Bucky compact / FCS 2000
9804 827 03109

Bucky table with integrated stand for tube assembly

Bucky-Tisch mit integrierter Säule für Strahler

IPSC: Hamburg
Author: H. Schulz
Copyright © 1991 Philips Medizin Systeme GmbH
Printed in Hamburg, Federal Republic of Germany
List of pages and drawings
SUBSYSTEM 9804 827 03109
Manual Order No. 4512 152 76612
File: C013_910_T
  C013_910L0
  C013A_910E/G
  C013B_910E/G
  C013C_910E/G

Cover: paper

1   (91.0)
2   (91.0)
A-0...A-5   (91.0) E/G
B-0...B-11   (91.0) E/G
C-0...C-3   (91.0) E/G
AZ-1.1   (a/91.0) A3/A4
AZ-1.2   (91.0) A3/A4
AZ-1.3   (91.0) A3/A4
AZ-2   (91.0) A2/A3
Z0   (91.0)
Z1-1   (91.0) A4
Z2-1   (91.0) A4
Z2-2   (91.0) A4

P-List
## Technical Data, Planning

### Text

**Contents** .......................... A-0

1. **Technical data** .......................... A-1
   1.1. General notes regarding safety  ........ A-1
   1.2. Weights of components ............... A-1
   1.3. Dimensions of components .......... A-1
   1.4. Dimensions and weights .............. A-1
   1.5. Designation of components .......... A-2
   1.6. Route high-tension and multi-leaf diaphragm cables .......... A-3
   1.7. Mains connection data .............. A-4
   1.8. Special tools required .......... A-4
   1.9. Measuring instruments required .......... A-4
   1.10. Cougar power supply (for USA only) .......... A-4
   1.11. Compatibility ............... A-5

**Drawings** ..........................

- Mechanical dimensions .......... AZ-1.1
- Mechanical dimensions .......... AZ-1.2
- Room layout .......... AZ-1.3
- Pin interface generator .......... AZ-2
1. Technical data

1.1. General notes regarding safety

The respective national regulations for medical purposes must be complied with. Consult the installation lay-out plan.

- During installation make sure that all protective ground wire connections provided by the manufacturer are properly made before the equipment is started up.
- Connect the protective ground wires between the individual system components and the power supply as shown in the wiring diagram.
- Observe the regulations of professional associations concerning safety and accident prevention.

No work may be performed on parts carrying a voltage higher than 42 V.

1.2. Weights of components

- Table: 133 kg
- Tabletop: 35 kg
- Rail stand: 64 kg
- Weight box: 60 kg
- Tube stand with vertical carriage: 88 kg
- Control handle: 3 kg

Total weight incl. tube assembly, multi-leaf diaphragm, bucky assembly: about 450 kg

1.3. Dimensions of components

- Table without pallet: 1400 x 780 x 745 mm
- Tabletop: 2200 x 810 x 40 mm
- Rail stand: 2826 x 610 x 200 mm
- Weight box with weights: 720 x 150 x 150 mm
- Tube stand: 2100 x 600 x 300 mm

1.4. Dimensions and weights

- Table + weight box: 1530 x 860 x 960 mm / weight about 217 kg
- Tabletop: 2320 x 930 x 200 mm / weight about 56 kg
- Rail stand + tube stand + accessories: 2810 x 700 x 620 mm / weight about 244 kg
Designation of components

1. Tabletop
2. Upper table frame
3. Bucky assembly
4. Table base
5. Rail stand for tube stand
6. Front cover panel
7. Foot-switch strip
8. Vertical carriage with X-ray tube support arm
9. X-ray tube assembly
10. Control handle

Bucky compact
1.6. Route high-tension and multi-leaf diaphragm cables

High-tension cable
Length from center of tube assembly to center of tube-stand top about 2150 mm.
Length from center of tube-stand top to the wall about 2600 mm (if the cable outlet is level with the tube-stand top and in center of the unit).
Travel range of tube stand ±902 mm.

