

PROGNOST SH

X-ray system tube support, floor stand

Model/ID: 7040-5-XX00L

User Manual

Ident. Nr. 5040-0-8002



PRONGOST SH in analogue base configuration



X-ray components (X-ray tube, collimator, X-ray generator) are not included in the PROGNOST SH.



**NOTE**

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**NOTE**

The information contained in this document conforms to the configuration of the equipment as of the date of manufacture. Revisions to the equipment subsequent to the date of manufacture will be addressed in service updates distributed to the PROTEC Technical Service Organization.

Document Effectivity

Revision No.	Date	List of effective pages	Comments
1.0	2019-05-14	all	Newly created. Replace document 5040-0-0002_Rev01

General Notes

**WARNING!**

No changes of the ME device!

Mechanical – Electric Warning

**WARNING!**

All of the movable assemblies and parts of this equipment should be operated with care and routinely inspected in accordance with the manufacturer's recommendations contained in the equipment Accompanying Documents.

Maintenance and service is only to be performed by Customers authorized by PROTEC GmbH & Co. KG.

Live electrical terminals are deadly.

Do not remove flexible high-tension cables from X-ray tube housing or high-tension generator and/or access covers from X-ray generator.

For all components of the equipment protective earthing means must be provided in compliance with the national regulations.

Failure to comply with the foregoing may result in serious or fatal bodily injuries to the operator or those in the area.

To the User

**NOTE**

The user of this Document is directed to read and carefully review the instructions, warnings and cautions contained herein prior to beginning operation, installation or service activities.

While you may have previously operated equipment similar to that described in this Document, changes in design, manufacture or procedure may have occurred which significantly affect the present operation.

Although the product was subject to a risk analysis and the design corresponds to the current state of the art, residual risk will remain in clinical use. These are displayed in the following user manual by application limitations, contraindications, warnings and precautions.

The installation and service of equipment described herein is to be performed by authorized, qualified **PROTEC GmbH & Co. KG** Customers.

Assemblers and other Customers not employed by nor directly affiliated with **PROTEC GmbH & Co. KG** technical services are directed to contact the local **PROTEC GmbH & Co. KG** office before attempting installation or service procedures.

For Installations and service procedures it is necessary to read the „technical description“ of the product and to observe any containing point in it.

1 Product description

1.1 Introduction

This user manual describes the special features and operational aspects of the PROGNOST SH, knowledge of which are required for efficient and effective use of the radiographic system.

Prior to working with the PROGNOST SH, it is required that the user reads the Safety Notes as well as the chapter regarding operation.

1.2 Description

The X-ray tube support, floor stand PROGNOST SH is guided by two floor-fixed rails to allow smooth horizontal movements. For special applications it is also possible to fix the tube stand directly to the floor.

The support arm is prepared for the installation of an X-ray tube assembly (X-ray tube with collimator) and the control unit with the user interface.

The horizontal movement of the tube stand and the vertical and rotational movement of the X-ray tube assembly are locked by electromagnetic brakes. Additionally, the rotation of the X-ray tube assembly around the horizontal support arm axis has pre-defined stops at 90°, e.g., for proper alignment with a Bucky wall stand. All movements are driven manually.

The control elements on the control arm of the tube stand and on the collimator are easily accessible from the front.

1.2.1 Models

PROGNOST SH 6AS; Angle display button	7040-5-8000
PROGNOST SH I6T; TOUCH 6 button	7040-5-9000

System components

The PROGNOST SH consists of the following components:

- Tube stand with vertical carriage and collimator
- Crosshead with magnetic brake
- Universal X-ray tube support
- Control unit with inclinometer
- Command arm and rotary brake with angle adjustment
- Floor rail
- Horizontal carriage

Optional functions/components

- Operating unit with Touch-Display
- Base plate for wall installation
- Base plate for free-standing floor installation
- Floor rail extension for 3m acquisition distance

Compatible components (stand-alone products) and possible combinations

The below mentioned components/products are not included with the standard delivery of PROGNOST SH but nevertheless can be combined with the PROGNOST SH tube stand.

- Collimator
- X-ray tube assembly
- X-ray generator
- Radiographic table incl. Bucky with cassette tray or DR detector – Grid unit
 - Bucky or Grid entity of the PROTEC series
 - 3-field measuring chamber of the PROTEC series
 - Anti-scatter grid of the PROTEC series

Accessory that can influence the EMC-conditions

- Network cable (note the max. cable length in the documents of components)

1.2.2 Installation

See separate Installation manual of PROGNOST SH.

Contact information of persons which are qualified to make installations are requestable at:

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1.2.2.1 Floor capacity



NOTE

The X-ray system is primarily made of metal pieces. This has a main role in the weight of the device.

The X-ray system PROGNOST SH has a weight of max. 331 kg.

Every technician is obliged to check the ground load. Also double bottoms and hollow floors have to be taken into account.

