOR, TURBINE OR SCALER)
PIN 4 = PURPLE - SURGICAL SUCTION TERM NAL Ø11
PIN 5 = PURPLE - SURGICAL SUCTION TERM NAL Ø17
PIN 8 = YELLOW - NSTRUMENT 3 (GENERALLY USED FOR NTRAORAL CAMERA)
PIN 9÷16 = BLACK - COMMON MICROSWITCHES
P N 1 = GREEN - INSTRUMENT 1
P N 2 = PINK - SALIVA EJECTOR
P N 3 = YELLOW - INSTRUMENT 2
P N 4, 5 = GREY - SURGICAL SUCTION TERMINALS
P N 8 = WHITE - INSTRUMENT 3
P N 9÷13, 16 = BROWN - COMMON MICROSWITCHES
SAFETY MICROSWITCH
FOR ASSISTANT'S CONSOLE
TO RC14 WATER UNIT
CARD COD. 59400056
COMMON (+25VDC) - 1
NSTRUMENT 1 - 2
NSTRUMENT 2 - 3
NSTRUMENT 3 - 4
NSTRUMENT 4 - 5
SUCTION TERMINALS SUPPORTS - 6
SALIVA EJECTOR - 7
GROUND - 8
TO RC15
UNIT CARD
COD. 59400056


KEYBOARD ON ASSISTANT'S
CONSOLE COD. 57000019
KEYBOARD ON ASSISTANT'S
CONSOLE CODE 57000020
SHIELDING
SH ELD NG
+25 Vdc
TUMBLER
SPITTOON
TO RC16
UNIT CARD
COD. 59400056
MODEL T5

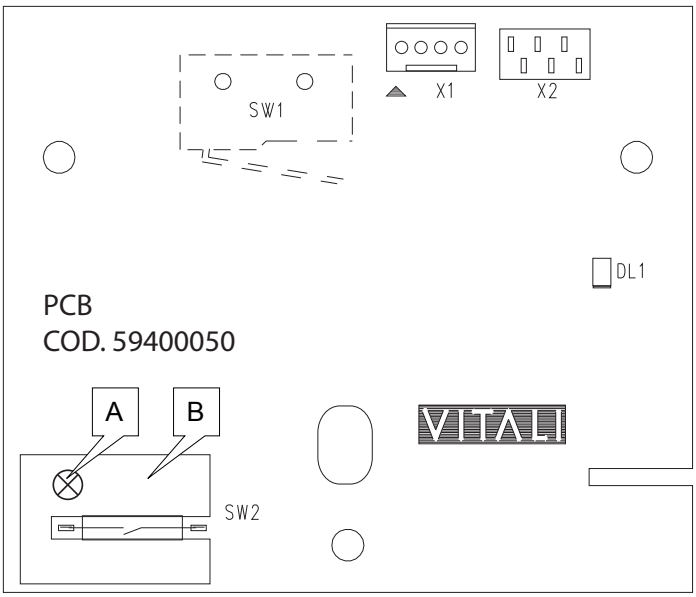

PCB COD. 57000028
TO RC17
UNIT CARD
COD. 59400056
+25 Vdc
CAN H
CAN L
GROUND
MODEL SD

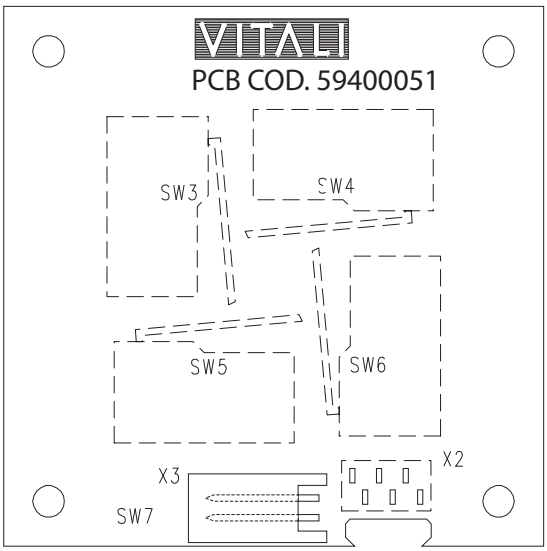
To have access to the indicated cards, remove the cover from the foot control by removing the 4 screws M5 “A”..





Foot control sensor card Code 59400050
Foot control joystick card Code 59400051





CONNECTORS	
N°	**DESCRIPTION**
X1	1 - +25 Vdc 2 - CAN H (serial communication chair card) 3 - CAN L (serial communication chair card) 4 - Ground
X2	1 - Chair rise microswitch 2 - Foot control push button microswitch 3 - Backrest descent microswitch 4 - Chair descent microswitch 5 - Backrest rise microswitch 6 - Ground microswitch
X3	1 - Foot control push button (P1) 2 - Ground

LED	
N°	**INDICATION**
DL1	It indicates the reception/sending of a foot control

FOOT CONTROL PROGRAMMING

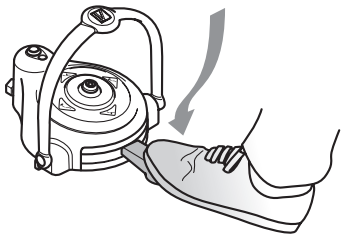
To program the foot control:
1) turn off the equipment;
2) press button P1 and the chair rise control at the same time (SW5);
3) without releasing these controls, turn the equipment on again;
4) release all controls;
5) move gently the lever to the left to its limit and come back to the centre;
6) move gently the lever to the right to its limit and come back to the centre;
7) turn off and restart the equipment;
8) lift the micromotor and make sure that it is set at maximum speed (see T5 EVO Operator's Manual, chapter CONTROLS, CHECKS AND ADJUSTMENTS).
9) activate the foot control lever until its limit on both sides (right and left) and check that the LEDs present on the unit control keyboard Code 57000016 are all lit (LEDs from 1 to 10).
If not, repeat the calibration from point 1.

N.B: to avoid damaging the equipment between one turning on and the next one, wait at least 10 seconds.

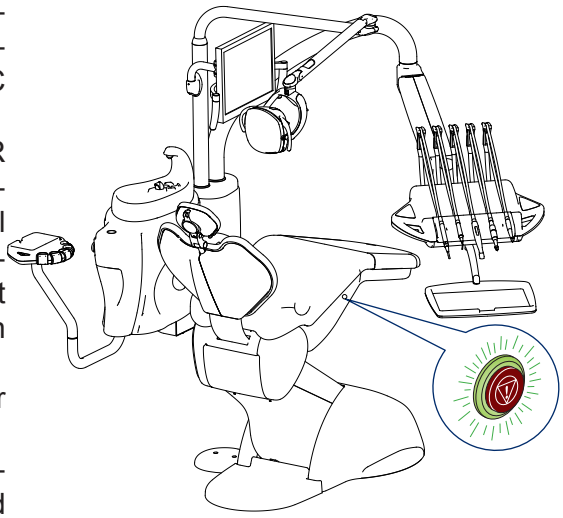
CHIP BLOWER CONTROL CALIBRATION

In some cases, after replacing parts of the foot control, it may be necessary to calibrate the sensitivity of the chip-blower control.

Procedure:



1) loosen the blocking screw A of the adjuster B;
1) activate the chip-blower control by pressing the foot control lever downwards until its limit;
3) move the adjuster B to the left (card exterior), until LED DL1 turns off;
4) move the adjuster B to the right (card interior), until LED DL1 turns on;
5) tighten screw A;
6) press and release the chip-blower control to check proper functioning and eventually repeat calibration from point 1.



To ensure that the proper performances of the device are maintained over time, please carry out the following periodic maintenance in addition to what reported in the Chapter PERIODIC CHECKS of the Operator's Manual.
The picture on the side shows the FUNCTIONING INDICATOR (see Chapter CHAIR in the Operator's Manual) whose intermittent switching signals periodically the need to perform a general inspection of the equipment (about every year when considering 6 hours of daily use) using as a guide the Installation Sheet contained in the Chapter "Check installation" of the Installation Manual.
At the end of the intervention, zero-set the maintenance timer (see chapter 4.2).
In order to ensure that safety standards are guaranteed, it is advisable to perform this control after the indicator switches on, and in any case every two years.

After installation or after major repairs or, in any case, every two years, perform also the test CHECKING ELECTRICAL SAFETY (see next paragraph).

Additional maintenance is required on devices not produced by VITALI. For intervention procedures, please refer to the corresponding instruction manuals (e.g., handpieces, dynamic amalgam separator, water treatment devices, etc.).

In order to protect the user's safety and health, the execution of these tasks requires the use of personal protective equipment whose type and characteristics will be determined according to the risk assessment (risk analysis) made by the organization in charge of assistance.

