

PHOENIX 2

Elevating Radiographic Table

CE
1011

Technical Manual



Control-X Medical Zrt.
Öv u. 29.
Budapest H-1141, Hungary
www.cxmed.com

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PLEASE READ THIS PAGE CAREFULLY

- This equipment must be installed, operated and maintained with the understanding that potential hazards exist for all who work with it unless necessary precautions are taken against injury and/or property damage from high voltage and/or X-ray radiation.
- The responsibility of the manufacturer is limited to providing adequate installation, operating and service instructions and information about possible hazards. The manufacturer shall not be liable for injury, loss of any kind, or non-compliance with the specifications, if it was a result of improper handling, installation, operating, servicing, repair or maintenance of this equipment.
- Only properly trained and qualified service personnel should perform installation, maintenance or repair. Failure to follow established safety procedures and practices could result in serious bodily injury or death and/or property damage. This equipment employs lethal voltages that may be present even if power is disconnected. Always make sure that the power is turned off and the energy storage capacitors are discharged before attempting any repair or other work on any circuits in this equipment.
- When this equipment is operated in conjunction with X-ray tubes and energized, X-rays will be produced. All persons working with X-rays must take necessary precautions to protect themselves against the effects of X-ray radiation. This equipment is designed to operate as a part of an X-ray system. To ensure safe-operating conditions only trained and qualified personnel shall operate the equipment, and only with all required beam-limiting devices and protective barriers in place.
- It is the user's responsibility to ensure that the government regulations are observed in the installation and operation of the unit.
- To ensure that this equipment performs according to the specifications it must be installed, operated and serviced according to the information provided in this document.
- To ensure the safe and efficient operation of the equipment, a periodic service inspection shall be performed annually, as it is recommended in the maintenance section of this manual.
- Do not modify this equipment (other than procedures described in the accompanying documents) without the expressed authorization of the manufacturer. After such authorized modifications are performed, the equipment must be inspected and tested according to the instruction set forth in this manual.
- Additional application and safety information can be obtained from the manufacturer upon request.

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1 INTRODUCTION

1.1 SCOPE OF THE INSTALLATION MANUAL

This Installation Manual is provided for service engineers. All service personnel must be trained and authorized by Control-X Medical to perform any procedure related to installation covered in this document. The service engineers have to possess a good understanding of general medical/x-ray equipment and the nature and potential dangers of high voltage and X-ray radiation.

The manual contains all the necessary information on installing the equipment. However, additional documentation may be needed from the manufacturer to perform a complete system installation (such as generator, Bucky manuals etc.).

The Installation Manual covers the following models:

Model #	Description
PHX2	Phoenix 2 elevating radiographic table
ACPHX2	Phoenix 2 Elevating radiographic table equipped with automatic receptor centering,
ACPHX2L	Phoenix 2 Long elevating radiographic table equipped with automatic receptor centering, without TT

1.2 LIABILITY NOTES

The manual should be read thoroughly before installing the equipment. Control-X Medical is not responsible for any damage or malfunction resulting from deviations from the instructions set forth in this manual. In addition, Control-X Medical is not responsible for any installation or service-related procedure performed by unauthorized person(s).

1.3 INTENDED USE

As part of a complete diagnostic radiographic system, the Phoenix table is intended to hold and **position the X-ray imager and associated devices and the patient** during general radiographic procedures, for instance:

- Chest and spine examinations (when positioning the patient on the table)
- General gastrointestinal radiograms
- Extremities procedures
- Lateral and oblique projections
- Ambulatory / emergency radiograms

The Phoenix table **cannot be used for fluoroscopic applications**.

There is no need for particular limitation of patients in regards to age, gender and physical condition. General guidelines used in radiography apply.

For a complete description of intended use and applications along with counter-indications when used in a complete system, please refer to document

D-1812 Perform-X Radiographic System Operating Instructions.

D-4788 – Perform-X F100-400 C100-400 Radiographic System Operating Instructions

2 IMPORTANT SAFETY INFORMATION

The manual should be read thoroughly before installing and/or using the equipment. You must comply with the instruction of this manual in order to perform a safe and trouble-free installation. You must observe and comply with all the safety symbols and notices listed in this manual and located on the unit.



WARNING!

ELECTRICAL CONNECTIONS

- All interconnection cables and wires (including but not limited to the Bucky cables and interlock cables) have to be UL certified (where applicable) and must comply with the NEC and local codes. The strain relief bushing and wiring methods of these cables and wires must comply with the NEC and local codes.
- The equipment shall not be operated without a proper protective ground connection.

RISKS OF INJURY, DEATH, ELECTRICAL SHOCK AND FIRE

- Do not use the equipment in the presence of flammable anesthetics as an explosion may occur.
- For continued protection against risk of fire, replace fuses only with same type and rating.
- Before cleaning the unit, the power shall be turned off and kept off until the cleaning material has evaporated.

COMPATIBILITY

All accessories used with the equipment (including, but not limited to X-ray tubes, HV cables, AEC detectors and collimators) have to be CE certified / UL recognized for medical application.

3 SPECIFICATIONS

3.1 Mechanical Data, Motion Range

Tabletop surface		810 x 2200 mm or 810 x 2000 mm (optional) 810 x 1850 mm (optional) 810 x 2400 mm (optional) 900 x 2200 mm (optional)
Tabletop transverse movement		+ / - 125 mm (+ / - 150 mm (optional))
Tabletop longitudinal movement		1030 mm (680/830/1230 mm optional)
Area covered by tabletop during longitudinal / transversal tabletop movement		3300 x 1050 mm
Tabletop height		440 ... 900 mm
Tabletop vertical movement		460 mm
Elevating table safety functions		Double-kick (optional) Crash-guard Audible warning
Table Bucky horizontal movement	CXB-17	550 mm 740 mm (optional)
	SGC	610 mm 800 mm (optional)
Tabletop max distributed load	equivalent to max patient weight – no additional accessories for table procedures	350 kg

3.2 X-RAY PARAMETERS

Tabletop Al equivalency		max 0.8 mm Al (99.9% purity or higher)
Cassette size	(CR / film / portable FP)	According to ISO 4090
Table Bucky grid		Fixed mounted or removable stationary or oscillating
AEC detector	optional	3-field ion chamber or solid state detector with preamp
Shortest irradiation time	with AEC	10 ms
Shortest irradiation time	without AEC	1 ms

For detailed X-ray parameter ranges and accuracy, please refer to the X-ray generator

accompanying documents.

