

Tips & Tricks: Setting Scan Range on the New Biograph mCT Flow

Biograph mCT Flow™ supports two modes of bed motion, conventional stop-and-go (S&G) or the revolutionary FlowMotion™. With FlowMotion, the bed is moved continuously through the PET axial field of view (FOV). For PET•CT exams, both modes allow an alignment between the PET and CT data.

Setting the Scan Range for FlowMotion

Setting the scan range for FlowMotion differs from stop-and-go. One change is that any start and stop position can be chosen by FlowMotion, whereas stop-and-go needs to start and stop at discrete bed positions. The second difference is that FlowMotion acquisition time is defined by the bed speed. Tables 1 and 2 convert the acquisition times between stop-and-go min/bed and FlowMotion bed speed. After acquiring the topogram, the scan range is indicated visually in the PET Planning window by a rectangular box. **Trick:** Double click in the PET Planning window to view an enlarged topogram. Double click again to return to the standard view.

Define the Area to be Scanned in PET Planning Window

Adjust the position of the axial range by dragging the small white circle in the center of the scan range up or down with the left mouse (Figure 1).

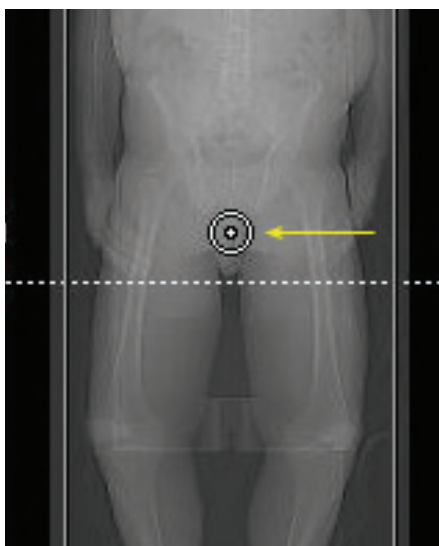


Figure 1
Small circle in the center to adjust axial range (yellow arrow).

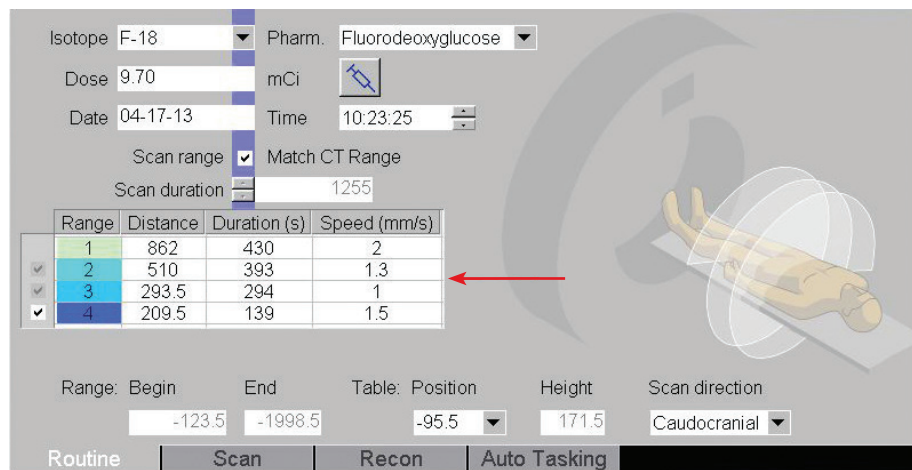
Define up to Four PET Zones in Routine Task Card

In the routine task card, create from 1 to 4 zones with different bed speeds by checking the boxes to the left of the range column. Define the speed between 0.1 mm/s and 10.0 mm/s for each range in the speed column (Figure 2).

Trick: Use Tables 1 and 2 to convert minutes per bed position to Biograph mCT Flow imaging protocols of mm per second. Note there are different values for a scanner with or without TrueV.

Biograph mCT Flow	
S&G Acquisition Time (min/bed)	FlowMotion Speed (mm/s)
1:00	1.5
1:48	0.8
2:00	0.7
2:30	0.6
3:00	0.5
4:00	0.4
5:00	0.3
6:00	0.2
10:00	0.1

Table 1: Stop-and-go acquisition times mapped to FlowMotion bed speed to achieve equivalent image quality on Biograph mCT Flow.



Biograph mCT Flow with TrueV	
S&G Acquisition Time (min/bed)	FlowMotion Speed (mm/s)
1:00	2.1
1:48	1.2
2:00	1.1
2:48	0.8
3:00	0.7
4:00	0.5
5:00	0.4
8:00	0.3
10:00	0.2

Table 2: Stop-and-go acquisition times mapped to FlowMotion bed speed to achieve equivalent image quality on Biograph mCT Flow with TrueV.

