ACR Quick Guide

ACR GUIDANCE FOR BLOCKHEADS

GE CT SCANNERS

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Computed Tomography

ACR Clinical Data Form Instructions

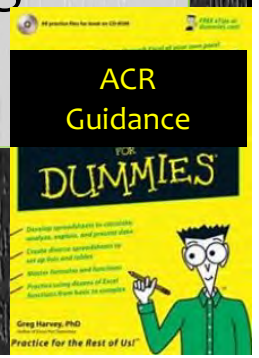
Is it that time again to fill out your ACR accreditation forms?

Having trouble understanding what they are asking for?

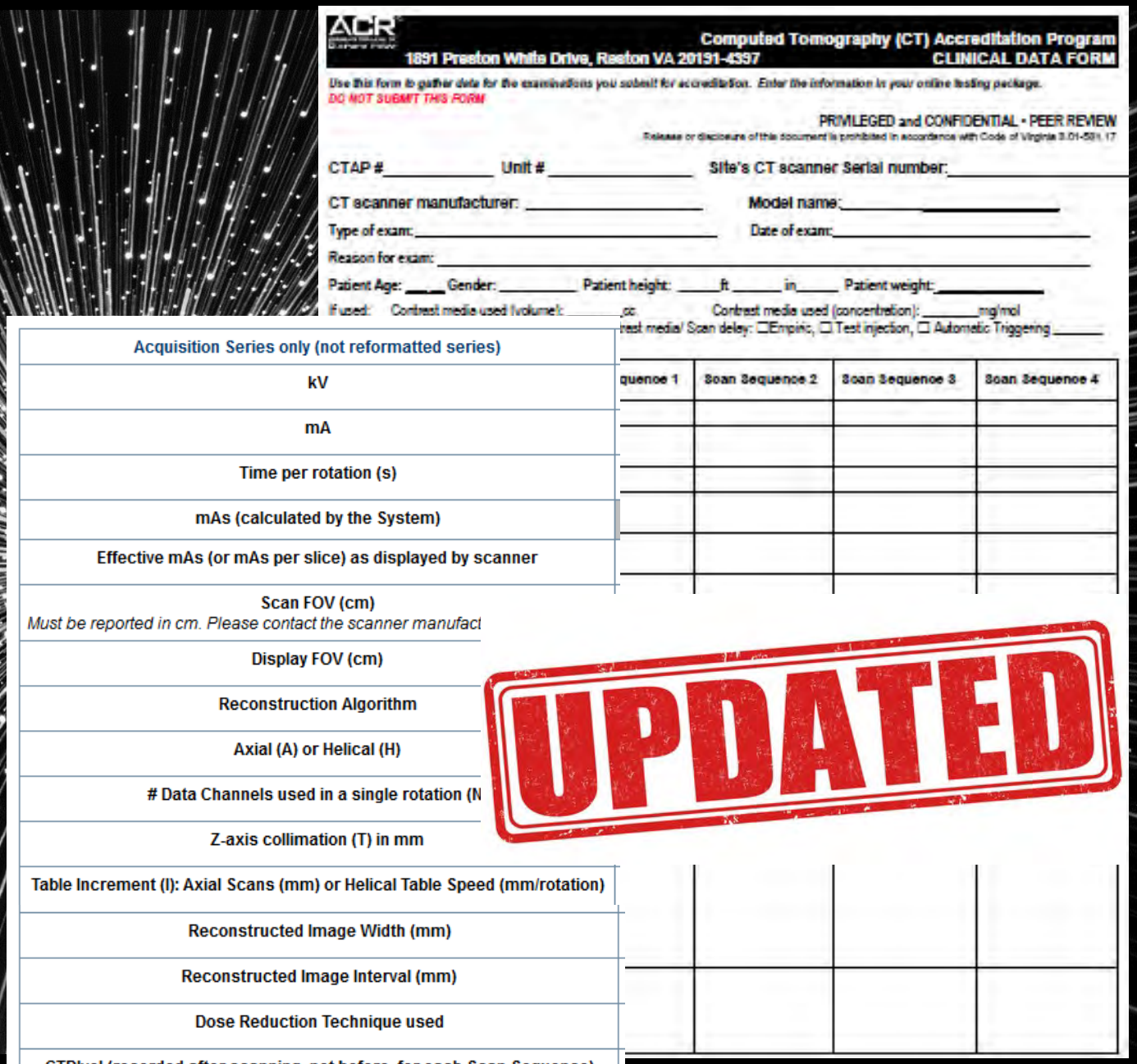
Need simple steps to make your job go faster?

Don't want to fail ACR and have to pay another fee?

This power point will explain step-by-step on how to fill out the proper documentation for the American College of Radiology (ACR).



For this presentation we will cover the acquisition parameters



ACR
Computed Tomography (CT) Accreditation Program
1891 Preston White Drive, Reston VA 20191-4397
CLINICAL DATA FORM

Use this form to gather data for the examinations you submit for accreditation. Enter the information in your online testing package.
DO NOT SUBMIT THIS FORM

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CTAP #_____ Unit # _____ Site's CT scanner Serial number:_____

CT scanner manufacturer: _____ Model name:_____

Type of exam:_____ Date of exam:_____

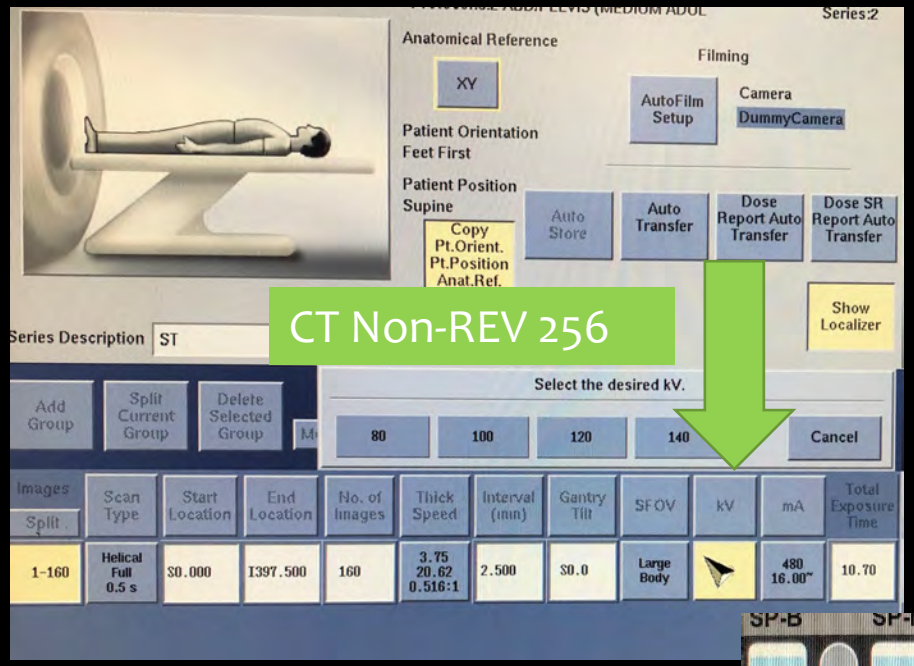
Reason for exam: _____

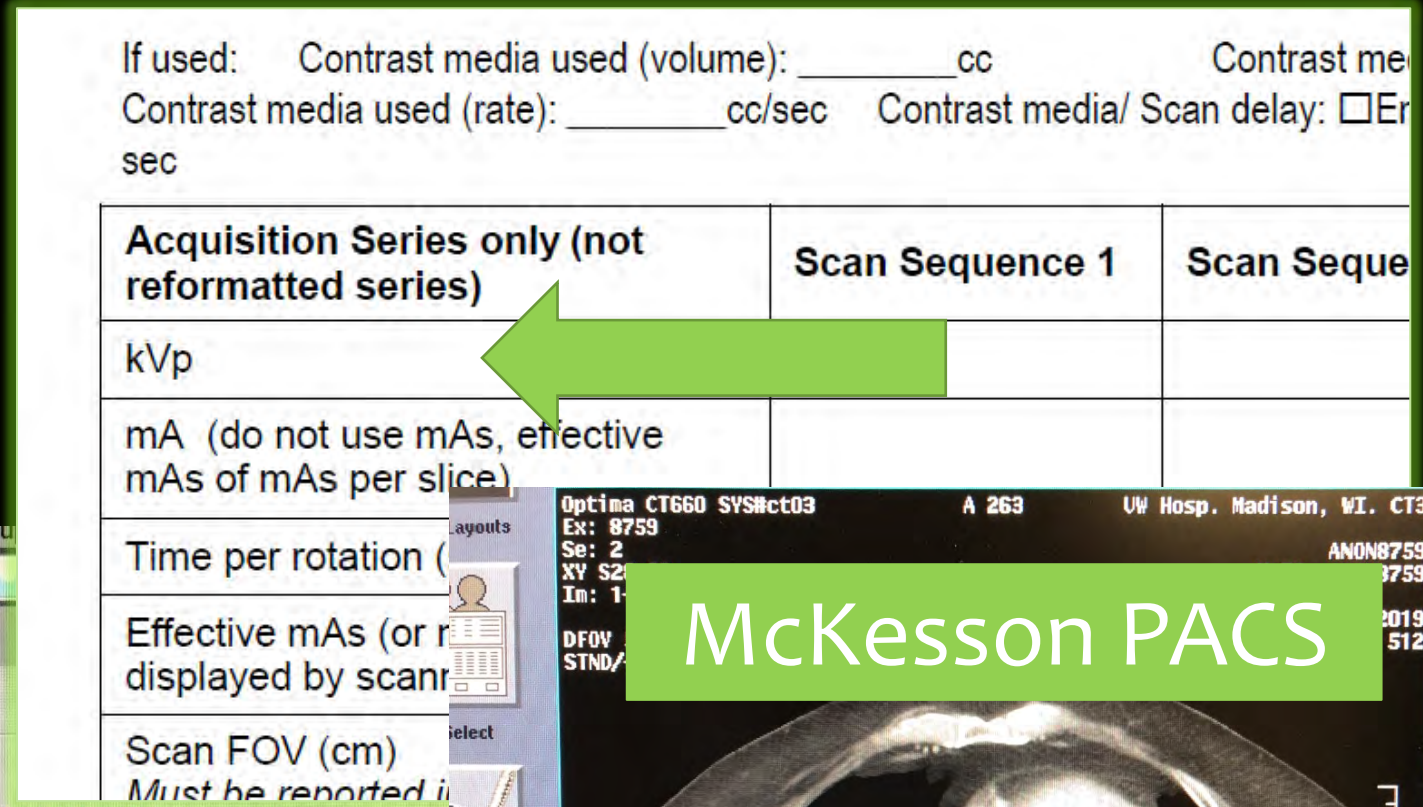
Patient Age: ___ Gender: _____ Patient height: _____ft _____in_____ Patient weight:_____

