7 Effects

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7 Effects

The DMR8 is fitted with three digital signal processors of the same quality as the industry-standard SPX1000. In RECMIX modes, two signal processors are available for effecting signals to tape (the third is reserved for monitoring) and all three are available for mixdown. The programs available on each processor are:

0	EXTERNAL	Allows an external digital signal processor (eg SPX1000 or DEQ7) to be used
1	REV 1 HALL A	Reverberation simulating the effect of a hall
2	REV 1 HALL B	Another kind of hall-type reverberation
3	REV 2 ROOM	Reverberation simulating the effect of a room
4	REV 3 VOCAL	A reverberation pattern especially suitable for vocals
5	REV 4 PLATE	Reverberation simulating the effect of a plate reverb
6	FLANGE	Flanging
7	CHORUS	Chorus effect
8	PHASING	Modulated phase shift
9	SYMPHONIC	An effect adding depth and richness to the signal
10	EARLY REF. 1	The early reflections alone of a reverberant environment
11	EARLY REF. 2	Another form of early reflections
12	GATE REVERB	Reverberation with a noise gate added
13	REVERSE GATE	Reversed gated reverberation
14	DELAY L,R	Independently settable left and right channel delay times
15	STEREO ECHO	Stereo echo effect with independently settable initial delays.
16	PITCH CHANGE 1	Repeated echoes, each rising or falling by a specified pitch shift
17	PITCH CHANGE 2	As above, but with two independent pitch-shifted echoes
18	AURAL EXCITER	An enhancer which adds harmonics to the signal, creating a psychoacoustic impression of volume, while still preserving headroom
19	PAN	A flexible autopanner
20	COMPRESSOR	A fully-programmable digital compressor/expander

The same effect may be selected for use as EFFECT 1, EFFECT 2 and/or EFFECT 3, with different parameter settings in each loop.

Effect parameter settings can be made independent of F1 memory settings, and the same effect can be used in different "scenes" without reprogramming, by using the ten user memories (21 - 30). These user memories are available for storage of edited versions of the preset programs.

7.1 Effect selection

To select an effect for use with a particular effects loop, press EFFECT 1, EFFECT 2 (or in mixdown mode) EFFECT 3, and then EFFECT SELECT. The display will show the currently-assigned effect for that loop.
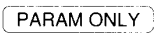
```
EFFECT 1
P[19]  PAN
```

Numbers preceded by "P" (0 through 20) refer to preset effects, and changed parameters may not be stored in these areas. Numbers preceded by "U" (21 through 30) refer to user memories, where changed parameters may be stored. Use the ⊙ and ⊙ keys or the DATA ENTRY slider to change the effect being selected. The number (in square brackets) will flash until the ⊙ key is pressed to confirm the selection. The displayed effect will not be actually selected until this time.

7.2 Editing an effect

There are several ways to edit the parameters of an effect. First, though, the `EFFECT PARAM` and the relevant `EFFECT` key must be pressed. If the EFFECT key (bottom right of the fader assign block) is not pressed, the main channel faders are not used to edit the effect parameters, and the PARAMETER keys and DATA ENTRY slider must be used.

7.2.1 Using the PARAMETER keys

Press the `PARAM ONLY` key in the DISPLAY FUNCTION section to display the parameters of the effect to be edited (if EFFECT 0 - EXTERNAL has been selected, no editing is possible). Some effects will have more parameters than can be shown on the screen at one time.

Use the PARAMETER ⊙ and ⊙ keys to select the parameter to be edited. If there are more than eight parameters displayed, pressing the ⊙ key more than eight times will bring up subsequent parameter(s) to be edited.

The value of the parameter with the cursor flashing by the parameter number may now be changed, using either the ⊙ and ⊙ keys, or the DATA ENTRY slider. For parameters which can be adjusted over a wide range, for example delay times in the ECHO and DELAY effects, the DATA ENTRY slider may be used to set a rough value, and fine adjustments can be made using the ⊙ and ⊙ keys.

Note that the PARAMETER keys repeat if continually held down.

If the NORMAL mode is selected from the DISPLAY FUNCTION, then only the top two lines of the display will be shown (a maximum of four parameters). Subsequent parameters can be accessed for editing by using the ⊙ key.

Effect parameter editing is not possible in the FADER or TRACK ASSIGN mode of the DISPLAY FUNCTION.

7.2.2 Using the channel faders

The channel faders can also be used to edit effect parameters. Pressing the (EFFECT) FADER CONTROL key will assign faders to effect parameters. The faders will automatically move to reflect the current effect settings. Faders not used by the effect will travel to the ∞ position. If, for example, effect 14 - DELAY L,R has been selected, and the NORMAL mode of the DISPLAY FUNCTION has been selected, the nine parameters for this effect are assigned to the faders as follows:

Fader No.	Abbreviation on bottom line of screen	Meaning (Longer parameter display name given in parentheses)
1	LDL	Left Channel delay time (LCh DLY)
2	RDL	Right Channel delay time (RCh DLY)
3	F1D	Feedback 1 delay time (FB1 DLY)
4	F1G	Feedback 1 gain (FB1 GAIN)
5	F2D	Feedback 2 delay time (FB2 DLY)
6	F2G	Feedback 2 gain (FB2 GAIN)
7	FBH	High-frequency feedback (FB HIGH)
8	HPF	High-pass filter frequency (HPF FRQ.)
9	LPF	Low-pass filter frequency (LPF FRQ.)

NOTE that if all the parameters are not displayed on screen, simply moving the appropriate fader ensures that the relevant parameter and its value will be displayed and selected on screen.

The DATA ENTRY slider will also move with the channel fader being moved, and both it and the PARAMETER keys can be used for additional editing as described in the previous section.

In the PARAM ONLY mode of the DISPLAY FUNCTION, the fader assignments will not be shown on the bottom of the screen, but the numbers by each parameter may be used as a reference to determine fader usage.

When in EFFECT mode, the faders will automatically move to reflect the current settings of the selected effect. Pressing the (EFFECT 1), (EFFECT 2), and (EFFECT 3) keys will bring up the appropriate fader assignments for that effect and move the faders accordingly.

While the faders are in EFFECT mode, the (EFFECT SELECT) key may be pressed, and another effect selected. The faders will move to reflect the parameter settings of the selected effect after the (→) key has been pressed to confirm selection, and then used to edit the effect's parameters.

The relative fader mode may also be used to make fine adjustments to the effect parameters.

Grouping may be applied to faders in the fader EFFECT mode so that similar parameters (eg delay times) may be altered together.

7.2.3 Storing effects

As mentioned above, effects may be stored in any of the ten user memories (U21 through U30). After editing the parameters of one of the preset programs, press (EFFECT SELECT) again. Use the effect (↑) key until an effect memory user number between U21 and U30 is displayed and blinking in the main display. If no data is stored in these memories (default shipping condition and after re-initialization), the display will read "NO MEMORY".

Press the (EFFECT STORE) key to write the effect with the edited parameters into the effect memory. The title will change from "NO MEMORY" to the name of the edited effect. The parameters in this effect memory may be edited in the same way as any of the other effects. Press (EFFECT SELECT) followed by (EFFECT STORE) when editing is finished.

7.3 Effects 1 & 2 in RECMIX

In the recording modes (ALL REC, SYNC DUB, PING-PONG, PUNCH IN, and EDIT), effects 1 and 2 are treated slightly differently from effect 3 (which cannot be used for recording).

a) Pre/Post	*Press PRE/POST key and EFFECT 1 or 2*
b) Send levels and ON/OFF	*Press PRE/POST key and EFFECT 1 or 2*
c) Send meters	
Effects units	*Internal or external (program 0)*
Return meters	
d) Return EQ	*Use fader EQ mode and channel 9*
e) Mono/stereo	*UTILITY mode*
f) Track assign	*Performed in the system mode setup*
g) Return on/off	*Performed in the SEND 1 or SEND 2 mode*
h) Return fader	*Performed in the SEND 1 or SEND 2 mode*
i) Return pan	*Use CH FADER mode and channel 9 to set panning*
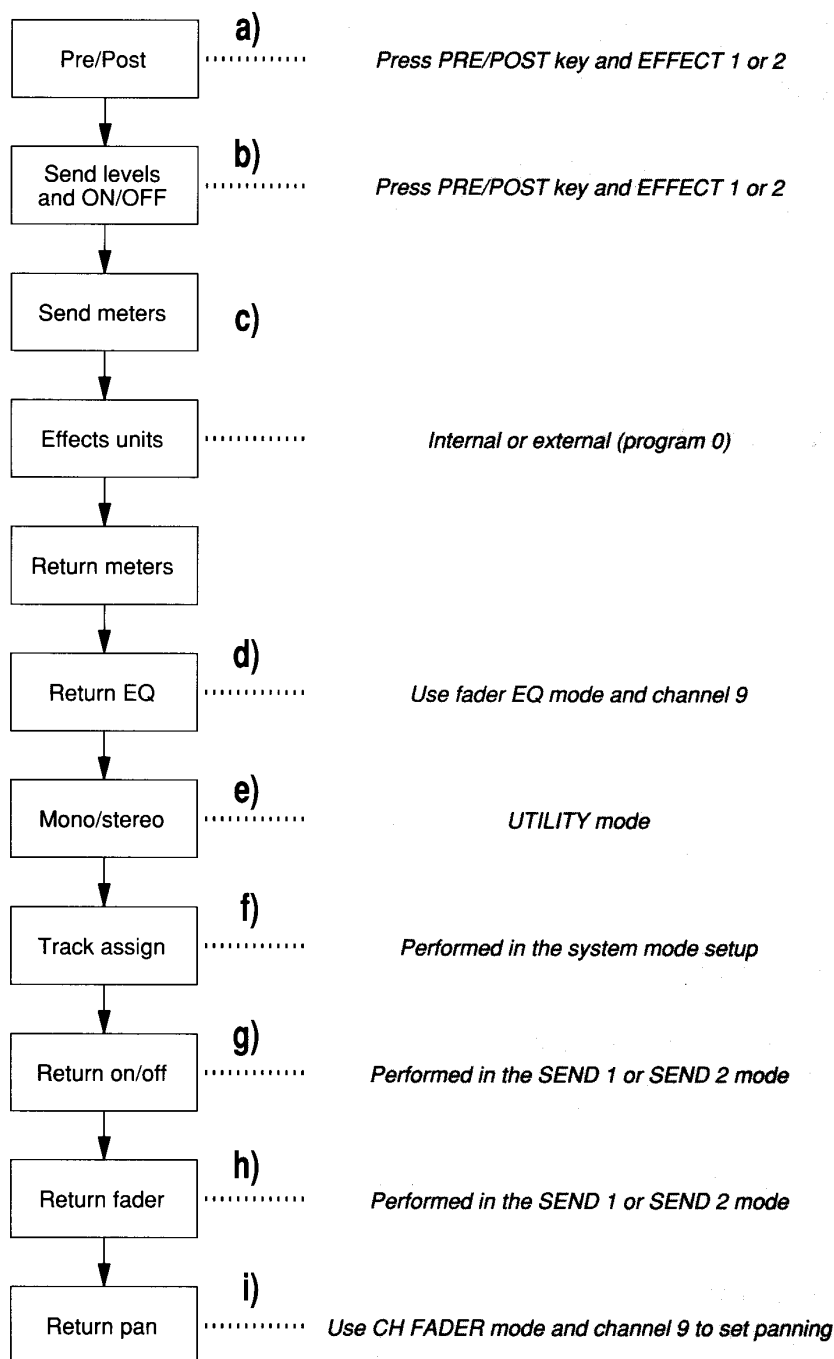
a) Pre/post-fader

Individual channel effect sends (1 and 2) may be routed either pre- or post-fader. Use the PRE/POST key and the relevant EFFECT key to display this screen. Select a channel with the individual channel SELECT keys (or the PARAMETER ⊡ and ⊡ keys), and then use the ⊡ and ⊡ keys to switch between pre- and post channel fader. These settings are always post-EQ.

b) Send levels

To set the level of the send signals from individual channels, in the CH MOD-ULE mode, faders 6 and 7 are used as individual channel SEND 1 and SEND 2 respectively.

Alternatively, the SEND 1 and SEND 2 modes may be used to set all channels' effect sends without changing channel selection. Grouping using GROUPs 1 and 2 may be used in these modes, for setting fader levels of a group of channel inputs.

The channel ⊙N keys may be used to turn individual channel sends on and off.

The summed send signal may be soloed in these modes.

c) Send and return meters

The send signals are then sent to the mono send busses and to the internal signal processors, passing through the SEND meters on the way.

The signals returning from the internal processors (or the external processor(s) if 0 - EXTERNAL has been selected) are passed through the RETURN meters.

d) Effect EQ

The signals then go through a 3-band parametric EQ stage, accessed from the fader EQ mode by selecting channel 9 (RETURN) and then pressing EFFECT 1 or EFFECT 2. Equalization is performed as for any other channel, and both channels of the stereo signal will be equalized simultaneously.

e) Mono/stereo effects

After equalization, the effect returns may be made mono or stereo. Press the UTILITY key (in the block above the PARAMETER keys and DATA entry slider) three times, or until the screen headed "RTN1-3, SUBIN MODE SELECT" is displayed. Use the ⊡ and ⊡ keys to select the return buss, and then the DATA ENTRY slider or ⊡ and ⊡ keys to select mono or stereo returns. Then press the UTILITY key a few times until its light goes out, or press any other key in the EFFECT block to remove the display.

f) Track assignment

The track assignment of the returns is performed in the ALL REC, SYNC DUB, PING-PONG, PUNCH IN and EDIT system modes. Pressing SHIFT NEXT repeatedly will at some point display track assignments for the two returns. Assign tracks to returns in exactly the same way as for input channels.

Returns may also be assigned using the soft keys, as explained in the section on the Mixing Console.

g) Return on/off

To turn the returns on and off, put the faders into SEND 1 or SEND 2 mode. Channel 9 is then used as the effect return channel, and may be turned on or off.

h) Return fader

In SEND 1 or SEND 2 mode, fader 9 (RETURN) is then used as the appropriate return channel fader. Alternatively, when in CHANNEL FADER MODE (channel 9 selected), and the SCROLL RIGHT key is pressed, faders 2 and 3 control the amount of RETURN 1 and 2 sent to the program mix. Effect returns may be soloed in the same way as input channels.

i) Effect panning

When channel 9 has been selected, the pan keys of this channel can be used to route the return to odd-numbered or even-numbered tracks (L or R respectively). If the SCROLL RIGHT is being used to adjust return levels, then the PAN keys cannot be used to control the pan position of the returns.

The return signals from Effects 1 and 2 may be added to the CUE and C-R monitor mixes.

7.4 Effect 3 in RECMIX

Effect 3 is selectable in exactly the same way as effects 1 and 2, but it cannot be assigned to tape tracks.

Instead, the program mix or tape playback is used to feed the effects sends (depending on the recording mode selected). These sends are treated in the same way as the channel sends for effects 1 and 2.

a) Pre/post-fader

The effect 3 send may be routed either pre- or post-fader (C-R). Use the PRE/POST key and the EFFECT key to display this screen. Select a channel with the individual fader SELECT keys (or the PARAMETER ⬅ and ➡ keys), and then use the ⬆ and ⬇ keys to switch between pre- and post fader. These settings are always post-EQ.

b) Send levels

The MONITOR/SEND 3 mode is used to set all tracks' effect sends. Grouping using GROUPs 1 and 2 may be used in these modes, for setting fader levels of a group of inputs.

The summed send signal may be soloed in these modes.

c) Send and return meters

The send signal is then sent to the mono send busses and to the internal signal processor, passing through the SEND meters on the way.

The stereo signals returning from the internal processor (or the external processor if 0 - EXTERNAL has been selected) are passed through the RETURN meters.

d) Effect EQ

It then goes through a 3-band parametric EQ stage, accessed from the fader EQ mode by selecting channel 9 (RETURN) and then pressing EFFECT 3. Equalization is performed as for any other channel, and both channels of the stereo signal will be equalized simultaneously.

e) Mono/stereo effects

After equalization, the effect return may be made mono or stereo. Press the UTILITY key (in the block above the PARAMETER keys and DATA entry slider) three times, or until the screen headed "RTN1-3, SUBIN MODE SELECT" is displayed. Use the ◀ and ▶ keys to select the EFFECT 3 return buss, and then the DATA ENTRY slider or ▲ and ▼ keys to select mono or stereo return. Then press the UTILITY key a few times until its light goes out, or press any other key in the EFFECT block to remove the display.

f) Return on/off

To turn the return on and off, put the faders into SEND 3 (MONI) mode. Channel 9 is then used as the effect return channel to the control room buss, and may be turned on or off. If SCROLL RIGHT is pressed, channel 9 then becomes the effect return channel to the CUE buss. Again, the ON switch may be used to add the effect signal to or subtract it from the CUE mix.

g) Return fader

In SEND 3 (MONI) mode, fader 9 (RETURN) is then used as the appropriate return channel fader (to C/R in SCROLL CENTER position and to CUE when in SCROLL RIGHT). The effect return may be soloed in the same way as input channels.

h) Effect panning

When channel 9 has been selected, the pan keys of this channel can be used to adjust the balance of the effect 3 return signal between the left and right channels of the C/R and CUE busses (both adjustments are made simultaneously and cannot be altered independently).

7.5 Mixdown

In the mixdown mode, the situation is a little different. All three effects are available for the mixdown procedure, and so no track assignation needs to be done when setting up the MIX DOWN mode.