Multi-leaf diaphragm cable
Length from multi-leaf diaphragm to center of tube-stand top about 2350 mm.
Total length from multi-leaf diaphragm to the supporting point at the left-hand side panel of the table base panel about 7600 mm.
1.7. Mains connection data

Prerequisites:
There must be a supply of the appropriate voltage and frequency as specified in the order before installation can commence.

- Mains connection: 220 V
- Rated voltage/frequency: 220 V/50 Hz
- Rated current (fuse): 1.25 A
- Rated capacity: 220 VA.

1.8. Special tools required

- Torque wrench 50 Nm (5 mkig)
- Hammer drill or jack drill
- Masonry drill 6 mm and 12 mm

1.9. Measuring instruments required

- Mechanist’s spirit level.

1.10. Cougar power supply (for USA only)
1.11. Compatibility

The Bucky compact is compatible with:

- Tube assembly ROT 350, 90°
- AMPLIMAT measuring chamber
- Tomographic equipment
- Coupling tube stand – buky grid
- Bucky assembly
- Anti-scatter grid 36/12 f = 100 mm
- Diaphragm hand-operated
  with field illuminator
- Multi-leaf diaphragm hand-operated
  with field illuminator
- Accessories flat notched rails

Code No.: 9803 509 10002
"  9804 827 10009
"  9804 827 20.09
"  9804 609 60202
"  9860 836 90101
"  9804 600 91004
"  9804 602 80003
## INSTALLATION

**Text**

<table>
<thead>
<tr>
<th>Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Installation</td>
<td>B-0</td>
</tr>
<tr>
<td>1.1. Preparation</td>
<td>B-1</td>
</tr>
<tr>
<td>1.2. Unpacking</td>
<td>B-1</td>
</tr>
<tr>
<td>1.3. Mount the rail stand to the table base</td>
<td>B-2</td>
</tr>
<tr>
<td>1.4. Mount table base and rail stand to the floor</td>
<td>B-2</td>
</tr>
<tr>
<td>1.5. Align table and rail stand</td>
<td>B-3</td>
</tr>
<tr>
<td>1.6. Mount the horizontal carriage</td>
<td>B-5</td>
</tr>
<tr>
<td>1.7. Mount the weight box</td>
<td>B-6</td>
</tr>
<tr>
<td>1.8. Mount the vertical carriage and the ropes</td>
<td>B-6</td>
</tr>
<tr>
<td>1.9. Insert the weight plates</td>
<td>B-7</td>
</tr>
<tr>
<td>1.10. Mount the head piece</td>
<td>B-7</td>
</tr>
<tr>
<td>1.11. Pre-assemble tube assembly/multi-leaf diaphragm unit</td>
<td>B-8</td>
</tr>
<tr>
<td>1.12. Mount tube assembly/multi-leaf diaphragm unit to the system</td>
<td>B-8</td>
</tr>
<tr>
<td>1.13. Counterbalance the weights</td>
<td>B-9</td>
</tr>
<tr>
<td>1.14. Mount theucky assembly</td>
<td>B-9</td>
</tr>
<tr>
<td>1.15. Electrical connection</td>
<td>B-10</td>
</tr>
<tr>
<td>1.16. Mount tube-stand/bucky-assembly coupling</td>
<td>B-10</td>
</tr>
<tr>
<td>1.17. Mount the tabletop</td>
<td>B-11</td>
</tr>
<tr>
<td>1.18. Finishing work</td>
<td>B-11</td>
</tr>
</tbody>
</table>
1. Installation

1.1. Preparation

- Position the supplied drilling templates for fixing the unit to the floor according to drawing AZ-1.3 in the room and align them. Observe the minimum permissible distances to the wall to provide all movements of the system.
- Drill 3 holes for the column stand and 4 holes for the table. If possible, use the outer drilling template of the table unless the respective structure of the floor (e.g. reinforcement, cable conduits) makes it necessary to use the inner template. The fixing material must be designed such that each fixing point can take up a torque of 2.4 kN. This is guaranteed when using the supplied M8 Liebig safety bolts S12/65 N with concrete floors from property class B 15 onwards according to DIN 1045.
- Rough-drill 7 holes Ø 6, remove the templates and bore out the holes to Ø 12, 70 deep.
- Remove the vinyl or carpet floor covering around the fixing points for the base of the unit. Lay floor covering shims (installation material/accessories) of the same thickness as the original floor covering at the fixing points.

