

480L

Digital Effects System

Classic Cart Programs

This manual contains complete information on the 480L Classic Cart programs, a collection of four algorithms and 40 supporting programs which bring the essence of the 224XL to the 480L. The four algorithms are: Concert Hall, Rich Plate, 6-Voice Chorus, and a newly-developed 1/3 Octave Multiband Delay.

The Classic Cart contains a wide variety of programs which can be used with many different signal sources. Many programs have names, such as Vocal Plate or Reggae Hall, which indicate the type of instrument or voice source and/or rhythm feel which might be appropriate.

Programs in the Classic Cart will run in any system configuration (single, mono split, stereo split, or cascade) in any machine (A, B, or both) in any 480L running Version 4 system software.

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Table of Contents

1. Bank 18: the Concert Hall Programs	1-1
About the Concert Hall Parameters	1-2
Bank 18 - Concert Hall	1-4
2. Bank 19: the Rich Plate Programs	2-1
About the Rich Plate Parameters	2-2
Bank 17 - Rich Plate	2-3
3. Bank 20: the Chorus Programs	3-1
About the Chorus Parameters	3-2
Bank 20 - Chorus	3-3
4. Bank 21: the Multi-Band Programs	4-1
About the Multi-Band Parameters	4-2
Bank 21 - Multi-Band	4-3

Bank 18: the Concert Hall Programs

In this chapter we'll discuss the classic
Concert Hall programs
created for the 480L.

Page One					
RTL Low Freq Rvb Time	RTM Mid Freq Rvb Time	XOV Crossover	RTC Reverb Time Cutoff	DEP Depth	PDLY Predelay
Page Two					
CHO Chorus	HFC Hi Frequency Cut	DIF Diffusion	DEF Definition	SIZ Size	MIX Wet/Dry Mix
Page Three					
LV1 Pre-echo Level	LV2 Pre-echo Level	LV3 Pre-echo Level	LV4 Pre-echo Level	LV5 Pre-echo Level	LV6 Pre-echo Level
Page Four					
DL1 Pre-echo Delay	DL2 Pre-echo Delay	DL3 Pre-echo Delay	DL4 Pre-echo Delay	DL5 Pre-echo Delay	DL6 Pre-echo Delay

Concert Hall Parameters

The Concert Hall Program

The Concert Hall program consists of two parts; the reverberator and two 3-voice stereo pre-echo delay lines. The six independent pre-echoes are non-diffused. The reverberator has controls affecting both low frequency and mid frequency decay times. A gentle 6dB/octave crossover controls the frequency division. Reverb Treble Contour (RTC), adjusts high frequency damping within the reverberator. Another high frequency filter, High Frequency Cut (HFC) is functionally located at the output of the entire program. Setting HFC to some high value will pass the pre-echoes through a higher bandpass; if RTC is set to some low value, the reverb content will be filtered lower as the reverb tail fades away. Think of RTC as high frequency room absorption. The Size parameter (SIZ) controls overall reverb density. Medium to large hall emulation should have size values of 28 or higher.

About the Concert Hall Parameters

Page One

RTL (Low-Frequency Reverb Time)

RTL sets the reverb time for low-frequency signals, as a multiplier of the RTM parameter. For example, if RTL is set to 2X, and RTM is set to two seconds, the low frequency reverb time will be four seconds. For a natural-sounding hall ambience, we recommend values of 1.5X or less.

RTM (Mid-Frequency Reverb Time)

RTM sets the reverb time for mid-frequency signals *when the signal stops*. Because low-frequency reverb time (RTL) is a multiplier of RTM, RTM acts as a master control for the stopped reverb time. The actual value set for RTM varies with the setting of SIZ. SIZ should be adjusted before RTM.

XOV (Crossover)

XOV sets the frequency at which the transition from RTL to RTM takes place. XOV should be set at least two octaves higher than the low frequency you want to boost. For example, to boost a signal at 100 Hz, set XOV to 400 Hz (This setting works well for classical music). XOV works best around 500 for boosting low frequencies, and around 1.5 kHz for cutting low frequencies.

RTC (Reverb Time High Frequency Cutoff)

RTC sets the frequency above which sounds decay at a progressively faster rate. It filters all the sound except the preechoes. When set relatively low, it gives a darker tone to the reverberation, simulating the effect of air absorption in a real hall. This also helps keep the ambience generated by the program from muddying the direct sound.

DEP (Depth)

DEP positions the listener relative to the sound source. When DEP is low, reverb attack is fast and strong. Increasing DEP moves the listener position toward the rear of the hall.

