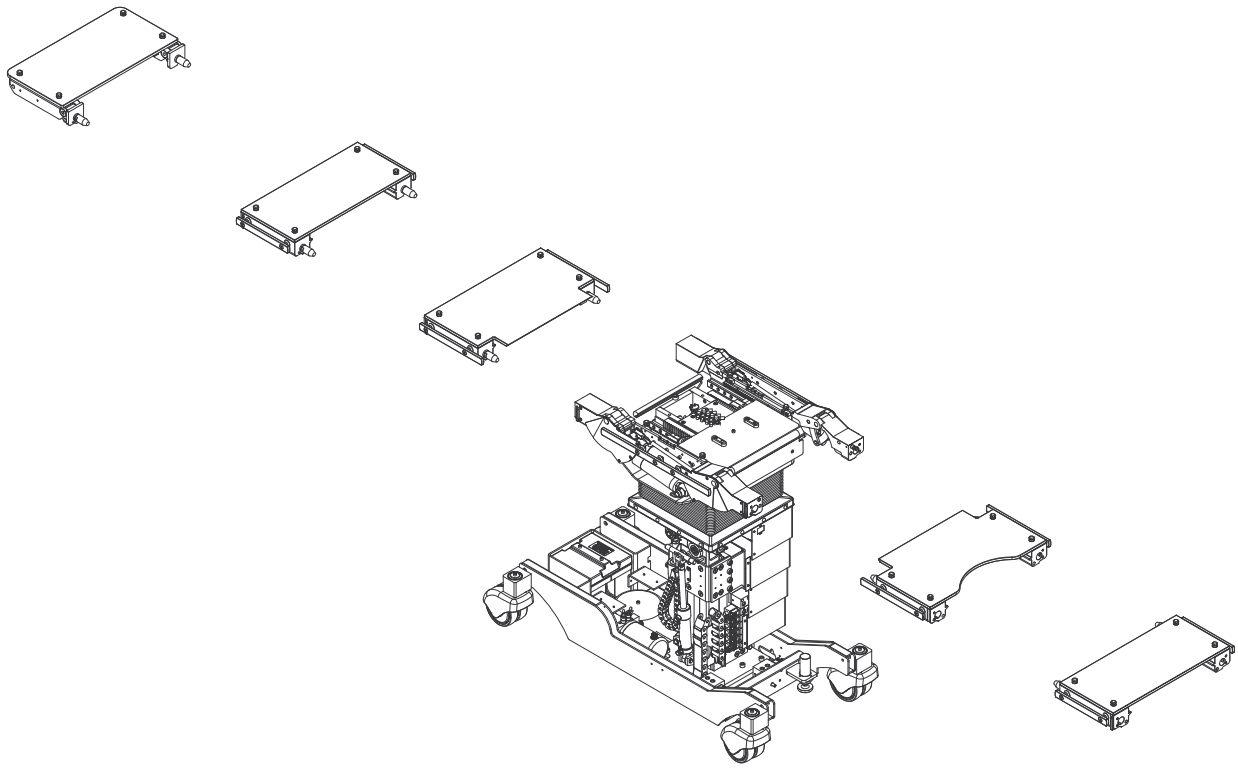
MAINTENANCE MANUAL

PromeriX operating table



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Compiled by: Harri Uusitalo

Approved by: Arto Koski-Laulaja _____ Date: ___ . ___ . _____

1. WARNINGS, NOTES AND INSTRUCTIONS



In order to ensure optimal surgical safety, all operating table users should carefully read the operating table and maintenance instructions before using the table. The entire surgical ward staff should be familiar with the correct use of the PROMERIX operating table as well as all warnings and observations concerning it.

Warnings and observations found in this instruction manual are indicated as follows:

WARNING! Please observe to ensure patient safety.

CAUTION! Please observe in order to avoid causing damage to the equipment or its parts.

NOTE! Please observe in order to improve operating table properties.

WARNINGS!

PromeriX operating table should only be used in facilities made for medical purposes.

IP X4 classification is valid only when the mains cord is disconnected.

Connect the mains cord only to earthed power supply.

PromeriX shall be operated from it's internal battery if the integrity of the protective earth conductor arrangement is in doubt.

Place the patient in the longitudinal center line of the table top.

In NORMAL mode max. patient weight with sliding seat section is 275 kg (600 lbs).
In NORMAL mode max. patient weight without sliding seat section is 325 kg (700 lbs).

In REVERSE mode max. patient weight is 180 kg (400 lbs).

Adjust the table top to the horizontal position (0-position) with the hand control unit before transporting a patient on the operating table.

Transporting of patients weighing up to 180 kg (400 lbs) is only allowed when table top is in horizontal position (0-position) and the height of the table is max 900 mm (3 ft).

WARNINGS, NOTES AND INSTRUCTIONS



Transporting of patients weighing 180-225 kg (400-500 lbs) is only allowed when the table is in NORMAL mode, in horizontal position (0-position) and in the lowest position.

Transporting of patients weighing 225-325 kg (500-700 lbs) is not allowed.

Use extreme caution when transporting the table with a patient on. Transporting of the table with a patient on requires two persons. To maximize patient safety utilize proper restraint methods during transport.

To avoid endangering the patient's respiratory system, nerve pathways and circulatory system, the patient should be positioned properly and kept under observation!

Check that table top sections catches lock correctly. Incorrect attachment of table sections is dangerous and can cause personal injury or equipment damage!

Use only accessories recommended by the table manufacturer.

When adjusting the operating table, take care to avoid collision between accessories and the operatingtable.

Do not use worn or damaged accessories. When using the table, ensure that all accessories are properly mounted and check the function of accessory locking and adjustments.

When adjusting the operating table, take care that the fingers, hands or other parts of the body of the patient are not placed between edges of back, leg or seat section frames and pivoting points.

Use only permitted table top configurations illustrated in this manual.

Ensure before adjusting the operating table that table top will not hit external obstacles.

Ensure before adjusting the operating table that NORMAL/REVERSE mode has been chosen correctly and is the same as patient's orientation on the table top. After use of main switch NORMAL mode is set as default.

Always follow manufacturer instructions when using diathermy or defibrillation equipment.

When using high frequency surgical equipment take care to prevent the patient coming into contact with metal parts of the operating table or accessories. Do not place the patient on wet or damp surfaces or electrically conductive pads. Hazard of burn injuries!

Combustible anaesthetic gases must not be used with the Promerix operating table.

WARNINGS, NOTES AND INSTRUCTIONS



Use potential equalization conductor with patient monitoring equipment. Connector placed at the table base.

When recharging the battery first plug the mains cord to table appliance inlet, after that to wall socket.

Main switch can be used as an emergency stopping device (demanded by the standards). Normally the switch lever is in up position. When the lever is turned down in OFF position all table functions are cancelled. Table movement stops immediately.

When recharging is completed disconnect the mains cord first from the wall socket, after that from the table appliance inlet.

Disconnect the mains cord from the table and turn the main switch to OFF position before cleaning of the table.

Disconnect the mains cord from the table before any service procedures. 100-240 V ~ used in power unit placed in table base. Hazard of electric shock!

Promerix operating table has been tested to EN 60601-1-2 to ensure proper electromagnetic compatibility. Other products used in the vicinity of Promerix operating table should also comply with this standard. If they do not comply, interference between products in unintended responses may occur. Please contact the appropriate manufacturer if any problems arise.

Portable and mobile RF-communications equipment can affect Promerix operating table.

WARNINGS, NOTES AND INSTRUCTIONS



CAUTIONS!

! If the operating table has been in the cold, allow it to warm up at room temperature for at least 6 hours before recharging the battery or switching on, to allow any condensation formed to evaporate.

! Recharge the battery prior to use. See the starting instructions attached to table base panel.

! OVERRIDE panel is only for returning the table top to the horizontal position in the case of electronic malfunction. Override makes it possible to adjust table without the controlling processor and any of the programmed restrictions are not functioning.

! Downwards adjusted leg or back section may hit the table base or column casings depending on the used height or tilt angle adjustments. Can cause damage to the operating table and creating pinching hazard!

! Do not place any objects on the base of the operating table! Danger of damage during adjustments!

! The best place to store the hand control unit especially during transport is the lever under the head section.

! Head and devided leg section 60475 gas springs can be disposed of as metal waste after nitrogen gas and oil has been removed. Instructions for gas releasing available from your sales representative.

! Operating table has been classified as splash proof equipment. Use of pressurized water is not allowed. Cleaning and disinfecting should be made according to this manual.

! Do not pull or push the shields of back and leg section joints. Check during adjustment that there is no foreign obstacles between shields.

! It is possible to adjust the SLIDE adjustment only when back or leg section are in horizontal or above horizontal position. Slide adjustment will stop automatically before collision if back or leg section in under the horizontal position.

! SLIDE adjustment is only possible when table top is in horizontal position. Use of SLIDE adjustment is restricted with tilted table top.

! Mattresses should be cleaned only with neutral detergent (ph 7-8).

! The antistatic properties of the operating table require the use of original brand mattresses and antistatic flooring.

WARNINGS, NOTES AND INSTRUCTIONS



NOTES!

- It’s recommended to recharge the battery overnight after day’s use. Table will be always ready for use and the battery will have longer service life.
- If the main switch is turned to OFF position (downwards), all table functions are blocked including recharging of the battery. Check that the green led above the charging inlet lights up when you connect the mains cord to the table.
- When mains cord is connected to operating table the cooling fan of the power unit is activated causing a humming sound. After disconnecting the mains cord the cooling fan still runs for few seconds.
- Turn the main switch to OFF position (downwards) when the table is not in use or stored for longer period of time. This eliminates the possibility of unintended use and is also saving the battery capacity.
- Activate the floor lock before adjusting the table. Only trendelenburg and back rest adjustments are functioning if floor lock is not activated.
- Cardboard packing material should be recycled. Wood and plastics are energy waste.
- Batteries contain lead and if replaced, need to be recycled in accordance with local environmental regulations.
- Velcro tapes on table top plates can be cleaned with pressurized air. Velcro tape can also be replaced; spare parts and instructions available from Merivaara service dpt.
- Floor lock can be deactivated with a release knob placed at the table base if normal deactivating with hand control unit or override panel can’t be done. Turn the knob 90° clockwise and the table will descend on to its castors. Turn the knob back to its original position after releasing.

2. GENERAL

Merivaara Corporation conforms to all its operations ISO 9001 Quality Management and ISO 14001 Environmental Management System Standards. In addition the Promerix operating table meets the following standards: EN 60601-2-46, EN 60601-1-2 (EMC) and EN 60601-1. The table complies with directive 93/42/EEC (MDD) product class I, and bears a CE marking based on this classification.

2.1 Intended use

Promerix Operating Table is intended for general surgical use. It is also well suited for:

- Day surgery
- ENT surgery
- Plastic surgery
- Orthopedics
- Arthroscopy
- Gynecology
- Urology
- Pediatrics
- Neurosurgery

Expertise is essential

The patient is the most important part of treatment. This is precisely why the equipment used in treatment must be absolutely safe and convenient to use. As a health care professional, you deserve the very best tools, allowing you to concentrate on your own field of expertise. Merivaara is an expert in providing hospital equipment.



Merivaara products have been designed to function efficiently and flexibly during the various stages of treatment. They assist you in the performance of your work, without distracting you from the task at hand. Our modular equipment system includes state-of-the-art equipment for hospital procedures and hospital room environments as well as for nursing homes and home care applications.

For more information on Merivaara products, contact our Sales Office. For matters related to equipment servicing, contact the Merivaara Service Department.

2.2 Operating characteristics

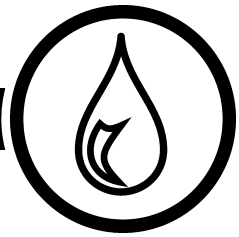
Promerix is transportable electrohydraulic battery and mains operated operating table. It is microprocessor controlled and it‘s function parameters are reprogrammable with special PC-operated service program. Table can be connected to 100….240 VAC mains power and its secondary voltage is 24 VDC. The table electronics are safely earthed and it has equipotential connection.

Table top consists of fixed or sliding seat section and detachable 25 and 40-sections. You can rearrange the sections as you wish depending on the surgical concept and operation. Look page 14. The width of the table top is 540 mm, (21 1/4 inch) without rails and length 2100 mm (82 inch). Table top plates are x-ray translucent material.

Promerix can be adjusted with cable connected hand control unit, IR-hand control unit or foot switch. Operating table can also be adjusted with override panel in case of electronical malfunction (hand control unit or table microprocessor defective).

Safe and fault-free use and maintenance of the equipment requires careful acquainting to these instructions. When mounting accessories to the equipment, the instructions provided with them must be followed closely. Always keep the instructions for accessories together with this manual.

3. CLEANING



3.1 Cleaning instructions

⚠ Disconnect the mains cord from the table and turn the main switch to OFF position before cleaning of the table.

! Operating table has been classified as a splash proof equipment. Use of pressurized water is not allowed. Cleaning and disinfecting should be made according to this manual.

! Do not pull or push the shields of back- and leg section joints. Check during adjustment that there is no foreign obstacles between the shields.

! Surface of the Promerix mattresses is electrically conductive. Cleaning of the mattresses should be done with neutral detergent(pH 7-8) and warm water applied with a single use wipe.

3.2 Cleaning

- Remove accessories and mattresses.
- Clean by wiping down with a mild alkaline detergent (pH 7-8).

3.3 Disinfection

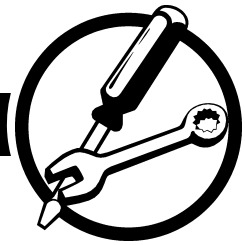
- Remove accessories and mattresses.
- Disinfect only when necessary.
- Wipe down the equipment with the surface disinfectant used at the facility in accordance with manufacturer instructions, unless the surface disinfectant contains phenols and alcohol, which can corrode plastic parts and mattresses.

! **NOTE!** Dry the operating table carefully immediately after cleaning or disinfecting.

3.4 Mattresses and pads

! Read the care instructions for mattresses and pads.

4. MAINTENANCE INSTRUCTIONS



4.1 Safety during maintenance procedures

Maintenance allowed only to persons specialized to Promerix service work.

Disconnect the mains cord from the table before any service procedures. 100-240 V ~ is used power unit placed in table base. Hazard of electric shock!

Turn the main switch to OFF position before connecting or disconnecting any of electronic connections or components in order to protect them against voltage surges.

Static charges can cause sparks harming sensitive electronic components. Ground yourself to metallic parts of table before touching electronic components.

Disconnecting any of the hydraulic hoses can cause uncontrolled and dangerous movement of the table. Support the table parts before disconnecting any hydraulic hoses!

- When mains cord is connected to operating table the cooling fan of the power unit is activated causing a humming sound. After disconnecting the mains cord the cooling fan still runs for few seconds.

4.1.1 Daily service

- During normal cleaning, check-up general condition of the operating table. Contact service personnel if needed.
- We recommend that you charge the table battery every day. This is to ensure sufficient battery charge level and long service life.
- Check the mains cord condition.
- Promerix operating table must be cleaned carefully after each surgical procedure!

4.1.2 Monthly service

- Clean and lubricate guide pins, latches, spring-loaded pins and pivoting points with light machine oil or spray vaceline.
- Check that castors roll smoothly and floor lock is functioning correctly.
- Test table functions by adjusting them to their extreme positions.

- Check hand control unit and foot switch cables, connector and plug.

4.1.3 Annual service

- Perform all daily and monthly service actions.
- Check the functioning of table section's latches.
- Check all cables and connectors, regarding injuries (kinks, cracks, wear)
- Visual check at the hydraulic hose connections and piston rods, regarding external leakage.
- Check of the oil level in the reservoir of the oil pump, if the level is too low fill up with filtrated mineral oil (ARAL VITAM DE32).
- Oil change: every 5 years



All electrical repairs must be performed by a licensed electrician.

