SIEMENS

MULTIMOBIL 5C

SP

Installation Instructions

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Multimobil 5C

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Installation Instructions

Version 5.0

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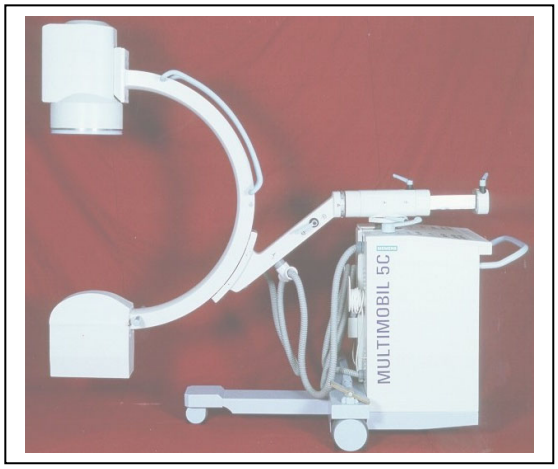
1 Installation

1.1 Transport Position of Unit

After unpacking the unit as explained in pre installation, bring the unit to its transport position as explained below.

- Adjust the column to the bottom most position.
- Bring the holder and C-Arm in the default transport setting and lock all the levers.
- Hang all the cables on the cable winder. Place the foot switch / Hand held exposure switch in the holder.
- Loosen the foot brake.
- Pay attention that the wheels do not strike against any obstacles.
- For transport of monitor trolley, loosen the brakes.
- For more details Refer Operational Manual.
- Label is provided on the unit showing the transport position.



NOTE: While transporting the unit on the slope ensure that the slope should not exceed +10°.If the slope is more than 10°,there is a risk of toppling.

1.2 Safety Information

1.2.1 General

It shall be the duty of the installation personnel and the user to ensure that all the safety measures concerning the unit operation and installation are adhered to.

The unit must be checked for the status of its safety measures at least every year or any time desired by the user, not exceeding one year.

However, we recommend in the interest of the safety of the patient, the user, and other personnel to have a yearly drill on operational safety.

If there are any special regulations of the hospital/institute, to be followed over and above the general safety regulations pertaining to the installation, the same must be ensured.

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Before commencing the operation, the user must convince himself/herself regarding all safety aspects and their proper functioning. He should also ascertain that all displays and indicators are functioning as described.

The radiation indication lamp should light only when the exposure is released. In case the lamp lights in any other condition, the unit should be immediately switched off and SIEMENS SERVICE DEPARTMENT should be informed.

Any change / or replacement in the unit must be carried out by the manufacturer or a person authorised by manufacturer ONLY. The record of such work must be maintained clearly at the site.

	**Before opening / closing the covers ensure that the mains is switched off and the plug is removed from the socket.** **Ensure that the protective earth connections of the sub assemblies are properly connected.**

1.2.2 Safety Checks

1.2.2.1 Before operation

- Brakes and locks
- All C-Arm movement in braked and unbraked condition
- Open the Front Cover and check for any loose connection or transport damage.
- Check for Mains supply as specified in Technical specification and ensure that the voltage difference between Earth and Neutral should not be more than 5 Volts.

1.2.2.2 During Operation

- Follow the Operating Instructions provided with the Unit.
- Vertical movement of C-Arm
- The radiation indication lamp should only glow when fluoroscopy or radiography is performed.
- Proper positioning of the unit.(refer to the operating instructions for positioning of the unit)
- While shifting a patient on the operating table, take care that the wheels of the unit are locked properly.

1.2.3 Overload Protection

The unit is designed to work on 110 / 190-240V, single phase, 15A socket. For safety purposes 16A HRC fuses are provided which will blow when a current exceeding 16A sustains for its response time.

Ensure that the mains socket is properly earthed.

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In case of fault if the kV tries to build beyond the safe limit of X-ray tube the protection circuit blocks the HT.

In case of fault if the Filament current tries to increase beyond the safe limit the protection circuit blocks filament boosting.

Maximum permissible resistance between the Earthing lead terminal in the control and on the HT transformer shall not exceed 0.1 ohms.

1.2.4 Radiation Protection

Do not put any part of your body in the direct line of radiation.

Collimate the X-ray beam.