1.2. Unpacking

- Remove packing material and check the parts delivered for completeness, i.e. according to shipping list or order.
- Check all parts for damage.

Table:

- Remove both fixing screws of front panel (2).
- Remove cover panel (1).
- Remove the 4 fixing screws of the transport pallet.
- Remove metal transport straps (3) from the rear side of the table.
3. Mount the rail stand to the table base

- Put the rail stand alongside the table base.
- Bring into coincidence the holes in the rail stand with those in the table base. Connect with 8 screws (4/5/6).
- Put one 3 mm spacer (7) (installation material/accessories) each on of the two lower screws between table base and rail stand (5/6). Make sure that the upper edge of the table base is level with the upper edge of the rail stand.
- Tighten the screws provisionally.

1.4. Mount table base and rail stand to the floor

- Position the table base properly over the fixing holes.
- Prepare the safety bolts supplied.
- Fit the safety bolts through the fixing holes of the table base.
- Tighten them provisionally. Make sure the table base is not under tension in any direction.
1.5. Align table and rail stand

- Align the table with the spirit level, in transverse direction across both ball bearings (8) of the table frame, in longitudinal direction along the table frame.

- Align the rail stand horizontally by placing the spirit level across the upper surface of the upper guide rail (9). (Table base and rail stand are parallel with each other when the upper edge of the rail stand is level with the upper edge of the table base.)
necessary, place shims (10) (installation material/accessories) under table base and rail stand as required.

- Align the rail stand vertically by placing the spirit level across the side of the lower guide rail (11) and the stop.
- Place spacers on the lower screws (7) between table base and rail stand as required (installation material/accessories). Tighten for good all fixing bolts with a torque of 50 Nm (50 mkg) with the torque wrench.
- Once again check the alignment of table and rail stand with the spirit level.
1.6. Mount the horizontal carriage

- Remove the stop from either side of the rail stand (12).
- Place the tube stand with horizontal carriage (but without vertical carriage and weight box) vertically beside the rail stand upon a soft support, e.g. wooden board, to avoid damage of the ball bearings of the horizontal carriage.

- Lift the tube stand only at the horizontal carriage to avoid damage of cables and ball bearings (13) and slide it in carefully.
- Screw on the stop.
- Establish electrical connection between table and tube stand, i.e. between control cables parts of table base and tube stand via plug-in connectors at the horizontal carriage.
17. Mount the weight box

- Insert the weight box (14) into the tube stand from above as described below. If the room height does not meet the min. requirements of 2.85 m, carry out the following steps before installation of the horizontal carriage in the rail stand:
  - Remove plastic caps (15) from the side panels of the column.
  - Insert the round steel rod (16) (installation material/accessories).
  - Slide in the weight box until it rests on the steel rod, with the stops facing downwards and the "V" sign (meaning: front) towards the guide rail.

18. Mount the vertical carriage and the ropes

- Before mounting the vertical carriage (23) on the tube stand, fasten the safety brake (20) to the wire rope (24) of the return pulley.
- Loosely attach, e.g. with adhesive tape, the column head piece with return pulley to the cross arm of the vertical carriage. When mounting the vertical carriage, pull the rope upwards up to stop (21) to release the safety brake and surmount the pressure of the safety-brake spring (22).

Caution!
Pressure spring (22) must remain under tension during this procedure!

After releasing the rope, the vertical carriage is locked by the safety brake.
- Fasten the other end of the rope to the weight box with screw and nut (18/19) supplied.

Caution!
Do not damage or twist the wire rope during installation!
1.9. Insert the weight plates

The net weight of the weight box of 17 kg corresponds roughly to that of the vertical carriage with supporting arm and rotational axis.