Pre/Post	**a)** ·············· *Press PRE/POST key and EFFECT 1 or 2*
Send levels and ON/OFF	**b)** ·············· *Press PRE/POST key and EFFECT 1 or 2*
Send meters	**c)**
Effects units	·············· *Internal or external (program 0)*
Return meters	
Return EQ	**d)** ·············· *Use fader EQ mode and channel 9*
Mono/stereo	**e)** ·············· *UTILITY mode*
Return on/off	**f)** ·············· *Performed in the SEND 1, 2 or 3 modes*
Return fader	**g)** ·············· *Performed in the SEND 1, 2 or 3 modes*
Return pan	**h)** ·············· *Use CH FADER mode and channel 9 to set panning*
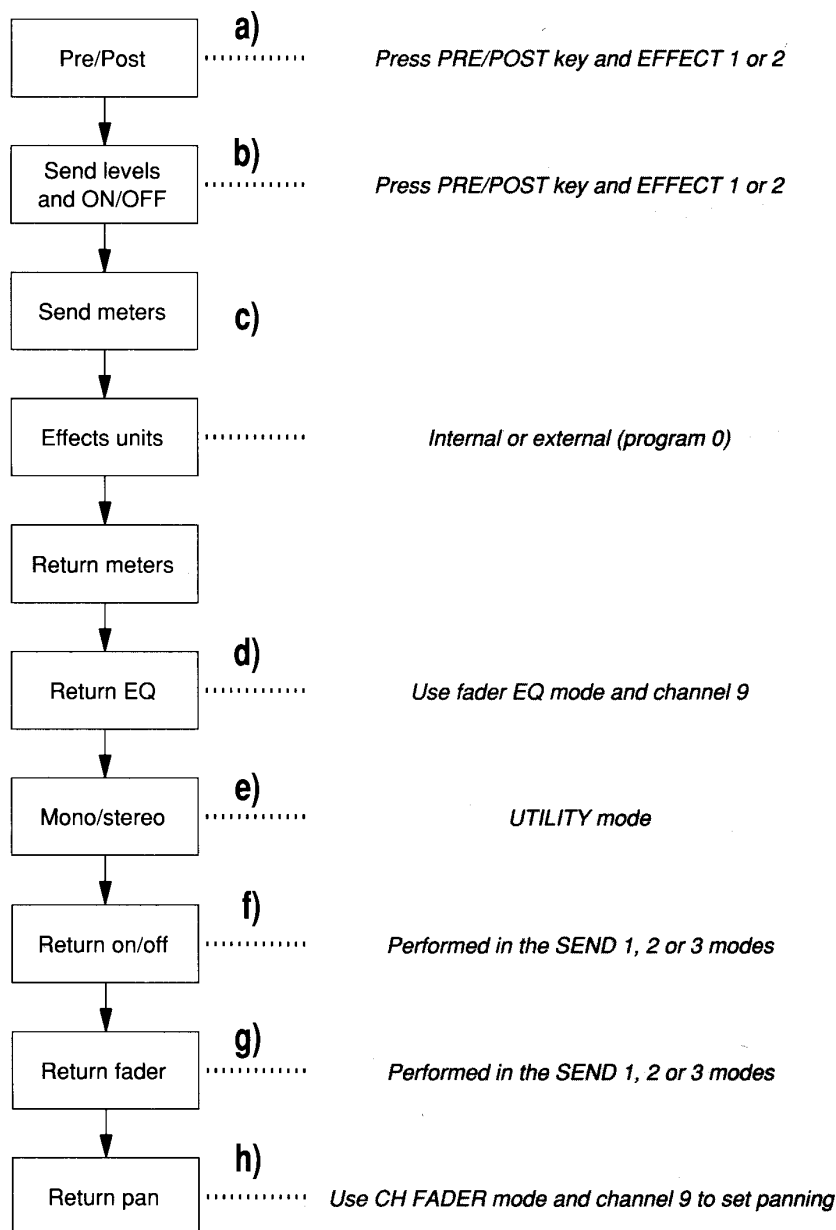
a) Pre/post-fader

Individual channel effect sends may be routed either pre- or post-fader. Use the PRE/POST key and the relevant EFFECT key to display this screen. Select a channel with the individual channel SELECT keys (or the PARAMETER ◄ and ► keys), and then use the ▲ and ▼ keys to switch between pre- and post channel fader. These settings are always post-EQ.

b) Send levels

To set the level of the send signals from individual channels, in the CH MODULE mode, faders 6, 7 and 8 are used as individual channel SEND 1, SEND 2 and SEND 3 respectively.

Alternatively, the SEND 1, SEND 2 and MONITOR /SEND 3 modes may be used to set all channels' effect sends simultaneously. Grouping using GROUPs 1 and 2 may be used in these modes, for setting fader levels of a group of channel inputs. The STEREO GROUP facility may be used for turning pairs of sends on and off.

The summed send signal may be soloed in these modes.

c) Send and return meters

The send signals are then sent to the mono send busses and to the internal signal processors, passing through the SEND meters on the way.

The stereo signals returning from the internal processors (or the external processor(s) if 0 - EXTERNAL has been selected) are passed through the RETURN meters.

d) Effect EQ

They then go through a 3-band parametric EQ stage, accessed from the fader EQ mode by selecting channel 9 (RETURN) and then pressing EFFECT 1, EFFECT 2 or EFFECT 3. Equalization is performed as for any other channel, and both channels of the stereo signal will be equalized simultaneously.

e) Mono/stereo effects

After equalization, the effect returns may be made mono or stereo. Press the UTILITY key (in the block above the PARAMETER keys and DATA entry slider) three times, or until the screen headed "RTN1-3, SUBIN MODE SELECT" is displayed. Use the ◄ and ► keys to select the return buss, and then the DATA ENTRY slider or ▲ and ▼ keys to select mono or stereo returns. Then press the UTILITY key a few times until its light goes out, or press any other key in the EFFECT block to remove the display.

f) Return on/off

To turn the returns on and off, put the faders into SEND 1, SEND 2 or MONITOR /SEND3 mode. Channel 9 is then used as the effect return channel, and may be turned on or off.

g) Return fader

In SEND 1, SEND 2 or MONITOR /SEND 3 mode, fader 9 (RETURN) is then used as the appropriate return channel fader. Alternatively, when in CHANNEL FADER MODE (channel 9 selected), and the SCROLL RIGHT key is pressed, faders 2, 3 and 4 control the amount of RETURN 1, 2 and 3 sent to the program mix. Effect returns may be soloed in the same way as input channels.

h) Effect panning

When channel 9 has been selected, the pan keys of this channel can be used to route the return to left or right. If the SCROLL RIGHT in CHANNEL FADER mode is being used to adjust return levels, then the PAN keys cannot be used to control the pan position of the returns.

7.6 Effects and parameters

The following is a list of the effect programs available and the parameters used to edit them.

NOTE: The times given for delay, reverb, etc are for 48kHz sampling frequency. If the sampling frequency is changed, these maximum and minimum values will change correspondingly.

[0] EXTERNAL

If this is selected, an external processor with an appropriate digital interface (eg the YAMAHA SPX1000 or DEQ7) connected to the appropriate EFFECT SEND and RETURN connectors will be used. No parameters can be set in this mode.

7.6.1 Reverberation programs

The following programs reproduce various types of reverberation patterns.

[1] REV 1 HALL A

This program reproduces the reverberant characteristics of a hall-type environment.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
REV TIME (time for a 1kHz signal to decay by 60dB)	1	RVT	0.3s	480.0s
HIGH (high frequency decay ratio)	2	HIG	0.1	1.0
LOW (low frequency decay ratio)	3	LOW	0.1	2.4
DIFFUSION (complexity of sound)	4	DIF	0	10
INI DLY (Initial delay between direct sound and first early reflections in ms)	5	IND	0.1	200.0
HPF FRQ. (Reverb signal highpass filter frequency)	6	HPF	THRU	1.0kHz
LPF FRQ. (Reverb signal lowpass filter frequency)	7	LPF	1.0kHz	THRU
ER/REV BAL (balance between early reflections and reverb)	8	ERB	0%	100%
REV DLY (Delay before start of reverb in ms)	9	RVD	0.1	100.0
DENSITY (Density of reflections)	10	DEN	0	4

[2] REV 1 HALL B

This program reproduces the reverberant characteristics of a different hall-type environment from the hall reverb in the previous setting.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
REV TIME (time for a 1kHz signal to decay by 60dB)	1	RVT	0.3s	480.0s
HIGH (high frequency decay ratio)	2	HIG	0.1	1.0
DIFFUSION (complexity of sound)	3	DIF	0	10
INI DLY (Initial delay between direct sound and first early reflections in ms)	4	IND	0.1	200.0
HPF FRQ. (Reverb signal highpass filter frequency)	5	HPF	THRU	1.0kHz
LPF FRQ. (Reverb signal lowpass filter frequency)	6	LPF	1.0kHz	THRU
ER/REV BAL (balance between early reflections and reverb)	7	ERB	0%	100%
REV DLY (Delay before start of reverb in ms)	8	RVD	0.1	100
DENSITY (Density of reflections)	9	DEN	0	4

[3] REV 2 ROOM

This program simulates the reverberant characteristics of a room-type environment.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
REV TIME (Reverberation time in seconds - the time taken for a 1kHz signal to decay by 60dB)	1	RVT	0.1	480.0
HIGH (Presence of high-frequency components)	2	HIG	0.1	1.0
DIFFUSION (Complexity of sound)	3	DIF	0	10
INI DLY (Initial delay to start of early reflections in ms)	4	IND	0.1	200
HPF FRQ. (Cutoff frequency of reverb signal high-pass filter)	5	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of reverb signal low-pass filter)	6	LPF	1.0kHz	THRU
ER/REV BAL (Balance between early reflections and reverberation - 0% is all early reflections)	7	ERB	0%	100%
REV DLY (Delay between original sound and start of reverberation in ms)	8	RVD	0.1	100
DENSITY (Density of reflections)	9	DEN	0	4

[4] REV 3 VOCAL

This is a reverberation program especially suitable for use with vocal programs.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
REV TIME (Reverberation time in seconds - the time taken for a 1kHz signal to decay by 60dB)	1	RVT	0.3	480.0
HIGH (Presence of high-frequency components)	2	HIG	0.1	1.0
DIFFUSION (Complexity of sound)	3	DIF	0	10
INI DLY (Initial delay to start of early reflections in ms)	4	IND	0.1	200
HPF FRQ. (Cutoff frequency of reverb signal high-pass filter)	5	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of reverb signal low-pass filter)	6	LPF	1.0kHz	THRU
ER/REV BAL (Balance between early reflections and reverberation - 0% is all early reflections)	7	ERB	0%	100%
REV DLY (Delay between original sound and start of reverberation in ms)	8	RVD	0.1	100
DENSITY (Density of reflections)	9	DEN	0	4

[5] REV 4 PLATE

This program simulates the reverberation produced by an electro-mechanical plate system.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
REV TIME (Reverberation time in seconds - the time taken for a 1kHz signal to decay by 60dB)	1	RVT	0.1	480.0
HIGH (Presence of high-frequency components)	2	HIG	0.1	1.0
DIFFUSION (Complexity of sound)	3	DIFF	0	10
INI DLY (Initial delay to start of early reflections in ms)	4	IND	0.1	200
HPF FRQ. (Cutoff frequency of reverb signal high-pass filter)	5	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of reverb signal low-pass filter)	6	LPF	1.0kHz	THRU
ER/REV BAL (Balance between early reflections and reverberation - 0% is all early reflections)	7	ERB	0%	100%
REV DLY (Delay between original sound and start of reverberation in ms)	8	RVD	0.1	100
DENSITY (Density of reflections)	9	DEN	0	4

7.6.2 Modulation programs

The following programs all use delay with continuously varying times in order to produce phase, flange and chorus effects.

[6] FLANGE

A thick "swirling" sound which can add life to an instrument's sound. Two modulators are employed.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
MOD. FRQ (The frequency of the flange modulation)	1	FRQ	0.05Hz	40Hz
MOD.DEPTH1 (The depth of the first modulation effect - delay time variation)	2	DP1	0%	100%
MOD.DLY1 (Delay until the beginning of the first modulation effect in ms)	3	DL1	0.1	100
MOD.DEPTH2 (The depth of the second modulation effect - delay time variation)	4	DP2	0%	100%
MOD.DLY2 (Delay until the beginning of the first modulation effect in ms)	5	DL2	0.0	100
PHASE (Phase shift between the two modulators)	6	PHS	-180°	180°
F.B.GAIN (Feedback gain - the amount of effected signal fed back for remodulation. Increasing this parameter increases the strength of the effect)	7	FBG	0%	99%
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	8	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	9	LPF	1.0kHz	THRU

[7] CHORUS

The chorus effect thickens a sound, giving it more life and depth, through a "comb filter" effect.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
MOD. FRQ (The frequency of the chorus modulation)	1	FRQ	0.05Hz	40Hz
DM DEPTH (The depth of the delay modulation effect - delay time variation)	2	DMD	0%	100%
AM DEPTH (The depth of the amplitude modulation)	3	AMD	0%	100%
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	4	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	5	LPF	1.0kHz	THRU

[8] PHASING

A gentler effect than flanging, but with a similar sound.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
MOD. FRQ (The frequency of the phaser modulation)	1	FRQ	0.05Hz	40Hz
MOD DEPTH (The depth of the modulation effect)	2	DEP	0%	100%
MOD DLY (Modulation delay - the time from the beginning of the direct sound to the effected sound)	3	DLY	0.1ms	5.0ms
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	4	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	5	LPF	1.0kHz	THRU

[9] SYMPHONIC

A program which adds depth and richness to sounds.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
MOD. FRQ (The frequency of the effect modulation)	1	FRQ	0.05Hz	40Hz
MOD DEPTH (The depth of the modulation effect)	2	DEP	0%	100%
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	3	HPF	THRU	1.0kHz
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	4	LPF	1.0kHz	THRU

7.6.3 Early Reflections programs

These programs both simulate the early reflections which are a distinctive part of any reverberation pattern.

[10] EARLY REF. 1

In this program, various parameters may be adjusted in order to tailor the sound precisely.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
TYPE (The type of reverberation pattern which is being used)	1	TYP	S-HALL (small hall), L-HALL (large hall), RANDOM (non-linear), REVERSE (a reversed reverb sound), PLATE (plate reverb), SPRING (spring reverb)	
ROOM SIZE (The size of the "room" in arbitrary units	2	RMS	0.1	25
LIVENESS (The reflecting qualities of the "room")	3	LIV	0	10
DIFFUSION (Complexity of the "room's" acoustic properties)	4	DIF	0	10
INI DLY (Delay between original sound and early reflections in ms)	5	IND	0.1	400
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	6	LPF	1.0kHz	THRU
FB DLY (Delay until start of feedback in ms)	7	FBD	0.1	900
FB GAIN (Amount of feedback)	8	FBG	-99%	+99%
FB HIGH (Amount of high-frequency components in feedback)	9	FBH	0.1	1

[11] EARLY REF. 2

Another early reflections program, in which the density of the reflections can also be altered.

Parameter				Limits
Name	Number	Abbreviation	Low	High
TYPE (The type of reverberation pattern which is being used)	1	TYP	S-HALL (small hall), L-HALL (large hall), RANDOM (non-linear), REVERSE (a reversed reverb sound), PLATE (plate reverb), spring (SPRING REVERB)	
ROOM SIZE (The size of the "room" in arbitrary units	2	RMS	0.1	25
LIVENESS (The reflecting qualities of the "room")	3	LIV	0	10
DIFFUSION (Complexity of the "room's" acoustic properties)	4	DIF	0	10
INI DLY (Delay between original sound and early reflections in ms)	5	IND	0.1	400
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	6	LPF	1.0kHz	THRU
FB DLY (Delay until start of feedback in ms)	7	FBD	0.1	900
FB GAIN (Amount of feedback)	8	FBG	-99%	+99%
FB HIGH (Amount of high-frequency components in feedback)	9	FBH	0.1	1
DENSITY (Complexity of early reflections)	10	DEN	1	3

7.6.4 Non-linear reverberation programs

These two programs provide non-linear (unnatural-sounding) reverberation patterns.

[12] GATE REVERB

A reverberation pattern in which the reverberations are cut off by a noise gate (limiter).

Parameter			Limits	
Name	Number	Abbreviation	Low	High
TYPE (The type of reverberation pattern which is being used)	1	TYP	TYPE-A	TYPE-B
ROOM SIZE (The size of the "room" in arbitrary units	2	RMS	0.1	25
LIVENESS (The reflecting qualities of the "room")	3	LIV	0	10
DIFFUSION (Complexity of the "room's" acoustic properties)	4	DIF	0	10
INI DLY (Delay between original sound and early reflections in ms)	5	IND	0.1	400
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	6	LPF	1.0kHz	THRU
FB DLY (Delay until start of feedback in ms)	7	FBD	0.1	900
FB GAIN (Amount of feedback)	8	FBG	-99%	+99%
FB HIGH (Amount of high-frequency components in feedback)	9	FBH	0.1	1
DENSITY (Complexity of early reflections)	10	DEN	1	3

[13] REVERSE GATE

A "reversed gate" reverb effect, giving a "backwards" feel to the sound.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
TYPE (The type of reverberation pattern which is being used)	1	TYP	TYPE-A	TYPE-B
ROOM SIZE (The size of the "room" in arbitrary units	2	RMS	0.1	25
LIVENESS (The reflecting qualities of the "room")	3	LIV	0	10
DIFFUSION (Complexity of the "room's" acoustic properties)	4	DIF	0	10
INI DLY (Delay between original sound and early reflections in ms)	5	IND	0.1	400
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	6	LPF	1.0kHz	THRU
FB DLY (Delay until start of feedback in ms)	7	FBD	0.1	900
FB GAIN (Amount of feedback)	8	FBG	-99%	+99%
FB HIGH (Amount of high-frequency components in feedback)	9	FBH	0.1	1
DENSITY (Complexity of early reflections)	10	DEN	1	3

7.6.5 Delay line programs

The next two programs make use of a digital delay line to create delay and echo effects.

[14] DELAY L,R

This program provides independently variable left and right channel delays.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
Lch DLY (The left channel's initial delay period in ms)	1	LDL	0.1	1360
Rch DLY (The right channel's initial delay period in ms)	2	RDL	0.1	1360
FB1 DLY (The delay interval of the first feedback loop in ms)	3	F1D	0.1	1360
FB1 GAIN (The gain applied to the first feedback loop)	4	F1G	-99%	+99%
FB2 DLY (The delay interval of the second feedback loop in ms)	5	F2D	0.1	1360
FB2 GAIN (The gain applied to the second feedback loop)	6	F2G	-99%	+99%
FB HIGH (The amount of high-frequency components in the feedback)	7	FBH	0.1	1
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	8	HPF	THRU	1.0kHz
LPF (Cutoff frequency of the effect's low-pass filter)	9	LPF	1.0kHz	THRU

[15] STEREO ECHO

A stereo echo program, with independently-programmable left and right channels.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
LFB DLY (The left feedback loop's delay period in ms)	1	LFD	0.1	680
Lch F.B. (The amount of feedback applied to the left feedback loop)	2	LFG	-99%	+99%
RFB DLY (The right feedback loop's delay period in ms)	3	RFD	0.1	680
Rch F.B. (The amount of feedback applied to the right feedback loop)	4	RFG	-99%	+99%
FB HIGH (The amount of high-frequency components in the feedback)	5	FBH	0.1	1
LINIDLY (Left initial delay - the initial delay time for the left feedback loop in ms)	6	LID	0.1	680
RINIDLY (Right initial delay - the initial delay time for the right feedback loop in ms)	7	RID	0.1	680
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	8	HPF	THRU	1.0kHz
LPF (Cutoff frequency of the effect's low-pass filter)	9	LPF	1.0kHz	THRU

7.6.6 Pitch change programs

These two programs shift the original pitch of the signal up or down, with repeats which are pitch-shifted relative to the last repeat.