PROCEDURE FOR MATERIAL REPLACEMENT/REPAIR

Before sending material to be replaced and/or repaired, it is essential to wait for our Assistance Service's authorization of the returned product, which is given by assigning an RMA number (Return Material Authorization).
The material shipped must be accompanied by the "REPAIRING/REPLACEMENT FORM" completed in its entirety (see MAQ28 contained in this chapter).
Each shipment that has no R.M.A. will not be examined and will be promptly returned, carriage forward.
Any items that are at a risk of contamination must be sent packaged and sterilized; or else, they will not be examined and will be automatically returned, carriage forward.
If the items examined do not present anomalies or are found to be non-repairable, you will be charged in any event €uro 50.00 (excluding VAT) as a fixed examination fee.
The same applies to any repairs quoted but not authorized by yourselves.
Lastly, please note that the warranty on any repairs carried out will last 3 months from the date of our return of the material repaired, and will cover only the components that have been repaired/replaced.
All items repaired/replaced will be returned carriage forward.
For any information, please contact our Technical Assistance Service support@vitali.com .

INFORMATION ON DISPOSAL

For information about the disposal of dental units, please refer to the Operator's Manual
(WEEE - Chapter PRODUCT SALE).
With regard to any consumables and/or components that may be replaced, please abide by national regulations in force.

ROUTINE MAINTENANCE

DAILY, WEEKLY, MONTHLY

Please refer to the chapter MAINTENANCE in the Operator's Manual of the Dental Unit mod.T5 EVO.

ANNUALLY

Activities to be performed in addition to what described in the chapter MAINTENANCE in the Operator's Manual of the Dental Unit mod. T5 EVO.

Lubricating backrest movement guides

Remove the upholstery from the chair as shown in the Installation Manual. Lubricate the points indicated below with oil (Fig. 1) and grease, e.g. Bechem Berulub FR16 (Fig.2 and Fig.3).

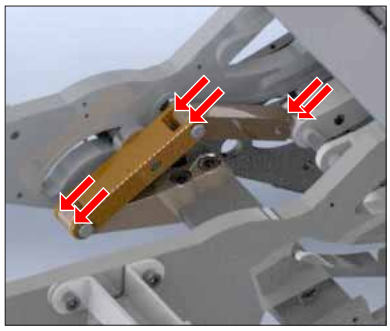


Fig.1

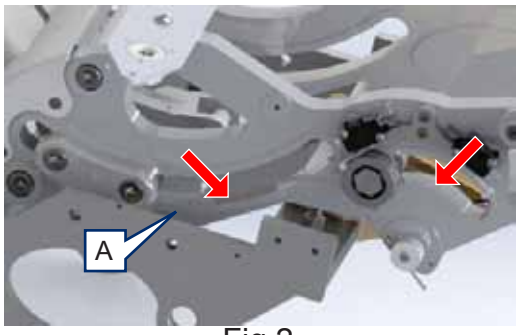


Fig.2

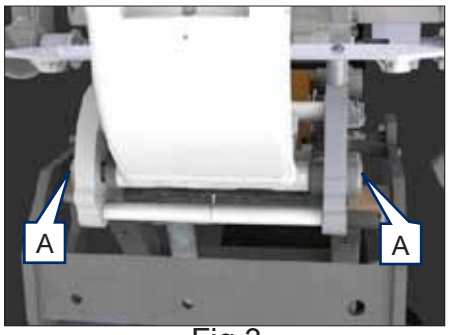


Fig.3

Checking the protection brush of the backrest cradle

Remove the upholstery from the chair as shown in the Installation Manual. Check the integrity of the brush shown in the picture (Fig.4) and remove any extraneous matters.

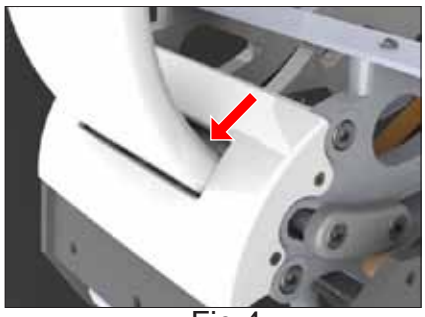


Fig.4

Checking lubrication of chair movements

Remove the upper cover of the pantograph as shown in the picture (Fig.5). Apply lubricating oil in the point indicated (Fig.6) .

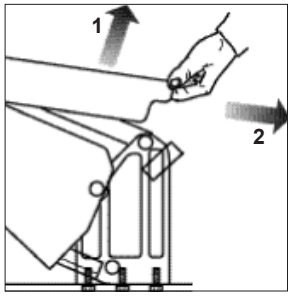


Fig.5

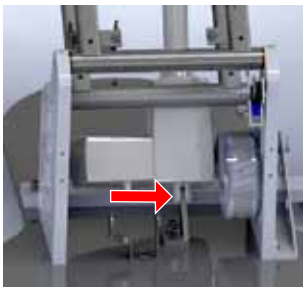


Fig.6

Checking instrument arms functionality

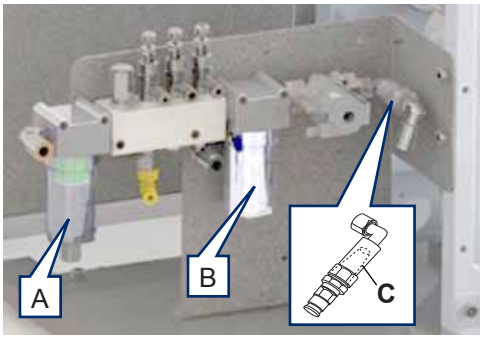
Check operation and wear of the instrument arm locking mechanisms, if present.
Check the smoothness of instrument cords and, if necessary, lubricate them with silicone spray.

Replacing internal suction tubes

Replace suction tubes. Check the condition of tubes for air/water supply and drainage, fully replacing them if the material is no longer elastic.

Replacing air/water group filters

Replace the cartridges of the air “A”, water “B” filters and the pre-filter “C”.



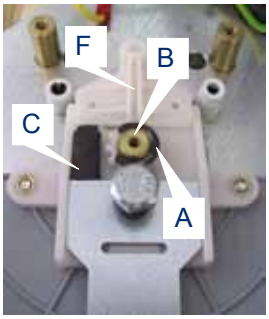
EVERY TWO YEARS

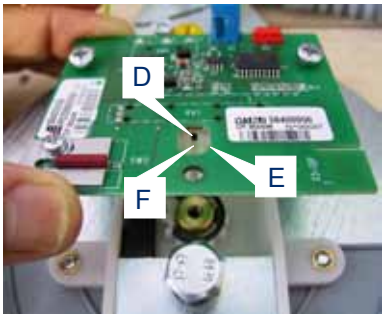
Checking moving parts

Remove any dust or impurities on the moving parts of equipment:
- engine shaft for backrest movement;
- pivot pins of assistant’s console arm;
- pins for movement/pivot of operating light:
- pins for movement/pivot of monitor (optional);
- pins for pivot of movable armrest (optional);
- pins for movement/pivot of instrument table arm.

If necessary, lubricate with specific grease (e.g. Bechem Berelub FR 16).

Checking instrument foot control

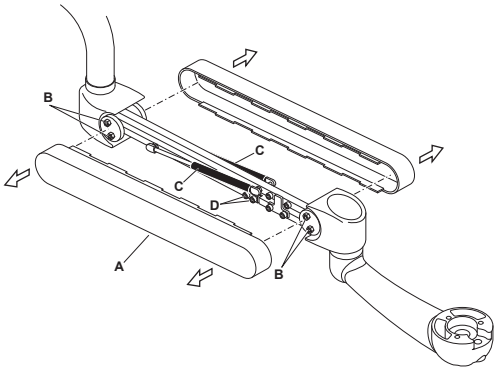




Check the centering of the foot control lever and the efficacy of the corresponding return spring. If the “play” of the lever is excessive, replace the spring. Remove the electronic card, the seeger “A” and pull the lever group “C” from the pin “B”. Remove any dust or impurities on the moving parts and, if appropriate, lubricate with specific grease (e.g. Bechem Berelub FR 16).
N.B: when repositioning the card, check through the eyelet “E” that the pin “D” is correctly positioned in its housing “F”.

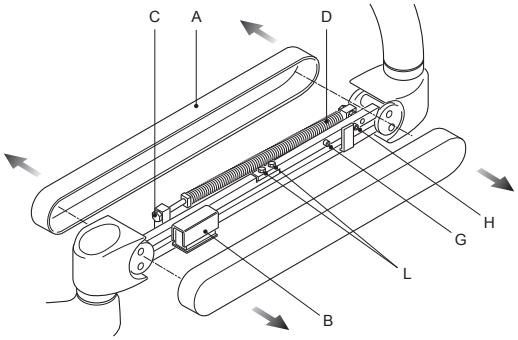
Checking and adjusting the instrument table support parallelogram

T5 EVO



Remove the cover “A” pulling in the direction indicated by the arrows. In order to obtain the proper friction, screw or unscrew the nuts “B”. The lifting force of the instrument table cannot be adjusted, as it is determined by the force exerted by the two gas springs “C”. At the end of the adjustments, replace the covers “A” in the direction opposite to that indicated by the arrows. This operation must be performed whenever the weight of the table is changed (e.g. when an instrument is added or removed).
N.B. To avoid changing the orthogonality of the arm, never unscrew the screws “D”.

