

## OPERATING LEVEL CROSS REFERENCE CHARTS

Maximum Recommended Operating Level	
3M #996	520 nWb/m (+9 dB)
3M #226/250	370 nWb/m (+6 dB)
3M #806	250 nWb/m (+3 dB)
3M #808	185 nWb/m (0 dB)

Your desired operating level may be different from the reference fluxivity level on your reproduce alignment tape. If this is the case, use the chart above to normalize the operating level to the reference level found on typical reproduce alignment tapes. Then adjust reproduce equalization for optimum frequency response using the reproduce alignment tape.

Any combination of signal-to-noise

and headroom can be achieved. Using less than the full signal-to-noise capability of the tape (by reducing the operating level) will result in lower distortion, less audible print-through and more headroom.

The reference (fluxivity) level of 320 nWb/m is commonly used in Europe. Due to difference in flux measurement techniques, this is equivalent to approximately 290 nWb/m when measured by American Standard Flux measurement technique as in this chart.

Desired Operating Level	Reference Fluxivity Level On Reproduce Alignment Tape			
	185 nWb/m	200 nWb/m	250 nWb/m	370 nWb/m
520 nWb/m (+9 dB)	-9 VU	-8 VU	-6 VU	-3 VU
370 nWb/m (+6 dB)	-6 VU	-5 VU	-3 VU	0 VU
250 nWb/m (+3 dB)	-3 VU	-2 VU	0 VU	+3 VU
185 nWb/m (0 dB)	0 VU	+1 VU	+3 VU	+6 VU

### PROCEDURE:

1. Determine the desired operating level.
2. Determine the reference (fluxivity) level of the reproduce alignment tape you are using.
3. In the chart, find the VU reading at the point where the values from steps 1 and 2 intersect.
4. When reproducing the reference level tone from the calibration tape, set reproduce gain so the VU meter reading found in step 3 is achieved.

### EXAMPLE:

1. Desired operating level for 3M 806 is 250 nWb/m.
2. Reference level on alignment tape is 185 nWb/m.
3. The VU reading is -3 VU at the intersection of the column and row from steps 1 and 2.
4. Set reproduce gain so VU meter reads -3 VU when reproducing the reference level tone from the calibration tape.

We won't be satisfied until you are.

84-9811-4273-4 (90.5) VP 36USC380

©3M 1990

3M Professional Audio/Video Products Division

3M Center Bldg. 223-5N-01  
St. Paul, MN 55144-1000



## Recommended Bias Settings



### MUSIC MASTERING TAPE (Highest Signal-to-Noise)

Tape #	Speed	Record Head Gap		10 kHz Over bias
		inches	mil	dB
3M 996	7.5	0.125	9	9
		0.25	6.5	6.5
		0.5	4	4
	15	0.125	6.5	6.5
		0.25	4	4
		0.5	3	3
	30	0.125	3	3
		0.25	2	2
		0.5	1.5	1.5
3M 250 3M 226 3M 227	7.5	0.125	7.5	7.5
		0.25	5	5
		0.5	3.5	3.5
	15	0.125	5.5	5.5
		0.25	3	3
		0.5	2.5	2.5
	30	0.125	2.5	2.5
		0.25	1.5	1.5
		0.5	1	1

### GENERAL MASTERING TAPE (Description)

Tape #	Speed	Record Head Gap		10 kHz Over bias
		inches	mil	dB
3M 806 3M 807	7.5	0.125	6	6
		0.25	4	4
		0.5	3	3
	15	0.125	3	3
		0.25	1.5	1.5
		0.5	1	1
	30	0.125	1.5	1.5
		0.25	1	1
		0.5	0.5	0.5

### SPEECH MASTERING TAPE (Highest Signal-to-Print)

Tape #	Speed	Record Head Gap		10 kHz Over bias
		inches	mil	dB
3M 808 3M 809	7.5	0.125	4.5	4.5
		0.25	3	3
		0.5	2	2
	15	0.125	2	2
		0.25	1	1
		0.5	0.5	0.5

**BIAS SETTINGS** Proper bias setting depends on the tape speed and the record head gap length. Smaller or narrower gaps require more over bias as shown in the table.

Record Head Gap Length	Recorder Model Numbers
0.25 mil (6.4 μm)	All models except those listed in the 0.50 mil chart below
0.50 mil (12.7 μm)	Ampex AG440, 1000 (newer models), ATR 100 series, Otari 7800, 5050B(F), MKII-1