1.3 Product specific characteristic

- Ceiling independent tube stand suitable for rooms with minimum 2,30 m ceiling height
- Wide range of application
- Short Installation time
- High reliability
- Short wall distance allows an optimal utilization of available space
- Control elements are arranged for easy access and operation on the control arm
- Angle indicator (inclinometer) ensures reproducible position of X-ray tube assembly (rotation around the support arm axis)
- Electromagnetic brakes for horizontal travel of the tube stand, vertical travel of the X-ray tube assembly, and rotation of the X-ray tube assembly around the support arm axis, with additional 90° click-stops

1.4 Intended use

The floor stand PROGNOST SH is a hardware assembly with its related electronic controls.

As a component of a stationary basic diagnostic x-ray system PROGNOST SH is intended to mount, support and facilitate positioning of the x-ray tube assembly during a variety of routine planar procedures requiring a diagnostic x-ray system in human medicine.

1.5 Indication and Contraindication

1.5.1 Indication

The X-ray system component PROGNOST SH, considered as a single component, has no indication and no contraindication. Since this X-ray system component is intended for connection with other X-ray system components, the indication and contraindication of an entire X-ray system are considered.

A complete list of indications is unrealisable for conventional radiography, because the spectrum of conventional X-rays is very diverse and can vary in the course of medical-technical progress.

Some examples of indications for an X-ray examination may be:

- For the diagnosis of a bone fracture or bony injuries of the skeletal system or pathological changes of hard tissues.

- To control the bone setting.
- For the diagnosis of luxations and ligament ruptures of the locomotor system.
- For the diagnosis of degenerative, inflammatory, traumatic and tumorous diseases and changes of the locomotor system.
- For diagnostic of malformations and malalignments of the skeletal system.
- For the diagnosis of thoracic and pulmonary symptoms (thorax exposures)
- For the diagnosis of sclerotherapy.
- For the diagnosis of inflammatory and expansive processes of the mucosa, cranial bones and paranasal extension.
- For the diagnosis of the abdomen (e.g. acute abdomen, plain abdominal radiography, urethrogram, cystogram).

According to §83 of the German radiation protection law (StrlSchG), an X-ray examination is only justified if the patients benefit from x-ray diagnostics outweighs the radiation risk. The examination method, means the conventional X-ray with the PRS 500 system, must be suitable to answer the diagnostic question and no other more suitable alternative method is available.

1.5.2 Contraindication

- There are no absolute contraindications for conventional X-rays.
- But it is not allowed to make any exposures on humans when they are not medically indicated
- For pregnant women and children it is important to consider if the exposure is really necessary. It should be avoided if possible.

1.6 Intended user group

The PROGNOST SH is exclusively designated for use by professional who are trained, in accordance with the corresponding national regulations, in the use of diagnostic X-ray equipment and its proper (certified) use in connection with other medical products, objects and accessories. Suitable users could include the following: Radiologist, radiology assistants, radiology technicians, doctors and other medically trained personnel.

1.7 Conformity



This product is in conformity with the requirements of the European Community Medical Device Directive 93/42/EEC from 06/14/1993 including all current revision standards.

The declaration of conformity is available directly from PROTEC:

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2 Safety Instructions



NOTE

Contains information that are relevant to the usage.

xxx



CAUTION!

Contains information that can cause damage to properties at non conformity.

xxx



WARNING!

Contains information that can cause personal injuries at nonconformity.

xxx



WARNING!

Warning of radioactive substances or ionising rays. Contains information that can cause personal injuries at non conformity.

xxx

Adjustments and calibrations that are described within the user manual must be made, with the aid of The technical description for the system, by the **PROTEC GmbH & Co. KG** customer service department or a PROTEC GmbH & Co. KG authorized service technician.



NOTE

Every delivered manual has to be read and the safety notes have to be observed.



NOTE

After installation the commissioning have to be recorded with the PROTEC acceptance protocol.



NOTE

The commissioning of the PROGNOST SH can only be done if all safety notes and user securities have been met. The user securities can be: door contact, marked area, dosimeter, safety clothings, etc.



CAUTION!

The manual contains every safety relevant information for the commissioning of the PROGNOST SH. Operating the device is exclusively for special trained staff. In this context there are on every operating element relevant safety symbols. Further information are on the delivered document-CD. Those information count as additional information and have to be observed.

**NOTE**

Every operating elements are descript in the corresponding manual.

2.1 General safety notice

2.1.1 Requirements for operation

**WARNING!****Protection Class I ME device**

To reduce the risk of electric shock, this unit is designated exclusively for connection to a supply network with protective earth.

In case for a use with a X-ray generator:

The power for the components of radiographic system PROGNOST SH is designated to be exclusively supplied through a direct connection to the available X-ray generator. The X-ray generator is required to offer a minimum of two connection ports with 230V 50/60Hz.

The X-ray Generator of the System is directly connected to the power supply (see according to Technical Description: PRS 500 X – DE 5066-0-8003 / EN 5066-0-8004, PRS 500 E – DE 5069-0-8003 / EN 5069-0-8004, PRS 500 F – DE 5067-0-8003 / EN 5067-0-8004).

The radiographic system PROGNOST SH with stand is a Class I ME product (according to EN 60601-1).

This device contains no on/off switch. The PROGNOST SH is directly connected to the X-ray generator and is switched on/off through the switching on and off of the generator itself. In order to disconnect the PROGNOST SH from the power the connected X-ray generator must be shut off.