[16] PITCH CHANGE 1

Two harmonies may be created using this program.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
1 PITCH (The pitch by which channel 1 will be shifted in semitones)	1	1PI	-24	+24
1 FINE (Fine adjustment to the pitch for channel 1 in cents)	2	1FI	-100	+100
1 DLY (The time between successive repeats on channel 1 in ms)	3	1DL	0.1	600
1 F.B. (The feedback applied to channel 1 and hence the number of repeats)	4	1FB	-99%	+99%
1 LEVEL (The level of the effect in channel 1)	5	1LV	0%	100%
2 PITCH (The pitch by which channel 2 will be shifted in semitones)	6	2PI	-24	+24
2 FINE (Fine adjustment to the pitch for channel 2 in cents)	7	2FI	-100	+100
2 DLY (The time between successive repeats on channel 2 in ms)	8	2DL	0.1	600
2 F.B. (The feedback applied to channel 2 and hence the number of repeats)	9	2FB	-99%	+99%
2 LEVEL (The level of the effect in channel 2)	10	2LV	0%	100%

[17] PITCH CHANGE 2

This pitch change effect allows two channels, assigned to left and right, to be set for pitch-shifting of the original signal.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
L PITCH (The pitch by which the left channel will be shifted in semitones)	1	LPI	-24	+24
L FINE (Fine adjustment to the pitch for the left channel in cents)	2	LFI	-100	+100
L DLY (The time between successive repeats on the left channel in ms)	3	LDL	0.1	600
L F.B. (The feedback applied to the left channel and hence the number of repeats)	4	LFB	-99%	+99%
R PITCH (The pitch by which the right channel will be shifted in semitones)	5	RPI	-24	+24
R FINE (Fine adjustment to the pitch for the right channel in cents)	6	RFI	-100	+100
R DLY (The time between successive repeats on the right channel in ms)	7	RDL	0.1	600
R F.B. (The feedback applied to the right channel and hence the number of repeats)	8	RFB	-99%	+99%

7.6.7 Miscellaneous programs

The three remaining internal programs and the external program do not fit into any of the above categories.

[18] AURAL EXCITER

The Aural Exciter[1] program adds harmonics to the signal, making it seem apparently louder, while maintaining a degree of headroom. The psychoacoustic effect of this program is greater than can be measured on test equipment.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
HPF FREQ. (The range of harmonics added to the sound)	1	HPF	500Hz	16kHz
ENHANCE (The degree of "excitement" which will be added to the signal)	2	ENH	0%	100%
MIX LVL (The balance between the original sound and the added harmonics)	3	MIX	0%	100%
DELAY (The delay time between the original and "excited" signal in ms)	4	DLY	0.1	1360

[19] PAN

An autopanner, which allows left-right panning, as well as a "circular" pattern, which gives a 3D feel to the sound.

Parameter				Limits
Name	Number	Abbreviation	Low	High
PAN TYPE (The type of panning which will be used)	1	PTP	L->R, L<-R, L<->R, L-TURN, R-TURN	
SPEED (The speed of the panning operation)	2	SPD	0.05Hz	40Hz
F/R DEPTH (When L-TURN and R-TURN are selected, this sets the depth between the front and rear of the "3D" effect)	3	FRD	0%	100%
L-R DEPTH (The depth of panning between the left and right channels)	4	LRD	0%	100%
HPF FRQ. (Cutoff frequency of the effect's high-pass filter)	5	HPF	THRU	1kHz
LPF FRQ. (Cutoff frequency of the effect's low-pass filter)	6	LPF	1kHz	THRU

---

[1] "Aural Exciter®" is a registered trademark of and is manufactured under license from Aphex Systems Ltd

[20] COMPRESSOR

A digital compressor/expander, with fully-programmable parameters.

Parameter			Limits	
Name	Number	Abbreviation	Low	High
ATTACK (the attack rate of the compressor in ms)	1	ATK	1	40
RELEASE (the rate at which the compressor will release in ms)	2	REL	10	2000
THRESHOLD (the compressor will trigger over this threshold expressed in dB)	3	THR	-48	-6
RATIO (the compression ratio)	4	RAT	1	20
EXPND THRS (the threshold at which the expander will activate in dB)	5	ETH	-72	-30
EXPND RATIO (the expansion ratio)	6	ERA	1.0	5.0
DELAY (the time between the direct and compressed sound in ms)	7	DLY	0.1	1300
DET. DLY (the time between the threshold level being exceeded and the compression effect starting. In this way, the initial attack of a sound can be passed through and the rest unaffected. Negative values cause the compressed sound to appear before the original. (ms))	8	DDL	-50.0	+50.0
DET. HPF (the cutoff high-pass filter which affects the compressed sound)	9	DHP	THRU	8.0kHz

U[21] - U[30] User memories

These locations are provided for storing user effects settings, as described earlier in this section .

8 Automix computer

8 Automix computer

The DMR8's automix computer allows timecode-referenced automated mixing of all parameters available from the mixer controls. All these parameters are performed in real time from the mixing console.

Automix recording and playback may be performed in any mode (RECMIX or MIXDOWN).

Automix can be synchronized to timecode from one of two sources: 1) Time-code recorded on tape. 2) External or Internal timecode generation.

The following explanation talks mainly about source 1 operation (timecode off- tape). To use source 2, the "AMIX TC GEN WORKING" function must be set to "ON", as explained in section 8.10.

8.1 Automix memory structure

The DMR8 contains three "C" (current) automix memories, and eight "D" (data) memories. Any one of these can be replayed at any time. Memories can be moved or copied from one location to another, or deleted. Memories can be merged and thinned out to save data. Automix memories can also be appended to each other to allow assembly of a mix from separate mixes.

Data memories can be stored to tape (TOC), card or to disk, via MIDI to a suit-ably-equipped sequencer or computer.

The "C" memories are the memories into which automix data is initially written from the mixer controls. They are organized in a "stack" (LIFO) fashion.

When recording or editing, data is <u>always</u> written into C1. On the next edit or record operation, the data contained in C1 moves to C2, data in C2 (if any) moves to C3, and data in C3 (if any) "falls off the end" and is lost, unless it has previously been saved to one of the eight D memories.

Recording with the three automix "C" memories

1st pass → C1 → C2 → C3

2nd pass → C1 → C2 → C3

3rd pass → C1 → C2 → C3

After the 3rd pass, the data currently contained in C3 "falls off the end"

4th pass → C1 → C2 → C3
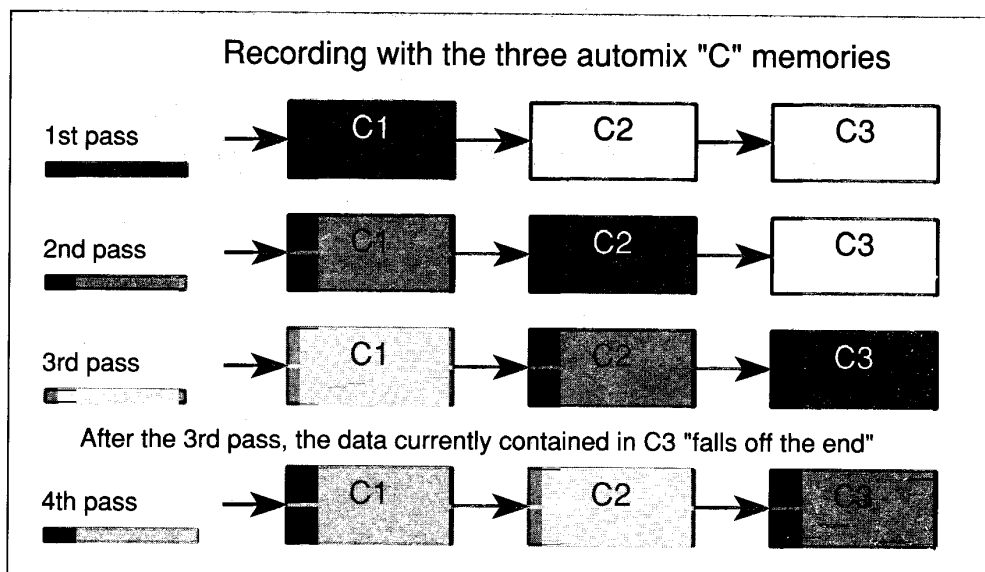
The above diagram shows the way in which successive record operations affect the contents of the C memories.

8.2 AUTO/MANUAL key

When replaying or editing automix data, the (AUTO/MANUAL) key will be activated (lit). This means that the mixer controls are being used by the automix computer, and no further adjustments are possible manually.

If the (AUTO/MANUAL) key is switched off, the automix computer relinquishes control of the console, and mixing then becomes a manual process.

In PLAYING EDIT mode, switching off the (AUTO/MANUAL) key drops the automix computer into record mode, overwriting any existing mix information for that timecode.

Adjustments to individual channels may be made using the channels' individual (EDIT) keys (see below).

8.3 EDIT keys

Each channel is equipped with an (EDIT) key (above the fader). When in automix edit or playback mode, no adjustments are possible to this channel unless the channel's (EDIT) key is activated (lit).

In automix edit mode, the adjustments will be recorded, but in playback mode, fader movements and other control settings will simply override the automix computer.

The exact nature of the adjustments possible depends on the selection made in the soft key menu (see the section below).

8.4 The soft key automix menu

In RECMIX and MIXDOWN modes, this menu is reached by pressing the green (S) key, and then the green (↓) key. It is the only soft key menu available in MIXDOWN mode. When this menu is selected, the top two lines of the main display will show:

```
AUTO MIX EDIT SELECT
FD  CH  EQ  PH  PP  EF  CE  IN:-------
```

The two-letter abbreviations in this display stand for different parameters which can be selected for editing:

Key	Display	Meaning
S1	FD	Fader movements *
S2	CH	ON/OFF switches †
S3	EQ	EQ ON/OFF for channels 1-8, Returns 1-3 and SUB IN
S4	PH	Phase for channels 1-8
S5	PP	Sends 1-3 pre/post for channels 1-8
S6	EF	Effect sel 1-3
S7	CE	Channel effects for channels 1-8
S8	IN	Insert ‡

*   The fader movements which may be stored, edited and replayed in auto-mix data for RECMIX modes are: channels 1-8, monitor cue 1-8, C-R 1-8, return 1-3 cue, return 1-2 program, return 1-3 C-R, slave cue, slave C-R, SUB IN cue, sub-in program, CUE, C-R, program, sends 1-3, pan, attenuation, EQ, delay and parameters for the three effects. In mixdown mode, all fader movements may be stored, edited and replayed.

†   The on/off switches which may be stored, edited and replayed are: channels 1-8, monitor cue 1-8, channel cue 1-8, C-R 1-8, return 1-3 cue, return 1-2 program, return 1-3 C-R, cue, C-R, program.

‡   The parameters which may be selected here are inserts 1 and 2 for channels 1 through 8.

Only one option can be selected for each editing pass.

IMPORTANT NOTE: Though this soft key menu can be displayed in any mode, no selections can be made from it <u>unless the AUTOMIX EDIT PLAYING function has previously been selected</u>. This menu has no function in AUTOMIX RECORD mode - all control settings will be recorded.

NOTE also that while the menu is displayed (the Ⓢ key is on), the function within AUTOMIX cannot be changed. Turn the soft key menu off (press Ⓢ so that it goes off) if it is required to change from EDIT to PLAY, for example.

Fader movements (Ⓢ1) can only be edited in the automix if the (EDIT) key for the appropriate channel is switched on. The settings for (EDIT) keys are not transferrable between modes, in other words, if fader levels for tracks 1 and 2 are being edited, and a change to (SEND 1) mode is carried out, the (EDIT) indicators for tracks 1 and 2 will go out, and you must reset them. Likewise, using the fader scroll keys will also reset the (EDIT) keys. This is designed to prevent the accidental overwriting of fader movements and control settings.

If no soft key menu option is selected, the default is fader movements.

Selecting an option will produce the following results:

8.4.1 S1 - FD (fader)

A dot will appear by "FD" on the main display, and the "-----" is replaced by "FADER". All fader movements (irrespective of the current fader mode) will be recorded by the automix computer, provided the (EDIT) key of that channel is switched on.

NOTE that if this key is selected, all (EDIT) keys are switched on for the current fader mode selected (if left and right scroll modes are permitted, all these faders may be edited, too). In CH MODULE mode, all (EDIT) keys for that channel are selected. If the fader mode is changed (eg from CH FADER to SEND 1), the (EDIT) keys must then be reset manually. In CH MODULE mode, if a different channel is (SELECT)ed, the (EDIT) keys must be manually reset. This is in contrast to the default of not selecting an option from the soft key menu, where all faders to be edited must be manually selected from the start of the edit.

8.4.2 S2 - CH (ON/OFF)

A dot will appear by "CH" on the main display, and the "-----" is replaced by "CHANNEL". The (EDIT) key of each channel to be edited must be manually turned on, and the (ON) keys may be edited (in all modes where the (ON) key has a function - see the end of the previous section for details).

8.4.3 S3 - EQ (EQ ON/OFF)

A row of solid shapes will appear for all channels where EQ is on (if EQ is off, there are replaced by "---"). The (EDIT) key for all channels where EQ is to be turned on or off must be manually selected.

The cursor on the main display is moved using the PARAMETER (◄) and (►) keys and the PARAMETER (▲) and (▼) keys are used to turn the EQ on or off (the DATA ENTRY slider may also be used).

If channels are assigned to stereo groups, channels belonging to a stereo group will have their EQ turned on or off together.

NOTE this does not allow the changing of EQ parameters. To do this, (EQ) or (CH MODULE) fader mode must be selected, and fader (S1) selected for editing.

8.4.4 S4 - PH (Phase)

A row of hollow shapes will appear in the main display for all channels whose phase is normal (reverse phase channels will appear as filled shapes).

The cursor on the main display is moved using the PARAMETER (◄) and (►) keys and the PARAMETER (▲) and (▼) keys are used to turn the phase to reverse or normal (the DATA ENTRY slider may also be used).

8.4.5 S5 - PP (pre/post)

The pre/post send screen is displayed (the "○♦●" symbol indicating post-fade send, and the "●♦○" symbol indicating pre-fade send).

The cursor on the main display is moved using the PARAMETER (◄) and (►) keys and the PARAMETER (▲) and (▼) keys are used to turn the send to pre- or post-fader (the DATA ENTRY slider may also be used).

8.4.6 S6 - EF (Effect selection and editing)

The name of the currently-selected effect (either with the (EFFECT 1) through (EFFECT 3) keys or with the (SEND 1) through (EFFECT 3) keys) is shown on the main display.

The PARAMETER (↑) and (↓) keys may be used to select an effect, and it should be confirmed with the (EFFECT RECALL) key.

NOTE that the effect will not take effect, until the time that the (EFFECT RECALL) key is pressed. On subsequent replay, the time at which the (EFFECT RECALL) key was pressed will determine the time at which the effect changes.

If the faders are in EFFECT mode at the time that the (S6) soft key is pressed, all (EDIT) keys for the faders will be turned on, and changes to the fader parameters can be recorded and replayed in real time.

8.4.7 S7 - CE (Channel effects)

The name of the channel effect for the currently-select channel is displayed.

This may be changed using the PARAMETER (↑) and (↓) keys, and should be confirmed with the (EFFECT RECALL) key.

Subsequent channels' effects may be altered by using the (SELECT) key of the appropriate channel.

NOTE that the channel effect will not take effect, until the time that the (EFFECT RECALL) key is pressed. On subsequent replay, the time at which the (EFFECT RECALL) key was pressed will determine the time at which the channel effect changes.

REMEMBER that only channels 1 through 8 may use channel effects in MIX-DOWN mode.

8.4.8 S8 - IN (INSERT 1,2)

Insert on or off may be edited here for the input channels (in RECMIX modes) and channels 1 through 8 in MIXDOWN.

A row of eight shapes is displayed on the main display; hollow for channels where insert is not selected, and filled for channels where insert has been selected. At the right of the line is the legend for "INSERT 1" or "INSERT 2".

The PARAMETER keys should be used with this option. Use the (←) and (→)keys to select the channel.

NOTE that if the cursor is on channel 8 and the (→) key is pressed, or if the cursor is on channel 1 and the (←) key is pressed, the INSERT will change from 1 to 2 or from 2 to 1 (depending on the number originally displayed).

Use the (↑) and (↓) keys to change values. The DATA ENTRY slider may also be used.

8.5 Automix menus

All automix operations except the soft key menu (described above) are carried out using the subdisplay, the ASSIGN•EDIT cursor and data keys and the (SHIFT NEXT) and (SHIFT BACK) keys.

To enter the AUTOMIX menu, the (AUTOMIX EDIT) key should be pressed (no soft key menus should be on the main display at this time).

A flowchart of options available in automix is given below:
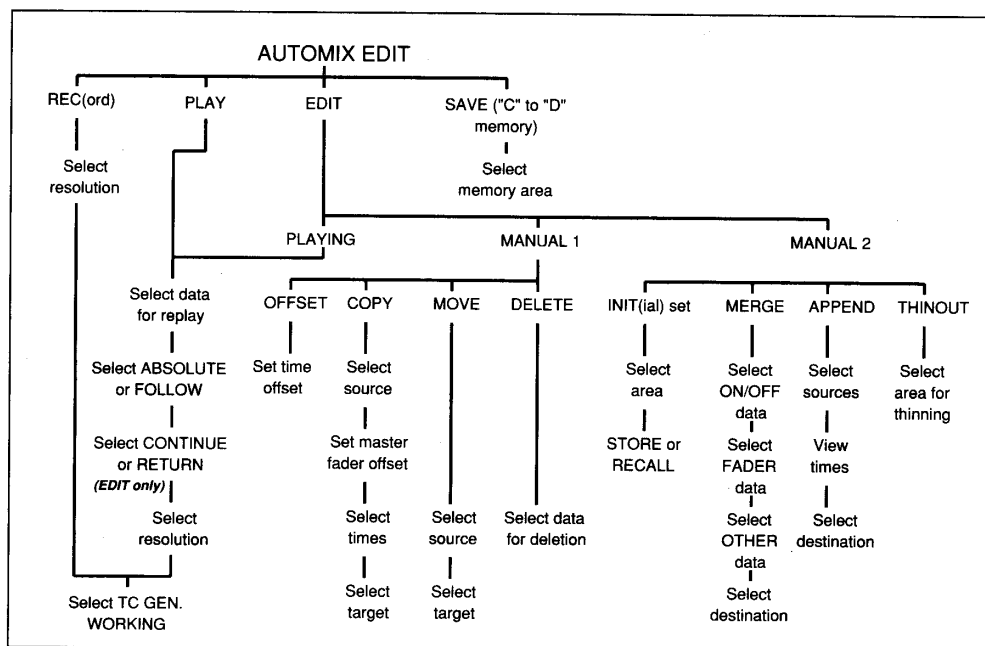
A few of the terms mentioned above may need a little explanation.

8.5.1 Resolution

When recording or editing automix data, the DMR8 takes a "snapshot" of the mixer at fixed intervals (this may be regarded as a very low-frequency sampling process). The maximum sample rate is once per frame, and the lowest is once every ten frames.

Setting the sample rate to once per frame will result in smooth fader movements, but will use up automix memory at high speed.

A low resolution such as 10 frames will not use up memory at the same rate, but will make the movements of faders and other continuous processes somewhat stepped or "jerky".