For the following specifications please refer to the X-ray tube datasheet:

- maximum symmetrical radiation field size
- focal spot size
- target angle

3.3 POWER SUPPLY

Phoenix radiographic table	230V~ 50 Hz, 690VA
Supply mains internal impedance	<i>Refer to the generator and flat panel display documentation (0.2 Ohms if otherwise not specified by the generator or flat panel)</i>

3.4 ENVIRONMENTAL DATA

Storage and transport temperature	-20°C ... 55°C
Operating temperature	10°C ... 40°C
Max. relative humidity (operation)	80%
Max. relative humidity (storage)	90%
Environmental protection	IP20

3.5 USAGE CONDITIONS

Shortest irradiation time (with / without AEC):	Usually 1ms (depending on generator model)
Longest possible exposure:	Typically 2.5 sec (limited by the flat panel)
Exposure cycle time without positioning:	Typically 10 sec (depends on the flat panel / DR component)
Exposure cycle time including positioning:	Approx. 1 min depending on positions
Useful expected life time:	10 years (with proper maintenance and average case load – 30 positioning cycles per day)

3.6 CLASSIFICATION

Protection against electric shock	 Type B equipment
Classification (as part of a radiographic system)	Class II/b medical equipment

3.7 COMPATIBLE ACCESSORIES

Accessories recommended and approved by Control-X Medical. for use with the Phoenix 2 table (for an accessory or equipment not listed, please contact the manufacturer):

Description	Manufacturer	Control-X Model No.
AEC detectors	Claymount ICX-1153	ICX-1153
Flat panel detectors	Toshiba FDX series	FP-FDX-3543RP, FP-FDX-3543RPW, FP-FDX-4343R

3.8 ELECTROMAGNETIC COMPATIBILITY*

Guidance and manufacturer's declaration – electromagnetic emissions		
The Perform-X Radiographic System is intended for use in the electromagnetic environment specified below. The customer or the user of the Perform-X Radiographic System should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The Perform-X Radiographic System uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A+20dB	The Perform-X Radiographic System is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded: Warning: This equipment/system is intended for use by healthcare professionals only. This equipment/ system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the Perform-X Radiographic System or shielding the location. The Perform-X Radiographic System must be used only in a shielded location with a minimum RF shielding effectiveness and, for each cable that exits the shielded location, a minimum RF filter attenuation of 20dB for radio signals between 30MHz ... 1000MHz.
Harmonic emissions IEC 61000-3-2	not applicable	
Voltage fluctuations / flicker emissions IEC 61000-3-3	not applicable	

Guidance and manufacturer's declaration – electromagnetic immunity			
The Perform-X Radiographic System is intended for use in electromagnetic environment specified below. The customer or the user of the Perform-X Radiographic System should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transients/ bursts IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/ output lines	± 2 kV for power supply lines ± 1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.

Guidance and manufacturer's declaration – electromagnetic immunity			
The Perform-X Radiographic System is intended for use in electromagnetic environment specified below. The customer or the user of the Perform-X Radiographic System should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	$< 5\% U_T$ (>95% dip in U_T) for 0.5 cycle $40\% U_T$ (60% dip in U_T) for 5 cycle $70\% U_T$ (30% dip in U_T) for 25 cycle $< 5\% U_T$ (>95% dip in U_T) for 5 sec	$< 5\% U_T$ (>95% dip in U_T) for 0.5 cycle $40\% U_T$ (60% dip in U_T) for 5 cycle $70\% U_T$ (30% dip in U_T) for 25 cycle $< 5\% U_T$ (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Perform-X Radiographic System requires continued operation during power mains interruptions, it is recommended that the Perform-X Radiographic System be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristics of a typical location in a typical commercial or hospital environment.
Note: U_T is the AC mains voltage prior to application of the test level			

Guidance and manufacturer's declaration – electromagnetic immunity			
The Perform-X System is suitable for use in the electromagnetic environment specified below. The customer or the user of the Perform-X System should assure that it is used in such an electromagnetic environment.			
IMMUNITY test	IEC 60601 TEST LEVEL	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz outside ISM bands ^a 10 Vrms 150 kHz to 80 MHz in ISM bands ^a		The Perform-X System must be used only in a shielded location with a minimum RF shielding effectiveness and, for each cable that enters the shielded location, a minimum RF filter attenuation of 20 dB. See <u>Installation Instructions</u> Field strengths outside the shielded location from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than 3 V/m. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2,5 GHz		
NOTE 1 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. NOTE 2 It is essential that the actual shielding effectiveness and filter attenuation of the shielded location be verified to assure that they meet the minimum specification.			

^a The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz.

^b Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength outside the shielded location in which the Perform-X System is used exceeds 3 V/m, observe the Perform-X System to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as relocating the Perform-X System or using a shielded location with a higher RF shielding effectiveness and filter attenuation.

Guidance and manufacturer's declaration – electromagnetic immunity			
The Perform-X System is suitable for use in the electromagnetic environment specified below. The customer or the user of the Perform-X System should assure that it is used in such an electromagnetic environment.			
IMMUNITY test	IEC 60601 TEST LEVEL	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz		The Perform-X System must be used only in a shielded location with a minimum RF shielding effectiveness and, for each cable that enters the shielded location, a minimum RF filter attenuation of 20 dB. See <u>Installation Instructions</u> Field strengths outside the shielded location from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than 3 V/m. ^a Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz		
NOTE 1 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
NOTE 2 It is essential that the actual shielding effectiveness and filter attenuation of the shielded location be verified to assure that they meet the minimum specification.			
^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength outside the shielded location in which the Perform-X System is used exceeds 3 V/m, the Perform-X System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as relocating the Perform-X System or using a shielded location with a higher RF shielding effectiveness and filter attenuation.			

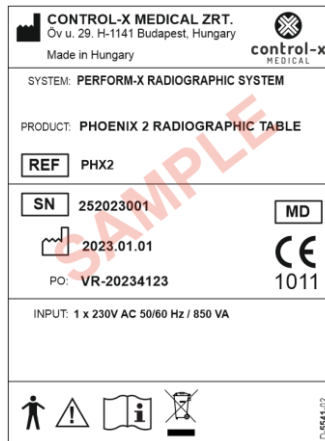
* The EMC information provided above is based on the tests performed on a complete Perform-X radiographic system.

