

KODAK EC-L FILM SYSTEM TECHNIQUE CHARTS

Using the Charts

1. First, identify the energy for which filming will be performed (remember, the lowest energy available will produce the best results).
2. Pay particular attention to the distance between patient and film. If this distance needs to be increased due to the access of the cassette and holder around the patient, then it may be necessary to add exposure to the secondary or open field. If different distances are used, then the techniques may have to be adjusted.
3. Next, refer to the anatomical area to be imaged. The technique indicated is based on standard considerations for thickness and field size. If the patient thickness differs from a standard thickness, add or subtract exposure from the open field accordingly. For particularly large treatment fields, decrease the exposure in the open field to account for increased scatter.

Customizing the charts

1. The charts are presented here as a guide. The previous discussion in this section describes how geometry and the local processing conditions can impact the exposure required for KODAK EC Film in KODAK EC-L Cassettes, which also includes the KODAK EC-L Lightweight Cassettes. The exposures in the secondary or open field should be modified to account for local preferences in these factors. Once a technique is worked out, new charts should be produced, and careful attention to using those techniques consistently is recommended.
2. Unlike imaging at diagnostic energies, there is not a substantial difference in tissue attenuation at megavoltage energies. For this reason, the biggest factors affecting the exposure required are not specifically dependent on the anatomy. Once the energy and geometry have been determined, patient thickness and field size would be the important factors. As an alternative to the technique charts presented here which provide exposure recommendations according to anatomy, a technique chart based on thickness and field size for a given geometry and energy could be created.

Fractional MUs

The charts provided express exposures in integer increments (MUs). Integer increments are common on most machines. Some manufacturers have provided for fractional increments of exposure. If this is available, then techniques can be fine-tuned for even greater optimization of exposure. The points raised in this discussion can be used to guide the fine-tuning according to patient thickness, field size, geometry, and processing.

KODAK EC-L Film System Technique Chart

Common Techniques for 6-MV Beams

Assumes source-to-film distance of:

105–115 cm for AP/PA; 100 cm SAD

115–125 cm for Obliques; 100 cm SAD

130–140 cm for Laterals; 100 cm SAD

LUNG/CHEST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+3	
OBLIQUE	Most	1+4	or 1+3
PELVIS		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+3	
OBLIQUE	Most	1+4	
LATERAL	Small	2+7	1+5
LATERAL	Most	2+8	1+6
LATERAL	Large	2+10	2+7
BREAST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
TANGENTS	Most	1+3	
TANGENTS	Single Exposure	4	
HEAD/NECK/BRAIN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+3	
LATERAL	Most	1+3	
SHOULDER/CLAVICLE		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+3	
ABDOMEN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+3	
OBLIQUE	Most	1+5	1+3
LATERAL	Most	2+8	1+6

Technique Tips:

- Generally, adjust the technique to darken or lighten films by adding or subtracting to the 2nd number (e.g., if an oblique pelvis is too light at 1+4, change technique to 1+5).
- Increasing the distance between patient and cassette will require additional MUs (e.g., a lateral lung at an angle of 270° will require more MUs than an oblique lung [1+4] at 210°).
- Poor processing conditions affect image quality and decrease image contrast and density. Recommended replenishment rates for EC film: 100 ml of developer and 120 ml of fixer.
- The dimensions of the surrounding (i.e., open) field can affect image quality.

KODAK EC-L Film System Technique Chart

Common Techniques for 4-MV Beams

Assumes source-to-film distance of:

105–115 cm for AP or PA; 100 cm SAD

130–140 cm for Laterals; 100 cm SAD

LUNG/CHEST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+4	
OBLIQUE	Most	1+6	
PELVIS		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Small/Medium	1+4	1+3
AP/PA	Large	1+6	1+4
LATERAL	Small		1+7
LATERAL	Medium		1+9
LATERAL	Large		1+10
LATERAL	Small/Medium (Single Exposure)		9
LATERAL	Large (Single Exposure)		10
BREAST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
TANGENTS	Small	1+3	
TANGENTS	Medium/Large	1+4	
TANGENTS	Single Exposure	4 or 5	5
HEAD/NECK/BRAIN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP	Most	1+3	
LATERAL	Most	1+4	
SHOULDER/CLAVICLE		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+4	
ABDOMEN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
LATERAL	Medium	2+12	2+10
OBLIQUE	Medium	2+6	2+5

