Sonolith®

edap tms

Bringing New Horizons to Therapy

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2 KARBON TABLE DESCRIPTION AND CONFIGURATIONS

Karbon table is a motorized (3 axes + Trendelenburg) patient support module which can be combined with **Sonolith® I-SYS**, **Sonolith® I-MOVE** and in a standalone configuration.

The intended use of the Karbon table is the realization of Extracorporeal Shock Wave Lithotripsy (**ESWL**) and simple endourology acts.

Karbon table is proposed in 4 different configurations: F, S, W and W2E.

Commercial Name : **Karbon** Table
Codification on plate : **TEU**

Karbon table (F model)

❶ Main column

❷ Control panel with emergency stop, remote control connection and de-collision button

❸ Main central plate witch notch for ESWL

❹ Long extension for Patient legs

❺ Short extension for Patient head

❻ Shutter notch (*2 shutters facing each other for the Karbon-W2E model*)

❼ Fixing rails for accessories (European type 25 x 10 mm)

Karbon table is associated with **Sonolith® I-SYS (TMS229370)** and/or **Sonolith® I-MOVE (TMS232555)** bills of materials and is referenced under the following codes:

Karbon-F:
With Sonolith® I-SYS: **TMS230811**
With Sonolith® I-MOVE: **TMS230811 +** kit **TMS232709**

Karbon-S:
With Sonolith® I-SYS: **TMS230811 +** kit **TMS231198**
With Sonolith® I-MOVE: **TMS230811 +** kit **TMS231199**

Karbon-W:
With Sonolith® I-MOVE *(only):* **TMS230811 +** kit **TMS233623**

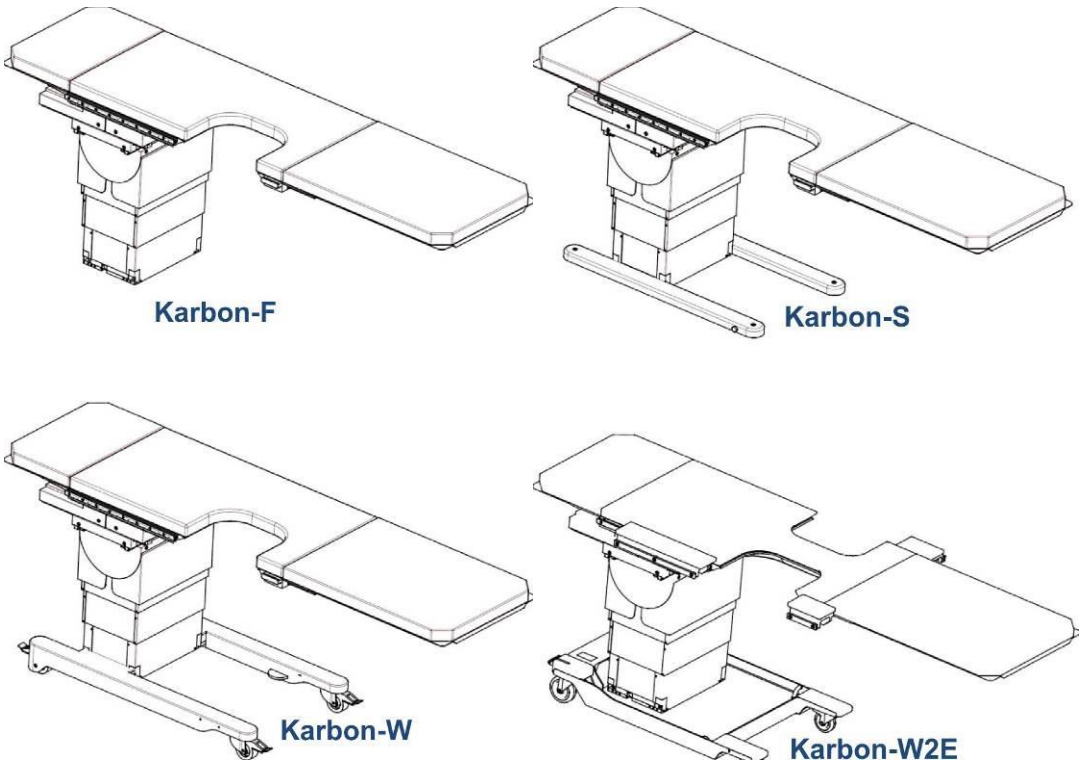
Karbon-W2E:
With Sonolith® I-MOVE *(only):* **TMS234181**

Karbon-F (F for Fixed): Stationary configuration, fixed to the ground by 4 anchoring points => for fixed sites with definitive fully dedicated room — Compatible **Sonolith® I-SYS** and **Sonolith® I-MOVE**.

Karbon-S (S for Steady): Stationary configuration, held by 2 feet fixed on each side => for fixed sites with definitive dedicated room but exceptional possibility of room changing managed by a trained engineer — Compatible **Sonolith® I-SYS** and **Sonolith® I-MOVE**.

Karbon-W (W for Wheels): Mobile configuration equipped with 2 feet fixed on each side and 4 wheels (2 mobile + 2 fixed with brake) => for fixed sites with non-definitive dedicated room with possibility regular room changing managed by local staff — Compatible with **Sonolith® I-MOVE** only.

Karbon-W2E (W for Wheels, 2E for 2 ESWL *"Encoches"* = "Apertures"): Transportable & mobile configuration equipped with a specific mobile base with 4 wheels (mobile or fixed with brake and steering functions) and specific Karbon plate with 2 symmetrical enclosures — Compatible **Sonolith® I-MOVE** only.



3 KARBON TABLE/SONOLITH COMPATIBILITY

		i-move compatible	i-sys compatible
Karbon-F		✓	✓
Karbon-S		✓	✓
Karbon-W		✓	✗

4 TECHNICAL SPECIFICATIONS

General description	Patient support and positioning table for ESWL & Endourology applications	
Clinical use	▪ ESWL of complete urinary track ▪ Simple acts of Endourology	
EC Marking Class	Class I	
Electrical class / Isolation Type	Class 1 / Type B	
Numbers of modules	1 module……..	ID plate: **TEU**
Functioning mode	▪ Intermittent ▪ 1min operation / 9 min downtime ▪ ESWL mode: motion step of 1 mm, then continuous displacement at low ▪ ENDOURO mode: continuous displacement at high speed	From key press to key release
Admissible load Main plate / Patient in ESWL Main plate / Patient in Endourology All removable extensions	 Max. 200 kg (2000 N) Max. 200 kg (2000 N) Max. 40 kg (400 N)	
Mains configuration Type Voltage Frequency Electrical plug Mains electrical protections	 Single phase (Phase / neutral / Earth) 100 to 230 VAC ±10% 50/60 Hz ±1Hz 1 plug 16 A…….. ▪ One differential circuit breaker …… ▪ One magneto thermal circuit breaker	Refer to local regulation Or refer to local socket Generally 16 A Generally 30 mA
Max power supply	850 W	
Electrical protection	▪ Fuse 10 A T (100–230 VAC)	
Instrumentation	▪ 24 VDC motors ▪ Encoder + Wire potentiometer…….. ▪ Mechanical end limit switch	For all axis motion and safety use
IP waterproof index	IP00	
Gas presence	Non AP/APG	
Fire resistance	▪ Table: UL 60601-1 requirement……. ▪ PCAN board: FR-4	Edition 2006-04-26
Tabletop cushions Fire class Biocompatibility	▪ Polyurethane foam 60mm…… ▪ GRIFFINE Tissue Diabolo Club M… M1 Yes	Ref. : HR40 4142 Ref. Cobalt 01022002
Rail for accessories (H x W)	25 x 10 mm	European type
Storage & transport conditions Temperature Relative humidity Atmospheric pressure	 –20 °C to +60 °C 45 % to 75 % 860 hPa to 1060 hPa	
Operating conditions (ambient) Temperature Relative humidity Atmospheric pressure Noise level	 +10 °C to +40 °C 45 % to 75 % 860 hPa to 1060hPa < 50 dBA	
Karbon table / Sonolith® I-SYS Max. footprint & height (L x W x H)	 2130 x 2720 x 1820 mm……	 with 31 cm I.I model
Karbon table / Sonolith® I-MOVE Max. footprint & height (L x W x H)	 2934 x 2385 x 2064 mm……	**Drawing TMS 230810** With GE-OEC 7900

Concrete fixation for Karbon table F		
Concrete class	C25/30, not cracked	
Minimum concrete thickness	200mm	
Concrete frame	Longitudinal and transversal with 150mm distance maximum	
Recommended anchors	SPIT GRIP-A4 (P/N 062170) M12x50-(A4-70) type	
Drilling diameter	15mm	
Drilling depth	54mm	
Tightening torque	35Nm	
Traction force per anchor with a 225kg patient (safety factor 2.5)	1265.62 daN	

5 KINEMATIC SPECIFICATIONS

KARBON-F / -S / -W		
ESWL Mode		
X movement		
Range	60 ± 2 mm	
Range / Zero position	± 30 mm	
Speed	5 ± 0.5 mm/s	
Y movement		
Range	140 ± 2 mm	
Range / Zero position	± 70 mm	
Speed	5 ± 0.5 mm/s	
Z movement		
Range	220 ± 2 mm	
Range / Zero position	± 110 mm	
Speed	6 ± 0.5 mm/s	
ENDOUROLOGY Mode		
X movement		
Range	325 ± 2 mm	
Range / Zero position	+300 mm / -25 mm	
Speed	14 ± 0.5 mm/s	
Y movement		
Range	290 ± 2 mm	
Range / Zero position	+70 mm / -220 mm	
Speed	14 ± 0.5 mm/s	
Z movement		
Range	150 ± 2 mm	
Range / Zero position	+150 mm / 0 mm	
Speed	14 ± 0.5 mm/s	
Trendelenburg		
Range	28 ± 1 °	
Range / Zero position	± 14 °	The Zero position is 0°
Speed	1 ± 0.5 °/s	
SERVICE Mode		Using service tool only
X movement		
Range	496 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Y movement		
Range	296 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Z movement		
Range	440 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Trendelenburg		
Range	28 ± 1 °	
Speed	1 ± 0.5 °/s	

KARBON-W2E		
RIGHT ESWL Mode		
X movement		
Range	100 ± 2 mm	
Range / Zero position	+55 mm / -45 mm	
Speed	5 ± 0.5 mm/s	
Y movement		
Range	110 ± 2 mm	
Range / Zero position	+30 mm / -80 mm	
Speed	5 ± 0.5 mm/s	
Z movement		
Range	170 ± 2 mm	
Range / Zero position	+110 mm / -60 mm	
Speed	6 ± 0.5 mm/s	
LEFT ESWL Mode		
X movement		
Range	100 ± 2 mm	
Range / Zero position	± 50 mm	
Speed	5 ± 0.5 mm/s	
Y movement		
Range	110 ± 2 mm	
Range / Zero position	+80 mm / -30 mm	
Speed	5 ± 0.5 mm/s	
Z movement		
Range	170 ± 2 mm	
Range / Zero position	+110 mm / -60 mm	
Speed	6 ± 0.5 mm/s	
LEFT ENDOURO Mode		
X movement		
Range	345 ± 2 mm	
Range / Zero position	+105 mm / -240 mm	
Speed	14 ± 0.5 mm/s	
Y movement		
Range	290 ± 2 mm	
Range / Zero position	± 145 mm	
Speed	14 ± 0.5 mm/s	
Z movement		
Range	240 ± 2 mm	
Range / Zero position	+235 mm / -5 mm	
Speed	14 ± 0.5 mm/s	
Trendelenburg		
Range	28 ± 1 °	
Range / Zero position	± 14 °	The Zero position is 0°
Speed	1 ± 0.5 °/s	

RIGHT ENDOURO Mode		
X movement		
Range	345 ± 2 mm	
Range / Zero position	+135 mm / -210 mm	
Speed	14 ± 0.5 mm/s	
Y movement		
Range	290 ± 2 mm	
Range / Zero position	± 145 mm	
Speed	14 ± 0.5 mm/s	
Z movement		
Range	240 ± 2 mm	
Range / Zero position	+235 mm / -5 mm	
Speed	14 ± 0.5 mm/s	
Trendelenburg		
Range	28 ± 1 °	
Range / Zero position	± 14 °	The Zero position is 0°
Speed	1 ± 0.5 °/s	
SERVICE Mode		Using service tool only
X movement		
Range	498 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Y movement		
Range	296 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Z movement		
Range	440 ± 2 mm	
Speed	14 ± 0.5 mm/s	
Trendelenburg		
Range	28 ± 1 °	
Speed	1 ± 0.5 °/s	

6 SPECIFIC POSITION

KARBON-F / -S / -W		
(1) These specific positions in horizontal height are measured from **the floor to the top of main carbon plate's cushion**. This is the reason for the ±5 mm tolerance. (2) When the Karbon –W model is ticked in the SONOLITH® technical file, a Z-axis offset value of 90 mm is automatically applied to the EEPROM data values in order to compensate the height brought by the mechanical mobile frame and ensure the positions in space remain the same for all the 3 models.		
Horizontal HEIGHT positions from floor to carbon plate top		
"Patient loading" Z (Karbon-F /-S)	720 ±5 mm	
"Patient loading" Z (Karbon-W)	810 ±5 mm	
ESWL Z "Zero"	980 ±5 mm	
ESWL Z min	870 ±5 mm	
ESWL Z max	1090 ±5 mm	
ENDOURO Z "Zero"	1070 ±5 mm	
ENDOURO Z min (Karbon-F /-S)	720 ±5 mm	
ENDOURO Z max (Karbon-F /-S)	1160 ±5 mm	
SERVICE Z min (Karbon-F /-S)	720 ±5 mm……....	Using service tool only
SERVICE Z max(Karbon-F /-S)	1160 ±5 mm	
ENDOURO Z min (Karbon-W)	810 ±5 mm……	Software offset of 90 mm
ENDOURO Z max (Karbon-W)	1225 ±5 mm	
SERVICE Z min (Karbon-W)	810 ±5 mm	Using service tool only
SERVICE Z max (Karbon-W)	1250 ±5 mm	

KARBON-W2E		
These specific positions are measured from **the floor to the top of main carbon plate's cushion**. This is the reason for the ±5 mm tolerance.		
Horizontal HEIGHT positions from floor to carbon plate top		
"Patient loading" position height	815 ±5 mm	
ESWL "Zero" height"	935 ±5 mm	For left & right ESWL
ESWL Z min Height	875 ±5 mm	For left & right ESWL
ESWL Z max Height	1045 ±5 mm	For left & right ESWL
ENDOURO "Zero" height	880 ±5 mm	For left & right ENDOURO
ENDOURO Z min height	875 ±5 mm	For left & right ENDOURO
ENDOURO Z max height	1115 ±5 mm	For left & right ENDOURO
SERVICE Z min	810 ±5 mm……....	Using service tool only
SERVICE Z max	1250 ±5 mm	
TRANSPORT Z height	900 ±5 mm	

