



BCA-9/12RK Angio *Plus*



Product Data Digital Mobile C-Arm

ELECTRICAL CHARACTERISTICS

• Voltage	Standard: 230 Vac ($\pm 10\%$) single phase Optional: 105 / 115 / 125 / 220 / 240 Vac ($\pm 10\%$) single phase
• Frequency	50 Hz standard (60 Hz on request)
• Absorbed current on stationary anode unit	5 A @ 230 Vac and 10 A @ 115 Vac in fluoro mode 20 A @ 230 Vac and 30 A @ 115 Vac in radiography mode
• Line compensation	Automatic
• Line resistance	< 0.4 Ω (supply at 230 Vac) < 0.2 Ω (supply at 115 Vac)

RADIOLOGICAL DATA

• Generator power (IEC 60601-2-7)	2.5 kW @ 100 kV
• Generator max power	7.2 kW (120 kV, 60 mA, pulse mode 25 fps max.)
• Generator max power (HI-RAD mode)	5 kW (<3.6 mAs) @ 230 V, 3.5 kW (<3.6 mAs) @ 115 V
• High frequency inverter	40 kHz
• Max. Ripple	< 2%
• High voltage range (radiography and fluoroscopy)	40 \div 120 kV
• Current range in continuous fluoroscopy	0.5 \div 8 mA
• Current in pulsed HCF fluoroscopy fluoro	30 mA fixed
• Current in pulsed fluoroscopy	45 \div 60 mA @ 230 V (45 mA @ 115 V)
• Current in digital radiography "One Shot"	60 mA @ 230 V (45 mA @ 115 V)
• Current range in radiography (HI-RAD mode)	50 \div 30 mA @ 230 V (35 \div 20 mA @ 115 V)
• mAs range	1 \div 125 mAs @ 230 V (1 \div 90 mAs @ 115 V)
• Exposure time in radiography	0.04 \div 5 sec
• Exposure time in radiography	0.020 \div 0.64 sec @ 230 V (0.028 \div 0.090 sec @ 115 V)

X-RAY TUBE

• Anode	Rotating
• Anode slope	10°
• Focal Spot size according to IEC 336	0.3 mm small focus / 0.6 mm large focus
• Anode power rating	5 kW small focus / 17 kW large focus
• Anode max cooling speed	33 kHU/min (25 kJ/min)
• Anode max. continuous thermal dissipation	300 W
• Anode heat storage capacity	

MONOBLOC

• Monobloc thermal capacity	600 kJ (800 kHU)
• Max continuous thermal dissipation of the monobloc	75 W, 102 HU/sec, 6120 HU/min
• Max. Fluoroscopy time	HU safety after 28' of fluoroscopy @ 120 kV, 5 mA (600 W)
• Max fluoroscopy time @75 W	75 kV - 1mA - Continuous fluoro (no limits)
• Max fluoroscopy time @280 W	80 kV - 3.5 mA - 54 Minutes
• Max fluoroscopy time @400 W	100 kV - 4 mA - 38 Minutes
• Max fluoroscopy time @525 W	70 kV - 7.5 mA - 31 Minutes
• Max fluoroscopy time @550 W	110 kV - 5 mA - 30 Minutes
• Max fluoroscopy time @600 W	120 kV - 5 mA - 28 Minutes

Note: HI-RAD mode (High Radiography) is selectable only if the mAs values are comprised between 1 mAs and 3.6 mAs. With this mode it is possible to perform radiography at higher mA value (with consequently greater power values) but with shorter exposure times.



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COLLIMATOR

- Type Standard: Iris with parallel shutters
- Iris Console-controlled with adjustable continuous opening up to the max. allowed value, as a function of the selected I.I. field.
- Adjustable shutters Console- controlled opening/closing and clockwise/ anti-clockwise rotation.