PDLY (Predelay)

PDLY sets the amount of time which elapses between input of signal and the onset of reverberation. Under natural conditions, the amount of predelay depends on the size and construction of the acoustic space and the relative position of the sound source and the listener(s). PDLY attempts to duplicate this phenomenon and is used to create a sense of distance and volume within an acoustic space. Relatively long PDLY settings place the reverberant field behind rather than on top of the input material. Extremely long PDLY settings produce unnatural sounds that often prove interesting.

A sense of continuity between source and reverb is maintained up to around 40 ms of predelay, after which the sound begins to separate into distinct patterns; however, large values of PDLY can effectively give the impression of large size if early reflections are used to fill in the spaces between input and the delayed reverberation.

Page Two

CHO (Chorus)

CHO randomly pitch shifts the reverb output. This helps reduce long live notes and coloration. High amounts of CHO will sound very unnatural, but could be interesting if the reverb time is kept short.

HFC (High Frequency Cutoff)

HFC sets the frequency above which a 6 dB/octave low-pass filter attenuates the processed signal. It attenuates both preechoes and reverberant sound. High frequencies are often rolled off with this parameter, resulting in more natural sounding reverberation.

DIF (Diffusion)

DIF affects the initial early reflection density of the reverb. It does not affect the pre-echoes. Realistic sounding halls have a moderate amount diffusion.

DEF (Definition)

DEF controls the articulation of the reverb delay loops. Low amounts of definition and depth will produce a "wavy" reverb effect.

SIZ (Size)

SIZ sets the rate of buildup of diffusion after the initial period (which is controlled by DIF). Generally, you should set SIZ to approximate the size of the acoustic space you are trying to create. The size in meters is roughly equal to the longest dimension of the space. Moving SIZ while a signal is present momentarily mutes the reverb signal.

MIX (Wet/Dry Mix)

MIX controls the ratio of direct vs. effect signal in the output from a program. When the 480L is patched into a console, this control should almost always be set to 100% wet. When an instrument is plugged directly into a 480L, or when the Cascade configuration is in use, a setting between 45 and 60% is a good starting point for experimentation with this parameter.

MIX is a sine/cosine fade. Practically speaking, this means that MIX can be adjusted over its range with little or no change in output level. When you control mix at the console, adding effect to the dry signal increases overall level.

Page Three

The six pre-echoes allow the construction of discrete echoes simulating stage reflections. Typical classical recording should be free of pre-echoes; pop recordings may be different. There are separate controls for Level and Delay of the pre-echoes, labeled LV and DL, respectively.

LV 1-6 (Pre-Echo Levels)

Preechoes can best be understood by visualizing a stage where the early reflections are the sounds emanating from the rear and side stage walls directly after the sound from the stage. Usually the rear stage wall reflection is earlier and louder than those from the two side walls.

The preecho reflection parameters change the perceived locations of reflecting surfaces surrounding the source. The pre-echo level controls adjust the loudness of the reflection.

Page Four

DL 1-6 (Pre-Echo Delays)

For each of the LV parameters, there is a corresponding DL parameter. Each sets the delay time in ms for one of the preechoes. Pre-echo delays are not affected by PDLY, so pre-echoes can be placed to occur before reverberation starts.

Programs — Bank 18: Concert Hall

1 Concert Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.5X	1.36s	621Hz	4.61k	20	0ms
CHO	HFC	DIF	DEF	SIZ	MIX
9	6.88k	51	66	35M	100%
LV1	LV2	LV3	LV4	LV5	LV6
Off	Off	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
0ms	0ms	0ms	0ms	0ms	0ms

2 Medium Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.2X	1.20s	752Hz	5.06k	20	8.23ms
CHO	HFC	DIF	DEF	SIZ	MIX
9	7.49k	69	50	27M	100%
LV1	LV2	LV3	LV4	LV5	LV6
Off	Off	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
0ms	0ms	0ms	0ms	0ms	0ms

3 Small Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.2X	1.04s	493Hz	6.31k	32	6.15ms
CHO	HFC	DIF	DEF	SIZ	MIX
9	6.88kHz	73	50	23M	100%
LV1	LV2	LV3	LV4	LV5	LV6
Off	Off	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
0ms	0ms	0ms	0ms	0ms	0ms

4 Gold Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.5X	1.50s	493Hz	6.88k	50	18.55ms
CHO	HFC	DIF	DEF	SIZ	MIX
10	7.18k	82	34	32M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-1dB	-3dB	OFF	-1dB	-3dB	Off
DL1	DL2	DL3	DL4	DL5	DL6
70ms	10ms	0ms	66ms	20ms	0ms