Technique Tips:

- Generally, adjust the technique to darken or lighten films by adding or subtracting to the 2nd number (e.g., if an oblique pelvis is too light at 1+4, change technique to 1+5).
- Increasing the distance between patient and cassette will require additional MUs (e.g., a lateral lung at an angle of 270° will require more MUs than an oblique lung [1+4] at 210°).
- Poor processing conditions affect image quality and decrease image contrast and density. Recommended replenishment rates for EC film: 100 ml of developer and 120 ml of fixer.
- The dimensions of the surrounding (i.e., open) field can affect image quality.

KODAK EC-L Film System Technique Chart

Common Techniques for 10-MV Beams

Assumes source-to-film distance of: 105–115 cm for AP or PA; 100 cm SAD
 130–140 cm for Laterals; 100 cm SAD

LUNG/CHEST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+2	
OBLIQUE	Most	1+4	
PELVIS		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Small/Medium	1+2	
AP/PA	Large	1+3	
LATERAL	Small		1+4
LATERAL	Medium		1+5
LATERAL	Large		1+6
LATERAL	Small/Medium (Single Exposure)		6
LATERAL	Large (Single Exposure)		7
BREAST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
TANGENTS	Small	1+2	
TANGENTS	Medium/Large	1+3	
TANGENTS	Single Exposure	3	
HEAD/NECK/BRAIN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP	Most	1+2	
LATERAL	Most	1+3	
SHOULDER/CLAVICLE		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+2	
ABDOMEN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
LATERAL	Medium		1+5
OBLIQUE	Medium	1+3	

Technique Tips:

- Generally, adjust the technique to darken or lighten films by adding or subtracting to the 2nd number (e.g., if an oblique pelvis is too light at 1+4, change technique to 1+5).
- Increasing the distance between patient and cassette will require additional MUs (e.g., a lateral lung at an angle of 270° will require more MUs than an oblique lung [1+4] at 210°).
- Poor processing conditions affect image quality and decrease image contrast and density. Recommended replenishment rates for EC film: 100 ml of developer and 120 ml of fixer.
- The dimensions of the surrounding (i.e., open) field can affect image quality.

KODAK EC-L Film System Technique Chart

Common Techniques for 18-MV Beams

Assumes source-to-film distance of: 105–115 cm for AP or PA; 100 cm SAD
 130–140 cm for Laterals; 100 cm SAD

LUNG/CHEST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+2	
OBLIQUE	Most	1+3	
PELVIS		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Small/Medium	1+2	
AP/PA	Large	1+3	
LATERAL	Small		1+2
LATERAL	Medium		1+3
LATERAL	Large		1+4
LATERAL	Small/Medium (Single Exposure)		4
LATERAL	Large (Single Exposure)		5
BREAST		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
TANGENTS	Small	1+2	
TANGENTS	Medium/Large	1+2	
TANGENTS	Single Exposure	3	
HEAD/NECK/BRAIN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP	Most	1+2	
LATERAL	Most	1+3	
SHOULDER/CLAVICLE		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
AP/PA	Most	1+2	
ABDOMEN		EC-L Regular Cassette	EC-L Fast Cassette
	Patient Profile	Monitor Units	Monitor Units
LATERAL	Medium		1+3
OBLIQUE	Medium		1+2

Technique Tips:

- Generally, adjust the technique to darken or lighten films by adding or subtracting to the 2nd number (e.g., if an oblique pelvis is too light at 1+4, change technique to 1+5).
- Increasing the distance between patient and cassette will require additional MUs (e.g., a lateral lung at an angle of 270° will require more MUs than an oblique lung [1+4] at 210°).
- Poor processing conditions affect image quality and decrease image contrast and density. Recommended replenishment rates for EC film: 100 ml of developer and 120 ml of fixer.
- The dimensions of the surrounding (i.e., open) field can affect image quality.