2.1.2 Operation of the radiographic system

In case of disrupted functionality, use of the product should be discontinued and the customer service department of PROTEC or an authorized service technician should be informed.

2.1.3 Operating personnel

The PROGNOST SH should only be operated by personnel who are trained in accordance with the corresponding national regulations in the use and operation of diagnostic X-ray systems.

**NOTE**

Only properly trained and authorized personnel are allowed to work with the PROGNOST SH.

The user, as well as the service personnel, must pay attention to the warnings, notices and safety instructions located on the device and in the user manual. Failure to comply with the information provided can lead to injury.

**NOTE**

Operating personnel are required to acquaint themselves with all warnings (warning signs) located on the device. They serve to ensure the safety of the operator as well as others and set a basic for orderly operation.

2.1.4 Pinching and Collision Hazards



CAUTION!

Ensure that while using any product that can be lowered, raised or moved in different directions, neither yourself (operator), the patient or any third party finds themselves in a hazardous position (area of movement). Remove all objects (e.g. chairs, pushcarts) from known collision areas.

Be aware that careless or improper adjustment of the radiographic system (movement of column, detector Bucky, Vertical Bucky wall stand and table top) can lead to damage of the X-ray components, unusable X-ray images and injury to the patient. Failure to pay attention can lead to damage of the radiographic system as well as external objects.

2.1.5 Explosion protection

The PROGNOST SH is not designated for use within areas with explosive hazards.

2.1.6 Interaction with external devices

Unwanted interaction with external devices is not known.

2.1.7 Electromagnetic Environment and the influence of devices



CAUTION!

The usage of other accessories, converter and other cables besides the delivered ones or by PROTEC (or the component manufacturer) established ones can cause increased electromagnetic emissions or a decreased electromagnetic resistance, which will lead to an improper operating mode.



NOTE

The characteristics of this device, as determined by emissions, allow its use in the industrial sector and in animal clinics (CISPR, Class A). When used in residential areas (for which Class B is usually required by CISPR 11), this unit may not provide adequate protection for radio services. The user must take remedial measures such as implementation or reorientation of the device.

The PROGNOST SH is intended for use in a professional environment of the medical service (e.g. clinic, surgery centres, physiology offices ...)

3 Control elements and device displays

3.1 X-ray system tube support, floor stand

- 1 Indication of rope rupture
- 2 Operating unit with Touch-Display
- 3 Keypad
- 4 Operating unit with inclinometer
- 5 Handle