Additional weights should correspond to the weight of the tube assembly/multi-leaf diaphragm unit with control handle.

- Insert weight plates (17) (installation material/accessories) into the weight box with their holes facing to the top, and with the large holes diameters facing to the center by means of the hook.

  weight plate 5 mm 2.25 kg
  weight plate 3 mm 1.35 kg.

1.10. Mount the head piece

- When mounting the column head piece with return pulley (28) on the column, seat the bolts accurately.
- Lift the vertical carriage by some cm while pulling the rope upwards to release the safety brake. Then lower the carriage slowly until it is held by the rope.
- After the vertical carriage has been completely installed, fasten 2 plastic covers (29) with 4 screws and washers each.
1.11. Pre-assemble tube assembly/multi-leaf diaphragm unit

- Pre-assemble the tube assembly/control-handle unit according to the installation instructions 9804 602 8.01.
- With tube assemblies ROT 350: Fasten control handle (A) to Z-angle (31) already mounted.

1.12. Mount tube assembly/multi-leaf diaphragm unit to the system

Move the center of gravity of the tube assembly/multi-leaf diaphragm/control handle unit into the rotational axis by displacing the unit vertically (in the direction of X-rays) on compensating plate (35).

Caution!

The compensating plate must in any case be installed as a spacing plate, even if the center of gravity without compensating plate lies in the rotational axis.
- Position the pre-assembled tube assembly with the wooden board on the upper edge of the table frame.
• Mount the tube arm.
• Establish electrical cable connection between tube stand and control board via plug-in connectors in the control handle.
• Move the tube assembly with the tube stand sideways until it touches the stop. Move the vertical carriage fully down.
• Remove round steel rod (16) (installation material/accessories).
• Check the weight compensation and, if necessary, measure the difference in weight by means of a spring balance.

1.13. Counterbalance the weights
• Determine the weight difference (e.g. with spring balance).
• Move the compensating weight upwards and insert the round steel rod as described.
• Lift the vertical carriage by about 20 cm. After releasing it will be held by the safety brake.
• Lift the head piece with return pulley and add or remove weights as required.
• Re-install the head piece with return pulley (dowels!).
• Lift the vertical carriage by some cm.
• Pull the rope upwards to release the safety brake. Lower the carriage until it is held by the wire rope.
• Remove the round steel rod and close both holes in the column with plastic caps (15).

1.14. Mount the bucky assembly
• Insert the bucky assembly into the carriage. The cassette opening must face the front, i.e. the operator’s side of the table.
• Fasten with 4 screws and washers (38) according to bucky type.
• Fastening of the bucky assembly at the right and left-hand sides (38).
• Place trim covers on front and rear edges (39/40) and fasten from above with 3 screws each (41).
1.15. Electrical connection

Connect the mains conductor and the bukey release decade (X1) to the interface in the bukey compact (see AZ–2 and sketch).

- Establish all connections according to Pin Interface AZ–2.
- Depending upon the type of generator concerned, insert a 220 V or 24 V relay (K2) into the socket of the interface (see AZ–2). Furthermore, connect a wire link to terminal strip (01a) of the interface (see AZ–2).

SOM/MCM; SCP; MEDIC CP
- Point 02 rrrr point 03
- Super 702
- Point 01 rrrr point 03.


- Insert the studs of coupling plate (45) from the rear side of the table into the bukey–assembly frame sections and fasten them (46).
- Fasten the driver of coupling (47) to the tube stand by driving 2 screws supplied with washers into the corresponding threaded holes.
- Fasten the bushings for the uncoupling of the bukey assembly by driving 2 screws supplied (48) into the corresponding threaded holes.
1.17. Mount the tabletop

- Exchange the plug at the cable of the coupling board (50) against the plug of the bucky assembly. Access from the inner side of the table base.

- Unscrew stops (55) from either end of tabletop (56), depending on which side the tabletop shall be inserted from.