Figure 2

Up to four zones can be easily added with different distance, duration and speed.

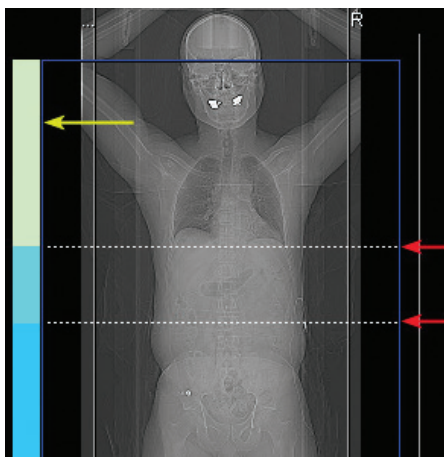


Figure 3
Scan range reference bar (yellow arrow).
Scan range reference lines (red arrows).

Redefine Scan Range in PET Planning Window

Scan range is typically defined by the protocol, but can be redefined by dragging the scan range reference lines in the PET Planning window (Figure 3). Changing the length of a range in the PET planning window changes the distance value on the routine task card (Figure 2).

Tip: Scan ranges are indicated visually by color coded bars on the scan reference bar on the left side of the PET Planning window (Figure 3) corresponding to the colored zone numbers in the range column of the routine task card (Figure 2).

Trick: The length of ranges can also be changed easily by dragging the dotted lines in the PET Planning window. Changing the length of a range in the PET Planning window changes the distance value on the routine task card.

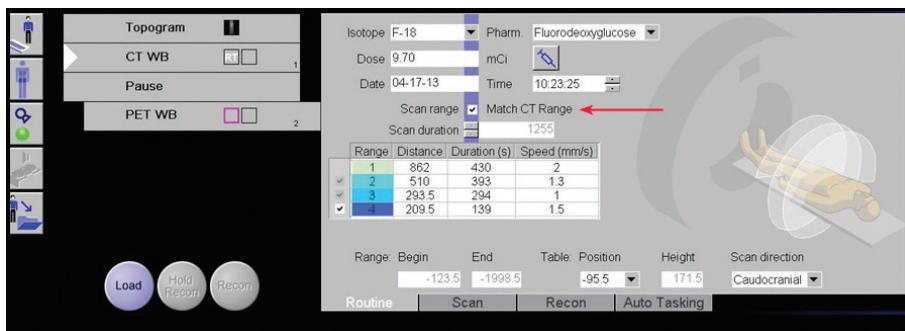


Figure 4
Scan Range - Match CT Range.

Match CT Range	Match CT Slice Location	Behavior of PET•CT Planning
Checked	Checked	CT range snaps automatically to PET scan range. The PET image slice location and thickness is then matched to the CT.
Unchecked	Checked	The CT and PET scan ranges are independently defined. The PET image slice location and thickness will be matched to the CT for the planned PET scan range.

Table 3: Match CT Range option to behavior of PET•CT planning.

Trick: For FlowMotion protocols, on the routine task card, if you check Scan Range - Match CT Range (Figure 4), syngo® automatically adjusts the CT field of view to match the PET field of view. Correspondingly, if the CT range is changed, the PET range is automatically changed to match. If Match CT Range is left unchecked, the CT and PET ranges will not automatically match (Table 3).

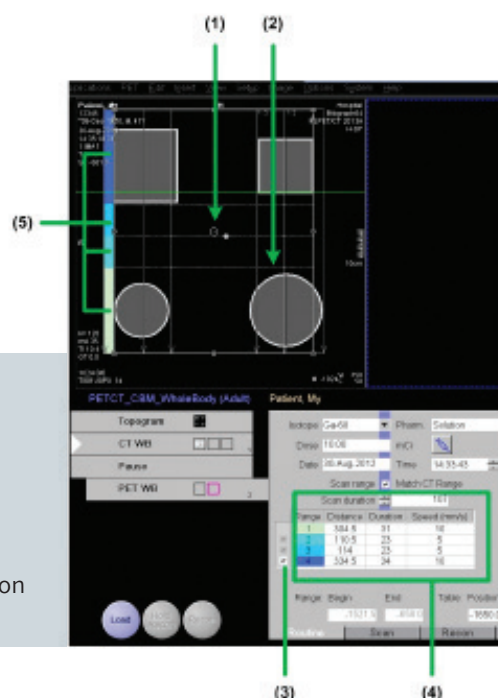


Figure 5
Overview: Setting Scan Range in FlowMotion Planning Window

- 1) Adjust the position of the axial range by dragging the small white circle
- 2) Drag the scan range reference lines to further define scan range
- 3) Click the box to add a new zone
- 4) Define the speed for each zone
- 5) Color-coded PET FlowMotion regions correspond to the color coded zones on the routine subtask card