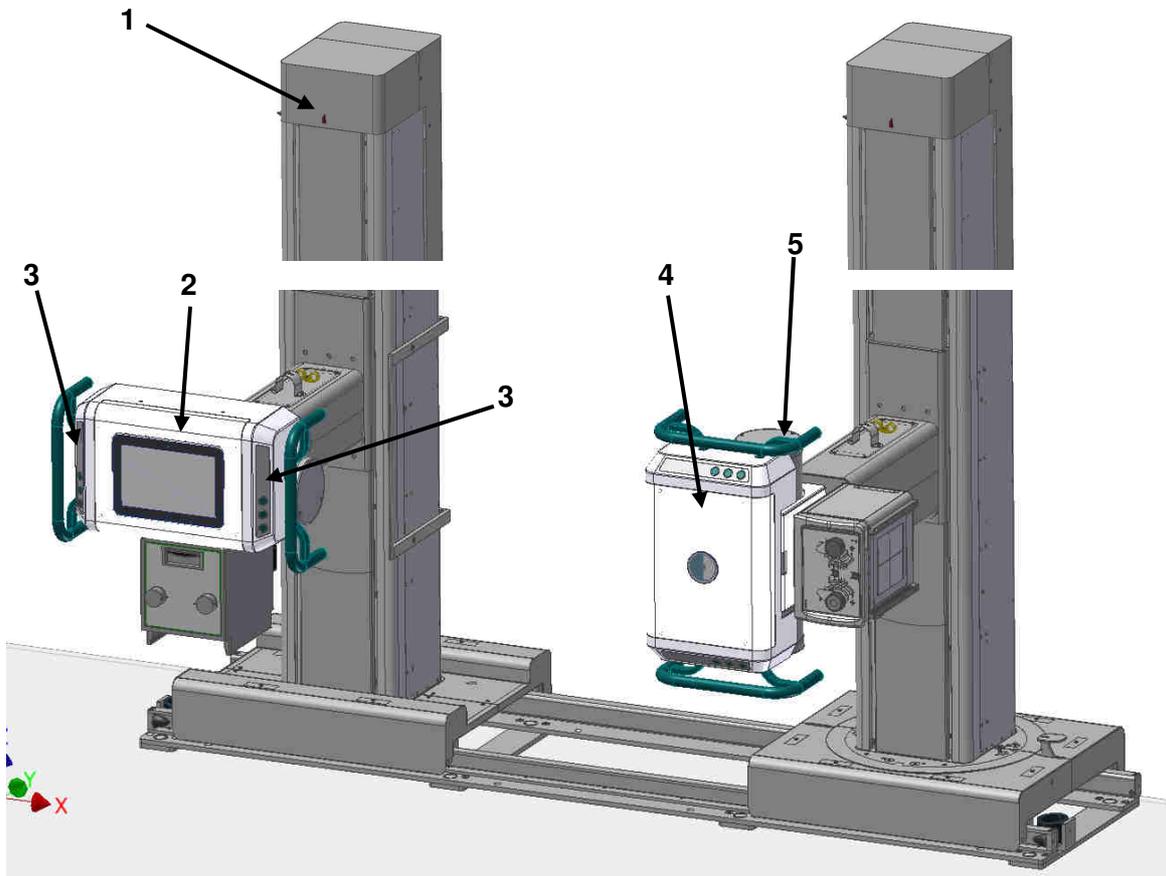


Figure 3-1

3.2 Command arm

3.2.1 PROGNOST SH

- 1 Angle indicator for adjusting the X-ray assembly
- 2 Brake release for horizontal movement of the X-ray tube stand
- 3 Brake release for rotational movement of the X-ray unit around the horizontal support arm axis
- 4 Brake release for vertical movement of X-ray tube arm and horizontal movement of X-ray tube stand
- 5 Brake release for vertical movement of X-ray tube arm and horizontal movement of X-ray tube stand
- 6 Brake release for movement of X-ray tube assembly around the horizontal support arm axis
- 7 Brake release for vertical movement of X-ray tube arm

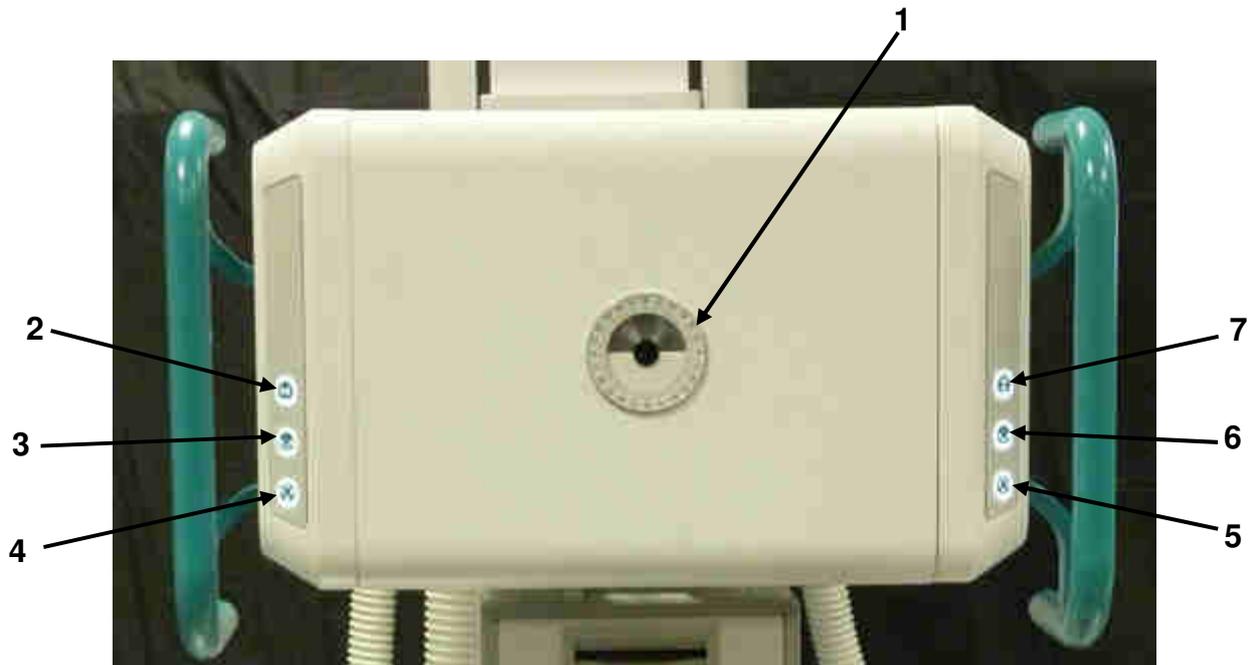


Figure 3-2

3.2.2 PROGNOST SH TOUCH

- 1 Touchdisplay of X-ray tube assembly
- 2 Brake release for horizontal movement of X-ray tube stand
- 3 Brake release for movement of X-ray tube assembly around the horizontal support arm axis
- 4 Brake release for vertical movement of X-ray tube arm and horizontal movement of X-ray tube stand
- 5 Brake release for vertical movement of X-ray tube arm and horizontal movement of X-ray tube stand
- 6 Brake release for movement of X-ray tube assembly around the horizontal support arm axis
- 7 Brake release for vertical movement of X-ray tube arm



Figure 3-3

Controls are operated from the front side (operator side) of the tube stand. With the handles grasped, the electromagnetic brakes can easily be released by pressing the respective button related to one or more movements to allow convenient and accurate positioning of the X-ray tube assembly.

4 Handling / Operation

4.1 Operation PROGNOST SH

Grab both handles of the control arm and push the button for the desired movement. The respective brakes are released and it is possible to move the X-ray tube assembly in the desired position.