3.9 PRODUCT LABEL

The following information is included on the Phoenix product label:

- name and address of the manufacturer
- the model number, serial number and manufacturing date of the component / system
- power supply requirements

The location of the product labels: on the side cover



Phoenix 2 radiographic table product label samples

3.10 DUTY CYCLE



WARNING! The Phoenix elevating table is **NOT** designed for continuous vertical movement operation. To prevent damage to the equipment and to reduce risk of fire, the table can only be moved for a **maximum of 30 seconds every 5 minutes**. (There must be a 4.5 minute pause after each 30 second movement, giving a 10% duty cycle.)

The following symbol located on the side of the elevating radiographic table (if applicable) informs the operator on the elevating table usage conditions:

CAUTION

THE **DUTY CYCLE** OF THE AC MOTOR FOR THE **VERTICAL MOVEMENT** INSIDE THIS EQUIPMENT IS

20% MAX

i.e. **OPERATE** for 1 min
then **REST** for 4 min

D-3632

3.11 CLEANING, STERILIZATION

The Phoenix table is not a sterile device and is not meant to be sterilized.

The Phoenix table does not require special cleaning or sterilization. However, it is recommended to clean the tabletop from time to time. For cleaning you may use soapy water or equivalent cleaning solution. Apply the solution with paper towel and wipe down the surface. If for any reason the surface requires cleaning, you may use rubbing alcohol.

3.12 APPLICABLE STANDARDS AND REGULATIONS

MDD 93/42/EEC Medical Device Directive
2006/42/EC Machinery Directive
IEC 60601-1:2005 (Third Edition) + CORR. 1:2006 + CORR. 2:2007 + A1:2012 (or IEC 60601-1: 2012 reprint)
IEC 60601-1-2:2007 (Third Edition) with IEC 60601-2-54:2009 + A1:2015 Clause 202

IEC 60601-1-3:2008 + A1:2013
IEC 60601-1-6:2010 + A1:2013
IEC 60601-2-54:2009 + A1:2015
EN ISO 13485:2016
EN ISO 14971:2019
EN ISO 15223-1:2016
EN 62304:2006 + A1:2015
EN 62366-1:2015 + A1:2020

3.13 SYMBOLS LOCATED ON THE EQUIPMENT

The following is a list of symbols used in the manuals and on the product label:

	Date of manufacture, located on the product label.
	Name and address of manufacturer, located on the product label.
	Serial Number of product - located on the product label.
	Single-phase AC main supply - located on the product label.
	WARNING! Refer to manual for additional safety information - located on the product label.
	Instruction manual must be read – located on the product
	Type B applied part - located on the product label.
	Protective earth ground – located inside the equipment at the main grounding terminal.

3.14 OPERATOR CONTROLS

Please refer to document

*D-1812 Perform-X Radiographic System Operating Instructions
– Section Operator Controls.*

*D-4788 – Perform-X F100-400 C100-400 Radiographic System Operating Instructions –
Section Operator Controls*

3.15 SOFTWARE VERSIONS

The following table list identifies the software version for each system serial number shipped. Please refer to the system product label located on the E-box for the system serial number.

Perform-X Serial Number Range	Control Software Version	Release Date (y.m.d)
P-0001 -	V1.12	2016.03.25

4 ROOM PREPARATION

For a complete room preparation description and room layout, please refer to the system installation instruction and system room layout provided with the shipment, for example:

D-3541 - Perform-X Radiographic System Installation Instructions

Refer to the Phoenix 2 table dimensional drawing for mechanical data including drill (floor anchor) patterns:

D-3722 - Phoenix 2 Dimensional Drawing

Plan a layout and prepare the X-ray room before starting the installation. Refer to the provided room layout and floor plan drawings of the tube stand.

Please consider the following when preparing for a Perform-X installation:

- Use appropriate wall plugs and bolts for mounting the rails according to the floor properties.

If the table is not installed with components that are made by Control-X Medical, please refer to the original manufacturer's specification.



ATTENTION!

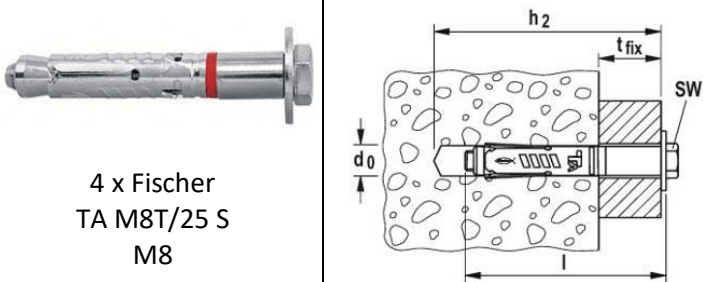
The site must comply with federal regulations and local codes, as well as the dimensional and power requirement set here and for other equipment.

Inspect the room before installation. If the condition of the floor is not suitable for leveling, corrective action shall be taken.

The table requires at least C20/25 grade reinforced concrete floor according to EN 206-1:

Concrete grade	Group	Compression strength of D=150mm / h=300mm object	Compression strength of 150mm cube
C20/25	Ordinary concrete	20 N/mm ²	25 N/mm ²

When anchoring the equipment, the following anchoring or equivalent shall be used (**anchors are not included and types used should be selected according to actual floor quality**):

Anchor type		Bore depth (h_2)	Bore diameter (d_0)
 4 x Fischer TA M8T/25 S M8		Min. 95 mm (3 ¾ ")	Ø12 mm (15/32")

Since the Phoenix radiographic tables do not have visible Power ON indication, the **main wall switch of the room shall be equipped with a green Power ON indicator light**. If the system includes an E-Box, the ON indicator of the E-Box is also lit whenever the power is ON.

4.1 ELECTROMAGNETIC SHIELDING

As indicated in Section [Specifications](#), the Phoenix table may only be installed in an electromagnetically shielded location (room).



ATTENTION!

The Phoenix table is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded:

Warning: This equipment/system is intended for use by healthcare professionals only. This equipment/ system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating Phoenix table or shielding the location.

The Phoenix must be used only in a shielded location with a minimum RF shielding effectiveness and, for each cable that exits the shielded location, a **minimum RF filter attenuation of 20dB** for radio signals between 30MHz ... 1000MHz.

The Phoenix table may interfere with and may be disturbed by other RF emitting devices even if they comply with CISPR emission requirements.



ATTENTION!

Do not use electronic devices in the x-ray room that emit high RF energy, such as radio transmitters and therapeutic equipment operating with electromagnetic radiation.