7 DEFAULT EEPROM DATA

KARBON-F / -S / -W				
MODE	**DATA**	**+/-**	**VALUE**	**COMMENT**
SONOLITH I-SYS / I-MOVE ESWL MODE	A_X_MIN_L7	-	55	Range in X ⇨ 60 mm
	A_X_MAX_L7	+	5	
	A_Y_MIN_L7	-	110	Range in Y ⇨ 140 mm
	A_Y_MAX_L7	+	30	
	A_Z_MIN_L7	+	165	Range in Z ⇨ 220 mm
	A_Z_MAX_L7	+	385	
	A_X_0POS_L7	-	25	“Zero” position
	A_Y_0POS_L7	-	40	
	A_Z_0POS_L7	+	275	
SONOLITH PRAKTIS ESWL MODE	A_X_MIN_PR	-	55	Range in X ⇨ 60 mm
	A_X_MAX_ PR	+	5	
	A_Y_MIN_ PR	-	110	Range in Y ⇨ 140 mm
	A_Y_MAX_ PR	+	30	
	A_Z_MIN_ PR	+	165	Range in Z ⇨ 220 mm
	A_Z_MAX_ PR	+	385	
	A_X_0POS_ PR	-	25	“Zero” position
	A_Y_0POS_ PR	-	40	
	A_Z_0POS_ PR	+	275	
ENDOURO MODE	A_X_MIN_EL	-	245	Range in X ⇨ 325 mm
	A_X_MAX_ EL	+	80	
	A_Y_MIN_ EL	-	145	Range in Y ⇨ 290 mm
	A_Y_MAX_ EL	+	145	
	A_Z_MIN_ EL	+	300	Range in Z ⇨ 150 mm
	A_Z_MAX_ EL	+	450	
	A_X_0POS_ EL	-	220	“Zero” position
	A_Y_0POS_ EL	+	75	
	A_Z_0POS_ EL	+	300	
CALIBRATION SERVICE MODE	A_X_MIN_ER	-	248	Range in X ⇨ 496 mm
	A_X_MAX_ ER	+	248	
	A_Y_MIN_ ER	-	148	Range in Y ⇨ 296 mm
	A_Y_MAX_ ER	+	148	
	A_Z_MIN_ ER	+	10	Range in Z ⇨ 440 mm
	A_Z_MAX_ ER	+	450	
	A_X_0POS_ ER	-	25	“Zero” position
	A_Y_0POS_ ER	-	145	
	A_Z_0POS_ ER	+	300	
TRENDELENBURG	A_ANG_MAX	+	14	Angle Range ⇨ 28°
SOFTWARE SPEC	A_AUTO_REPEAT_TMO_TBL	+	350	Key repeat timing in ms

Comments :

(1) The Karbon-**F**, -**S** and -**W** models only offer one Endourology mode (same side for all patients). The parameters with the termination « _EL » are referring to the data of the Endourology mode. The parameters with termination « _ER » are referring to the « Calibration » mode.

(2) Trendelenburg motion is only accessible in ENDOURO mode.

KARBON-W2E				
MODE	**DATA**	**+/-**	**VALUE**	**COMMENT**
RIGHT ESWL MODE	A_X_MIN_LITHO	-	80	Range in X ⇨ 100 mm
	A_X_MAX_LITHO	+	20	
	A_Y_MIN_LITHO	-	110	Range in Y ⇨ 110 mm
	A_Y_MAX_LITHO	+	0	
	A_Z_MIN_LITHO	+	160	Range in Z ⇨ 170 mm
	A_Z_MAX_LITHO	+	330	
	A_X_0POS_LITHO	-	35	"Zero" position
	A_Y_0POS_LITHO	-	30	
	A_Z_0POS_LITHO	+	220	
LEFT ESWL MODE	A_X_MIN_PR	-	55	Range in X ⇨ 100 mm
	A_X_MAX_PR	+	45	
	A_Y_MIN_PR	+	0	Range in Y ⇨ 110 mm
	A_Y_MAX_PR	+	110	
	A_Z_MIN_PR	+	160	Range in Z ⇨ 170 mm
	A_Z_MAX_PR	+	330	
	A_X_0POS_PR	-	5	"Zero" position
	A_Y_0POS_PR	+	30	
	A_Z_0POS_PR	+	220	
LEFT ENDOURO MODE	A_X_MIN_EL	-	245	Range in X ⇨ 345 mm
	A_X_MAX_ EL	+	100	
	A_Y_MIN_ EL	-	145	Range in Y ⇨ 290 mm
	A_Y_MAX_ EL	+	145	
	A_Z_MIN_ EL	+	160	Range in Z ⇨ 240 mm
	A_Z_MAX_ EL	+	400	
	A_X_0POS_ EL	-	5	"Zero" position
	A_Y_0POS_ EL	+	0	
	A_Z_0POS_ EL	+	165	
RIGHT ENDOURO MODE	A_X_MIN_ER	-	245	Range in X ⇨ 345 mm
	A_X_MAX_ ER	+	100	
	A_Y_MIN_ ER	-	145	Range in Y ⇨ 290 mm
	A_Y_MAX_ ER	+	145	
	A_Z_MIN_ ER	+	160	Range in Z ⇨ 240 mm
	A_Z_MAX_ ER	+	400	
	A_X_0POS_ ER	-	35	"Zero" position
	A_Y_0POS_ ER	+	0	
	A_Z_0POS_ ER	+	165	
TRENDELENBURG	A_ANG_MAX	+	14	Angle Range ⇨ 28°
SOFTWARE SPEC	A_AUTO_REPEAT_TMO_TBL	+	500	

Comments :

(1) Depending the orientation of the table, the Karbon-**W2E** is offering
- 2 configurations for ESWL : RIGHT or LEFT
- 2 configurations ENDOURO : RIGHT or LEFT

(2) Trendelenburg motion is only accessible in ENDOURO mode

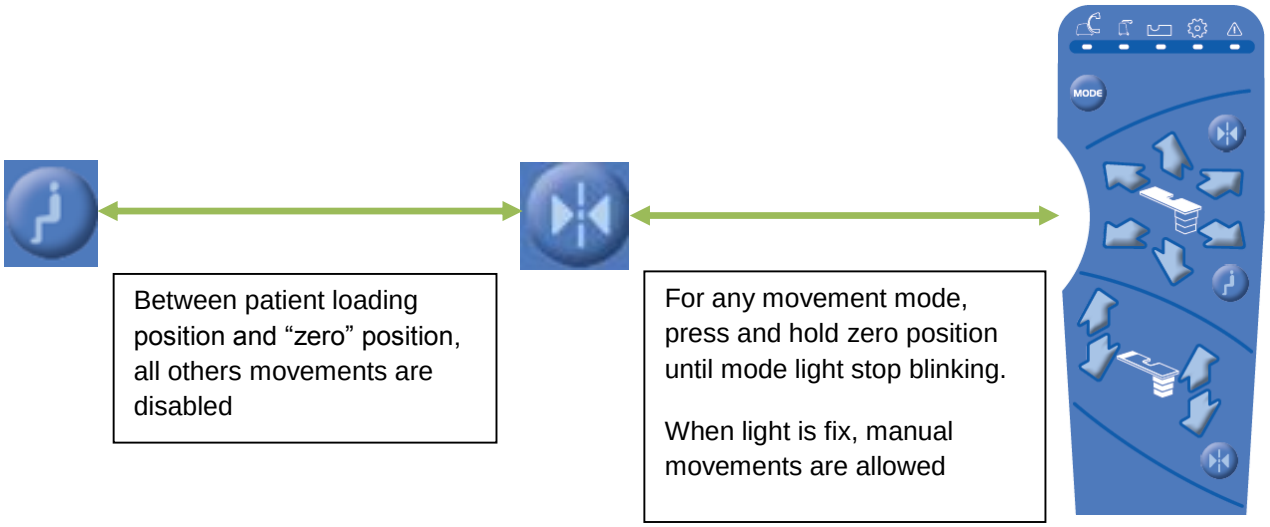
8 BEHAVIOR

8.1 Applicative behavior

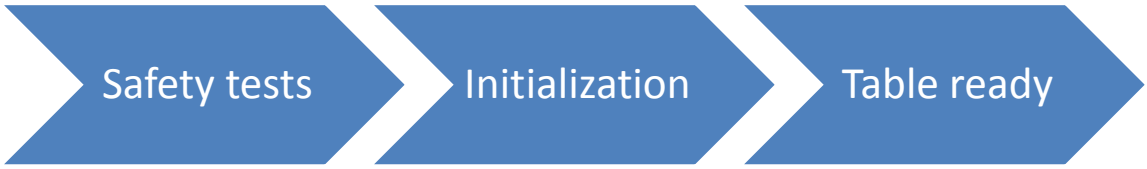
According to selected mode, table behave differently

Litho Modes	Endo-Uro Modes
Always accessible	Accessible if initialized with service plug
Specific “0” home position for Lithotripsy.	Specific “0” home position for Endourology.
Narrow movement limits (no collision with module shockwave generator)	Wide movement limits
Stone tracking mode (1 step, pause then move at low speed)	Move continuously at high speed
Trendelberg movements disabled	Trendelberg movements enabled

Whatever functioning mode, some functions are restricted if specific position is not reach:



8.2 Table Initialization



1) **At start up**, controller test that safeties are not trip:
   - Internal E/S
   - External E/S + A/C (from module or maintenance plug)

   If one safety is trip (active safety = close wire = Good)
   - ➢ System wait for user to check safeties
   - ➢ Communication with module is not activated.
   - ➢ Error code display on remote controller (blinking light):

   If no safety is trip system go to next step

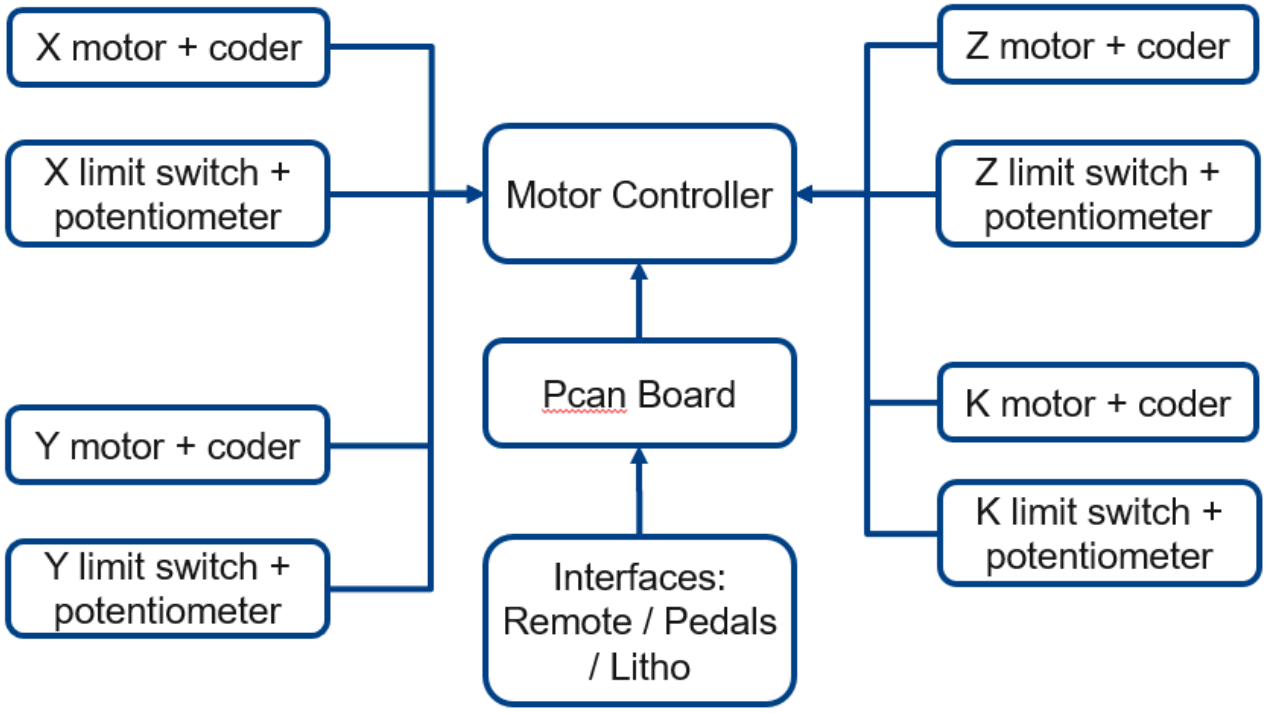
2) **Initialization start**
   - Remote lights turn off.
   - System check program and EEPROM integrity (CRC test).
   - System reload coders position from memory.

3) **When initialization is finished**, table is ready:
   - Communication with module start.
   - Remote controller is activated (blinking light).

8.3 Table power off

1) When table is switched off, 24Vdc power supply of table controller drop
2) Controller power is sustained few seconds by large capacitor
3) When power drop is detected, controller store coder position into EEPROM.

8.4 Internal diagram

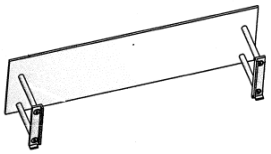
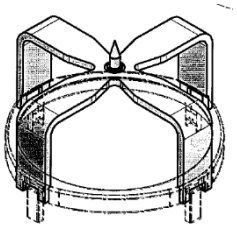
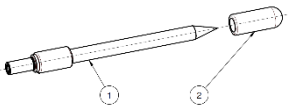


9 SERVICING

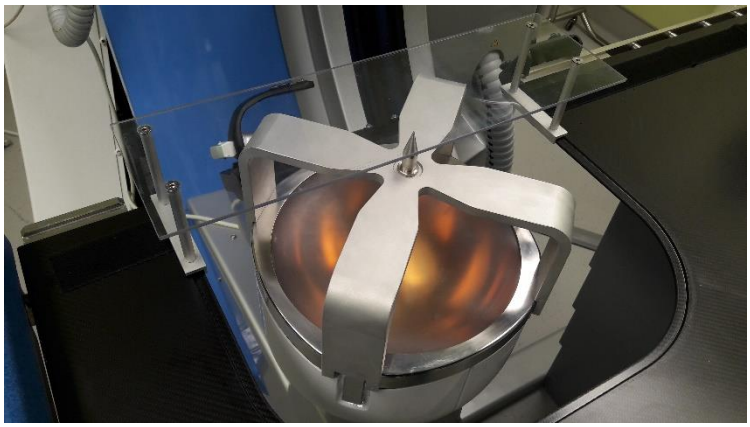
9.1 "Zero Litho" position setting with I-Sys

Prerequisites: System must be connected to a started logged in maintenance hospital and initialized I-Sys treatment module.

