MACKENZIE

DV-2000

Digital Autoload, Message-On-Hold System



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General Safety Instructions

Always follow these basic safety precautions when using the system:

1. Read carefully and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. DO NOT block or cover ventilation slots and openings.
4. DO NOT place the product in a closed enclosure or cabinet unless proper ventilation is provided.
5. Never spill liquid on the product or drop objects into the ventilation slots and openings. Doing so may result in serious damage to the components.
6. Repair or service must be performed by a factory authorized repair facility.
7. DO NOT staple or otherwise attach the power supply cord to building surface.
8. DO NOT use the product near or in wet or damp places, such as wet basements.
9. DO NOT use an extension cord. Install within 6 feet of a grounded outlet receptacle.
10. DO NOT install during lightning storm.
11. Never touch un-insulated wires or terminals unless the unit is disconnected from both power and the rest of the phone system.
12. Use Caution when installing or modifying configuration switches or control lines.
13. Install in a protected location where no one can step on, or trip over, power and line cords.
14. The unit must be securely attached to a wall board, rack or table mounted.
15. Use correct power source. Use only the power pack supplied.

Regulations

FCC (Part 15) Radio Frequency Interference

The DV-2000 generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. Unit complies with the limits for Class A devices in accordance with the specifications in Subpart J of Part 15 of the FCC Rules. This testing is designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the unit off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or TV receiving antenna.
- Relocate the unit with respect to the radio or TV receiver or vice-versa.
- Plug the unit into a different outlet so that it and the radio or TV receiver are on different branch circuits
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

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Shipping Container Contents

The following items should be found in the container of the DV-2000.

- DV-2000
- Wall mount power pack
- Audio cable
- Mounting hardware
- User's manual

Aphex®, Aphex Aural Exciter and AX are patented, registered trademarks of Aphex Systems, Ltd.

1. OVERVIEW

1.1. Features and Benefits

The DV-2000 is a highly reliable audio playback system specifically designed for Message-On-Hold applications. Message material is loaded into the system by cassette and stored in non-volatile FLASH memory. Messages play continuously from memory until new messages are loaded.

The DV-2000 is designed to interface with the Message-On-Hold port of a wide variety of phone systems. This allows your marketing messages to be played to customers while they are on hold, reducing hang ups and increasing sales.

DV-2000 incorporates a ruggedized cassette mechanism and non-volatile FLASH memory for unsurpassed reliability. The cassette mechanism was originally designed for automotive applications and is intended for years of reliable service. FLASH memory means that your messages remain intact in the event of a brownout or power loss, without battery backup.

Multiple audio outputs with level control, Aphex® and high quality sampling allow the sound of the DV-2000 to be optimized to almost any phone system, insuring that the message gets heard.

1.2. General Specifications

Memory:
- Type: Non-Volatile FLASH
- Capacity: 8 - 32 minutes

Audio Fidelity:
- STD Version: 100Hz - 3.4kHz
- PRO Version: 100Hz - 6.8kHz
- Signal to Noise: 60dB

Power: 12VDC (power pack)

Audio Outputs:
- Line: RCA, mono, 600 ohm
- Amplified: RCA, mono, 2W @ 8ohm

Manual Controls: Aphex Mix, Output Volume, Eject, Speaker Enable

LED Indicators: Tape Ejected, Recording, M-O-H

Package: Painted steel chassis

1.3. Models

Model #	Capacity	Bandwidth
DV-2004	4 minutes	3.4kHz
DV-2008	8 minutes	3.4kHz
DV-2016	16 minutes	3.4kHz
DV-2032	32 minutes	3.4kHz
DV-2008 PRO	8 minutes	6.8kHz
DV-2016 PRO	16 minutes	6.8kHz

2. INSTALLATION

This section provides complete instructions for mounting the DV-2000. Before you install the DV-2000, make sure you have:

- A message or music on hold input connection/jack on your phone system.
- A non-switchable 110VAC electrical outlet near the location where the unit is to be installed.

2.1. Wall or Table Installation

1. Locate a proper space on the telephone equipment board or wall (see Figure 1). You can mount the DV-2000 in one of three positions: flat, side, or horizontal. See illustration below.