5 Guitar Hall

RTL	RTM	XOV	RTC	DEP	PDLY
3.0X	1.06s	493Hz	10.12k 63	63ms	35.02ms
CHO	HFC	DIF	DEF	SIZ	MIX
10	10.5k	46	38	19M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-1dB	Off	Off	-1dB	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
64ms	0ms	0ms	60ms	0ms	0ms

6 Reggae Hall

RTL	RTM	XOV	RTC	DEP	PDLY
2.0X	.98s	885k	5.06k	27	0ms
CHO	HFC	DIF	DEF	SIZ	MIX
11	10.1k	50	15	30M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-6dB	-6dB	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
36ms	38ms	0ms	0ms	Off	Off

7 Reflex Hall

RTL	RTM	XOV	RTC	DEP	PDLY
2.0X	0.77s	243Hz	4.61k	50	6.15ms
CHO	HFC	DIF	DEF	SIZ	MIX
9	6.31k	52	41	29M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-6dB	Off	Off	-7dB	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
120ms	0ms	0ms	100ms	0ms	0ms

8 Bright Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.2X	1.59s	367Hz	7.49k	25	10.31ms
CHO	HFC	DIF	DEF	SIZ	MIX
9	10.5k	85	63	34M	100%
LV1	LV2	LV3	LV4	LV5	LV6
Off	Off	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
40ms	30ms	0ms	0ms	0ms	0ms

9 Dark Hall

RTL	RTM	XOV	RTC	DEP	PDLY
1.5X	1.95s	367Hz	3.4k	21	18.5ms
CHO	HFC	DIF	DEF	SIZ	MIX
10	3.21k	80	55	36M	100%
LV1	LV2	LV3	LV4	LV5	LV6
Off	Off	Off	Off	Off	Off
DL1	DL2	DL3	DL4	DL5	DL6
0ms	0ms	0ms	0ms	0ms	0ms

0 Oliver's Well

RTL	RTM	XOV	RTC	DEP	PDLY
2.0X	2.26s	885Hz	4.6k	54	41.2ms
CHO	HFC	DIF	DEF	SIZ	MIX
10	3.7k	90	38	37M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-6dB	-6dB	-4dB	-4dB	-2dB	-2dB
DL1	DL2	DL3	DL4	DL5	DL6
36ms	42ms	14ms	24ms	30ms	18ms

1 Concert Hall

This preset combines all the original algorithm elements of the 224 Concert Hall. The size is set large with the depth set halfway back in the hall. If more immediate reverb impact is needed set the depth control to 10 or less. The reverb tail is set to match the Room size. Changing room size will vary the reverb time automatically.

2 Medium Hall

This preset takes all the elements of Large Hall and brings them a bit closer in. A good starting point for strings and BG vocals.

3 Small Hall

Smaller still. Adds a nice “envelope” around an acoustic piano track.

4 Gold Hall

Combines more bass and treble response as well as a “deeper” position in the hall. Two pairs of pre-echoes liven up the sound. The chorusing parameter is set a bit higher. Ballad type “pop” vocals work well here.

5 Guitar Hall

Any guitar, any time. Stronger bass and brighter than Gold Hall, but a smaller size and shorter reverb time. Two pre-echoes simulate wall reflections.

6 Reggae Hall

More of everything. Lots of undulation and chorusing to the reverb tail.

7 Reflex Hall

Quite an unnatural space. A bit tubby and deep with a short reverb tail. Two strong pre-echoes create the hard reflections. This preset was originally made with BG vocals although we suggest trying it with short staccato sounds. Adjust pre-delay to match the tempo.

8 Bright Hall

Very similar to Concert Hall except considerably brighter. No pre-echoes.

9 Dark Hall

A dark version of Concert Hall with a longer reverb tail and a bit more chorusing.

0 Oliver's Well

A variant of Dark Hall with all 6 pre-echoes active. Big and rich sounding. Use to “deepen” any sound source... about 100 feet worth.

Bank 19: the Rich Plate Programs

In this chapter we'll discuss the classic
Rich Plate programs
created for the 480L.

Page One					
RTL Low Freq Rvb Time	RTM Mid Freq Rvb Time	XOV Crossover	RTC Rvb Time Contour	ATK Reverb Attack	PDLY Predelay
Page Two					
	HFC Hi Freq Cutoff	DIF Diffusion	DCO Decay Optimization	SIZ Size	MIX Wet/Dry Mix
Page Three					
LV1 Pre-echo Level	LV2 Pre-echo Level	LV3 Pre-echo Level	LV4 Pre-echo Level	LV5 Pre-echo Level	LV6 Pre-echo Level
Page Four					
DL1 Pre-echo Delay	DL2 Pre-echo Delay	DL3 Pre-echo Delay	DL4 Pre-echo Delay	DL5 Pre-echo Delay	DL6 Pre-echo Delay

The Rich Plate Program

The Rich Plate algorithm is designed to simulate metal plate reverberation devices popular in the 70's and 80's. Typically, plates are bright and highly diffused.

