DIGITAL MULTI-EFFECTS

OWNER'S MANUAL 2FX (version 1)

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1.0 INTRODUCTION

Thank you for purchasing the ADA 2FX DIGITAL MULTI-EFFECTS. The 2FX combines the latest in digital technology in an innovative performance oriented format. The DIGITAL MULTI-EFFECTS' dedicated controls and two independent delay processors give you more special effects processing power than any other digital delay in its class.
To properly set-up and familiarize yourself with your new DIGITAL MULTI-EFFECTS, read and follow these operating instructions completely. Also, please take this time to fill-out and return your enclosed WARRANTY CARD.

1.1 FEATURES

- Two independent effects at once.
- Over one second of delay at 17kHz bandwidth.
- Separate group of controls for each effect: Digital Flanger, Digital Chorus, and Digital Echo.
- PATCH Switching System provides up to twelve combinations of effects.
- 10-to-1 sweep range for the widest digital flange and pitch modulation effects available.
- LED RATE Indicator displays delay time for accurate real-time echo setting.
- Instantaneous logic-controlled FET switching.
- Remote footswitch control of Bypass, Flanger, Chorus, Digital Delay and Repeat Hold.
- MEMORY BYPASS® function remembers the last combination of effects used.
- 90dB dynamic range.
- One year parts and labor warranty.

1.2 PRECAUTIONS

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

CAUTION: To prevent electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.0 CONTROL FUNCTIONS

INPUT LEVEL	A pre-amp that boosts or attenuates the input signal.
CLIP	An LED which indicates signal overload.
OUTPUT LEVEL	Adjusts the EFFECT OUTPUT signal level up to +20dBM.
PATCH	Reverses the position of effects when two effects are used (i.e., Flanger before Echo versus Echo before Flanger).
BYPASS	Engages or bypasses the selected effects. LED indicates effects are bypassed.
FLANGE	Selects the DIGITAL FLANGER effect. Cancels the CHORUS effect when engaged. LED indicates DIGITAL FLANGER is engaged.
CHORUS	Selects the DIGITAL CHORUS effect. Cancels the FLANGE effect when engaged. LED indicates DIGITAL CHORUS is engaged.
DELAY	Selects the DIGITAL DELAY effect. LED indicates DIGITAL DELAY is engaged.
REPEAT HOLD	Engages the infinite repeat function if the DIGITAL DELAY effect has been engaged. LED indicates REPEAT HOLD is engaged.
PHASE INVERT	Reverses the polarity of the flanged signal for positive or negative flanging effects.

DIGITAL FLANGER:

MANUAL	Sets the static delay time.
DEPTH	Determines the mix between the MANUAL control and the RATE control (sweep LED). As the DEPTH control is turned clockwise, the FLANGER sweeps over a wider range.
RATE	Sets the speed at which the DIGITAL FLANGER sweeps up and down.
REGEN	Determines the amount of the flanged signal fed back to the input of the FLANGER.

DIGITAL CHORUS:

DEPTH	Determines the range of delay time over which the RATE control will sweep.
RATE	Sets the speed at which the DIGITAL CHORUS sweeps.

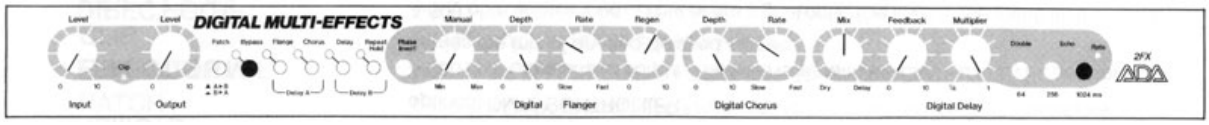
DIGITAL DELAY:

MIX	Determines the mix between the delay and dry signal.
FEEDBACK	Controls the amount of the delayed signal fed back to the input.
MULTIPLIER	Allows a continuous 0.25X to 1X adjustment of any selected delay range.
DELAY RANGE	Interlocking pushbuttons for selection of the delay time range: Double, Echo 1, or Echo 2.
RATE	An LED indicator that "blinks" at the rate of the delay time interval.