8.5.2 ABSOLUTE and FOLLOW modes

These two modes refer to the way in which faders are used to enter or edit automix data. They are effective only for Relative Fader mode.

In ABSOLUTE mode, the movements of faders are recorded exactly.

In FOLLOW mode, the relative movements of faders are added to the existing data (in a somewhat similar way to the absolute and relative fader modes).
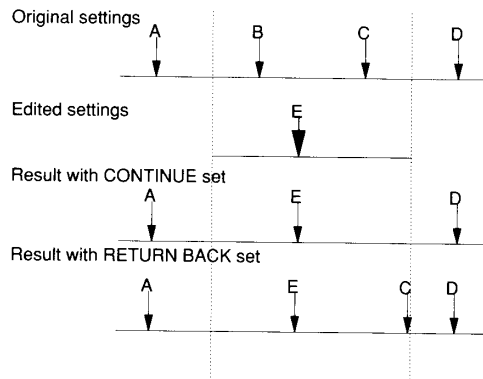
8.5.3 CONTINUE/RETURN

Since it is possible to edit only portions of a track's mix, there must be a way of returning to the original settings after the edit has finished. For instance, if a fader has originally been set at too high a level, and this has subsequently been corrected in an fader edit, the fader may "jump" back to the originally recorded value when the edited portion finishes. On the DMR8, this is called RETURN BACK mode.

To avoid this problem, the DMR8 provides another method of going from the edited portion of the mix to the original part. This is called CONTINUE mode and works in the following ways:

With a continuous fader value, at the end of the edit point, the value set by the fader at the exit point of the edited section carries on until the original fader value "changes direction" from the last edited fader movement. The diagram below should make things a little clearer:
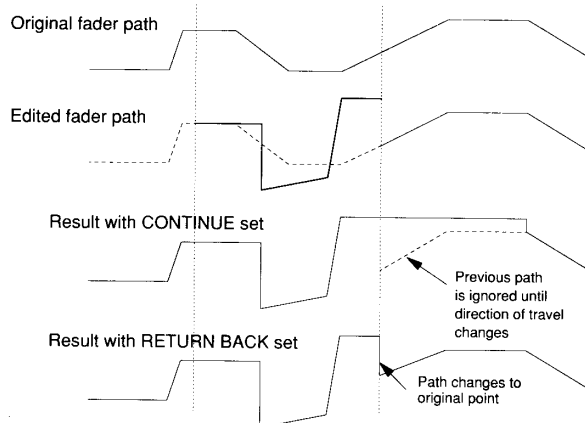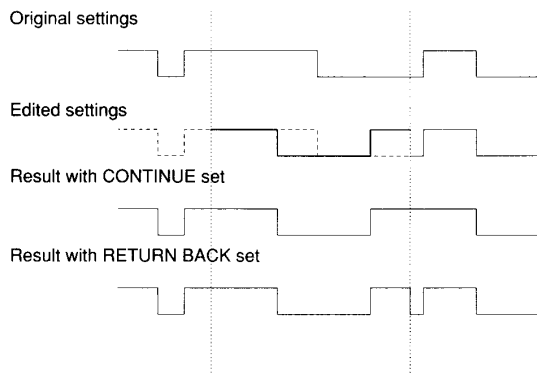

With selectable parameters (eg effect selection) the way in which this works is a little different.

With on/off switches (eg effect and pre/post), the way in which this works is again slightly different.

Original settings

Edited settings

Result with CONTINUE set

Result with RETURN BACK set

However, the principle of all these modes is essentially the same. In CON-TINUE mode, the last setting of the edited data continues until a change occurs in the original data to reset the parameter. In RETURN BACK mode, as soon as the edited data finishes, the parameter returns back to the original setting. The CONTINUE and RETURN BACK modes are globally applicable, ie a setting of CONTINUE for fader movements and RETURN BACK for switches is not possible.

8.5.4 Time offset

It is possible to "slip" a mix relative to the original timecode reference forwards or backwards by up to 12 hours. This can be used to compensate for reaction times.

8.5.5 Master fader offset

This offset allows a mix to be copied, but the output of the master fader only may be offset by ±20dB.

8.6 Recording automix

With the cassette, loaded, press the (AUTOMIX EDIT) key.

```
AMix MODE        FREE84%
  *REC  PLAY  EDIT  SAVE
```

Move the cursor (an asterisk), to before the "REC", using the ASSIGN.EDIT (◄) and (►) keys.

Press (▲) to select recording.

Press (SHIFT NEXT) to get the resolution screen:

```
AMix REC  RESOLUTION
    >  10frame
```

Alter the resolution using the ⊙ and ⊙ keys (01 through 10 frames).

Press (SHIFT NEXT) to get to the "***END***".

Press (PLAY), and note that the timecode display on the subdisplay will show something like:

```
AMixR 99%      00:01:04.23
Memory <ID 2>00:00:25.00
```

All mixer controls moved will be recorded into automix memory, and the percentage of automix memory free (as shown on the top line) will decrease.

8.6.1 Confirming recording

When the tape is stopped, the subdisplay shows:

```
AMix REC END
This Mix valid? >(Y↑/N↓)
```

To preserve the mix for future replay and/or editing, the ⊙ key should be pressed. The mix data is then stored into memory area C1, which is then automatically selected for playing when PLAY mode is selected.

If the mix is to be discarded, the ⊙ key should be pressed, the tape rewound, and the mix re-recorded.

8.6.2 Memory overflow

The amount of memory available is constantly indicated during recording or editing operations. This is the amount of memory available for all automix memory areas.

If a mix recording or edit exceeds the amount of available memory, the following will be displayed for a few seconds:

```
WARNING!!     AMIX AREA!!
OVER STOP MEMORY AREA
```

the screen will then display the deletion menu, allowing you to choose a "C" or "D" memory to delete:

```
AMix DEL  C123 D12345---
>CRNT- →DELET( 0%) EXE↑
```

Select an unwanted automix memory area using the ⊙ and ⊙ keys (the percentage of total memory used by this area is displayed to the right), then move to the EXE[cute] field (⊙), and press ⊙ to delete it. This is the same procedure as the MANUAL EDIT deletion menu.

The data to be deleted may be saved prior to deletion, using card, TOC (tape) or MIDI dump. Press (SHIFT BACK) to exit from this deletion screen. See the appropriate section of this manual for details on saving.

8.7 Playback of automix

From the opening automix menu, move the cursor to the "PLAY" option, and press ⊕.

The asterisk ("*") cursor will change to a hyphen ("-") or a filled triangle (">")..

Press (SHIFT NEXT) to select the data to be replayed.

```
AMix PLAY C1-- D--------
PLAY DATA --- --------
```

Any "C" or "D" memories in existence will be represented by an appropriate numeral; unused memory locations will be represented by a hyphen ("-").

Move the underline cursor ("_") to the required replay data, and press ⊕. The memory indicator will change from a hyphen "-" to a small "o":

```
AMix PLAY C1-- D--------
PLAY DATA o-- --------
```

Press (SHIFT NEXT) to select either ABSOLUTE or FOLLOW mode using the ⊕ and ⊕ keys (see above for explanations of these terms).

Press (SHIFT NEXT) to select the RESUME mode, either CONTINUE or RETURN using the ⊕ and ⊕ keys (see above for explanations of these terms).

As a final check, press (SHIFT BACK) three times or the (AUTOMIX EDIT) key once to return to the opening AUTOMIX screen. Make sure that the cursor by the "PLAY" option is a filled triangle (">"), not an asterisk ("*") or hyphen. If it is not, it should be set to the triangle symbol using the ⊕ key.

Press (PLAY) to replay the mix. After a second or two, the DMR8 mixer settings will reset to the appropriate position, and automix replay will start:

```
AMixP 92%AC  00:01:04.23
Memory <ID 2>00:00:25.00
```

The two letters following the percentage of memory free refer to the modes selected; in this case, ABSOLUTE and CONTINUE.

All mixer settings can be overridden by setting (AUTO/MANUAL) to manual (off).

Individual faders can be overridden by setting the (EDIT) key of the appropriate channel to ON (lit).

8.8 Editing automix data

In the DMR8, editing automix data has two distinct parts: real-time editing of data, and "housekeeping tasks" such as deletion, copying, etc. The different options available within these parts are shown in the flow diagram earlier in this section.

8.8.1 Realtime automix editing

In this mode, a selected automix memory data area is replayed, and changes are made to it. The resulting sum (original plus changes) is then written into the "C1" area.

From the main menu, select EDIT by moving the cursor and pressing ⊕. Press [SHIFT NEXT] to get to the next page:

```
AMix EDIT MODE
   >PLAYING  MANL1  MANL2
```

Select PLAYING (move the cursor to precede "PLAYING" and then press [SHIFT NEXT].

Select the data to be replayed and edited in the same way as for PLAY (move the cursor and press ⊕).

NOTE: Regardless of the data selected for replay, the data after editing will always reside in "C1".

Press [SHIFT NEXT] to select either ABSOLUTE or FOLLOW mode using the ⊕ and ⊕ keys (see above for explanations of these terms).

Press [SHIFT NEXT] to select the RESUME mode, either CONTINUE or RETURN using the ⊕ and ⊕ keys (see above for explanations of these terms).

Press [SHIFT NEXT] to get the resolution screen:

```
AMix REC  RESOLUTION
   >  10frame
```

Alter the resolution using the ⊕ and ⊕ keys (01 through 10 frames).

As a final check, press [SHIFT BACK] five times, or the [AUTOMIX EDIT] key once to return to the opening AUTOMIX screen. Make sure that the cursor by the "EDIT" option is a filled triangle ("▸"), not an asterisk ("*") or hyphen. If it is not, it should be set to the triangle symbol using the ⊕ key.

If you wish to edit a mix parameter other than the faders, use the soft key menu to choose the parameter to be edited. See above for details of the soft key menu.

Press the [PLAY] key:

```
AMixE 87%AC  00:03:25.15
Memory <ID 2>00:00:25.00
```

The automix data can only be edited for those parameters chosen by the soft key menu, following the rules given above. If faders are to be edited with no soft key menu selection, the [EDIT] key must be ON for each channel to be edited.

When the tape is stopped, the following will appear:

```
AMix EDIT END
This Mix valid? >(Y↑/N↓)
```

As with recording, pressing ⊙ will write the edited data into C1. Pressing ⊙ gives another chance to edit the data.

If the memory overflows, the result is the same as if this occurs during recording. Notice that in editing a space equal to the size of the original data to be edited <u>plus</u> the size of the changes must be available, so that the result can be stored in C1.

8.8.2 MANUAL automix editing (i)

The tasks in this mode are concerned with adding a time offset, copying, moving, and saving data from "C" to "D" memories.

From the main automix menu, select EDIT, and on the next screen, select MANL1. Then press ⌈ SHIFT NEXT ⌋ to obtain the following:

```
AMIX MANUAL EDIT MENU1
>OFST  COPY  MOVE  DELET
```

Select one of these by moving the cursor (⊙ and ⊙), and pressing ⌈ SHIFT NEXT ⌋.

Adding an offset

A time offset may be added to or subtracted from an automix data area in order to sync it more precisely to the material.

The time offset may be up to 12 hours (minus 1 frame) in either direction.

```
AMix MANUAL EDIT OFST
>CRNT- +00:00:00.00 EXE↑
```

Select the data area to be offset (only areas containing data may be selected), and then move the cursor to the plus/minus "+" field. This can be altered using the ⊙ and ⊙ keys.

Use the ⊙ key to move to the hours, minutes, seconds and frames fields in turn, and set the values using the ⊙ and ⊙ keys.

When the values have been set, move the cursor to the EXE field and press ⊙ to confirm the offset.

To escape without setting the offset, press ⌈ SHIFT BACK ⌋.

Copying a data area

This allows the copy of a data area with the additional advantage that the master fader level can be reset to another value (±20dB), allowing for matching of levels on different master recorders, etc.

When COPY is first selected, the following screen will be displayed:

```
AMix COPY C123 D12------
COPY DATA -->CRNT-
```

Select a used memory area from which the data will be copied, using the ⊙ and ⊙ keys. Then press ⌈ SHIFT NEXT ⌋.

```
AMix MANUAL EDIT COPY
MAS FADER LEVEL >±00dB
```

Use the ⟨▲⟩ and ⟨▼⟩ keys to set the fader offset and then press ⟨SHIFT NEXT⟩.

```
AMix COPY C123 D12-----
>00:00:28.21 00:04:01.12
```

Using this screen, all of the time of an automix data area can be copied, or a selected time area only can be copied. Use the numeric keypad to enter new values for the start and end time of the copied data.

NOTE that the end time of mix data does not refer to the point where the tape was stopped, but to the time that the last pice of mix data was entered.

When the times have been selected, press ⟨SHIFT NEXT⟩ to enter the next screen.

```
AMix COPY C1-- D12------
>CRNT1 → DATA-    EXET
```

Select the target area using the ⟨▲⟩ and ⟨▼⟩ keys (only "C1" and "D" data areas which do not contain data can be selected).

Move the cursor to EXE, and press ⟨▲⟩ to copy the data.

Make another copy, or press ⟨SHIFT NEXT⟩ to go to the "***END***" of this procedure.

The copy procedure can be aborted by pressing ⟨SHIFT BACK⟩ twice.

Moving data areas

This differs from copying in that the source data is erased from the original area after copying to the target. Additionally, no fader offset is possible.

Press ⟨SHIFT NEXT⟩ to get the following screen:

```
AMix MOVE C1-- D12------
>CRNT- → DATA-    EXET
```

Use the ⟨▲⟩ and ⟨▼⟩ keys to select the source area (only areas containing data may be selected), and then move the cursor (⟨▶⟩) to the target field.

Select the target area using the ⟨▲⟩ and ⟨▼⟩ keys (only "D" data areas which do not contain data can be selected).

Move the cursor to EXE, and press ⟨▲⟩ to move the data. Note that after the operation, the source field changes from a number to a hyphen ("-").

Move more data, or press ⟨SHIFT NEXT⟩ to go to the "***END***" of this procedure.

The move procedure can be aborted by pressing ⟨SHIFT BACK⟩.

Deleting automix data

Press (SHIFT NEXT) to obtain the following display:

```
AMix DEL   C1-- D123------
>CRNT- →DELET( 0%)   EXE↑
```

Select the area to be deleted by pressing (↑) and (↓) (only areas containing data may be selected for deletion).

Note that the number changes as the area is selected, reflecting the area's size as a percentage of total automix memory available.

Use (→) to move the cursor to the EXE field, and press (↑) to delete the data.

The process may be repeated with other data areas, or (SHIFT NEXT) may be pressed to come to the "***END***" of this menu.

To abort without deleting, press (SHIFT BACK).

8.8.3 MANUAL automix editing (ii)

From the EDIT mode page, select MANL2 to enter the second manual edit menu:

```
AMix MANUAL EDIT MENU2
>INIT MERGE APND THINOUT
```

The tasks in this mode are concerned with initial mixer settings, merging, appending, and thinning out the data in memories.

Move the cursor, and then press (SHIFT NEXT):

Initial settings

This allows the recall or the setting of the console status (fader positions, etc) at the beginning of playback:

```
AMix INITIAL-SET EDIT
>CRNT-   RECALL?      EXE↑
```

Select a data area "C" or "D" containing data in the first field. Only those areas containing data may be selected. This is the data area for which the console status will be stored or recalled.

Move the cursor to the next field ((→)). If the current mixer status is to be stored as an initial setting, press (↑) or (↓) so that the screen now reads:

```
AMix INITIAL-SET EDIT
>CRNT-   STORE?      EXE↑
```

To store or recall the mixer setting, move the cursor to EXE, and press (↑).

When the (AUTO/MANUAL) key is ON, the only mixer values which may be changed are those set using the soft key menu, or those associated with a channel where the (EDIT) key is on.

Merging

Up to three data areas may be merged into another data area. The ON/OFF settings from one may be merged with the fader settings from another, and all other settings from a third area may be added.

It is not necessary to use three different data areas. Either one, two or three data areas may be used. The use of only one data area can be useful, in that ON/OFF, fader or other data can be extracted and then edited in PLAY mode to add other information.

After selecting this option, the first screen shows:

```
AMix MERG C1-- D12------
ON/OFF SELECT   →CRNT-
```

Select a data area containing the desired ON/OFF data, using the ⬆ and ⬇ keys. Only data areas containing data may be selected. If no data area containing ON/OFF data is to be merged, this field should read "CRNT-". Press [SHIFT NEXT]

```
AMix MERG C1-- D12------
FADER SELECT   →CRNT-
```

Select a data area containing the desired fader data, using the ⬆ and ⬇ keys. Only data areas containing data may be selected
. If no data area containing fader data is to be merged, this field should read "CRNT-". Press [SHIFT NEXT]

```
AMix MERG C1-- D12------
OTHER SELECT   →CRNT-
```

Select a data area containing the desired data (not ON/OFF or fader), using the ⬆ and ⬇ keys. Only data areas containing data may be selected. If no data area containing this data is to be merged, this field should read "CRNT-". Press [SHIFT NEXT]

```
AMix MERG C1-- D12------
C1+D1+C1 →>DATA-    EXET
```

The bottom line of this screen means that the ON/OFF data from C1 is to be merged with both the fader data from D1 and all other data from C1. The ⬆ and ⬇ keys should now be used to select a data area for the merged data (only empty data areas may be selected). When this has been done, press ⬅, and then ⬆ to merge the data.

The data used in this operation is:

ON/OFF (RECMIX): Chs 1-8, Monitor CUE 1-8, C-R 1-8, Ch CUE 1-8, PGM master, Send 1-3 master, CUE master, C-R master, SUB IN to PGM, Rtn 1 to PGM, Rtn 2 to PGM, Rtn 3 to C-R, SLAVE to CUE, SLAVE to C-R, Rtn 1-3 to CUE, RTN 1-2 to C-R, AUX IN 1-2, AUX OUT 1-2, SUB IN to CUE, SUB IN to C-R

ON/OFF (MIXDOWN): Chs 1-24, Stereo master, Send 1-3 Master, Monitor master, SUB IN, Rtn 1-3, AUX OUT 1-2

FADER (RECMIX): Chs 1-8, Send 1-3 (1-8), Moni CUE, C-R, Ch CUE, PGM master, Send 1-3 master, CUE master, C-R master, SUB IN to PGM, Rtn 1-2 to PGM, Rtn 3 to C-R, SLAVE to CUE, SLAVE to C-R, SUB IN to CUE, Rtn 1-3 to CUE, Rtn 1-2 to C-R, SUB IN to C-R, AUX IN 1-2, AUX OUT 1-2

FADER (MIXDOWN): Chs 1-24, Send 1-3 (1-24), Stereo master, Send 1-3 master, Monitor master

Appending data

Appending data means that two automix memory areas which contain data for different times on the tape may be added together to make one contiguous memory area.