Requested tool:

	i-move	i-sys	Picture
Calibration plate	**TMS 230847**	**TMS 230847**	
F2 simulator with membrane	**TMS 236466**	**TMS 235999**	
F2 simulator without membrane	**TMS 238186**	**TMS 238187**	

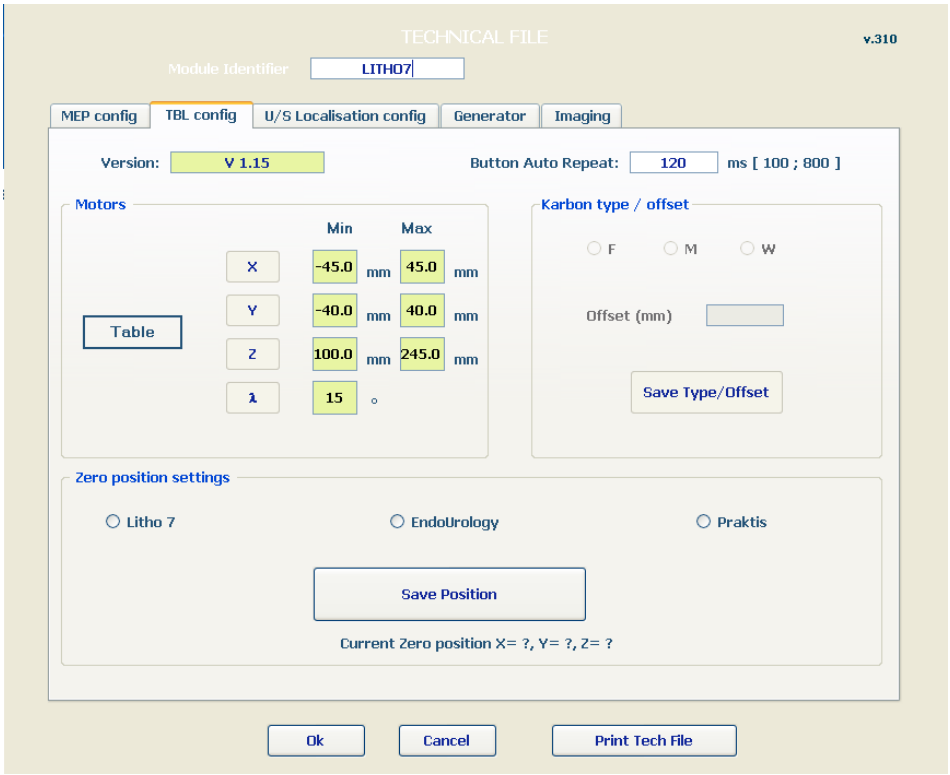
1) According to F2 simulator used, empty shockwave generator and remove membrane holder and electrode.
2) Set table to "Zero Litho" position then move upward 20mm.
3) Set generator to treatment then 0° position.
4) Remove cushion on tabletop.
5) Install F2 simulator on shockwave generator.
6) Install Calibration plate on tabletop as see below.



7) Move table on Z axis until the F2 simulator almost touch acrylic plate.

8) Move table on X and Y axis to align acrylic plate mark on the F2 simulator tip as see below.

9) On I-Sys module, go in "**Settings**" tab then press "**Technical Files**".
10) Enter password provided during technical training.
11) Go in "**TBL Config**" page
12) Check that correct Karbon type and offset are correctly set.

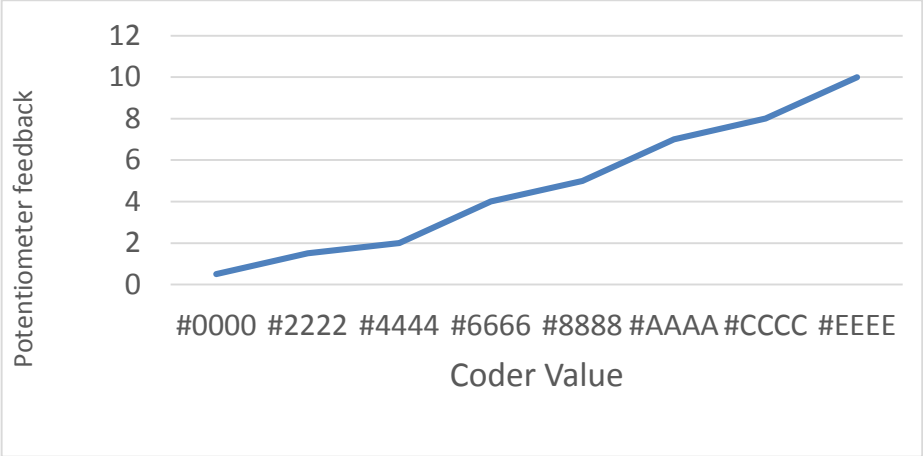


13) In the "**Zero position settings**" box, select "**Litho 7**" mode.
14) Press "**Save Position**" and valid all confirmation popup.
15) Quit windows pressing "**Ok**" to save change
16) Power off the table, wait 30 seconds then power on.
17) Remove Calibration plate.
18) Go to "**patient loading**" position
19) Go to "**zero litho**" position
20) Install calibration plate, F2 simulator tip should match with acrylic plate' mark. If not restart process from step 7).
21) Move table to software limits on all axis, no collision should occur. If not restart process from step 7).
22) Perform all necessary actions to set system back in applicative mode (install cushion, electrode etc…).

9.2 Table calibration

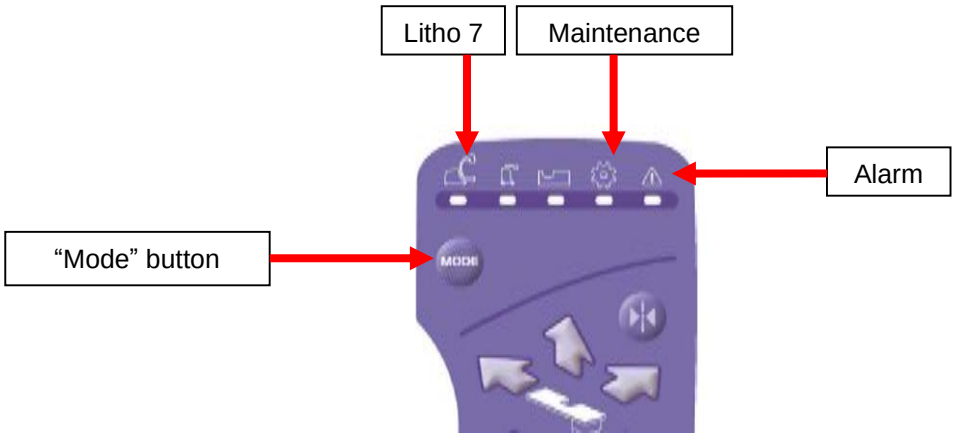
<u>Warning</u>: during calibration, table reach its mechanical limits, mind table movements and watch for possible collision, during Trendelbreg movement calibration, table top will reach important tilt, mind to not left any material on table top to prevent any damage.

Karbon table includes potentiometers presents on each axis. Potentiometers provide an extra safety check of table position at all times. A gap of 4mm in standby and 8mm during movement is permitted (due to potentiometer random winding/unwinding).
For this, it is necessary to calibrate potentiometers/coder comparison curve. This curve that fit real behavior is computed with 11 points (2 for limit switches position, 9 in between).



When first turned on, a change of electronic card or if this has never been successfully completed, the LED numbers 1, 4 and 5 on the remote, flashed to report this default.

In this case, press the **'Service'** button on the top of the table, between connector on the remote control and the emergency stop button to continue. The LED **'Litho7 (#1)'** flashes.



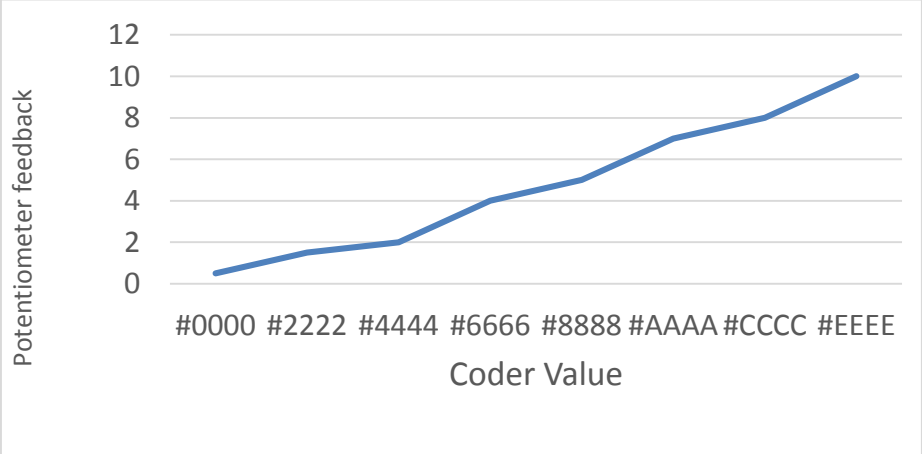
NB: This remote layout is for -F / -S / -W only.

Step One: Set calibration mode;

- Press and hold “Service button” then on the remote press once “Mode” button.
- When LED #4 flash slowly release “Service” button.

Step Two: Axis calibration

1) Press and hold “Service” button then on remote press and hold any button (+ or -) of this axis.
2) When table start moving, release “Servce” button, **keep movement button pressed during the whole movement sequence.**
3) Table move first to lower limit switch, then pause to memorize coder and potentiometer value.
4) Table move one step, then pause to memorize coder and potentiometer value.
5) Step process is repeated 9 times.
6) Table reach then upper limit switch, then pause to memorize coder and potentiometer value.
7) Table move to final position, movement button can be release safely.
8) With memorized coder and potentiometer value, system compute calibration’ curve that fit the most to real behavior.



Step Three: Repeat for all axes of the table (X,Y, Z and the 2 tredelenburgs).

When the LEDs status change from quick blinking to slow blinking, the axis is correctly calibrated.

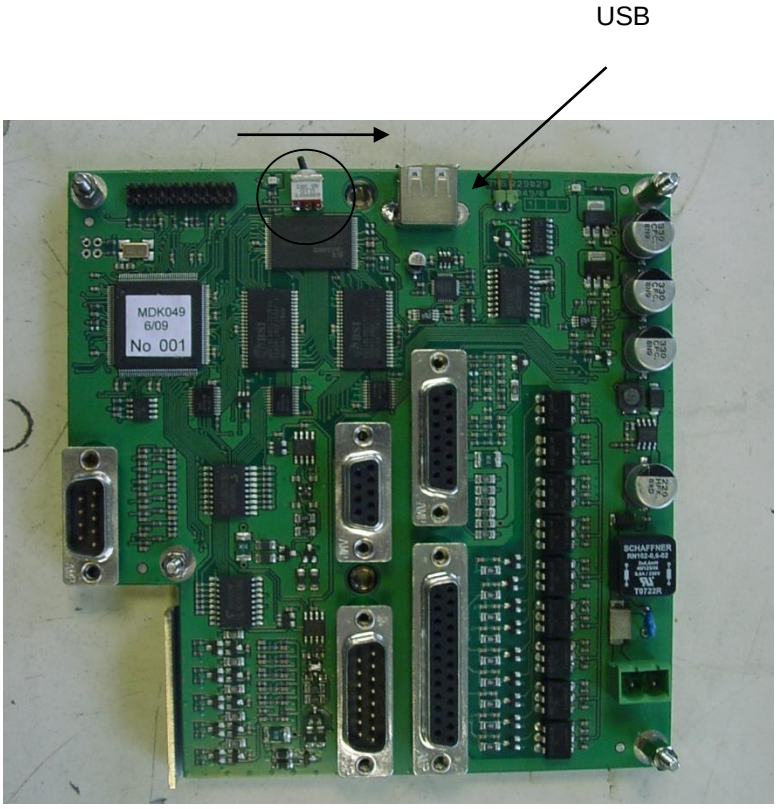
If there is anything wrong during the calibration process, LED status won’t be slow and only this axis is in default

Step Four: Restart the table: it must initialize without error, only #1 LED flashes.

9.3 Software upload

Step One: PCAN Preparation. Table is OFF.

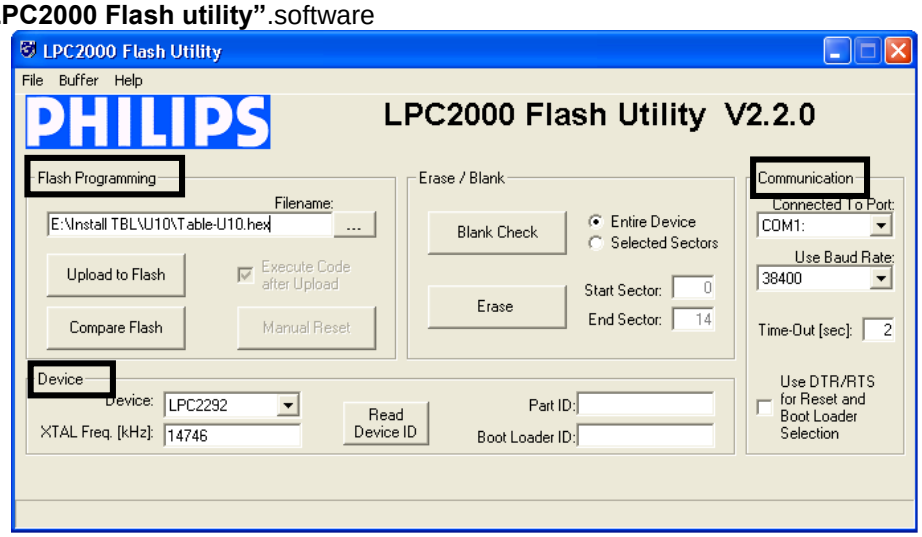
- Be sure that the alimentation of PCAN is plug.
- Toggle switch on PCAN to the right.
- Plug a USB cable on PCAN.



Step Two: Software upload.

- Connect the table communication cable to the I-Move and start both modules.
- If you are using the I-Move to do the upload, go to the Admin mode and disconnect the MEP USB cable to avoid any conflict with the COM port.

- Start **“LPC2000 Flash utility”**.software



-

- In **Communication**:

  Go to ‘Device Manager’ and check the COM Port number associated to the line called **“SiliconLab…”**
  On LPC2000 software, select this COM port number.
  Set “Use baud rate” to 38400.

- In **Device**:

  Select **LPC2292** and a frequency of **14746**.

- In **Flash Programming**:

Select the .hex file to download on the software folder:

- For all tables except W2E: Install TBL\U10\Table-U10.hex
- For the W2E table **only**: Install TBL\U10D_W2E/Table-U10**D**.hex

- Turn OFF and back ON the table.
- Wait 30s and then, click on ‘Read Device ID’. On the bottom left, the message ‘Read part ID successfully’ should appears.
- Click on ‘Upload to flash’. Click ‘OK’ on the next popup window.
- A blue bar graph indicates the progress of download. Once the upload finish, a successful message will indicated it at the bottom left.
- Switch OFF the table.
- Toggle switch on PCAN to the left position.
- Unplug the USB cable.
- Turn back ON the table and close LPC2000.
- Start applicative interface, go to **Level 1**, **Maintenance** the **EEPROM** tab click on **“Read TBL InitStatus”**
- Check version number is display and no error reported.

9.4 EEPROM data managment

For litho mode limit change, follow the procedure in section “Zero Litho” position setting with I-Sys.
For experts user only. Check that there is no collision with module or peripheral after any change.