2.1 REAR PANEL

FUSE	Externally accessible 0.5AMP fuse. Replace with equivalent type and rating only.
POWER SWITCH	ON/OFF rocker switch (located near power supply to prevent the leakage of AC line hum into the audio circuitry).
REMOTE	Provides remote access to the BYPASS and EFFECT MODES. Interfaces with the optional DM-2 CONTROLLER.
EFFECT OUT	A 600 ohm unbalanced output. The level is set with the OUTPUT LEVEL control and carries the mix of dry and delayed signals.
DIRECT OUT	A 600 ohm unbalanced output of dry signal only. The level is the same as the input signal level.
INPUT	An unbalanced high impedance input which interfaces with low or high impedance sources and low and high signal levels.

FIGURE 3-1 - INITIAL FRONT PANEL SET-UP



3.0 INITIAL SET-UP

The ADA DIGITAL MULTI-EFFECTS interfaces with a wide variety of input sources including high level microphones, electronic instruments and mixing consoles. The input circuitry is high impedance which functions properly with both low or high impedance sources and low (-18dBV) and high (+24dBV) signal levels.

(A) To prepare your DIGITAL MULTI-EFFECTS for use, set the rear panel POWER SWITCH to the "OFF" position. Also set your amplifier's power switch to the "OFF" position.
(B) Connect your DIGITAL MULTI-EFFECTS'AC POWER CORD to a grounded outlet.
(C) Set the front panel controls as shown above (Figure 3-1).
(D) Connect your signal source to the INPUT jack located on the rear panel.
(E) Connect the EFFECT OUTPUT on your DIGITAL MULTI-EFFECTS to your amplifier input or mixing console effects receive input. The DIRECT OUTPUT is used with a second amplifier for stereo effects.
(F) If you own the optional footswitch, connect the REMOTE IN jack to the DM-2 CONTROLLER with the [1]A" STEREO CORD.
(G) Select the "ON" position of the rear panel POWER SWITCH, then set your amplifier's power switch to the "ON" position.
(H) Engage the EFFECT IN pushbutton. Your DIGITAL MULTI-EFFECTS is now ready for operation.

3.1 INPUT/OUTPUT ADJUSTMENT

(A) To properly set the input level: find the strongest signal or note that you will put into the DIGITAL MULTI-EFFECTS, and slowly turn the INPUT LEVEL control clockwise until the CLIP LED begins to flicker. The LED should flicker only on the strongest signals or notes. **Never set the INPUT LEVEL control so the LED is constantly on.** Note that the CLIP LED monitors all signals entering the delay line. The REGEN and FEEDBACK controls may effect the headroom and therefore the readings. While performing, rememberto monitor the CLIP LED for possible overloads.
(B) The OUTPUT LEVEL control sets the level of the EFFECTOUTPUT whether in BYPASS or effect(s) "IN" modes. In general, guitar level signals will have the control in its mid-scale or higher, line level signals will generally require positioning the control more counter-clockwise. Remember, proper setting of the INPUT/OUTPUT LEVEL controls is necessary to achieve maximum performance with the least amount of noise and distortion.

3.2 EFFECT SELECTION

The row of six PUSHBUTTONS on the front panel are used to select the EFFECT modes, BYPASS mode, and the PATCH Switching System. The PATCH Switching System allows you to place each effect in any position without using patch cords. For example, if the DIGITAL CHORUS and ECHO modes are selected, tapping the PATCH pushbutton will reverse the order of the effects for a completely different effect.

3.3 REPEAT HOLD

When engaged, the REPEAT HOLD pushbutton will capture and indefinitely repeat the signal stored in memory without any loss of audio quality. REPEAT HOLD may only be engaged if the DELAY mode is selected. Up to 1024ms of a musical passage may be repeated as a

counterpoint or a background rhythm in the REPEAT HOLD mode. When your DIGITAL MULTI-EFFECTS is initially powered up, an internal protection circuit defeats the REPEAT HOLD function to prevent "howling."