4.2 Troubleshooting and checklist

POSSIBLE SITUATIONS:

PROBLEM:	**Table will not activate when pressing ON/OFF-button**	PROCEDURE:
CAUSE:	-Main Switch in OFF position	Turn to ON position
	-Hand Control Unit not connected properly	Check the connection
	-Faulty Hand Control Unit	Replace the hand control unit
	-Broken Hand Control Unit cable	Replace the cable
	-Empty batteries	Connect mains cable and recharge batteries
	-Battery fuse blown	Check and replace
	-Faulty MPC	Replace MPC

PROBLEM:	**Table adjustment not functioning when pressing function button, table activated**	PROCEDURE:
CAUSE:	-Floor lock not activated	Press activation button
	-Making adjustment table program restricts	Check the table positioning
	-Adjustment already in its end position	Check the table positioning
	-Faulty hand control unit or IR-control unit not programmed correctly.	Check the control unit

PROBLEM:	**Table movement won't stop although function button is released**	PROCEDURE:
CAUSE:	-Severe functioning failure of electronics. Malfunctions are always recorded in the Error Log.	MAIN SWITCH to OFF position! Use service program manual to resolve error code.
	-Faulty hand control unit	MAIN SWITCH to OFF position! Contact service
	-Valve is mechanically stuck or stays open constantly	Contact service, new valveblock or solenoid is needed
	-Short circuit in the transistor controlling the solenoid	Contact service
	-Damaged solenoid or sensor wires	Contact service

PROBLEM:	**Back section moves when leg section button is pressed or vice versa**	PROCEDURE:
CAUSE:	-Normal/Reverse – mode wrongly selected	Check the selected mode

PROBLEM:	**Audial signal when using IR-hand control unit**	PROCEDURE:
CAUSE:	- Indicates that the operating table floor lock is not activated!	Press the floor lock button steadily!
	- Cause no marking into the Error Log	Reset by pressing the ON/OFF button.

PROBLEM:	**Table not responding to IR-hand control unit commands**	PROCEDURE:
CAUSE:	-Control unit wrongly aimed	Aim towards the table
	-Distance between table and control	Check the distance
	-IR-receiver blocked	Check
	-IR-control unit battery depleted	Replace batteries
	-IR-control unit wrongly coded	Set codes again
⚠	-Emergency situations use override panel buttons!	

PROBLEM:	**Table motion stops during adjustment**	PROCEDURE:
CAUSE:	- A simultaneous commands will stop the table movement	Release another of the pressed buttons
	- Can cause if foot control and hand control units are pressed at the same time.	Use one control unit at the time

PROBLEM:	**One piece leg section can not be adjusted**	PROCEDURE:
CAUSE:	-One piece leg sections not attached to seat section correctly	Check the latches
	-Faulty inductive sensor	Contact service

PROBLEM:	**Hydraulic unit starts but no movement occurs**	PROCEDURE:
CAUSE:	-Valve block solenoid defective or loose	Contact service
	-Table adjustment in its end position	Check the table positioning

PROBLEM:	**The table changes position by itself**	PROCEDURE:
	- Control unit buttons are accidentally pressed or pinched	Check the control unit

CONTACT:

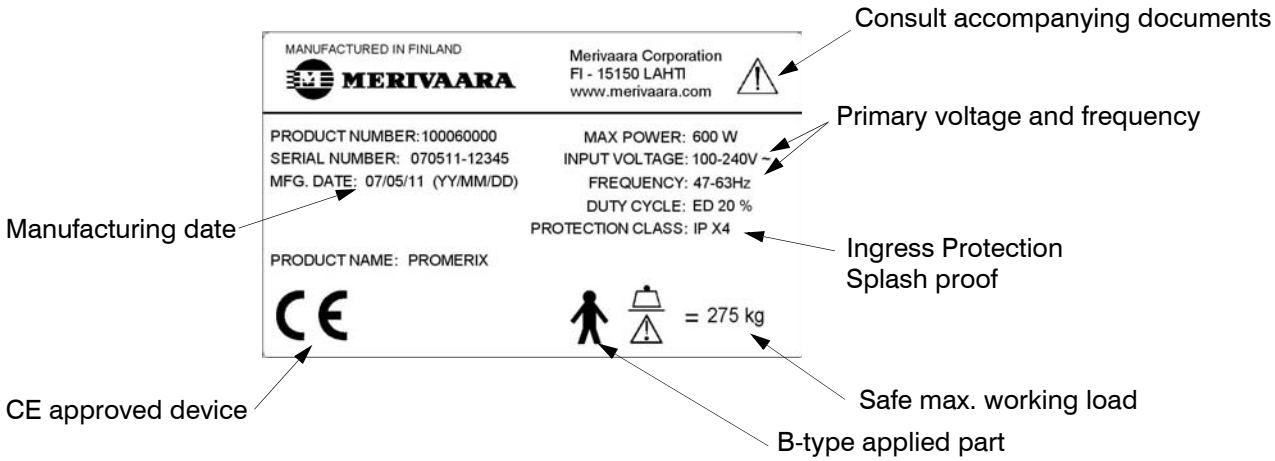
Further information of PromeriX service, product support and spare parts are available from your local dealer or from Merivaara Corp.

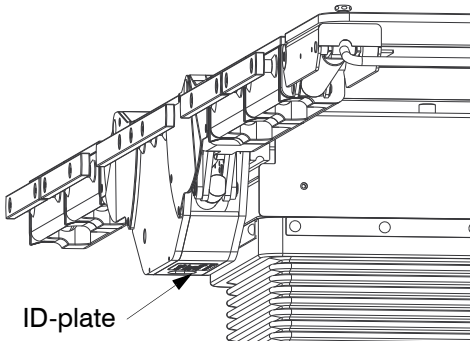
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E-mail	merivaara@merivaara.fi
Internet	www.merivaara.com

5. TECHNICAL DATA

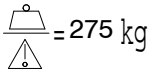
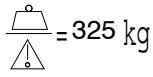
5.1 Identification plate

Identification plate is located in the joint, under of the seat section.





5.1.1 Illustrated designations and symbols

	Equipotentiality
	Protective grounding
~	Alternating current
	B-type applied part
	Attention, consult accompanying documents
 = 275 kg	Maximum load with slide (including patient, mattresses and accessories)
 = 325 kg	Maximum load without slide (including patient, mattresses and accessories)

5.2 Properties and materials

5.2.1 Surface materials

Surface materials used in Promerix table with possibility to skin contact:

Epoxy coated steel	Frame constructions
Zinc plated steel	Frame constructions
Stainless steel	Accessory rails, casings, frame constructions
Aluminium bronze	Pivots
High pressure laminate	Table top plates
PUR	Mattresses
Anodized aluminium	Table top section sides
Polycarbonate (PC)	Hand control unit B-cover and battery cover
Silicon	Hand control unit A-cover
EPDM-rubber	Bellows
ABS+PMMA	Base and castor covers
PC/ABS-composite	Override panel
ABS	IR-receivers

5.3 Specifications

5.3.1 Environmental specifications

Promerix is designed to be used in following environmental conditions:

Ambient temperature	+10 ... +40 °C
Ambient pressure	700 ... 1060 mbar
Relative humidity	30 % ... 75 %
Transport temperature	- 10 ... +40 °C
Storage temperature	+10 ... +40 °C

5.3.2 Electrical specifications

Primary voltage	100 - 240 V~
Frequency	47 - 63 Hz
Secondary voltage	Nom. 24V DC
Maintenance free sealed lead acid battery	24V / 18 Ah
Max. power consumption	600 W
Main fuses	F10A (5x20 2 pcs)
Normal recharging time	5 - 10 h (depending on battery charge level)
Operation time with full battery	approx. 180 min.
Max. uninterrupted operating time	2 min / 10 min (ED 20 %)

! If you would like more detailed information, please contact the Merivaara service department.

5.3.3 Classification data

Promerix is classified according to EN 60601-1 as follows:

Electric shock protection	Class I equipment, internally powered
Degree of electric protection	B-type
Protection against liquids	IP X4 / Splash proof equipment
Cleaning and disinfecting	According to instructions, on page 13
Operating Rate	Intermittent operation / ED 20%
Protection against flammable anaesthetic gases	Do not use with combustible gases
Safe working load	325 / 275 / 225 / 180 kg incl. patient, mattresses and accessories.

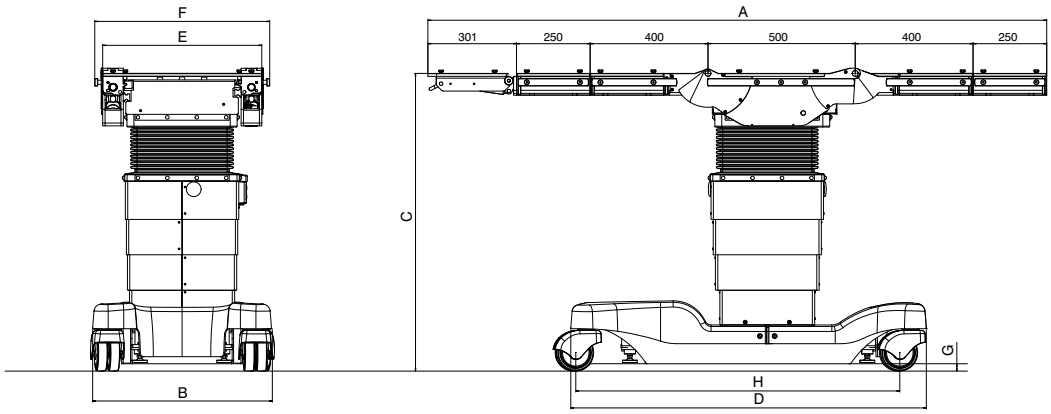
5.3.4 Adjustment ranges

	WITH SLIDE	WITHOUT SLIDE	
Height	650 - 1110 mm	610 - 1070 mm	(0 / +10 mm ...+/ -5 mm)
Longitudinal shift	410 mm	-	(0 / -10 mm)
Lateral tilt	± 25°	+ 20°	(±2,5 °)
Back section	- 45° ... +80°	- 45° ... +80°	(+4° / -1°...+1° / -4°)
Leg section	- 105° ... +70°	- 95° ... +70°	(+4° / -1°...+1° / -4°)
Trendelenburg and antitrendelenburg	± 35	± 35	(±2,5 °)
Headrest (Std.)	- 45° ... +45°	- 45° ... +45°	(0 / +5 °...0 / -5 °)

5.3.5 Weights and dimensions

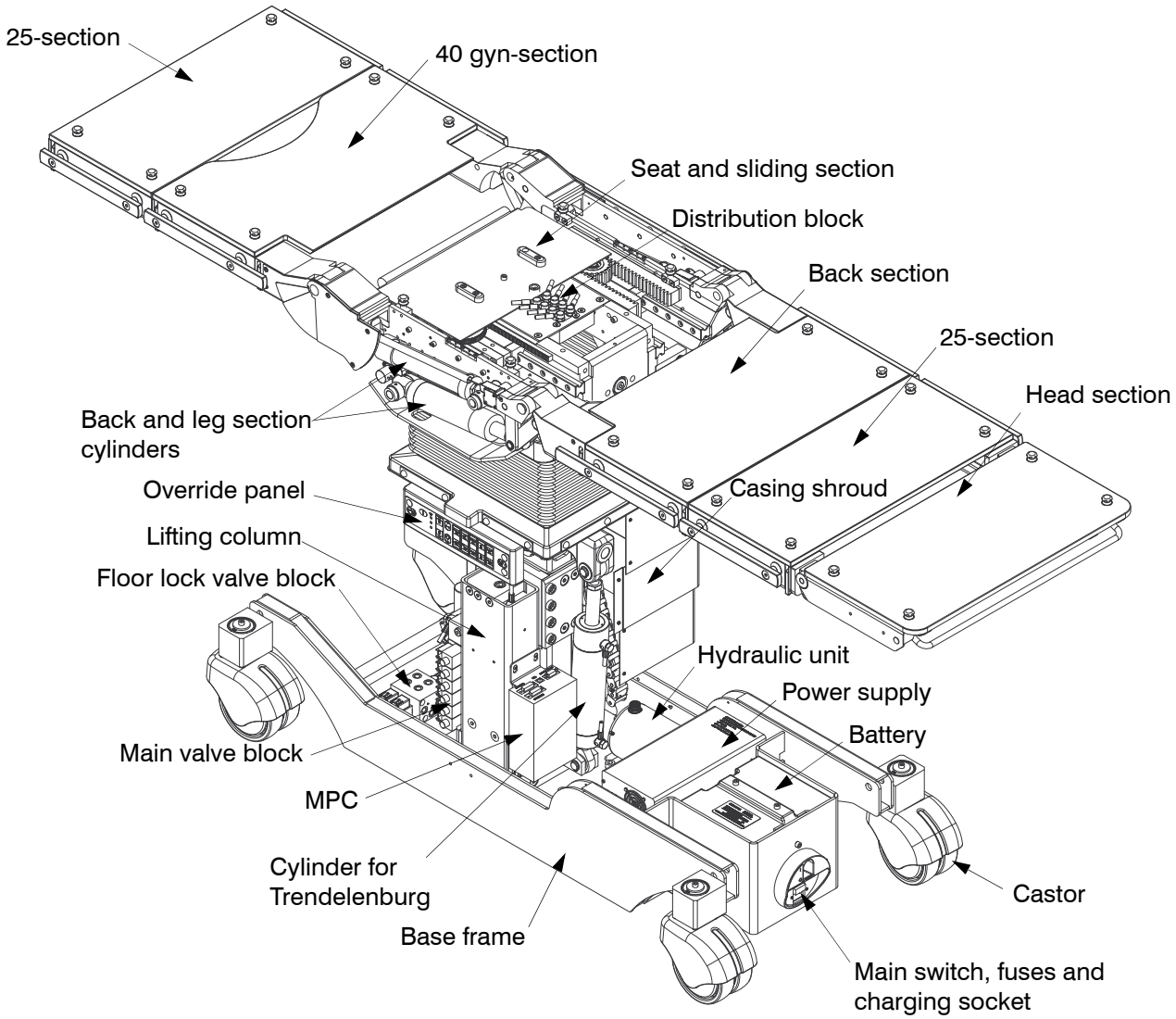
	WITH SLIDING FUNCTION	WITHOUT SLIDING FUNCTION
Table top	6-sections	6-sections
Weight of table	325 kg	300 kg
Length (A)	2100 mm	2100 mm
Width (B)	610 mm	610 mm
Height (C)	650 - 1110 mm	610 - 1070 mm
Lenght of the base (D)	1200 mm	1200 mm
Table top width without rails (E)	540 mm	540 mm
Table top width with rails (F)	594 mm	594 mm
Floor clearance (G)	25 mm (0 / + 3 mm)	25 mm (0 / + 3 mm)
Castors Ø	125 mm	125 mm
Longitudinal Shift	410 mm	-
Castors distance (H)	1100 mm	1100 mm

Dimensional drawing

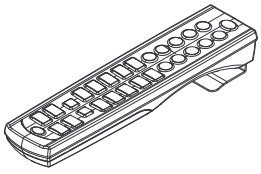


6. MAIN COMPONENTS

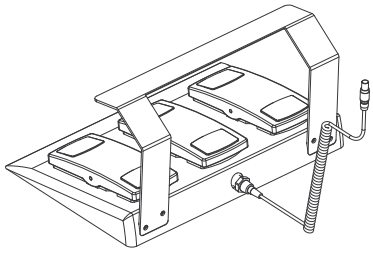
6.1 Structure



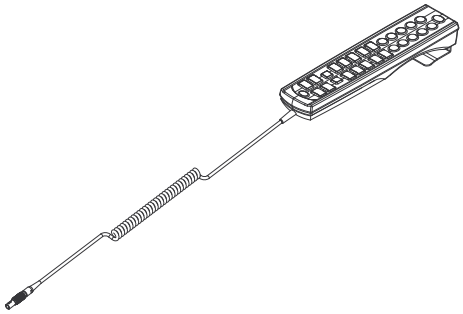
CONTROL DEVICES:



IR-remote control



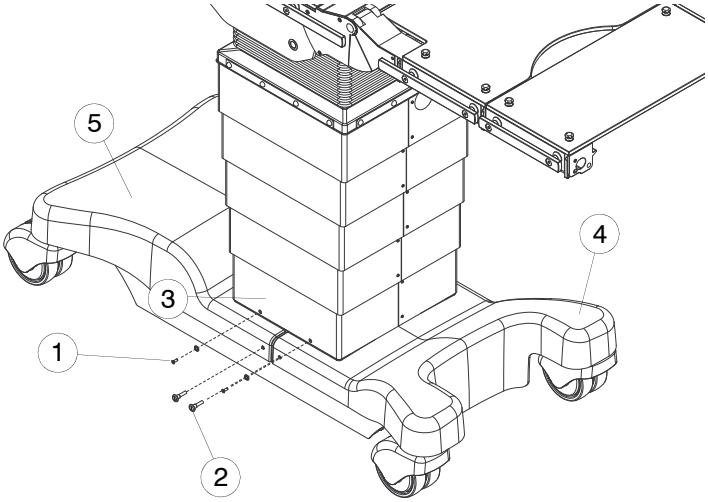
Foot control



Hand control unit

6.2 Removal of casings

6.2.1 Table base casings

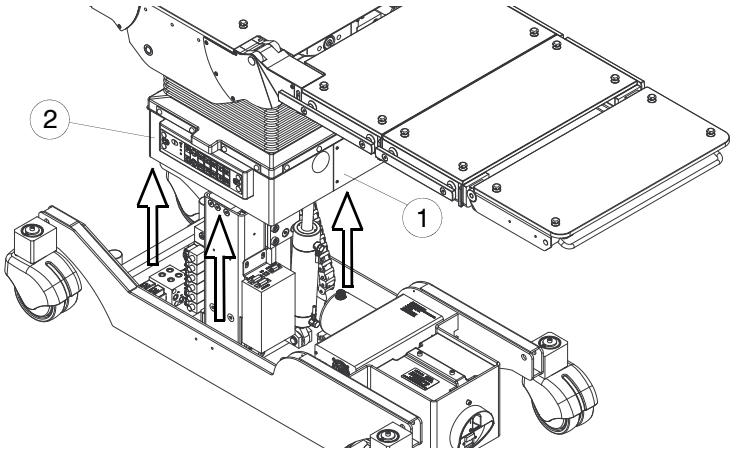


Disconnect the mains cord from the table and turn the main switch to OFF position before removing any casings!

- Remove screws from the lowest protective casing shroud (1) 4 pcs.
- Remove plastic head screws from both sides of the base casings (2) 4 pcs.
- Lift the lowest casing shroud (3) slightly up and pull the Rear base casing cover (4), Front casing cover (5) away from the end of the table.

- Assemble the casing in reverse order.

6.2.2 Column casing shrouds lifted up



- Check that the table is its highest position, for better access.

- Lift the casings (2) up, within each other and hang under the seat section of the table top or support with suitable braces.

! You don‘t have to remove casings completely in all situations.

Assemble the casing in reverse order.

6.2.3 Removing the column casings

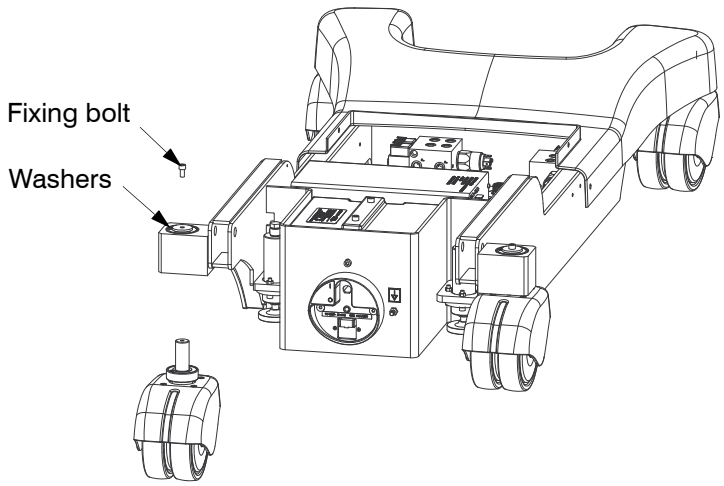
! If you need to remove column casings completely, e.g. changing sensors, disassemble shrouds one by one.

- Starting on lowest casing shroud.
- Look at the section 6.2.1. Remove screws (1) 4 pcs which are fixing the lowest column casing shroud to the base.
- Remove the shroud piece fixing screws 4 pcs with 2 mm Allen wrench. You may need to push shroud pieces slightly inwards because of shroud sliding brackets.

6.2.4 Replacing castors

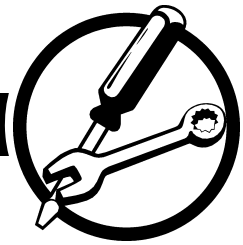
! Before you get access to remove castors you have to use ramp or lift up the operating table from the ground. One bearing is installed top of the frame and another in the base of the castors shaft.

Castors are fixed with M6 bolts. Removing with 5 mm Allen wrench.



- 1 pcs fixing bolt
- 1 pcs washer
- 1 pcs plastic washer
- 2 ball bearings, lubricated for life

7. ELECTRONICS



7.1 Special user attention

To assure the highest degree of operating safety all the users of the operating table should carefully familiarize themselves with the instructions for use and maintenance manual before use of this table. Aquainting your operating personnel to only proper use of the Promerix operating table and also to the warnings, cautions and notes relating to it.

7.1.1 Warnings

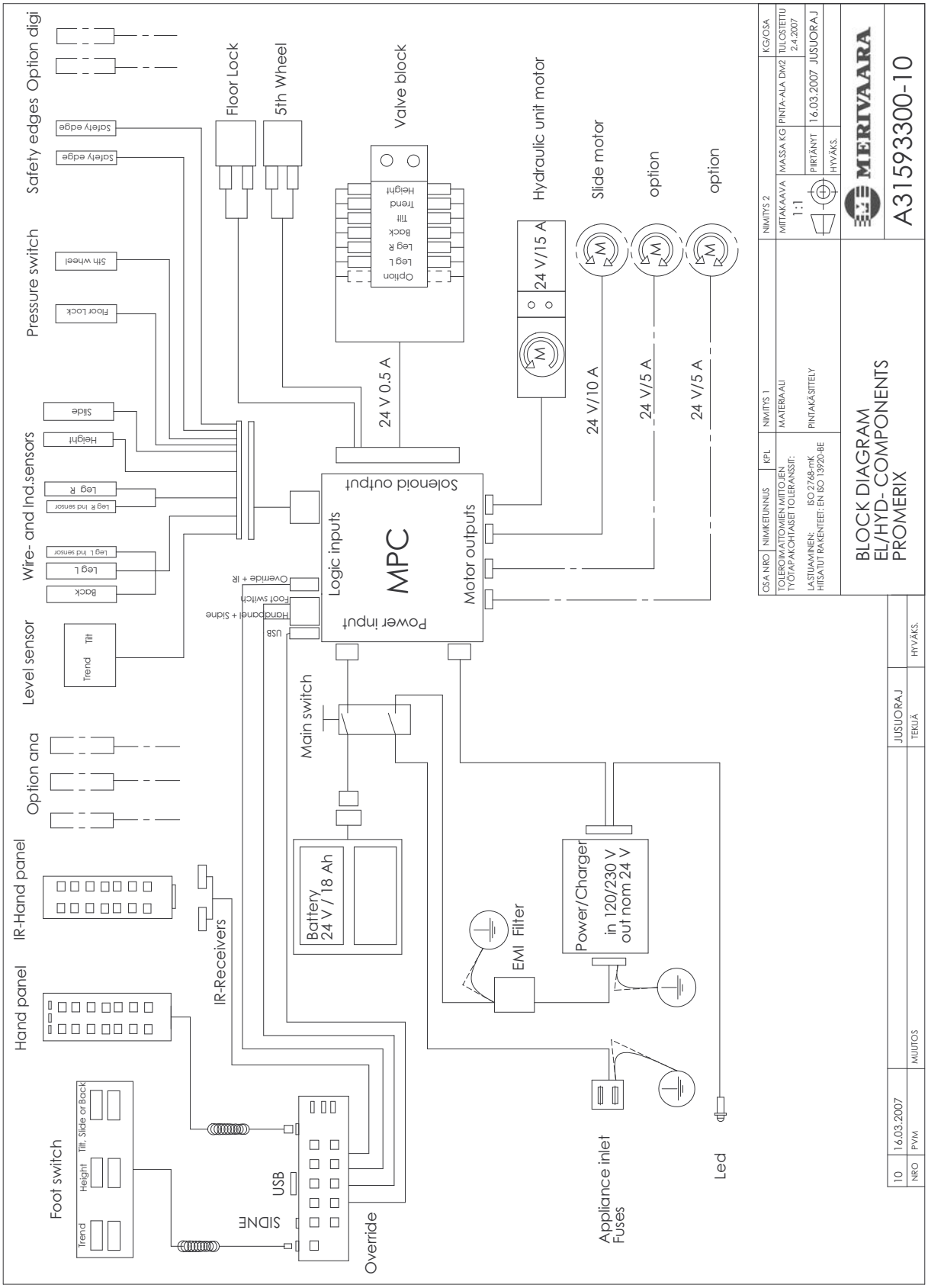
⚠ When adjusting the table take care that the fingers, hands and other parts of the body of the patient are not placed between edges of back / foot or seat section frames and pivoting points.

⚠ Disconnect the mains cord from the table and turn the main switch to OFF position before touching or removing any electronic components!

⚠ Ensure to full, appropriate functioning after repairing, connections must be performed with using approved components.

⚠ Installation must be done according to local regulations and standards. If any doubt, consult a licensed technician.

7.1.2 Block diagram

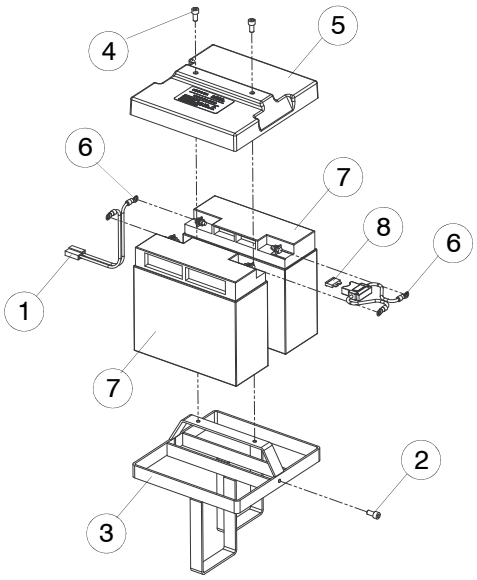


7.2 Battery

Two 12 V batteries connected in series.

Nominal Voltage	2 x 12 V
Nominal Capacity	18 Ah
Dimensions (LxWxH, mm)	181 x 76 x 167
Approximate weight	6.2 Kg
Internal Resistance (Fully charged battery)	10.5 mΩ
Maximum charging current	4.5 A
Terminals	Bolt and Nut M5
Torques	4.5 Nm
Storage temperature	-20°C to 40°C
Operative temperature range	Charge_____0° C to 40°C
	Discharge_____-20°C to 50°C
Case material	Acrylonitrile-Butadiene-Styrene

7.2.1 Replacing the battery



- Turn the operating table main switch to OFF-position.
- Remove the front casings of the table base, check section 6.2.1 at the page 23 .
- Unplug the electric conductor (1)
- Remove the screw (2) holding the battery frame (outside of the base) look at the page view A. look at the page 29 view A. Remove the screws (4) and cover (5)
- Disconnect the wire sets (6)

CODES:

- Bettery assembly	A31596800
- Battery	7133593 (7)
- Fuse	71342542 (8)

7.2.2 Battery charge

- Voltage measurement
- Current limitation and measurement
- Constant voltage charging 27,8 V ⎓

LED indication for battery and charge state

- Green LED = Battery OK
- Yellow LED = Lowered battery capacity
- Flashing yellow LED = Not fully charged
- Flashing green LED = Fully charged battery (charge current is less than 150 mA which means
- > 80 % of total capacity, still charging).
- Red LED = Battery empty, connect to powerline

Charging continues all the time when power is connect to line.

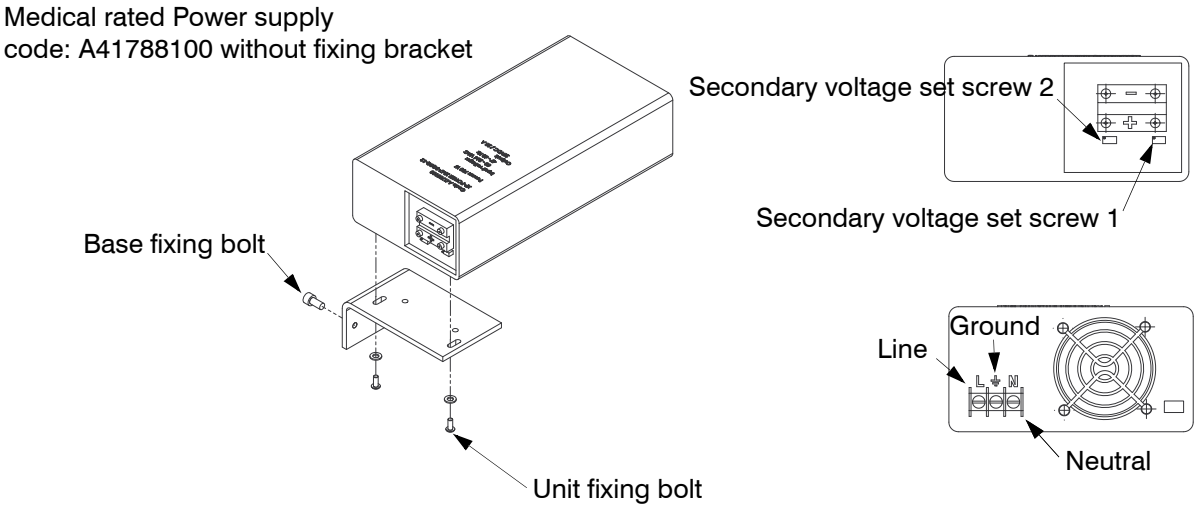
Indication level parameters can be changed with PC Service Program.

7.2.3 Storage of batteries

Batteries should be storaged in a dry, clean condition and charged before storing. At a storage temperature of 20° C, batteries should be re-charged after 8 months. At higher temperature, re-charging should take place more frequently. Discharged batteries should be re-charged within one week.

WARNING ! Do not open the vents. Replace always both batteries together. Use only the batteries delivered or recommended by the manufacturer. Notice local disposal regulations.

7.3 Power supply unit



7.3.1 Specifications

100 - 240 V ~	Input voltage, alternating current
47 - 63 Hz	Frequency
27,8 ⎓	Output voltage, direct current
115 °C	Overtemperature protection, measured internally
600W	Output power
	Output overvoltage protection 110-140 % V nominal



CE\UL\CSA approved device.

7.3.2 Replacing power supply



All electrical repairs must be performed by a licensed electrician.



Disconnect the mains cord from the table before any procedures.



Cases when you have to replace power supply unit, read well all the warnings, specifications and notations.



Work only when the table is de-energized state.