IMAGE INTENSIFIER

I.I. size	9"	12"
• Number of fields	3 (9" / 6" / 4")	3 (12" / 9" / 6")
• Input nominal diameter	230 mm	320 mm
• Resolution (central)	48 / 56 / 64 lp/cm	48 / 54 / 62 lp/cm
• Conversion factor	240 (cd*m ² / mR*s ⁻¹)	320 (cd*m ² / mR*s ⁻¹)
• Contrast ratio	23:1 / 25:1 / 30:1	36:1 / 36:1 / 36:1
• DQE @ 59.5 kV	65%	65%
• MTF	60% / 65% / 70% @ 10 lp/cm 25% / 30% / 40% @ 20 lp/cm	60% / 65% / 70% @ 10 lp/cm 25% / 30% / 40% @ 20 lp/cm
• Integral distortion	4% / 2% / 1%	8% / 5% / 3%
• "All metal" Technology	Yes	Yes
• Input screen "Hi-Res"	Yes	Yes
• Anti-scatter fixed grid	Ratio 8:1, 36 shutters/cm, focus 80 cm	Ratio 10:1, 43 shutters/cm, focus 110 cm

CCD CAMERA 1K x 1K

• Technology	CCD interline progressive scanning	CCD interline progressive scanning
• Active pixel	1024 x 1024	1024 x 1024
• Acquisition	Matrix 1024 x 1024, 10 bits	Matrix 1024 x 1024, 10 bits, rate 25 fps
• Contrast resolution	1024 grey levels	1024 grey levels
• Sensitivity	0.2 lux (PB20 light)	0.2 lux (PB20 light)
• Signal - Noise Ratio	60 dB	60 dB



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DIGITAL IMAGE SYSTEM WITH 1K x 1K CCD CAMERA

CHARACTERISTICS

MEMORY HRP 2000 TYPE WITH STANDARD DICOM ESIDIC 3

ACQUISITION

Image acquisition	High dose acquisition, 12 fps, at 1024 x 1024 x 12 bit. Fluoroscopy, 25 fps at 1024 x 1024 x 8 bit. Cinematography, 1024x1024x8 bit or 512 x 512 x 8 bit.
Image storage	1024 x 1024 x 12 bit
Image storing on hard disk	H. D. SCSI - 36 GByte: 36000 images 1k x 1K x 8 bit, 18000 images with memory 1k x 1k, x 12 bit, 144000 images 512k x 512k x 8 bit,
Fluoroscopy with recursive filter and motion detector	Yes
16 images integrations during pulsed fluoroscopy	Yes
Electronic rotation steps 1°	Yes
Horizontal, vertical image inversion	Yes
Gray scale inversion	Yes
Contrast and brightness	Yes
Max. opacification during fluoroscopy acquisition	Yes
Subtraction in real time	Yes
Programmable frame acquisition rate	Yes, 3, 6, 12, 25 fps
Telenjector management	Yes

POST PROCESSING

Horizontal, vertical image inversion	Yes
Contrast & brightness	Yes
Grey scale inversion	Yes
Spatial filters, edge enhancement	Yes
Cineloop	Yes
Rectangular and circular virtual electronic collimators	Yes
Shifting pixel	Yes
Electronic zoom	Yes, from 1, 2 to 3 factor
Electronic lens	Yes, from 1, 2 to 3 factor
Land marking	Yes
Overview	Yes, 4, 9, 16 frames
Image subtraction	Yes,

MEASURES

Distance calculation	Yes
Angles measuring	Yes
Stenosis measuring	Yes



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DIGITAL IMAGE SYSTEM WITH 1K x 1K CCD CAMERA

OPTIONAL

DICOM utility connection	<ul style="list-style-type: none"> • VERIFY: check of the DICOM unit connection. • STORAGE: Single image, complete run, images selected in CR or XA mode. • PRINT: Printing with DICOM protocol, possibility to compose the printing on various divisions according to the printing type. • WORKS LIST: Working list coming from the informative hospital system with management of the Accession Number. • DICOM MEDIA INTERCHANGE: Creation of the CD Rom in DICOM 3 format, with program of auto run display.
QCA	Quantitative coronary analysis. Percentage and absolute measure of the stenosis with report drawing up.