3.4 DIGITAL FLANGER

(A) The DIGITAL FLANGER section uses a triangle wave for its sweep waveform and offers delay times within the range of 0.5ms to 5ms for crisp, biting flange effects.

(B) The PHASE Invert switch allows you to produce positive and negative flanging which resemble a "swooshing, jet-like" sound or a "hollow tunnel" effect.

(C) The MANUAL control sets the static (non-sweeping) delay time of the flanger. Turning the DEPTH control clockwise from the "0" (off position) will bring the sweep modulation into play. The sweep is centered around the delay time set by the MANUAL control. Changing the position of the MANUAL control will change the bass or treble emphasis of the flanging effect. As the DEPTH control is turned further clockwise, a wider range of the delay time is swept. With the DEPTH control set at" 10", the full 10-to-1 range is swept and the position of the MANUAL control will have no effect on the modulation.The RATE control adjusts the speed of the modulation from 0.1 sec to 25sec for a complete sweep cycle. Slow sweeps are useful for flanging and chorusing effects while faster sweeps can produce vibrato and rotating speaker simulation.

(D) Increasing the REGEN level setting from "0" to "10" sustains sounds and adds resonance to the flanged signal. As the REGEN control is turned clockwise, more of the delayed signal is sent back to the input of the FLANGER increasing the intensity of the effect.

3.5 DIGITAL CHORUS

The DIGITAL CHORUS section uses a smooth contoured sine wave and delay times within the range of 2.5ms to 20ms for rich chorusing effects. (Please refer to section 3.4, C for explanation of DEPTH and RATE controls.)

3.6 DIGITAL DELAY

The DIGITAL DELAY section offers a full compliment of controls to produce doubling, slapback, repeat echoes, infinite repeat, and reverb effects.

The MIX control mixes the DELAY processed signal with the dry input signal. For use with instruments, the control will most often be in its center range. For studio applications where your DIGITAL MULTI-EFFECTS is in an effects loop, the MIX control is most useful in the full clockwise, "Delay" position.

The FEEDBACK control determines the number of repeats produced at longer time delays and the spaciousness of reverberant sounds at shorter echo settings. With the FEEDBACK control set at "0" and delay time over 100ms, a single distinct repeat will be produced. As the FEEDBACK control is turned clockwise, additional repeats are produced. In addition, with the control at "10" with 1024ms of delay, numerous passages can be layered then transferred into REPEAT HOLD for a non-deteriorating background rhythm pattern.

The Delay MULTIPLIER control allows continuous 0.25X to 1X adjustment of the delay time selected from any one of the interlocking Delay Range PUSHBUTTONS.

The LED RATE Indicator is a simple but effective realtime method of displaying the delay time. The RATE Indicator flashes at a rate equal to the delay time interval. As the delay time is increased, the "blink" rate slows. In PA use, a soundman can quickly and accurately set the repeat echo rate by matching the "blink" rate to the rhythmic pulse of the music.

4.0 REMOTE FUNCTIONS

The DM-2 CONTROLLER is a remote footswitch that accesses BYPASS, FLANGER, CHORUS, DIGITAL DELAY and REPEAT HOLD. When in the BYPASS mode, the MEMORY BYPASS™ function "remembers" the last combination of effects used. For example, this feature allows you to set-up a chorus/echo patch, enter the BYPASS mode, then turn-on chorus/echo patch with one tap of the MEMORY BYPASS™ footswitch.
The DM-2 CONTROLLER and the DIGITAL MULTI-EFFECTS rack unit have LED indicators which display the selected effect modes.

5.0 PATCH DIAGRAMS

FIGURE 5-1
CLASSIC FLANGE

This demonstrates the full 10:1 sweep range of the FLANGER. Turning the REGEN control clockwise produces more resonant or more dramatic flanging effects.

