SIEMENS

# MULTIMOBIL 5C

SP

## Pre-Installation



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# Multimobil 5C

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## Pre-installation

**Version 5.0**

# INDEX

# 1 Pre-installation

## 1.1 Technical Specifications

| Sr.No | Parameter | Value |
|---|---|---|
| 1. | Mains Voltage | 110V/190 -240V~ |
| 2. | Line frequency | 50 / 60Hz |
| 3. | Line impedance | 1.5 Ω (max) @ 190-240 V<br>0.36Ω (max) @ 110V |
| 4. | Length of power cable | 5 m |
| 5. | Power Output – Radiography<br>Nominal Electric power at 100kV and 100mSec. | 2.5 kW (100 kV, 25 mA) @ 190-240V<br>1.6KW (100 kV, 16 mA) @110V |
| 6. | Wave Shape | Multipulse DC - Ripple 5kV max |
| 7. | KVp Range | 40 – 100kV in 20 steps |
| 8. | KV Accuracy | ≤ ± 5 % |
| 9. | mA-range | 13 – 63 mA @ 190-240V input<br>10 – 40 mA @ 110V input |
| 10. | mAs Range | 0.32 – 200mAs at 40kV |
| | | 0.32 – 160mAs at 42 - 50kV |
| | | 0.32 – 125mAs at 52 - 63kV |
| | | 0.32 – 100mAs at 66 - 77kV |
| | | 0.32 – 80 mAs at 81 - 100kV |
| 11. | mAs Accuracy | ≤ 10 % + 0.2 mAsfor mAs ≤ 20 mAs |
| | | ≤ 5 % + 0.2 mAs for mAs > 20 mAs |
| 12. | Exposure Time | 20mSec - 5 Sec in 24 steps @190-240V<br>20mSec – 8 Sec in 26 steps @ 110V |
| | | For details of kV, mA and exposure time combinations as per EN 60601-2-7 refer to exposure chart on page 6-14. |
| 13. | Fluoroscopy voltage | 40-110 kV |
| 14. | Fluoroscopy Modes | ADR(Automatic dosage regulation):<br>Anti-isowatt & Contrast. |
| 15. | Fluroscopy mA range | Anti-isowatt 0.5 to 5 mA<br>Contrast 0.5 to 7mA |
| 16. | Fluroscopy Power | 550W continous |
| 17. | Timer | Fluoroscopy time display with timer |

| Sr.No | Parameter | Value |
|---|---|---|
| | | reset and 5 minute buzzer indication |
| 18. | Thermal Protection | Auto cutoff of fluoroscopy and radiography in case of tube head temperature exceeding 60°(+5°) Celsius |
| 19. | Automatic termination | Buzzer alarm is set and fluoroscopy terminates after 10 minutes of<br>Continuous uninterrupted fluoroscopy. |
| 20. | Power Input:<br>Continous<br>Instantaneous | <br>1.5kVA<br>3.5kVA |
| 21. | Mains Isolation<br>External: done by the user | Power supply cord shall be plugged where both poles (L & N) are isolated simultaneously. |
| 22. | Type and degree of protection against electric shock (EN 60601 – 1) | Class – I, Type B equipment |
| 23. | X - ray Tube | Stationary Anode DF-151R |
| 24. | Focal Spot – nominal value | 0.5 for Fluoroscopy<br>1.5 for radiography |
| 25. | Inherent tube Filtration | 0.8 mm Al at 50kV |
| 26. | Nominal kV | 110 kV |
| 27. | Target Angle | 16° |
| 28. | Collimator | Motorised, multileaf Iris Collimator |
| 29. | Total filtration | 5.3 mm Al at 100kV |
| 30. | Exposure release Switch.<br><br>Flouroscopy switch. | Hand held - 1 Step.<br><br>Foot switch – 1 step and / or<br>Hand held switch – 1 step. |
| 31. | Exposure Rate for Radiography | Pulse to pause ratio 1:30; corresponds to a cool down period of 4 minutes at maximum output. |
| 32. | Max. X-ray coverage | 430X430mm at SID 909 mm |
| 33. | Mode of Operation | Continuous operation |
| 34. | Focus-II distance | 860mm for 9'' system<br>900mm for 6'' system |
| 35. | Max. cassette size at 900 cm SID | 10''X12'' |