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MONITORS COLOR LCD DISPLAY

VERSION

18"

- Panel size / type 18" TFT active matrix LCD anti-glare and hard coated, medical

HARDWARE REQUIREMENTS

- Brightness and contrast control OSD menu

ELECTRICAL CHARACTERISTICS

- Standard power supply 110 to 240 Vac 60/50Hz
- Current absorbed 1.4 A
- Power absorbed 60 W

DISPLAY CHARACTERISTICS

- Visibility angle 170°
- Contrast 400:1
- Resolution 1280 x 1024
- Active Display area 359 mm (H) x 287 mm (V)
- Pixel pitch 0.2805 x 0.2805 mm
- Max luminance 750 Cd/m²
- Aspect ratio 4:3
- Response time 40 msec
- Grey scale 256 x 3 = 768 levels

ENVIRONMENT AND RELIABILITY

- Operation Temperature:
 - From 5° C to + 35°C
 - Humidity: 20% to 80% (not condensing)
- Temperature and storage Temperature:
 - From -20° C to + 60°C
 - Humidity: 10% to 80% (not condensing)



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FUNCTIONALITY

DESCRIPTION

DATA

User's interface	Membrane keyboard with alphanumeric touch-screen 5.7" LCD display for all the operation parameters and messages concerning possible faulty conditions. The user interface control can be rotated by 60°.
Languages	Italian, English, French, German, Spanish (selection at setup)
I.I. field selection	Electronic zoom selection according to the number of I.I. fields with automatic limitation of the irradiated field.
Thermal units	Real time control and visualization of monobloc thermal capacity percentage (% HU) according to the selected parameters (kV - mA). Five minutes before reaching 0% of the monobloc HU capacity value, an acoustic signal warns the operator and the remaining exposure time is displayed on the console. Should the time left not be sufficient to complete the examination, the operator can switch over to manual mode to extend the exposure time by resetting and lowering the mA value parameter (without modifying the kV value). In any case, when 0% of the total available monobloc HU capacity has been reached, the X-ray emission is stopped. At least 10% of monobloc HU capacity must be available to restart the X-ray emission.
Fluoroscopy control	Multi-functioning footswitch: <ul style="list-style-type: none"> • Pedal for continuous, pulsed and single shot (boost) fluoroscopy (the selection occurs by means of three different footswitches). • Footswitch controlled image storage with no need of interrupting fluoroscopy examination.
Stand	<ul style="list-style-type: none"> • General automatic magneto-thermic circuit breaker switch • Safety key switch • Emergency pushbutton • Printer for Area Dosimeter (optional)
Monitor positioning	Directly on the trolley with two 18" orientable LCD monitors. Digital system with CCD 1K x 1K <ul style="list-style-type: none"> • Two monochrome LCD monitors 18" • Dicom transmission unit Esidic 3 • Alphanumeric keyboard • Memory HRP 2000
Safeties devices	<ul style="list-style-type: none"> • Filament current • Monobloc temperature • Overload • kV min/max. or faulty H.V. • Stored data check



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OPERATIONAL MODES WITH HRP 2000 MEMORY