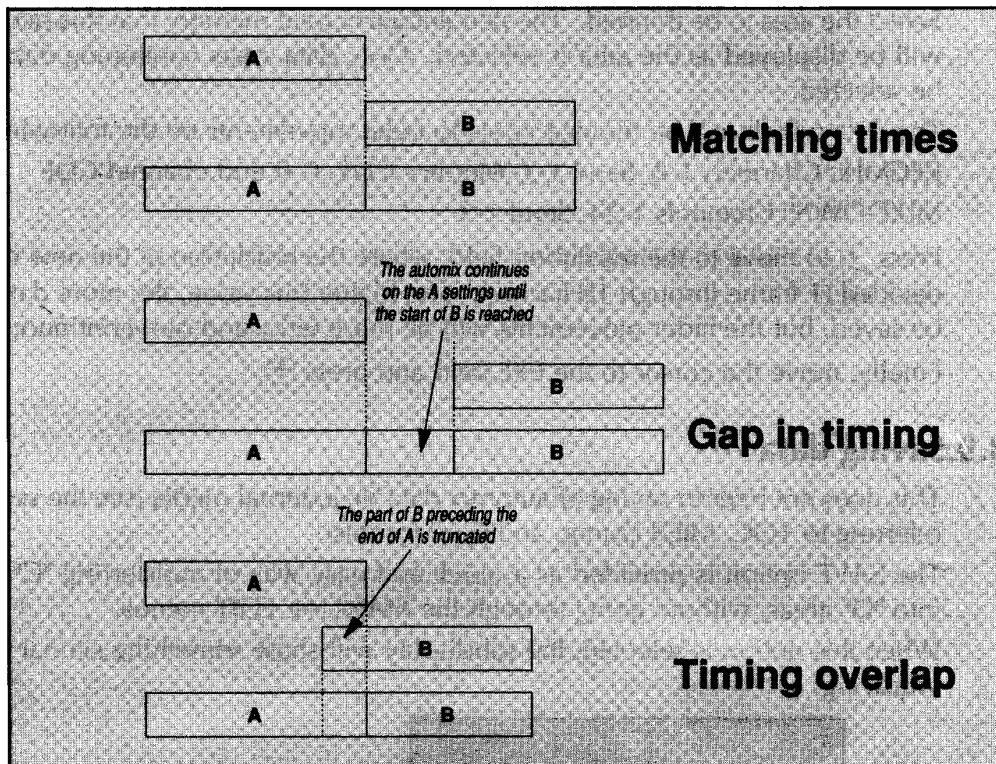The first screen allows the choice of two data areas, A and B:

```
AMix APND C1-- D123------
>A:DATA1   B:CRNT1
```

Use the cursor keys to select the required data areas. Only data areas which contain data may be selected (it is possible to select "C-", but this is meaningless), and the same data area may not be selected for both A and B. Pressing (SHIFT NEXT) gives the start and end time limits for the A area:

```
AMix APND C1-- D123------
 00:02:37.06 00:04:21.03
```

The italic character ("D1")here indicates a flashing character on the screen, indicating the area whose start and end times are displayed on the bottom line. As with copying data, the end time does not refer to the time when the tape was stopped, but the time at which the last mixer parameter change was made. Pressing (SHIFT NEXT) repeats the process for the second data area.

If data areas which are not contiguous are appended to each other, one of two operations may occur. If there is a gap between the two, the console settings will continue in the same position from the end of A to the beginning of B. If the two areas overlap in time, the start of B will be truncated, and the B automix will start at the end of A.

Matching times

*The automix continues
on the A settings until
the start of B is reached*

Gap in timing

*The part of B preceding the
end of A is truncated*

Timing overlap

NOTE There are two error conditions which may occur with regard to the times of A and B. If B is completely contained within A (ie, the start of B is after the start of A, and the end of B is before the end of A), this is an error condition. The other error condition is when the start time of B is before the start time of A.

The last screen allows the selection of the destination area, and the final writing of the two data areas to the destination.

```
AMix APND C1-- D123-----
A:C1 B:D1 ->>DATA4   EXE↑
```

Select the data area to which the appended data areas will be written (only empty areas may be selected), move the cursor to the EXE field and press ⊕ to perform the operation.

Thinout

Sometimes it may be desirable to "thin out" continuous controller (fader) data in order to save automix space. In effect, the DMR8 performs a "resample operation", so that the fader positions are not updated as often as previously. The thinout screen reads:

```
AMix TOUT C1-- D123-----
>CRNT- ( 0%) 01frame EXE↑
```

Select the area to be thinned. The percentage of total memory that this occupies will be displayed as the area is selected. Only data areas containing data may be selected.

The data which will be thinned refers to fader movements on the following:

RECMIX: Channels 1-8, Send 1-3, Monitor CUE, C-R and channel CUE

MIXDOWN: Channels 1-24, Send 1-3

Press ⊙ to move to the resolution field, where the resolution of the new data is decided (1 frame through 10 frames). The higher this value, the more data will be saved, but the fader movements will be more jerky and non-continuous.
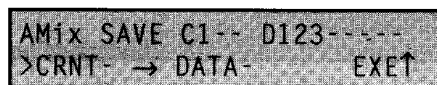
Finally, move the cursor to the EXE field and press ⊙.

8.9 Saving data

This does not refer to saving of automix data on external media (see the sections referring to TOC, MIDI Dump, and Card for this).

The SAVE option is provided as a quick and easy way of transferring "C" areas into "D" areas, without going through the MANUAL EDIT menus.

When this option is selected, the subdisplay will show something similar to the following:
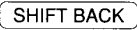
```
AMix SAVE C1-- D123------
>CRNT- → DATA-       EXE↑
```

Use the ⊙ and ⊙ keys to select a current memory (only "C" memories containing data may be selected).

Move the cursor to the target field using the ⊙ key, and select a "D" area as the target.

NOTE: Data areas which already contain data may be selected as target areas. Make sure that a data area which contains wanted data is not selected, as the data will be overwritten.

Use ⊙ to move to EXE, and press ⊙ to copy the data. The source data will remain in the original data area after the copy has been made.

Further copies may be made, or (SHIFT BACK) may be pressed to exit.

Pressing (SHIFT BACK) before the copy process will abort the procedure.

8.10 Automix TC generator working

```
 ix  TC GEN. WORKING
 OFF   ON
```

OFF: Automix works with tape playback TC only.

ON: Pressing [LOAD/HOLD] will start the TC generator (depends on INT/EXT setting in the "1:TC.GEN" menu) and automix will work. However, if a tape transport key is pressed, FF, REW, STOP, PAUSE, etc., automix will switch back to tape playback TC.

When using an external timecode source, wait for the timecode to start, then press [LOAD/HOLD] to start automix recording. To stop automix recording, press [LOAD/HOLD] again or stop the external timecode. You will then be asked "Valid Yes/No".

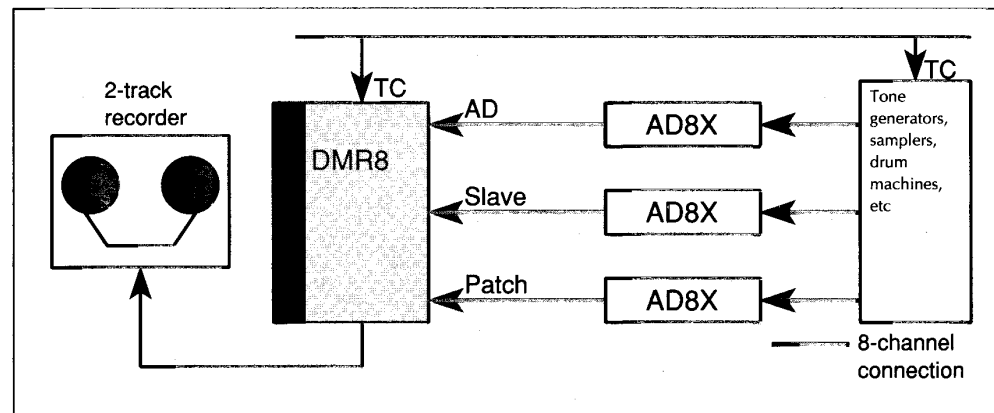### RECMix mode

In this example, automix data is created before recording to tape.
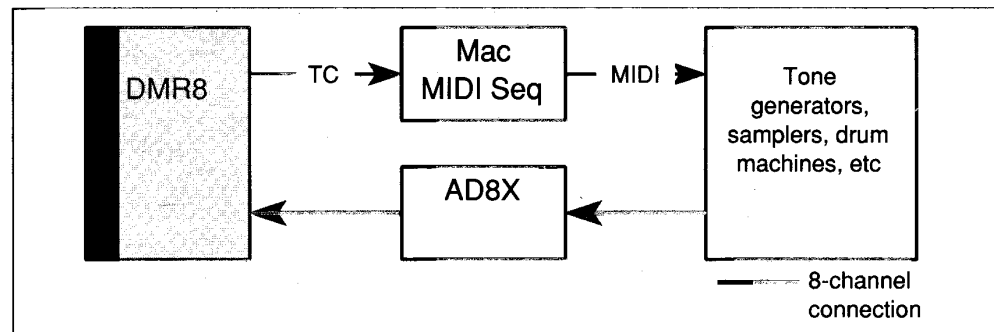
Mixdown mode

In this example, the DMR8 is being used as a 24 into 2 digital mixer with automix. Automix can be used for an unlimited time.

When recording down to a 2-track recorder with the automix using off-tape timecode, use a Chase mode (All Chase, etc).

9 Recorder

Recorder - Table of contents

9 Recorder

This section deals with the recorder section of the DMR8 and its operation in the various recording modes available. Since these different modes also involve a certain amount of automatic internal re-routing and repatching, this section will also cover these topics.

9.1 Features of the recorder

The DMR8 tape recorder uses 8mm metal particle tape in a proprietary format cassette, giving approximately 20 minutes' running time, using an M20P cassette, depending on the sampling frequency selected.

Fs	Tape time
48kHz	20 min
44.1kHz	22 min
32kHz	30 min

The actual running time may vary slightly from those stated above.

The format of the DMR8 tape allows for eight PCM audio tracks, recorded at 20-bit resolution. In addition, two analog AUX tracks are provided, for click, etc. A discrete timecode track, and internal servo tracks are also provided.

Tape speed is variable ±10%.

All transport functions (including cassette loading and ejection) are logic-controlled.

In addition to recording audio data, the DMR8 is also capable of using the approximately first 30 seconds of tape (the exact amount varies according to the sampling frequency) for the storage of alphanumeric information about the session and automix data. This is referred to as the "TOC Area" (Table of Contents), and recording of audio data is not possible on this part of the tape.

9.2 Tape handling and insertion

Only use YAMAHA M20P cassettes. Insert the cassette with the tape shutter first, and the tape window uppermost.

Do not open the shutter and/or touch the tape. Dust and grease can not only affect the recording quality, but may cause damage to the tape and/or the heads of the DMR8.

If a tape has been stored in a cold place (eg overnight in a car) and is to be used in a warmer environment, allow about an hour for the tape to acclimatize before inserting it into the DMR8. If a cold tape is inserted in the DMR8, condensation may occur, causing subsequent malfunction and damage.

When the tape is inserted, the DMR8 will load it automatically. The process of taking the tape out of the cassette and threading it will take about 5 seconds (as indicated on the display). After the tape has been threaded, the DMR8 will read about a second's worth of tape to discover the position (either timecode or absolute position, detected from the reel speed).

To avoid accidental recording on any one set of four tracks (either 1-4 or 5-8), the appropriate write-protect tab on the tape cassette can be moved to the open (protect) position.

Do not switch the DMR8 off with a tape inserted. Probably no damage will occur to either the DMR8 or the tape, but this is a commonsense precaution. Remember that the DMR8 uses power-assisted ejection; it is not possible to eject a tape from the DMR8 with the power turned off.

The tape cassette will get hot when it is inside the DMR8. This is normal and should not be regarded as a symptom of trouble. However, if the top panel is covered and the cooling vents are blocked, then the temperature inside the DMR8 could rise to a level where the tape and the DMR8 will be damaged. Keep the top panel uncovered, and allow sufficient ventilation space.

Use only the YAMAHA head cleaning cassette (M20CL) for cleaning the heads of the DMR8. Clean the heads regularly as directed on the head cleaning cassette.

9.3 Transport controls

The tape transport keys are at the top of the console, under the tape cassette slot. In addition to the usual tape transport keys, the DMR8 provides a rehearsal key (REHE). This key is used for location, etc operations, and also is used for rehearsal of punch-in operations, etc.

9.3.1 Transport operations

A list of permissible transport operations is given in the following table, where "x" - impossible, and "-" = meaningless (eg entering rewind mode from rewind mode is meaningless).

The word "Held" in this table refers to the action of holding down the indicated key while another is pressed, and "One push" means that the key has been pressed and released.

Key → / Current mode ↓	REW	FF	PLAY	PAUSE/STOP	REC	REHE (Held)	REHE (One push)	EJECT
No cassette	x	x	x	x	x	x	x	-
Loading	x	x	x	x	x	x	x	x
Eject	x	x	x	x	x	x	x	-
REW Held	-	-	Review (7.5x)	Index search	-	-	-	x
One push	-	FF	Play	Pause	x	x	x	x
FF Held	-	-	Cue (7.5x)	Index search	-	-	-	-
One push	Rewind	-	Play	Pause	x	x	x	x
PAUSE (pause mode)	Rewind	FF	Play	Stop	Record standby	R'hse standby	Locate	Eject
PAUSE (stop mode)	Rewind	FF	Play	Pause	Record standby	R'hse standby	Locate	Eject
REC Held	Rewind	FF	Record	Pause	-	R'hse standby	Locate	x
One push	Rewind	FF	Play	Pause	-	R'hse standby	Locate	x
REHE Held	Rewind	FF	Rehearse	Pause	Record standby	x	Locate	x
One push	Rewind	FF	Play	Pause	Record standby	-	-	x
PLAY Held	Review (7.5x)	Cue (1.6x)	-	Pause	Record	Rehearse	Rehearse	x
One push	Rewind	FF	-	Pause	x	x	Locate	x
Recording	Rewind	FF	Play	Pause	x	x	x	x
Rehearsing	Rewind	FF	Play	Pause	x	x	x	x
Play+FF (CUE 1.6x) (CUE 7.5x)	Rewind	FF	Play	Pause	x	x	x	x
Play+Rewind (REVIEW 7.5x)	Rewind	FF	Play	Pause	x	x	x	x

The Cue mode (at 1.6 times normal speed) allows high-speed cueing using the analog aux tracks).

The Review mode and the second Cue mode serve a similar purpose, but scan the timecode track at 7.5 times the normal play speed.

Fast forward and rewind are carried out at 15 times the play speed.

9.3.2 PAUSE/STOP

When the (PAUSE/STOP) key is pressed in most modes, the transport goes into a "pause" mode; the tape is held nearer the heads than in the "stop" mode, and the change to any other tape operation is faster than from stop mode. If pressed while the DMR8 is in pause mode, the tape transport goes into stop mode. The stop mode is also entered automatically if the DMR8 is left in pause mode for five minutes or more. Pressing the (PAUSE/STOP) key while the DMR8 is in stop mode will cause the transport to go into pause mode.
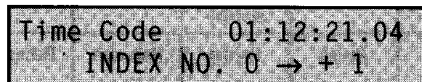
9.3.3 REHE key

The (REHE) key plays an important part in the operation of the DMR8. In all recording modes, it acts as a pseudo-record key; ie, all monitoring and metering behave exactly as if recording was taking place, except that the record head is not activated. In some cases it also acts as a locate key, returning the tape to the point at which a take or rehearsed take started.

9.3.4 Index searching

The DMR8 incorporates a tape indexing system for fast location of different takes or for set points in a classical score. Indexes may only be written in ALL REC mode. For details of how to write indexes, see the section on ALL REC.

Indexes may be located in any mode. To locate an index following the current tape location, press (FF). While holding down the (FF) key, press the (PAUSE/STOP) key. The subdisplay will show that the DMR8 is searching for an index marker. Subsequent presses of the (PAUSE/STOP) key while the (FF) key is held down will increment the index search by one index for each push of the (PAUSE/STOP) key, as shown on the subdisplay. As the tape passes index points, these will be shown on the subdisplay, and the "index search count" will decrement by one.

```
Time Code    01:12:21.04
    INDEX NO. 0 → + 1
```

NOTE that indexes need not necessarily be written in sequential numerical order.

To search for an index prior to the current tape location, the procedure is the same, except that the (REW) and (PAUSE/STOP) keys are used.

When the tape reaches the chosen index point it will stop. However, if (PLAY) is pushed while an index search is in progress (the tape is in FF or REW mode), when the tape reaches the chosen index point, it will stop and then start playing.