| Sr.No | Parameter | Value |
|---|---|---|
| 36. | Grid | Circular grid placed at the input of the II tube , 40 lp/cm, 8:1 |
| 37. | Image Intensifier | 9'' / 6'' |
| 38. | Image Intensifier tube resolution | Nominal 52lp/cm and zoom 68 lp/cm for 9'' system<br>Nominal 66 lp/cm and zoom 77 lp/cm |
| 39. | Nominal entrance field | 230mm for 9'' system<br>150mm for 6'' system |
| 40. | II output image size diameter | 25±0.5mm for 9'' system<br>20±0.5mm for 6'' system |
| 41. | Zoom (field size) | 230mm/160mm for 9'' system<br>150 mm/100 mm for 6'' system |
| 42. | TV camera<br>Input Voltage | AC100~220V±10% |
| 43. | Pick Up device<br>Pick UP area | CCD<br>6.4X4.8mm |
| 44. | Effective Pixels | 752(H)X582(V)(CCIR)<br>768(H)X494(V)(EIA) |
| 45. | TV System | 625lines/50Hz(CCIR)<br>525lines/60Hz(EIA) |
| 46. | No. of monitors | 2 monitors one each for Live/Last Image Hold(LIH) and stored memory display |
| 47. | Monitor size | 17''monochrome with 9'' system and 15'' monochrome with 6'' system |
| 48. | Monitor screen | High brightness, high resolution with independent brightness and contrast control |
| 49. | TV standard | CCIR 625 lines at 50 Hz |
| 50. | Aspect ratio | 4:3 |
| 51. | Image rotation | Endless clockwise and anti-clockwise with complete 400°rotation |
| 52. | Recursive filter | Steps of OFF,2,4,8,16 to minimize dynamic blur |
| 53. | Image reversal | Left/right and top/bottom |
| 54. | II Chain Resolution | Nominal 1.2 lp/cm Zoom 1.6 lp/cm for 9'' system<br>Nominal 1.4 lp/cm Zoom 2.0 lp/cm for 6'' system |

| Sr.No | Parameter | Value |
|---|---|---|
| 55. | C-arm orbital movement | 125°(+90°to -35°) |
| 56. | Angulation | ±190° |
| 57. | Horizontal travel | 200mm |
| 58. | Swivel range | ±12.5° |
| 59. | Vertical travel | 400 mm |
| 60. | Mobility | Directional lock on rear wheels enabling excellent maneuverability |
| 61. | Max. floor incline for transport | 5° |
| 62. | Mechanical Dimensions<br>(lxbxh) | 2000 x 800 x1720 mm (min)<br>2070x1050 x2120 mm (max) |
| 63. | Weight | |
| | Without packing | 280kg |
| | With packing | 680kg |
| 64. | Environmental conditions<br>Transport and Storage<br>Temp range.<br>Relative Humidity range<br>Atmospheric pressure | <br><br><br>-15° C to 45° C<br>Upto 95% (No Condensation)<br>76 kPa to106 kPa |
| | Operating Temperature<br>Relative Humidity range<br>Atmospheric pressure | 10° C to 40° C<br>Upto 85% Max non condensing<br>76 kPa to106 kPa |
| 65. | Conformance to Standards | EN 60601-1:1990<br>EN 60601-2-7:1998<br>EN 60601-1-3:1994<br>EN 60601-1-2:2001<br>Compliance to AERB Type Approval Certification<br>Compliance to BIS test certification. |

## 1.2 Information on Room Planning

No specific conditions required. Following are the recommended room conditions for proper functioning of the unit.

Ambient Temperature (Room temperature): + 40 °C Max

Air Humidity: up to 75%, Non-condensing.

During Transport and storage of the product the ambient temperature should not be below -15°C or rise above +45°C. Storage is permissible in rooms with minimum amount of dust and Humidity in range of 30% to 95% RH provided no condensation occurs.

## 1.3 Packaging

The Multimobil 5C unit is delivered in two wooden boxes.
One box consists of the Monitor trolley. This is a wooden box with the trolley mounted on the wooden base and is fixed using clamping brackets.

The second box contains the MM5C unit along with monitors and accessories .The C-arm unit is clamped using brackets on the wooden base. The two monitors are packed in the corrugated box and placed on the wooden platform.
One box consists of standard accessories i.e. sterile cloth, Clips and user manual.

MM5C with monitors and accessories

Monitor trolley for MM5C

## 1.4 Unloading

The unloading of the unit from the truck can be carried out using any of the following ways depending on the site conditions:

1) Using a forklift.
2) Using an overhead travelling crane.
3) Using a chain pulley block and tripod.
4) Using conventional ways i.e. using wedges, wooden planks, pipes or rods and labour etc.

**Note:** 1. All boxes are provided with transport base.
2. Do not roll the boxes.
3. Do not drop the boxes from a height of more than 20cms.
4. Observe the stickers **(This side up)** and **(handle with care)** on the Packing for proper handling.

Once the unit is removed from the transport, place it on the ground on the base.