9.4.1 Explanation about EEPROM names

EEPROM name explain in the shortest way role of associated value:

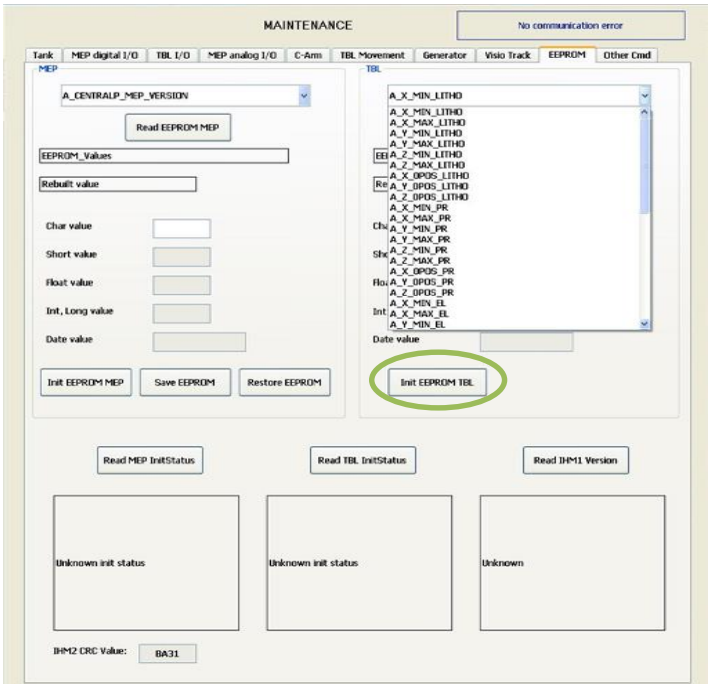
i.e. A_X_MIN_L7 : X axis, MINimum software limit position, L7 Isys mode.

Axis can be: **X**, **Y** or **Z**.
Limit position can be: **MIN**imum, **MAX**imum or **0POS** (center).
Mode can be (according table configuration) : **L7** (ESWL with I-Sys), **PR** (ESWL with Praktis), **EL** (Endo-Uro with I-Sys or Endo-Uro Left side with 2E type), **ER** (Calibration or Endo-Uro Right side with 2E type)

A_REFRESH_TBL_DATA = Reload EEPROM values in working memory

9.4.2 Restore default values

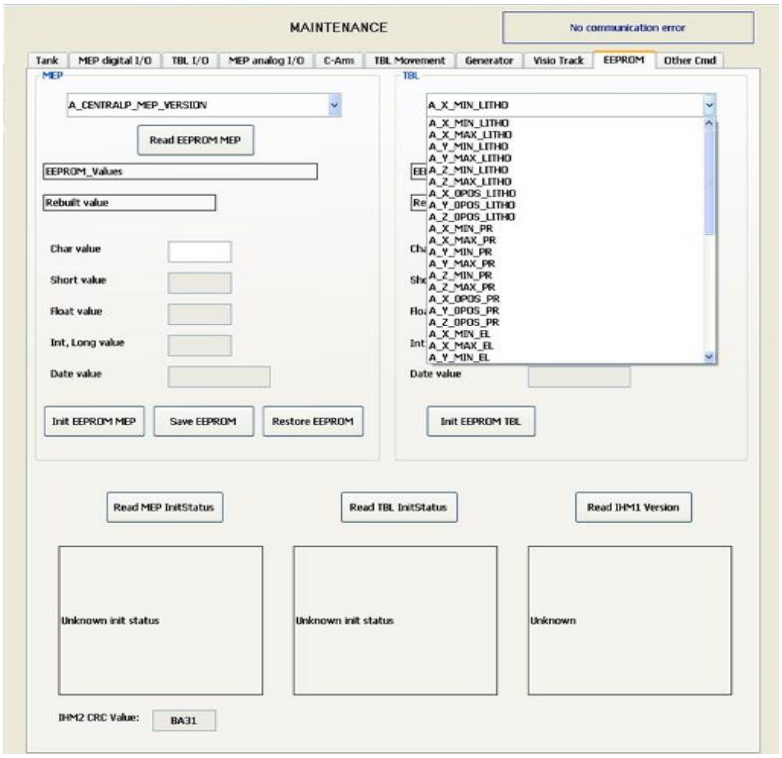
1) Initialize table and connect it to the treatment module.
2) On treatment module login into maintenance hospital then go into “**Settings**”.
3) Press on “**Maintenance**” and enter level 1 password (provided during technical training only).
4) Go in “EEPROM” (or “TBL EEPROM” for I-Move standard).
5) Press on “**Init EEPROM TBL**”
6) To reload EEPROM value in working memory:
   - Power OFF the table at least 30 seconds then power ON.
     or
   - Select **A_REFRESH_TBL_DATA** in dropdown box and press “**Read EEPROM TBL**”.



7) Perform “**zero litho**” setting as described in section “Zero Litho” position setting with I-Sys.

9.4.3 Customize EEPROM value

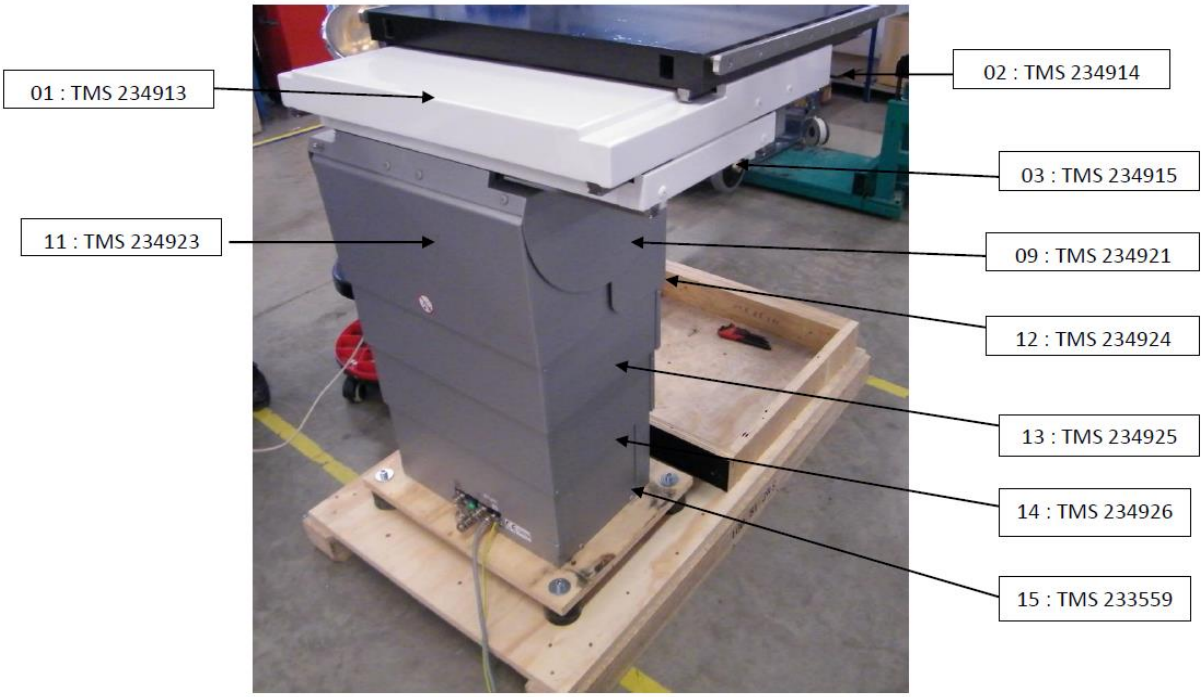
8) Initialize table and connect it to the treatment module.
9) On treatment module login into maintenance hospital then go into “**Settings**”.
10) Press on “**Maintenance**” and enter level 2 password (provided during technical training only).
11) Go in “**EEPROM**” (or “**TBL EEPROM**” for I-Move standard).
12) Select in the dropdown box value to be customize.



13) Press “**Read EEPROM TBL**” to display current item value; write it down to have backup value.
14) Enter new value in the dedicated box.
15) Press “**Write**” button.
16) Repeat from step 5 for all necessary values
17) To reload EEPROM value in working memory:
    - Power OFF the table at least 30 seconds then power ON.
      or
    - Select **A_REFRESH_TBL_DATA** in dropdown box and press “**Read EEPROM TBL**”.
18) Check by reading that change has been save
19) Check with the table movements that changes are applied and there is no collision.

9.5 Covers removal

For X and Y axis access, remove cover 01, 02 and 03 (mind interface plate)



For controllers and power supply: remove cover from up to down:

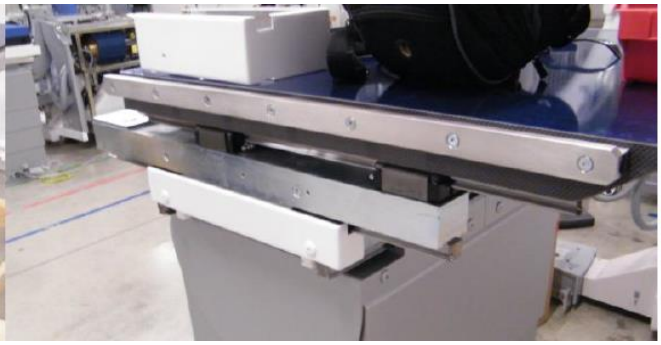
- 09 (2 sides)
- 11 and 12 (mind recoil springs)
- 13, 14 and 15 (6 screws for closing panels) 2 screws for holding to frame.

9.6 Karbon plate removal

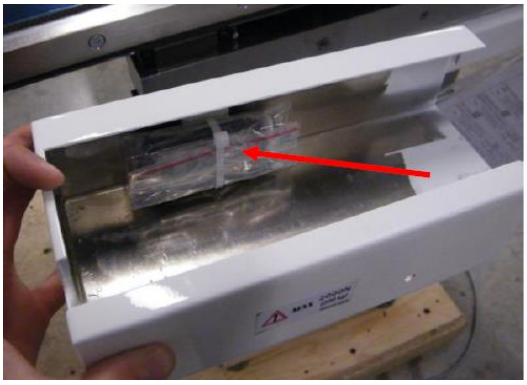
Required manpower: 3 persons for sliding table top off.

1) Remove 2 screws holding front cover and slide it away.

2) Remove 4 screw holding side covers and slide them away.

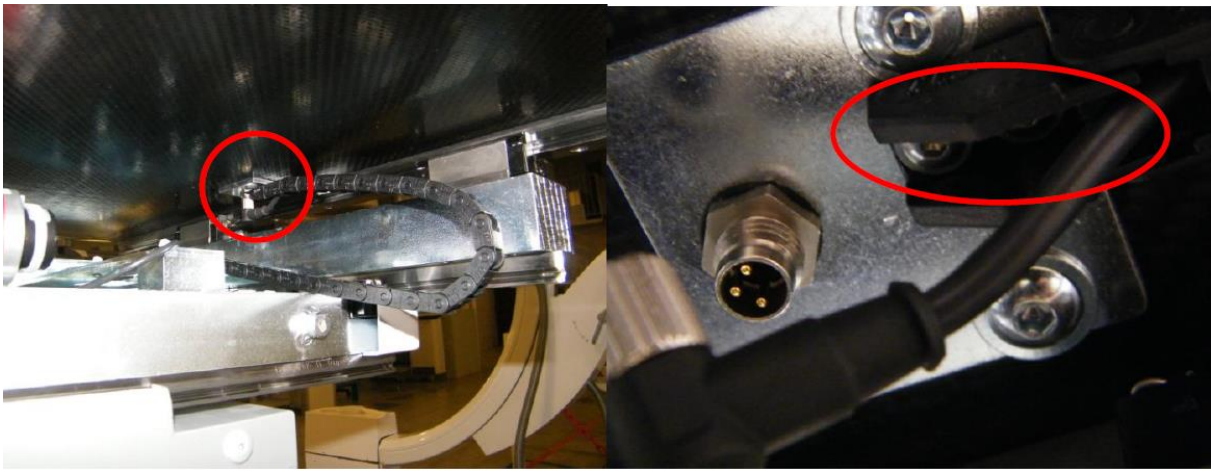


3) Recover from the side cover plastic bag containing linear bearing' wedges.

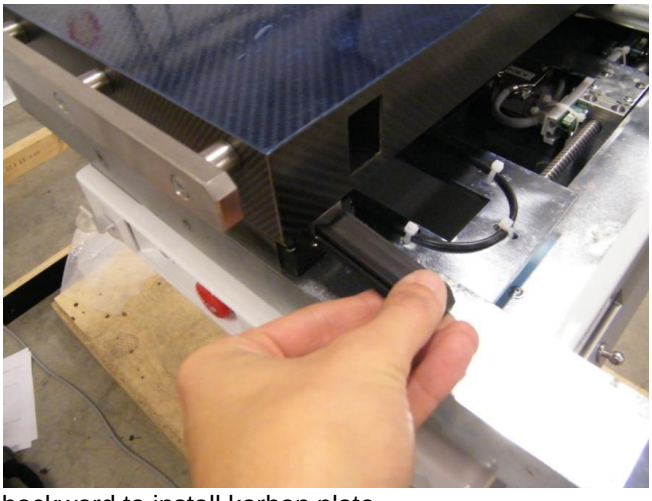


4) Remove 2 screws connecting table top to driving belt.

5) Remove connector (filler plate detector) and remove screw of drag chain.



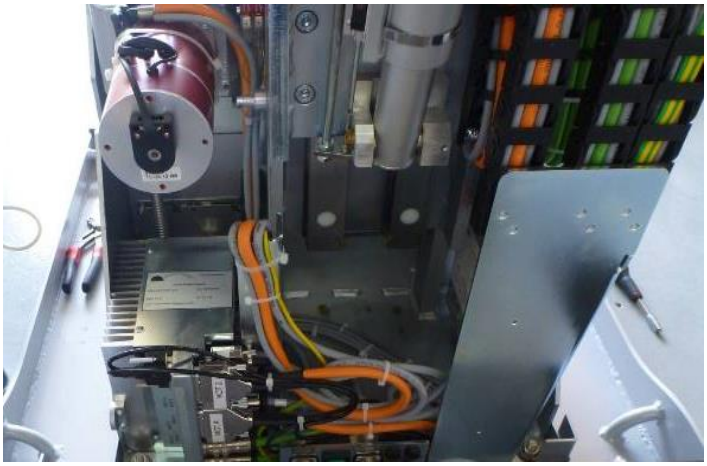
6) **/!\ Be carefull, table top is fragile and expensive handle it with care. Mind when pushing it off the seconde set of linear bearings. /!**
While 2 Persons pull tabletop from the front 1 person set wedges into linear bearings (to avoid ball loss), secure wedges with tape for long time manipulations.



7) Follow instrucion backward to install karbon plate.

9.7 Motor controller removal

1) Turn off table and disconnect it from main and treatment module.
2) Remove lower cover as see in section Covers removal.
3) Remove all connectors



4) Remove 2 screw holding controller.

5) Follow instruction backward to install new controller. Mind connector labels match with connector layout on motor controller cover.
6) and “Zero Litho” position setting.

Reminder: Respect connector order on motor controller (system is not foolproof)

- Right side, rear line, connector from bottom to top: pos K, pos Y, Pos Z, Pos X, CAN.
- Right side: front line, connector from bottom to top: Mot X, Mot Y, Mot K, Mot Z.
- Left side: Power Input.