If used: Contrast media used (volume): _____cc Contrast media used (concentration): _____mg/ml

Contrast media/ Scan delay: ☐Empiric, ☐Test injection, ☐ Automatic Triggering _____

Acquisition Series only (not reformatted series)	Scan Sequence 1	Scan Sequence 2	Scan Sequence 3	Scan Sequence 4
kV				
mA				
Time per rotation (s)				
mAs (calculated by the System)				
Effective mAs (or mAs per slice) as displayed by scanner				
Scan FOV (cm) *Must be reported in cm. Please contact the scanner manufact*				
Display FOV (cm)				
Reconstruction Algorithm				
Axial (A) or Helical (H)				
# Data Channels used in a single rotation (N				
Z-axis collimation (T) in mm				
Table Increment (I): Axial Scans (mm) or Helical Table Speed (mm/rotation)				
Reconstructed Image Width (mm)				
Reconstructed Image Interval (mm)				
Dose Reduction Technique used				
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*				
DLP (Dose length product) *If your scanner is incapable of reporting dose, enter "0" in this field.*				

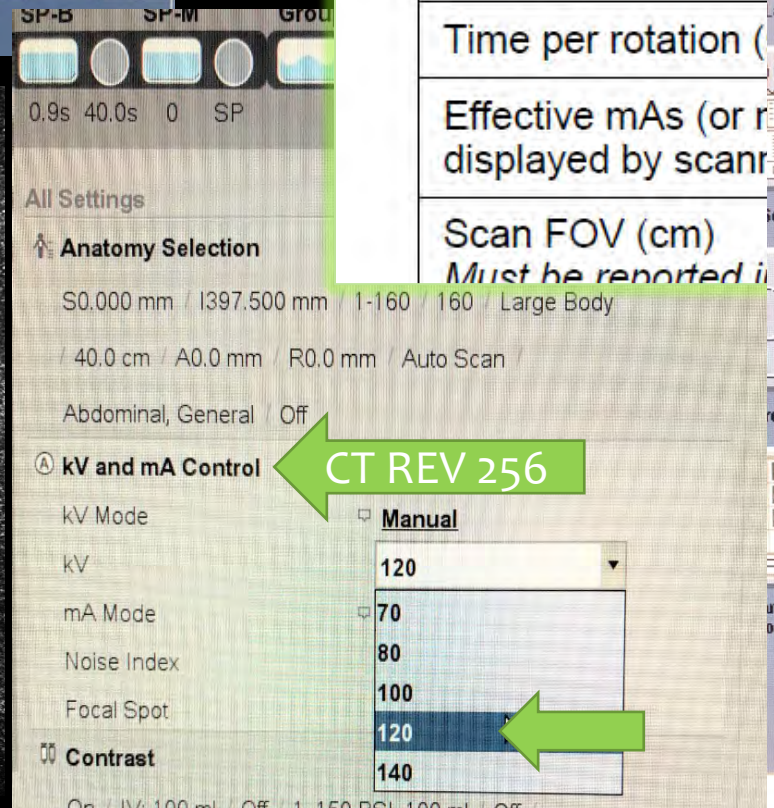


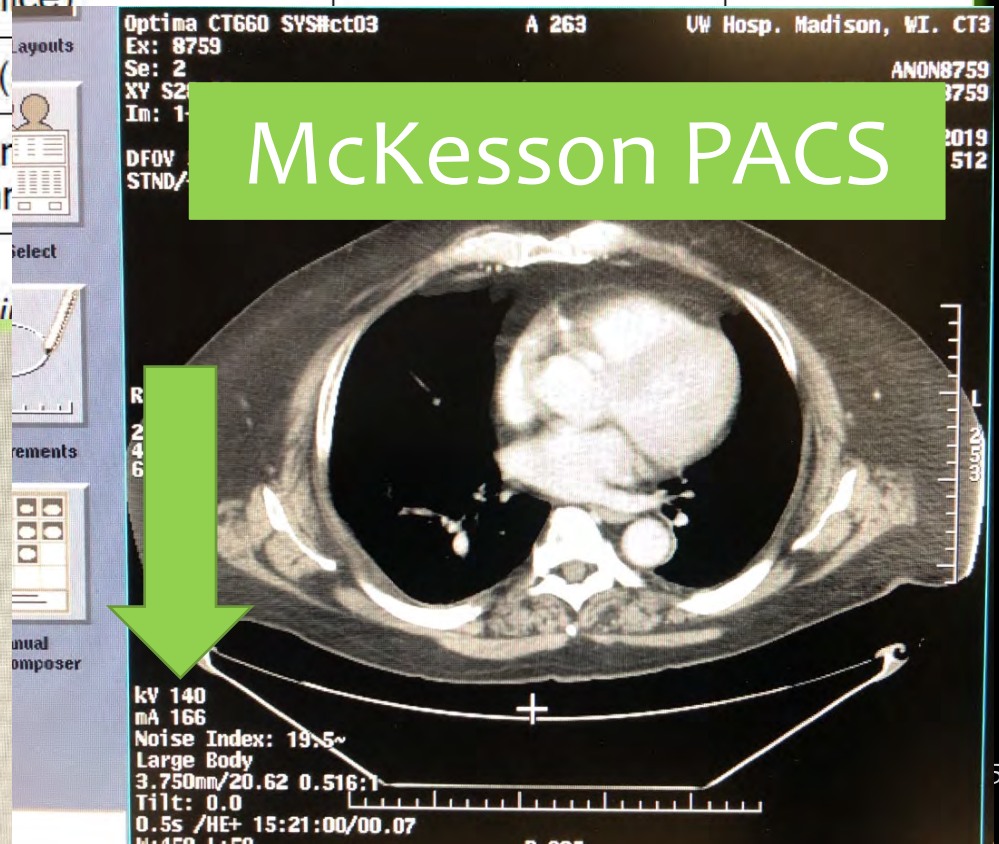


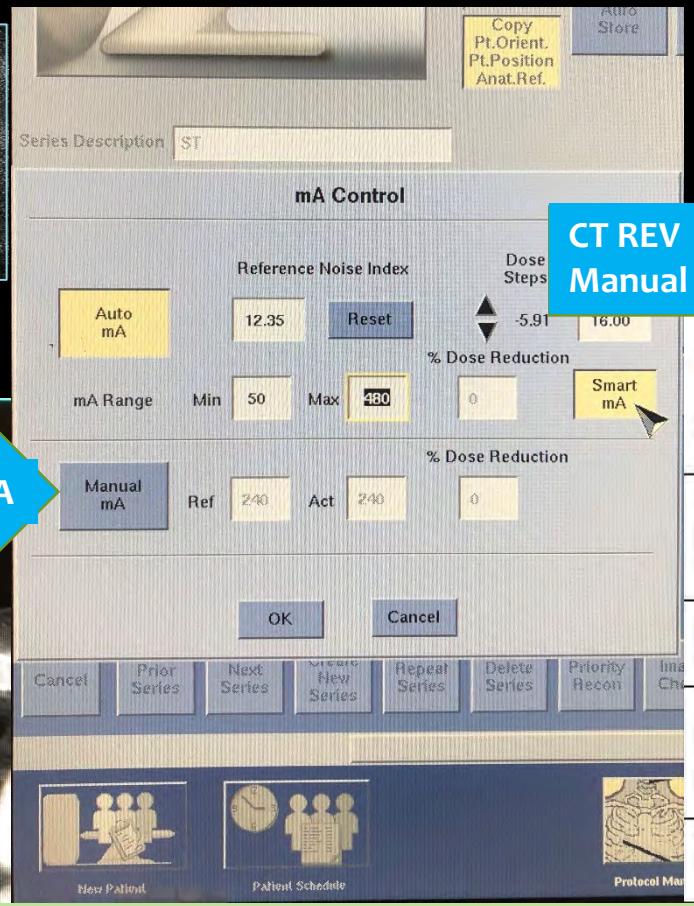
kVp

The kVp settings are found on:

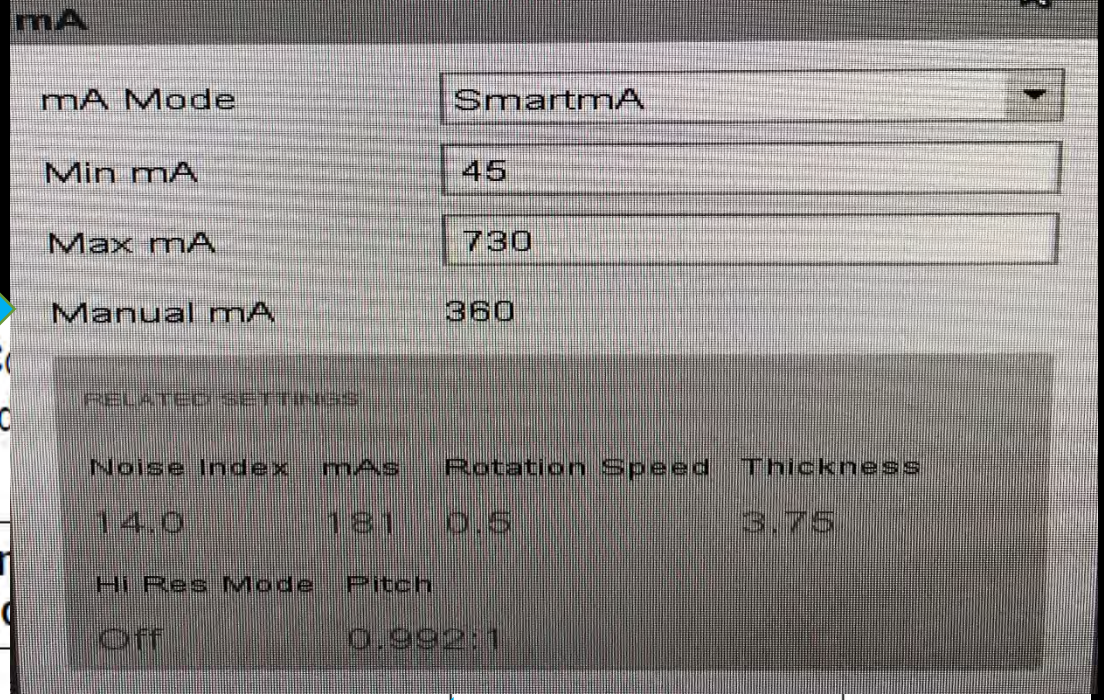
- The axial image in your PACS.
- In the protocol on your scanner.