V8



Check that, by placing the table up or down, the tension of the spring “D” is not higher than the tension of the pneumatic brake “B”. Otherwise, proceed as follows. Remove the cover “A” pulling in the direction indicated by the arrows. Turn the hexagonal screw “C” (either screw or unscrew it). By screwing it, you increase the tension of the spring “D”. By unscrewing it, you reduce the tension of the spring “D”. This operation must be performed whenever the weight of the table is changed (e.g. when an instrument is added or removed)
N.B. To avoid changing the orthogonality of the arm, never unscrew the screws “L”.

Checking electrical safety

Check, by using a tool for electrical safety analysis, that the safety features of the device are unaltered (ref. EN ISO 60601-1), referring to the data indicated in the testing report attached to the machine manual, in the chapter “Machine card.”
When performing the tests, all devices connected to the equipment must be connected and powered.

SPECIAL MAINTENANCE

The following are the main instruction charts for major repairs.

- REPLACING INSTRUMENT ARM AND LIMIT STOP
- REPLACING GUIDE BLOCKS
- REPLACING V8 CUSPIDOR SPITTOON
- REPLACING T5 EVO CUSPIDOR SPITTOON
- REPLACING CHAIR VERTICAL MOVEMENT ACTUATOR
- REPLACING CHAIR BACKREST CENTRAL ACTUATOR
- MOUNTING INSTRUMENT TABLE CORDS
- ADJUSTING MICROSWITCH AND POTENTIOMETER FOR CHAIR RISE
- ADJUSTING MICROSWITCH AND POTENTIOMETER FOR CHAIR BACK-REST

ASSEMBLING THE INSTRUMENT TABLE ARM STOP

1) Open the upper table housing as described in the “Installation manual”.

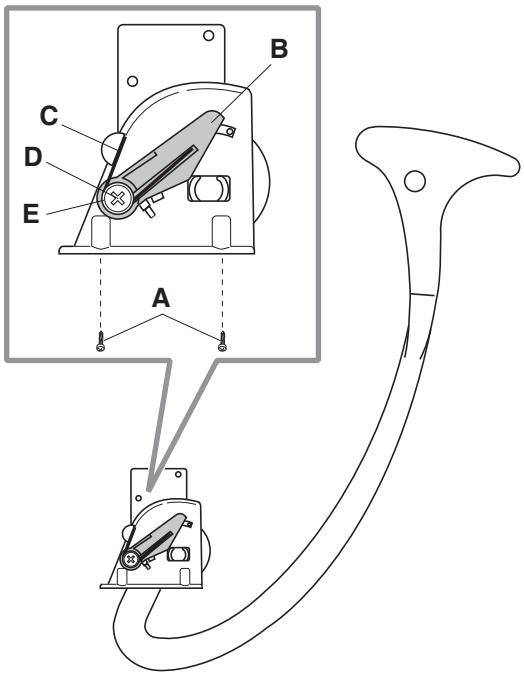
2) Remove the arm by unscrewing the four selfthreading screws "A".

3) Insert the stopping cam "B" into its slot.

4) Insert the spring "C" as illustrated.

5) Insert the washer “D”.

6) Fasten the cams with the self-threading screw "D", taking care to leave enough room to allow the cam to move properly.



ASSEMBLING THE INSTRUMENT TABLE ARM

1) Open the upper table housing as described in the “Installation manual”.

2) Remove the 4 screws “A”.

3) Fasten the arm as illustrated by the 4 self-tapping screws “B”.

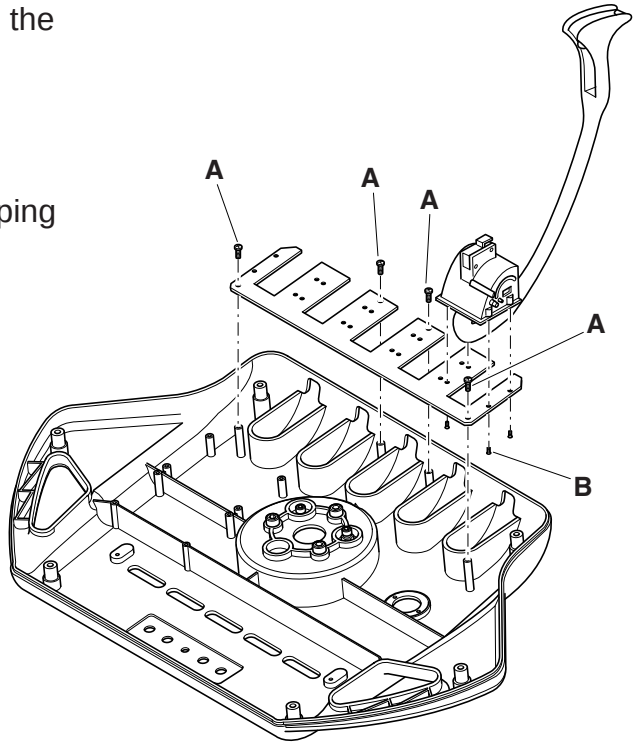


Fig.1

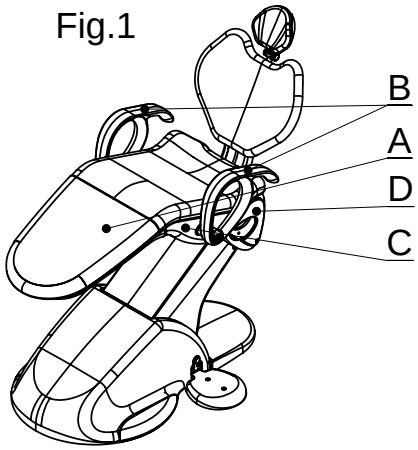
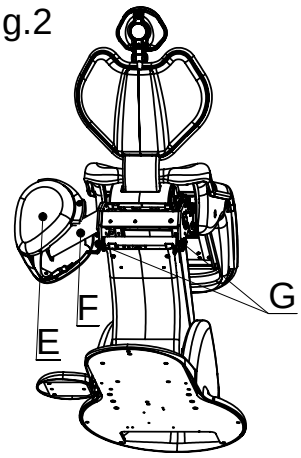


Fig.2



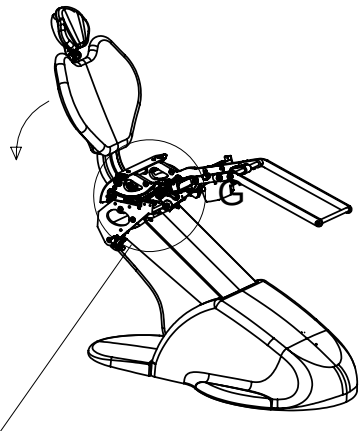


Fig.3

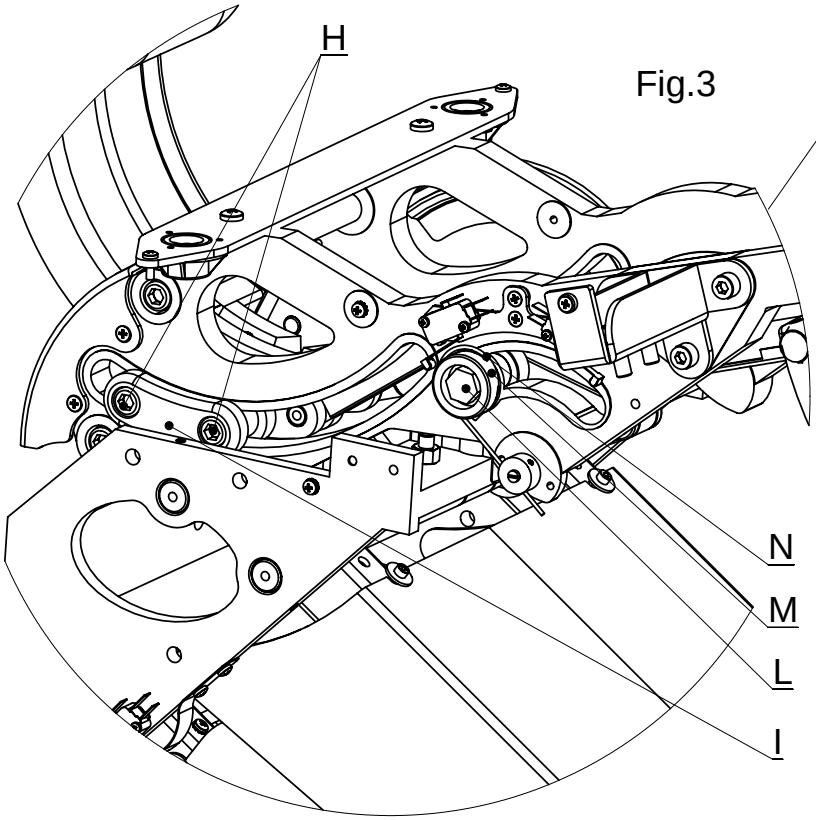
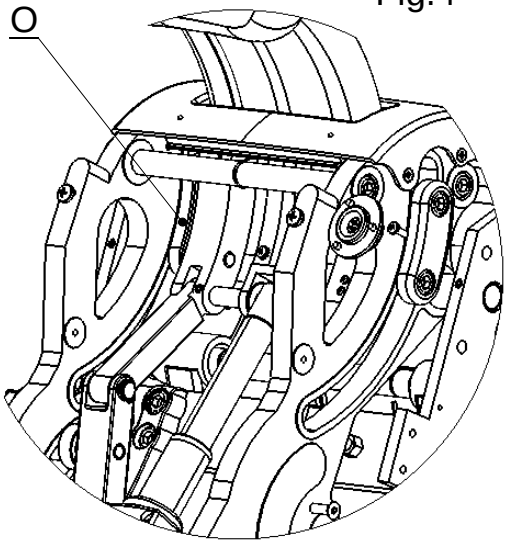