- Move in the tabletop from the side (57) such that the stops are on the opposite side of the column.
- Re-mount the stops.

1.18. Finishing work

- Glue logo "Bucky compact" to the respective vacant place in the logo strip. Logo "PCS 2000" is only used in Germany.
CONTENTS

1. Adjustment
   1.1. Stand/bucky grid coupling
   1.2. Tube rotational axis
   1.3. Centering of tube and bucky assembly
   1.4. Tube stand
   1.5. Angular adjustment of X-ray tube support arm/rail stand
   1.6. Adjust the column stop

C-0
C-1
C-1
C-1
C-2
C-3
C-3
1. **Adjustment**

1.1. **Stand/bucky grid coupling**

- Adjust the coupling plate such that the micro-switch underneath (49) is operated by the lug of the driver (47). The red pilot lamp in the control handle must go out when stand and bucky grid are coupled. Also see wiring diagram (page 10 or 11).

1.2. **Tube rotational axis**

- Check the vertical position of the flanged plate under load by holding the spirit level against it and adjust respectively.
- To do so, loosen both set screws by turning in both sockethead cap screws (60).
- Adjust with both countersunk screws (61).
- Lock again the set screws by turning out both sockethead cap screws.

1.3. **Centering of tube and bucky assembly**

- Move the vertical carriage with tube fully down. If necessary, mount distance plate(s) (36) (installation material/accessories) at the flanged plate.
1.1. Tube stand

The column must keep its vertical balance when rotated through 90°.

- Check by holding a spirit level against it (65) and (66). Turning screw (67) clockwise makes the column incline as in (70). Turning screw (68) clockwise makes the column incline as in (71) seen from the operator’s side.
1.5. Angular adjustment of X-ray tube support arm/rail stand

Loosen the 4 screws (75) of the column stop to adjust the angle of X-ray tube support arm and rail stand.

This adjustment is required in case of a second working place, e.g. wall stand.

- To check the angle, rotate the tube through 90° and switch on the field illuminator. Move the column stand over its whole travel range to check – with help of a mark applied to the wall – whether the light field is migrating. For exact angular adjustment, the light field must not deviate from the mark.

1.6. Adjust the column stop

The locking action of the column stop during rotation of the tube stand can be changed by adjusting both lock-nuts (76).
1) drill preferably here
(2) drill here only if drilling pattern 1 is not practicable
3) Cable outlet for tube stand alternatively
   left or right i.e. steel box 200x200x80
   centre 300 beneath ceiling
4) Cable outlet for table
   i.e. steel box 135x80x65
   in line with floor covering
5) drill 7x ø12.70 deep for
   M8 safety bolts supplied

Room Lay-out

Scale 1:20

SUBSYSTEM 9804 827 03109 (91.0)
© Philips Medizin Systeme GmbH
<table>
<thead>
<tr>
<th>Diagram Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stromlaufplan</td>
<td>Z1-1</td>
</tr>
<tr>
<td>Current diagram</td>
<td></td>
</tr>
<tr>
<td>Elektrischer Lageplan</td>
<td>Z2-1</td>
</tr>
<tr>
<td>Physical location of electrical components</td>
<td></td>
</tr>
<tr>
<td>Verdrahtungsplan</td>
<td>Z2-2</td>
</tr>
<tr>
<td>Wiring diagram</td>
<td></td>
</tr>
</tbody>
</table>
Philips Medical Systems: DECLASSIFIED Customer Service Intellectual Property