Plates are characteristically colored in their reverberation content. Six pre-echoes similar to those in the Concert Hall program can be utilized to create hard non-diffused reflections. Note, however, that Echo Level 3 gets its feed from the right input, and Echo Level 4 gets its feed from the left.

Low frequency and mid frequency reverb times are independently adjustable with a cross-over control. Size controls reverb density. Since plates characteristically have high density, most realistic size settings should be between 19 and 28. Of course, other settings can be used for more extreme reverb effects.

About the Parameters

Page One

RTL (Low-Frequency Reverb Time)

RTL sets the low-frequency reverb multiplier.

RTM (Mid-Frequency Reverb Time)

RTM sets the mid frequency reverb time.

XOV (Crossover)

XOV set the crossover point between RTL and RTM.

RTC (Reverb Time Contour)

RTC adjusts the reverb time high frequency contour. This controls shortens the running reverb time above the selected frequency.

ATK (Reverb Attack)

ATK sets the explosiveness of the reverb envelope. Lesser value settings have the sharpest attack.

PDLY (Predelay)

PDLY sets a delay line prior the reverberator.

Page Two**HFC (High Frequency Contour)**

HFC sets the overall reverb and pre-echo frequency response.

DIF (Diffusion)

DIF sets the diffusion amount.

DCO (Decay Optimization)

DCO or decay optimization has two states: reverb and effects. In the Reverb mode, changing SIZ will change the reverb time as well. In the Effect mode, changing SIZ has no natural affect on the running reverb time.

SIZ (Size)

SIZ sets the initial reverb density.

MIX (Wet/Dry Mix)

MIX adjusts the ratio of Dry (unprocessed) digital audio with the Wet digital audio bus.

Page Three**LV 1-6 (Pre-Echo Levels)**

LV1-LV6 adjust the level of the discrete pre-echoes. These pre-echoes are not diffused.

Page Four**DL1-6 (Pre-Echo Delays)**

DL1-DL6 adjust the delay of each pre-echo. Maximum value is 510 milliseconds

Programs — Bank 19: Rich Plate**1 Large Plate**

RTL	RTM	XOV	RTC	ATK	PDLY
0.8X	1.94s	243Hz	6.31k	0	10ms
	HFC	DIF	DCO	SIZ	MIX
	14.1k	90	0	26M	100%
LV1	LV2	LV3	LV4	LV5	LV6
OFF	OFF	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
0ms	0ms	0ms	0ms	0ms	0ms

2 Drum Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.0X	1.14s	243Hz	8.15k	17	14ms
	HFC	DIF	DCO	SIZ	MIX
	14.1k	44	0	20M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-3dB	-3dB	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
6.0ms	16ms	0ms	0ms	0ms	0ms

3 Vocal Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.2X	1.43s	493Hz	5.78k	50	36ms
	HFC	DIF	DCO	SIZ	MIX
	12.1k	58	0	27M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-5	-5	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
24ms	40ms	0ms	0ms	0ms	0ms

4 Vox Plate #2

RTL	RTM	XOV	RTC	ATK	PDLY
1.2x	1.19s	621Hz	4.8k	67	60ms
	HFC	DIF	DCO	SIZ	MIX
	16.9k	70	0	25M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-3	-3	-5	-5	-8	-8
DL1	DL2	DL3	DL4	DL5	DL6
24m	40m	74m	58m	106m	116m

5 Slap Plate

RTL	RTM	XOV	RTC	ATK	PDLY
0.4x	4.00s	1.29k	3.5k	0	8m
	HFC	DIF	DCO	SIZ	MIX
	14.9k	93	0	20M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-4	-1	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
50m	34m				

6 Guitar Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.2x	1.41s	752Hz	10.1k	9	44m
	HFC	DIF	DCO	SIZ	MIX
	16.9k	99	0	23M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-4	-1	-7	-7	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
50m	34m	160m	142m	0m	0m

7 Short Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.0x	1.08s	752Hz	6.0k	0	4m
	HFC	DIF	DCO	SIZ	MIX
	13.4s	87	0	19M	100%
LV1	LV2	LV3	LV4	LV5	LV6
OFF	OFF	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
0m	0m	0m	0m	0m	0m