A warning sign must be installed on the door of the x-ray room stating the following:

**DO NOT USE ELECTRONIC DEVICES EMITTING HIGH RF ENERGY,
SUCH AS RADIO TRANSMITTERS, MICROWAVE OVENS
OR THERAPEUTIC EQUIPMENT OPERATING WITH
ELECTROMAGNETIC / ULTRASONIC RADIATION
IN THIS X-RAY ROOM.**

4.2 ISOLATION FORM THE SUPPLY MAINS

The Phoenix table incorporates an emergency switch that disconnects the motorized drive and the electromagnetic brakes from the mains supply on all phases. However, some associated equipment, such as computers, flat panel detectors are not disconnected when activating the emergency switch for data / study integrity reasons.



ATTENTION!

The X-ray room must be equipped with a suitable isolation device (e.g. 3-phase breaker) that disconnects the entire radiographic system (including the X-ray generator, associated equipment and accessories) from the mains supply in case of:

- the equipment is not in use
- emergency

The isolation device must be equipped with an indicator for both the ON and OFF states and must lock into both ON and OFF positions.

The voltage and current rating of the isolation device must be equal or greater than the supply mains requirements indicated in the X-ray generator accompanying documents.



WARNING!

- Reconnect (turn ON) the mains only after safe usage conditions are ensured.
- The overcurrent protection device (e.g. circuit breaker or FI-relay) cannot be used and the system disconnect device. You must use a separate device, e.g. a magnetic breaker.

5 SHIPPING ARRANGEMENT

The Phoenix radiographic table is packaged in 2 crates for shipping and is not completely assembled when shipped.

The transporting crates contain the following parts, assemblies:

Crate 1

- Radiographic table (If the table was ordered as a component of a system, it is completed with Bucky, tray and optional AEC chamber. The grid is packed in the general accessory box.)
- Accessories, manuals

Crate 2

- Tabletop

Table Crate		
Dimensions 880 x 1520 x 700 (34.6" x 60" x 27.5") Gross weight: 250 kg (550 lbs)		
QTY	Part/dwg #	Description
1	PHOENIX	Phoenix
1	2200-HG	Patient handgrip
1	Bucky or Grid Cabinet	OPTIONAL – Built-in Bucky or Grid Cabinet with grid and optional AEC detector
Tabletop Crate		
2200 mm version: 2280 x 900 x 70 (89.75" x 35.4" x 2.75") Gross weight: 53 kg (118 lbs)		
1800 mm version: 1930 x 900 x 70 (76" x 35.4" x 2.75") Gross weight: 46 kg (102 lbs)		
2400 mm version: 2480x900x70 (97.63"x35.4"x 2.75") Gross weight:58 kg (128lbs)		

5.1 UNPACKING THE EQUIPMENT

Examine all the crates (boxes) carefully at the time of the delivery. In case of obvious damage, immediately notify the freight company and ask for an inspection for the damage.

Open the crates and boxes carefully and do not discard them until you have located all parts and the equipment is fully assembled.



CAUTION!

The Phoenix table is a heavy objects. Lift and move with help.

- Remove the top and sides of the table crate and the top of the tabletop crate (note that the tabletop may be installed at the end of the installation)
- Remove the foil covering from the table and from the tabletop
- Remove the accessories from the crate
- Remove the bolts from the base of the table and lift the table off the palette.
- Clean any grease or dust, accumulated during transportation from the unit

Arrange the cleaned unit to protect it from any damage and to not obstruct the installation work.

6 INSTALLATION INSTRUCTIONS

6.1 NECESSARY TOOLS AND MATERIAL

- Hand tools (screwdrivers, metric Allen keys, wrenches etc.)
- Concrete anchors
- Measuring tools (measuring tape, level, voltmeter, etc.)
- Metric open-end wrench set
- Metric socket wrench set (in the US standard as well)
- Regular hand tools (crew drivers, pliers etc.)
- Digital Voltmeter
- Hammer drill
- Level

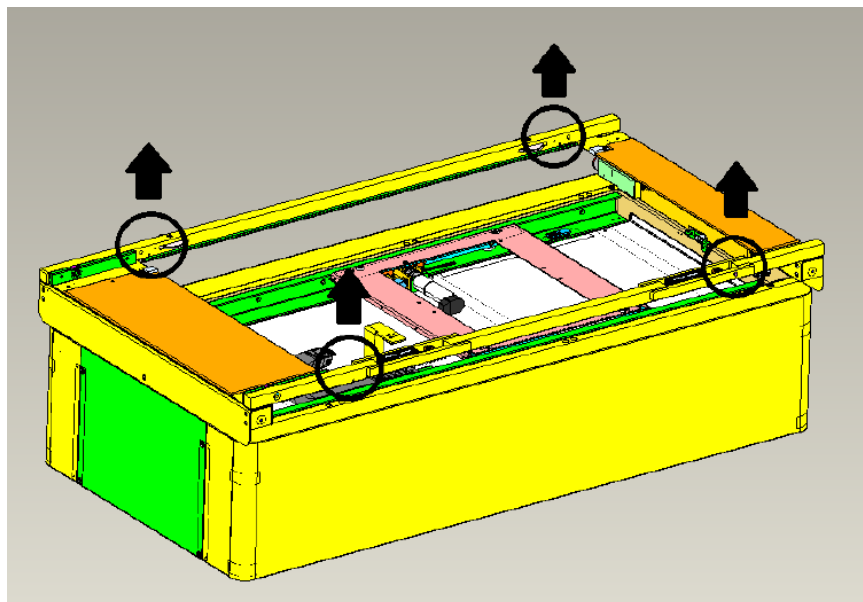
6.2 PHOENIX RADIOGRAPHIC TABLE INSTALLATION

For mechanical dimensions, please refer to documents:

D-3722 – Phoenix 2 Dimensional Drawing

6.2.1 Table Installation

- Set and align the table to the center of the X-ray beam (collimator light). For lifting points on the tableframe please see image below:



**ATTENTION!**

Please make sure that the table is lifted using the indicated lifting points only, otherwise the equipment might get damaged. Please note that the table frame can move transversally and horizontally during lifting, as magnetic brakes are not functional without power supply. Be careful during positioning process.

- Mark the positions of the table mounting holes.
- Move the table from its final location and free the area for drilling the mounting holes.
- Drill 4 holes of appropriate diameter for the 1/2" (12-mm) anchors.
- Install the anchors. (Anchors and bolts are not part of the consignment.)
- Reposition the table and anchor it with the bolts. Use shims if needed for appropriate leveling.
- Check the level of the table in longitudinal and cross table directions. If adjustment is necessary, place the necessary amount of "U" shape shim plates under the appropriate corner of the table.
- Leveling reference points:
 - Cross-table direction: ball bearings located in the two ends of the table's transversal frame
 - Longitudinal direction: plane of the tabletop
- Check that the mounting screws are holding it securely on the carriage. Remove If the table comes with the Bucky device already installed, double check the holding straps from the carriage and make sure it runs smoothly throughout its travel. (If the table does not have a Bucky device installed, proceed with the following instruction.)