	Horizontal movement of the X-ray tube stand
	Vertical movement of the X-ray tube assembly
	Rotation of the X-ray tube assembly
	Horizontal movement of the X-ray tube stand and vertical movement of the X-ray tube assembly

4.2 Function of the PROGNOST SH

4.2.1 Switching On/Off the PROGNOST SH

PROGNOST SH starts automatically by switching on the X-ray system. PROGNOST SH. The PROGNOST SH turns off automatically by switching off the X-ray system.

5 Safety and Maintenance



WARNING!

**Caution Electrocutation hazard!
Disconnect the power supply.
If the component is to be supplied via X-ray system or generator, then switch off the whole X-ray system.**

5.1 Introduction

In this chapter, you will find details regarding safety and maintenance, which is required to ensure the correct and reliable function of the radiographic system following initial installation.

5.2 Cleaning and disinfection



NOTE

Caution
Changes to material are possible!

Pay attention that, during cleaning and/ or disinfection, no fluids find their way into the main housing of the control unit. This reduces the risk of short circuits and corrosion.

5.2.1 Cleaning

The use of corrosive or abrasive cleaning agents as well as solvents is not allowed. These materials can cause damage to the outer surface of the unit or to the coating of the individual components.

Clean the outer surfaces of the unit and all painted components using a damp towel and a mild – light alkaline cleaning agent (e.g. RBS* Neutral T). Dry the components off following cleaning.

Chrome components should be cleaned by being wiped down with a dry woollen cloth

5.2.2 Disinfection

Disinfection must be performed in accordance with the applicable legal requirements and guidelines corresponding to disinfection and explosion protection.

For reasons related to safety, the use of spray disinfection is not allowed. The mist from such disinfection dispenser systems can find its way into the unit, resulting in short circuiting and/ or corrosive build up.

All components within the radiographic system, including unit accessories, should undergo a wipe down disinfection using appropriate surface disinfection agents (e.g. Melsept* SF, 15 min. reaction time with a concentration of 2%). The information provided by the disinfectant manufacturer in regard to concentration and reaction time must be closely followed.

No disinfection agent, which is classified as flammable, can be utilized.

Should explosive gas and / or vapors be created through the use of the chosen disinfection agents, the unit can only be switched on when the gas/vapors have 100% dispersed.

5.3 Check-up and maintenance



WARNING!

It's forbidden to make any check-up or maintenance services while the PROGNOST SH is in use with a patient! Any check-up or maintenance services can only be done by people who got trained or authorized by PROTEC.

5.3.1 Daily Controls (prior to or during the unit operation)

No daily maintenance is required prior to or during operation.

5.3.2 Regular controls

X-ray equipment should be quality-controlled at regular intervals, at least monthly, or as required by applicable regulations to determine that the image quality remains in accordance to national regulations.

5.3.3 Maintenance



NOTE

Only original spare parts are to be used in situations requiring component replacement Maintenance

Required maintenance must be performed at 6-month intervals by PROTEC Service or specific authorized service provider to ensure the safe and reliable operation of the equipment. In the event that scheduled maintenance is not performed, PROTEC GmbH & Co. KG will not be responsible for damages incurred by the user or third parties if such damages are the result of improper or omitted maintenance.

Prior to operation (creation of X-ray images), the operator must ensure that all Safety related mechanisms, indicators and/or switches described within the user manual are fully functional and that the unit is overall operationally ready.

See Technical Description off the system and off all integral components.

Only original spare parts are to be used in situations requiring component replacement.

5.3.4 Warranty



NOTE

The current conditions of guarantee are deposited in the order papers or in the valid pricelist to the time of purchase.

All repairs and replacement of components because of misuse and/or incorrect operation are excluded from the warranty.

Only authorized technicians may do service and maintenance work.

5.3.5 Product life time

The PROGNOST SH has an expected product life of 10 years when used in accordance with the product specifications/ limitations and provided that maintenance through the PROTEC service department or a **PROTEC** authorized service provider has be completed. After reaching the life span the further usage of the device happens on own risk.

5.3.6 Further Information

Further information to the chapters and for a safe usage, transport or storage are in the technical description of the PROGNOST SH.

5.3.7 Applied Parts and parts which get handled like an application part

The patient does not come in contact with PROGNOST SH while utilization. It is not necessary to define applied parts.

5.3.8 Disposal



The X-ray system PROGNOST SH contains different plastics. At disposal of exchange parts or the whole system the current regulations have to be observed. Please contact your contractual partner or the service company, or a company specialized for disposing the components.



6 Electrical data



NOTE

The X-ray system is in need of the following power supply (see table „Power supply Generator).

Power supply	230 Vac
Power frequency	50 - 60 Hz
Input current	2,5 – 6 A

The power supply for the electromagnetic brakes of the X-ray stand and the X-ray unit is provided by a power supply with a power of 500W. This is mounted on the X-ray column. The power adapter comes with 230V; 6A 2,5A; connected directly to the generator and delivers 24Vdc, 20.83A.



WARNING!

To lower the risk of an electrical shock, the device can only be run on a power supply with a protective conductor.

6.1 Electromagnetic Compatibility (EMC) after EN 60601-1-2



CAUTION!