Fig.4



1) By following the Installation Manual, disassemble the seat "A". Disassemble the armrests "B", the under-seat cover "C" and the bracket closing cover "D" (Fig.1).
2) Disassemble the cover "E", paying special attention to the safety micros "G" inside it, making it rotate around the bracket "F" (Fig.2).
3) Lower the backrest completely to make disassembly easier.
4) Disconnect the dental unit from the electricity supply.
5) Unscrew the screws "H", replace the external block "I" Code: 51300004(Fig.3) and the internal block "O" Code: 51300005 (Fig.4).
6) Unscrew the screw "L", remove the spring "N" and replace the guide "M" Code: 51300008(Fig.3).
7) Replace the blocks and the guide by using a special threadlocker on screws "H" and "L" (e.g. Loctite 243).
(Fig.3).
8) Replace the blocks on the opposite side by following the same procedure.

For reassembly, operate in a reverse way.

Pay attention to the moving parts and to any loose parts when replacing the blocks and the guide.

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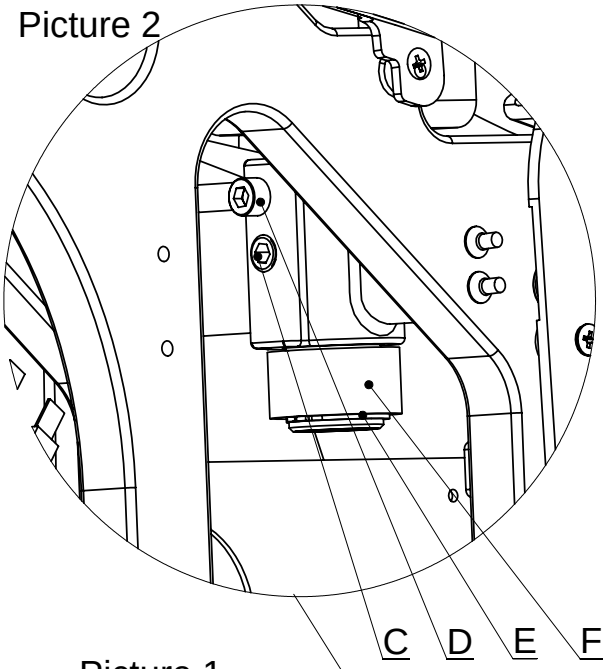
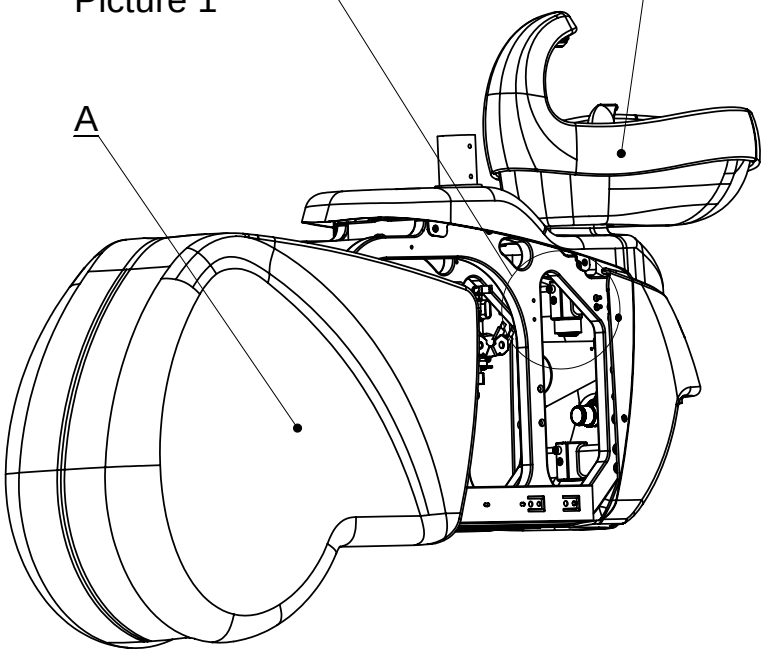
Disegnato da	VALIDO DAL:	
Gianpiero Longo	**01/09/2011**	**Replacing Guide Blocks**

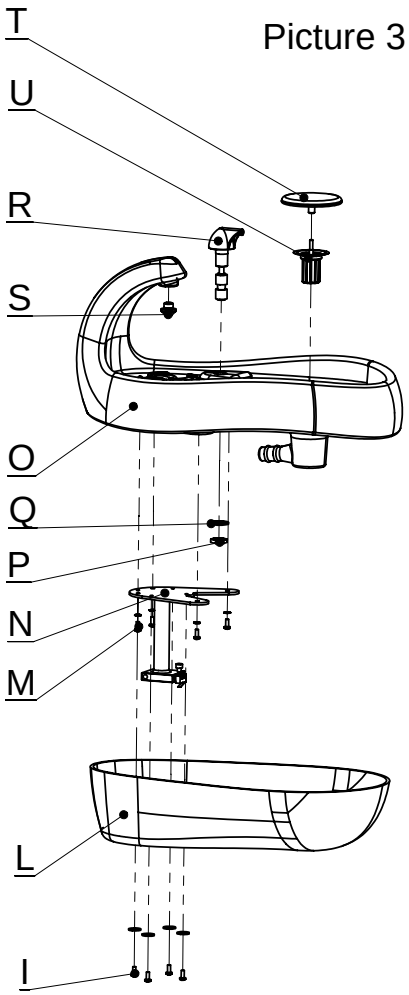
Picture 2



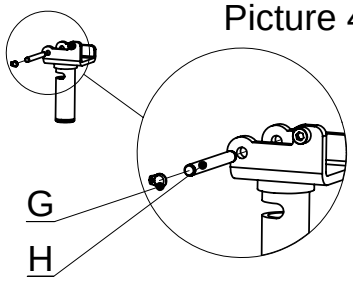
Picture 1



Picture 3



Picture 4



1) Disconnect the unit from the power supply.
2) Open the plastic cover “A” making it run along the guides (Picture 1).
3) Disconnect the spittoon from the drain and from the various power supplies. Disconnect the connector from the card code 59400036.
4) Dismantle the seeger ring “C” and draw out the spacer “F”. Loosen the grub screw “C” and the screw “D” and draw out the spittoon “B” (Picture 2).
5) Dismantle the seeger ring “G” and draw out the pin “H” (Picture 4).
6) Unscrew the screws “I” and draw out the plastic cover “L”. Unscrew the screws “M” and remove the connection “N” (Picture 3).
7) Dismantle the nut “P” and the spacer “Q” from the spittoon “O”. Draw out the flush pipe “R” (Picture 3).
8) Dismantle the drain-cover “T” and the spittoon filter “U” from the spittoon “O” (Picture 3).

For remounting, apply these instructions in a reverse order.