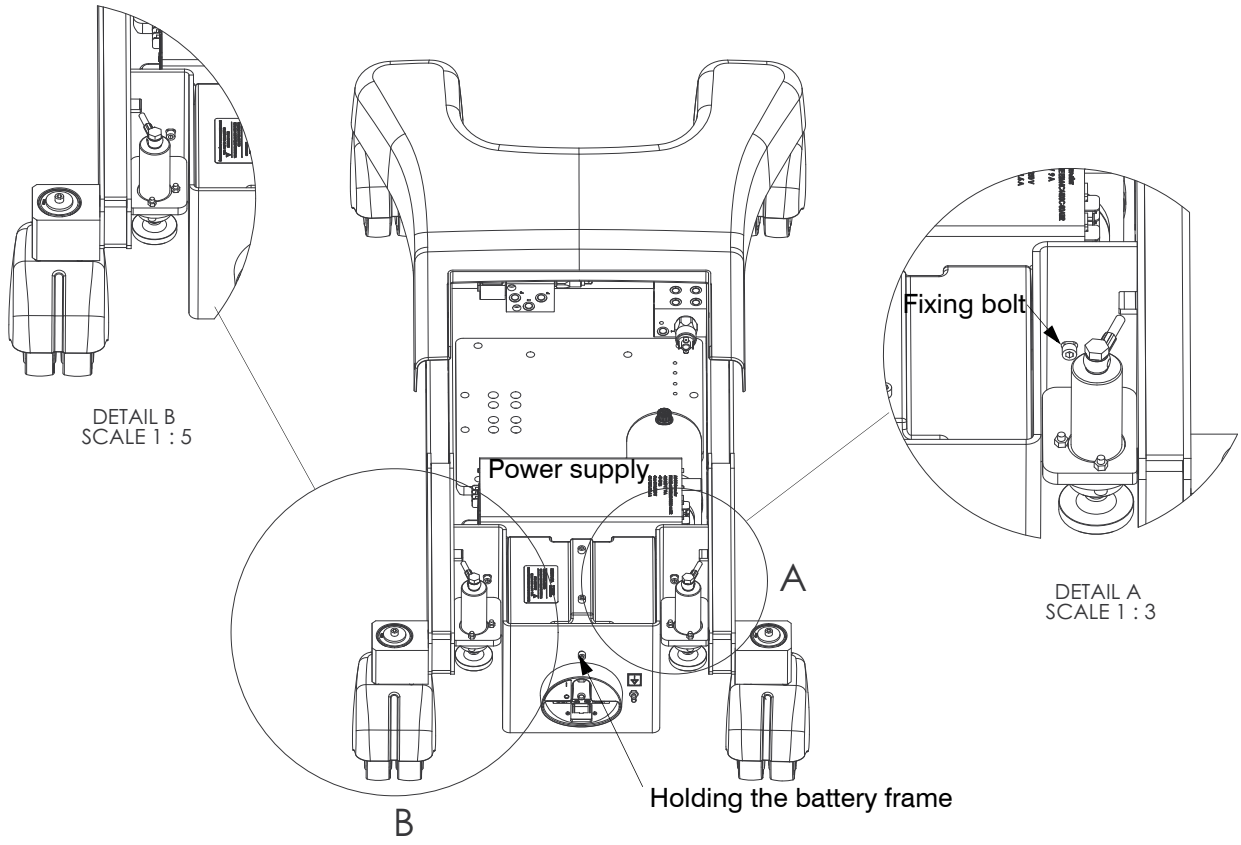


Check and mark all cable connections before removing.



Use professional, protected tools.

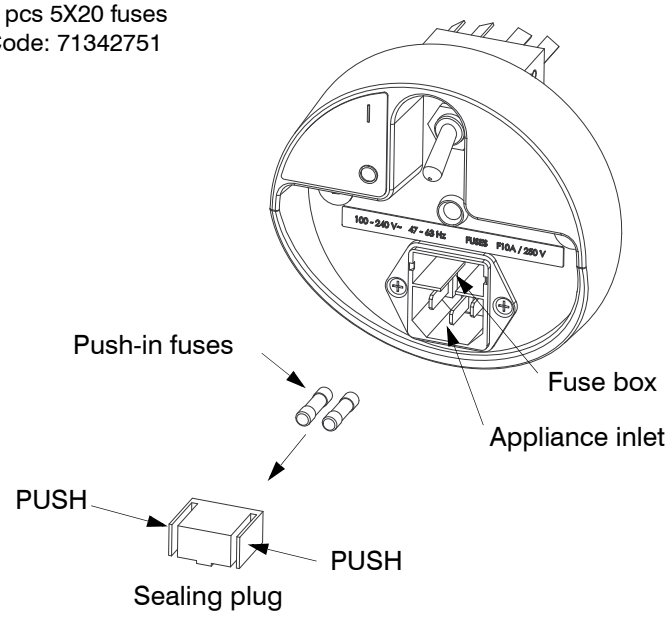
- Power supply is fixed with two bolts which you can screw out with 5 mm Allen wrench.



7.4 Mains fuses

⚠ Mains receptacle includes 2 x F10A fuses, which can be easily changed. Turn the main switch OFF before continuing.

2 pcs 5X20 fuses
Code: 71342751



Push the sealing plug side clips simultaneously and pull the plug cover out from the receptacle!

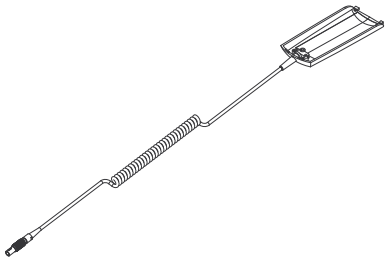
7.5 Hand control units

7.5.1 Hand control unit MV-CUC01

FEATURES:

- LED indications; Orient, Floor Lock, 5th Direction Wheel
- Battery state (green, yellow, red)
- RS232 serial communication with MPC
- Key Matrix 4x7 =28
- IP-54
- Backlight Boost converter

REPLACEMENT PARTS:



- Cable is equipped with quick connector which can easily connect to the PCB

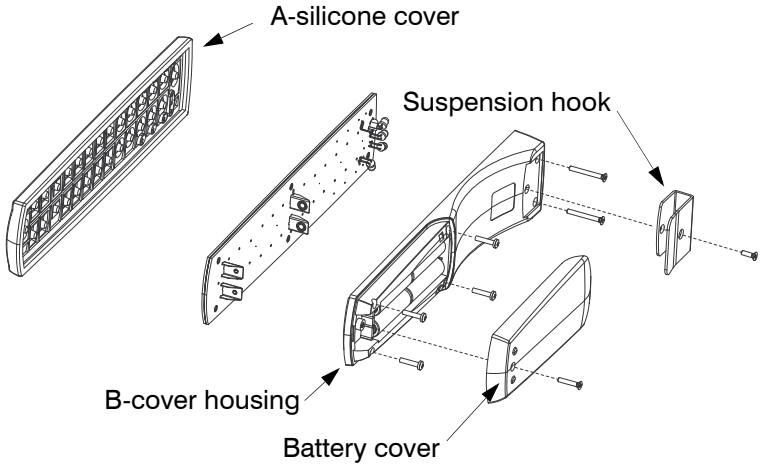
- Battery cover module with cable installed, CODE A41809700

- A-silicone cover, CODE A21560600
- B-cover CODE A41809600
- Hook CODE A41829300

7.5.2 IR-remote controller unit MV-CUI01

FEATURES:

- Same PCB as in hand panel but with different components
- Micro chip PIC16LF874A
- Crystal 4 MHz



- IR-transmission
- Key matrix 4 x 7
- IP 54
-Backlight boost converter

LED INDICATION:

- Battery state green/red

REPLACEMENT PARTS:

- A-silicone cover, CODE A41811100
- B-cover housing, CODE A41809600
- Battery cover, CODE A31638600
- Suspension hook, CODE A41829300
- AA-batteries 4 pcs, CODE 71335974

7.5.3 Device address programming

An device address is saved in the non-volatile EEPROM memory of each table during final testing. The only table movement commands that the table‘s microcontroller accepts are IR-messages, which are send via this address. The table addresses can be programmed remote controls memory following the instruction sequense shown below.

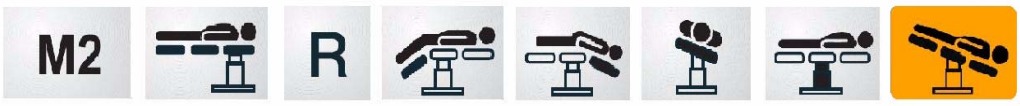
7.5.4 IR-remote control programming sequence

Device instructions uses double button press functions, which are not used during normal operatio. This is designed to prevent accidental activation of the address selection sequence.

The address search/instruction process goes as follows:

1. Point the remote control at the operating table.

2. Press the backlight  button while pressing the buttons on the right side of the remote control one after the other from bottom to top.



3. When the operating table buzzer gives two consecutive tones, the correct address group has been found.

4. Keep the backlight button pressed down.

5. While holding the backlight button press the buttons for rows found in above section 3 on the **left** side of the remote control.

6. Keep the buttons pressed down untill the operating table buzzer begins to send short, rapidly repeating tones. The tones will sound in 2 seconds, **during which time the buttons on the left should be released**. If the buttons are held down the tone will sound in 16 second intervals.

7. Release the backlight button. The operating table buzzer will then give a long tone. The table‘s individualised device address is now saved in the remote controls memory.

8. The operating tables mechanical movements can be controlled with this remote control after the instruction sequence. The saved device address is maintained in the remote controls non-volatile memory, even when changing the batteries.

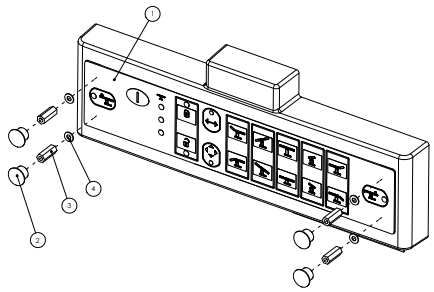
7.5.5 IR-receivers

- Infra-red transparent ABS-cover
- 2 pcs
- Fixing bolts inside the column shrouds
- Protected with polyurethane tape

-CODE A41617700

7.6 Override panel MV-CUO 01

FEATURES:



- Key(s) with simultaneous multiple inhibition
- LED Indications; Orient, Floor Lock, 5th Wheel, Battery state (green, yellow,red)
- Buzzer oscillation circuit
- IR-receiver inputs
- Key panel (1)
- protective plug (2)
- Fixing nut (3)
- Washer (4)

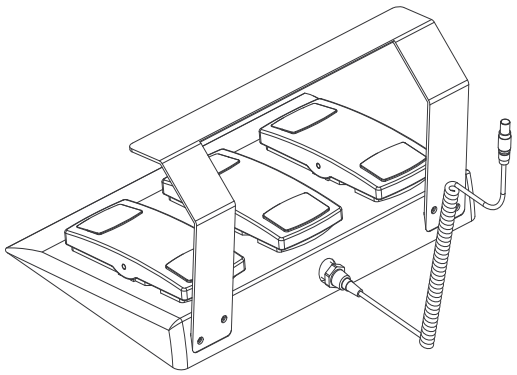
CODE A41713500 with cables (fixing parts not included)

CABLE INTERFACES:

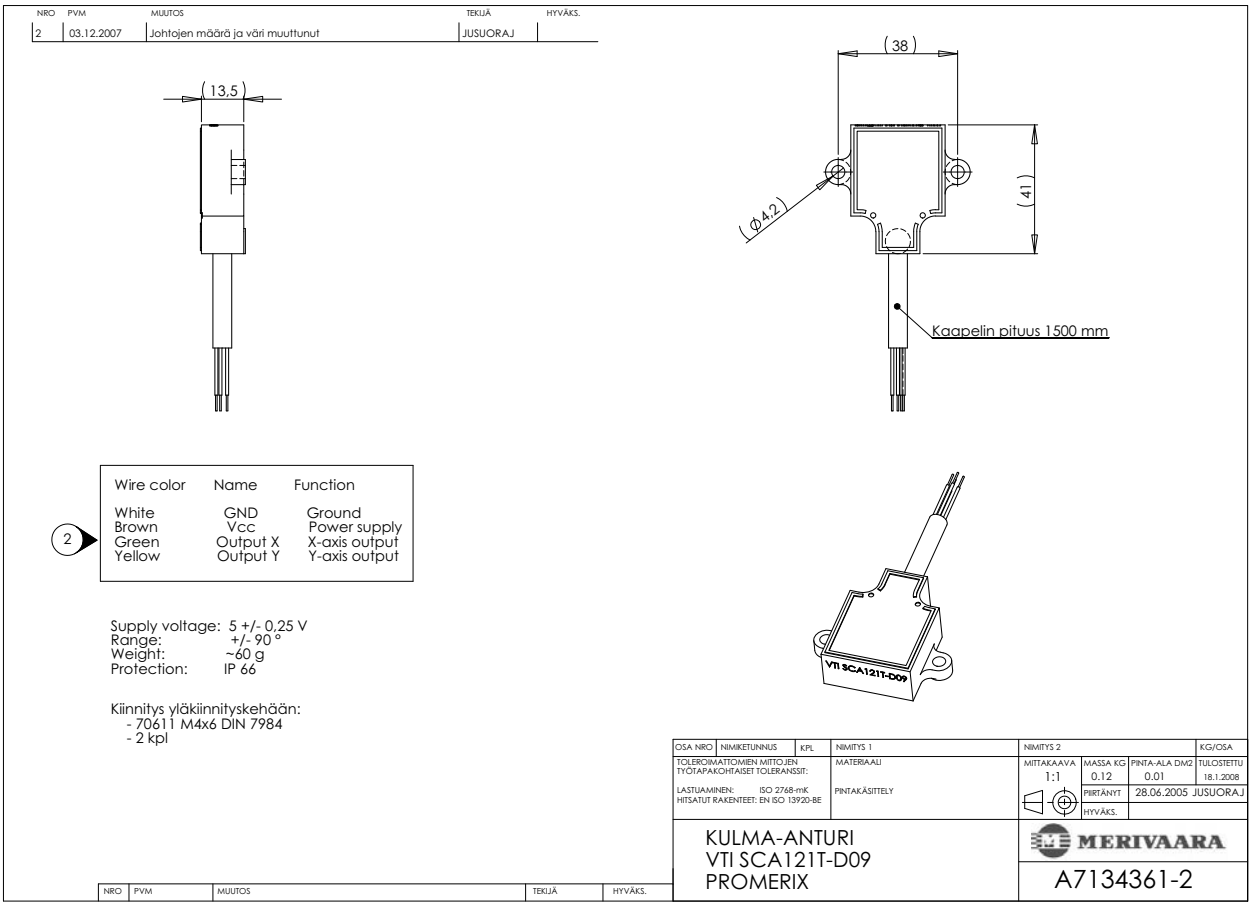
- USB for PC service software
- RS-232 for hand control (LEMO)
- Foot control connection (LEMO)
- Control/monitoring system connection (LEMO)

7.7 Foot switch

- 6 digital inputs with common ground.
- Programmable
- LEMO connector
- Foot control, CODE 60850



7.8 Level sensor



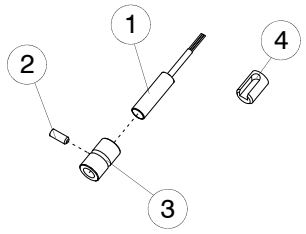
CODE A7134361

! NOTE! After replacing level sensor reprogramming with service program is needed. Consult Merivaara service department.