The radiographic system PROGNOST SH is, as a medical electrical electric device, subject to particular precautionary measures in regard to EMC and is required to be installed and prepared for initial use as described within the accompanying documents.



CAUTION!

Mobile HF-Communication devices shouldn't be used closer than 30cm (12 Inch) to the marked parts and cables of the PROGNOST SH. Disregarding this can cause a decrease in the performance features of the device.

6.1.1 Guidelines and Manufacturers declaration – electromagnetic interference (non-life supporting device)

The X-ray system tube support, floor stand PROGNOST SH is intended for use in the electromagnetic environment specified below. The customer or the user of the radiographic system should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic Environment
RF emissions CISPR 11	Group 1	This radiographic system uses RF energy only for its internal function. Therefore, the RF emission is very low and unlikely to cause any interference in nearby electronic equipment. This 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 system is intended for use by healthcare professionals only. This equipment/system may cause
RF emissions CISPR 11	Class A	
Harmonic emissions EN 61000-3-2	Class A	
Voltage fluctuation/ flicker Emission EN 61000-3-3	Complies	

		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 radiographic system or shielding the location.
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The X-ray system tube support, floor stand PROGNOST SH is intended for use in the electromagnetic environment specified below. The customer or the user of the radiographic system should assure that it is used in such an environment.

Immunity Test	EN 60601-1-2 Test level	Compliance level	Electromagnetic Environment - guidance
Electrostatic discharge (ESD) EN 61000-4-2	± 6 kV contact ± 8 kV air	EN 60601-1-2 Test level	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 transient/burst EN 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output	EN 60601-1-2 Test level	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN 61000-4-5	± 1 kV differential mode ± 2 kV common mode	EN 60601-1-2 Test level	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines EN 61000-4-11	<5 % U_T for 0,5 cycle (>95 % dip in U_T) 40 % U_T for 5 cycles (60 % dip in U_T) 70 % U_T for 25 cycles (30 % dip in U_T) <5 % U_T for 5 s (>95 % dip in U_T)	EN 60601-1-2 Test level	Mains power quality should be that of a typical commercial or hospital environment. If the user of the radiographic system requires continued operation during power mains interruptions, it is recommended that the radiographic system be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field EN 61000-4-8	3 A/m	EN 60601-1-2 Test level	Power frequency magnetic fields should be at levels characteristic of a Typical location in a typical commercial or hospital environment.

NOTE: U_T is the alternating supply voltage prior to application of the test levels

Immunity Test	EN 60601-1-2 Test level	Compliance level	Electromagnetic Environment - guidance
Radiated RF EN 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the Equipment , including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter

			<p>Recommended separation distance</p> <p>$d=1.2 \times \sqrt{P}$ 80 MHz to 800MHz</p> <p>$d=2.3 \times \sqrt{P}$ 800 MHz to 2.5GHz</p> <p>$d=1.2 \times \sqrt{P}$</p> <p>Where P is the maximum output rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths for fixed RF transmitter, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
--	--	--	--

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structure, objects and people.

^a Fields strengths from fixed transmitters, such as base stations for radio 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 radiographic system is used exceeds [field strength] V/m, observe the radiographic system to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as relocating the radiographic system or using a shielded location with a higher RF shielding effectiveness and filter attenuation