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Disegnato da	VALIDO DAL:	
Gianpiero Longo	**01/01/2009**	**Replacement of Spittoon**

Fig.1

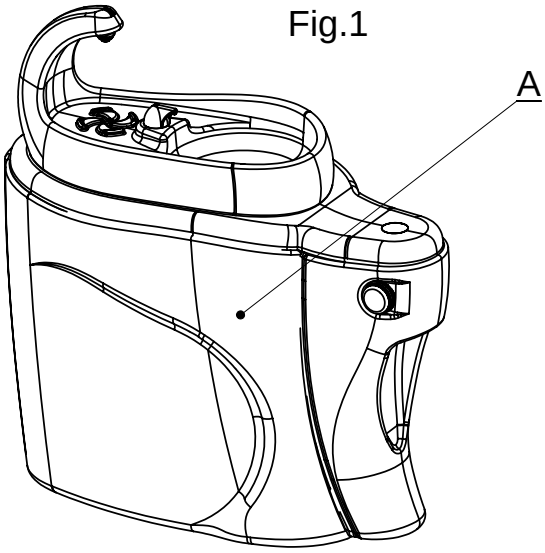
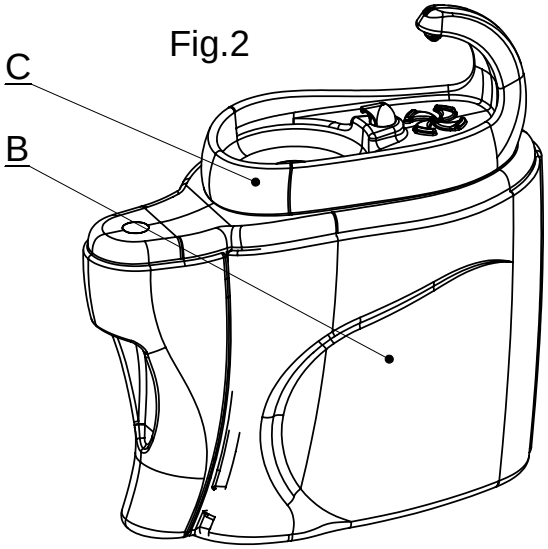


Fig.2



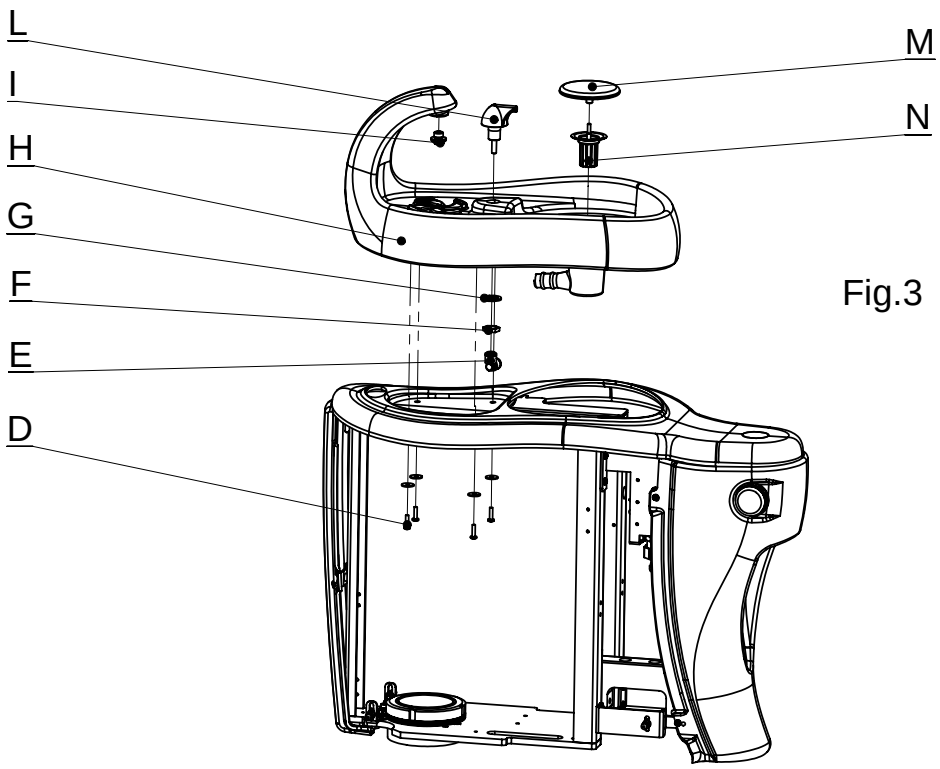


Fig.3

1) Disconnect the dental unit from the electricity supply.
2) Disassemble the side covers "A" and "B" by drawing them out of the pins (Fig.1 - Fig.2).
3) Disconnect the spittoon from the drains and from its various supplies.
4) Unscrew the 4 screws "D" (Fig.3) and draw out the spittoon group "C" (Fig.2).
5) From the spittoon "H", disassemble the connection "E", the ring "F" and the spacer "G". Draw out the nozzle group "L" (Fig.3).
6) From the spittoon "H", disassemble the drains-cover "M" and the spittoon filter "N" (Fig.3).

For reassembly, operate in a reverse way.

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Disegnato da	VALIDO DAL:	
Gianpiero Longo	**01/01/2011**	**T5 EVO Replacing Cuspidor Spittoon**

Fig.1

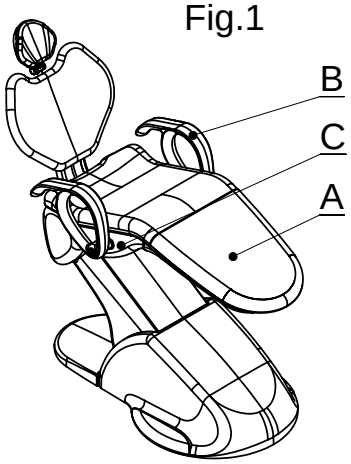
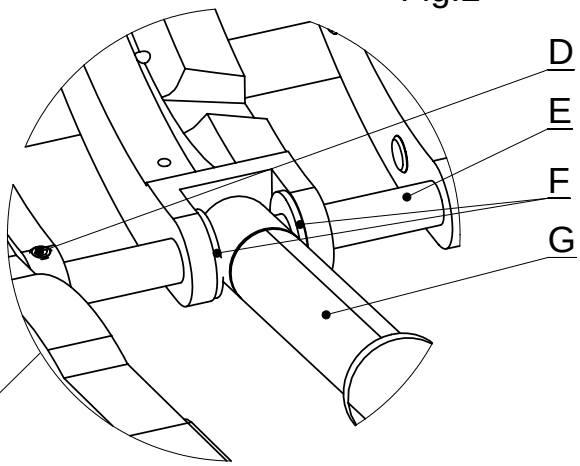


Fig.2



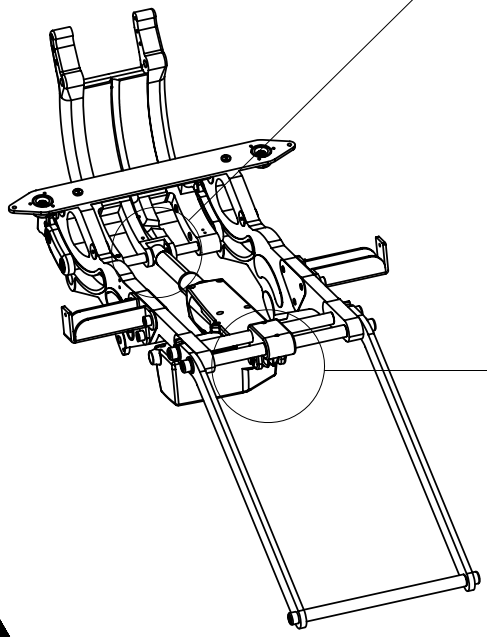
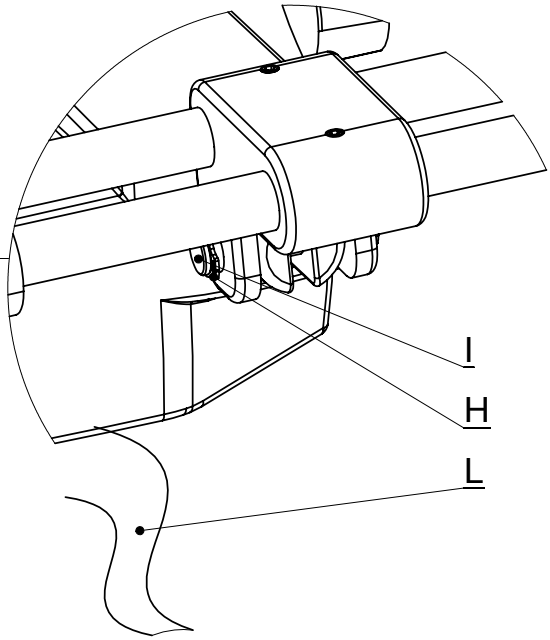


Fig.3



1) By following the Installation Manual, disassemble the seat "A". Disassemble armrests "B" and the underseat cover "C" (Fig.1).
2) If the actuator is working, lower the backrest completely to facilitate disassembly.
3) Disconnect the dental unit from the electricity supply.
4) Remove the grubscrew "D". Draw out the pin "E" by using a screw extractor screwed onto the M6 hole that is present at the tip of the pin. Remove the 2 spacers "F" and remove the motor shaft "G" (Fig.2).
5) Disassemble the seeger ring "H" and draw out the pin "I" (Fig.3).
6) Cut the cable "L" and replace the actuator by applying the connector supplied.