9.8 PCAN board removal

1) If possible, start treatment simulation and move table to upper limit.
2) Turn off table and disconnect it from main and treatment module.
3) Remove lower cover as see in section Covers removal.

9.9 If PCAN board is not easily reachable, perform Karbon plate removal

Required manpower: 3 persons for sliding table top off.

8) Remove 2 screws holding front cover and slide it away.
9) Remove 4 screw holding side covers and slide them away.

10) Recover from the side cover plastic bag containing linear bearing' wedges.
11) Remove 2 screws connecting table top to driving belt.

12) Remove connector (filler plate detector) and remove screw of drag chain.

13) **/!\ Be carefull, table top is fragile and expensive handle it with care. Mind when pushing it off the seconde set of linear bearings. /!**
While 2 Persons pull tabletop from the front 1 person set wedges into linear bearings (to avoid ball loss), secure wedges with tape for long time manipulations.
14) Follow instrucion backward to install karbon plate.

4) Motor controller removal and go to step 7.
5) If PCAN board is easily reachable, remove 2 screws holding motor controller.

6) Pull motor controller as far as possible to ease the access to PCAN board.
7) Remove all connectors on PCAN board.

8) Remove 2 screws holding PCAN board and remove board.

9) Follow instruction backward to install new PCAN. Mind connector labels match with connector layout on motor controller cover.
10) and “Zero Litho” position setting.

9.10 Checking filler sensor on W2E type

To use this procedure we need the table, the table remote control and communication cable cap.

We will check the answer of the sensor in two points:

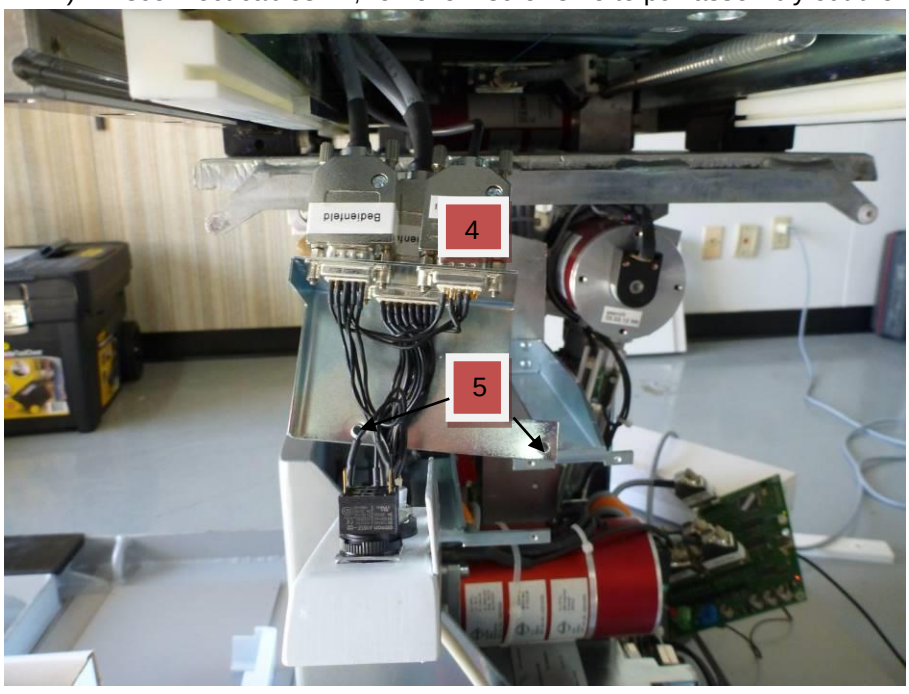
- On the control panel to check the cable between control panel and the sensors.
- On the mother board to check the cable between the mother board and the control panel.

Step One: Check from sensor on control Panel

Turn on the table, choose endo-uro mode, make a zero position (solid green light).
Place the table at the maximum high and left. Switch off the table.

1) Remove panels #1 #2 and #3.

2) Disconnect cables #4, remove 2 screws #5 to pull assembly out then plug back cables #4



3) Check voltage according to filler position and sensor activation according to the table below.

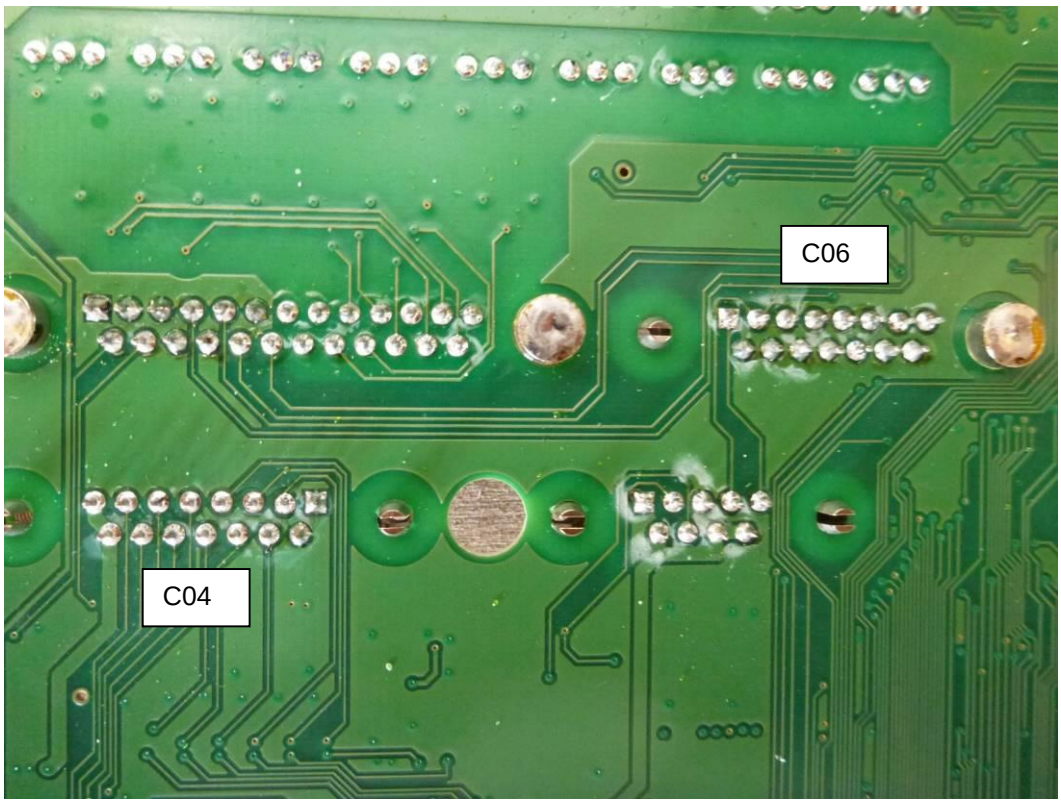
Sensor Connector	Left insert	Right insert	Voltage between pin 1 and 3	Voltage between pin 2 and 4	Troubleshooting
Disconnected	in	in	7V	7V	- mother board -Cable between mother board and control panel
Connected	in	in	7V	7V	- Cable between sensor to control panel - Sensors
Connected	in	out	7V	0V	- Cable between sensor to control panel - Right sensor
Conected	out	in	0V	7V	- Cable between sensor to control panel - Left sensor
Connected	out	out	0V	0V	- Cable between sensor to control panel - Sensors

Step Two: Cable check between control panel and PCAN board.

1) Perform PCAN board removal, then connect back motor rack controller.
2) Remove steel plates around PCAN board.

3) Reconnect cable, cut cable ties if necessary.
4) Place the naked PCAN board out of the table and mind to avoid any contact with some metallic parts.

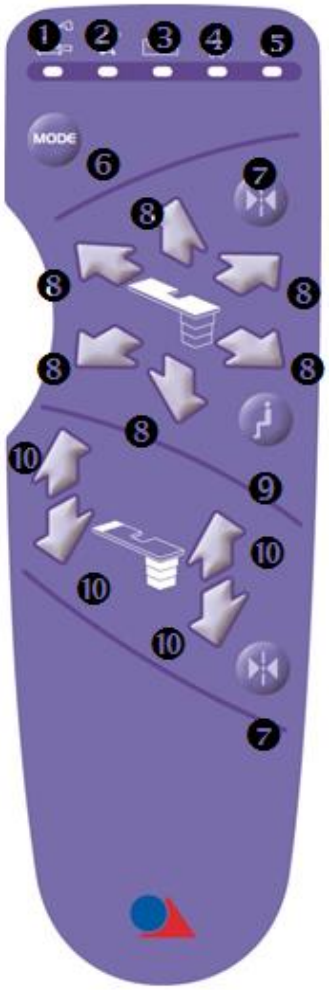
5) Power on table with care.
6) Check voltage on C04 and C06, mind that pin #1 is square shaped

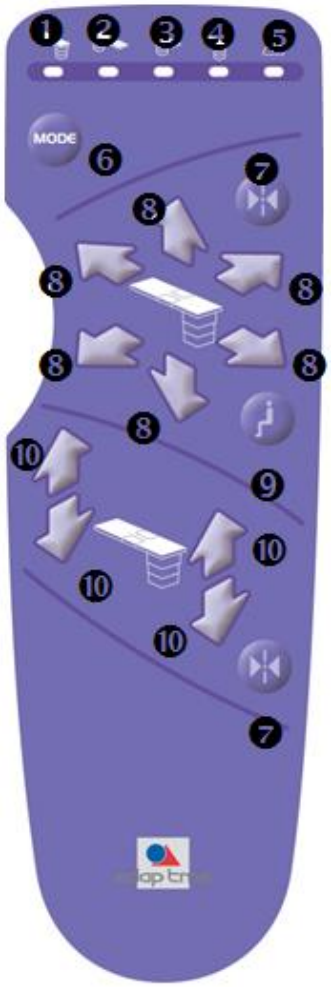


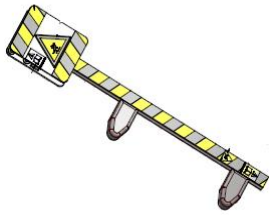
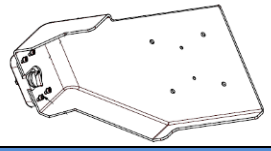
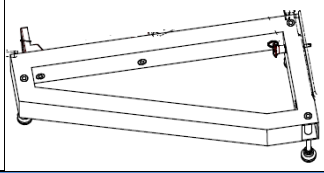
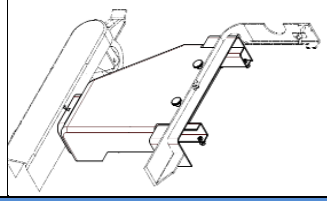
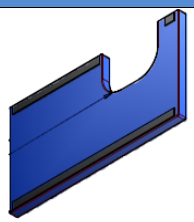
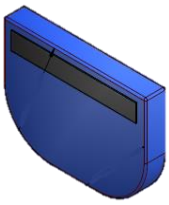
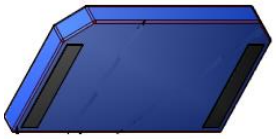
Left Insert	Right Insert	Voltage between Pin #7 on C06 and Pin # 14 on C06	Voltage between Pin #15 on C06 and Pin # 12 on C04	Troubleshooting
In	In	7V	7V	Cable between mother board and control panel
In	Out	7V	0V	Cable between mother board and control panel
Out	In	0V	7V	Cable between mother board and control panel
Out	Out	0V	0V	Cable between mother board and control panel

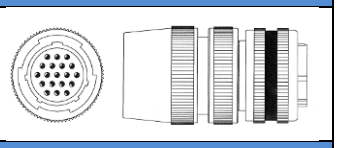
10 PART LIST

10.1 Standard Accessories

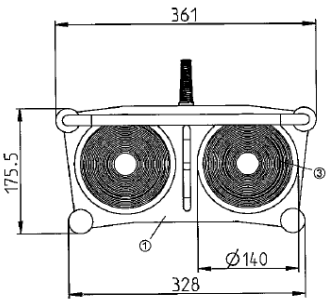
Remote Controller for - F, - S and –W TMS 230849		
Type	Wired remote control	
Mechanical enclosure	Resin + paint white bright color (RAL 9003)	
Electronic film	TMS 228982	
Finishing	4 colors	
Function keys	14 keys with spherical contacts	
Led	4 green (modes), 1 red (warning)	
Retro-lighting	Yes – all keys	
Connector	- 1 female LEMO 16 points - Soft Cable with 28 AWG 10 pairs 0.09 mm² - Cable length 2.5 m	
Dimensions	203.5 x 64 mm	
Total Mass	380 g	
Functions	❶ Sonolith® I-SYS ESWL mode ❷ Sonolith® Praktis/Vision ESWL mode ❸ Sonolith® I-SYS ENDOURO mode ❹ Sonolith® I-SYS MAINTENANCE mode ❺ Alarm or end of displacement signal ❻ Mode selection button (n°1 to 4) ❼ « Zero Litho» function (top one) and “Zero Trendelenburg” function (bottom one) ❽ X, Y, Z movements in both directions ❾ Patient loading function ❿Trendelenburg movement	
Patient loading (❾)	- Objective ⇨ offers a memorized fixed position suitable for a self-patient loading, i.e. the patient is able to sit on the carbon main plate (Z min). - Behavior ⇨ performs a fast speed displacement of the carbon plate in order to reach the memorized position.	
Zero position (❼ up)	- Objective ⇨ offers a memorized position of the main plate in order to reach an ergonomic position in regards with the selected mode. For e.g., in ESWL mode, the ESWL notch is centered n regards with the ESWL shockwave generator’s ellipsoid. - Behavior ⇨ performs a fast speed displacement of the carbon plate in order to reach the memorized position of the selected mode.	
Trendelenburg “0” position (❼ down)	- Objective ⇨ brings the carbon main plate at the horizontal - Behavior ⇨ performs a fast speed rotation of the carbon plate in order to bring it back to the horizontal.	

Remote Controller for – W2E TMS 234185		
Type	Wired remote control	
Mechanical enclosure	Resin + paint white bright color (RAL 9003)	
Electronic film	**TMS 234183**	
Finishing	4 colors	
Function keys	14 keys with spherical contacts	
Led	4 green (modes), 1 red (warning)	
Retro-lighting	Yes – all keys	
	- 1 female LEMO 16 points - Soft Cable with 28 AWG 10 pairs 0.09 mm² - Cable length 2.5 m	
Dimensions	203.5 x 64 mm	
Total Mass	380 g	
Functions	❶ Right side ESWL mode ❷ Left side ESWL mode ❸ Left side ENDOURO mode ❹ Right side ENDOURO mode ❺ Alarm or end of displacement signal ❻ Mode selection button (n°1 to 4) ❼ « Zero Litho» function (top one) and “Zero Trendelenburg” function (bottom one) ❽ X, Y, Z movements in both directions ❾ Patient loading function ❿Trendelenburg movement	
Patient loading (❾)	- Objective ⇨ offers a memorized fixed position suitable for a self-patient loading, i.e. the patient is able to sit on the carbon main plate (Z min). - Behavior ⇨ performs a fast speed displacement of the carbon plate in order to reach the memorized position.	
Zero position (❼ up)	- Objective ⇨ offers a memorized position of the main plate in order to reach an ergonomic position in regards with the selected mode. For e.g., in ESWL mode, the ESWL notch is centered n regards with the ESWL shockwave generator’s ellipsoid. - Behavior ⇨ performs a fast speed displacement of the carbon plate in order to reach the memorized position of the selected mode.	
Trendelenburg “0” position (❼ down)	- Objective ⇨ brings the carbon main plate at the horizontal - Behavior ⇨ performs a fast speed rotation of the carbon plate in order to bring it back to the horizontal.	