7.9 Inductive sensor

Sensor nominal voltage	24 V
Current type	DC
Wiring	3-Wire
Switching function	type NO
Output signal	PNP
Rated operational Voltage	24 V DC
Rated operational current	200 mA
Supply voltage	10...30 DC

Inductive sensor, type PNP



Sensor CODE A42108700
Spare part set CODE A31631500

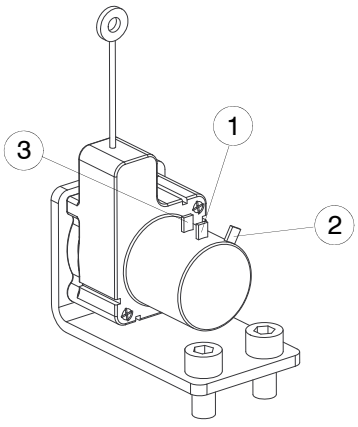
WIRE CONNECTIONS:

- Black, signal
- Blue, GND
- Brown, +24 V

- Sensor (1) is mounted inside leg section joints. Cable is protected with protective mesh.
- Sensor is fixed with locking screw (2) and plastic bushing (3)
- Cable is locked with locking screw (4) and wires are connected with wire end ferrules to terminal block, look at page 36.
- After installation, adjustment ranges must be tested

7.10 Wire sensors

- 0...5 V analog output



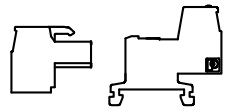
SENSOR CONNECTIONS:

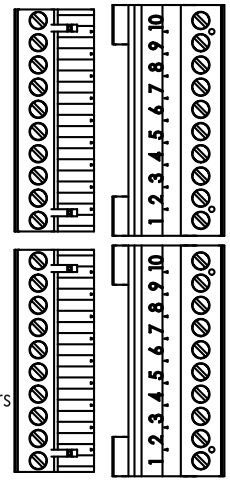
1. +5 V, brown
2. Signal wire, white
3. GND, green

- Height, WPS-500, CODE 7134362
- Slide, WPS-250, CODE 7134363
- Back section, WPS-150, CODE 7134364
- Leg section, WPS-150, CODE 7134364, 2 pcs

Wires from sensors

No	Colour	Function	Name	Sensor type
20	Brown	+5 V		VTI-sensor
19	White	GND		VTI- sensor
18	Yellow	Signal	Tilt (Y)	VTI-sensor
17	Green	Signal	Trend (X)	VTI-sensor
16	Red	+24 V	Pressure switches/safety edges	
15	Green	GND		
14	Black	Signal	5th wheel	Pressure switch
13	Black	Signal	Floor Lock	Pressure switch
12	Black	Signal	Safety edge	Leg side
11	Black	Signal	Safety edge	Back side
10	White L	Signal	Leg left	Ind sensor
9	White R	Signal	Leg right	Ind sensor
8	Pink	+ 5 V		Wire sensors
7	Grey L	Signal	Leg left	Wire sensor
6	Grey R	Signal	Leg right	Wire sensor
5	Brown	+24 V		Ind sensors
4	Green/Blue	GND		Wire and Ind sensors
3	White	Signal	Slide	Wire sensor
2	Yellow	Signal	Back	Wire sensor
1	White	Signal	Height	Wire sensor





Wires from MPC/D-connector

No	Colour	Function	Name	
20	Brown	+5 V	VTI- sensor	
19	Green	GND	VTI- sensor	
18	Lila	Signal	Tilt (Y)	
17	Grey/pink	Signal	Trend (X)	
16	Brown/Black	+24 V	Pressure switch/safety edges	
15	Black	GND		
14	Grey/brown	Signal	5th Wheel	Pressure switch
13	White/grey	Signal	Floor Lock	Pressure switch
12	White/pink	Signal	Safety edge	Leg side
11	Pink/brown	Signal	Safety edge	Back side
10	Yellow/brown	Signal	Leg left	Ind sensor
9	White/Yellow	Signal	Leg right	Ind sensor
8	White	+ 5 V		Wire sensors
7	Pink	Signal	Leg left	Wire sensor
6	Blue	Signal	Leg right	Wire sensor
5	White/black	+24 V		Ind sensors
4	Yellow	GND		Wire and Ind sensors
3	Black	Signal	Slide	Wire sensor
2	Grey	Signal	Back	Wire sensor
1	Red	Signal	Height	Wire sensor

2	7134342	2	LIITIN PISTOKE MSTB 2,5/10-ST 5.08	PHOENIX CONTACT	0.1
1	7134341	2	LIITIN MSTBHK 2,5/10-G 5.08	PHOENIX CONTACT	0.1
OSA NRO	NIMIKETUNNUS	KPL	NIMITYS 1	NIMITYS 2	KG/OSA

TOLEROIMATTOMIEN MITTOJEN TYÖTAPAKOHTAISET TOLERANSSIT:	MATERIAALI	MITTAKAAVA 1:1	MASSA KG 0.32	PINTA-ALA DM2 0.25
LASTUAMINEN: ISO 2768-mK HITSATUT RAKENTEET: EN ISO 13920-BE	PINTAKÄSITTELY	PIIRTÄNYT	29.07.2005 JUSUORAJ	TULOSTETTU 15.12.2008
		HYVÄKS.		

ANTURIEN LIITTIMET
SENSOR CONNECTORS
PROMERIX

MERIVAARA

A31605000-5

NRO	PVM	MUUTOS	TEKIJÄ	HYVÄKS.
5	24.10.2008	Numbering starting from bottom as it is in the tables	JUSUORAJ	

7.12 Motion Process Controller MV-MPC01

7.12.1 General

The MPC is installed on the surface of the outer tube of the column guiding system. CODE A41744800

- PC-programmable icrocontroller, PIC18F4550, Quartz crystal 12 MHz
- EEPROM memory for parameters
- Solenoid control (9x2=18 pcs) in main valve block
- Hydraulic unit motor PWM modulation and drive 15 A (single direction)
- Motor drives: 1 PWM 10 A (reversing), 2 pcs 5 A (reversing)
- Analog sensors: 8 (height, side tilt, Trendelenburg, slide, back section, leg section (2 pcs) and 1 spare)
- Digital inputs: 8
- Error log
- Real-time clock
- RS-323 connection
- USB-connection
- Sleep mode wake up

7.12.2 Communication

- Hand control unit, IR control unit, override control panel
- Battery back-up
- Programmable positions

7.12.3 PC connection

- Parameter configuration (speed, start ramp, stop ramp)
- Automatic tests
- Hand control emulation
- System data (battery status, sensor readings)
- Test and service software updates

7.12.4 Connectors

- 15 Pin Female solder connector for remote controls
- 2 pcs 26 Pin Female solder connectors for override panel and sensors
- 44 Pin female solder connector for main valve block solenoids
- USB-connector

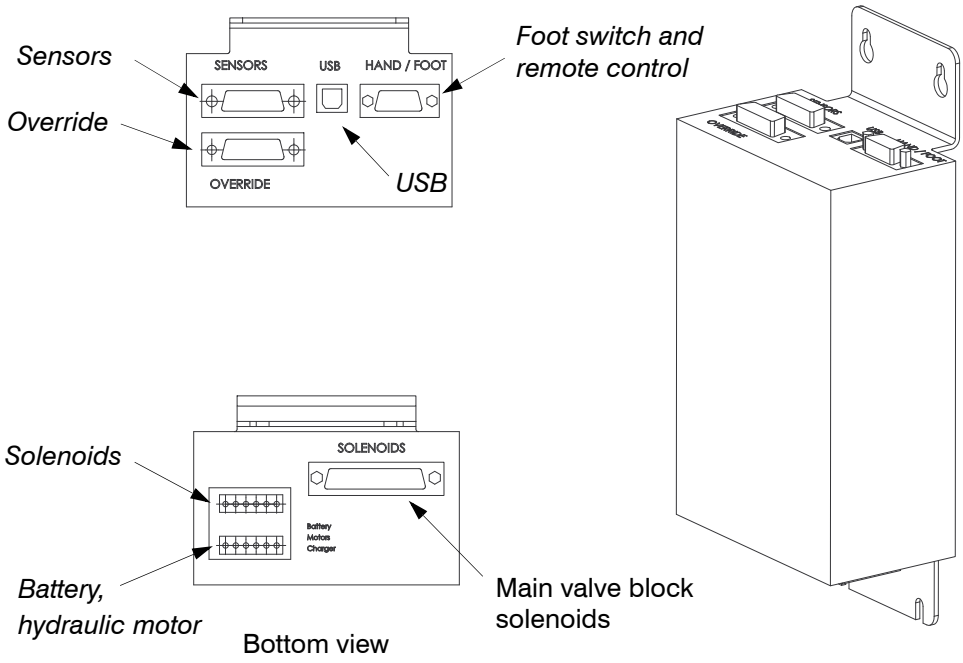
7.12.5 Cables

- Sensor cable	71165294 from OR panel to MPC
- Foot, Hand, Sidne controller cable	4530093 from OR panel to MPC
- IR receiver cable	4530112 from OR panel to IR receivers
- Override panel cable	4530091 from OR panel to MPC

7.12.6 MPC connections

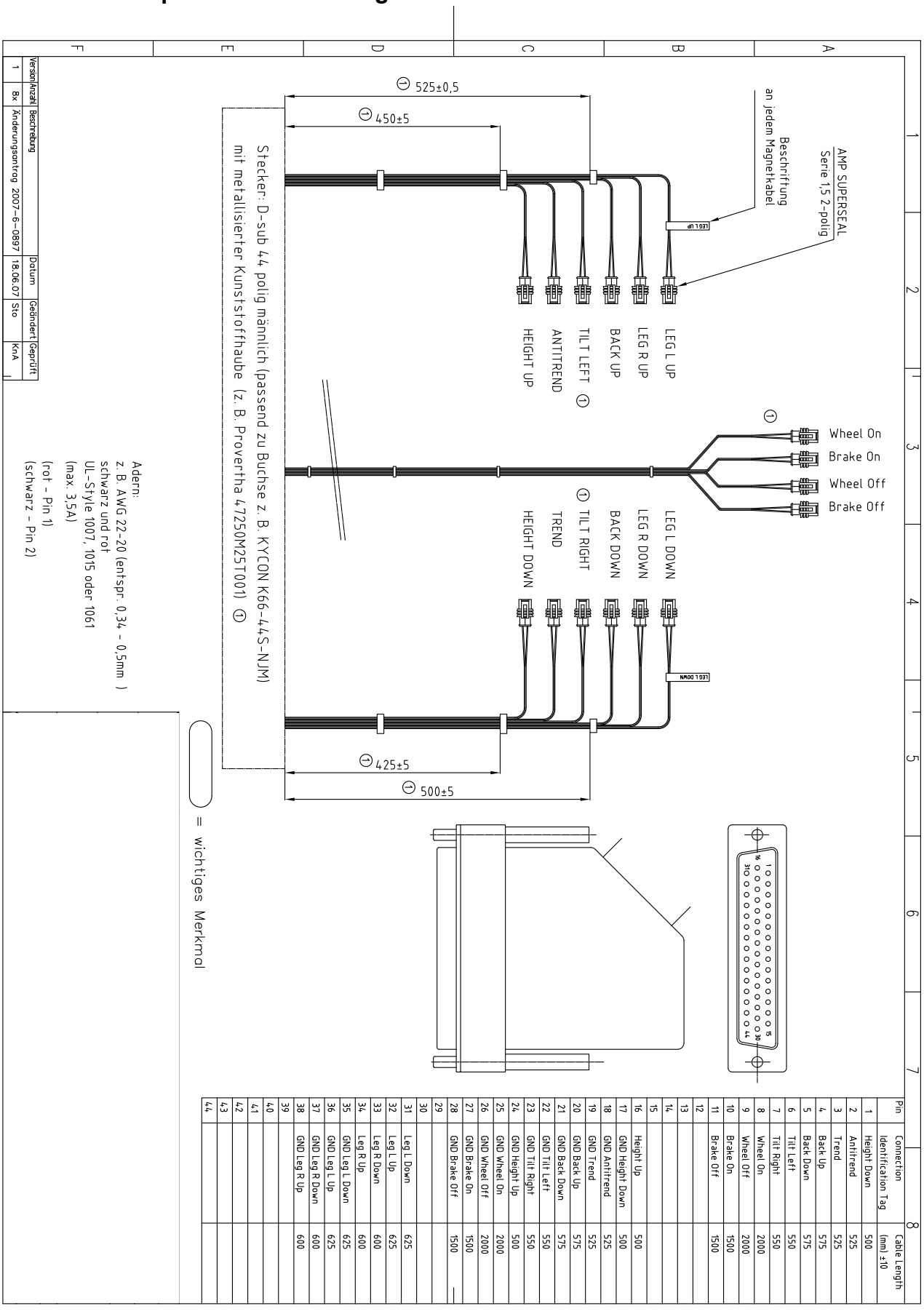
Mounted on surface of a lifting cylinder quiding system, frontside of the table, fixed with M4 x 6mm screws.

Cable connectors tensioning screws are hand usable.



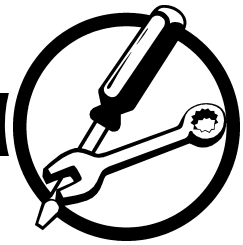
! NOTE! If MPC is replaced table's individual parameters must be reprogrammed. Consult Merivaara service department.

7.13 Solenoid pin connector configuration



Pin	Connection Identification Tag	Cable Length (mm) ±10
1	Height Down	500
2	Antitrend	525
3	Trend	525
4	Back Up	575
5	Back Down	575
6	Tilt Left	550
7	Tilt Right	550
8	Wheel On	2000
9	Wheel Off	2000
10	Brake On	1500
11	Brake Off	1500
12		
13		
14		
15		
16	Height Up	500
17	GND Height Down	500
18	GND Antitrend	525
19	GND Trend	525
20	GND Back Up	575
21	GND Back Down	575
22	GND Tilt Left	550
23	GND Tilt Right	550
24	GND Height Up	500
25	GND Wheel On	2000
26	GND Wheel Off	2000
27	GND Brake On	1500
28	GND Brake Off	1500
29		
30		
31	Leg L Down	625
32	Leg L Up	625
33	Leg R Down	600
34	Leg R Up	600
35	GND Leg L Down	625
36	GND Leg L Up	625
37	GND Leg R Down	600
38	GND Leg R Up	600
39		
40		
41		
42		
43		
44		

8. HYDRAULICS



8.1 Safety information

Before disconnecting any of the hydraulic lines, fittings, joints, hoses etc. be sure the attached table sections are removed and the floor lock is OFF position. Failure of these precautions may cause an uncontrolled oil spray and damage to the table or personal injury.

8.1.1 Lift column

Lift columns are operating agents which may be a risk to health or to material in case of incorrect handling, improper application or insufficient maintenance. Therefore any work on the lift columns must be executed by qualified persons only.

Fix the table top with belts or a similar equipment to a crane or support it by brackets. Otherwise the table top can move downwards causing uncontolled movements.

8.1.2 Warnings

Work on the lift column only if it is disconnected, i. e. in a de-energized status. Protect lift column against reactivation.

Hydraulic oil may cause skin irritations and other damages to health. Avoid skin being in contact with for a longer period.

In case of damage of single components hydraulic oil may splash under high pressure.

For security reasons do not loosen any connections or devices while the hydraulic system is pressurized. Before you open the system you have to ensure, that no load is on the cylinders or that the table top is supported by brackets.

Make sure everything is absolutely clean before working, because dirt can cause major damage to the hydraulic system.

Equip all openings with protective caps so that dirt cannot penetrate into the system.

For cleaning hydraulic components use fluff-free materials only (no finery wool etc.).

Only fill oil into the system via a filter (10 µm); the system is filled with hydraulic fluid ARAL Vitam DE32; this can be mixed with BP Energol HLP-HM32.

Exchange a hydraulic hose, if any damage (e. g. imprint or injury of the cover layer) is visible.

Use new sealing washers, if you open a hydraulic connection.

