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Technique Charts by CTD

Manual timing technique charts in the digital age are still required by state regulations in many cases. And they allow an operator to work independent of the anatomical programming or automatic exposure controls that may be available. The first chart included is a *Simple Technique Chart*. It represents the simplicity of using a mostly fixed kVp and varying the mAS for changes in patient or part thickness.

The next chart, *Typical General Radiography*, represents technique factors that would be typical in many general radiographic x-ray rooms using some kind of digital imaging. Digital receptors vary in how much dose is required to produce an optimum image so these factors may not be exact for the equipment you are using. But the blank chart that follows can be adapted to your environment, Here are the steps to customize this technique chart.

1. Discover the following optimum techniques in your environment either from patient data or by using a water phantom, 25 cm PA chest , 6 cm extremity, and a 25 cm AP lumbar spine or abdomen.

   These techniques are known to produce images with the recommended EI# range or in the middle of the DI scale. NOTE: If you don't have either of these factors available to you, we recommend just using the Typical General Radiography chart.

2. Make a draft copy of the blank chart and fill in these techniques where appropriate. NOTE: If you prefer 120 kVp for chests, it is the same process.

3. You can complete the rest of the chest, extremities and lumbar spine rows by doubling mAS for every 5 cm (2linch) increase and halving for every 5 cm decrease. NOTE: A lateral chests are the same as a PA only thicker so use the same row. Lateral lumbar spines are the same only thicker with the exception of the L/S Junction which benefits from increased kVp but same mAS as the thickness suggests.

4. When using the chart, the operator will Increase mAS by an "in-between" value, i.e. less than double, for measurements that are not 5 cm more and go down less than half for those that are not 5 cm smaller.

5. Determine the values for the other rows by doing the following math:

   The typical chart suggests 30 mAS for a 25 cm lumbar spine, but your optimum mAS is 15. So everything else on the chart (NOT chests and extremities) will need to be cut in half. This will give you a good working draft and can be validated with usage.

7. You can contact us if you have questions about this process. Hopefully it will help take some of the mystery out of technique selection.

8. The last document is a suggested use of sensors when using the AEC.

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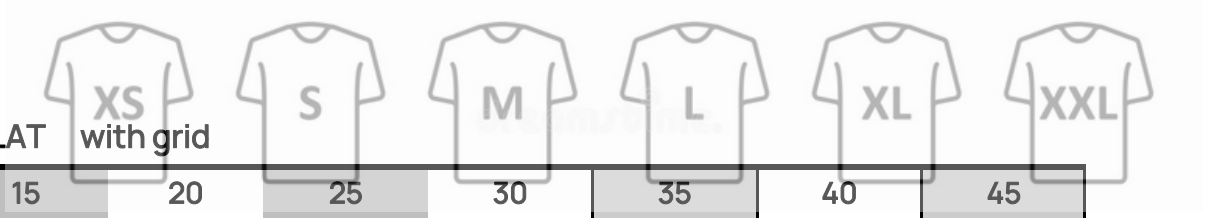
General Radiography

Simple Technique Chart



CHEST PA & LAT with grid

CM	15	20	25	30	35	40	45
Inches	6	8	10	12	14	16	18
kVp	90	110	110	110	110	110	110
mAS	1.5	1.5	3.0	6.0	12	24	48
mA & S			200 @ 1/60 Or 200 @0.015				

LUMBAR SPINE, PELVIS, HIP, FEMUR with table Bucky

CM	15	20	25	30	35	40	
Inches	6	8	10	12	14	16	
kVp	80	80	80	80	80	80	
mAS	7.5	15	30	60	120	240	

EXTREMITES no grid

CM Inches typical anatomy	1-2 .5 digits	3-4 1.5 PA hand PA wrist	5-7 2.5 Lat wrist forearm	8-9 3.5 Elbow AP ankle	10-11 4.0 humerus knee
kVp	60	60	60	60	60
mAS	0.5	0.75	1.0	1.5	2.0

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Typical General Radiography

CHEST PA & Lat 8:1 - 10:1 Grid

CM 72" SID	15 cm 6 in	20 cm 8 in	25 cm 10 in	30 cm 12 in	35 cm 14 in	40 cm 16 in	45 cm 18 in
kVp	90	110	110	110	110	110	110
mAS	1.5	1.5	3.0	6.0	12	24	48

EXTREMITIES

CM typical anatomy 40"SID	1-2 cm 0.5 in digits	3-4 cm 1.5 in PA hand PA wrist distal foot	5-7 cm 2.5 in Lat wrist forearm lat ankle	8-9 cm 3 in elbow AP ankle lower leg	10-11 cm 4 in humerus knee
kVp	60	60	60	60	60
**PREFERRED mAS No Grid	0.5	1.75	1.0	1.5	2.0
With Grid	2.0	3.0	4.0	6.0	8.0

SHOULDER/KNEE 10/12:1 Bucky/grid

CM	8 cm	10 cm	13 cm	15 cm	
	80	80	80	80	
mAS	1.5	2.0	3.0	4.0	

SKULL/SINUS/FACIAL BONES 10/12:1 Bucky/grid

CM 40" SID	PA	Lat	Occipital	SMV	Waters	PA with tilt	Lat Sinus/ facials
kVp	80	80	80	80	80	80	80
mAS	5.0	3.0	8.0	10-15	8.0	6.0	2.0