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

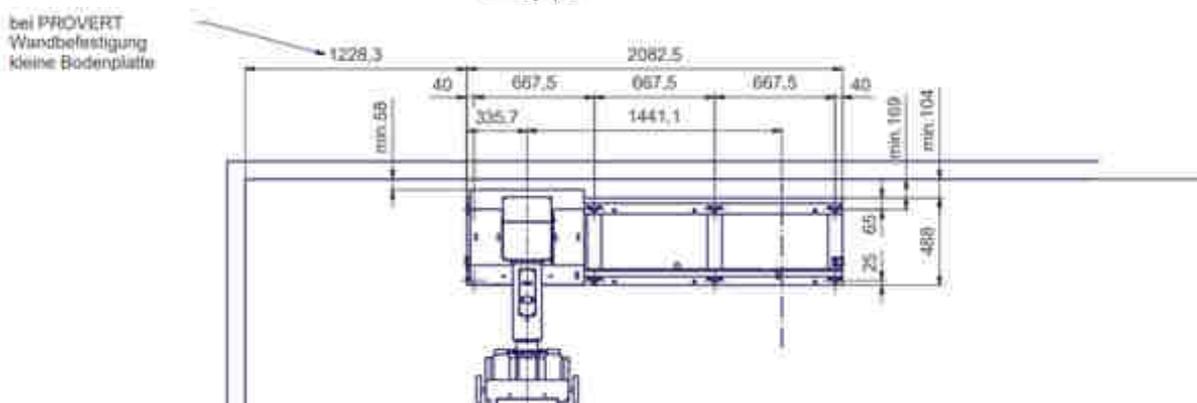
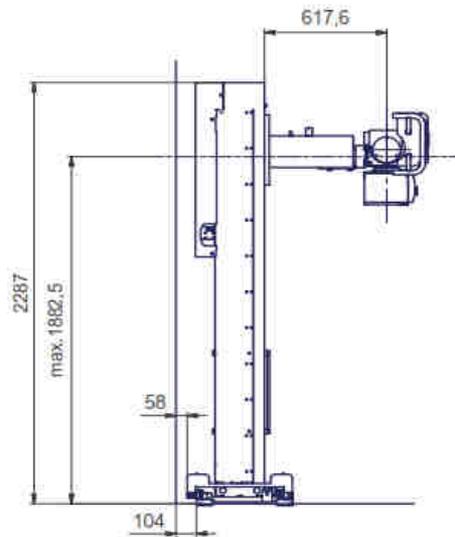
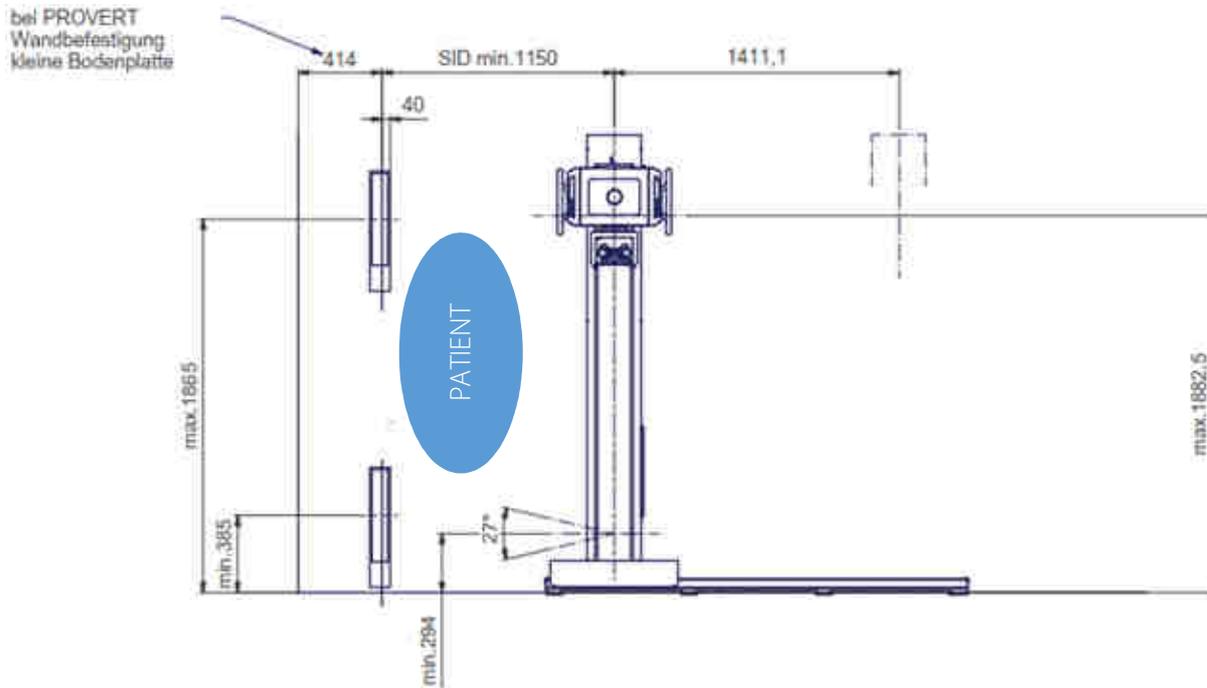
The X-ray system tube support, floor stand PROGNOST SH is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the radiographic system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitter) and the radiographic system as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of the transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150kHz to 80MHz	80MHz to 800MHz	800MHz to 2.5GHz
	$d=1.2 \times \sqrt{P}$	$d=1.2 \times \sqrt{P}$	$d=2.3 \times \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3

100	12	12	23
<p>For transmitters rated at the maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.</p> <p>Note:</p> <ol style="list-style-type: none">(1) at 80MHz and 800MHz, the separation distance for the higher frequency range applies(2) These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

7 Technical Data

7.1 Dimensions



*OP = Operator

7.1.1 Travel range

Angulation X-ray tube assembly around horizontal support arm	+/- 180°
Detents X-ray tube assembly around horizontal support arm	-90°; 0°; +90°, 180°
Tube stand longitudinal travel:	1411 mm
Tube stand longitudinal travel, FFD 3m with long rails	2078,5 mm
Focal spot vertical travel @horizontal X-ray beam:	294 -1882,5mm

7.1.2 Total weight

The maximum total weight of PROGNOST SH with floor rail and X-ray tube assembly amounts 331 kg.

7.2 Protection Art and Protection Class

The PROGNOST SH is consistent with a protection class 1 (according to EN 60601-1).