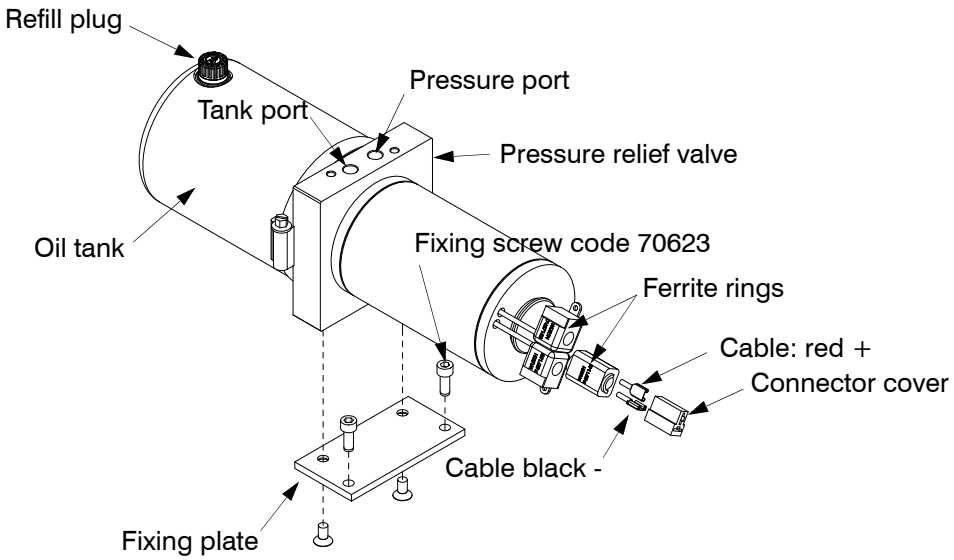
After you have replaced any parts, do a functional test with PromeriX service software without a patient on the table or manually run with hand control all the movements to their min. and max. positions (min. 5 times).

Jerky movements may indicate unnoticed inclusions of air. The system is completely evacuated, if all functions are performed jerk-free, the system runs smoothly, and the surface of the oil level is without foam. The system should evacuate automatically, if you move each cylinder from one internal stop to the other.

- Recommended fastening torques for banjo bolts:
  - M10x1: 14±1.5Nm
  - M8x1: 10±1Nm

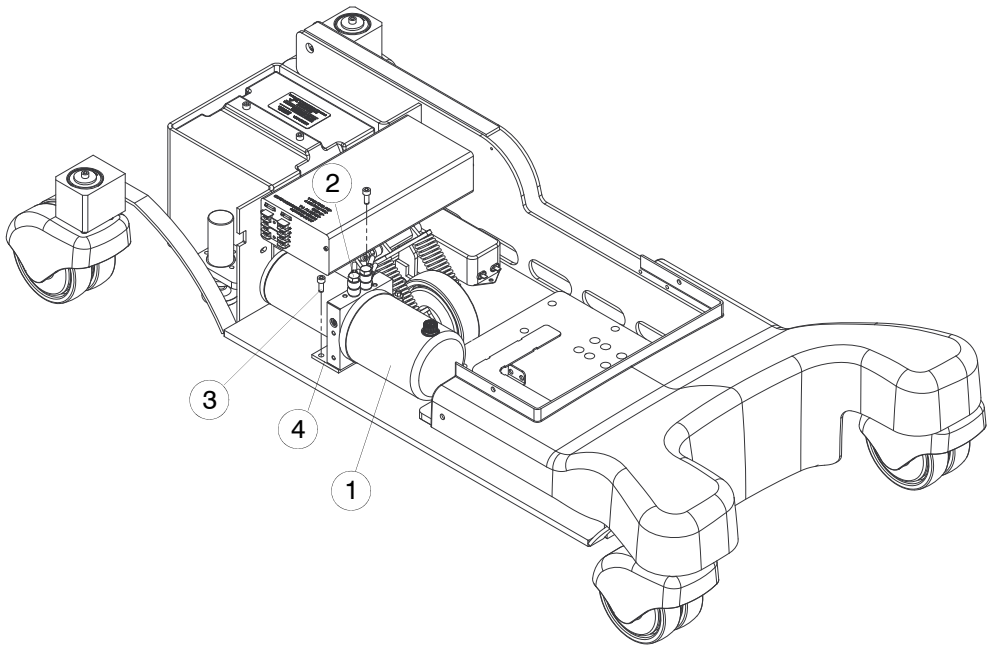
8.2 Hydraulic unit

- CODE A41951900
- Pump volume 0,24 cm3 / rev
- Motor size 0,2 kW / Nom 24 V
- Pressure relief valve setting 120 bar ±5 bar (1740 psi ±72.5 psi) (1 bar = 14.5 psi)
- IP 65
- Cables protected against interferences



- Electric motor UL-listed: Dunkermotoren GR80x40

8.2.1 Removing the hydraulic unit

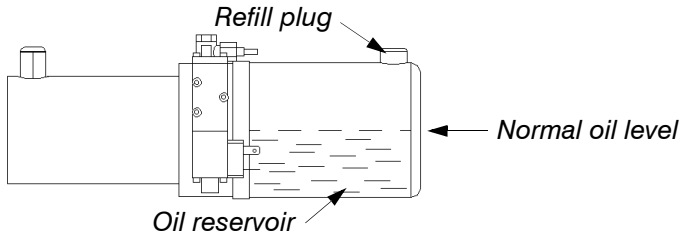


- Remove casing screws, look at the page 23, lift out the casing brackets.
- Disconnect main cord plug from the MPC.
- Disconnect cables, and banjo fittings (2) 2 pcs.
- Remove screws (3) 2 pcs from the fixing plate (4) and lift out the hydraulic unit (1) sideways.

8.2.2 Hydraulic oil

When checking oil level, first adjust table top to the horizontal and uppermost position. Oil level should be in middle of pump reservoir.

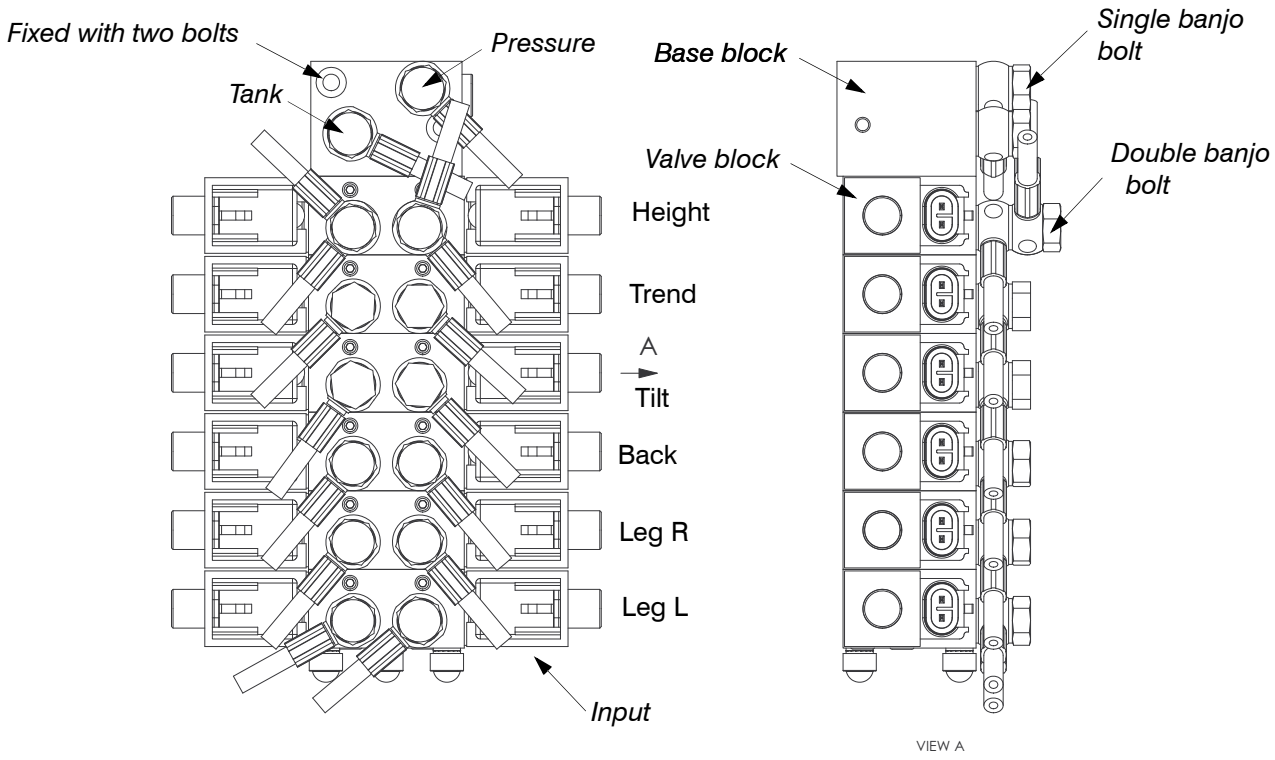
- Use ARAL Vitam DE 32 or BP Energol HLP-HM 32, CODE 71573 (1L)



8.3 Main valve block TLC3

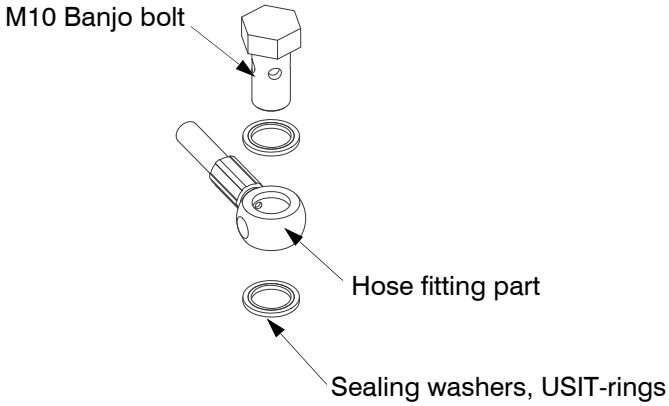
Left side valve ports: Plus-movement of the cylinder (piston rod coming outwards).

CODE A41798900



Dirt will cause malfunctions; therefore you have to ensure, that no dirt can contaminate the hydraulic system.

HOSE CONNECTOR:



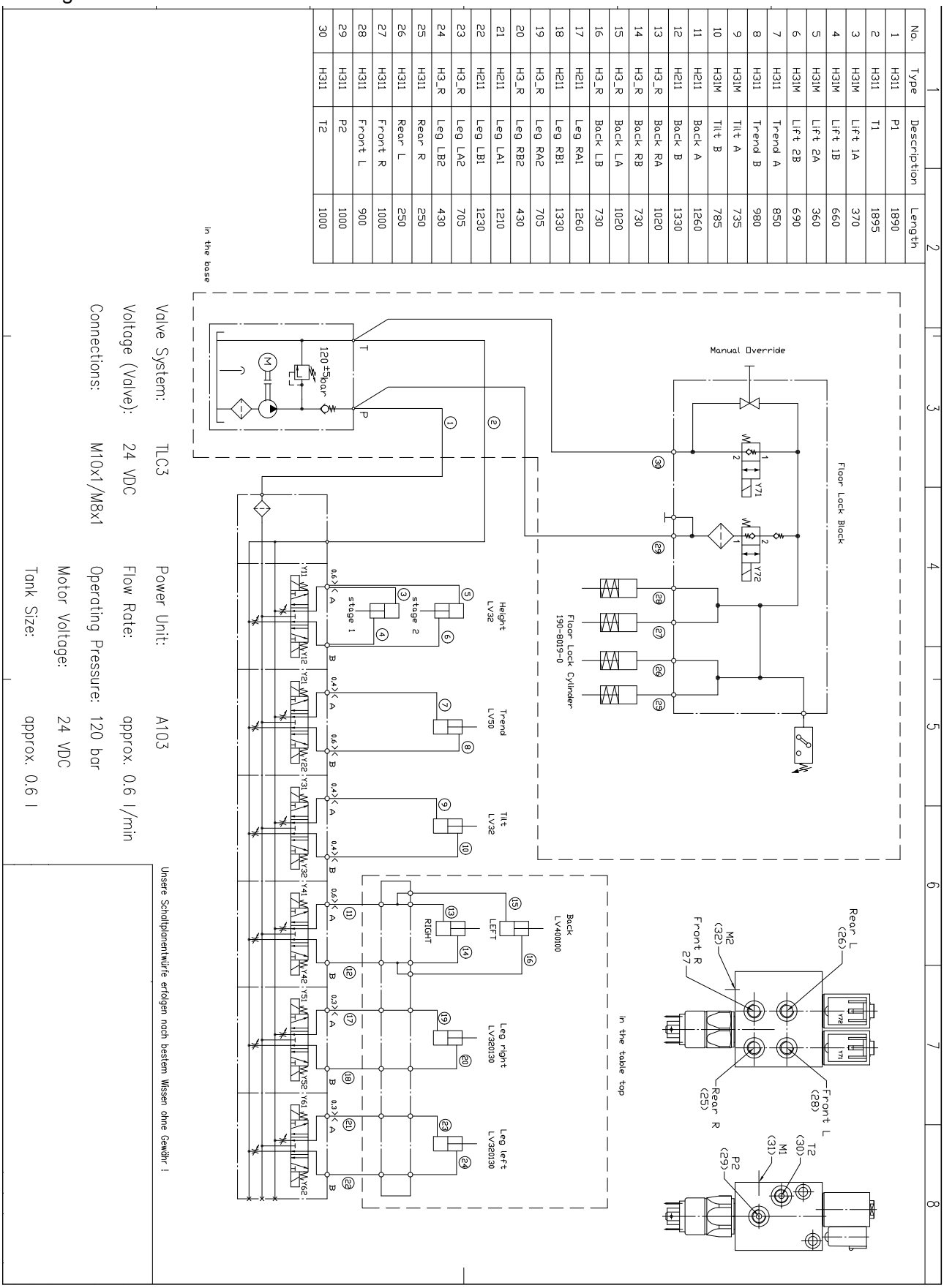
Codes:

- M10 Short BANJO BOLT: A41766200
- M10 Long BONJO BOLT: A41766300
- M10 Sealing washer: A41766500

Tightening with torgue wrench to 14±1.5 Nm

8.3.1 Hydraulic circuit diagram

Drawing A41892100



No.	Type	Description	Length
1	H311	P1	1890
2	H311	T1	1895
3	H31M	Lift 1A	370
4	H31M	Lift 1B	660
5	H31M	Lift 2A	360
6	H31M	Lift 2B	690
7	H311	Trend A	850
8	H311	Trend B	980
9	H31M	Tilt A	735
10	H31M	Tilt B	785
11	H211	Back A	1260
12	H211	Back B	1330
13	H3_R	Back RA	1020
14	H3_R	Back RB	730
15	H3_R	Back LA	1020
16	H3_R	Back LB	730
17	H211	Leg RA1	1260
18	H211	Leg RB1	1330
19	H3_R	Leg RA2	705
20	H3_R	Leg RB2	430
21	H211	Leg LA1	1210
22	H211	Leg LB1	1230
23	H3_R	Leg LA2	705
24	H3_R	Leg LB2	430
25	H311	Rear R	250
26	H311	Rear L	250
27	H311	Front R	1000
28	H311	Front L	900
29	H311	P2	1000
30	H311	T2	1000

in the base

Manual Override

Floor Lock Block

Floor Lock Cylinder 190-8019-0

Height LV32

Trend LV50

Tilt LV32

Back LV480100

Leg right LV320130

Leg left LV320130

in the table top

Rear L (26)

M2 (32)

Front R 27

Front L (28)

Rear R (25)

T2 (30)

M1 (31)

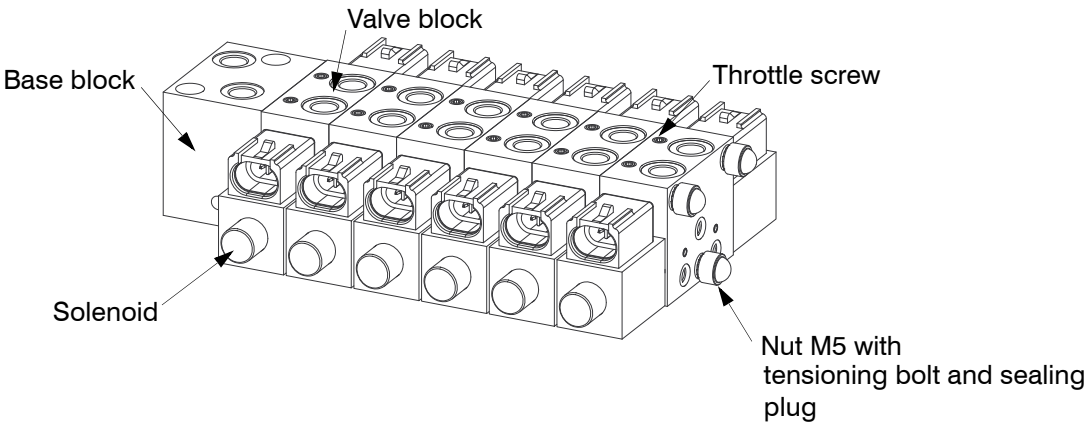
P2 (29)

Valve System:	TLC3	Power Unit:	A103
Voltage (Valve):	24 VDC	Flow Rate:	approx. 0.6 l/min
Connections:	M10x1/M8x1	Operating Pressure:	120 bar
		Motor Voltage:	24 VDC
		Tank Size:	approx. 0.6 l

Unsere Schaltplanentwürfe erfolgen nach bestem Wissen ohne Gewähr !