Keep maximum possible distances from the object being radiographed. For this make the best use of 5 mtr of recoilable exposure release switch.

In the room, wear protective clothing (lead Apron).

Monitor radiation received using the personal TLD-badges or pen-dosimeter.

1.3 Preliminary Checks

1.3.1 Mechanical Check

1.3.1.1 Unit Movements

Force required to push/pull the unit on a horizontal surface should not exceed 5 kgf. Force required to push/pull the unit on a 10° slope should not exceed 30 kgf.

1.3.1.2 Orbital Movement

125° ± 2° counterbalanced in all positions. Force required should not exceed 6 kgf at the handles provided, in a direction tangential to the C arm.

1.3.1.3 Angulation Movement

190° ± 3° counterbalanced in all positions. Force required should not exceed 6 kgf at the handles provided.

1.3.1.4 Horizontal Movement

200 ± 5mm. Force required should not exceed 5 kgf in either direction.

1.3.1.5 Swivel Movement

±12.5° (± 1°). Force required should not exceed 3 kgf at the handles.

1.3.1.6 Steering movement

Ensure that the rear wheels can be revolved using the steering lever. This will confirm that the chain connecting the various links are intact and has not slipped off.

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1.3.2 Electrical Check

1.3.2.1 Mains supply

For units with 190-240V supply

1. Check available mains voltage at the site.
2. Check if the mains voltage is within ± 10% of the nominal range 190-240V.
3. Check if the Mains resistance is ≤ 1.5Ω.

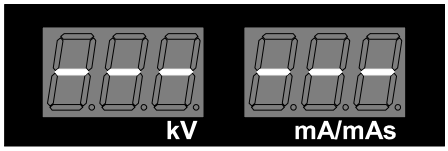
For units with 110V supply

1. Check available mains voltage at the site.
2. Check if the mains voltage is within ± 10% of the nominal value 110V.
3. Check if the Mains resistance is ≤ 0.36Ω.

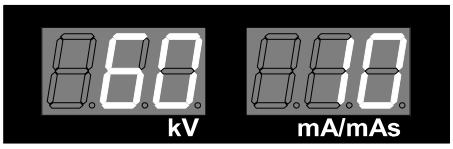
1.3.2.2 Switching ON

Press ⊙ switch on the top panel. The kV-mAs display will light up.

The Display will indicate for the set-up time. (3 seconds approx)



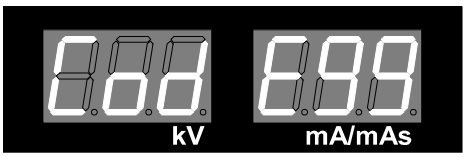
After setup and initial hardware checks the display changes to the default kV and mAs settings.



NOTICE

The Control Unit contains Non volatile Memory which retains the last selected kV and mAs. So the initial display after set-up will depend on the last settings done.

The kV & mAs display and settings will now respond to the corresponding switches on the panel.
In case of any errors while setting up / hardware check / stand-by operation, the corresponding Error code will be displayed on the same displays.



The display will indicate CodE 99 in case the unit while setting up/ after set-up detects that last reset of the unit was due to watch-dog and not hardware RESET.

⚠ **WARNING**	**If the unit is being installed after six months from the date of despatch, the capacitors need forming. Refer Service instructions for forming.**

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1.3.2.3 Up/Down movement

Once the unit is switched on, Check column Up and down movement. Check for the operation of the limit switches. Do the Up/Dn movements several times to confirm that there is no wear and tear of belt/bearings and no abnormal noise from the mechanism. Keep the column in the upper most position and switch off the unit.

	**After the unit is switched ON, the capacitors charge to 300VDC. (Approx) After switching the unit OFF, it takes about 4 minutes for capacitors to discharge. Green LED on D61 indicates the presence of DC voltage.**

1.3.2.4 Cable Connections

Switch off the unit and disconnect the mains supply. Wait for 5 minutes. Open the front cover and top panel. Check the cable connections as per the table below.