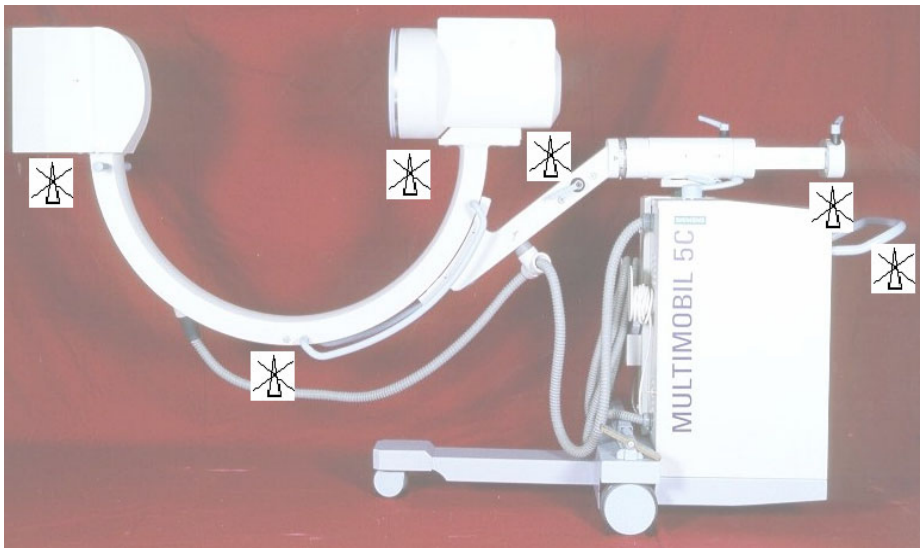
## 1.5 Unpacking the MM5C

**The complete system must be inspected for physical damage and / or material short-fall and factory must be informed accordingly.**

The Multimobil 5C consists of fragile components like camera, Image intensifier, X-ray Tube etc. Sufficient care must be taken while unloading / unpacking the unit. **Refer the unpacking instructions provided on the packing.**

Observe the following steps:

1) Remove the restraining strips by cutting it. Use a cutting plier for this purpose.
2) Start removing the wooden planks. For this purpose the service engineer should use a claw hammer or nail pulling plier and preferably a crow bar.
3) First of all remove the top planks. Upon opening this plank you will be able to see the unit inside. Ensure that the unit has not received any transit damages.
4) Now, remove the front and rear wall of the box one by one. The front wall is provided with a ramp. Hence, place this plank carefully for pushing the unit out of the platform.
5) Now you will see three wooden blocks fixed across the unit for supporting the wall and also to support the image intensifier and single tank. These are supporting beams.
6) Loosen these blocks from one side and remove them gently. Now, remove the side walls.
7) Care should be taken to see that the wooden planks or the nails do not damage the unit.
8) Now, you can easily remove the ESD bags.
9) After removing the ESD bags, remove the monitor boxes and accessories and take them to the OT.
10) Remove the packing strips and thermocol packing from the control, II and single tank. Also, remove the wooden lever fixed at the base by cutting the strap.
11) Next step is to remove the clamping brackets. First of all, remove the bracket used for clamping the single tank and Image intensifier. Secondly, remove the bracket used to clamp C-arm. Third, remove the brackets on the rear wheels. Next remove the brackets used to clamp the base.
12) Now ensure that the rear wheels are in locked condition. Also the C-Arm should be in locked condition.
13) Remove the bolts of the clamping brackets at the rear side on which the housing is resting. Now, using the lever, gently lift the base along the bracket so that the rubber block can be removed. Once the rubber blocks are removed, remove the clamping bracket.
14) Now, remove the two brackets on the front end of the base. Lift from sides using wooden lever. Remove the rubber buffer and remove the bracket.
15) Now the unit will be resting on the wooden platform. Release the brakes and push the unit down to the ground through the ramp.




**WARNING**

DO NOT HOLD THE UNIT AT POINTS MARKED  WHILE LIFTING

Observe the following steps for transporting the unit to the OT.

Unlock the C-arm and turn it to the position shown in the figure and lock it. This is the suitable position for moving the unit from the platform.

Now, release the brake of the C-Arm and swing the C-Arm back to the normal position as shown in the figure for transportation. This is also the parking position.

Roll all the cables and hang it on the cable holder provided on the housing.

Unbrake the wheels and move the unit to the OT. Use the steering for easy manoeuvrability.

### 1.6 Unpacking the monitor trolley

Observe the following steps:

1) Remove the restraining strips by cutting it .Use a cutting plier for this purpose.
2) Remove the top plank.
3) Remove the front and rear wall of the box.
4) Remove the supporting beams fixed across the sidewalls.
5) Remove the side planks. The trolley is mounted on the clamping brackets.
6) Remove the ESD bag.
7) Now, using a spanner of 16-17, remove the clamping brackets.
8) Lift the trolley gently by holding at the base and supporting it from top. Place it on the floor.
9) Release the brakes and the trolley can be shifted to the OT.

## 1.7 Installation Of The Monitors

1) Open the corrugated box and remove the monitors.
2) Open the accessories box and remove the packet of hardware.
3) Place the monitors on the top tray of the monitor trolley and fasten them using socket HD screw M4x20, spring washer and plain washers.
4) Make use of the connector provided on the monitor trolley for providing power supply to the monitors.
5) Ensure that the radiation indication lamp is available on the Monitor Trolley.