6.2.2 Bucky Installation

(If Bucky and the tray has been already installed in the table, disregard this section)

The holding brackets and the switch assembly are factory mounted on the holding carriage and electrically connected according to the schematic.

- Position the Bucky on the carriage. The cassette tray opening should face the front of the table.
- Remove the cover of the motor compartment.
- Fix the Bucky from the side using 4 bolts. Connect the Bucky switch cable as per the provided drawing.

6.2.3 Grid Installation (non-removable type)

- Detach the spring from the frame.
- Remove the frame from the Bucky.
- Disconnect two of the grid-mounting brackets on one side and loosen the other two.
- Locate the tube-side mark on the grid, place it properly into the frame, and secure it against movement.
- Restore the frame, spring and the compartment cover.

6.2.4 Installation of the Table Top

- Depending upon the intended mounting end, remove the appropriate end stops.
- Slide the tabletop onto the transversal frame. The longitudinal tabletop brakes may stop the sliding process.

- Carefully press the brakes down against the springs until you are able to push the tabletop into position. (Please see below for cleaning the brakes before installation).
- Reattach the table stops.

6.2.5 Electrical Connections

- All wiring inside the table has been prepared to accept the installation of the Bucky device. A 10-conductor cable is delivered with the table, the bucky device, the brake switch and the brake has to be connected as per drawing.
- Connect the Bucky cable to the Bucky terminal. Refer to the connection chart displayed on the drawing and in the CXB-17 manual for the Bucky. If using any other Bucky device, please refer to the corresponding manual!

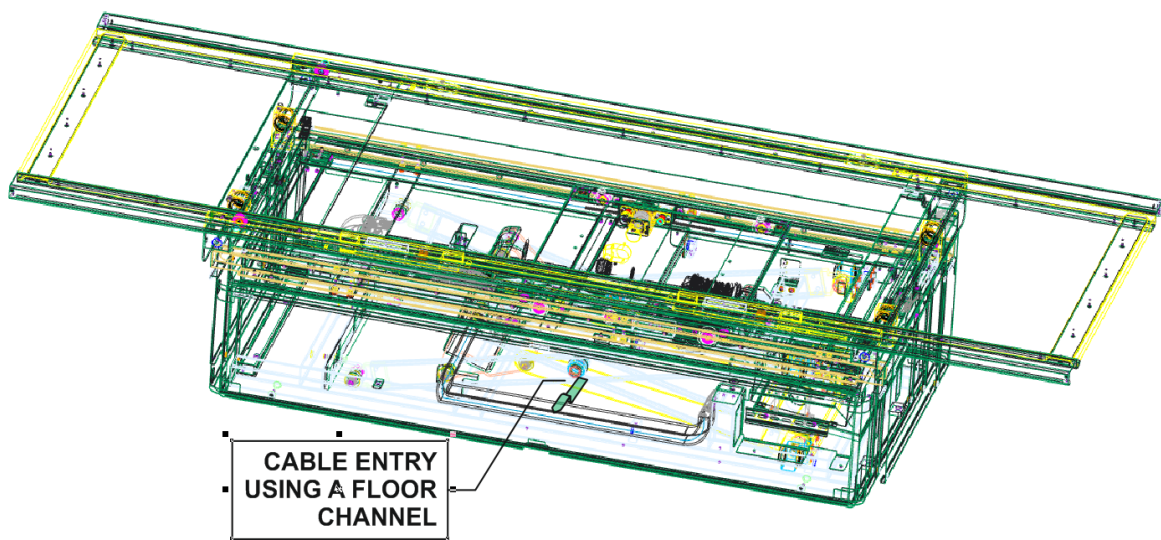


ATTENTION!

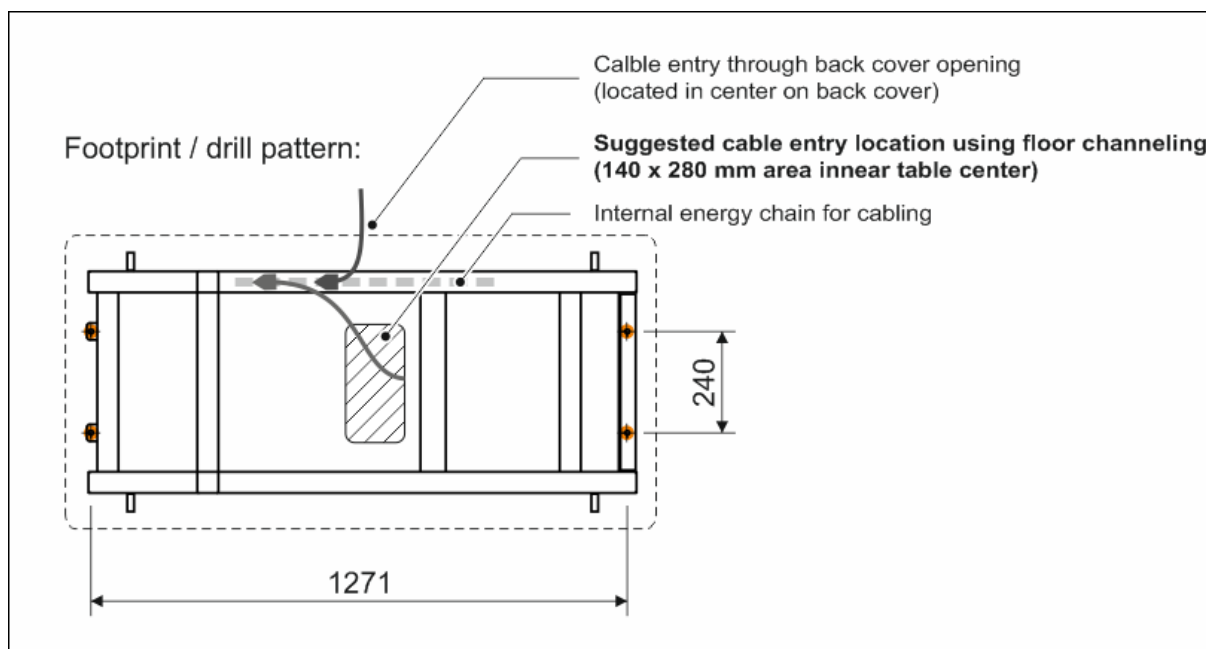
Please make sure the safety table switch (next to the printed circuit board) is in "ON" position. If this switch is in the "OFF" position, no electrical functions will be possible.