For reassembly, operate in a reverse way.

Pay attention to the moving parts and to any loose parts when disconnecting the actuator.

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Disegnato da	VALIDO DAL:	V8-T5 EVO Replacing Chair Backrest Central Actuator
Gianpiero Longo	**01/09/2010**	

Fig.1

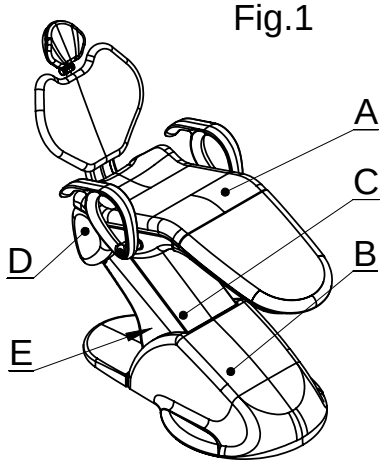
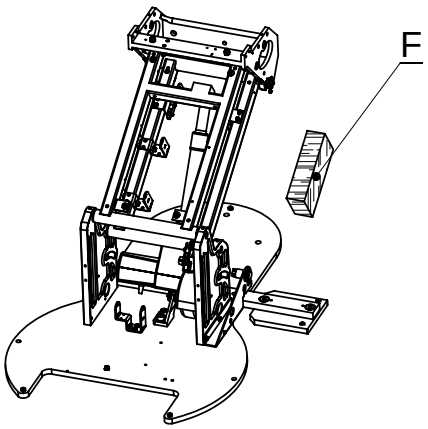


Fig.2



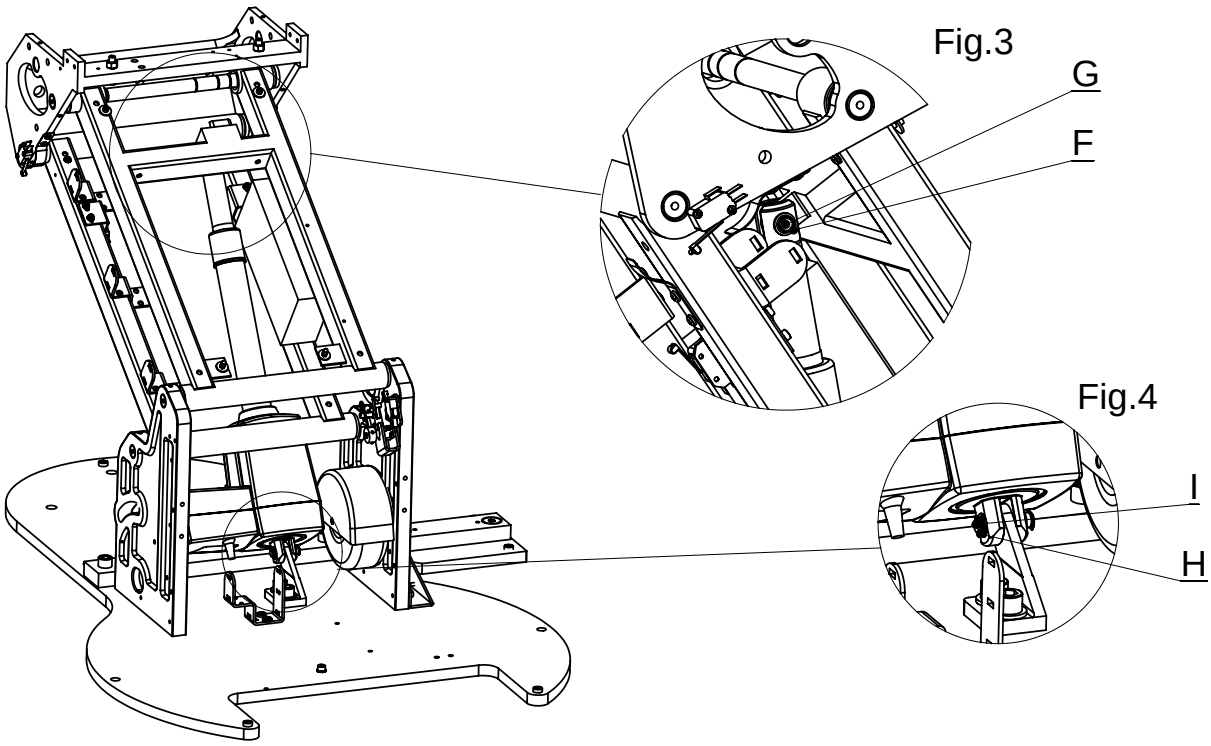


Fig.3

Fig.4

1) By following the Installation Manual, disassemble the seat "A" and raise the mobile part of the seat frame. Disassemble the derivation cover "B" and the parallelogram upper cover "C". You do not need to remove covers "D" and "E" (Fig.1).
2) If the motor is working, start it by making the chair rise to facilitate disassembly.
3) If present, disassemble the IPC.
4) During motor replacement, to prevent the chair falling, place a spacer "F" (our Code: 55150014) between the upper rod and the lower one in the point shown, making the chair come down until the two rods are fully blocked (Fig.2).
5) Disconnect the dental unit from the electricity supply.
6) Disconnect the connector PC15 from the card Code: 59400048, unscrew the fitters "Motor/chair" from the connector, taking note of their position.
7) Draw out the seeger ring "F" and the pin "G" by starting the motor during descent (Fig.3).
8) Disassemble the seeger ring "H" and draw out the pin "I" (Fig.4).
9) Remove the motor.

For reassembly, operate in a reverse way.
Pay attention to the moving parts and to any loose parts when disconnecting the motor.

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Disegnato da	VALIDO DAL:	T5 EVO Replacing Chair Vertical Movement Actuator
Gianpiero Longo	**01/01/2011**	

Fig.1

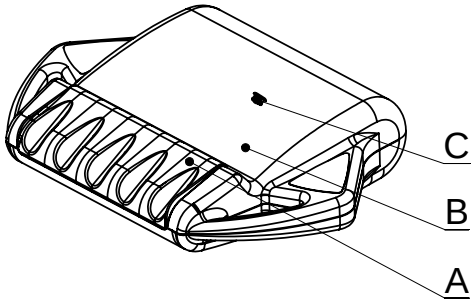


Fig.2

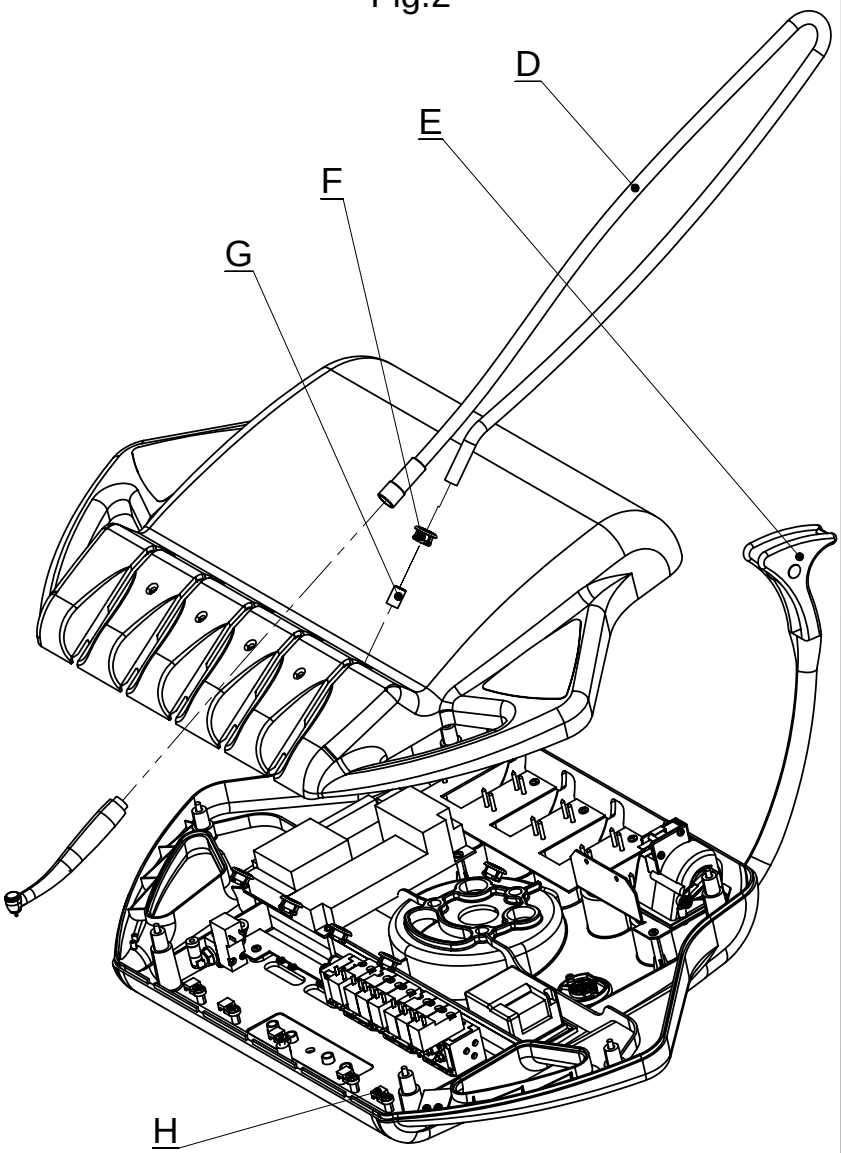
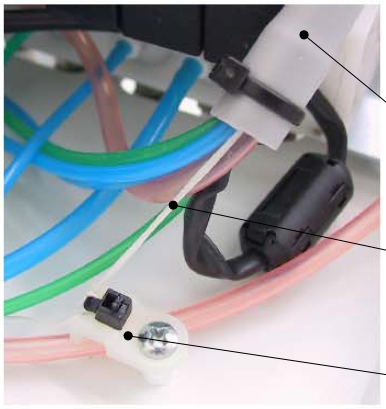
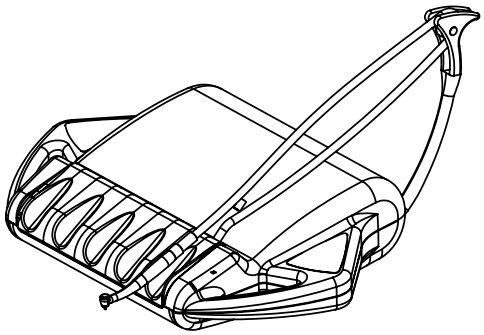