9.3.5 Tape indicators

The tape indicator LEDs (together with the illuminated transport keys) show the current status of the tape transport, as follows:

⊙ ▭ ▭ ⊙	No cassette (eject)
|/ ⊙■ ▭ ▭ ⊙	Tape begin
|/ ⊙ ▭ ▭ ■⊙	Tape end
➤ ⊙ ▭ ■ ⊙	Play / Rec
➤➤ ⊙ ▭ ■ ⊙	Search (FF)
◄◄ ⊙ ▭ ■ ⊙	Search (rewind)
➤➤➤ ⊙ ▭ ■ ⊙	Fast forward
◄◄◄ ⊙ ▭ ■ ⊙	Rewind
⊙ ■ ■ ⊙	Stop
|/|/ ⊙ ■ ■ ⊙	Pause
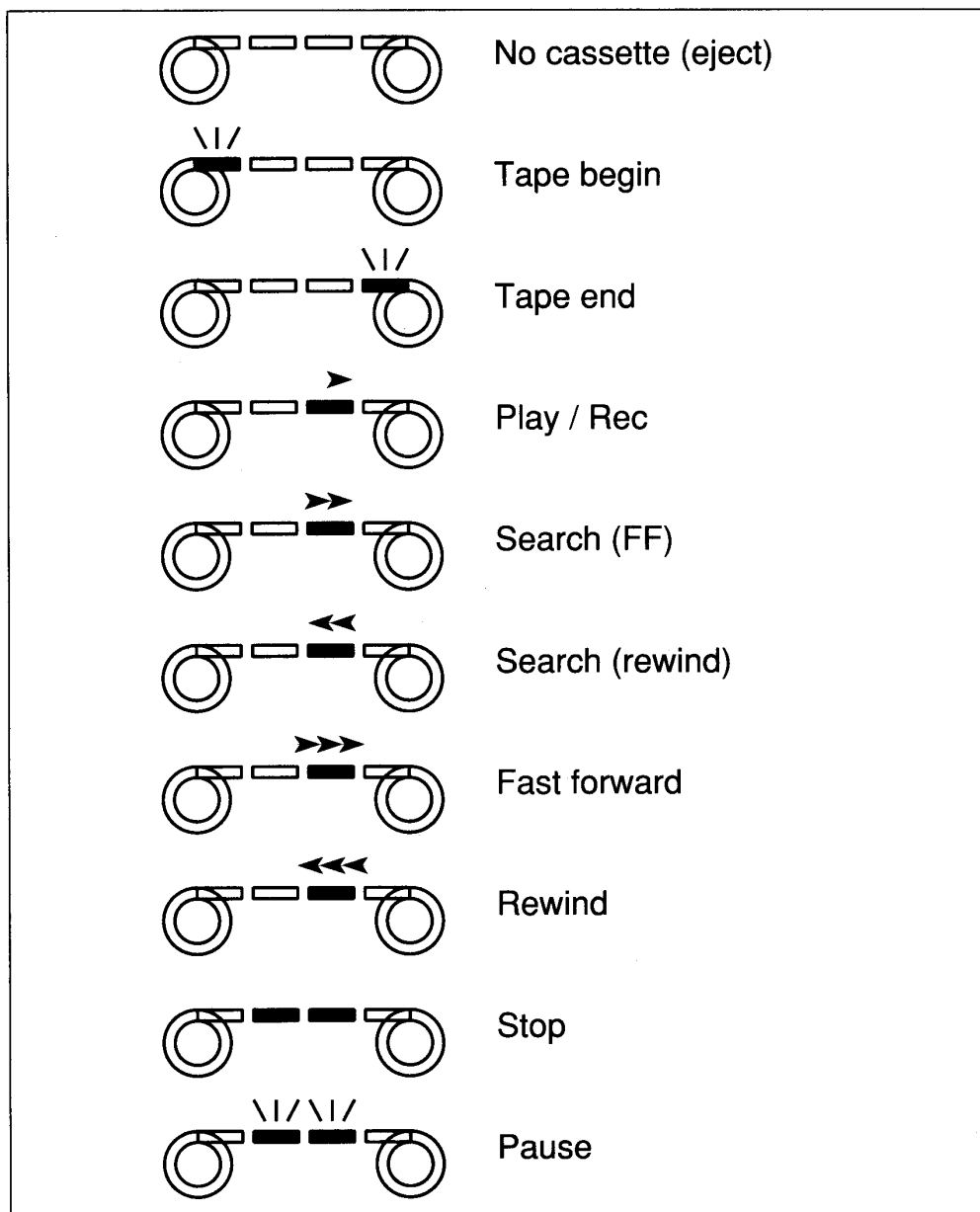
Note that there is no dedicated tape counter on the DMR8. The subdisplay will display the current tape time using TC, or using a tachometer-based tape position counter when the (MEMORY/TC) key is lit. While the (MEMORY/TC) key is held down, the remaining tape time is displayed.

If a composite video signal is fed out of the VIDEO OUT connector on the rear panel, the current time will <u>always</u> be displayed on the video monitor. If the subdisplay on the DMR8 is displaying something other than timecode, this will also be displayed on the video monitor.

9.3.6 The (PARKING) key

This is not, strictly, a tape control key, but is important in the operation of the DMR8.

Since the subdisplay is used for a number of purposes, such as timecode, memory, and option selection, it is important to have a way of changing display modes. The (PARKING) key, when lit, indicates that the subdisplay is displaying timecode or memory data.

Pressing the (PARKING) key at this time will return the display to the last option selection screen which was displayed before the timecode, memory, or special function screen (e.g. a MIDI or COPY function screen) was displayed. This function only works in RECMIX modes.

The (PARKING) key will only operate when lit. This is a "one-way" operation – the (PARKING) key cannot be used to re-display the timecode, memory or special function screen.

9.3.7 Loading and ejecting the tape

When the DMR8 is first switched on without a cassette loaded, the bottom line of the subdisplay will read:

```
ssette Unloaded now!
```

Gently insert the cassette into the DMR8, window uppermost with the yellow write-protect tabs going in last. When the cassette is most of the way into the slot, the DMR8 will take over the loading of the cassette (similar to a video cassette recorder). The display will show:

```
ssette Loading Now
        Wait 4 sec
```

The display will count down the number of seconds and then display the timecode of the current position on the tape (in all modes other than ALL REC), or invite you to format the tape (in ALL REC mode). See below for details of tape formatting.

Press (EJECT) in order to eject the cassette. As the tape is unthreaded, and the cassette ejected, the bottom line of the display will read:

```
ssette Eject Now!!
```

ALWAYS eject the cassette before powering down the DMR8.

9.4 Autolocator

The DMR8 contains an autolocator which allows for a variety of automated transport functions as described below.

The keys connected with the locator are almost all at the bottom right of the front panel of the DMR8.

9.4.1 LOCATE

The (LOCATE) key is used to return the tape to a pre-defined location point. The default memory point is 00:00:35.00 for the 32kHz sampling frequency, and 00:00:25.00 for the other sampling frequencies, as displayed on the "Memory" field on the subdisplay:

```
Time Code    00:02:30.23
Memory <ID 1>00:00:25.00
```

The "ID" number refers to the current index marker.

When the (LOCATE) key is pressed and released, the tape will move to the location point.

If the (LOCATE) key is held for more than half a second and then released, the tape will move to a position before the locate memory (the default is two seconds, but this can be altered in the TIMECODE menu).

While the tape is moving to the location point or pre-roll point, (PLAY) can be pressed so that the tape will automatically start playing when it reaches the memory point.

To cancel a locate operation, (PAUSE/STOP) must be pressed. No other transport key has any effect.

To change the location point, follow one of the two methods described below; "on-the-fly" or ADDRESS IN:

"On-the-fly" memory entry

If the (MEMORY) key is pressed at any time when the cassette is inserted, and timecode has been read, the currently-displayed time will be entered into the locator memory. This method works in any tape transport mode.

However, the default setting of the DMR8 gives an offset of ten frames from the displayed time, so that the memory time is ten frames before the actual time:

```
Time Code    01:02:04:23
Memory <ID 2>01:02:04:13
```

This is to allow for human reaction time when the tape is moving forwards, and can be adjusted in the TIMECODE MENU 4 option to suit individual tastes.

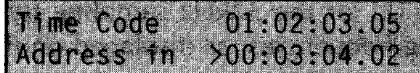### Address in

This allows frame-accurate entry of timecode values for the locator. Press the (ADDRESS IN) key:

```
Time Code    01:02:03.05
Address in  M01:03:04.02
```

If the figure on the bottom line is not preceded by an "M", press the ASSIGN·EDIT keys until an "M" appears.

Pressing the ⊕ key will replace the "M" by the cursor. The "hours" field can then be incremented or decremented using the ⊕ and ⊕ keys:

```
Time Code      01:02:03.05
Address in   >00:03:04.02
```
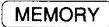
By using the ⊕ and ⊕ keys, the "minutes", "seconds" and "frames" fields can be adjusted in the same way.

When these adjustments are complete, press the (MEMORY) key to store the value into the location memory.

As an alternative to setting fields individually, the time can be entered using the numeric keypad if the ">" cursor is not immediately preceding one of the fields. As soon as a number key is pressed, the number resets to "00:00:00.00", and numbers are entered from the right of the number (leading zeroes need not be entered). To enter the number as the location memory, press the (MEMORY) key when the number is complete.

To enter the time "00:03:04.15", for instance, the sequence of key presses would be:

(ADDRESS IN) + (3) + (0) + (4) + (1) + (5) + (MEMORY)

9.4.2 REPEAT
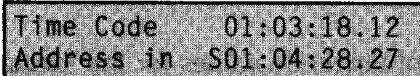
The DMR8 provides a repeat function which allows continuous automatic shuttling between two defined points on the tape.

Entering repeat points

The repeat points (START and RETURN) may be entered "on-the-fly" in the same way as the location memory, ie by pressing (START) and (RETURN) at the appropriate points. The start point must be before the return point, otherwise the repeat function will not work. "Before midnight" times may be used (eg a start time of 23:58:03.22 and a return point of 00:01:13.21 are valid).

Alternatively, the start and end addresses may be entered manually, in the same way as for the location memory.

However, to enter a start or return address, the address on the bottom line of the subdisplay should be preceded by an "S" or an "R". Use the ⊕ and ⊕ keys so that the time value is preceded by the appropriate letter:

```
Time Code      01:03:18.12
Address in   S01:04:28.27
```

Now either use the cursor keys to select and adjust a time, or enter the time directly as for the location point time.

Using repeat

Pressing the (REPEAT) key and releasing it will start the repeat process:

```
ime Code 0 00:02:52.08
0:02:56:01 00:03:15.03
```

When the start time is reached, the "0" on the top line will change to a "1", indicating that the repeat is on the first loop.

If the start time is greater than (or equal to) the return time, the following will be displayed:

```
ime Code 0 00:02:52.08
epeat Error Stt>=Rtt
```

The repeat loop will be repeated as many times as are set up in the TIMECODE MENU option (the default is 1). Each time the start point is passed in PLAY mode or REHE PLAY mode, the repeat counter on the top line of the subdisplay will increment by one.

Holding the (REPEAT) key for more than 0.5 seconds and then releasing it will cause an infinite number of repeats between the start and return points.

The return operation can be aborted at any time by pressing (PAUSE/STOP).

9.4.3 F4 points

The F4 memories (timecode event) are also available as location points. To access these memory locations, press the MEMORY FUNCTION (F4) key, and select the memory point using the MEMORY (↑) and (↓) keys.

```
4- 2 p:- TC.01:06:10.21
1  ,32  ,3** 01:04:22.12
```

(The figures at the beginning of the bottom line refer to auto event execution). The 2-digit LED memory indicator will flash.

To locate to the position in this F4 memory, press the (LOCATE) key. While the tape is locating, (PLAY) may be pressed, meaning that when the tape reaches the location point, playback will start. Holding the (LOCATE) key for more than about 0.5 second will return the tape to the pre-roll point.

Entering F4 memories "on-the-fly"

To enter location points as the tape is playing (for instance, to mark verse and chorus start and end points), make sure the (F4) key is pressed.

Select the memory to which the time is to be stored, using the MEMORY (↑) and (↓) keys. The 2-digit LED memory indicator will flash. When the tape is at the required position, press the MEMORY (STORE) key. The 2-digit LED will stop flashing.
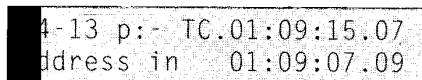
Press the MEMORY (↑) key to select the next F4 memory and store it, if required.

Direct entry of F4 memories

To enter an F4 memory using the numeric keypad, make sure that the F4 memory to be edited is shown in the subdisplay, and that the main display is not showing a screen which requires the use of (SHIFT NEXT) (e.g. a (HELP) screen).

Press (SHIFT NEXT) to enter the F4 address entry screen:

```
4-13 p:- TC.01:09:15.07
ddress in   01:09:07.09
```

Enter the time in hh:mm:ss.ff format using the numeric keypad. The displayed value will reset to "00:00:00.00" as soon as the numeric keypad is pressed. The display fills up from right to left, and leading zeroes need not be entered. When the number is entered, press the MEMORY (STORE) key or the ASSIGN•EDIT (ENTER) key. The display will stop flashing.

To enter another F4 memory, use the MEMORY (↑) and (↓) keys, followed by (SHIFT NEXT) and the numeric keypad.
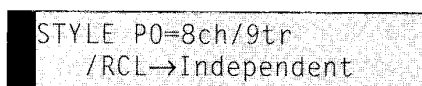
F4 time values may also be entered and edited in the EVENT EDIT field, as described in the "Mixing Console" section of this manual.

9.5 INITIAL SET

Initial settings set the overall configuration of the DMR8. However, details regarding these are given here, as initial settings should be made before recording. A brief introduction to initial settings is given in the "System Setup" section, earlier in this manual.

9.5.1 Selecting a preset style

Press the (INITIAL SET) key ((S1) under the tape transport controls). The display will show:

```
STYLE P0=8ch/9tr
  /RCL→Independent
```

NOTE: This is the default setting if the DMR8 has been initialized. If the DMR8 has been used with another style since initialization, another style will be displayed. However, the principles involved are the same.

Use the ASSIGN•EDIT (↑) and (↓) keys to choose a style for final selection. The number of the style will blink until the (→) key is pressed to recall the style.

9.5.2 Editing a style title

When a style has been recalled, press (SHIFT NEXT). The title of the style can then be edited, using the numeric keypad in (SHIFT) mode and/or the cursor keys.

```
TYLE U4>Jazz live
DIT     Piano trio
```

9.5.3 Internal/external word clock

From the title edit, press (SHIFT NEXT) to bring up the word clock selection screen:

```
System Clock
 >INT    EXT
```

Use the ← and → cursor keys to move the cursor to precede INTERNAL or EXTERNAL. Then press (SHIFT NEXT) to confirm the selection.

Internal word clock

If the word clock has been set to be internal, the sampling frequency will be the next selection:

```
Sampling Frequency
 >48.0K  44.1K  32.0K
```

Move the cursor (← and → keys) to precede the required sampling frequency, and then press ↑ to confirm. If the sampling frequency is changed, the DMR8 will reconfigure itself.

The next screen ((SHIFT NEXT)) allows the selection of the internal clock source: a crystal (Xtal) or phase-locked loop (PLL). If the varispeed option is to be used, PLL should be selected:

```
INT Clock Mode
 >Xtal    PLL
```

Use the ← or → keys to change the clock source. No other key presses are needed. If the clock source is changed, the DMR8 will reconfigure itself.

External word clock

If the external clock option is selected, pressing (SHIFT NEXT) will bring up the following screen:

```
EXT Clock Master
 *CASIN  SLV  AD  BNC
```

Move the cursor (the asterisk) to precede the desired clock source: CASCADE 8-pin DIN, SLAVE 25-pin 'D', AD 25-pin 'D' or the WORD CLOCK IN BNC. To confirm the selection, press ↑. The "*" will change to a "•" if the clock source is connected. The EXT CLK LED above the tape slot will also light.

If the selected clock source is not connected, an appropriate message will appear on the subdisplay. It is not possible to select an external clock source unless the external device is connected and powered up.

If the external clock is selected, but is subsequently lost (the clock source is turned off or disconnected), the DMR8 will inform you of the fact and reset itself to an internal clock frequency.

9.5.4 Input selection

After the clock selection screens (either internal or external), pressing (SHIFT NEXT) brings up the following:

```
REC-MIX DIGITAL-IN SEL
      >AD   SLAVE
```

In all modes other than MIXDOWN (RECMIX modes), the source of the eight input channels can be selected - either through the AD 25-pin 'D' or through the SLAVE 25-pin 'D'. Move the cursor to the desired selection and press (SHIFT NEXT).

9.5.5 8-way output

The next screen allows you to select what signals will be output from the previously-selected 25-pin connector:

```
AD/SLAVE DIGITAL-OUT SEL
>REC-IN(PGM/PB)    PBonly
```

The first option outputs the program/playback monitor assignments through the selected 25-pin connector, and the second outputs tape tracks only. Move the cursor to the desired field, and then press (SHIFT NEXT). This will display the "*** END ***" screen of the INITIAL SET menus.

9.5.6 Storing styles

If a preset ("P") style has been edited and is needed for future reference, it can be stored to a user ("U") style. From the "*** END ***" screen, press (SHIFT NEXT) again:

```
>STYLE P4=Jazz live
     /RCL→Piano trio
```

Use the (▲) and (▼) keys to select a user style that can be overwritten:

```
>STYLE U4=Jazz
←STR/RCL→sax trio
```

Now press (◄) to store the information from the edited style into location U4:

```
>STYLE U4=Jazz live
←STR/RCL→Piano trio
```

This style may be subsequently recalled and edited, as described earlier.

9.6 ALL REC

In ALL REC mode, all tracks are armed for recording, including the analog AUX tracks. Timecode is laid down, either from the DMR8's internal generator, or from an external source.

NOTE: This is the only mode in which the DMR8 can record timecode (either internal or external). If it is subsequently desired to sync the DMR8 using timecode, ALL REC must be used in order to timestripe the tape. In addition, indexes can only be written in this mode. If indexes are to be used for location later in the project, then ALL REC should be used at the initial stage to mark track divisions using indexes (see below for how to use the indexes).

All control-room monitoring in ALL REC mode is of the tape tracks. The CUE mix allows the tape tracks and the input programs to be monitored separately.

ALL REC is the default setting when the DMR8 is re-initialized.

9.6.1 Tape formatting

It is not necessary to format a new tape before recording on it with the DMR8. Nonetheless, it is advised in the majority of cases for the following reasons:

• Timecode will be contiguous throughout the tape, regardless of the number of takes made

• The DMR8 will format a servo track throughout the tape, leading to greater tracking accuracy.

The use of ALL REC as a recording, rather than a tape formatting mode is suggested in the following circumstances (amongst others):

• When the DMR8 must record from pre-recorded timestriped material using the same timecode (eg laying down the actuality tracks from a video worktape and taking the timecode from the VTR).

• When all tracks are being used for recording (eg live or classical recording sessions).

• If timecode values are critical. For example, a recording with a time of more than one tape using two DMR8s or a DMR8 and DRU8 in serial chase mode will need the timecode to be consecutive and continuous between tapes.

• Indexes can only be written in ALL REC mode

When the DMR8 is in ALL REC mode, and a tape is inserted, the display will show a "loading" message, and then show:

```
FORMAT            REC+PLAY
>TOConly   COMPLETE   NO
```

If the tape has already been formatted, then move the cursor to NO (use the ➔ key), and press (SHIFT NEXT). Remember, however, that subsequent recording in ALL REC mode will delete any previous tracks and overwrite the timecode. It is probably best to change modes to SYNC DUB in this case.

TOC area only

The TOC area only (the first part of the tape) can be formatted. In this case, make sure that the cursor is before the "TOConly" message, hold down the (REC)

key, and press (PLAY). The first part of the tape will then be formatted. The tape will be rewound first if it is not already at the start. The exact length of the area reserved for TOC and the default location points are given in the table below:

Fs	TOC format time	Default location point
48kHz	35s	00:00:25.00
44.1kHz	35s	00:00:25.00
32kHz	53s	00:00:35.00

After formatting the TOC area, the tape will be rewound to the locate point given in the table above.

Whole tape
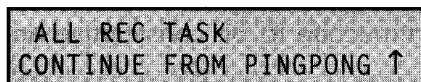
If the whole tape is to be formatted, move the cursor to the COMPLETE field, and press (REC) and (PLAY). The tape will be rewound if necessary, and the whole tape will be timestriped.

IMPORTANT NOTE: The timecode will start at 00:00:00.00, unless this has been changed in the ALL REC setup pages (see below). If timecode is <u>not</u> to start at 00:00:00.00, follow the instructions below on resetting the generator <u>before</u> inserting the tape.

The tape will not be rewound when the formatting procedure ends. When formatting has finished, and the tape has stopped, press the (LOCATE) key to return the tape to the default location point.

9.6.2 Entering ALL REC mode from another mode
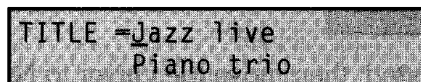
If the (ALL REC) key is pressed from another recorder mode, the screen will show:

```
ALL REC TASK
CONTINUE FROM PINGPONG ↑
```

(or the name of the previous mode).