8.3.2 Substitution of TLC3 manifold

- 6 solenoid valves
- 5/3-way spool valve and pilot operated check valve
- Nominal voltage 24 V
- Minimum working voltage 19 V
- Current consumption of solenoid 0.42 A
- Tightening of connectors 14 Nm (130 lbf.in)



1. Lift the table top to the highest position. Install a wooden stick or similar device between the base and the upper stage of lift column to fix the table in the extended position.

2. Retract the Trend, Tilt, Back and Leg cylinders completely.

3. Prepare the new manifold:
   - Check, if the manifold is without any transport damage and if it is clean.
   - Unscrew the yellow caps in the hydraulic ports and cover the manifold with a clean tissue.

4. Clean the manifold at the lift column.

5. Lay an absorbent tissue and a clean plastic box under the manifold.

6. Tie the two hoses of the double banjo bolts with a clip together (Height).

7. Unscrew the banjo bolts (hexagon 14 mm) at each hydraulic connection.

8. Unplug the electric connectors at the solenoids.

9. Unscrew the two M5 screws of the base block with an Allen wrench (4 mm).

10. Assemble the new manifold and tighten the two hexagon socket screws with a torque of 5,5±0,6Nm.

11. Plug the electronic connectors to the solenoids.

12. Check, if the rubber lip of the sealing washers is damaged. If yes, use a new one.



13. Connect the hoses to the connections of the TLC3 valves and tighten the banjo bolts (torque:14±1,5Nm). Use new sealing washers (especially between the banjo and the valve body); check, if there are sealin washers between the manifold, the banjos and the bolt head.

14. Remove the clips at the hoses of the double banjo bolts.

15. Clean the hoses, valves etc. with a tissue.

16. Remove the plastic box and the tissue under the manifold.

17. Remove the wooden stick at the Height movement of the lift column.

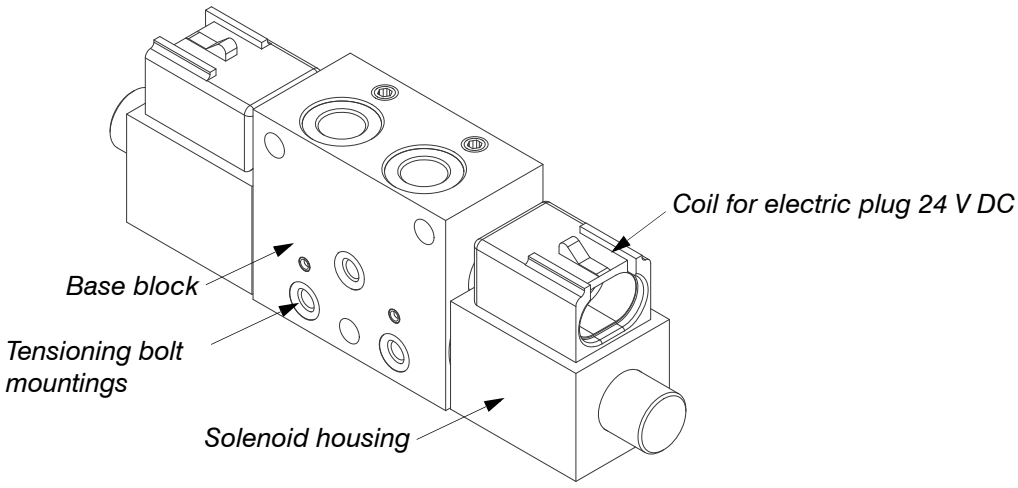
18. Move all articulation at least 5 times to bleed the system (retract and extend the cylinders completely).

19. Check, if there is external leakage at the hose connections or at the flange connections of the valves.

20. Check the oil level at the tank of the power unit and fill it with filtrated hydraulic fluid Aral Vitam DE 32, if required.

⚠ After all these actions functional test of the operating table has to be done.

8.3.3 Exchange of TLC3 valve



Process:

1. Lift the table top to the highest position.

2. Fix the table top with belts or a similar equipment to a crane or support it by brackets. Otherwise the table top can move, if you disconnect the hoses at the valve. Retract the leg or back cylinders, if you want to change one of these valves.

3. Lay an absorbent tissue under the valves.

4. Unscrew the banjo bolts (1) of the TLC3 valve (2) you want to substitute.
Close the banjo bolts with a M10x1 cap nut in order to stop the oil leakage.

5. Pull off the plug of the valve.

6. Fix the lower TLC3 valve with a belt to the base block (4).

7. Remove the plastic caps and loosen the three M5 nuts (3).

8. Unscrew the three tensioning bolts.

9. Pull out the faulty valve.

10. Assemble the new valve at the same position. Check the three o-rings at the flange connection of all valves.



11. Screw the three tensioning bolts to the base block, install the three pairs of toothed washer and tighten them with the M5 nuts (torque: 5,5 ± 0,6 Nm).



12. Connect the hoses to the ports of the TLC3 valve and tighten the banjo bolts (torque: 14 ± 1,5 Nm). Use new sealing washers (especially between the banjo and the valve body). Check the sealing washers between the manifold, the banjos and the bolt head.

13. Connect the plugs to the solenoids.

14. Remove the fixing belts.

15. Clean the hoses, valves, ... with a tissue.

16. Move the articulation of the substituted valve at least three times to bleed the system (retract and extend the cylinders completely). Check, if there is external leakage at the hose connections or at the flange connections of the valves.

17. Check the oil level at the tank of the power unit and fill it with filtrated hydraulic fluid Aral Vitam DE 32, if required.



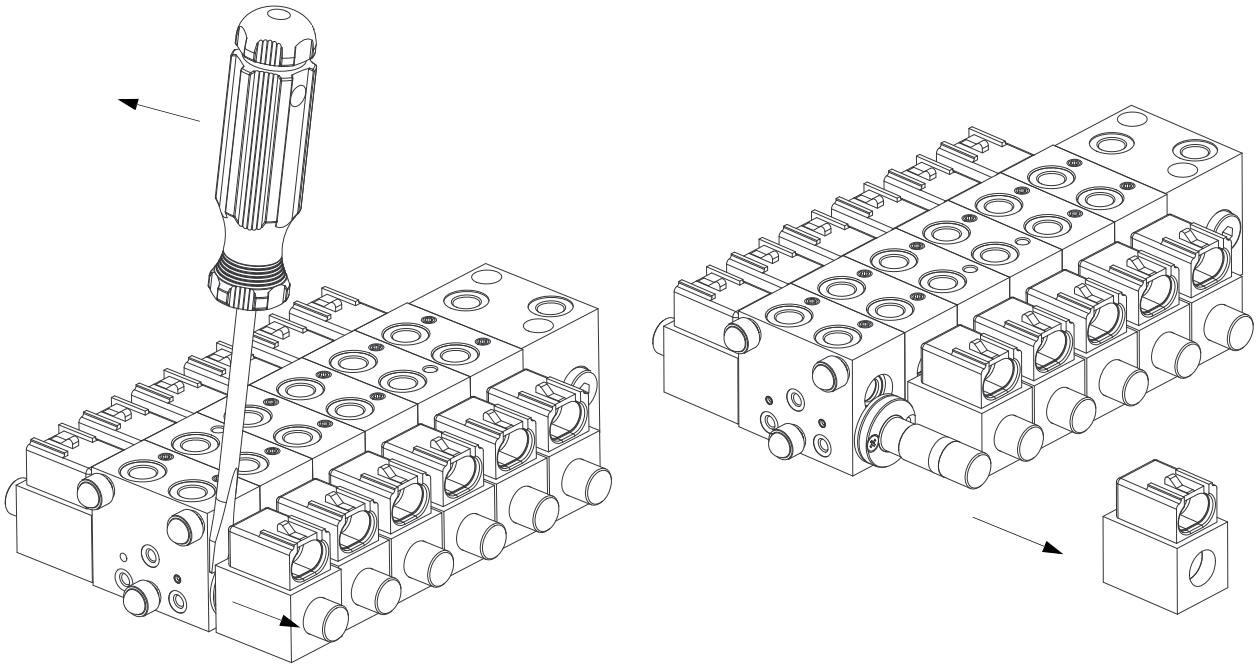
18. After all these actions functional test of the operating table has to be done.

8.3.4 Changing of solenoid coil at SP1 and TLC3 (valve system)

The resistance of the coil is 66.4Ω ± 10%. If there is a short-circuit or a break you can exchange only the coil of the solenoid (without opening the hydraulic system).

The change can be done at an assembled valve block. You do not have to disassemble the manifold.

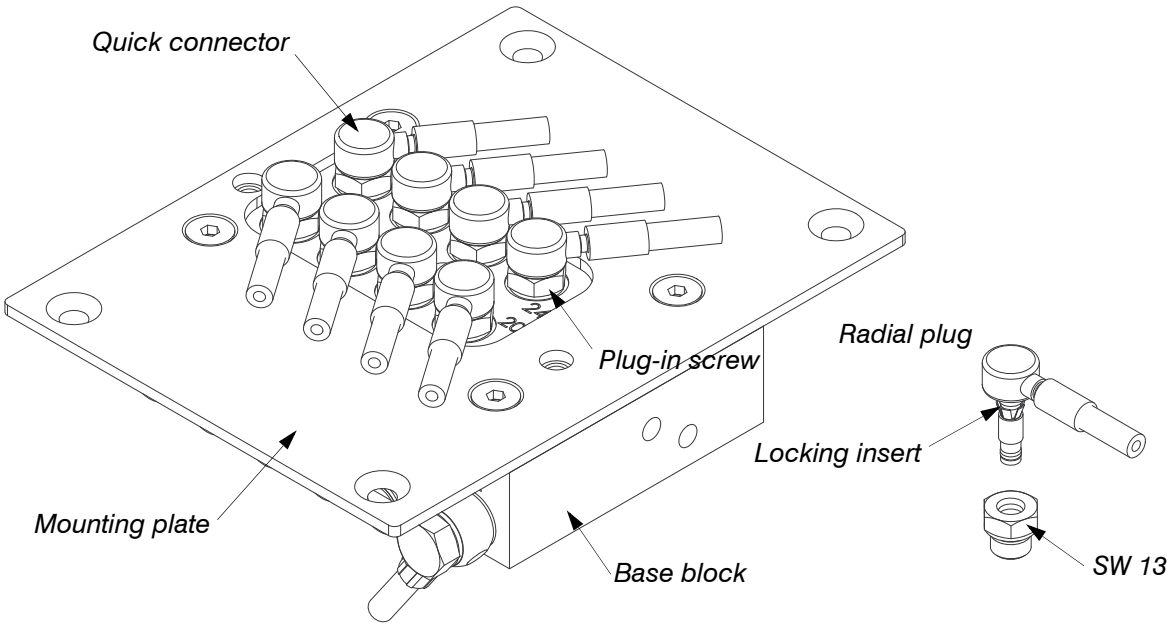
8.3.4.1 Remove the housing of the solenoid



! Use screwdriver and push it between the housing and the valve body then crank the housing out from the solenoid (if necessary) strike with a plastic hammer one by one.

8.4 Cylinders

8.4.1 Distribution block of table with sliding function



⚠ For security reason the assembly of the plug-in connection can only be disconnected by a special tool with a skilled person.

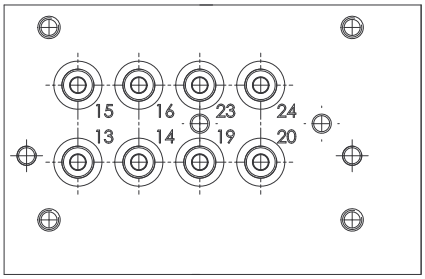
! Ask for more information about tools and methods if repairing is needed.

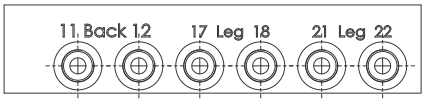
HOSES:

13 Back RA
14 Back RB
15 Back LA
16 Back LB

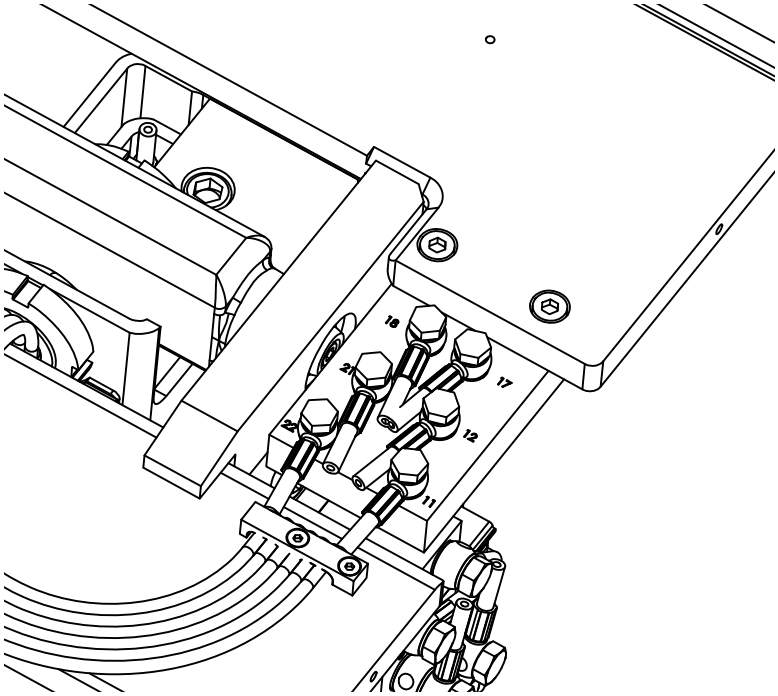
19 Leg RA2
20 Leg RB2
23 Leg LA2
24 Leg LB2

Port configuration





8.4.2 Distribution block of table without sliding function



B3 port configuration

11	to	13+15	Back RA+LA
12	to	14+16	Back RB+LB
17	to	19	Leg RA2
18	to	20	Leg RB2
21	to	23	Leg LA2
22	to	24	Leg LB2

8.4.3 Cylinder types

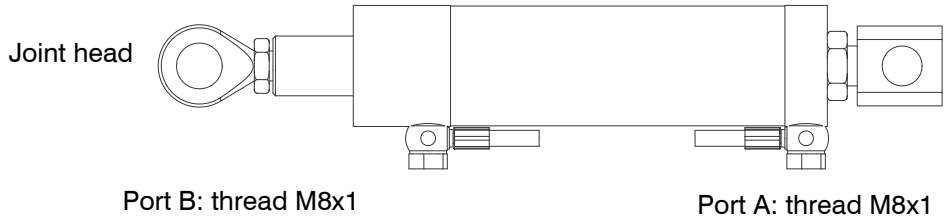
Cylinders type LV: (Double acting with differential piston)

- Trendelenburg: LV50 stroke 152mm	CODE	A41820800
- Side tilt: LV32 stroke 90mm	CODE	A41820700 table with sliding function
- Side tilt: LV32 stroke 74mm	CODE	A41927200 table without sliding function
- Height: LV32 stroke 250mm (lower stage)		
LV32 stroke 215mm (upper stage)		
- Back section: LV40 stroke 100mm	CODE	A42175200
- Leg section: LV32 stroke 130mm	CODE	A42178400

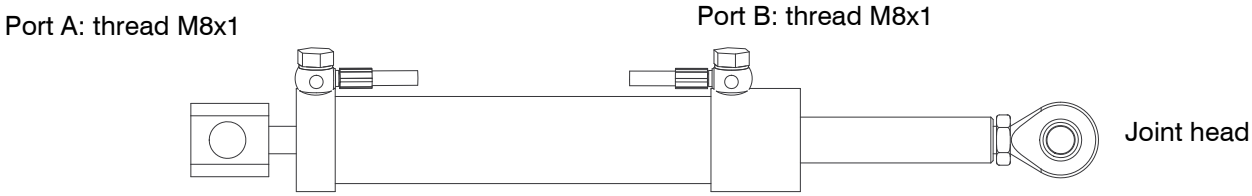
8.4.3.1 Leg and back section cylinder hose connections

- M8 short banjo bolts	CODE A41808100
- M8 Sealing washers	CODE A41808300
- Tightening with torgue wrench to	10 ± 1 Nm
- Hydraulic circuit diagram	Look section 8.3.1 at the page 43.