8 Horn Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.0x	1.21s	752Hz	5.0k	20	12m
	HFC	DIF	DCO	SIZ	MIX
	12.1k	96	0	19	100%
LV1	LV2	LV3	LV4	LV5	LV6
OFF	OFF	OFF	OFF	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
0m	0m	0m	0m	0m	0m

9 Echo Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.2x	1.68s	752Hz	5.53k	31	18m
	HFC	DIF	DCO	SIZ	MIX
	12.1k	41	0	23M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-5	-5	-10	-10	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
230m	224m	460m	440m	0m	0m

0 Silver Plate

RTL	RTM	XOV	RTC	ATK	PDLY
1.0x	2.60s	752	8.86k	37	14m
	HFC	DIF	DCO	SIZ	MIX
	19.4k	99	0	35M	100%
LV1	LV2	LV3	LV4	LV5	LV6
-8	-8	-12	-12	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
62m	62m	96m	96m		

Program Descriptions**1 Large Plate**

Standard sounding Rich Plate preset. The low-frequency Rt runs at a slightly shorter rate than the mid-frequencies. This is a very diffuse preset with a moderate size. An excellent starting point to build other presets.

2 Drum Plate

A smaller size which sets a denser reverb tail. Some pre-echoes have been added to strengthen the initial sound source.

3 Vocal Plate

This version has a larger size with a softer attack. Slightly darker than a traditional plate, but great for making vocals cut through a mix. Adjust RTM to match the mood of the music.

4 Vox Plate #2

A bit duller and softer than Vocal Plate. All 6 pre-echoes are used giving a delay and reverb combination.

5 Slap Plate

Bright and thin. Good for dull sound sources or low resolution samples. Two pre-echoes are added for impact.

6 Guitar Plate

This is very dense and highly diffused preset. The inclusion of 4 pre-echoes, two of which are set near 150ms, make a very good enhancement to guitar tracks.

7 Short Plate

A very short plate which will create a very nice space around any track.

8 Horn Plate

Excellent for horn blatts and stabs. Very smooth, but also very dense. No pre-echoes, for a straight ahead reverb effect.

9 Echo Plate

Reverb plus long echoes. A little extra kick with a difference. If the echoes are a little too loud, go to page 3 and pull back the levels.

0 Silver Plate

A very large plate with lots of diffusion and brightness. The pre-echoes liven up the sound even more. Good on singular tracks.

Bank 20: the 6-Voice Chorus Programs

In this chapter we'll discuss the classic
6-Voice Chorus programs
created for the 480L.

Page One					
DIF Diffusion	DOF Diffusion On/Off	HFC Hi Frequency Cut	RND Randomization	DLY Master Delay	MIX WetDry Mix
Page Two					
LV1 Voice 1 Level	LV2 Voice 2 Level	LV3 Voice 3 Level	LV4 Voice 4 Level	LV5 Voice 5 Level	LV6 Voice 6 Level
Page Three					
DL1 Voice 1 Delay	DL2 Voice 2 Delay	DL3 Voice 3 Delay	DL4 Voice 4 Delay	DL5 Voice 5 Delay	DL6 Voice 6 Delay
Page Four					
FB1 Feedback 1	FB2 Feedback 2	FB3 Feedback 3	FB4 Feedback 4	FB5 Feedback 5	FB6 Feedback 6
Page Five					
PAN1 Voice 1 Pan	PAN2 Voice 2 Pan	PAN3 Voice 3 Pan	PAN4 Voice 4 Pan	PAN5 Voice 5 Pan	PAN6 Voice 6 Pan

The 6-Voice Chorus Program

This program consists of two stereo delay lines, each with three delay taps. Each tap has adjustable level, delay, feedback, and pan. At the input of the delay lines there is a stereo all-pass diffusor, followed by a 6dB/octave low-pass filter. Feedback paths are picked off pre-fader, returning to the input before the rolloff filter, thus re-filtering each delay recirculation. Voice taps 3 and 4 are crossed to opposite inputs.

The chorusing element, COR, controls the amount of randomization in each voice. Increasing COR increases both the rate and the depth of the randomization.

The DLY parameter is a master delay which adds a total offset to all six delay voices.