6.2.5.1 Cable Entry Using Floor Channel

The recommended method of connecting the power and interconnecting cables is using a floor channel reaching underneath the table. Plan the opening according to the following drawing:

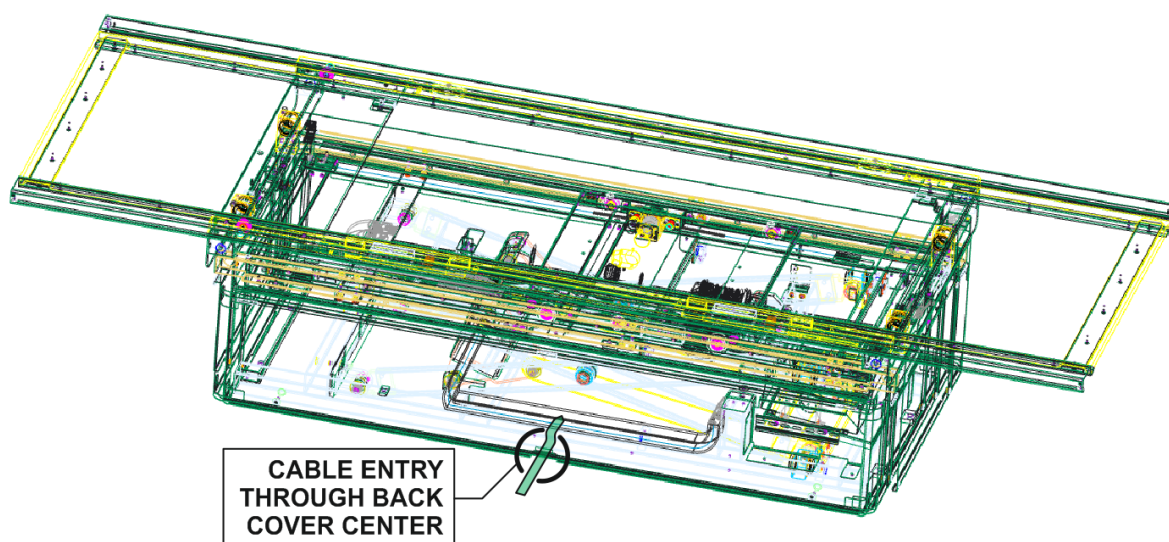


The floor opening (up to ~ 140 x 280 mm) should be planned in the center on the table base. Use the following diagram for approximate opening location (from drawing D3722):



6.2.5.2 Cable Entry Through the Back Cover

Alternatively, the cable can be lead through the center opening of the back cover. Run the cables through the center opening, then enter the cables into the internal energy chain mounted on the lower table frame.



6.2.6 Table Function Settings

The CXPHX2 board has a set of DIP switches that configure some of the functions of the table. The DIP switches are factory configured for the following:

DS1	DS2	DS3	DS4	DS5	DS6	DS7	DS8
OFF	OFF	ON	OFF	ON	OFF	OFF	ON
Auto test mode	Table top brake release config	Stepper Driver enable (Bucky Hor)	Stop at Center Pos and SID height	Speaker Enable	Double –Kick Enable	Stepper Drive Mode	HW Test Mode

The PHOENIX elevating table features two circuits where the duration of the vertical movement STOP time and the transversal movement of the tabletop are adjustable.

The following service functions are available:

DS2: Table top brake release operation

When OFF:

Both the left and right brake release foot pedals release the transverse AND longitudinal brakes.

When ON:

- (1) The LEFT brake release foot pedal releases the transverse AND longitudinal brakes.
- (2) The RIGHT brake release foot pedal releases the LONGITUDINAL brakes ONLY.

DS3: Enable motorized bucky movement when ON

DS4: STOP at tabletop center and SID position

When ON:

- (1) the tabletop will stop at the center of travel for a few seconds while positioning the tabletop. Movement can continue when the STOP delay elapses.
- (2) The vertical travel will stop for a few seconds when reaching the preset SID height. Movement continues after the STOP delay elapses.

DS5: Enable the speaker (buzzer) on controller board

DS6: Enable double kick (double tap) safety feature for the vertical travel

DS7: Select stepper drive ON – CW/CCW , OFF PUL6DIR

6.2.6.1 Safety Feature Settings

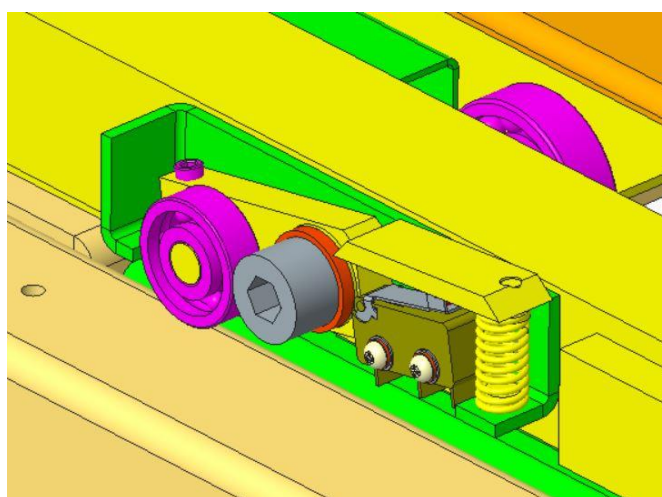
The Phoenix elevating table is equipped with several safety features that prevent the undesired operation of the table (i.e. patients getting on or off the table and involuntarily stepping on the foot pedal) and avoid accident.

Vertical Movement

The table vertical movement cannot be started unless the operator initiates it by double tapping on the foot pedal. To activate the preferred feature set DS5 DIP switch to ON position.

Crash Guard

To prevent damage to the table while lowering accidentally on any object, crash guards are installed in all four corners of the tabletop frame. This guard stops the down motion when the tabletop is pushed upward.



6.2.6.2 Position Switches

The table position switches are adjusted in the factory. If you need to make an adjustment on these switches, they are located in the front left area of the table. Please remove the front covers to have access to the switches. Loosening the bolts on the holding bracket the switches can be adjusted in either direction. Once you finished the required adjustment, tighten the bolts and restore the covers.