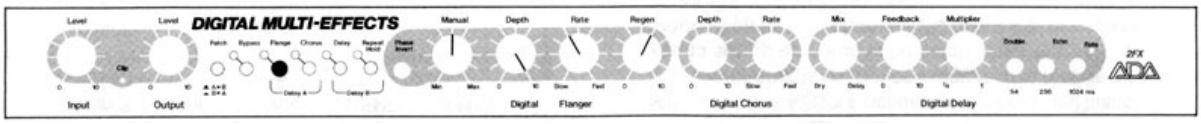


FIGURE 5-2
THICK CHORUS

This is a dramatic, very deep chorus. Adjust the RATE control for the desired effect.

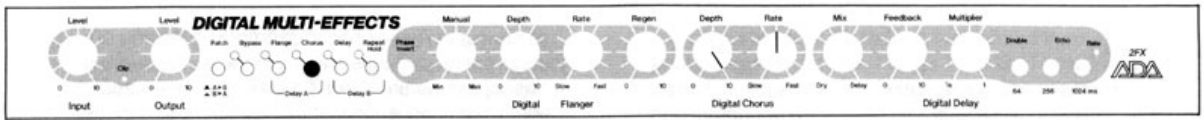


FIGURE 5-3
STEREO DOUBLING

The MIX control is set at full delay (10) for double tracking when using the DIRECT OUTPUT and the EFFECT OUTPUT in a stereo PA or recording system. In mono systems, set the MIX control in its center position (5). A single short repeat of the note or chord is produced for added thickness.

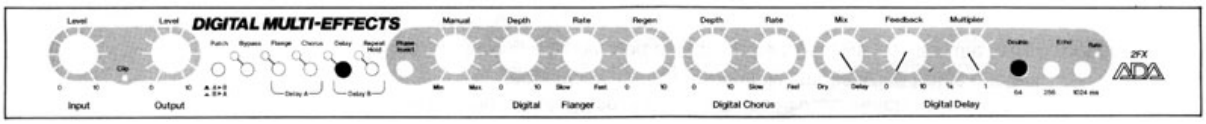


FIGURE 5-4
REPEAT ECHO

By carefully adjusting the FEEDBACK control, you can select from one repeat to multiple repeats lasting 50 seconds or more.

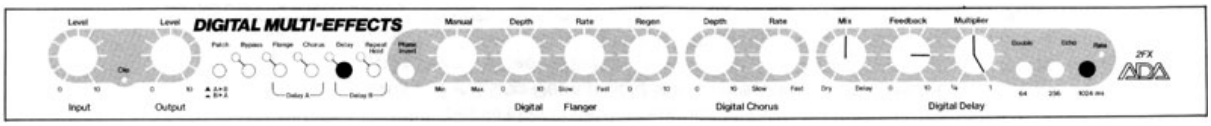


FIGURE 5-5
REPEAT HOLD

This captures, stores, and repeats a segment of sound without signal degradation. The pitch and repeat rate may be modified by using the MULTIPLIER control. Many useful special effects can be produced by varying the DEPTH and RATE controls. The key to using Repeat Hold is to depress the REPEAT HOLD button *after* the passage has been played.

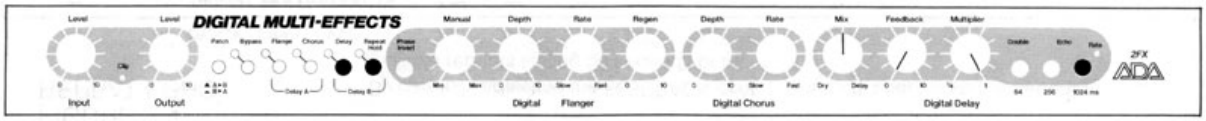


FIGURE 5-6
EVEN/ODD HARMONIC FLANGE with REVERB

FLANGE: At minimum MULTIPLIER control settings, switch Between in-phase and out-of-phase settings with the PHASE switch. Inverted signals will cancel lower frequencies thereby apparently emphasizing treble content. REVERB: Mixing a higher percentage of dry signal will position the reverb further into the background.