7.3 Environmental conditions**7.3.1 Environmental conditions during operation**

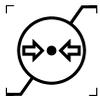
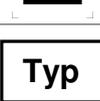
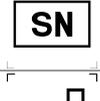
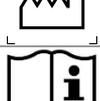
Ambient Temperature	+ 10°C to + 40°C
Relative humidity	30% to 75% (non-condensing)
Atmospheric pressure	700 hPa to 1060hPa

7.3.2 Environmental Conditions for Shipping and Storage

Ambient Temperature	- 10°C to + 70°C
Relative humidity	10% to 95% (non-condensing)
Atmospheric pressure	500 hPa to 1060hPa

8 Description of symbols, labels and abbreviations

8.1 Symbols

	Limitation atmospheric pressure
	Limitation temperature
	Limitation humidity
	Keep dry
	Fragile, Handle with care
	This way up
	Attention, consult accompanying documents
	Refer to User manual
	CE-Mark
	Manufacturer
	Trade name
	Order number
	Serial number
	Date of manufacture
 www.protec-med.com/download	With this symbol we point out that Usage instructions of the corresponding product is on our homepage
	Note on disposal; WEEE, Waste of Electrical and Electronic Equipment
	Protective ground (Earth)

	Caution: pinch-/crushing hazard for hands and fingers
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8.2 Identification label



PROTEC
TEAM SPIRIT | ABILITY

PROTEC GmbH & Co. KG
In den Dorfwiesen 14
71720 Oberstenfeld

Prognost SH

REF ---- - - - - -L
SN S-- ----
MAY JULY 2018

CE	Power Rating	Vdc	⚠	
	24			A
	10			Hz

www.protec-med.com/download
Made in Germany

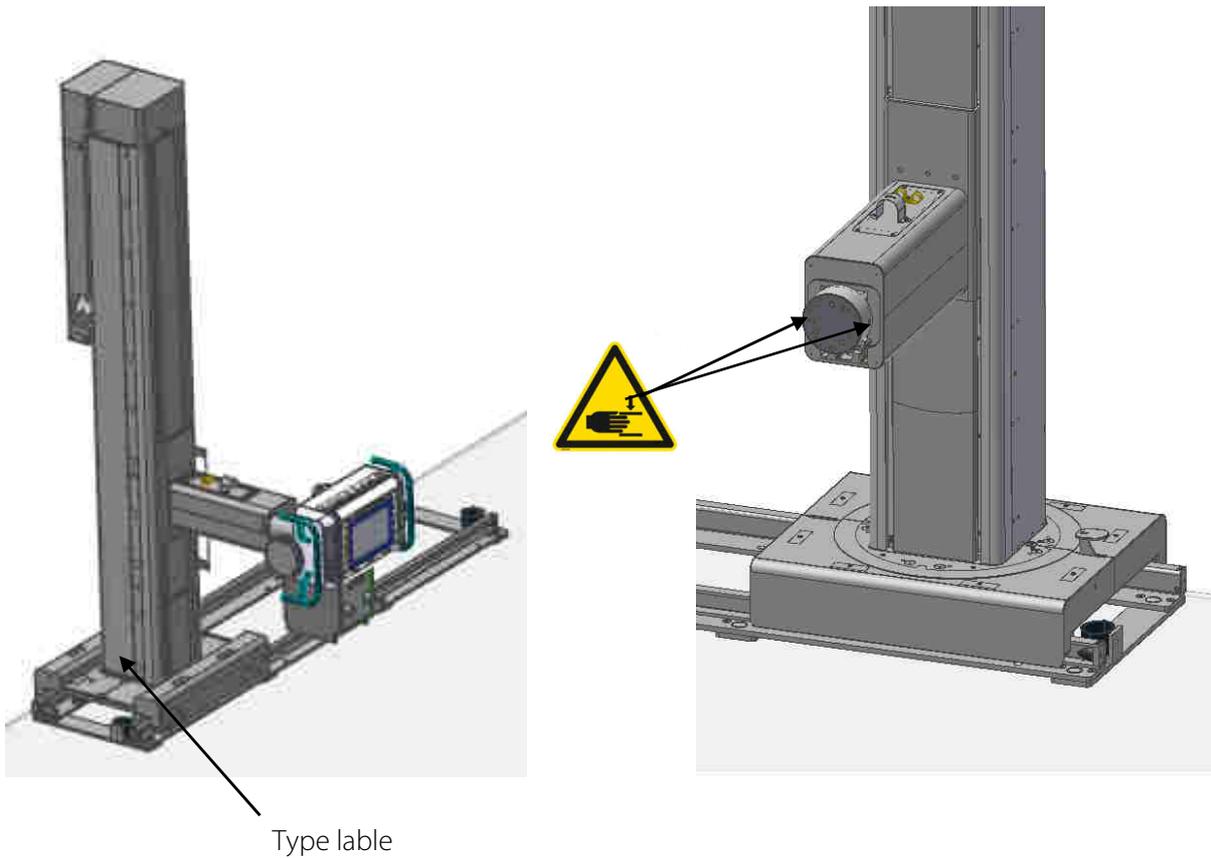
8.3 Labels

Labels on the tubearm



Caution: Possible pinch-/crushing hazard for the hands and fingers while moving the tabletop, table and or X-ray tube assembly unit.

8.4 Position symbols and labels



8.5 Abbreviations

mm	Millimeter
cm	Centimeter
lb.	Pound
kg	Kilogram
°C	Degree -Celsius
hPa	Hectopascal
DIN	German Industry Standard
EN	European Standard
CE	CE-Mark
Hz	Hertz
ED	Duty cycle
A	Ampere
SN	Serial number
Vac	Volt (AC voltage)
Vdc	Volt (DC voltage)
Inch	Inches