OPERATIONAL MODES

MODE	CHARACTERISTICS	PERFORMANCES
Continuous fluoroscopy	Dose control (kV - mA)	Automatic or manual
	Small Focus	0.3 mm (IAE X-ray tube)
	kV variation range	40 - 120 kV
	mA fluoro variation range	0.5 - 8 mA
	kV - mA correlation	Standard: 40 kV / 0.5 mA, 80 kV / 7.6 mA, 120 kV / 8mA
	Safety timer	<ul style="list-style-type: none"> Acoustic alarm resettable after 5 minutes fluoroscopy exposure. Automatic stop after 10 minutes of continuous X-ray emission (IEC 60601-2-7 § 29.1.104)
	Last image hold (LIH)	Yes
HCF fluoroscopy	Exposure rate range (Selectable by memory menu)	From 1 image/sec to 25 images/sec (depending also on the selected average weight)
	X-ray flash time	Minimum time for better image
	mA variation range	30 mA fixed
	Large focus	0.6 mm (IAE X-ray tube)
	Acquisition obtained by integrating 16 following readings (average = 16) Manual image acquisition. Other characteristics same as continuous fluoroscopy.	
Pulsed fluorography	Exposure rate range (Selectable by memory menu)	From 1 image/sec to 25 images/sec (depending also on the selected average weight)
	X-ray flash time	Minimum time for better image
	mA variation range	Possibility to select 45 or 60 mA @ 230 V (45 mA @ 115 V)
	Large focus	0.6 mm (IAE X-ray tube)
	Acquisition obtained by integrating 16 following readings (average = 16) Automatic image storage with the selected frequency. Other characteristics same as continuous fluoroscopy.	
One-Shot Digital Fluoroscopy	mA variation range	60 mA @ 230 V (45 mA @ 115 V)
	Large focus	0.6 mm (IAE X-ray tube)
	X-ray flash time	< 1 sec, minimum time for better image
	Acquisition obtained by integrating 16 following readings (average = 16). Automatic storage of the image on RAM or "non-volatile memory", according to the memory type. Other characteristics same as continuous fluoroscopy.	
mA 1/2 fluoroscopy	mA variation range	0.25 ÷ 4 mA
	kV - mA correlation	40 kV / 0.25 mA, 80 kV / 3.8 mA, 120 kV / 4 mA
	Other characteristics same as continuous fluoroscopy.	
APR In fluoroscopy	APR 1 mA	Anatomic fine parts or paediatric use from 0.7 mA to 6.6 mA 40 kV / 0.7 mA 80 kV / 6.6 mA 120 kV / 6.6 mA
	APR 2 mA	Lungs from 0.5 mA to 7 mA 40 kV / 0.5 mA 80 kV / 7 mA 120 kV / 5.5 mA
	The curves cannot be modified by the operator	



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OPERATIONAL MODES WITH HRP 2000 MEMORY

Radiography	Working technique	2-point with kV and mAs setting		
	Large Focus	0.6 mm (IAE X-ray tube)		
	kV variation range	40 - 120 kV		
	mA variation range	@ 230 Vac 25 mA fixed from 40 kV to 100kV 20 mA @ 120 kV	@ 115 Vac 18 mA fixed from 40 kV to 100 kV 15 mA @ 120 kV	
	mAs variation range	@ 230 Vac 1 - 125 mAs from 40 to 100 kV 1 - 100 mAs from 101 to 120 kV in 42 steps, R 20 curve	@ 115 Vac 1 - 90 mAs from 40 to 100 kV 1 - 71 mAs from 101 to 120 kV	
	Times range	0.04 - 5 sec max		
	Utilization factor (duty cycle)	Calculated as per the anode dissipation		
APR In radiography	Description	Standard	Paediatric	Adult
	APR 1 Head	77 kV 56 mAs	74 kV 45 mAs	80 kV 71 mAs
	APR 2 Lungs	110 kV 11 mAs	107 kV 9 mAs	110 kV 14 mAs
	APR 3 Pelvis	85 kV 22 mAs	82 kV 28 mAs	88 kV 18 mAs
kV and mAs values can be modified and stored in any APR anatomical program.				



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

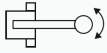
ENVIRONMENTAL CONDITIONS

Environmental conditions in standard use	<ul style="list-style-type: none"> • Temperature: from +10 °C to +40 °C • Humidity: 30% to 75% (not condensing) • Pressure: from 700 to 1060hPa
Environmental conditions in transport and warehouse	<ul style="list-style-type: none"> • Temperature: from -25 °C to +70°C • Humidity: 10% to 90% (not condensing) • Pressure: from 500 hPa to 1060 hPa

WEIGHT AND DIMENSIONS

Description	C-Arm	Trolley, "Standard"	Trolley, "High"
Weight	~ 360 Kg	~ 97 Kg	~ 150 Kg
(1) Width	859 mm	869 mm	872 mm
(2) Depth	2000 mm	855 mm	653 mm
(3) Height	1800 mm	1606 mm	1603 mm
Weight and dimensions according to the accessories.			