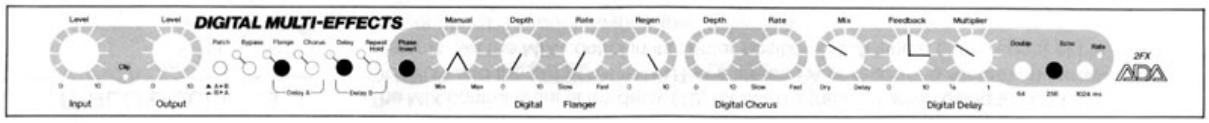


FIGURE 5-7
LESLIE CHORUS with SLAPBACK ECHO

CHORUS: This simulates the popular rotating speaker effect. SLAPBACK: This produces a single repeat. Turning the MULTIPLIER control further clockwise increases the delay between the dry signal and the repeat

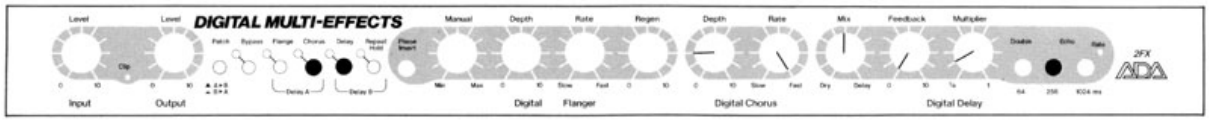
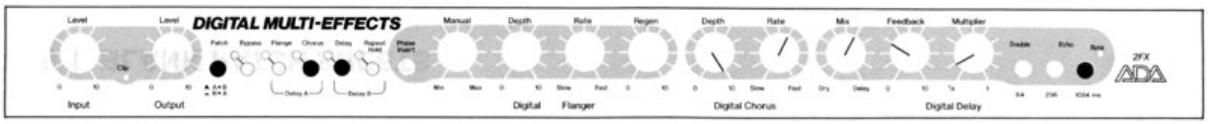


FIGURE 5-8
CHORUSED ECHO versus ECHOED CHORUS

This demonstrates the usefulness of the PATCH switch. The DIGITAL MULTI-EFFECTS allows you to set up the popular chorused echo effect or reverse the sequence by depressing the PATCH switch. In the ECHOED CHORUS mode, each repeat has a different tonality for a very unique sound.



6.0 SPECIFICATIONS

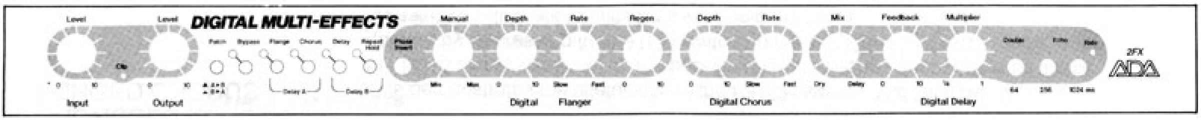
DYNAMIC RANGE	90dB
BANDWIDTH, DRY	10Hz to 20kHz
DELAY	20Hzto17kHz
DISTORTION (THD) @ 1kHz	dry, 0dBV, 0.1% max. wet, 0dBV, 0.5% max.
DELAY RANGE	DIGITAL FLANGER — 0.5 to 5ms DIGITAL CHORUS — 2.5 to 20ms DIGITAL DELAY—16 to 1024ms
MODULATION DEPTH	DIGITAL FLANGER — 0(none) to 10:1 DIGITAL CHORUS — 0 (none) to 8:1 DIGITAL DELAY —0 (none) to 4:1
SWEEP SPEED	0.1secto25sec
INPUT	510k ohm single-ended, ¼" phone jack, handles instrument and single-ended line-level signals.
OUTPUT(S)	Single-ended, ¼ phone jacks, drives 600 ohms.
MAX. INPUT LEVEL	+20dBM (ref. .775VRMS)
MAX. OUTPUT	+20dBM (ref. .775VRMS)
POWER CONSUMPTION	5 watts
POWER	120 VAC, 50/60HZ
DIMENSIONS	L-10.5" x W-19" x H-1.75" (483 x 44 x 269mm)
WEIGHT	6.75lbs (14.85kg); 10lbs (22kg) shipping
OPTION	220 or 240 VAC 50/60Hz
ACCESSORY	DM-2 CONTROLLER (with ¼" STEREO CORD)