Pressing the ASSIGN·EDIT (▲) key will keep the title, channel-to-track assignments, track and channel names. Alternatively, pressing (SHIFT NEXT) will bring up the following screen:

```
TITLE =Jazz live
       Piano trio
```

The title may be edited using the numeric keypad (use the (SHIFT) key for letters) and/or the cursor keys.

9.6.3 Naming channels

Each input channel may be assigned a name of up to three characters in the next screen:

```
CH  >1DrL 2DrR 3HH  4SN
NAME 5BDr 6BAS 7PfL 8PfR
```

The above channel names are the default names for the "P4" style. Use the numeric keypad in (SHIFT) mode and/or the cursor keys in order to change the names.

These names are displayed at the bottom of the main display, and are also used in channel-to-track assignments. They provide a useful point for future reference.

NOTE: Though not essential, it is a good idea to follow the convention of the DMR8 default styles on channel and track names: begin channel names with an uppercase letter and track names with a lowercase letter. This helps avoid possible confusion between "BAS" (the input channel) and "bas" (the tape track).

Press (SHIFT NEXT) to enter the track naming screen:

9.6.4 Naming tracks

```
TR  >1drL 2drR 3bdr 4bas
NAME 5pfL 6pfR 7h-L 8h-R
```

Tracks may be given names in the same way as channels. Note that preset style track names begin with a lowercase letter.

9.6.5 Channel-to-track assignment

This allows the routing of input channels to tape tracks. In this mode the subdisplay is used.

An alternative method of performing this operation is described in section 6.4, which uses the main display. The two methods interact; changes made using one method will be reflected on the other screen.

From the track naming screen, press (SHIFT NEXT):

```
TR-ASSIGN 12345678
 CH 1 DrL o-------  drL
```

An "o" above the cursor indicates that the channel whose name is on the left of the bottom line is routed to the track whose name is on the right of the bottom line.

Using the (◄) and (►) cursor keys, different tracks may be displayed on the right of the display:

```
TR-ASSIGN 12345678
 CH 1 DrL o-------  pfR
```

To assign a channel to track(s), press the ⊕ key when the cursor is at the track position. To de-assign a channel, press ⊕. A channel can be assigned to more than one track, and a track can have more than one channel assigned to it.

The eight input channels are available for assignment by using (SHIFT NEXT) and (SHIFT BACK) to step through.

By pressing the (TRACK ASSIGN) DISPLAY FUNCTION key, a semi-graphical display of the channel-to-track assignments can be shown on the main display:

```
>•-| -•| ••| ••| --| --| --| --|N12
D--|D- -|H--|S---|B•-|B-•|P--|P--|S--|A34
r--|r--|H--|N--|D--|A--|f••|f••|U--|M56
L--|R-•| --| --|r--|S--|L--|R--|B••|E78
```

As channel/track assignments are made in the subdisplay, these will be reflected in the main display.

9.6.6 Assignment of effect returns

The two recording effect returns are assignable to any track or tracks in the same way as are channels.

After channel 8, press (SHIFT NEXT) again:

```
TR-ASSIGN 12345678
RTN1 RVA oo------   drL
```

A three-letter abbreviation of the effect name will appear at the bottom left of the display. This return may be assigned to a track or tracks in the same way as a channel. Pressing (SHIFT NEXT) will show the assignment of the other effect return.

9.6.7 Assignment of SUB IN

The stereo signal received at the SUB IN connector can be assigned to a track or tracks, immediately following the second effect return:

```
TR-ASSIGN 12345678
SUB RVA ------oo  h-L
```

The procedure is the same as for input channels. The SUB assignment can be viewed on the main display.

9.6.8 Setting up timecode, etc

After assigning the SUB input and pressing (SHIFT NEXT), the following screen is displayed:

```
TC,AUX,INDEX SETUP
  >AUTO    MANUAL
```

If AUTO is selected, then the following will occur:

- Timecode will start recording from the internal generator at 30fps (default) or the last selected fps setting from the beginning of the tape at 00:00:00.00 (or contiguously from the last timecode previously recorded on the tape).
- Both AUX tracks are armed for recording
- Index numbers are automatically incremented by 1 every time the transport enters record mode, and an index is written to tape at that time.

To alter any of these parameters, set to MANUAL (⊕ and then (SHIFT NEXT)). The next screen shows:

Timecode setting

```
Time Code Generator
 >INT  30    00:00:00.00
```

The first field can be set (⊕ and ⊕ keys) to "INT" (internal timecode), "MTC" (MIDI Time Code) or "EXT" (external timecode).

Move the cursor to the right (⊕) and the next field can be set to "30", "30D" (30 drop-frame), "25" or "24" frames/second.

When this has been set, move right, and the starting timecode can be set (if "INT" has been selected). Use the numeric keypad and/or the cursor keys to set the start time. When this is complete, press (SHIFT NEXT).

AUX track arming

```
AUX REC    1 2
SELECT    >o o
```

Move the cursor to either AUX track 1 or 2 and arm ("o") or disarm ("-") the track using the ⊕ and ⊕ keys. When this is done, press (SHIFT NEXT).

Index

This allows the setting of the index number which will be recorded next. Use the ⊕ key to increment the index number. These numbers go from 0 to 15. When 15 is reached, pressing ⊕ will start from 0 again.

```
INDEX  NO.
         2
```

When the tape is in record mode, and moving, a screen similar to that shown below will be displayed:

```
INDEX NO. 2  INC↑
   INT  30    00:01:21.21
```

Pressing the ASSIGN·EDIT ⊕ key will write an index mark at the tape position where the ⊕ key is pressed.

NOTES:

• It is not possible to erase index marks once they have been recorded without erasing all audio data as well (ie ALL REC and ALL ERASE will erase index marks, but will also erase audio data).

• Though any number of index marks may be recorded on a tape, the index numbers range only from 0 to 15.

• Index marks should not be placed closer to each other than about 0.5s.

9.6.9 Recording

When recording in ALL REC mode, press [PLAY] and [REC] together to start recording. When recording is finished, press [PAUSE/STOP]. To return to the point where recording started, press [REHE]. While the tape is rewinding, [PLAY] may be pressed in order to start replay when the tape reaches the start position.

Another way to record is to start the tape playing, and while the [PLAY] key is held down, to press the [REC] key. The REC LEDs above the meters will light when recording is taking place.

An index mark (either using the automatic index increment, or the manually-set index number) will be written where the tape starts recording. Addition index marks may be written while the tape is recording by pressing the ⊕ key every time an index mark is to be written.

If further takes are to be made on the same tape, timecode will be recorded with a value immediately following the previous timecode (unless external timecode has been selected).

VERY IMPORTANT NOTE!!

When the DMR8 is in ALL REC mode, and another take is recorded immediately following a previous take, at least five seconds must be allowed for the DMR8 to pick up the previous timecode values and write continuous timecode for the new take.

Since the DMR8 is in ALL REC mode at this time, the last five seconds of the previous take will be overwritten.

When recording a take, therefore, leave at least five seconds' silence (preferably ten seconds) at the end of a take to allow for this property of the DMR8. If this is not done, there is a risk that the end of a take will be overwritten by the beginning of the next take

---

See the section on the mixer for details of monitoring input channels and tracks.

Effects may be selected and edited at any time in this process (as may channel effects). See the section on "Effects" for details.

9.7 SYNC DUB

In SYNC DUB mode individual tracks may be selected for recording, and previously-recorded tracks are replayed.

When the ⌈SYNC DUB⌋ key is pressed, the display will show:

```
SYNCDUB TASK
CONTINUE from ALL REC   ↑
```

Press ⊕ to keep the same channel and track names and other settings as in ALL REC mode. If ⊕ is pressed, the display will show:

```
        *** END ***
```

briefly, and then return to the tape counter display. No tracks will be armed for recording.

If names and/or track assignments etc, are to be changed, then press ⌈SHIFT NEXT⌋, rather than the ⊕ key. The first two pages allow you to change the title and the track names, in the same way as the ALL REC mode. Pressing ⌈SHIFT NEXT⌋ after the track naming page allows you to arm tracks.

9.7.1 Arming tracks

There are two ways of arming tracks in RECMIX modes (excluding the ALL REC mode, where all tracks are automatically armed), either from the subdisplay, or using the soft keys.

From the subdisplay

When ⌈SHIFT NEXT⌋ is pressed after naming tracks, the subdisplay will show:

```
REC TR     12345678
SELECT     _------   drL
```

The cursor is represented in this screen by an underline. Arm the underlined track by pressing ⊕, so the "-" changes to a "o":

```
REC TR     12345678
SELECT     o------   drL
```

The corresponding orange "RDY" LED above the meters will light.

Using the soft keys

Press the green ⌈S⌋ key (below the memory card), and then the green ⊕ key. The top two lines of the main display will show:

```
↑ REC TRACK SELECT                    OFF ON
↓--- --- --- --- --- --- --- ---:--- (⊏⊐)
```

where the "---" symbol represents "track not armed" and the "(⊏⊐)" symbol represents "track armed".

The eight keys (labelled in green as S1 through S8) immediately below the tape transport keys can now be used to arm tracks. When one of these keys is lit, the corresponding track will be armed (as shown in the main display and on the orange RDY LED).

Changes made using the soft keys will be reflected in the subdisplay (and *vice versa*).

To return the main display to its previous state, press the green S again.

9.7.2 Naming channels

After tracks have been armed, channels may be named in the same way as for the ALL REC mode. When this has been done, [SHIFT NEXT] should be pressed to enter the next screen:

9.7.3 Channel-to-track assignment

This is carried out in exactly the same way as for ALL REC recording, but there is one major difference. Since only some tracks may be armed for recording, the tracks which are not armed are represented by "X". In the following example, it is assumed that only tracks 1, 2, 3 and 4 have been armed:

```
TR-ASSIGN 12345678
CH 1 DrL o- - XXXX
```
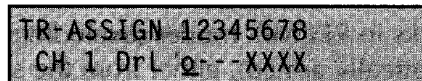
Though it is possible to change the "X" to an "o", this has no meaning (the channel has been assigned to an unarmed track and will not be recorded).

If the [TRACK ASSIGN] DISPLAY FUNCTION key is pressed, the channel-to-track assignments will appear in the same way as for ALL REC mode. Again, unarmed tracks will appear on the display as "X".

As in ALL REC, the eight input channels, the two effect returns, and the stereo SUB IN can all be routed to tracks.

The soft keys can also be used to route channels to tracks, as described in the section on the mixer.

9.7.4 Monitor selection

After the SUB IN track assignments have been made, press [SHIFT NEXT]. The display will show something similar to the following (the exact configuration will vary according to what recording channels and track assignments have been made):

```
MONITOR   12345678
SELECT    IIIIiiPP  drL
```
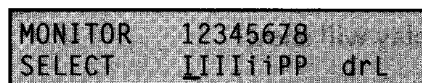
An "I" means that the control room monitor signal will be from the channels routed to that track (in record or rehearsal mode), and a "P" represents playback. When the tape is in (PLAY) mode, all tracks will replay - signals input to the tracks cannot be monitored.

NOTE that these monitor assignments only become effective in (REC) or (REHE) mode.

An uppercase letter ("P" or "I") means that the monitoring cannot be changed. A lowercase letter ("p" or "i") means that the monitoring can be changed using the (▲) and (▼) keys.

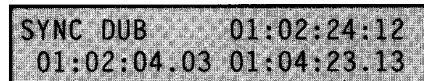If a track has been designated as a REC track, the monitor symbol will always be "I". If a channel has not been assigned to a track, and the track is not a REC track, the symbol will be "P". If this channel has been assigned to a track, the symbol will be a lowecase "i" or "p" (it can be changed).

This procedure is also explained in the mixer section, as is the use of the soft keys for selecting the monitoring assignment for individual channels and tracks.

9.7.5 Rehearsal in SYNC DUB

To rehearse tracks in SYNC DUB mode, for example so that C-R and CUE monitor mixes can be perfected prior to the actual take, position the tape to the start point, and press (PLAY) and (REHE) together. Alternatively, start the tape playing, and press (REHE) while holding down the (PLAY) key. The start of the rehearsal take will be displayed on the left of the bottom line of the subdisplay.

```
SYNC DUB        01:02:24:12
01:02:04.03  01:04:23.13
```

When the rehearsal is finished, press (STOP) and then (REHE). The tape will rewind to the position where the rehearsal started.

Alternatively, while the tape is moving in (REHE) mode, press (PLAY) alone, and the DMR8 will drop out of rehearsal mode into play mode. The time at which this happens will be shown on the right of the bottom line of the subdisplay. Press (STOP) and then (REHE). The tape will rewind to the position at which rehearsal started.

If (REHE) is held down for more than half a second, the tape will rewind to a preroll point (set in the timecode MENU 4 option).

If (PLAY) is pressed while the tape is rewinding, the tape will start playing automatically when the location point is reached.

9.7.6 Recording in SYNC DUB

To record in SYNC DUB mode, the procedure is the same as for rehearsal, except that (PLAY) and (REC) should be pressed simultaneously.

The recorder may be dropped into record mode by holding down (PLAY) and pressing (REC), and dropped out by pressing either (PLAY) alone, or (STOP).

The (REHE) key can be used to rewind the tape to the beginning of the tape.
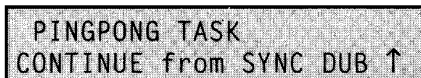
9.7.7 Re-recording

After the take and subsequent replay, either use the same tracks for re-recording bad takes, or build up the piece track by track, changing the tracks armed for recording as required.

If, however, automatically timed drop-ins or any track bouncing operations are required, the PING-PONG, PUNCH IN, or TRACK EDIT mode should be selected.

9.8 PING-PONG

The PING-PONG mode allows track bouncing. Thanks to the head placement of the mechanism of the DMR8, it is possible to bounce a track to itself. In PING-PONG mode, it is also possible to record external inputs as well as bounced tracks.

To enter this mode from any other mode, press the (PING-PONG) key:

```
┌─────────────────────────┐
│ PINGPONG TASK           │
│ CONTINUE from SYNC DUB ↑ │
└─────────────────────────┘
```

As before, press (↑) to keep the channel and track names, etc from the previous recording mode. If any of these are to be changed, press (SHIFT NEXT).

The first screen will show the title, allowing it to be edited. Press (SHIFT NEXT) to enter the track naming screen. Track names can be edited in the same way as in other RECMIX modes.

9.8.1 Track arming

Tracks on which recording is to be performed are selected in the screen following the track naming screen.
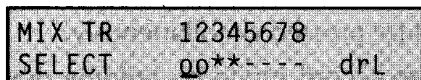
As with the other RECMIX modes, the main display and the soft keys can be used instead of, or in addition to, the subdisplay method.

9.8.2 MIX tracks

On the DMR8, a MIX track is a tape track which has been routed back to take the place of an input from the A/D or SLAVE inputs. MIX tracks are routed to the mixer on a "one-to-one" basis: ie, track 1 will always take the place of input channel 1, etc.

Using the subdisplay

The subdisplay for selecting MIX tracks is similar to that for selecting REC tracks:

```
┌─────────────────────────┐
│ MIX TR    12345678      │
│ SELECT    oo**----  drL │
└─────────────────────────┘
```

In this display, "o" indicates a track which has been selected as a mix track, "*" indicates a track which has previously been selected as a recording track, and "-" indicates a track which has been selected as neither mix nor recording.

It is possible to select a recording track as a mix track. In this case, the "*" will be overwritten by a "o".

Using the main display

Press the green Ⓢ key and then the green ⊕ key twice, so that the top two lines of the main display read:

```
↑ INPUT SELECT(MIX TR SELECT)    IN  PB
↓(☐) (☐) -*- -*- --- --- --- -:-    (☐)
```

where "(☐)" indicates a track selected as a mix track, "-*-" indicates a track previously selected as a recording track, and "---" indicates a track which has been selected neither as mix nor recording.

The soft keys (labelled Ⓢ1 through Ⓢ8 below the tape transport keys) may be used to turn the mix assignment of tracks on and off.

Any changes made to the mix assignment on the main display will be echoed on the subdisplay (and *vice versa*).

9.8.3 Naming channels

The procedure for naming channels is the same as in the other modes, with the important difference that any mix tracks which are acting as input channels are preceded by a 𝕂 symbol (Tape Return). If tracks have been set up as in the previous examples, the channel naming screen will appear as follows:

```
CH  >1drL𝕂2drR 3HH  4SN
NAME 5BDr 6BAS 7PfL 8PfR
```

Note that the cursor hides the 𝕂 symbol when it is before a channel name. Channel names displayed on the bottom line of the main display will also be preceded by the 𝕂 symbol when they are mix tracks.

9.8.4 Channel-to-track assignment

This operation is much the same as in the previous RECMIX modes; each channel in turn is displayed with its name on the left side of the bottom line of the subdisplay:

```
TR-ASSIGN 12345678
𝕂CH 1 drL XX_-XXXX
```

All mix tracks are preceded by the 𝕂 symbol.

The channel-to-track assignment can also be viewed on the main display, and/or changed using the soft keys. Once again, the 𝕂 symbol is used to indicate a mix track.

The eight input channels (including tracks designated as mix tracks), the two effect returns, and the SUB IN signal are assignable here.

9.8.5 Monitor selection

This is carried out in the same way as for other RECMIX modes (except ALL REC).

```
MONITOR    12345678
SELECT     IiIIiii
```

The same meaning is applied to the symbols: "I" means input, "P" means playback, lowercase indicates a changeable parameter, and uppercase indicates a fixed parameter.

The main display and/or soft keys may be used for this operation.

9.8.6 Rehearsal

This is identical to the previously-described RECMIX modes: (PLAY) and (REHE) together allow a "preview" of the bounced tracks.

The start and end point of the rehearsed take are displayed on screen. Pressing (REHE) after the tape has stopped will return the tape to the start of the take.

9.8.7 Recording
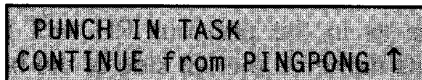
As with ALL REC and SYNC DUB, recording is performed with the (PLAY) and (REC) keys.

The (REHE) key can be used as a locator key to return the tape to the beginning of the take.

9.9 PUNCH IN

In PUNCH IN mode, timed drop-ins and drop-outs can be made. Track-bouncing can also be performed. The DMR8 can handle all tape transport functions, including timed pre- and post-roll.

When the (PUNCH IN) key is pressed from another mode, the display will show:

```
PUNCH IN TASK
CONTINUE from PINGPONG ↑
```

If (↑) is pressed, the display will change to the MANUAL/AUTO page (see below). If (SHIFT NEXT) is pressed, the following options are available:

9.9.1 Title edit

The title may be edited in this screen in the same way as the previous modes.
Press (SHIFT NEXT) to enter the next screen:

9.9.2 Track naming

Tracks may be renamed in this screen in the same way as for the previous modes.