SUBSYSTEM 9004-8270309

Stromlaufplan / Current diagram

21 - 1

bucky compact / PCS 2000
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Klemmleiste</td>
<td>17a</td>
<td>40° Schalter SID Lampe</td>
</tr>
<tr>
<td>02</td>
<td>Terminal Strip</td>
<td>18</td>
<td>40° Switch SID Light</td>
</tr>
<tr>
<td>02a</td>
<td>Connector - Power Supply</td>
<td>18a</td>
<td>40° Schalter horizontal</td>
</tr>
<tr>
<td>03</td>
<td>Steckverbindung - Tomo</td>
<td></td>
<td>40° Switch horizontal</td>
</tr>
<tr>
<td>04</td>
<td>Bremsmagnet Laufrasterlade</td>
<td>19</td>
<td>2° Schalter horizontal</td>
</tr>
<tr>
<td>05</td>
<td>Brake Magnet, Bucky Carriage</td>
<td>20</td>
<td>2° Switch horizontal</td>
</tr>
<tr>
<td>05a</td>
<td>Bremsmagnet Tischplatte längs</td>
<td></td>
<td>Steckverbindung am Tragarm</td>
</tr>
<tr>
<td>06</td>
<td>Bremsmagnet Tischplatte quer</td>
<td>21</td>
<td>Connection Tube Support Arm</td>
</tr>
<tr>
<td>07</td>
<td>Bremsmagnet Tischplatte quer</td>
<td>22</td>
<td>Steckverbindung am Stativ</td>
</tr>
<tr>
<td>08</td>
<td>Bremsmagnet Tischplatte quer</td>
<td>23</td>
<td>Connection Column</td>
</tr>
<tr>
<td>09</td>
<td>Brake Magnet, Table Top, lateral</td>
<td>24</td>
<td>Taster Vertikalbremse</td>
</tr>
<tr>
<td>10</td>
<td>Brake Magnet, Table Top, longitudinal</td>
<td>24a</td>
<td>Switch vertical Lock</td>
</tr>
<tr>
<td>11</td>
<td>Brromagnet Tischplatte quer</td>
<td>25</td>
<td>Taster Rotationsbremse</td>
</tr>
<tr>
<td>12</td>
<td>Brromagnet Tischplatte quer</td>
<td>25a</td>
<td>Switch Rotational Lock</td>
</tr>
<tr>
<td>13</td>
<td>Steckverbindung Laufrasterkupplung</td>
<td>26</td>
<td>Taster Horizontalbremse</td>
</tr>
<tr>
<td>14</td>
<td>Plug Connection for Bucky Coupling</td>
<td></td>
<td>Switch Horizontal Lock</td>
</tr>
<tr>
<td>15</td>
<td>Taster Bremse Laufrasterlade</td>
<td>27</td>
<td>Rote Kontrollampe</td>
</tr>
<tr>
<td>16</td>
<td>Switch Bucky Lock</td>
<td>28</td>
<td>Green Control Light</td>
</tr>
<tr>
<td>17</td>
<td>Schalter Bremse Tischplatte längs + quer</td>
<td>29</td>
<td>Lampe Pilotlicht</td>
</tr>
<tr>
<td>18</td>
<td>Schalter Tischplattenquerrzentrierung</td>
<td></td>
<td>Pilot Light</td>
</tr>
<tr>
<td>19</td>
<td>Switch Centering Table Top lateral</td>
<td></td>
<td>Taster Pilotlicht</td>
</tr>
<tr>
<td>20</td>
<td>Schalter Tischplattenquerrzentrierung</td>
<td></td>
<td>Switch Pilot Light</td>
</tr>
<tr>
<td>21</td>
<td>Switch Centering Table Top lateral</td>
<td></td>
<td>Rotationsbremse</td>
</tr>
<tr>
<td>22</td>
<td>Schalter Laufrasterkupplung</td>
<td></td>
<td>Rotational Lock</td>
</tr>
<tr>
<td>23</td>
<td>Switch Bucky Coupling</td>
<td></td>
<td>Vertical Lock</td>
</tr>
<tr>
<td>24</td>
<td>40° SID Schalter</td>
<td></td>
<td>Horizontalbremse</td>
</tr>
<tr>
<td>25</td>
<td>40° SID Switch</td>
<td></td>
<td>Horizontal Lock</td>
</tr>
<tr>
<td>26</td>
<td>40° Switch SID Light</td>
<td></td>
<td>Steckverbindung im Bediengriff</td>
</tr>
</tbody>
</table>

Elektrischer Lageplan
Physical location of electrical components