Fig.3





1) By following the Installation Manual, disassemble the instrument support "A" and the upper cover "B" (Fig.1).
2) Remove the cap "C" from the upper cover "B" (Fig.1).
3) Insert the cord "D" in the instrument arm "E" by making it pass into the bushing "F" (Fig.2).
4) Pull the cord "D" and insert the bushing "G" at its end. Tie the tow rope "I" at the end of the cord, blocking it on the bushing "G" with a clamp. Tie the tow rope to the clamp-holder "H" by using a clamp. (Fig.3).
5) Make the connections as shown in the diagrams.
6) Insert the bushing "F" in the upper cover "B" (Fig.2).
7) Assemble again the upper cover "B" and the instrument support "A".

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Disegnato da	VALIDO DAL:	Mounting Instrument Table Cords
Gianpiero Longo	**01/01/2009**	

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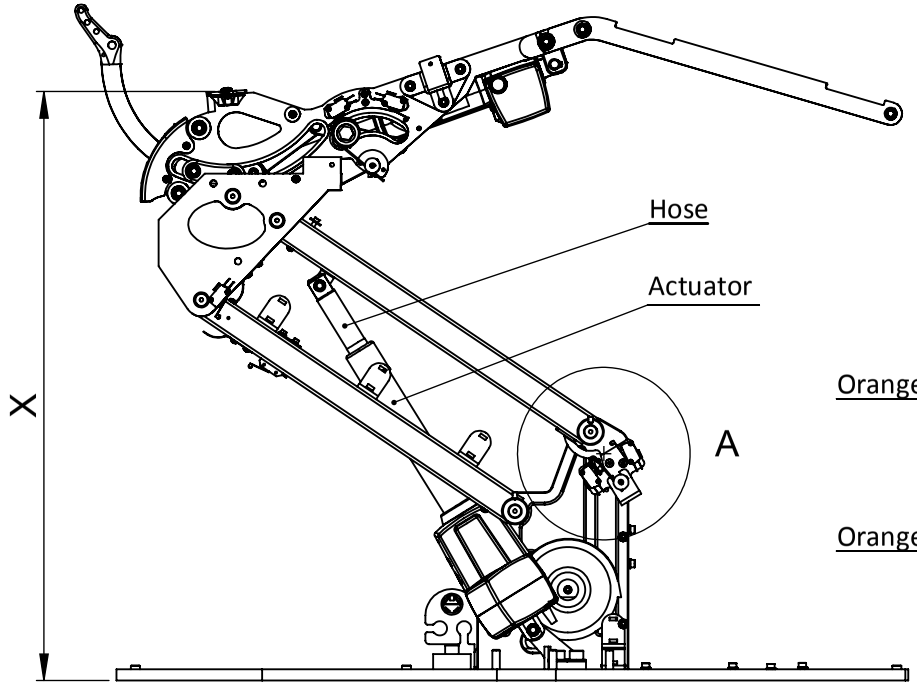
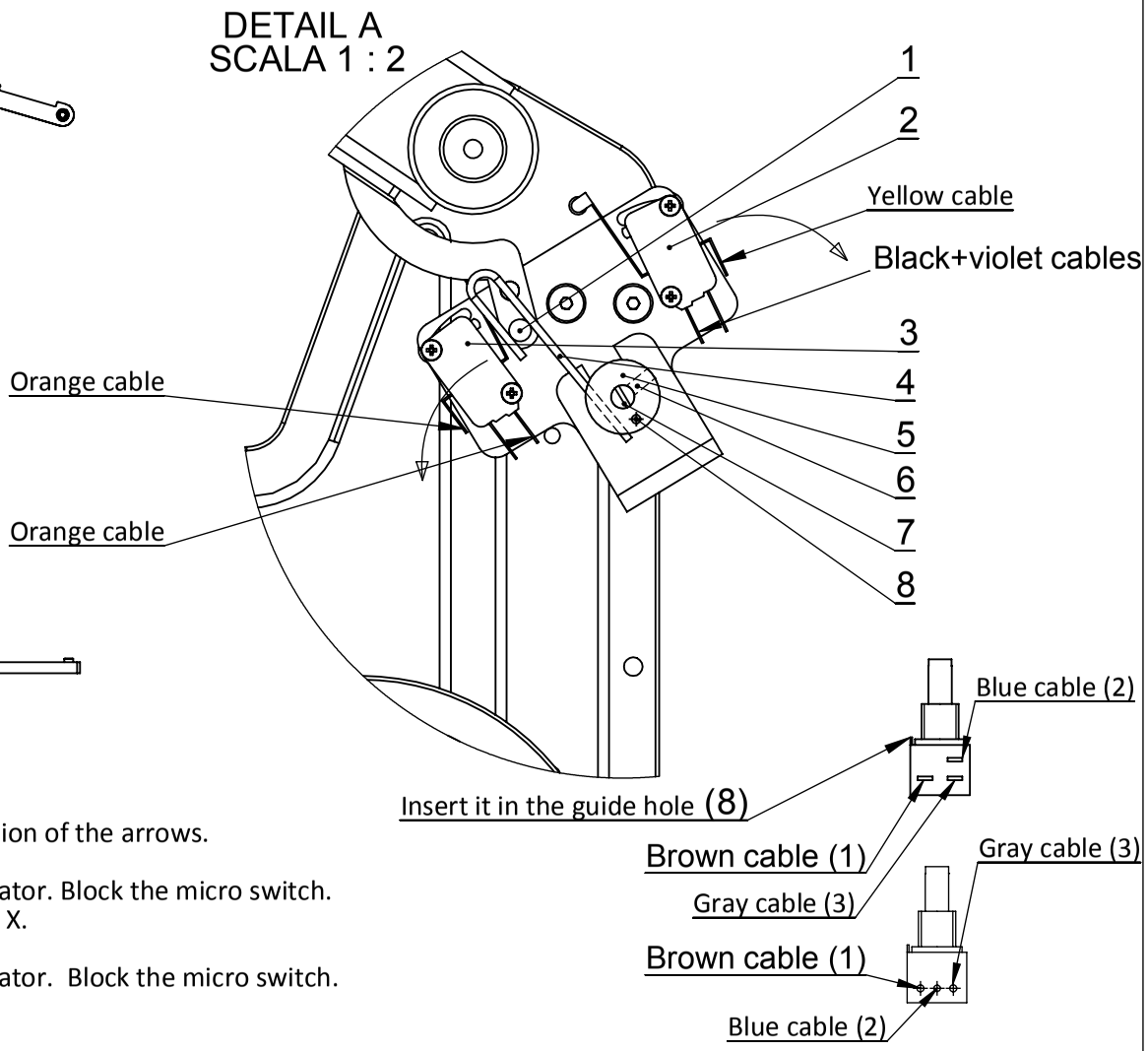
Disegnato da: **Gianpiero Longo**

VALIDO DAL: **15/03/2011**

T5 EVO Adjusting microswitch and potentiometer for chair rise





Adjusting Micro Switches:

1) Place the micro switches (2) and (3) to the fullest extent in the direction of the arrows.
2) Lower the chair, bringing the actuator to its limit.
3) Adjust the micro switch (2) making it snap in the position of the actuator. Block the micro switch.
4) Raise the chair, bringing the actuator to its limit. Measure the height X.
5) Lower the chair to about X-1cm (X-3.5 cm for V8eC)
6) Adjust the micro switch (3) making it snap in the position of the actuator. Block the micro switch.