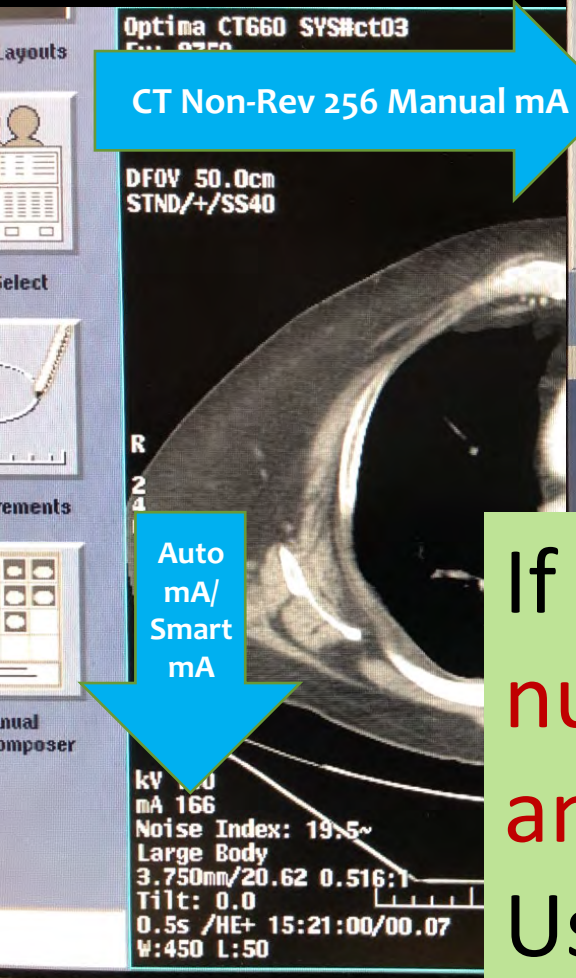




CT REV 256 Manual mA



CT Non-Rev 256 Manual mA



Auto mA/ Smart mA

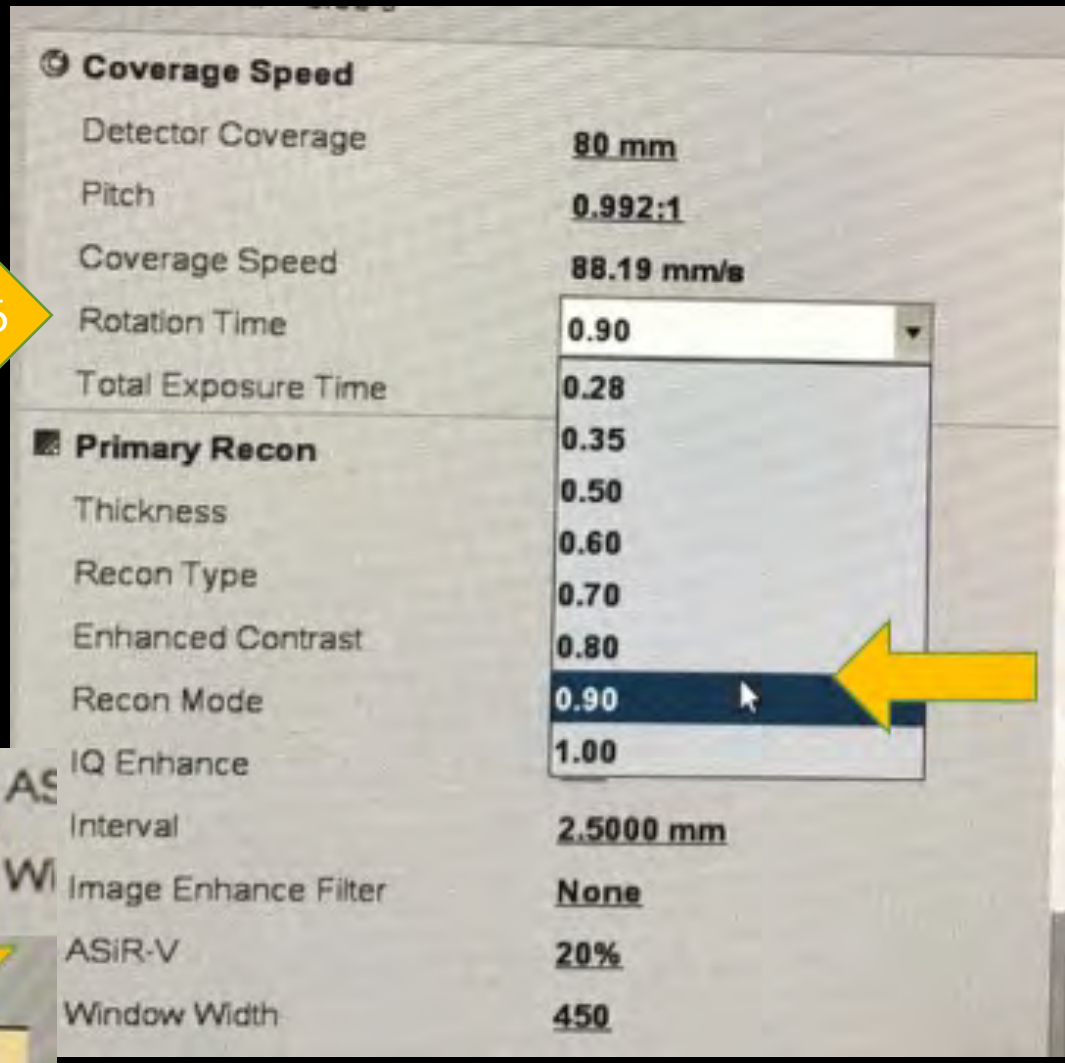
Contrast med
sec
Acquisition reformatte
kVp
mA (do not use mAs, effective mAs of mAs per slice)
Time per rotation (s)

If using Auto mA or Smart mA= Take the highest number and the lowest number, add them together and divide by 2, enter that result in this column.

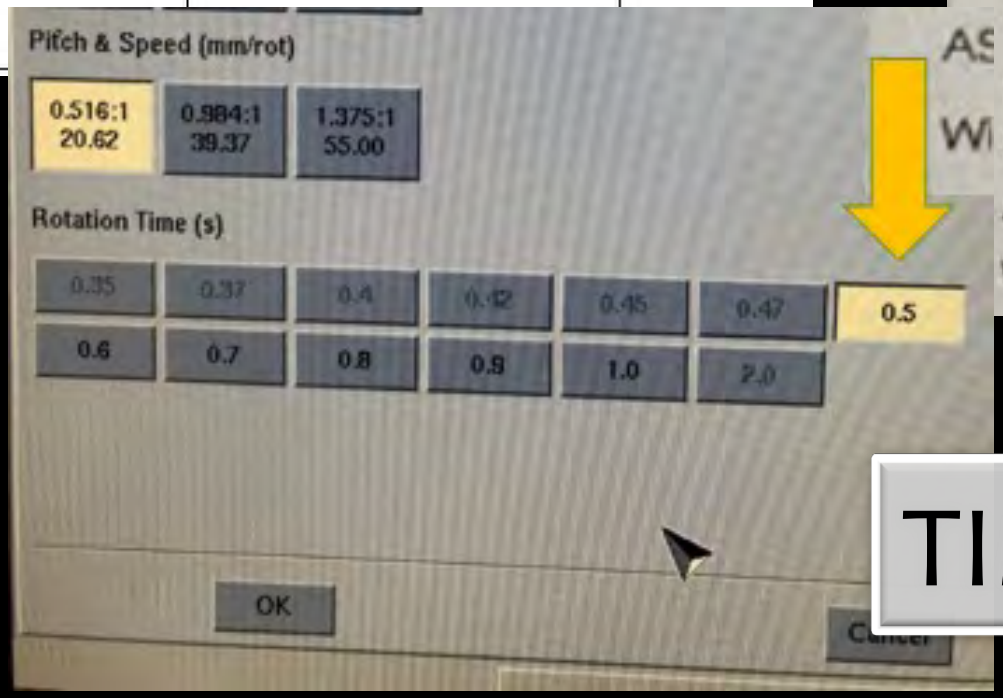
Using Manual mA = This will be a constant number.

Acquisition Series only (not reformatted series)	Scan Sequence 1	Scan Se
kVp		
mA (do not use mAs, effective mAs of mAs per slice)		
Time per rotation (s)		
Effective mAs (or mAs per slice) as displayed by scanner		
Scan FOV (cm) *Must be reported in cm.*		
Display FOV (cm)		

CT REV 256



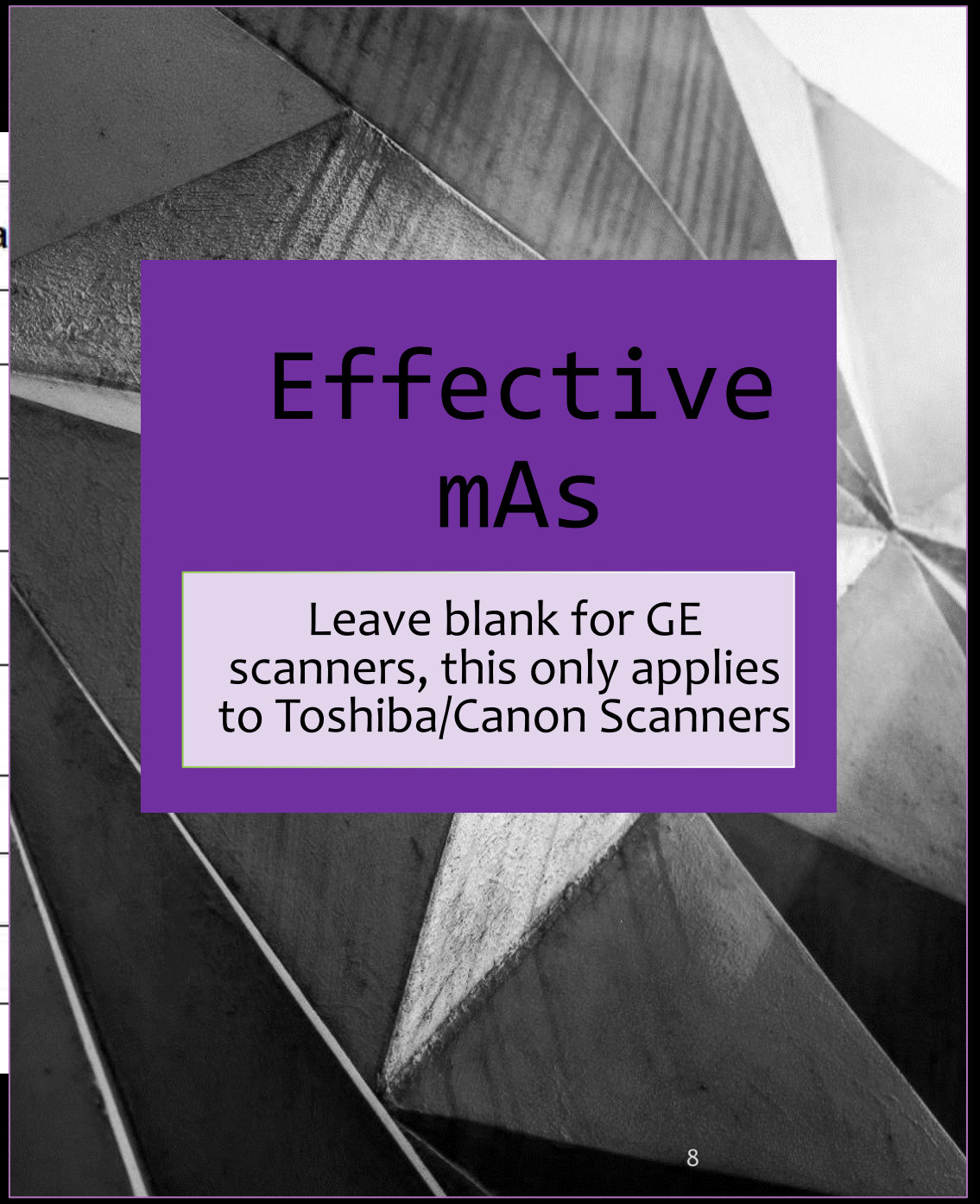
CT Non-REV 256



TIME PER ROTATION

sec

Acquisition Series only (not reformatted series)	Scan Sequence 1	Sca
kVp		
mA (do not use mAs, effective mAs of mAs per slice)		
Time per rotation (s)		
Effective mAs (or mAs per slice) as displayed by scanner		
Scan FOV (cm) *Must be reported in cm.*		
Display FOV (cm)		
Reconstruction Algorithm		
Axial (A) or Helical (H)		
Number of slices per tube rotation:		