Type	Description	Specifications
Mains	Mains Cable	3 x 1.5 mm sq.(15A Moulded Plug)- 5mtr length
Control to single Tank	HT Cables U & V	6 mm sq. black twisted with braid
	Filament cables Y, 12 & 22	3 Core shielded PVC insulated
	Collimator Cable	12 Core Grey
	Earth Cable	6 mm sq. Yellow-Green
	kV feedback Cable	2 Core shielded PVC insulated
	Ground Wire (X)	1.5 mm sq. Yellow
Control to Monitor Trolley	Mains Cable	3 x 1.5 mm sq.
	Composite Video Cable	2 x RG 59 with BNC termination
	Radiation indication lamp	2 x 1.5 mm. Sq.
Control to CCU	Mains Cable	3 x 1.5 mm sq.
Interconnections	D915.X20 to D506X20	20p FRC
	D915.X10 to D506.X10	26p FRC
	D915.X11 to D506.X11	16p FRC
	D915.X12 to D507.X12	14p FRC
	D915.X50 to D507.X50	20p FRC
	D915.X8 to D506.X8	10p Bonded

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	D915.X15 to SMPS 1	Bunch
	D915.X40 to D509.X40	34p FRC
	D507 X70 to D509 X70	20p FRC
	D507.X80 to D508.X80	40p FRC
	D508.X2 to Collimator.X2	15p D type
	D506.X6 to D61.X6	D type soldered connections
	D506.X27 to S27 D506.X99 to S28	4 Core cable
	D508.X90 to CCU X.18	20p FRC
	D508.X3 to wire bunch	Bunch
	D508.X4 to up/down Motor Control	Bunch
	D506.X1 to T1 input	Bunch
	D506.X4 (Pin 1 to 5) to T1 output.	Bunch
	D506.X2 to Single Tank	Bunch

Close the top panel and front cover.

1.3.3 Collimator

Switch the unit ON. It will be going to stand by mode.

Check the opening and Closing of Iris Collimator. In Fluoroscopy the maximum opening of the Iris will be limited to the maximum diameter of input field of the Image Intensifier (6” or 9” as the case may be).

In case of Radiography the Iris Collimator will open automatically to it’s maximum opening diameter for the cassette exposure.

Use Radiation Protection

Presence of High Tension

Observe Safety Precautions

1.3.4 X - ray

1.3.4.1 Fluoroscopy

Switch ON the unit. Enter in to the Fluoroscopy Mode, press foot switch check for the Initialization of the Fluoroscopy at the same time radiation Indication, Amber

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coloured LED on the top panel and the lamp on the monitor trolley, will light up. The Image will appear on the Monitor in ‘Live‘ Mode, by releasing the foot switch The Last Image On the Monitor will be frozen (LIH function).

Now, Select hand held recoilable fluoroscopy switch, check for the Initialization of the Fluoroscopy at the same time radiation Indication, Amber coloured LED on the top panel and the lamp on the monitor trolley, will light up. The Image will appear on the Monitor in ‘Live’ Mode, by releasing the hand held fluoroscopy switch. The Last Image on the Monitor will be frozen (LIH function).

1.3.4.2 Exposure

Set the exposure parameters as 60kV, 10mAs.

Pull the recoilable 1 step Exposure Release Switch and release an exposure. The Amber coloured LED on the top panel and the lamp on the monitor trolley will light up for duration equal to exposure time.

An audible indication by a muffled sound from single tank as well as from the buzzer will confirm the working of the inverter and the exposure.

1.3.4.3 Timing

Set 40 kV 200mAs.

Release an exposure. The radiation indication LED will light for the time (±5%) as per Exposure chart.

Set 90 kV 80mAs

Release an exposure. The radiation indication LED will light for the time (±5%) as per Exposure chart.

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1.4 General Check

Check for the following before handing over the unit to the customer.

1. Cassette Holder: It should be possible to mount the cassette holder on I.I. ring in any position of the C arm. A 10” x 12" cassette shall not slip from the cassette holder in any position of the C arm. It shall be possible to mount the cassette holder even if the unit is covered with sterile covers on the Image Intensifier.

2. Sterile Cover: The sterile cover should be easily fitted with the clips provided and shall not slip out or hinder free movement in any condition.

3. Exposure: Radiation indication as explained in the section 1.3.4

4. Front cover and top panel are protectively earthed.

5. All the handles shall be of the same colour & smooth in movement.

6. Unit brake pedal shall be fixed with rubber jacket.

7. Footswitch holder shall be fixed on the rear panel of control trolley.

8. Check for all PVC caps are fixed on all visible holes.

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