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Typical General Radiography

LUMBAR SPINE (Abdomen) PELVIS, HIP, FEMUR 10/12:1 Table Bucky or upright grid

CM Inches 40"SID	15 6	20 8	25 10	30 12	35 14	40 16	45 18
kVp	80	80	80	80	80	80	96
mAS	7.5	15	30	60	120	240	320

L-S Jct
+ 10 kVp

THORACIC SPINE 10/12:1 Table Bucky or upright grid

CM	15 cm	20 cm	25 cm	30 cm	35 cm	40 cm	45 cm
AP	80	80	80	80	80	80	96
mAS	5.0	10	20	40	80	160	160
LATERAL	80	80	80	80	80	80	80
mAS	*Patient*	*breathes*	30	60	120	240	240

CERVICAL SPINE 10/12:1 Table Bucky or upright grid

CM	AP	Odontoid	Obl/Lat	Swimmers
kVp	80	80	80	
mAS 40"	4.0	5.0		20-25
mAS 72"	12	15	18	

RIBS 10/12:1 Table Bucky or upright grid

CM	*15 cm*	*20 cm*	*25 cm*	*30 cm*	*35 cm*	*40 cm*	*45 cm*
kVp	80	80	80	80	80	96	96
Upper	2.0	4.0	7.5	15	30	30	60
Lower	7.5	15	30	60	120	120	240

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Typical General Radiography

CHEST PA & Lat 8:1 - 10:1 Grid

CM 72" SID	15 cm 6 in	20 cm 8 in	25 cm 10 in	30 cm 12 in	35 cm 14 in	40 cm 16 in	45 cm 18 in
kVp	90	110	110	110	110	110	110
mAS							

EXTREMITIES

CM typical anatomy 40"SID	1-2 cm 0.5 in digits	3-4 cm 1.5 in PA hand PA wrist distal foot	5-7 cm 2.5 in Lat wrist forearm lat ankle	8-9 cm 3 in elbow AP ankle lower leg	10-11 cm 4 in humerus knee
kVp	60	60	60	60	60
mAS No Grid					
With Grid					

**PREFERRED

SHOULDER/KNEE 10/12:1 Bucky/grid

CM	8 cm	10 cm	13 cm	15 cm	
	80	80	80	80	
mAS					

SKULL/SINUS/FACIAL BONES 10/12:1 Bucky/grid

CM 40" SID	PA	Lat	Occipital	SMV	Waters	PA with tilt	Lat Sinus/ facials
kVp	80	80	80	80	80	80	80
mAS							

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Typical General Radiography

LUMBAR SPINE (Abdomen) PELVIS, HIP, FEMUR 10/12:1 Table Bucky or upright grid

CM Inches 40"SID	15 6	20 8	25 10	30 12	35 14	40 16	45 cm 18 in
kVp	80	80	80	80	80	80	96
mAS							

L-S Jct
+ 10 kVp

THORACIC SPINE 10/12:1 Table Bucky or upright grid

CM	15 cm	20 cm	25 cm	30 cm	35 cm	40 cm	45 cm
AP	80	80	80	80	80	80	96
mAS							
LATERAL	80	80	80	80	80	80	80
mAS	*Patient*	*breathes*					

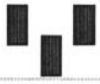
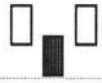
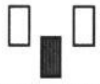
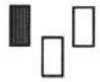
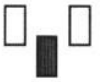
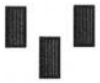
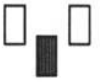
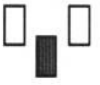
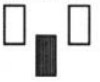
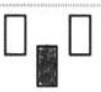
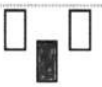
CERVICAL SPINE 10/12:1 Table Bucky or upright grid

CM	AP	Odontoid	Obl/Lat	Swimmers
kVp	80	80	80	
mAS 40"				
mAS 72"				

RIBS 10/12:1 Table Bucky or upright grid

CM	*15 cm*	*20 cm*	*25 cm*	*30 cm*	*35 cm*	*40 cm*	*45 cm*
kVp	80	80	80	80	80	96	96
Upper							
Lower							

AEC CR Imaging Guideline

PART	kVP	BACK UP mAS selection *A safe maximum mAS*	Sensor selection CR IMAGING	Alternate	
Chest PA	110	50			
Chest LAT	110	80			
Shoulder/ Knee	80	10			COLLIMATE TO PART
Ribs AP/PA Upper	80	40			
Ribs AP/PA Lower	80	160			
Ribs Oblique	80	160			Choose according to affected side
Lumbar Ap, Obl & Lat	80	160			Ensure sensor is covered by anatomy
Pelvis	80	160			
Hip/Femur	80	160			Ensure sensor is covered by anatomy
ABDOMEN	80	160			
Thoracic Spine AP	80 or 110	160		High kV reduces contrast	& increases information
Thoracic Lateral	80	160			
Cervical Spine - All	80	20			Ensure sensor is covered by anatomy
Skull/Sinus	80	20			COLLIMATE TO PART