Effective mAs

Leave blank for GE scanners, this only applies to Toshiba/Canon Scanners

Scan FOV (cm)

must be reported in cm

Below are the most common scan FOV, this will depend on your scanner make and model

Large Body = 50 cm

Medium Body = 36 cm

Small Body = 32 cm

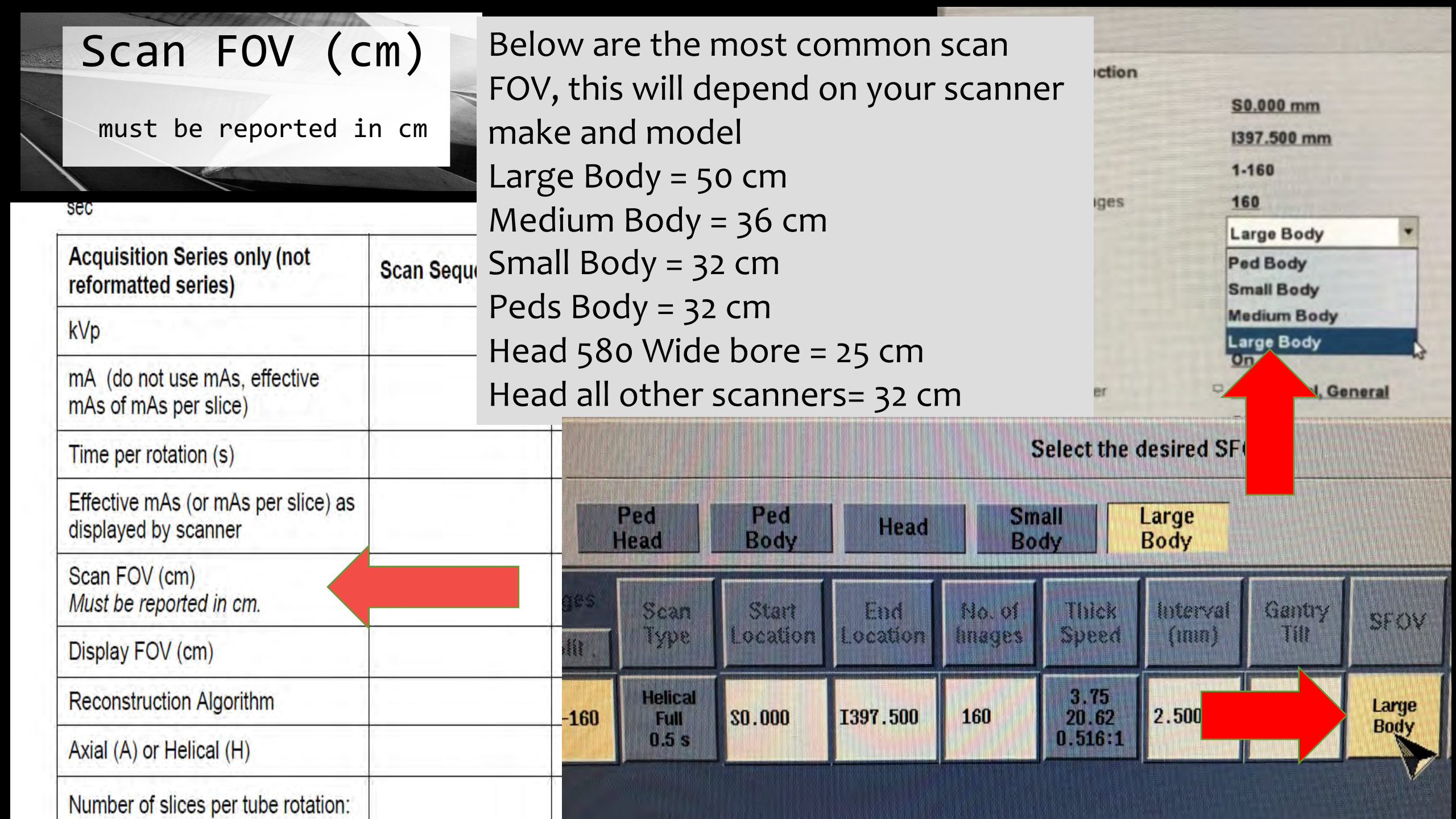
Peds Body = 32 cm

Head 580 Wide bore = 25 cm

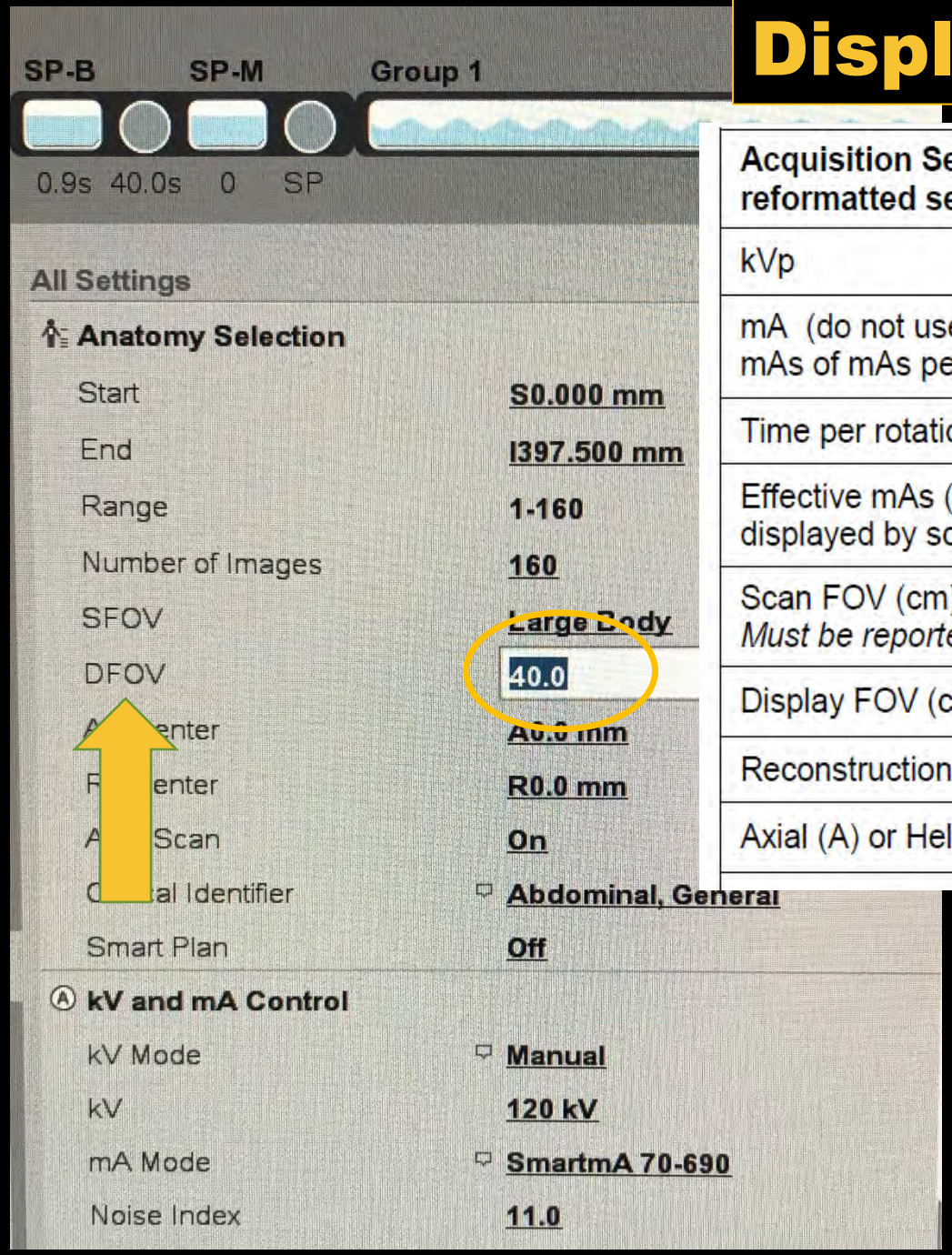
Head all other scanners= 32 cm

sec

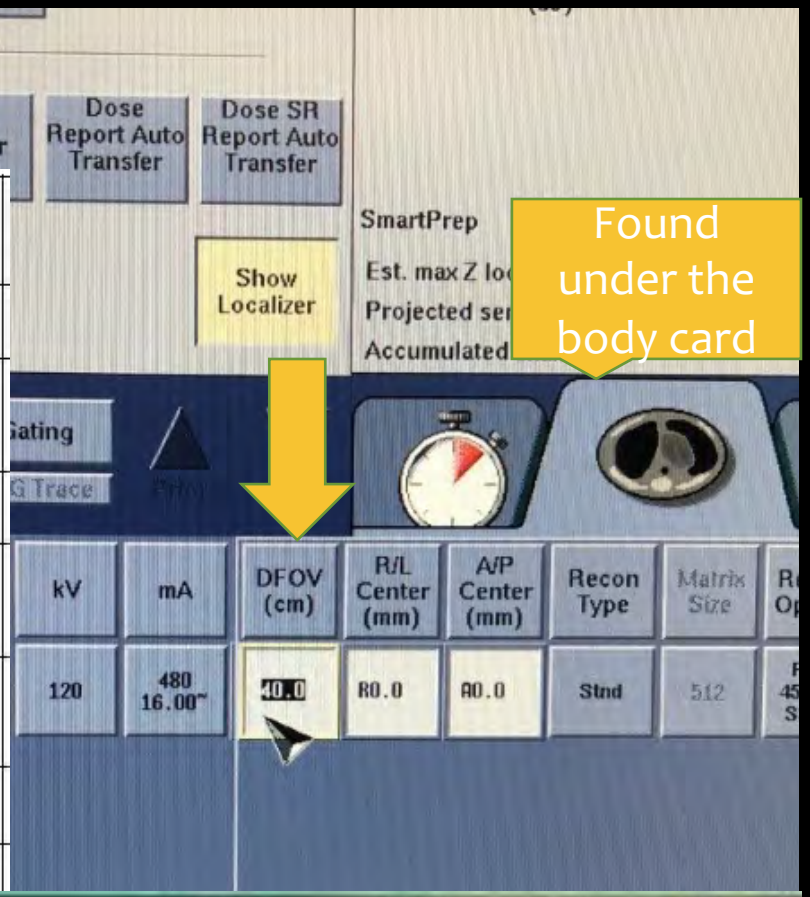
Acquisition Series only (not reformatted series)	Scan Sequ
kVp	
mA (do not use mAs, effective mAs of mAs per slice)	
Time per rotation (s)	
Effective mAs (or mAs per slice) as displayed by scanner	
Scan FOV (cm) *Must be reported in cm.*	
Display FOV (cm)	
Reconstruction Algorithm	
Axial (A) or Helical (H)	
Number of slices per tube rotation:	