MECHANICAL CHARACTERISTICS

Vertical travel		500 mm motorized in 60 sec.
Horizontal travel		200 mm
Panning movement		± 270°
Orbital rotation		115° (+90° ÷ - 25°)
Pivotal rotation		± 9°
Free Space		718 mm
Depth		641 mm
S.I.D.		920 mm
Focus skin distance		200 mm
Movement		Manual. Operator manual control of rear wheels with manual swivelling front wheel. Stationary hand-brake.
C-Arm wheels diameter		<ul style="list-style-type: none"> • Rear: Two double wheels ø 125 x 40 mm • Front: Double wheels ø 80 x 30 mm
Trolley wheels diameter		<ul style="list-style-type: none"> • Model HIGH: nr. 4 wheels ø 125 x 30 mm with brake.
Protection against cables squashing		Semi-rigid rubber core-hitch on wheels.



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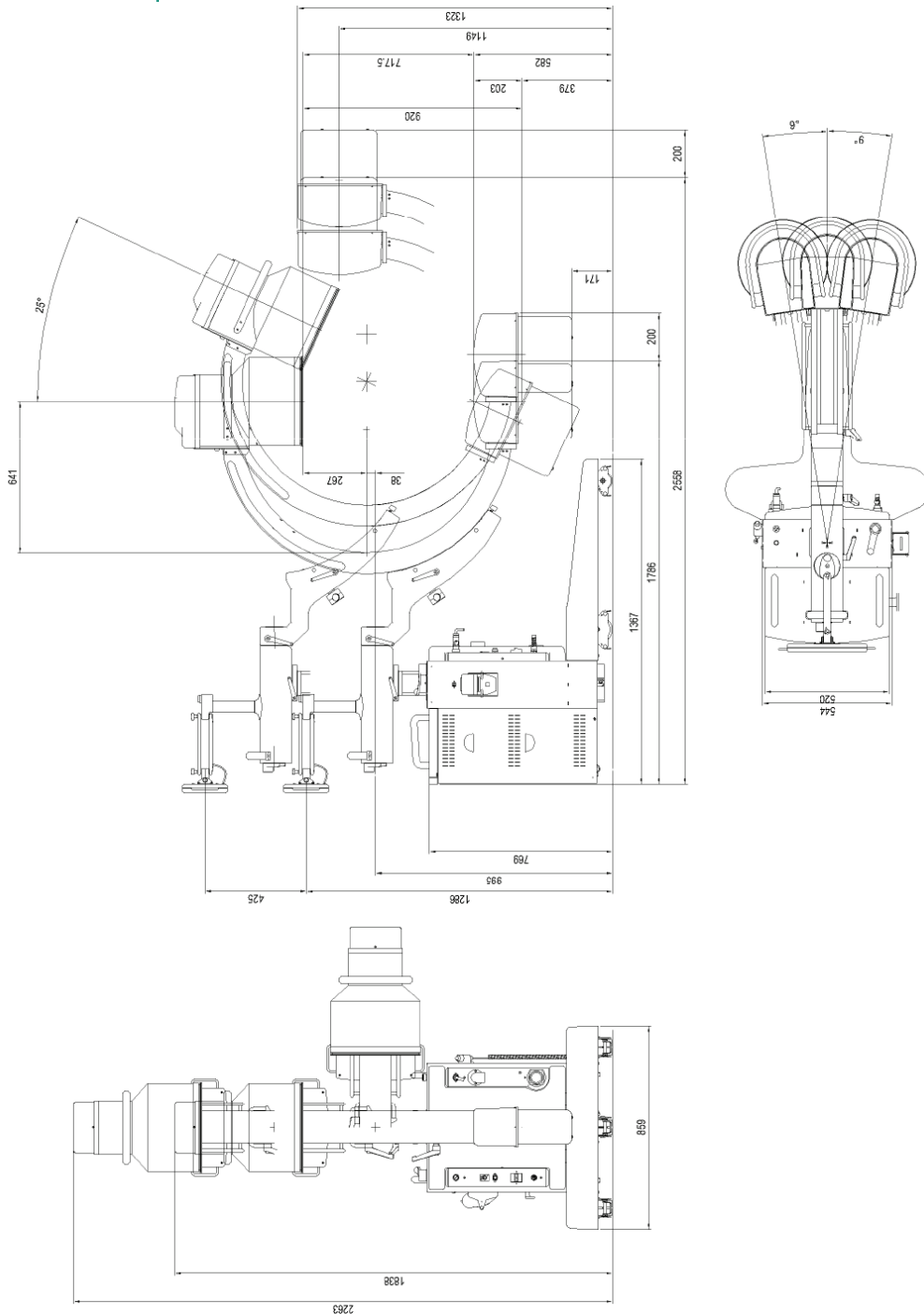