7.0 RETURNING UNITS FOR SERVICE

If your unit requires service, please take the following steps:

(1) Call our Customer Service Department toll free at (800) 241 -8888 for a Return Authorization (RA) number.
(2) Pack unit in its original carton with packing materials and include a note explaining the problem, your name, address, day-time phone number, and date and place of purchase.
(3) Write the RA number on the outside of the shipping container.
(4) Ship via UPS, Federal Express, or U.S. Postal Service. You pay the freight. (We recommend that you insure the unit.)
(5) If the unit is under warranty, ADA will perform the servicing and pay the return shipping charges to you.
(6) If the unit is not under warranty, ADA will bill you for the servicing and return shipping charges. We require payment in advance or cash on delivery (COD) for these charges.

8.0 BLANK PATCH SHEET



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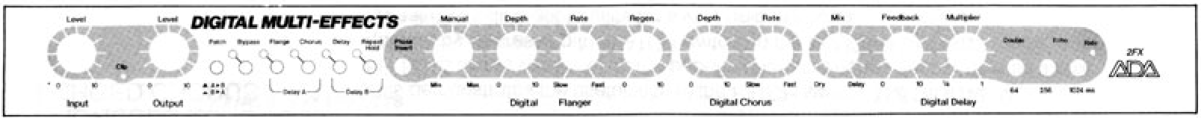

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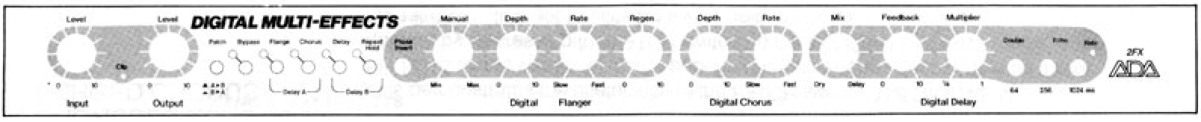

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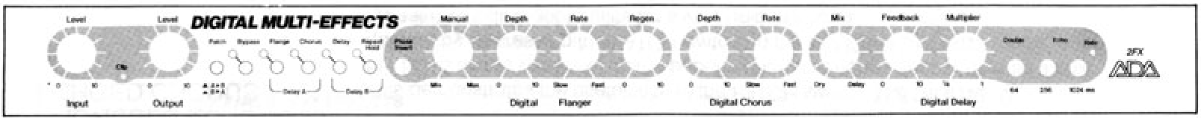

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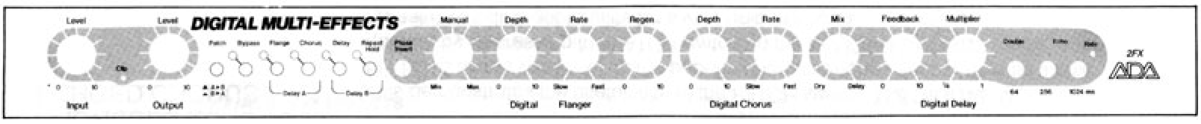

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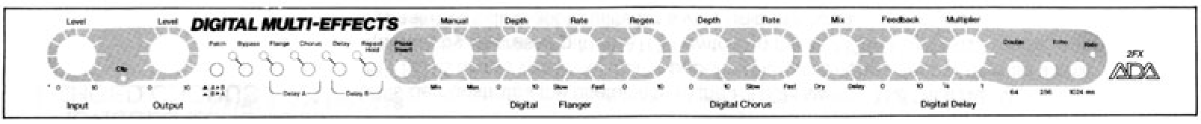

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