Programs — Bank 20: 6-Voice Chorus

1 Woo-Woo

DIF	DOF	ROL	RND	DLY	MIX
49	1	11.0KHZ	12	3.91ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-5	-7	-9dB	-9	-7	-5dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
6.40ms	9.65ms	5.07ms	6.73ms	8.98ms	4.57ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
-31	-33	-22	-25	-32	-31
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	30	50	50	70	Right

2 6Vc Korus

DIF	DOF	ROL	RND	DLY	MIX
17	1	15.88k	11	0.0ms	100
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-4dB	-5dB	-4dB	-5dB	-5dB	-5dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
34.86ms	88.77ms	23.12ms	114.73ms	80.62ms	140.10ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
0	0	0	0	0	0
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Right	63	Left	Right	75	Left

3 3-Voice Chorus

DIF	DOF	ROL	RND	DLY	MIX
99	1	7.18KHZ	12	0.0ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-1dB	Off	-3dB	-8dB	Off	Off
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
35.94ms	0.0ms	30.78ms	66.80ms	0.0ms	0.0ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
27	0	26	-36	0	0
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	Right	Right	50	Right	Right

4 4-Voice Chorus

DIF	DOF	ROL	RND	DLY	MIX
14	1	15.88KHZ	11	0.0ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-1dB	-4dB	Off	Off	-4dB	-1dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
31.69ms	15.39ms	0.0ms	0.0ms	10.23ms	21.63ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
6	-10	0	0	-10	8
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	25	50	50	75	Right

5 Ekoz & Korus

DIF	DOF	ROL	RND	DLY	MIX
89	1	7.49KHZ	12	323.98ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-4dB	-4dB	-4dB	-4dB	-4dB	-4dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
205.67ms	226.22ms	5.07ms	6.73ms	226.22ms	210.82ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
-21	-14	12	-13	14	21
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	Left	Left	Right	Right	Right

6 Vocal Chorus

DIF	DOF	ROL	RND	DLY	MIX
81	1	6.593KHZ	13	8.15ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
Full	-14dB	Off	Off	-14dB	Full
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
31.69ms	46.25ms	0ms	0ms	56.49ms	21.63ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
40	-30	0	0	-30	40
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	30	Left	Right	70	Right

7 Soft Echoes

DIF	DOF	ROL	RND	DLY	MIX
38	1	3.03KHZ	12	0.0ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
Full	-2dB	-14dB	-14dB	-2dB	Full
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
10.73ms	15.39ms	483.39	437.13ms	10.23ms	24.21ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
8	-10	25	25	-10	8
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
50	50	Left	Right	50	50

8 Hard Echorus

DIF	DOF	ROL	RND	DLY	MIX
0	0	12.17KHZ	13	0.0ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-2dB	-6dB	-5dB	-5dB	-6dB	-2dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
0.0ms	380.55ms	51.41ms	41.10ms	323.98ms	0.0ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
8	-22	27	27	22	8
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
50	Left	Left	Right	Right	50

9 Canyon Korus

DIF	DOF	ROL	RND	DLY	MIX
88	1	3.21KHZ	12	323.98ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-6dB	-8dB	Full	Full	-8dB	-6dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
205.67ms	596.54ms	25.70ms	25.70	592.38ms	210.82
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
19	-30	-25	-25	30	-19
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
50	Right	54	45	Left	50

0 Tuff Stuff

DIF	DOF	ROL	RND	DLY	MIX
0	0	Full	13	0.0ms	100%
LVL1	LVL2	LVL3	LVL4	LVL5	LVL6
-5dB	-5dB	-5dB	-5dB	-5dB	-5dB
DLY1	DLY2	DLY3	DLY4	DLY5	DLY6
0.0ms	0.0ms	0.0ms	0.0ms	0.0ms	0.0ms
FBK1	FBK2	FBK3	FBK4	FBK5	FBK6
16	18	-20	-20	18	16
PAN1	PAN2	PAN3	PAN4	PAN5	PAN6
Left	Left	Left	Right	Right	Right

Program Descriptions**1 Woo-Woo**

This preset is a very aggressive “flange” type of effect. Lots of movement with a moderate amount of diffusion. Just on the edge of howling feedback. This preset will continuously vary the timbre of any steady tone sound source. Push the master dly parameter to create echoes in rhythm with the track. Heavy, heavy effect for guitar solos.

2 6-Voice Korus

This baseline effect incorporates all 6 voices evenly panned across the stereo output. A high amount of diffusion “smears” the input signal. Great effect on vocals.

3 3-Voice Chorus

This preset is a 3 voice version of 6 voice. Voices 1 and 3 are panned hard left - right while voice 4 at nearly double the delay is panned up the middle. Diffusion set real high. A nice rolling effect on brass tracks if mixed under.

4 4-Voice Chorus

Less wobble and a bit more doubling with far less diffusion.