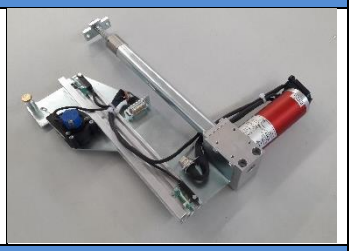
Foot positioning system Karbon-F/Sonolith I-Move TMS 232709		
Reference and features Overall dimensions (L x W x H) Mass Compatibility with	 870 x 205 x 39mm 5.6 Kg All C-arm	
Foot positioning system Karbon-W/Sonolith I-Move TMS 234085		
Reference and features Overall dimensions (L x W x H) Mass Compatibility with	 510 * 300 * 140 3Kg all	
Foot positioning system Karbon-2E/ Sonolith I-Move TMS 235587		
Reference and features Overall dimensions (L x W x H) Mass Compatibility with	 637 * 280 * 60 1.5 all	
Foot positioning system Karbon-W/Sonolith I-Sys TMS 235650		
Reference and features Overall dimensions (L x W x H) Mass Compatibility with	 300 * 262 * 111 2Kg all	
Karbon Cushion set for table TMS 230685		
TMS 230659 Overall dimensions (L x W x H)	Plate cushion for Karbon Table 1268*680*60	
TMS 230670 Overall dimensions (L x W x H)	Shutter cushion for Karbon Table 412*300*60	
TMS 230682 Overall dimensions (L x W x H)	Large extension cushion for Karbon Table 950*680*60	
TMS 230681 Overall dimensions (L x W x H)	Small extension cushion for Karbon Table 400*680*60	

Other cushion	
228790	SP+ cushion kit
228789	SP+ Bottom cushion adjustment
230108	SP+ Cushion pillow
230109	SP+ Setting up cushion
Other Tool	
230847	Calibration plate for I-sys (Zero litho position)
230690	Drilling template on the ground
Karbon Table Plug TMS 230961	
Maintenance plug	To use the table without the I-Move/I-Sys connection 
Cables	
228474	Table / module link cable

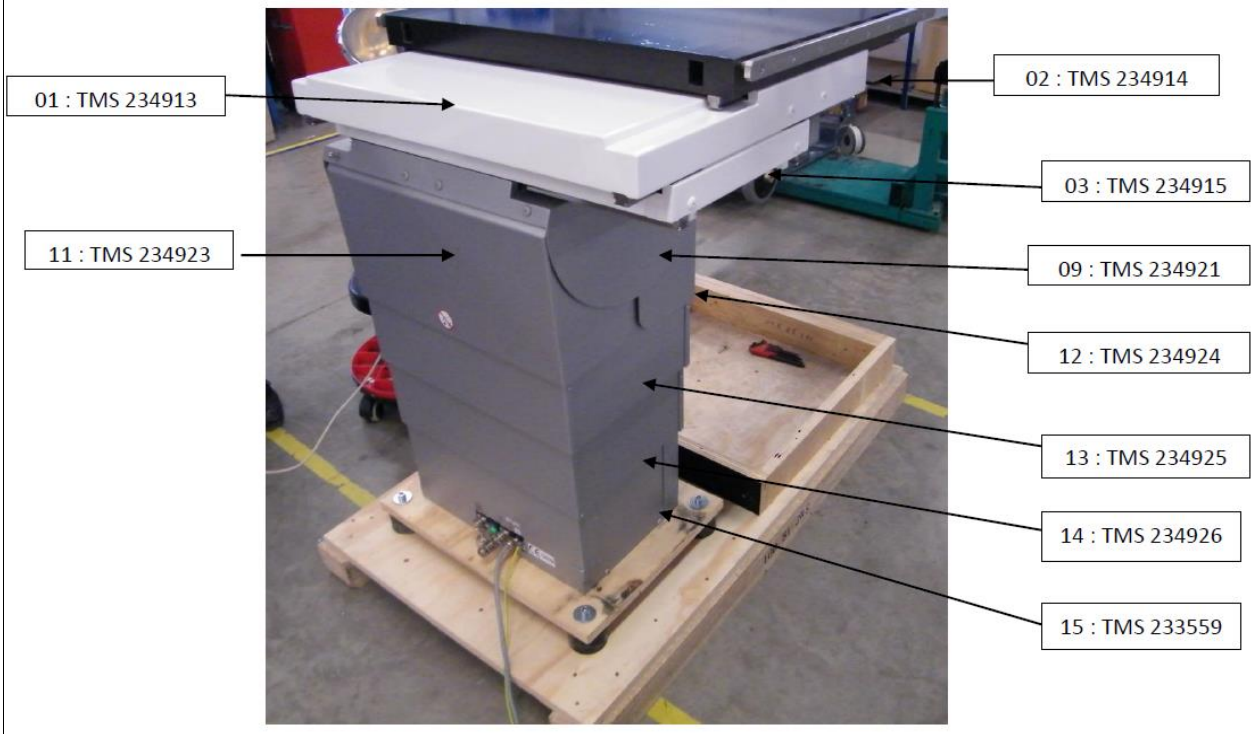
10.2 Optional accessory

FOOTSWITCH FOR ENDOUROLOGY TMS 229228		
Reference and features		
Overall dimensions (L x W x H)	361 x 175.5 x 188 mm	
Electrical Class	Class I	
Contact	8 (NO : Normally Open)	
Mechanical trigering action	10 N	
Triggering frequency	< 50 triggering/minute	
Cable	UL / CSA-LIYCY AWG 24, length 2 m	
Connector	Jaeger, 12 poles	
IP class of pedal and cable	IP68	
IP class of connector	IP65	
Mechanical lifetime	10 Million operation/cycle	
Mass	5.5 kg	
AMATECH OPTIONAL ACCESSORIES TMS 226838		
TMS 226254	Pair of stirrups + orientable clamps	
TMS 226263	Urinary kit	
TMS 226264	Pair of stirrups Cysto-Lift +clamps	
TMS 226265	Pair of stirrups + rapid clamps	
TMS 226266	Compression belt Amatech	
TMS 234555	Ellit stirrups (foot) + clamps	
TMS 235704	Arm support with rail mounting	
ARM SUPPORT TMS 226259		
Reference and features		
Overall dimensions (L x W x H)	700*150*50mm	
Mass	2Kg	
ADJUSTABLE FLANGE TMS 226255		
Reference and features		
Overall dimensions (L x W x H)	100*70*110mm	
Mass	1Kg	

10.3 Technical spare parts

POTENTIOMETER FOR AXIS X Y TMS 234563		
Reference and features Length of wire	 30”	
POTENTIOMETER FOR AXIS Z TMS 235637		
Reference and features Length of wire	 50”	
DC POWER SUPPLY TMS 230839		
Reference and features Supply voltage Output voltage Dimension Weight	 100-230v 24v 280*125*65 3Kg	
MAIN CONTROLLER TMS 230861		
Reference and features Supply voltage Dimension Weight	 24v 200*165*120 4Kg	
PASSERELLE PCAN WIRED BOARD TMS 228994		
Reference and features	Interface between main controller and control panels	
MOTOR FOR X AXIS TMS 234573		
Reference and features MVT Supply voltage Motor type Patient axis	 100 24V Brushless Longitudinal (head-foot)	
MOTOR FOR Y AXIS TMS 234572		
Reference and features MVT Supply voltage Motor type Patient axis	 110 24V Brushless Lateral	
MOTOR FOR Z AXIS WITH TMS 235969		
Reference and features MVT Supply voltage	 170 24V Be Careful the motor can’t be change alone we sent a motor with the complete base	

COVERS


01 : TMS 234913
11 : TMS 234923
02 : TMS 234914
03 : TMS 234915
09 : TMS 234921
12 : TMS 234924
13 : TMS 234925
14 : TMS 234926
15 : TMS 233559

11 PREVENTIVE MAINTENANCE

In normal condition no greasing are necessary.

Extract from check List (TMS 510193). Refer to the official version.

1. CONNECTIONS				
CONTROL	VALUE	OK	NOT OK	COMMENTS N°
Table (30mA/16A for 230V) (30mA/20A for 100-120V) (installation only) ☐ NA		☐	☐	
Table emergency stop functions		☐	☐	
2. REMOTE CONTROLLERS (Table and Module)				
CONTROL		OK	NOT OK	COMMENTS N°
Table controller buttons are not worn or damaged		☐	☐	
All buttons and LEDs function on each controller. Back light is functional		☐	☐	
3. TABLE				
CONTROL	VALUE	OK	NOT OK	COMMENTS N°
All three movements stop at the software limit (X,Y and Z) before reaching the hardware limit		☐	☐	
Origin position (centering) functions correctly		☐	☐	
Generator is centred between limits of table opening when in zero position (X position check)		☐	☐	
The table does not collide with the treatment head whatever their positions		☐	☐	
Movement check using steel rule (Only IHM2) ☐ **NA**				
Request a movement of 50 mm in X axis. Record real distance moved (Tolerance 50mm ±2)		☐	☐	
Request a movement of 40mm in Y axis. Record real distance moved (Tolerance 40 mm ±2)		☐	☐	
Request a movement of 100mm in Z axis. Record real distance moved (Tolerance 100 mm ±2)		☐	☐	
Steel rails are all firmly fixed		☐	☐	
4. APPEARANCE AND BRAKES				
CONTROL		OK	NOT OK	COMMENTS N°
Table		☐	☐	

12 ERROR MESSAGES

12.1 On the Sonolith

N°	Trigger conditions	Step in which the fault can be triggered	Actions
1400	Impossible to pass the litho mode	Starting treatment ESWL	Possibility to try again, to ignore or cancel
1401	Impossible to pass the EndoUro mode	Starting treatment endouro	Possibility to try again, to ignore or cancel
1402	Collision detected	All	Possibility to try again, to ignore or cancel
1404	CRC error on the table software	Start-up	Possibility to cancel (closing the application)or to ignore
1405	CRC error on the table l'EEPROM	Start-up	Possibility to cancel (closing the application)or to ignore
1406	Watch dog error	Start-up	Possibility to cancel (closing the application)or to ignore
1407	Crash sensor operation error	Start-up	Possibility to cancel (closing the application)or to ignore
1408	Problem with the table processor	Start-up	Possibility to cancel (closing the application)or to ignore
1409	No voltage signal	Start-up	Possibility to try again, to ignore or cancel
1410	The table has reached its limit, the required position is not reached	Treatment	Possibility to validate
1411	Initialization failed	Start-up	Possibility to try again, to ignore or cancel
1412	Calibration failed	Start-up	Possibility to try again, to ignore or cancel

12.2 On the Remote controller

Error Type	Error name	Remote LED status					Comments
		Litho 7 / Litho right	Praktis / Litho Left	Endo-Uro / Endo right	Service / Endo left	Alarm	
Boot Error	CRC Program fault	ON	OFF	OFF	OFF	ON	The ON LED flash against following. System unusable
	CRC EEPROM Fault	OFF	ON	OFF	OFF	ON	
	Processor fault	ON	ON	OFF	OFF	ON	
	Watchdog fault	OFF	OFF	ON	OFF	ON	
	24V not present	ON	OFF	ON	OFF	ON	
	Collision detector input faulty	OFF	OFF	OFF	ON	ON	
	Communication fault	ON	ON	ON	OFF	ON	
	Calibration not done	ON	OFF	OFF	ON	ON	

CRC Program fault
Internal software integrity test fail: software corrupted.
Perform Software upload**Erreur ! Source du renvoi introuvable.** if not successful replace control box.

CRC EEPROM Fault
Internal EEPROM data integrity' test fail: EEPROM data corrupted.
Perform Default EEPROM value reloading see Restore default values of EEPROM**Erreur ! Source du renvoi introuvable.**, if not successful replace control box.

Processor fault
Internal processor integrity test fail: defective processor.
Replace motor control box.

Watchdog fault
Processor watchdog test fail: defective watchdog circuit.
Replace motor control box.

24V not present
Internal and external safety test fail: one or more emergency/collision switch is activated
Check table E/S switch activation, check treatment module E/S is switch.

- If system is connected to treatment module, disconnect module and test with "dummy plug".
  If table initialize correctly check interconnection cable integrity, for table with I-Move check FU10 inside I-move module
- If system is connected to dummy plug, check internal connections.

Collision detector input faulty
Check treatment module collision detection system, check interconnection cable integrity.

Communication fault
Internal communication test fail: defective control box.
Replace control box or PCAN board.

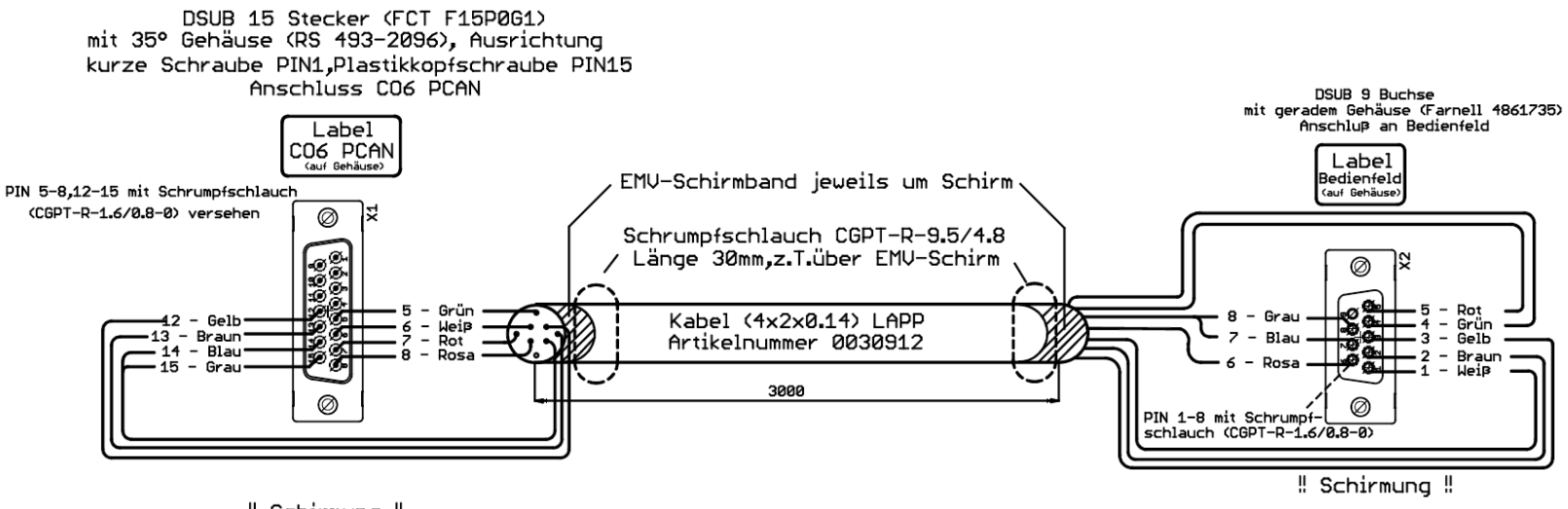
Calibration not done
Difference between coder and potentiometer feedback is greater than 4mm in standby and 8mm while moving.
Perform **Erreur ! Source du renvoi introuvable.**.