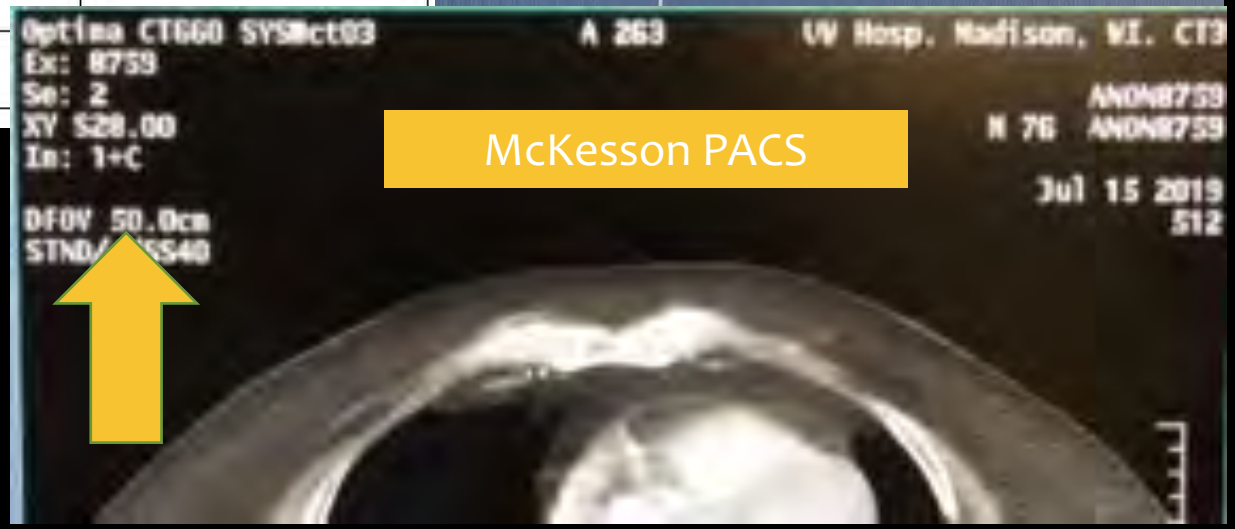


Display FOV (cm)



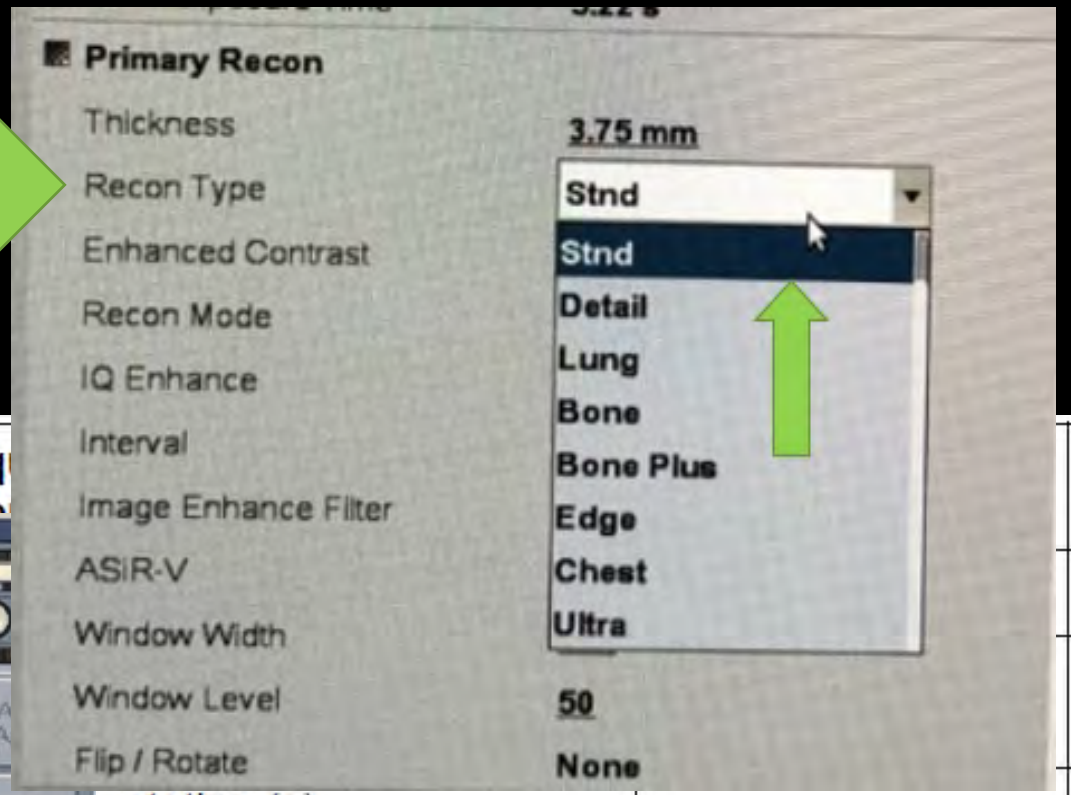
Acquisition Series only (not reformatted series)	Scan Sequence 1
kVp	
mA (do not use mAs, effective mAs of mAs per slice)	
Time per rotation (s)	
Effective mAs (or mAs per slice) as displayed by scanner	
Scan FOV (cm) *Must be reported in cm.*	
Display FOV (cm)	
Reconstruction Algorithm	
Axial (A) or Helical (H)	