5 Ekoz & Korus

The first 3 voices panned left and 4 thru 6 panned right. Kind of a “combo” platter. Move the master dly to match tempo.

6 Vocal Chorus

4 voices of heavy, diffused chorusing. For BG vocals only.

7 Soft Echoes

This preset offers a gentle combination of diffused, filtered chorusing and soft distinct echoes. Lead vocal effect for female vox. Use master dly for tempo.

8 Hard Echoes

More aggressive. No diffusion with a higher chorusing value.

9 Canyon Korus

Chorused echoes coming from every direction. If monitored through surround decoder watch out!!!!

0 Tuff Stuff

No delay, no diffusion, just strong chorusing all the time. Knock you in the face effect.

Bank 21: the Multi-Band Delay Programs

In this chapter we'll discuss the classic
Multi-Band Delay programs
created for the 480L.

Page One					
FR1 Frequency 1	FR2 Frequency 2	FR3 Frequency 3	FR4 Frequency 4	FR5 Frequency 5	FR6 Frequency 6
Page Two					
DL1 Delay 1	DL2 Delay 2	DL3 Delay 3	DL4 Delay 4	DL5 Delay 5	DL6 Delay 6
Page Three					
LV1 Level 1	LV2 Level 2	LV3 Level 3	LV4 Level 4	LV5 Level 5	LV6 Level 6
Page Four					
PN1 Pan 1	PN2 Pan 2	PN3 Pan 3	PN4 Pan 4	PN5 Pan 5	PN6 Pan 6
Page Five					
FB1 Feedback 1	FD1 Feedback 1 Delay	FB4 Feedback 4	FD4 Feedback 4 Delay		

The Multiband Delays Program

This program utilizes two stereo delay lines each 1478ms long (1354ms @ 48k). There are three voices per delay line. Each voice is band-pass tunable in 1/3 octave sections, starting at 50Hz, and continuing to 10kHz. Each voice additionally has control over level, delay, and pan.

Voices 1 and 4 have their own feedback path, with separate delay adjustments. Feedback paths are post-fader and post-EQ, returning to each left and right input respectively.

Programs — Bank 21: Multiband Delays

1 Closet

FR1	FR2	FR3	FR4	FR5	FR6
250Hz	200Hz	50Hz	160Hz	100Hz	2.0k
DL1	DL2	DL3	DL4	DL5	DL6
10.64	15.97	0.0m	26.62	37.27	0.0m
LV1	LV2	LV3	LV4	LV5	LV6
-2dB	-1dB	OFF	FULL	FULL	OFF
PN1	PN2	PN3	PN4	PN5	PN6
25	75	LEFT	50	50	RIGHT
FB1	FD1	FB4	FD4		
-38%	9.81m	-34%	15.47m		

2. Telephone

FR1	FR2	FR3	FR4	FR5	FR6
1.0k	1.6k	50	2.0	50	50
LV1	LV2	LV3	LV4	LV5	LV6
-2	-1	OFF	FULL	OFF	OFF
DL1	DL2	DL3	DL4	DL5	DL6
5.32m	8.32m	0.0m	26.62	0.0m	0.0m
PN1	PN2	PN3	PN4	PN5	PN6
35	65	LEFT	50	LEFT	RIGHT
FB1	FD1	FB4	FD4		
-31%	3.24m	-39%	4.90m		

3 Phartage

FR1	FR2	FR3	FR4	FR5	FR6
160Hz	250Hz	400Hz	630Hz	800Hz	1.2k
DL1	DL2	DL3	DL4	DL5	DL6
20.05	40.01	60.07	80.03	100.08	120.05
LV1	LV2	LV3	LV4	LV5	LV6
FULL	FULL	-1dB	-2dB	-1dB	-1dB
PN1	PN2	PN3	PN4	PN5	PN6
12	30	50	50	70	88
FB1	FD1	FB4	FD4		
0%	0m	0%	0m		

4 Stadium

FR1	FR2	FR3	FR4	FR5	FR6
500Hz	2.5k	800Hz	630Hz	2.5k	1.0k
DL1	DL2	DL3	DL4	DL5	DL6
426m	101.3	117.3	469.3	105.4	122.6
LV1	LV2	LV3	LV4	LV5	LV6
-8	-3	FULL	-8	-3	FULL
PN1	PN2	PN3	PN4	PN5	PN6
40	50	30	60	50	70
FB1	FD1	FB4	FD4		
+12%	517.3	-12%	522.6ms		