13 SCHEMATICS

Schematics below are in low quality.

High quality schematics are provided in the flash drive given during the technical training.

Kabel C06 PCAN Bedienfeld



PIN	Farbe/Kabel	Belegung
1	- frei -	
2	- frei -	
3	- frei -	
4	- frei -	
5	Grün	Kollisionsauflösung In
6	Weiß	Notstop In
7	Rot	Lithoausschnitt R In
8	Rosa	Lithoausschnitt L In
9	- frei -	
10	- frei -	
11	- frei -	
12	Gelb	Kollisionsauflösung +
13	Braun	Notstop
14	Blau	Lithoausschnitt R+
15	Grau	Lithoausschnitt L+

PIN	Farbe/Kabel	Belegung
1	Weiß	Notstop In
2	Braun	Notstop
3	Gelb	Kollisionsauflösung +
4	Grün	Kollisionsauflösung In
5	Rot	Lithoausschnitt R In
6	Rosa	Lithoausschnitt L In
7	Blau	Lithoausschnitt R+
8	Grau	Lithoausschnitt L+
9	-frei-	

	Datum	Name
Gez	25.05.09	Grieg
Gep	02.06.09	Grieg
Norm		

Bezeichnung
Kabel C06 PCAN Bedienfeld

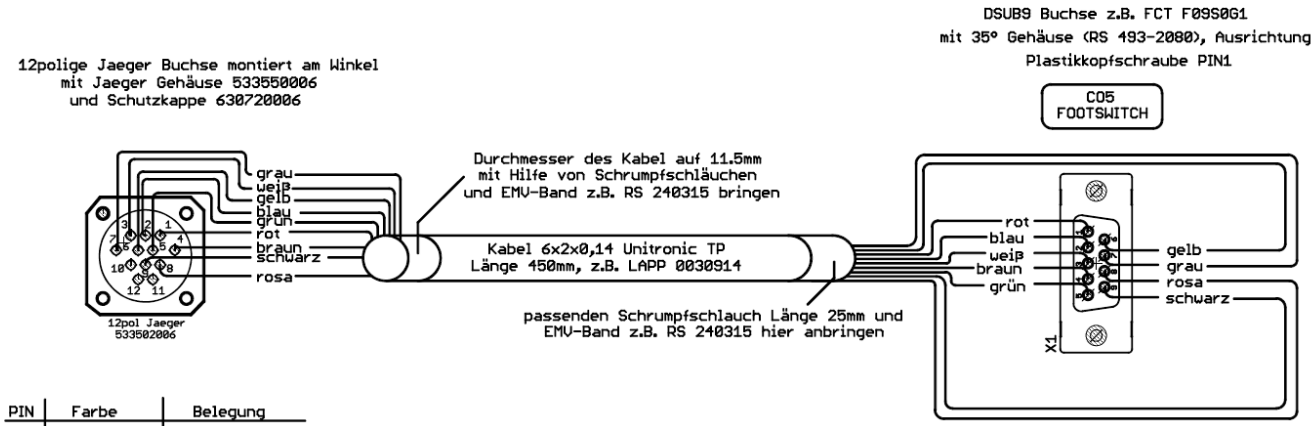
Guido Kübler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Zeichnungsnummer
18300021

Blatt 1
Blätter 1

Änderungs-index | Änderungs-antragsnr. | Datum | Unterschrift | Geprüft

Kabel C05 PCAN Footswitch



PIN	Farbe	Belegung
1	rot	EP5
2	blau	EP6
3	weiß	EP7
4	braun	EP8
5	grün	EP9
6	gelb	EP10
7	grau	EP11
8	rosa	EP12
9	schwarz	0V
10	-frei-	-frei-
11	-frei-	-frei-
12	-frei-	-frei-

Änderungs-index	Änderungsantragsnr.	Datum	Unterschrift	Geprüft
a	1	23.07.09	Grieg	

	Datum	Name
Gez	29.05.09	Grieg
Gep	02.06.09	Grieg

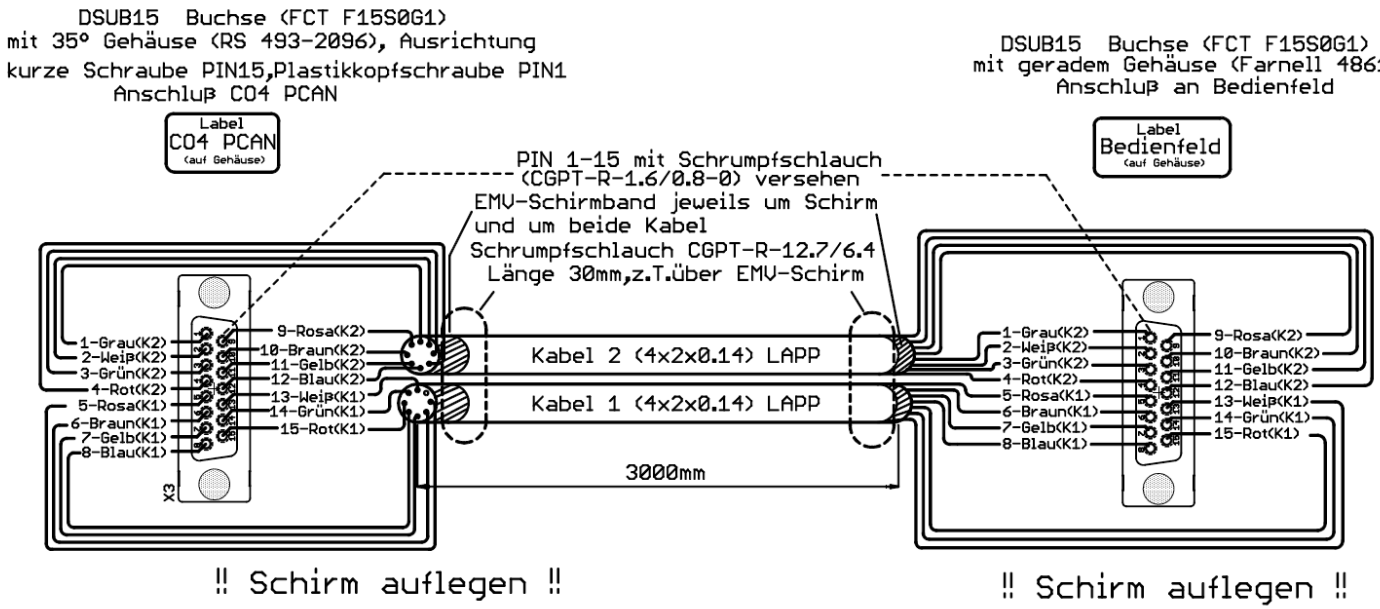
Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Bezeichnung
Kabel C05 PCAN Footswitch

Zeichnungsnummer 18300022a

Blatt 1
Blätter 1

Kabel C04 PCAN – Bedienfeld



PIN	Kabel	Farbe	Belegung
1	Kabel 2	Grau(K2)	0V
2	Kabel 2	Weiß(K2)	EP13
3	Kabel 2	Grün(K2)	EP15
4	Kabel 2	Rot(K2)	EP17
5	Kabel 1	Rosa(K1)	SP0
6	Kabel 1	Braun(K1)	SP2
7	Kabel 1	Gelb(K1)	SP4
8	Kabel 1	Blau(K1)	24V
9	Kabel 2	Rosa(K2)	0V
10	Kabel 2	Braun(K2)	EP14
11	Kabel 2	Gelb(K2)	EP16
12	Kabel 2	Blau(K2)	EP18
13	Kabel 1	Weiß(K1)	SP1
14	Kabel 1	Grün(K1)	SP3
15	Kabel 1	Rot(K1)	24V

Kabel 1+2 z.B. LAPP Artikelnummer 0030912

Änderungs-index	Änderungs-antragsnr.	Datum	Unterschrift	Geprüft		Datum	Name
					Gez	25.05.09	Grieg
					Gep	02.06.09	Grieg

Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Bezeichnung
Kabel C04 PCAN Bedienfeld

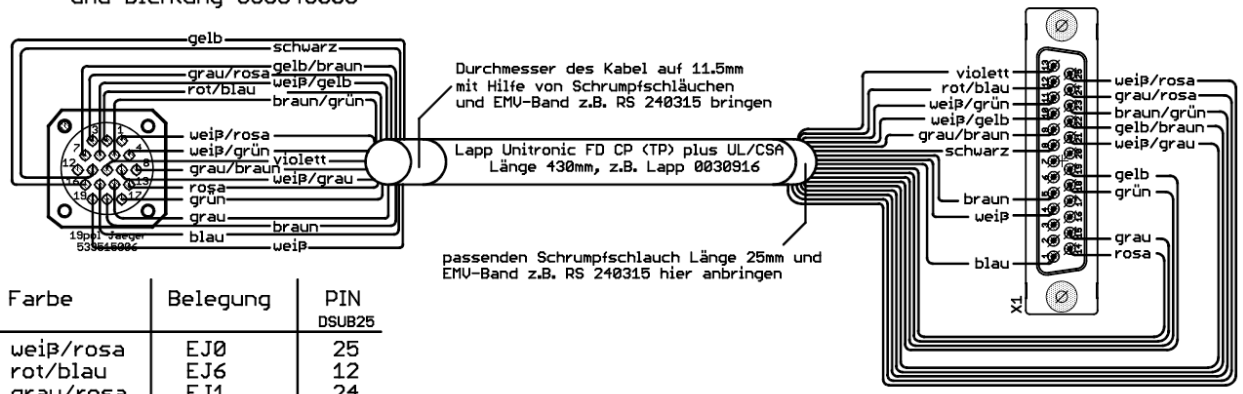
Zeichnungsnummer 18300023
Blatt 1
Blätter 1

Kabel C03 Module Link

DSUB25 Stecker z.B. FCT F25P01G1
mit 35° Gehäuse z.B.RS 493-2103
lange Schraube auf PIN13
Label auf Gehäuse

C03
MODULE LINK

19 polige Jaeger Buchse montiert am
Winkel mit Jaeger Gehäuse 533550006
und Schutzkappe 630720006
und Dichtung 536945006



PIN Jaeger	Farbe	Belegung	PIN DSUB25
1	weiß/rosa	EJ0	25
2	rot/blau	EJ6	12
3	grau/rosa	EJ1	24
4	weiß/grün	EJ7	11
5	braun/grün	EJ2	23
6	weiß/gelb	EJ8	10
7	gelb/braun	EJ3	22
8	grau/braun	EJ9	9
9	weiß/grau	EJ4	21
10	violett	0V	13
11	schwarz	0V	8
12	-frei-		
13	rosa	CAN L	14
14	grau	CAN H	15
15	blau	CAN GND	1
16	gelb	+AU	19
17	grün	-AU	18
18	braun	AC+	5
19	weiß	AC-	4

	Datum	Name
Gez	26.05.09	Grieg
Gep	02.06.09	Grieg

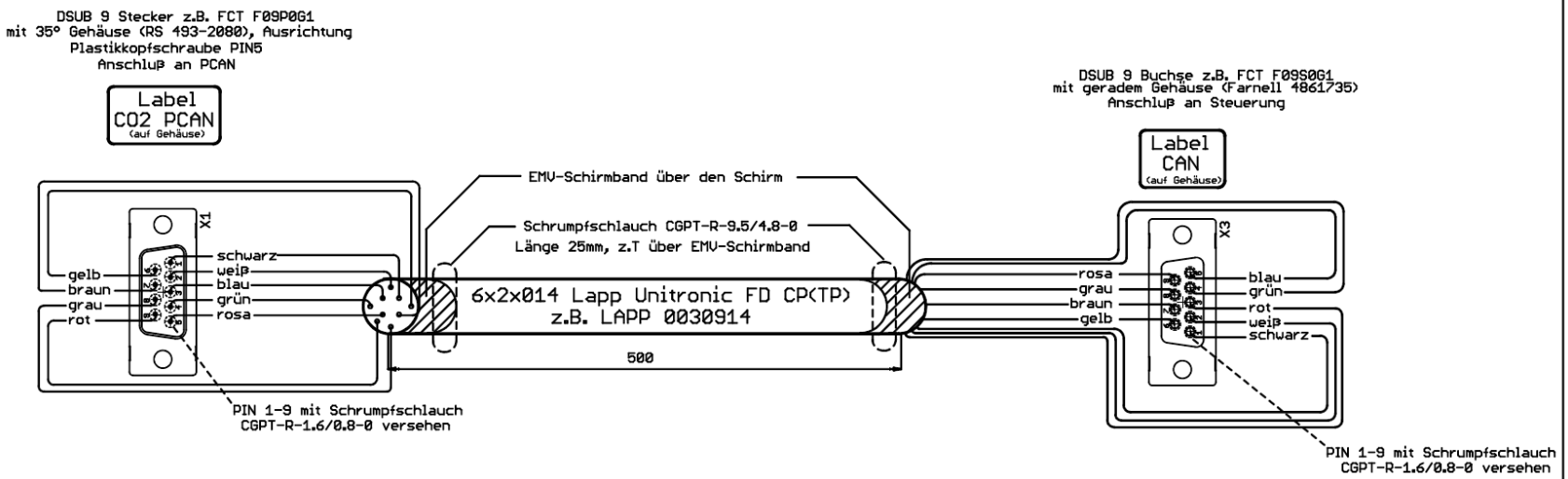
Bezeichnung
Kabel C03 Module Link

Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Zeichnungsnummer 18300024a
Blatt 1
Blätter 1

Änderungs-index	Änderungs-antragsnr.	Datum	Unterschrift	Geprüft
a	1	23.07.09	Grieg	

Kabel CO2 PCAN CAN



‼ Schirmung ‼

PIN	Farbe/Kabel	Belegung
1	schwarz	DMG/QS/EGY GND
2	weiß	CAN-L
3	blau	CAN GND
4	grün	EGY S FB
5	rosa	EGY S
6	gelb	QS
7	braun	CAN-H
8	grau	DMG
9	rot	CAN Power +

‼ Schirmung ‼

PIN	Farbe/Kabel	Belegung
1	schwarz	DMG/QS/EGY GND
2	weiß	CAN-L
3	rot	CAN Power +
4	grün	EGY S FB
5	blau	CAN GND
6	gelb	QS
7	braun	CAN-H
8	grau	DMG
9	rosa	EGY S