Phoenix-2 crash guard setup procedure

1. In order to prevent the possible collisions between the tabletop and the crash guard, it has to be set up properly. In the first step, the actuator lever (1) has to be levelled using a set screw (2). The tip of the actuator lever has to be just slightly lower than the topmost point of the load-bearing (3).

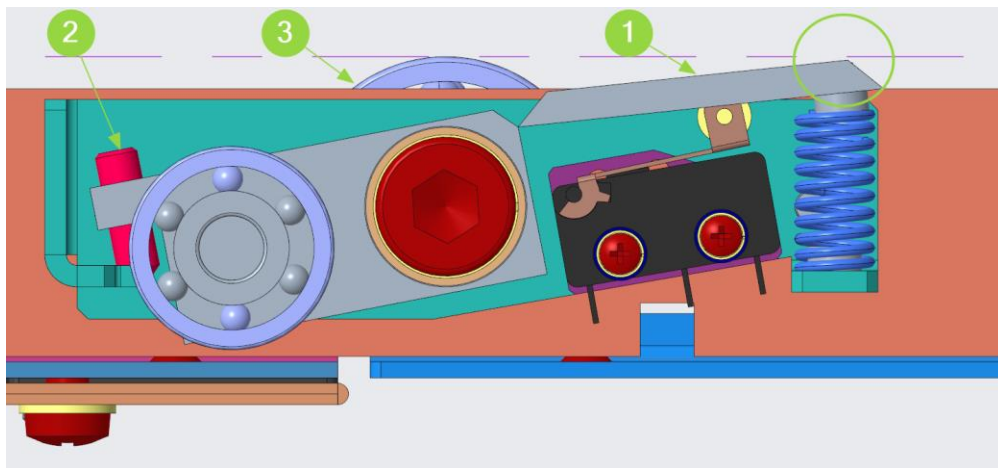


Fig.1. – Correct setup

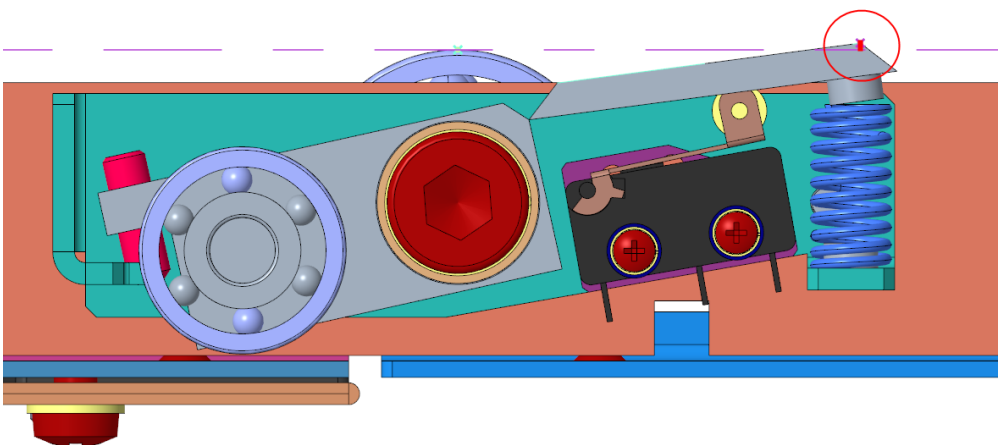


Fig. 2. – Incorrect setup

2. This is followed by the switching point adjustment. After loosen the screws (5) the microswitch can be translated along the red arrow and re-tightened in the desired position. In the optimal setup the actuator lever travels 1.5 -2 mm to the switching point.

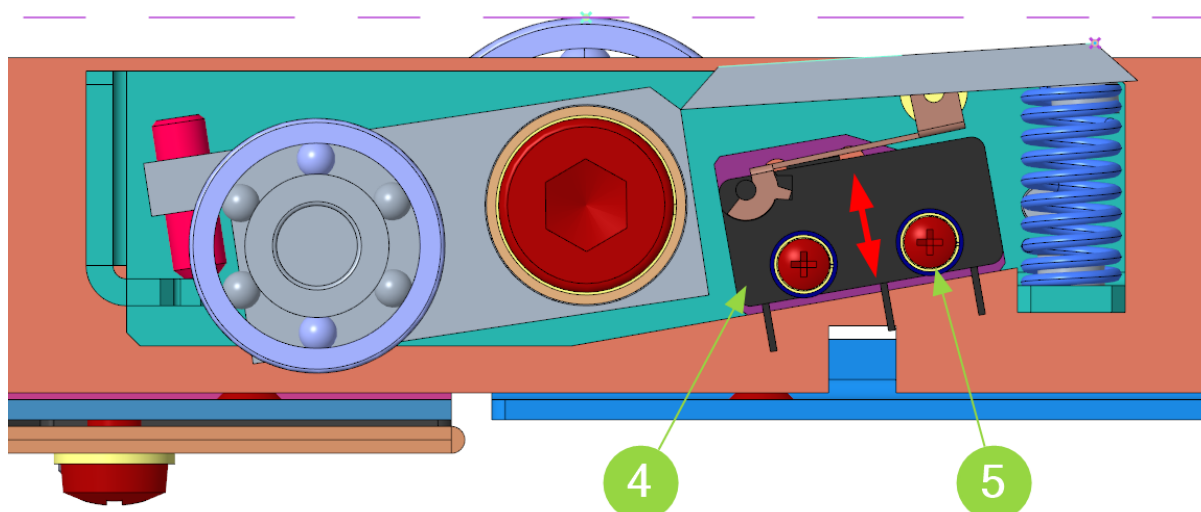


Fig. 3. – Positioning of the microswitch

6.2.6.3 Tabletop SID Height Setting

The vertical movement can be configured to stop at the desired SID height (see section *Table Function Settings* - defaults to 75cm). To activate the SID height stop feature, set dip switch DS4 to ON.

To change the SID height setting:

1. Move the table to the desired SID height
2. Simultaneously press the Bucky brake release button AND step on BOTH left and right tabletop release pedals.

6.2.6.4 Tabletop Brakes

The function of the brakes is to hold the tabletop in a fixed position while the releasing foot pedal is not activated. If the tabletop tends to move in any directions while the brakes are activated, please check the surface of the brakes and the rails system facing the brakes. The brakes and rails are treated before shipment to avoid oxidation on the surface, so this protecting layer may reduce effectiveness of the brakes. If needed brakes and rails must be cleaned. Remove all protecting grease or oil from the surface to have best performance. To get access to the cross-table brakes, remove the side cover on both sides (inside the table) of the transverse travel bearing assembly, clean the brakes, and surface as necessary. The longitudinal brakes are underneath the tabletop, you need to slide the top in one and the other direction (remove the stopping end-pieces first) to have access to the brakes.