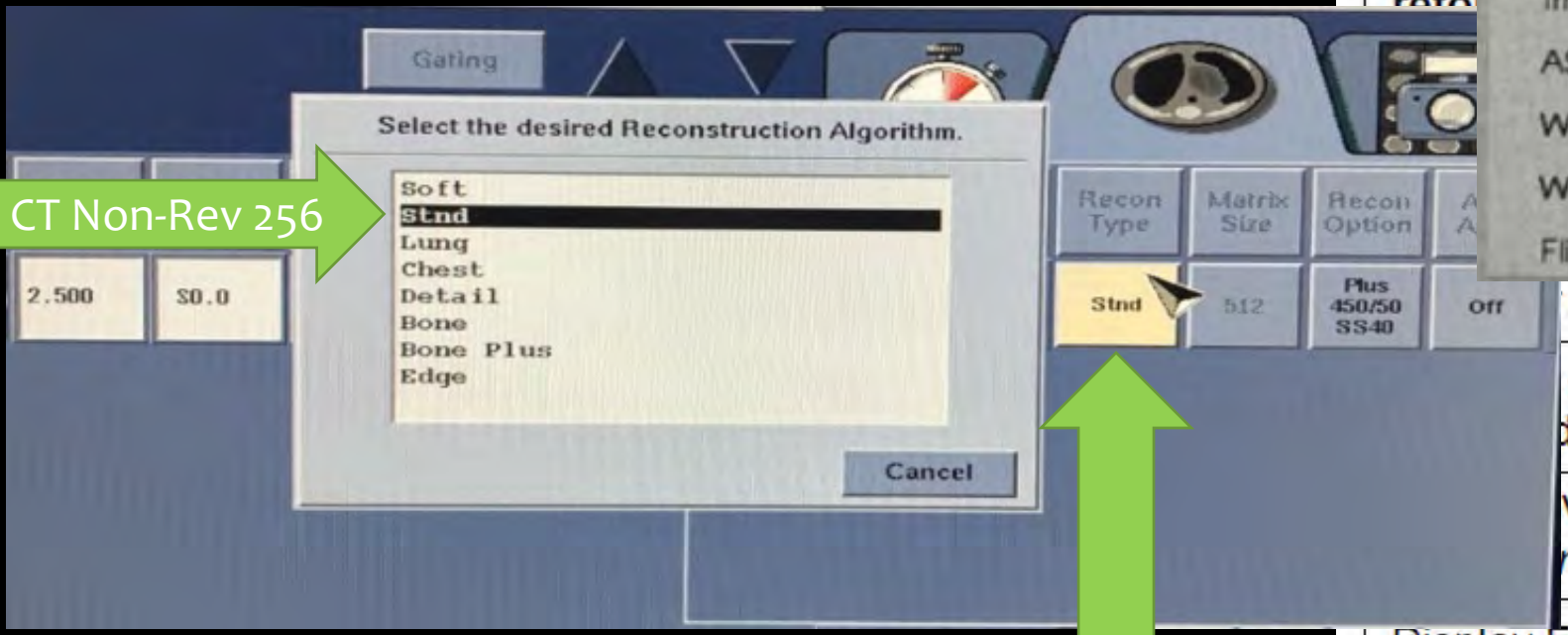


Reconstruction Algorithm

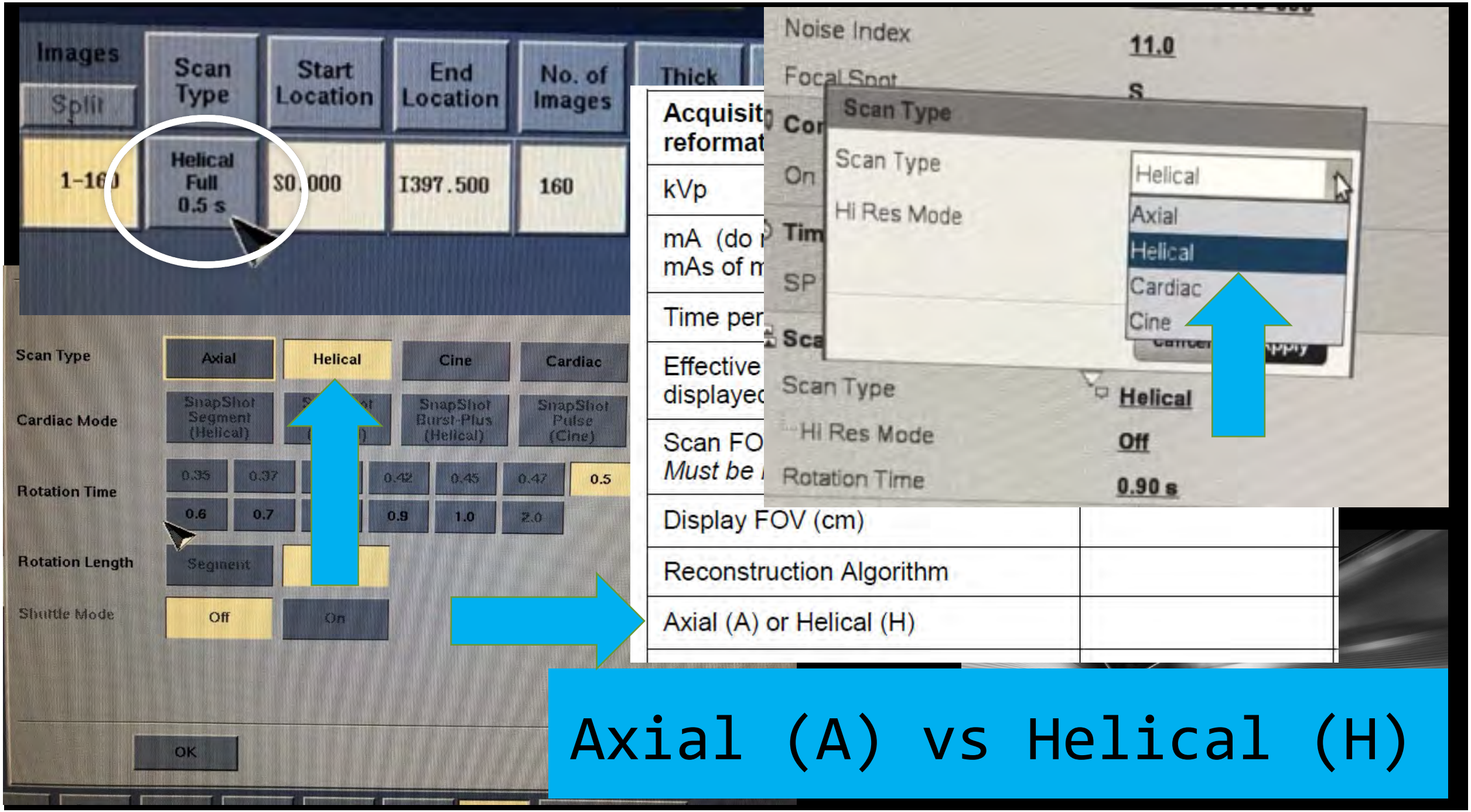
CT REV 256



CT Non-Rev 256



rotation (s)
mAs (or mAs per slice) as d by scanner
V (cm) *reported in cm.*
Display FOV (cm)
Reconstruction Algorithm
Axial (A) or Helical (H)


Images
Split
Scan Type
Start Location
End Location
No. of Images
Thick
1-160
Helical Full 0.5 s
S0.000
I397.500
160
Noise Index
11.0
Focal Spot
Scan Type
Scan Type
Helical
Hi Res Mode
Axial
Helical
Cardiac
Cine
Scan Type
Helical
Hi Res Mode
Off
Rotation Time
0.90 s
Scan Type
Axial
Helical
Cine
Cardiac
Cardiac Mode
SnapShot Segment (Helical)
SnapShot Burst-Plus (Helical)
SnapShot Pulse (Cine)
Rotation Time
0.35
0.37
0.42
0.45
0.47
0.5
0.6
0.7
0.9
1.0
2.0
Rotation Length
Segment
Shuttle Mode
Off
On
OK
Acquisit
reformat
kVp
mA (do
mAs of m
Time per
Effective
displayed
Scan FO
Must be
Display FOV (cm)
Reconstruction Algorithm
Axial (A) or Helical (H)
Axial (A) vs Helical (H)

Z-axis collimation (T) in mm

Number of slices per tube rotation: # data channels used (N))	
Z-axis collimation (T) in mm	0.625 (for GE 64 slice)
Table Increment/Speed (mm)	
Reconstructed Scan Width (mm)	
Reconstructed Scan Interval (mm)	
Dose Reduction Technique used	
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*	
DLP (Dose length product) *If your scanner is incapable of reporting dose, enter "0" in this field.*	

This is often misconstrued to be the total beam width. (In GE language the "Detector Coverage".)

It is not.

It is the effective width of a single data channel.

This is always 0.625 mm for GE 256, 128, and 64 slice scanners.

For GE 32 and 16 slice scanners it is either 0.625 mm or 1.25 mm.

For GE 4 and 8 slice scanners it is 1.25 mm

T = 0.625 is the Z-axis collimation in mm for all 256, 128, and 64 slice GE Scanners.

For 32 slice GE scanners:
T = 0.625 using 10 mm beam width
T = 1.25 using 20 mm beam width

For 16 slice GE scanners:
T = 0.625 using 10 mm beam width
T = 1.25 using 20 mm beam width

For 4 and 8 slice GE scanners:
T = 1.25

Number of Data Channels used in a single rotation (N)

# Data Channels used in a single rotation (N)	

To determine N:
Take the detector coverage in mm and divide by the Z axis Collimation (T) in mm.

Examples for 64, 128, or 256 slice scanners:

20 / 0.625 = 32
40 / 0.625 = 64
80 / 0.625 = 128
160 / 0.625 = 256

For 32 slice scanners it should always be 32:
20 / 0.625 = 32
40 / 1.25 = 32

For 16 slice scanners it should always be 16:
10 / 0.625 = 16
20 / 1.25 = 16

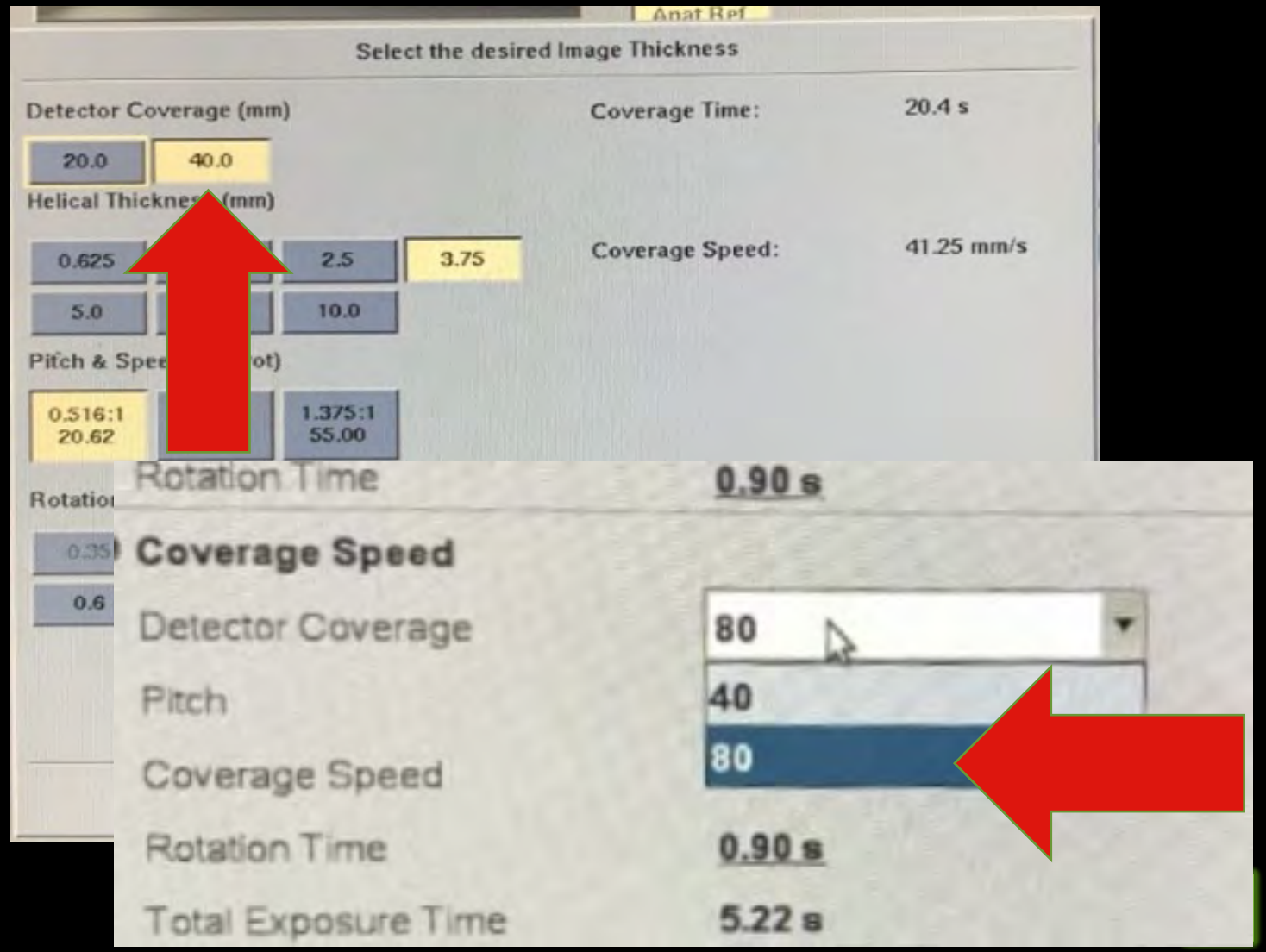


Table increment/speed (I):