	Datum	Name
Gez	25.05.09	Grieg
Gep	02.06.09	Grieg

Änderungs-index | Änderungs-antragsnr. | Datum | Unterschrift | Geprüft

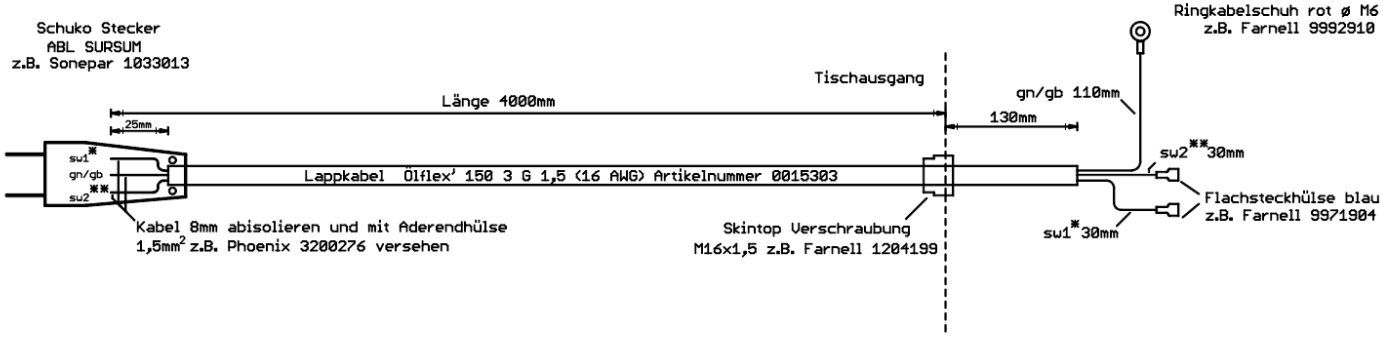
Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Bezeichnung
Kabel CO2 PCAN CAN

Zeichnungsnummer 18300025

Blatt 1
Blätter 1

I-O Switch Powerkabel



* sw1 bzw. sw mit braunem Schrumpfschlauch z.B. RS 4874243
** sw2 mit blauem Schrumpfschlauch z.B. RS 3415916

Änderungs-index	Änderungs-antragsnr.	Datum	Unterschrift	Geprüft
b	1	18.01.10	Grieg	Grieg
a	1	23.07.09	Grieg	Grieg

	Datum	Name
Gez	29.05.09	Grieg
Gep	02.06.09	Grieg

Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

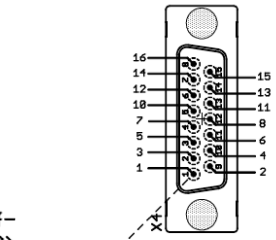
Bezeichnung
I-O Switch Powerkabel

Zeichnungsnummer
18300026b

Blatt 1
Blätter 1

Bedienfeld

DSUB 15 Stecker mit
Gewindebuchsen M3 99600517
(FCT FZS15P0G1) montiert am Blech



Lemo Buchse EGG2B316CLL
Sicht auf die Lötkelche

PIN 1-8,10-16 mit Schrumpf-
schlauch (CGPT-R-1.2/0.6-0)

PIN 1-15 mit Schrumpfschlauch
(CGPT-R-1.6/0.8-0)

alle Kabel AWG24 UL (z.B.Farnell 1177493)
Länge 75mm zwischen Lemo und DSUB 15

Lemo PIN	Belegung	DSUB15 PIN
1	0V	1
2	0V	9
3	EP13	2
4	EP14	10
5	EP15	3
6	EP16	11
7	EP17	4
8	EP18	12
9	-frei-	
10	SP0	5
11	SP1	13
12	SP2	6
13	SP3	14
14	SP4	7
15	24V	15
16	24V	8

Kollisionsauflösung Taster
99600485 Schurter
(Farnell 3072125)

anlöten und mit Schrumpfschlauch
(CGPT-R-2.4/1.2-0) versehen

Kabel 24AWG UL 80mm
(z.B.Farnell 1177493)

DSUB 9 Stecker mit Gewindebuchsen M3
99100212 (FCT FZS09P0G1) montiert am Blech

PIN 1-8 mit Schrumpfschlauch
(CGPT-R-1.6/0.8-0)

Kabel 24AWG UL 65mm
(z.B.Farnell 1177493)

Not-Aus Schalter
OMRON A165E-02
99600482

STOP

Kabel 24AWG UL 110mm
(z.B.Farnell 1177493)

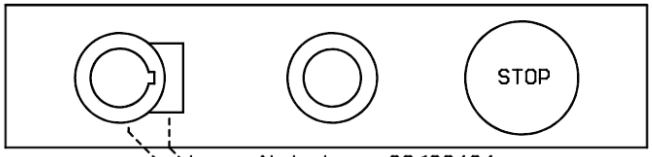
PIN	Belegung
1	Notstop In
2	Notstop
3	Kollisionsauflösung +
4	Kollisionsauflösung In
5	Lithoausschnitt R In
6	-frei-
7	Lithoausschnitt R+
8	Lithoausschnitt R+
9	-frei-

PIN 1,3+4 mit Schrumpf-
schlauch (CGPT-R-1.6/0.8-0)

PIN	Belegung
1	Lithoausschnitt R In
2	-frei-
3	Lithoausschnitt R+
4	Lithoausschnitt R+
5-9	-frei-

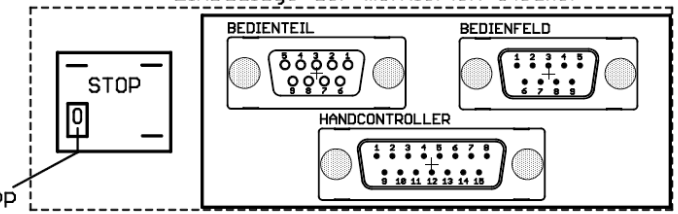
DSUB 9 Buchse mit Gewinde-
buchsen M3 99100214
(FCT FZS09S0G1) montiert am Blech

Einbaulage LEMO - Taster - NOTSTOP



Lemo-Abdeckung 99600484
Unterlegscheibe 18700152

Einbaulage der montierten Stecker



Anschluss vom Notstop
hochbiegen

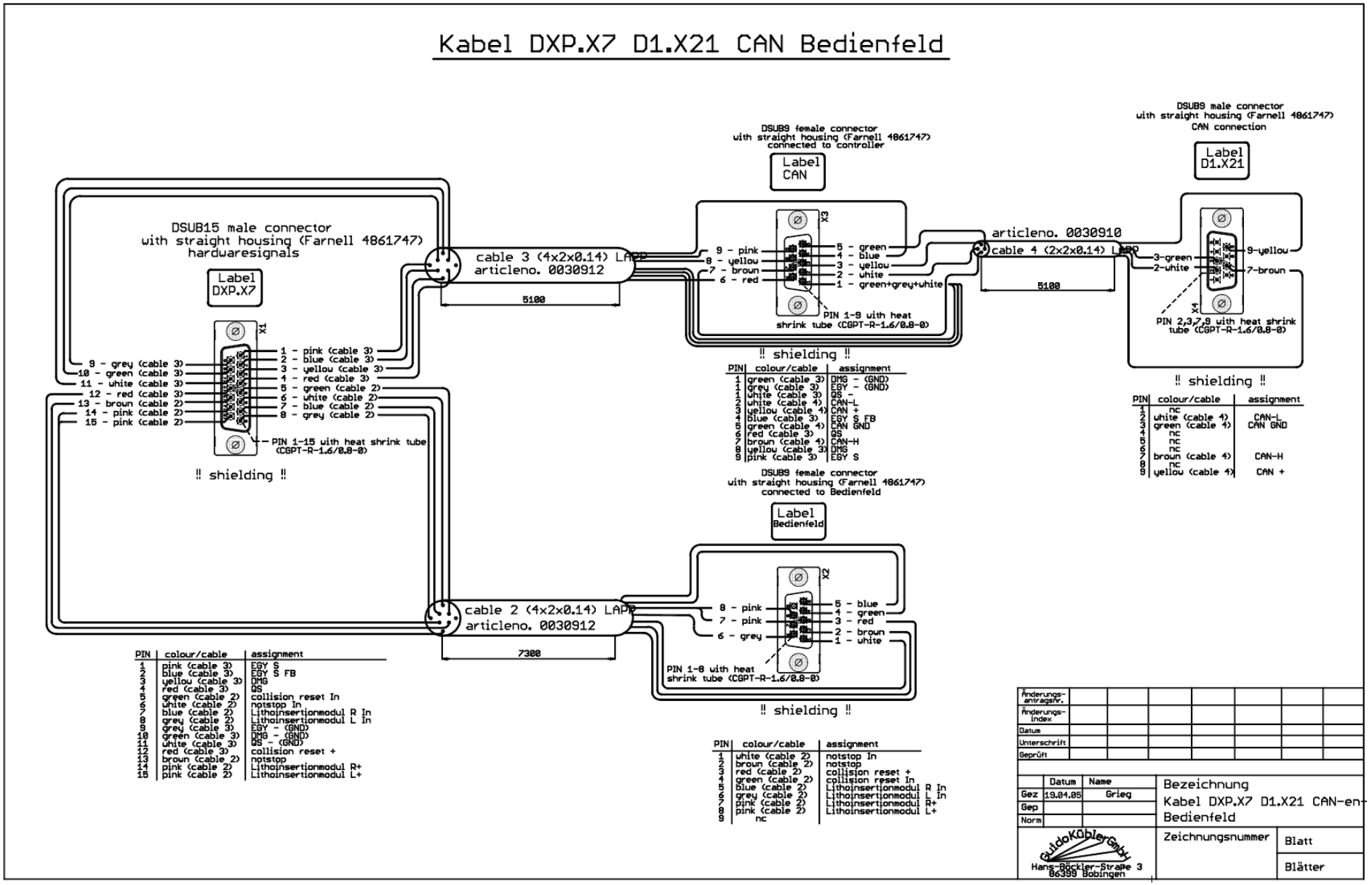
	Datum	Name
Gez	25.05.09	Grieg
Gep	25.05.09	Grieg

Guido Köbler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

Bezeichnung
Bedienfeld

Zeichnungsnummer
18300027

Blatt 1
Blätter 1


Kabel DXP.X7 D1.X21 CAN Bedienfeld
DSUB15 male connector
with straight housing (Farnell 4861747)
hardwaresignals
Label
DXP.X7
X1
9 - grey (cable 3)
10 - green (cable 3)
11 - white (cable 3)
12 - red (cable 3)
13 - brown (cable 2)
14 - pink (cable 2)
15 - pink (cable 2)
1 - pink (cable 3)
2 - blue (cable 3)
3 - yellow (cable 3)
4 - red (cable 3)
5 - green (cable 2)
6 - white (cable 2)
7 - blue (cable 2)
8 - grey (cable 2)
PIN 1-15 with heat shrink tube (CGPT-R-1.6/0.8-0)
‼ shielding ‼
cable 3 (4x2x0.14) LAPP
articleno. 0030912
5100
DSUB9 female connector
with straight housing (Farnell 4861747)
connected to controller
Label
CAN
X3
9 - pink
8 - yellow
7 - brown
6 - red
5 - green
4 - blue
3 - yellow
2 - white
1 - green+grey+white
PIN 1-9 with heat shrink tube (CGPT-R-1.6/0.8-0)
articleno. 0030910
cable 4 (2x2x0.14) LAPP
5100
DSUB9 male connector
with straight housing (Farnell 4861747)
CAN connection
Label
D1.X21
X4
3-green
2-white
9-yellow
7-brown
PIN 2,3,7,9 with heat shrink tube (CGPT-R-1.6/0.8-0)
‼ shielding ‼
PIN | colour/cable | assignment
1 | nc
2 | white (cable 4) | CAN-L
3 | green (cable 4) | CAN GND
4 | nc
5 | nc
6 | nc
7 | brown (cable 4) | CAN-H
8 | nc
9 | yellow (cable 4) | CAN +
‼ shielding ‼
PIN | colour/cable | assignment
1 | green (cable 3) | DMG - (GND)
1 | grey (cable 3) | EGY - (GND)
1 | white (cable 3) | QS -
2 | white (cable 4) | CAN-L
3 | yellow (cable 4) | CAN +
4 | blue (cable 3) | EGY S FB
5 | green (cable 4) | CAN GND
6 | red (cable 3) | QS
7 | brown (cable 4) | CAN-H
8 | yellow (cable 3) | DMG
9 | pink (cable 3) | EGY S
DSUB9 female connector
with straight housing (Farnell 4861747)
connected to Bedienfeld
Label
Bedienfeld
X2
8 - pink
7 - pink
6 - grey
5 - blue
4 - green
3 - red
2 - brown
1 - white
PIN 1-8 with heat shrink tube (CGPT-R-1.6/0.8-0)
cable 2 (4x2x0.14) LAPP
articleno. 0030912
7300
‼ shielding ‼
PIN | colour/cable | assignment
1 | white (cable 2) | notstop In
2 | brown (cable 2) | notstop
3 | red (cable 2) | collision reset +
4 | green (cable 2) | collision reset In
5 | blue (cable 2) | Lithoinsertionmodul R In
6 | grey (cable 2) | Lithoinsertionmodul L In
7 | pink (cable 2) | Lithoinsertionmodul R+
8 | pink (cable 2) | Lithoinsertionmodul L+
9 | nc
PIN | colour/cable | assignment
1 | pink (cable 3) | EGY S
2 | blue (cable 3) | EGY S FB
3 | yellow (cable 3) | DMG
4 | red (cable 3) | QS
5 | green (cable 2) | collision reset In
6 | white (cable 2) | notstop In
7 | blue (cable 2) | Lithoinsertionmodul R In
8 | grey (cable 2) | Lithoinsertionmodul L In
9 | grey (cable 3) | EGY - (GND)
10 | green (cable 3) | DMG - (GND)
11 | white (cable 3) | QS - (GND)
12 | red (cable 3) | collision reset +
13 | brown (cable 2) | notstop
14 | pink (cable 2) | Lithoinsertionmodul R+
15 | pink (cable 2) | Lithoinsertionmodul L+
Änderungs-antragsnr.
Änderungs-index
Datum
Unterschrift
Geprüft
Datum
Name
Gez
19.04.05
Grieg
Gep
Norm
Bezeichnung
Kabel DXP.X7 D1.X21 CAN-en+
Bedienfeld
Zeichnungsnummer
Blatt
Blätter
Guido Kübler GmbH
Hans-Böckler-Straße 3
86399 Bobingen

14 MANUAL UPDATE

Updates in the form of "Service bulletins" are sent to manual holders.

DATE	DESCRIPTION	PAGE OR SECTION ADDED	PAGES MODIFIED	REVISION
17/11/2015	Creation.	All	All	A
05/01/2018	Global update.	Section 6-15	All	B

15 COMMENT CARD

Please complete the form below, detach and send, fax or mail to

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QUESTIONS	YES	NO, BECAUSE
1 - Is the manual well organized?		
2 - Is the manual easy to use?		
3 - Is information easy to find?		
4 - Is there enough informations?		
5 - Is the style simple and clear?		
6 - Are there enough illustrations?		
7 - Are the illustrations clear?		
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Other comments		

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Person in charge of maintenance	
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Name	
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