6.3 ALIGNMENT AND ADJUSTMENT PROCEDURES

If the tabletop is floating or there is no centerline on it, then it shall be removed and the receptor will be referenced to for positioning.

Move the tube stand and the receptor horizontally to one end of the table and using the collimator cross-hair shadow center that end of the table. Repeat the procedure on the other end as well. Verify that the image receptor is centered within 1/8-inch (3 mm) along the

vertical travel. When the table is parallel to the horizontal travel of the tube stand, anchor the table to the floor as instructed by the manufacturer.

7 MAINTENANCE

The Phoenix table requires regular maintenance. In order to keep the equipment in good operating condition it is necessary to perform regular inspections.



WARNING!

Repairs shall be carried out by a trained and qualified technician, or in a service workshop, or in the manufacturing factory.

In order to keep the equipment in good operating condition it is necessary to perform regular inspections.



WARNING!

If the equipment is used frequently, an inspection should be performed every month. In case the device is used only occasionally, random maintenance inspection shall be carried out at a 3-6 months interval.

The objective of this inspection is to reveal and eliminate any hidden malfunctions. The inspection shall include the following:

- The running track of the roller bearings (contamination of the tracks or running surfaces of the bearings)
- The forces required for the movement (jamming, loose screw, contamination)
- The operation of the magnetic brakes (unadjustment, loose screw, insufficient contact)
- The most important screw joints
- Electrical operation

The Phoenix table has been constructed to require minimal lubrication. The parts requiring lubrication are supplied with the appropriate lubricant when the equipment was delivered from the factory; they do not require any re-lubrication.

7.1 LUBRICATION

If for any reason lubrication is required, the materials used originally are described below.

- Special ball bearing grease saponified by lithium. The use of greases inclined to gumming is prohibited, because they would increase the rolling resistance of the bearings.

**WARNING!**

Only acid free grease and oil may be used for treatment.

7.2 MECHANICAL TESTING

Check the anchors for proper tightness as well as all assembling screws and nuts. If necessary, tighten loose connections.

Check the proper position of the ball and guide bearings of the Bucky carriage.

Check all brakes and moving parts every 6 months. Movements must be smooth and without any excessive noise. Brakes must hold the tabletop firmly in every position. When released they must not obstruct movement.

7.3 CLEANING AND DISINFECTION

The Phoenix table does not require special cleaning or sterilization. However, it is recommended to clean the tabletop from time to time.

- For cleaning without disinfecting, you may use mild soapy water or an equivalent cleaning solution. Apply some solution with lint free cloth or paper towel and wipe down the surface.
- If for some reason, the surfaces require disinfection, you may use Actichlor (contains Sodium Dichloroisocyanurate, a form of chlorine) or equivalent with a 3 to 5% Hypochlorite concentration.
- Method of disinfection:
 1. Turn off the system completely (using the wall disconnect switch).
 2. Use 50/50 disinfectant / water solution.
 3. Apply (e.g. spray) the disinfectant on a lint free cloth. Make sure the **cloth is only damp and not wet.**
 4. **Do NOT apply the it directly** on the surfaces as the substance may get inside the equipment
 5. Wipe the surfaces carefully with the cloth.
 6. Before turning the equipment on again, make sure that the disinfectant has evaporated.

**WARNING!**

To clean / treat the surfaces, only acid-free, non-corrosive, non-abrasive substances shall be used.

Only such disinfecting methods shall be used that correspond to the relevant regulations and rules as well as the protection from explosion.

The use of disinfecting spray is not recommended because it can get inside the equipment.



WARNING!

Make sure that no water or other liquids enter any component of the equipment. Such liquids may cause short circuit in electrical components and / or corrosion on surfaces.

7.4 CALIBRATION SCHEDULE

Some of the components require periodic calibration:

Every 12 Months

- If the equipment is equipped with one or more tracking functions or digital SID / tube angle display, calibrate the position display and tracking once a year
- Perform the Acceptance Test described in next section

8 ACCEPTANCE TEST



WARNING!

The Acceptance Test shall be performed after the installation is completed and the equipment is calibrated, before putting the system in service.



ATTENTION!

For test requiring producing X-rays, such as parameter accuracy, linearity and reproducibility, refer to generator's maintenance manual / acceptance test.

The acceptance test shall be performed on a fully assembled and functional Perform-X system.

Please refer to the system acceptance test for detailed instructions:

D-3541 - Perform-X Radiographic System Installation Instructions

9 SCHEMATICS AND BOARD LAYOUT

Please refer to the wiring diagram and schematic drawings supplied in the System Documentation folder for detailed information:

D-3723 - Phoenix 2 HPMS Wiring Diagram

For additional or complete schematic diagrams and parts lists, please contact the manufacturer.

10 REPLACEABLE CIRCUIT PROTECTION / FUSES

The Phoenix table contains replaceable fuses on various printed circuit boards as listed below.



WARNING!

To avoid risk of fire, replace fuses only with ratings and types specified below.

COMPONENT	PC BOARD	FUSE DESIGNATOR	RATING	RECOMMENDED TYPE
Phoenix	CXPHX2	F1, F2, F3	T 4AL, 250V	Littelfuse 218 004P
		F2	T 2A, 250V	Littelfuse 218 002P

Recommended manufacturer / type: Littelfuse 218P series 5 x 200 mm time lag glass fuses.

REVISION HISTORY

Revision	Date	Description of Changes	Modified Page(s)
01	2017.06.25	Original version	Entire document
02	2018.04.04	Information on lifting points added	Page 17
03	2018.11.23	(1) Replaced front page image (2) Added 2300 mm table top option	1, 6
04	2019.02.20	SID height adjustment updated	20
05	2019.05.02	Added description for DIP switch 2	20
06	2019.07.03	Added cable entry information	Section 6.2.5
07	2020.04.01	Logo change	1
08	2022.03.10	CAPA-5183: update references of standards and regulations	
09	2023.03.10	Change business structure + label sample	1 st page, section 3.9
10	2023.05.16	Add Phoenix-2 crash guard setup procedure to 6.2.6.2	22
11	2023.07.21	Technical parameter updated	6
12	2024.05.27	Add ACPHX2L model and long tabletop crate dimension	4,6,17
13	2024.06.24	Fixed information on DS2 operation	22