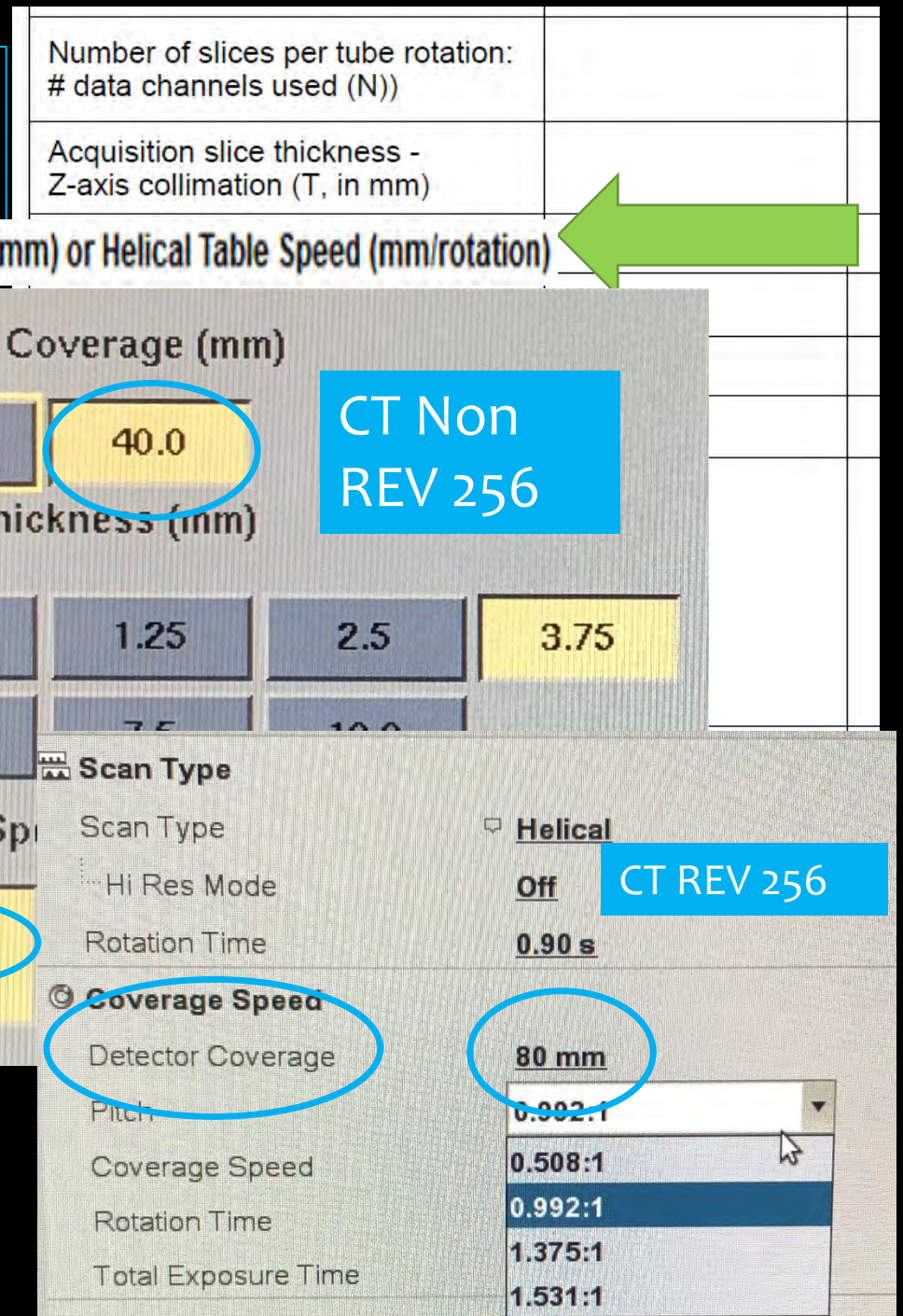
Axial Scans (mm) or Helical Table Speed (mm/rotation)

- Axial: I = the table increment
- Helical:
  I = the detector coverage (mm) x the pitch

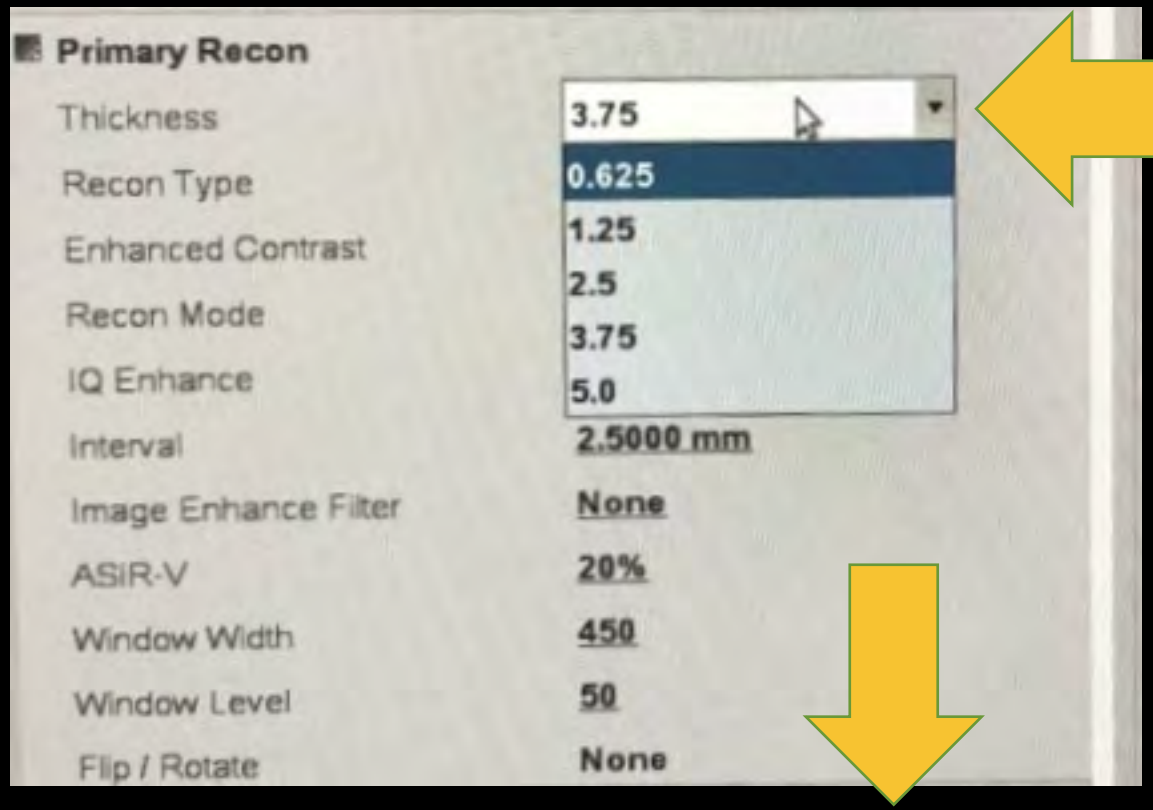
Detector coverage helical options

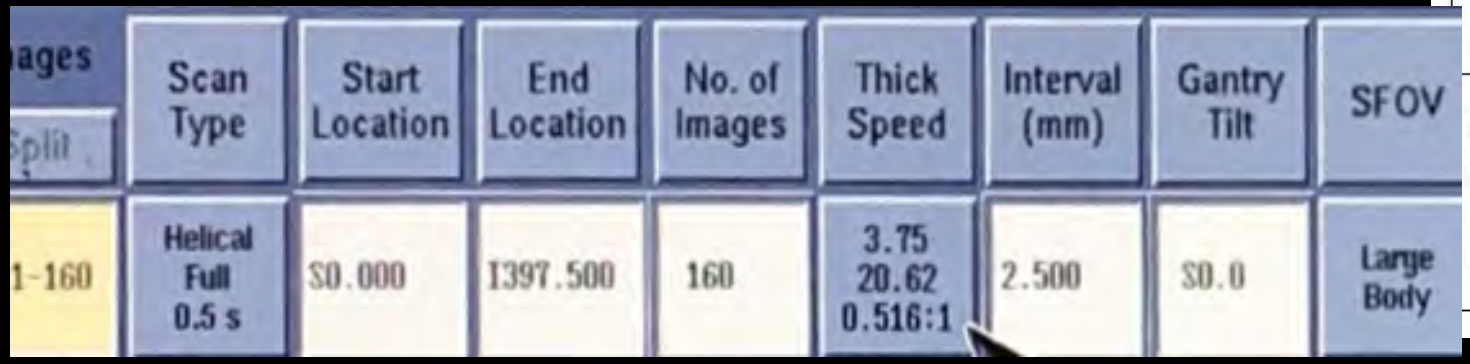
- 16 channel = 10 mm or 20 mm
- 32 channel = 20 mm or 40 mm
- 64 channel = 20 mm or 40 mm
- 256 channel = 40 mm or 80 mm

Example:
for a 40 mm detector coverage and a pitch of 0.516:
I = 40 x 0.516 = **20.62** mm/rotation



Reconstructed Image width (mm)