5 Downstairs

FR1	FR2	FR3	FR4	FR5	FR6
800Hz	1.2kHz	2.0kHz	200Hz	400Hz	630Hz
DL1	DL2	DL3	DL4	DL5	DL6
42.5m	26.6m	15.9m	101.3m	79.9m	63.9m
LV1	LV2	LV3	LV4	LV5	LV6
-2dB	-2dB	-1dB	-3dB	-2dB	-2dB
PN1	PN2	PN3	PN4	PN5	PN6
50	35	50	50	65	50
FB1	FD1	FB4	FD4		
+35%	26.6m	-34%	37.27mm		

6 Bandsweep

FR1	FR2	FR3	FR4	FR5	FR6
160Hz	500Hz	1.0kHz	1.6kHz	3.1kHz	6.3kHz
DL1	DL2	DL3	DL4	DL5	DL6
0.0m	100m	200m	300m	400m	500m
LV1	LV2	LV3	LV4	LV5	LV6
FULL	-1dB	-2dB	-2dB	-1dB	FULL
PN1	PN2	PN3	PN4	PN5	PN6
LEFT	20	40	60	80	RIGHT
FB1	FD1	FB4	FD4		
+0%	501m	+0%	501m		

7 BassEchoes

FR1	FR2	FR3	FR4	FR5	FR6
160Hz	1.6kHz	250Hz	120Hz	1.6kHz	400Hz
DL1	DL2	DL3	DL4	DL5	DL6
42.5m	47.9m	53.3m	42.5m	47.9m	53.3m
LV1	LV2	LV3	LV4	LV5	LV6
FULL	-1dB	FULL	FULL	-1dB	FUL
PN1	PN2	PN3	PN4	PN5	PN6
LEFT	50	50	RIGHT	50	50
FB1	FD1	FB4	FD4		
+30	373.3	+30	378.6		

8 BandBounce

FR1	FR2	FR3	FR4	FR5	FR6
315Hz	2.0kHz	630Hz	500Hz	2.5kHz	630Hz
DL1	DL2	DL3	DL4	DL5	DL6
704m	352m	53.3m	704m	352m	56.9m
LV1	LV2	LV3	LV4	LV5	LV6
-4dB	FULL	-8dB	-4dB	FULL	-8dB
PN1	PN2	PN3	PN4	PN5	PN6
LEFT	RIGHT	50	LEFT	RIGHT	50
FB1	FD1	FB4	FD4		
+38%	704m	+38%	704m		

9 Whispers

FR1	FR2	FR3	FR4	FR5	FR6
2.0kHz	1.6kHz	4.0kHz	2.0kHz	1.2kHz	4.0kHz
DL1	DL2	DL3	DL4	DL5	DL6
117m	213m	410m	111m	223m	426m
LV1	LV2	LV3	LV4	LV5	LV6
PN1	PN2	PN3	PN4	PN5	PN6
-6dB	-2dB	FULL	-6dB	-2dB	FULL
35	LEFT	LEFT	65	RIGHT	RIGHT
FB1	FD1	FB4	FD4		
-46%	239m	-24%	517m		

0 On Stage

FR1	FR2	FR3	FR4	FR5	FR6
63Hz	4.0kHz	500Hz	1.0kHz	80Hz	3.1kHz
DL1	DL2	DL3	DL4	DL5	DL6
26m	85m	42m	90m	53m	37m
LV1	LV2	LV3	LV4	LV5	LV6
FULL	-4dB	-2dB	-4dB	FULL	-3dB
PN1	PN2	PN3	PN4	PN5	PN6
LEFT	40	65	60	35	RIGHT
FB1	FD1	FB4	FD4		
-15%	160m	-15%	170m		

Program Descriptions**1 Closet**

Full of clothes with the doors shut.

2 Telephone

Not up against your ear, but laid down on the nightstand. If you need more resonance go to page 5 and carefully add more feedback to voices 1 and 4.

3 Phartage

This one rips from left to right. Each voice gets progressively brighter in bandwidth. Each voice is spaced 20 milliseconds apart. Very strange.....

4 Stadium

Filtered Altec horns and reflections and echoes.

5 Downstairs

No furniture. Tubby and full of resonances. "Hey turn it off down there!!!!"

6 Bandsweep

Multiband and echoes. Panned left to right. Great for sharp sound effects. Go to page 5 feedbacks for additional repeats.

7 Bass Echoes

Dull echoes. Page 5 will adjust the feedbacks and delays feedbacks. This is kind of a distant and far away effect.

8 Band Bounce

Bright right, dull left. Back and forth...back and forth.

9 Whispers

Bright echoes all around.

0 On Stage

Like an empty stage with some drifting sound out into the hall. Really nice sounding on vocal tracks.

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