9.9.3 Track arming

Tracks may be armed for recording in the same way as for the previous modes (a "-" indicates non-armed, and a "o" indicates armed). The appropriate RDY indicators above the meters will light.

The soft keys may also be used for this task.

9.9.4 Mix track select

As explained earlier, a "mix" track is one which has been routed to take the place of an input channel.

The same methods and displays for setting mix tracks as are used in the PING-PONG mode are used in PUNCH IN.

```
MIX TR    12345678
SELECT    oo**-- -   drL
```

A "*" indicates a track armed for recording, a "o" indicates a track selected as a mix track, and a "-" indicates a track selected as neither.

The main display and soft keys may also be used for this function.

9.9.5 Channel naming

The input channels and mix tracks may be named here. As with the PING-PONG mode, input channels which are in fact mix tracks will be preceded by a ᛮ symbol.

```
CH  >1drL*2drR 3HH   4SN
NAME 5BDr 6BAS 7PfL 8PfR
```

9.9.6 Channel-to-track assignment

The eight input channels (including mix tracks), the two effect returns and the stereo SUB IN may be routed to tracks. Remember that a mix track may be routed to itself.
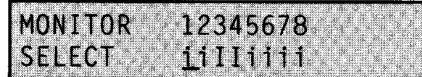
```
TR-ASSIGN 12345678
*CH 1 drL XX-- XXXX
```

The main display may be used to display and/or edit the channel-to-track assignments.

9.9.7 Monitor selection

This is carried out in the same way as for other RECMIX modes (except ALL REC).
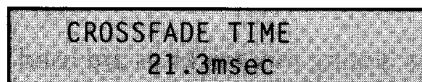
```
MONITOR    12345678
SELECT     IiIIiiii
```

The same meaning is applied to the symbols: "I" means input, "P" means playback, lowercase indicates a changeable parameter, and uppercase indicates a fixed parameter.

The main display and/or soft keys may be used for this operation.

9.9.8 Crossfade time

After the monitor selection screen, press (SHIFT NEXT). This allows the selection of the crossfade time - an important consideration in digital punching. Without a crossfade, audible digital "glitches" may occur, and a crossfade between the original and punched signal is necessary.

```
CROSSFADE TIME
    21.3msec
```

Use the (↑) and (↓) keys to set the crossfade time in milliseconds. The crossfade operation will start at half the crossfade time prior to the punch point (both punch-in and punch-out). In other words, half the crossfade is performed prior to the punch point, and half after it. Permissible values are:

1.33, 2.67, 5.33, 10.7, 21.3, 42.7, 85.3, 171, 341, 683, 1365, 2730 (all in milliseconds)

The above selection of crossfade times is for 48kHz sampling frequency. The times availabel will vary according to the sampling frequency selected.

Press (SHIFT NEXT) when the desired crossfade time is displayed.

9.9.9 Pre- and post-roll and rehearse mode

The next screen allows the setting of automatic pre- and post-roll times (times before and after the specified punching area which will be used by the DMR8's automatic transport control).

```
>PRE   POST   REHE-MODE
  5s     3s     _X_X_
```

The pre- and post-roll times can be set individually using the cursor keys, each with values ranging from 0 to 99 seconds in steps of 1 second.

The rehearsal mode field determines what will be monitored during rehearsal and recording of punch-ins. This applies to both the control room and the studio CUE monitoring systems.

In the first mode, "⎯X⎯X⎯", the previously-recorded off-tape signal will be heard up to the punch-in point, at which point the signal input to the track will be monitored (with the appropriate crossfading). At the punch-out point, the reverse occurs; the input signal will be crossfaded back to the off-tape signal. This is the usual multitrack mode of monitoring punch-ins.
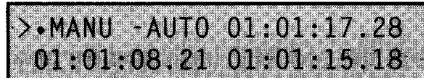
The second option, "\＿／", allows monitoring of the previously-recorded tape signal until the punch-in point, ducks the signal from the inputs at the beginning of the punch sequence, and returns to off-tape monitoring at the punch-out point. The input signal(s) can, of course, be monitored during the punch sequence using the appropriate input faders.

The last option, "／⎯\", ducks the off-tape signal, switching in the input signal at the punch-in point. The off-tape signal is ducked again at the punch-out point.

After these parameters have been set, press (SHIFT NEXT):

9.9.10 Auto/manual

NOTE: If ⊕ is pressed from the "CONTINUE from SYNCDUB" message, this is the screen which will be displayed. By pressing (SHIFT BACK), it is possible to edit values on the screens just described (crossfade times, pre- and post-roll times, etc).

```
>•MANU -AUTO 01:01:17.28
 01:01:08.21 01:01:15.18
```

The first choice is between manual and automatic punch-in. "Manual" mode means that punches are done manually, and that the tape transport must be operated manually. In auto mode, all tape location to pre- and post-roll points is handled automatically, record or rehearse mode is entered automatically and the tape is rewound after each rehearsal or take.

Use the ⊕ and ⊖ keys to select between auto and manual.

Use ⊕ to move the cursor to the bottom line. The punch-in time may either be entered using the keypad or in real time.

Keypad entering and editing of punch times

To enter a punch time using the numeric keypad, enter a time in hh:mm:ss.ff format, followed by the (ENTER) key. Use the ⊕ and ⊕ keys to change between the punch-in and punch-out times.

If punch times have previously been entered (either from the keypad or in real time), and subsequently need adjustment, the ⊕ and ⊕ keys can be used to slip the time backwards or forwards a frame at a time.

Real-time entering of punch times

This section applies to automatic mode only.

The tape should be positioned some way before the proposed punch-in point. At least one track should be armed (REC RDY light on) to enter punch times in real time. Press [PLAY] to start the tape, and when the proposed punch-in point occurs, hold down [PLAY], and press the [REHE] key. The left time on the bottom line of the subdisplay will indicate the time at which this was performed. The red REC indicator above any armed tracks will start flashing.

The punch-out point is set by pressing [PLAY] alone while the tape is in rehearsal mode. The right time on the bottom line of the subdisplay will indicate the time at this was performed.

The tape will then continue playing for the previously-set post-roll time, and rewind to the pre-roll time.

9.9.11 Rehearsal

Using the automatic mode, rehearsals can be carried out, to establish the punch-in and punch-out points, as well as for the benefit of the artistes.
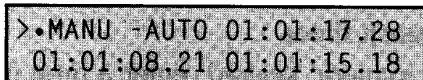
To rehearse punch-ins in automatic mode, press [PLAY] and [REHE] together. If in automatic mode, the tape will rewind to the pre-roll point (if not already at this position), and start playing.

When the punch-in point is reached, the red REC indicator for any armed tracks will start flashing. When the punch-out point is reached, the indicator will stop flashing. The tape will continue to the post-roll point and then rewind to the preroll point.

Monitoring of any armed tracks is carried out as described above.

The [STOP] key can be pressed at any point in the process. Pressing [PLAY] and [REHE] together from this point will start the tape from the pre-roll point (locating it if necessary), and go through the rehearsal procedure again.

If the rehearsal shows the punch points to be in the wrong place, the [PARKING] key may be pressed to return the subdisplay to the punch point setting screen.

```
>•MANU -AUTO 01:01:17.28
 01:01:08.21 01:01:15.18
```

The cursor may be moved to the bottom line, and the [▲] and [▼] keys used to adjust the punch point times a frame at a time.

9.9.12 Rehearsal in manual mode

This does not differ substantially from setting the punch-in and punch-out points in real time. The [PLAY] key should be pressed first, [PLAY] and [REHE] together to set the punch-in time, and [PLAY] alone to set the punch-out time.

After the punch-out point has been set, the [PARKING] key may be pressed in order to automate the process by selecting AUTO and adjusting the punch points as necessary.

9.9.13 Recording

Punch recording can be carried out either in automatic or manual mode.

Monitoring in both cases is performed as previously specified.

Automatic

Automatic punch recording is carried out in the same way as for a rehearsal. Pressing [PLAY] and [REC] together will locate the tape to the pre-roll point, and play until the punch-in point.

At the punch-in point, the recorder will drop into REC mode, and the red REC indicator above any armed tracks will light steadily. At the punch-out point, the recorder will drop back into playback mode and continue to the post-roll point, from where the tape will be rewound to the pre-roll point.

From this point, the new take may be monitored by playing the tape, or another take may be attempted.

Pressing [STOP] when the tape is playing or recording will abort the take. Pressing [PLAY] and [REC] together at this point will rewind the tape to the preroll position and restart the punch process.

In Automatic mode, the punch-in and punch-out points can be set to 1/4 frame accuracy, and up to ± 9/4 frame.

```
I/O   >IN        OUT
NE    0/4fr      0/4fr
```

Manual

Manual punch recording is carried out by positioning the tape before the desired punch-in point, and pressing [PLAY]. At the punch-in point, [PLAY] should be held down, and [REC] pressed. The red REC indicator above any armed tracks will light.

To punch out, press [PLAY] alone.

Use of the foot switch (MANUAL mode)

A foot switch (Yamaha FC-4 or equivalent) may be connected to the FOOT SWITCH A connector on the rear panel. This may be used instead of the [PLAY] and [REC] combination, and the [PLAY] key in order to punch in and punch out points when it is inconvenient to be near the tape transport keys.

NOTE that punching is carried out when the foot switch is released, not when it is initially depressed. This can be changed using option "13: FOOT SW POLARITY", in the HELP menu.

Use of the foot switch (ALL SAFE)

If the [ALL SAFE] key is on, and AUTO punch mode has been chosen, operation of the foot switch will simulate the [PLAY] +[REHE] and [PLAY] key presses to set the punch points.

9.10 TRACK EDIT

The TRACK EDIT mode works in the same way as the PUNCH IN mode, except that no external inputs may be used.

Automatically timed track bouncing is possible.

If TRACK EDIT mode is entered from any other mode, the display will show:

```
EDIT TASK
ONTINUE from SYNC DUB ↑
```

Pressing ↑ will display the auto/manual screen, identical to the same screen in the PUNCH IN mode.

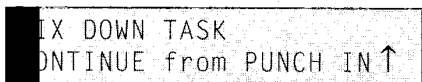If SHIFT NEXT is pressed, the following screens are available:

- Title edit
- Track naming
- Selection of recording tracks
- Selection of mix tracks
- "Channel"-to-track assignment screens for any selected mix tracks†, the stereo returns and the stereo SUB IN
- Monitor selection
- Crossfade time
- Pre- and post-roll times and rehearsal mode
- Auto or manual punch-in selection, and punch time edit screen

† Only those tracks which have been assigned as mix tracks may be assigned to recording tracks. As in the PING-PONG mode, a track may be selected as a recording track and a mix track, i.e. it can be bounced to itself. On the main display channel-to-track assign screen, no track which is not assigned as a mix track may be assigned to a recording track.

All other functions work in exactly the same way as the PUNCH IN mode. See the PUNCH IN section for details.

9.11 MIXDOWN

When the MIXDOWN mode key is pressed, the DMR8 will reconfigure itself, as shown in the main display. The subdisplay will show:

```
IX DOWN TASK
ONTINUE from PUNCH IN ↑
```

When the DMR8 has reconfigured itself after a few seconds (the faders may then move to the last mixdown position), press ↑ to maintain the last track and channel names.

The DMR8 will also reconfigure itself if one of the RECMIX modes is entered from MIXDOWN mode.

The first screen entered is the title edit screen. Edit this if necessary, and then press SHIFT NEXT.

9.11.1 Group shift

As explained in the section on the mixer, there are 24 input channels available on the mixdown stage of the DMR8 (using the fader scroll keys to select between groups of eight faders). This screen allows the assignment of the eight fader blocks.
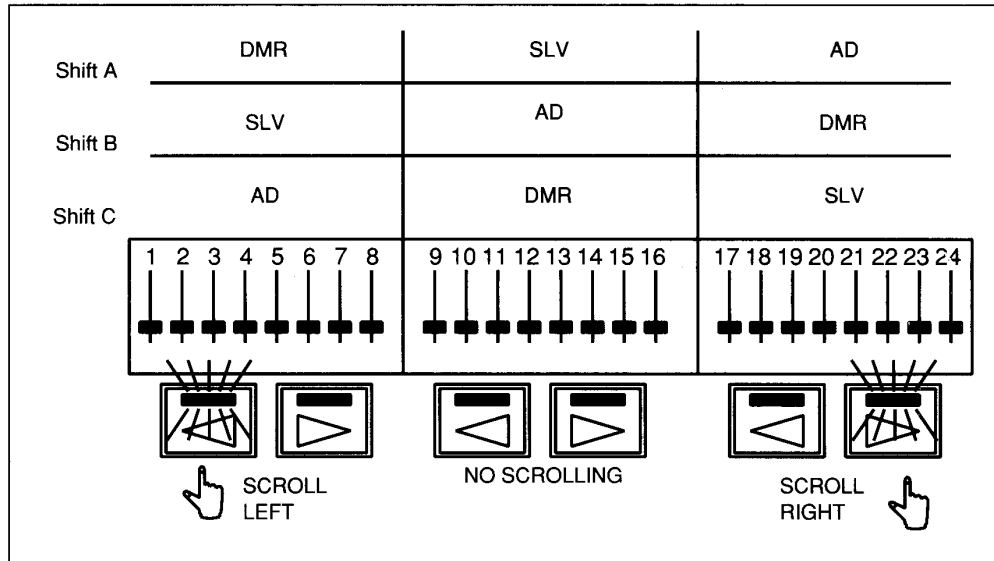
There are three options available, selected with the ⬆ and ⬇ keys. When the selection has been made, press (SHIFT NEXT).

9.11.2 DMR channel names

These channel names refer to the eight tracks of the DMR8's internal recorder. Normally, these will have the same names as previously used in the last REC-MIX operation. They can be changed if necessary, and (SHIFT NEXT) should then be pressed to enter the next screen.

9.11.3 SLV channel names

This allows the naming of the eight inputs received through the SLAVE connector. Normally, these will have the same names as previously used in the last RECMIX operation. They can be changed if necessary, and (SHIFT NEXT) should then be pressed to enter the next screen.

9.11.4 AD channel names

This allows the naming of the eight inputs received through the AD connector. Normally, these will have the same names as previously used in the last REC-MIX operation. They can be changed if necessary, and (SHIFT NEXT) should then be pressed to enter the next screen.

9.11.4a 2CH REC TR select

In mixdown mode, a pair of tape tracks can be used to record the stereo mix: 1&2, 3&4, 5&6, or 7&8. The left channel is recorded to the odd channel, and the right channel is recorded to the even channel. This mix can be monitored via the CUE outputs. The recording level is set using the CUE master fader, and the level is indicated on the cue level meters. Note: this function can be set only when group "Shift A" is selected, i.e. scroll left, channels 1 through 8 are the tape returns from the DMR8's internal tape transport.

```
2CH REC TR SELECT
1&2   3&4   5&6   7&8
```

9.11.5 Operation in MIXDOWN mode

In MIXDOWN mode the [REHE] key has one function: when pressed, it will return the tape to the point where the last position where the [PLAY] key was pressed. This feature is available when the tape is playing or stopped (not from fast forward, cue, review or rewind modes).

9.12 ALL ERASE

When the [ALL ERASE] key is pressed, the following will be shown on the subdisplay:

```
*** ALL ERASE ***
  REC + PLAY KEY
```

Pressing the [REC] and [PLAY] key together will erase all tracks: the eight PCM tracks, the two analog AUX tracks, the control track, including indexes, and the timecode track.

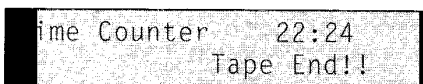While the ALL ERASE process is taking place, the subdisplay will show:

```
*** ALL ERASE ***
            01:20
```

showing the absolute time position as determined by the tape tachometer mechanism. When the tape is stopped, the display will show:

```
*** END      ***
            02:30
```

The following display will be shown when the end of the tape is reached:

```
Time Counter    22:24
         Tape End!!
```

Adjustment, monitoring and metering of input signals can still be carried out while the tape is being erased.

9.13 ALL SAFE

As the name suggests, the (ALL SAFE) key is a way of temporarily making any armed tracks safe. When this key is on (lit), the RDY indicators above any armed tracks will flash.

When ALL SAFE is on, recording and rehearsal modes are unavailable for recording (this is indicated by the REC indicators for all armed tracks flashing), and these modes may be used to rehearse and set monitor and CUE levels.

9.14 AUX tracks

The AUX tracks are two low-fidelity analog tracks provided for audio cues, click tracks etc. In ALL REC mode, the default is for them to be armed.

9.14.1 [AUX TRACK] key

At any time in the RECMIX modes, the (AUX TRACK) key may be pressed to show the following on the subdisplay:

```
UX REC    1  2
ELECT    >-  -
```

Use the (←) and (→) cursor keys to select one of the two AUX tracks, and the (↑) key to arm ("o") or the (↓) key to disarm ("-") them. The current armed status of the AUX tracks is also indicated on the RDY indicators above the meters.

Armed AUX tracks may receive the talkback signal when the (SLATE) key is depressed.

9.14.2 Connections

Normally, the signal to the AUX tracks will come through the phono (RCA) connectors on the rear panel. They can be replayed separately through the AUX OUT phono connectors, for connection to a "click-to-clock" or similar device.
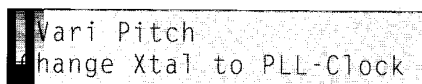
9.14.3 Monitoring

The AUX tracks can also be monitored through the C-R and CUE busses in RECMIX modes. The (AUX) MONITOR key must be on (lit). The volume of the AUX tracks is adjusted using faders 7 and 8 in RIGHT SCROLL mode (see the mixer section for details).

9.15 Varispeed (Vari pitch)

The DMR8 is capable of replaying the tape at ±10% of the original speed. For varispeed to be accessed, the DMR8 must be using the PLL as a clock source. Use the INITIAL SET menus to select this. PLL is automatically selected if the DMR is a timecode slave.
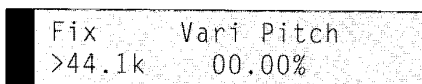
To select the varispeed option, press the [VARI PITCH] key (aka [S2]). If the clock source is the internal crystal, the display will show:

```
Vari Pitch
hange Xtal to PLL-Clock
```

Use INITIAL SET to change this. However, if PLL has already been selected, the display will show:

```
Fix      Vari Pitch
>44.1k    00.00%
```

The value of the left field depends on the currently-selected sampling frequency. To enable varispeed, move the cursor right (ASSIGN•EDIT ⊡ key) to the percentage field. Using the ⊡ and ⊡ keys, the speed can be adjusted ±10% in 0.05% steps.

To return the DMR8 to normal speed, use ⊡ to place the cursor under "Fix".

If a foot controller (YAMAHA FC-7 or equivalent) is connected to the FOOT VOLUME B connector on the rear panel, this can be used to alter the tape speed when the cursor is in the Vari Pitch field.