Adjusting Potentiometer:

1) Insert the spring (4) into the potentiometer guide (5). Mount the potentiometer guide (5) on the shaft of the potentiometer (7), centering the spring (4) into the pin of the limit switch actuator (1).
2) Move the switch 1 of SW1 of the card Code: 59400049 to ON.
3) Activate the chair descent control of the foot control until the chair is brought to zero, and insist with the control until LED DL2 of the card Code: 59400054 turns off.
4) If, when releasing the control, LED DL2 turns on again, the potentiometer is already in the right position, so move on to step 6.
5) If, when releasing the control, LED DL2 remains off, rotate the potentiometer with a flathead screwdriver until the LED turns on again.
6) Mount and tighten the grubscrew (6), making sure that LED DL2 is still lit.
7) If necessary, adjust the backrest potentiometer (see procedure " T5 EVO Adjusting microswitch and potentiometer for chair backrest")
8) On the foot control, press at the same time the button and the backrest rise control to activate the automatic procedure of limits storage.
9) Once the chair has performed 2 complete storage cycles, reposition the switch 1 of SW1 of the card Code: 59400049 to OFF.

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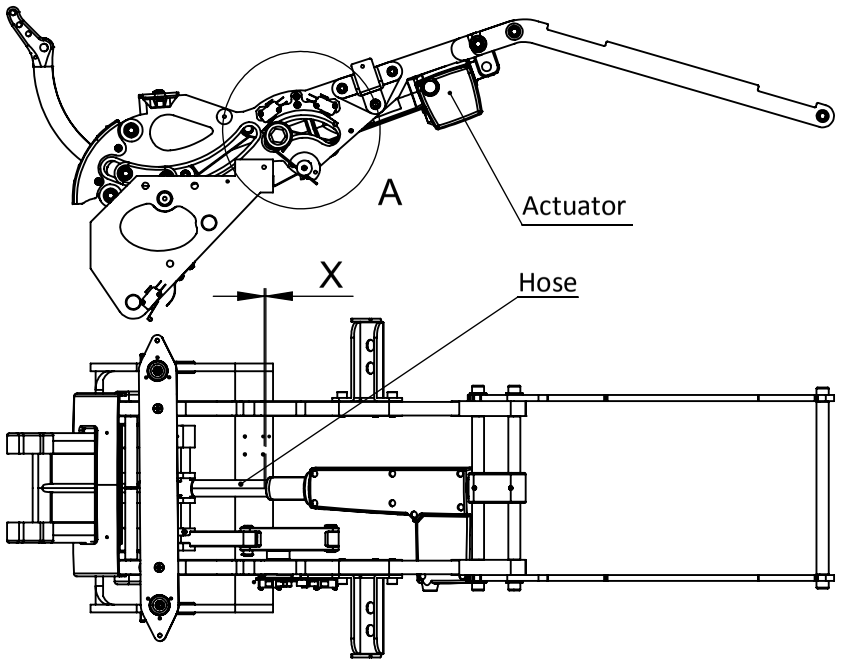
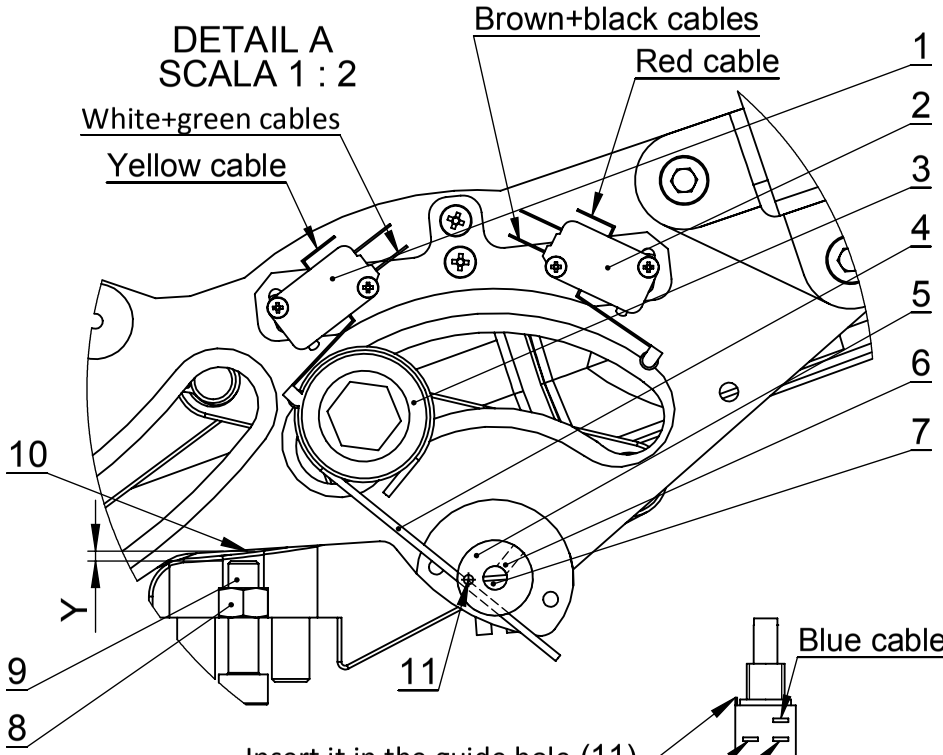
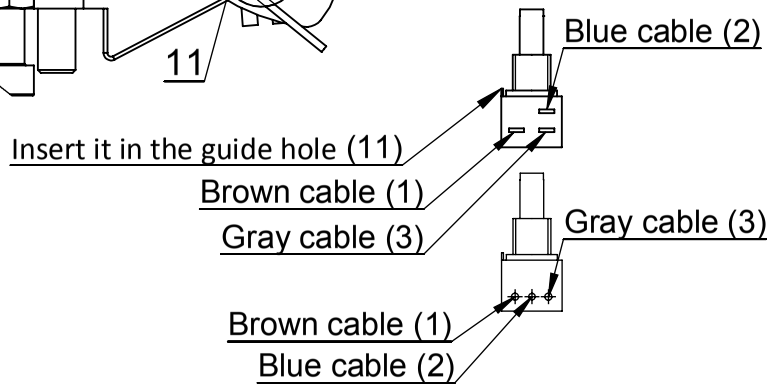
Disegnato da: **Gianpiero Longo**

VALIDO DAL: **15/03/2011**

T5 EVO Adjusting microswitch and potentiometer for chair backrest







Adjusting Micro Switches:

1) Lower the backrest bringing it to the actuator limit.
2) Move the hose of the motor forward of about X=2± 1 mm.
3) Adjust the micro switch (2) making it snap in the position of the actuator. Block the micro switch.
4) Loosen completely the lock nuts (8) and the two blocking screws (9).
5) Start the actuator until the backrest limit.
6) Adjust the two blocking screws (9) until contact with point (10).
7) Activate the actuator, moving away from point (10) of Y=2±1.
8) Adjust the micro switch (1) making it snap in the position of the actuator. Block the micro switch.
9) Bring the two blocking screws (9) in contact again with point (10) and block the lock nuts (8).

Adjusting Potentiometer:

1) Insert the spring (4) into the potentiometer guide (5). Mount the potentiometer guide (5) onto the shaft of the potentiometer (7), centering the spring (4) in the guide (3).
2) Move the switch 1 of SW1 of the card Code: 59400049 to ON.
3) Activate the backrest descent control of the foot control until the backrest is brought to zero, and insist with the control until LED DL2 of card Code: 59400049 turns off.
4) If, when releasing the control, LED DL2 turns on again, the potentiometer is already in the right position, so move on to step 6.
5) If, when releasing the control, LED DL2 remains switched off, rotate the potentiometer with a flathead screwdriver until the LED turns on again.
6) Mount and tighten the grubscrew (6), making sure that LED DL2 is still lit.
7) If necessary, adjust the chair potentiometer (see procedure " T5 EVO Adjusting microswitch and potentiometer for chair rise ")
8) On the foot control, press at the same time the button and the backrest rise control to activate the automatic procedure of limits storage.
9) Once the chair has performed 2 complete storage cycles, reposition the switch 1 of SW1 of the card Code: 59400049 to OFF.