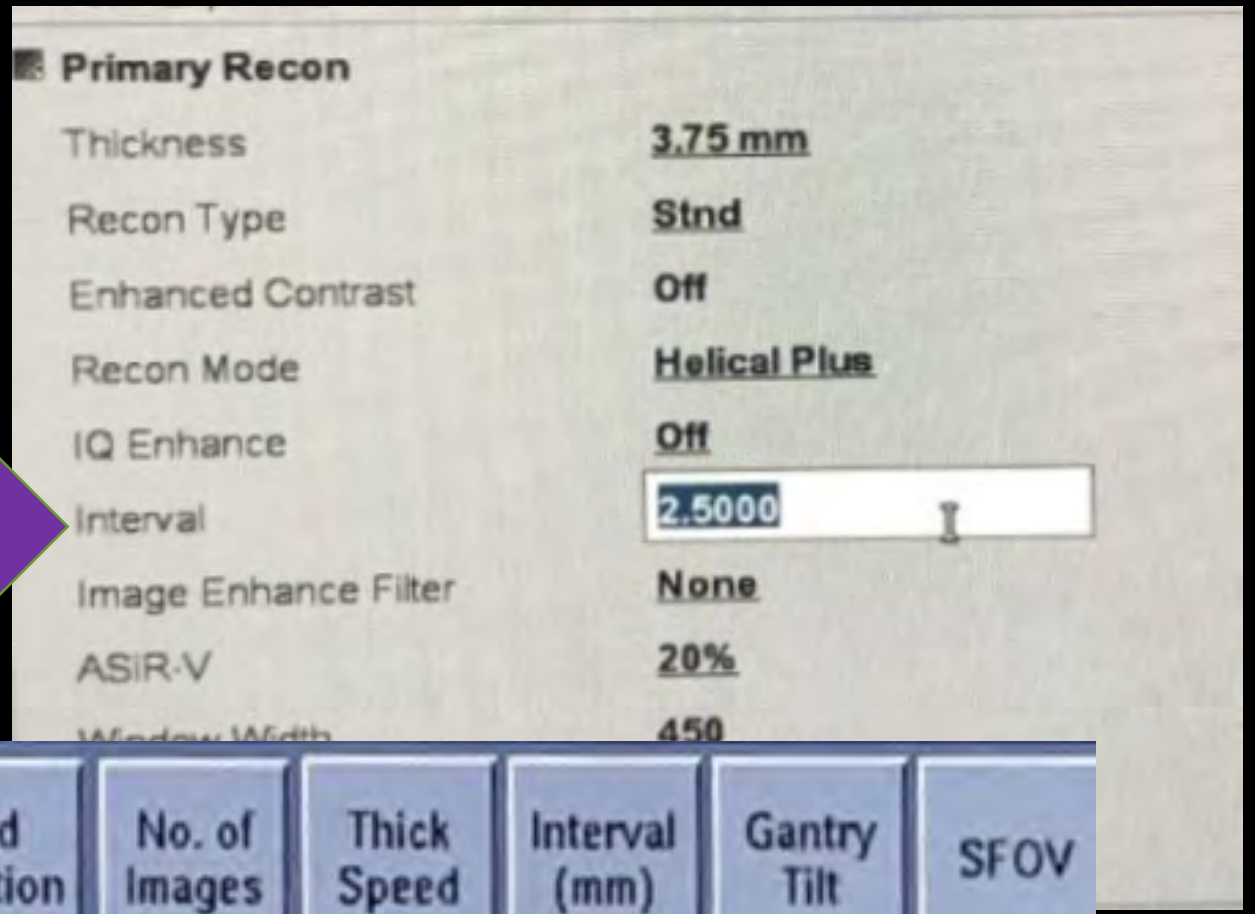




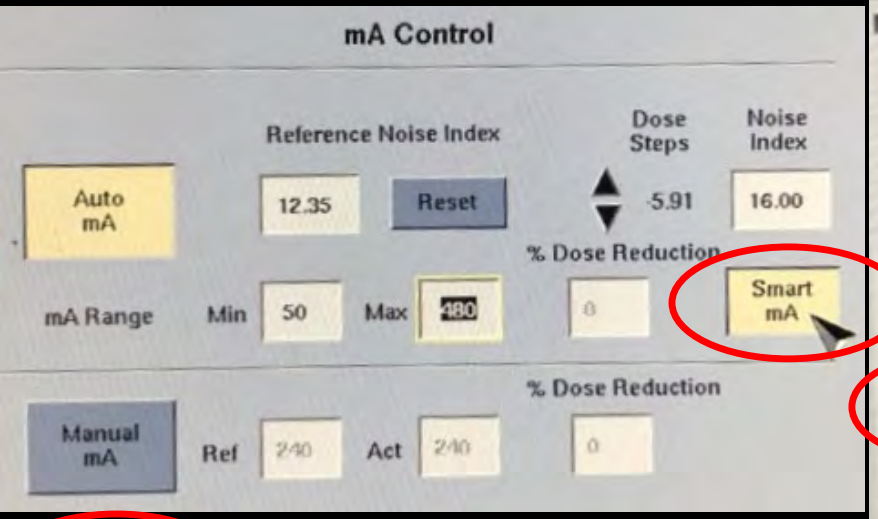
Number of slices per tube rotation: # data channels used (N))
Acquisition slice thickness - Z-axis collimation (T, in mm)
Table Increment/Speed (mm)
Reconstructed Image Width (mm)
Reconstructed Scan Interval (mm)
Dose Reduction Technique used
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*
DLP (Dose length product) *If your scanner is incapable of reporting dose, enter "0" in this field.*

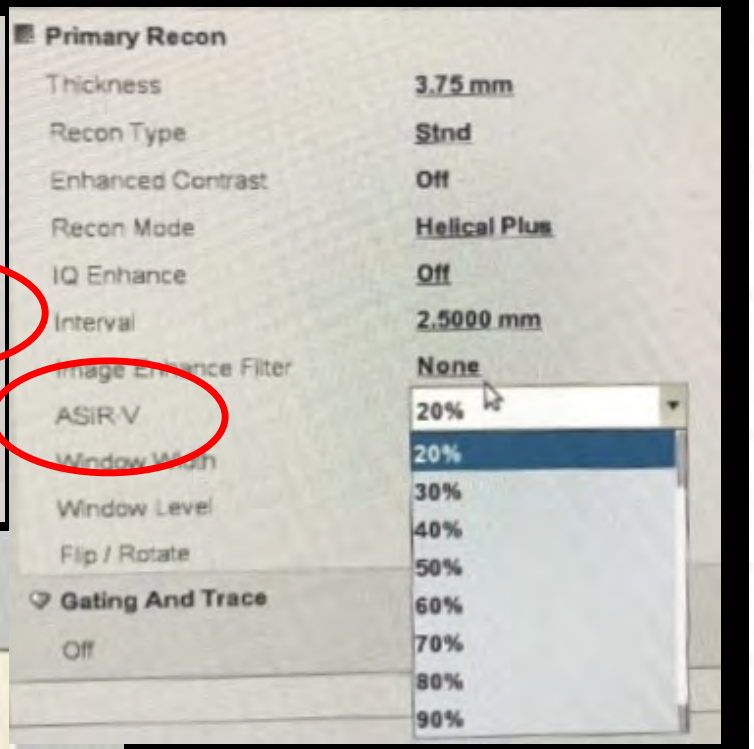
Reconstructed Image Interval (mm)

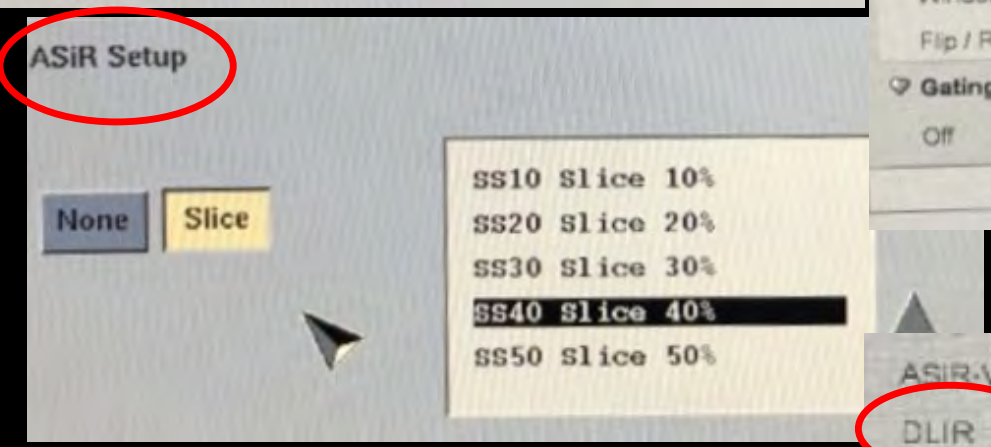
Number of s… …be rotation: # data chann… …N))
Acquisition s… …ss - Z-axis collim… …mm)
Table Incre… …(mm)
Reconstructed … Width (mm)
Reconstructed Image Interval (mm)
Dose Reduction Technique used
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*
DLP (Dose length product) *If your scanner is incapable of reporting dose, enter "0" in this field.*

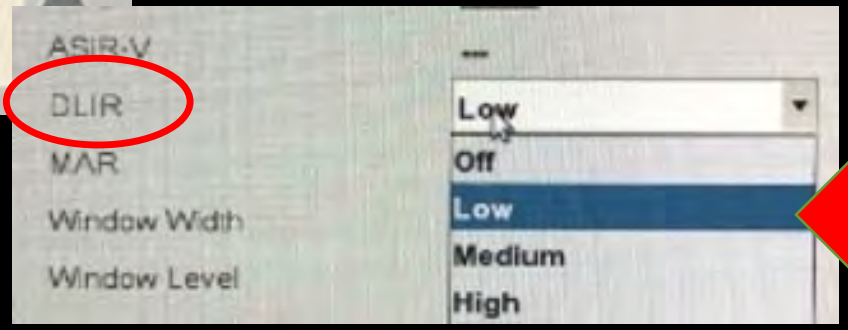


Dose Reduction Technique









Number of slices per tube rotation: # data channels used (N))	
Acquisition slice thickness - Z-axis collimation (T, in mm)	
Table Increment/Speed (mm)	
Reconstructed Scan Width (mm)	
Reconstructed Scan Interval (mm)	
Dose Reduction Technique used	Smart mA & ASiR
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*	
DLP (Dose length product) *If your scanner is incapable of reporting dose, enter "0" in this field.*	

DLIR - for CT REV 256 only

CTDIVOL

Dose Report

Series	Type	Scan Range (mm)	CTDIvol (mGy)	DLP (mGy*cm)	Phantom cm
SCOUT					
1	Scout	S150-I150		0.86	Body 32
1	Scout	S150-I150		1.72	Body 32
THIN ST					
2	Helical	I115.383-S100.867	10.00	246.11	Head 16
			Total Exam DLP:	248.69	

Number of slices per tube rotation: # data channels used (N))
Acquisition slice thickness - Z-axis collimation (T, in mm)
Table Increment/Speed (mm)
Reconstructed Scan Width (mm)
Reconstructed Scan Interval (mm)
Dose Reduction Technique used
CTDIvol (recorded after scanning, not before, for each Scan Sequence) *If your scanner is incapable of reporting dose, enter "0" in this field.*

Only the enter the CTDIvol for the series, do not include the scouts.

DLP

Dose Report

Series	Type	Scan Range (mm)	CTDIvol (mGy)	DLP (mGy*cm)	Phantom cm
SCOUT					
1	Scout	S150-I150	0.03	0.86	Body 32
1	Scout	S150-I150	0.06	1.72	Body 32
THIN ST					
2	Helical	I115.383-S100.867	10.00	246.11	Head 16
			Total Exam DLP:	248.69	

CTDIvol (recorded after scanning, not before, for each Scan Sequence)
If your scanner is incapable of reporting dose, enter "0" in this field.

DLP (Dose length product)
If your scanner is incapable of reporting dose, enter "0" in this field.

Enter the DLP in mGy*cm

Upload your images to Triad

2. Adult Chest Module

Adult Chest	
A. Technique Parameters	
Required series	IV contrast may be used but is not required
Reconstructed slice width	≤ 5 mm
Reconstructed algorithm	Standard or equivalent
CTDIvol	Reference Value: 21 mGy* Radiation dose reduction methods such as Automatic Exposure Control methods (e.g. Tube Current Modulation) are encouraged.
B. Anatomic Coverage	
Coverage	Lung apex to below the lung bases

3. Adult Abdomen Module

Adult Abdomen	
A. Technique Parameters	
Required series	IV contrast enhanced. Should be timed to portal venous phase.
Reconstructed slice width	≤ 5 mm
Reconstructed algorithm	Standard or soft tissue (or appropriate body kernel)
Oral contrast	Oral contrast material must be present with barium or neutral contrast agents
CTDIvol	Reference value: 25 mGy * Pass/Fail criteria: 30 mGy *
B. Anatomical Coverage	
Coverage	Diaphragm to iliac crest to include the entire liver; May include pelvis

Adult Coronary CTA	
A. Technique Parameters	
Required series	Best phase of contrast enhanced axial images*
Dose reduction	Required (dose modulation, prospective gating or automatic dose reduction)
Reconstructed slice width	≤ 1 mm
Reconstruction algorithm	Standard
CTDIvol	≤ 50 mGy prospective gating ≤ 150 mGy retrospective gating CTDIvol information on dose received is required.
Gating	The use of prospective gating is encouraged whenever possible.***
B. Anatomic Coverage	
Coverage**	Scan must cover the entire coronary circulation and heart**
Required Screen Shots*	CTDIvol and DLP Scout with locations displayed Curved or straight reformat of 2 cm of LAD Curved or straight reformat of 2 cm of LCX Curved or straight reformat of 2 cm of OM1 or first large OM or RCA

nly submit the one best phase set of axial images and the required screen shots. Additional cardiac ses, multiplanar views and reconstructions should not be submitted.