Back section cylinder



Leg section cylinder



! • When need to replace hydraulic cylinder(s) contact Merivaara service department!

8.4.3.2 Height cylinder connections

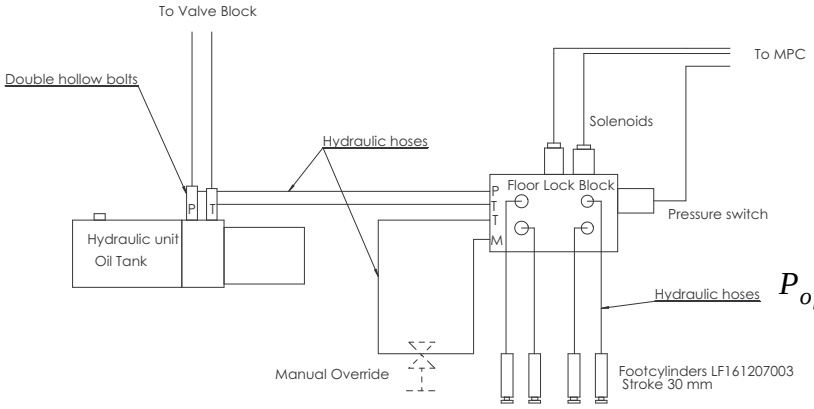
- M8 Banjo bolts	CODE A41808100
- M8 Sealing washers	CODE A41808300
- Hydraulic circuit diagram	CODE A41892100

8.4.3.3 Trendelenburg cylinder connections

- M10 Banjo bolts	CODE A41766200
- M10 Sealing washers	CODE A41766500
- M10 Special sealing washers	CODE A42079000
- Hydraulic circuit diagram	CODE A41892100

8.5 Floor lock cylinder type LF16

8.5.1 Connections



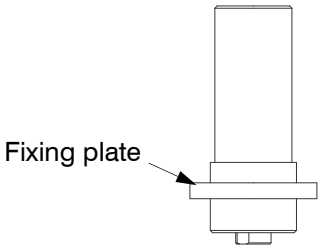
$$P_{off} = 35 \pm 3bar$$

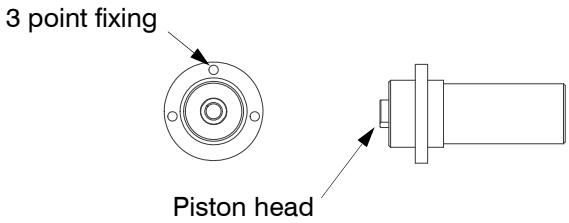
8.5.2 Cylinder type

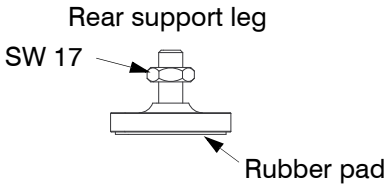
-Single acting with spring return, CODE A41638500

8.5.2.1 Features

- Piston diameter	16 mm
- Stroke	30 ± 1,5mm
- Max. operating pressure	160 bar
- Fixed with 3 pcs M5 bolts	







- Support leg, front without pads	CODE A41617200
- Support leg with pad, rear	CODE A41776800

8.5.3 Floor lock support leg adjustments

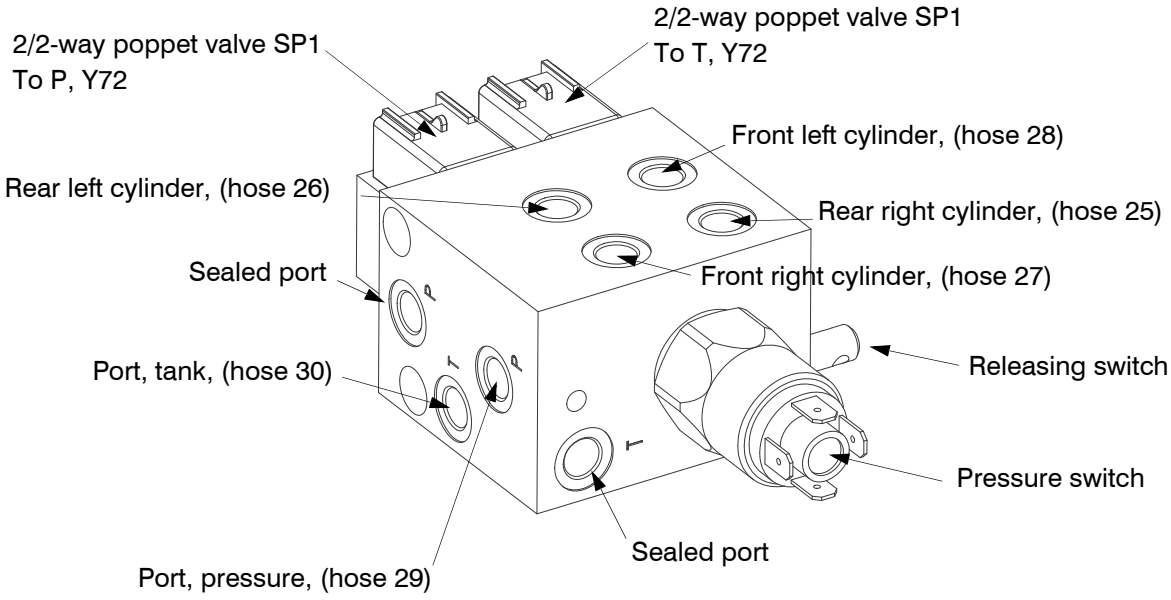
Deactivate floor lock. Move or lift operating table to flat surface just enough to apply 2 mm plates under the operating table castors.

- Support leg replacement and adjustment:

- Remove support legs.
- Add detent (Loctite 243) to threads and install new support legs with fixing nuts to the floor lock cylinders.
- Adjust the support legs to firmly touching the flat surface when floor lock is activated.
- Lock support legs with locking nuts using 17 mm wrench. Hold piston rod head in place using wrench 14 mm.
- Deactivate floor lock. Remove 2 mm adjusting plates which are under the castors.
- Activate floor lock again and check that castors are not touching the surface (distance 2 mm).

8.5.4 Pressure switch and SP1 valve block

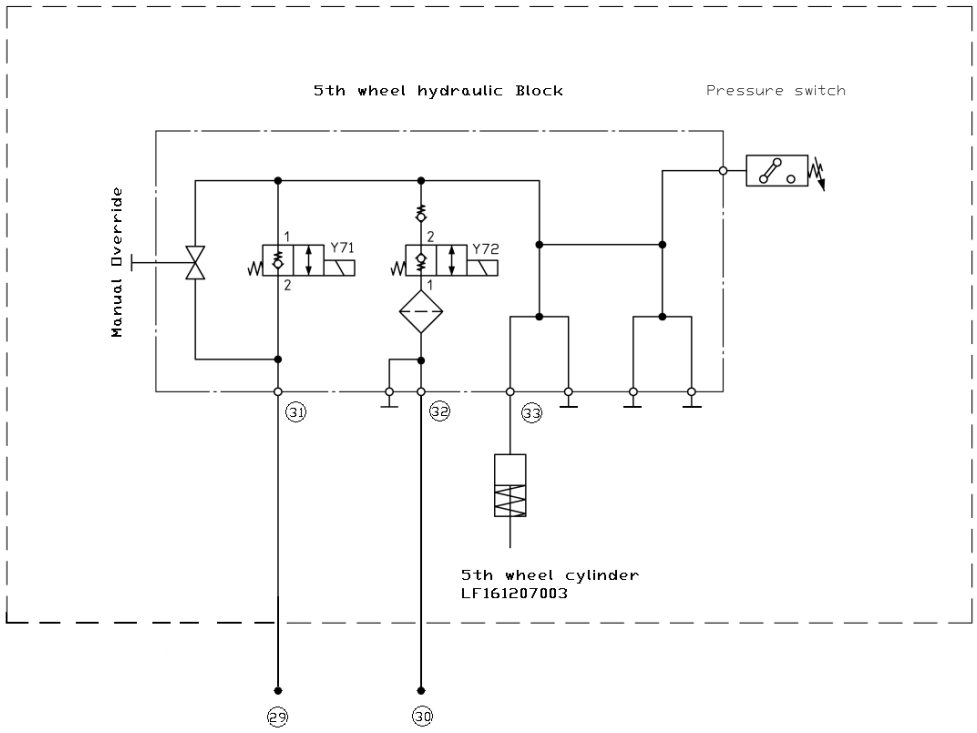
CODE A41638000



! NOTE: Check and mark the connections before removing hoses.

8.5.5 5th wheel cylinder block connection diagram

Optionally assembled LF16 cylinder and SP1 valve block are connected as shown below. 5th wheel system is connected parallel with the floor lock valve block using long banjo bolts 2 pcs.

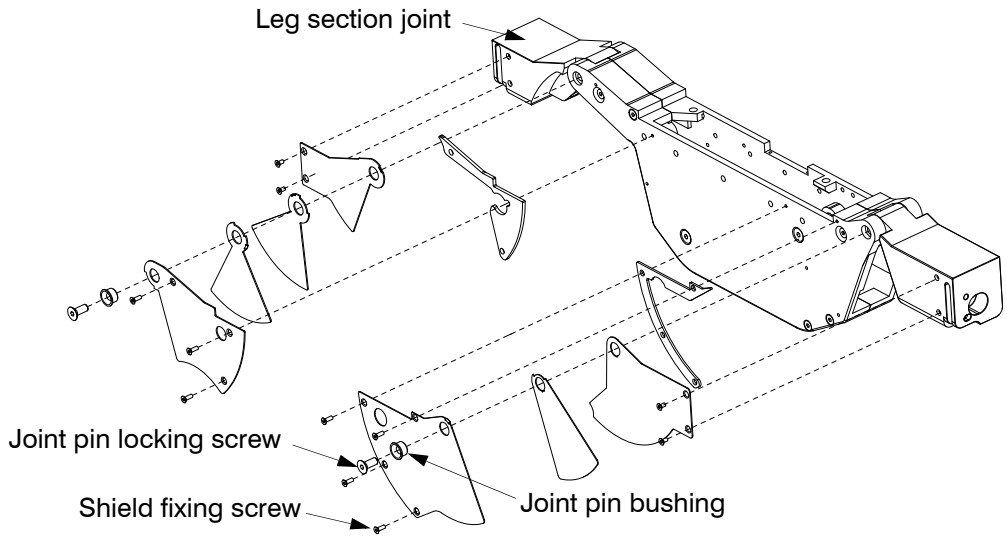


No.	Type	Desc.	Lenght
31	H311	T3	250 mm
32	H311	P3	250 mm
33	H311	5th wheel cylinder	1000 mm

! NOTE! Hose (31) and (32) onnections (29) and (30) connected to the floor lock cylinder block according to the drawing A41892100 in section 8.3.1 page 44.

8.6 Seat section joint shields

8.6.1 Replacing joint shields



Worn or damaged shield plates can be replaced with new spare part shield sets. Joint shields back and leg side sets are fixed under the joint pin bushings and through accessory rail fixing screws. Remove the joint pin locking screw and bushing which is holding joint shield plates and accessory rail fixing screws 1-4 pcs.

All shield plates are fixed with M4 HEX screws. Use 2.5 mm Allen key.

Joint locking screws and accessory rail fixing screws are M8 HEX screws. Use 5 mm Allen key.

Fix the new plates in correct order!

⚠ Ensure that there is no load or table sections attached, when perform this operation.

⚠ If any hesitation, contact Merivaara service department.

9. RECYCLING

9.1 Metals and plastics

When disposing of a product or replacing any of its parts, check the recyclability of each item. A majority of the metal used in Promerix is stainless steel or epoxy/zinc coated steel. Other metals used are anodized aluminium and aluminium bronze.

When recycling plastic parts, determine the material type. Refer to the surface materials table, which is found in this user manual, page 28 to confirm whether or not recycling is possible. For more information about recycling, contact your local waste management facility or visit related sites on the internet. Below are recycling symbols, which are marked on parts made of plastic. Products marked with these symbols can be used as energy waste.

.



9.2 Hydraulic cylinders and gas springs

Hydraulic cylinders and gas springs can be disposed of as metal waste when all oil has been removed. Gas springs contains pressurized nitrogen gas, which should also be removed.

WARNING ! Head section gas spring can be disposed as metal waste after nitrogen gas and oil has been removed. Releasing nitrogen gas is strictly prohibited without following the proper instructions. Gas spring dismantling instructions are available from your sales representative.

NOTE! Maintenance free sealed lead acid batteries used in Promerix are environmentally hazardous and should be disposed of according to local waste regulations.

9.3 Oil

Hydraulic oil used in Promerix: ARAL Vitam DE 32 or BP Energol HLP-HM 32. Hydraulic oil should be disposed of according to local waste regulations.

- Avoid unnecessary skin contact with oil.

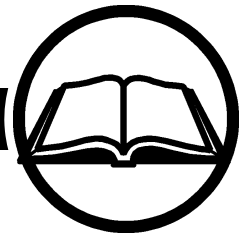
9.4 Electronic waste and batteries

Electronic components and devices should be disposed of according to local waste regulations.



Symbol informs that the product contains electronic devices and cannot be disposed with general waste. If so, the product must be recycled separately and cannot be disposed of along with general waste.

ORDER FORM



Orderer:

Invoicing address:

Delivery address:

Mark / Reference:

Order date:

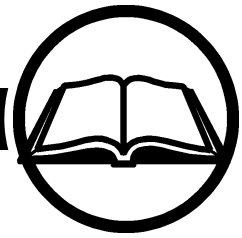
Transport mode:

Pcs	Part	Code	Part name

Information:

Dealer

NOTES




MERIVAARA