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TECHNICAL DATA

C-ARM Dimension in mm



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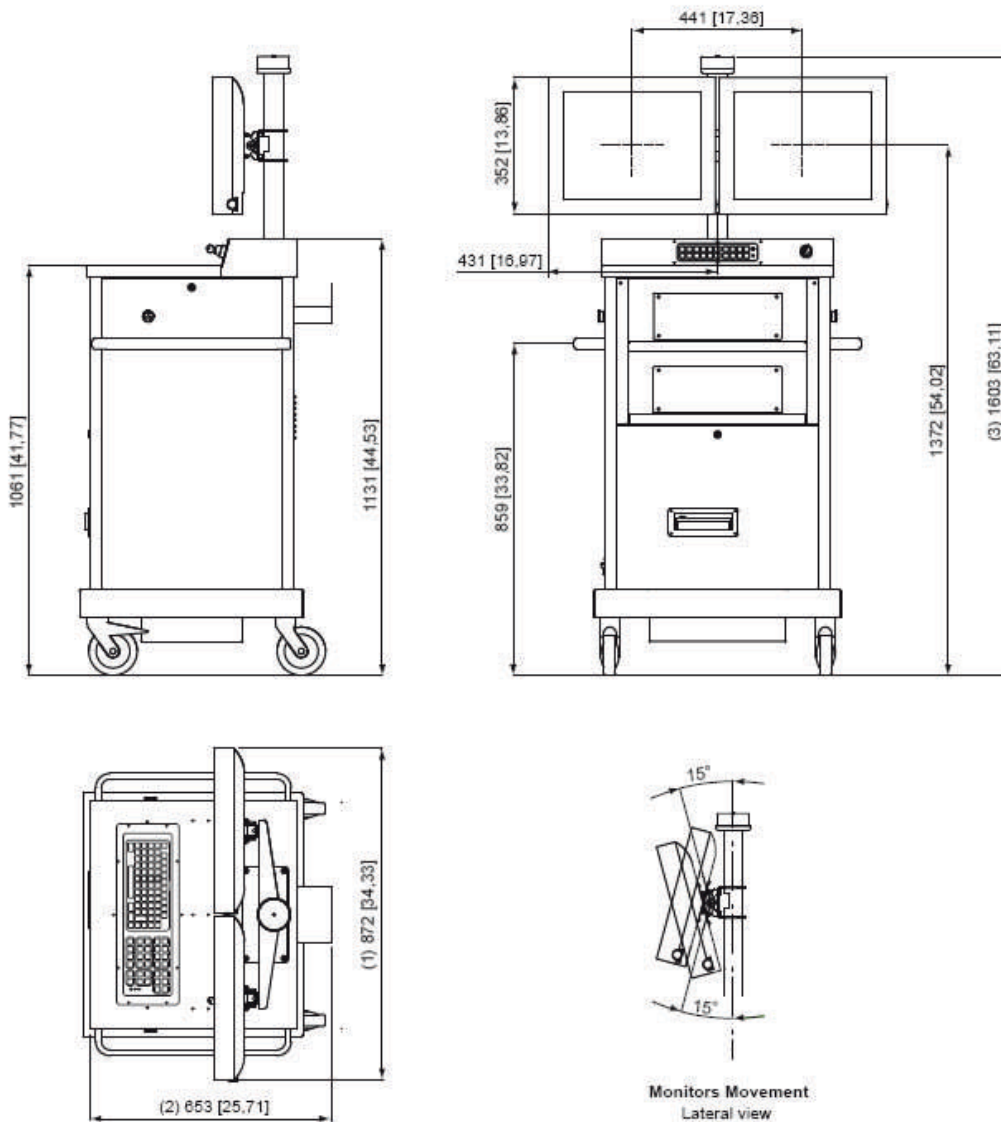
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TECHNICAL DATA

TROLLEY
MODEL "HIGH"

Dimension in mm



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