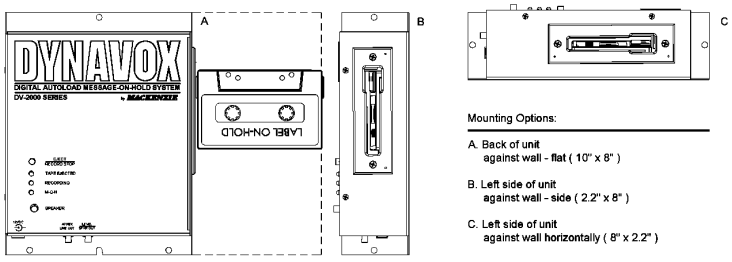


Figure 1

2. Position the unit on the board; mark the mounting hole locations.

3. Using the mounting screws provided, secure the DV-2000 to the board or wall.

4. If table top mounting the DV-2000, stick the enclosed rubber feet on the bottom of the unit.

2.2. Connecting Power (Figure 2)

1. Plug the power pack into a 110VAC power outlet which is not connected to a switch.

2. Plug the power jack into the DV-2000's power plug marked 12VDC.

3. There is no power switch on the DV-2000, so as soon as power is connected, the system will be active.

2.3. Connection to Telephone Equipment (Figure 2)

1. Connect one side of the supplied RCA cable to the telephone equipment's Message-On-Hold input. Connect the other side of this cable to the DV-2000's LINE OUT. There are two audio outputs on the DV-2000, LINE OUT (Low, +4dB into 600 ohms), and SPKR OUT (High, 2W into 8 ohms). Use the LINE OUT first adjusting the audio output volume potentiometer to obtain the correct audio level. If this does not provide enough audio level, then switch to the SPKR OUT.

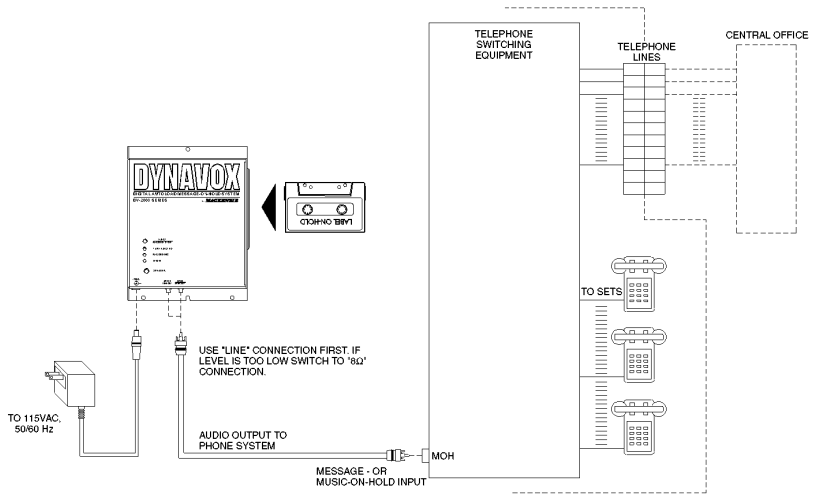


Figure 2

3. OPERATION

3.1. Message Downloading

When you receive the new DV-2000, its memory will be blank. To load a new message into the DV-2000's memory, simply insert a recorded cassette (Tape Up, Facing Label).

When a new tape is inserted, the DV-2000 will automatically rewind the cassette to the beginning and then start playing it. The DV-2000 will record the audio program, ignoring the silence before and after the audio recorded on the cassette. When the audio program on the tape starts, the red Record light will come on signifying that audio is being recorded to memory. At the end of the audio program, when the DV-2000 detects 5 seconds of silence, the recording will end, the Record LED will go out, and the system will automatically rewind the cassette tape. The 5 seconds of silence will be deleted prior to playing the message.

The audio being recorded will be output though the LINE and SPKR outputs during the recording process. This audio may also be monitored by the user, by pressing the "Speaker" button.

Warning: When a tape is inserted into the DV-2000, the previous recording is deleted immediately. If the tape is then ejected, prior to recording any audio, the DV-2000's memory will be empty.

3.2. Message Playback

After a message has been recorded into memory, the DV-2000 will automatically begin playing this message through the audio outputs. The green M-O-H LED, will illuminate whenever a pre-recorded message is playing.

The Mackenzie Dynavox
Digital Autoload Message On-Hold System
Model DV-2000 & DV-2000 PRO

EJECT / RECORD STOP PUSH-BUTTON:
This ejects the tape when the system is playing a message. If pressed during the recording process the recording will be stopped.

TAPE EJECTED LED:
Yellow light on indicates there is no cassette inserted. Insert cassette, yellow light off = cassette in place, will start memory loading.

RECORDING LED:
Used to determine tape loading mode. Red light on, indicates message (s) is being loaded into memory

M-O-H LED:
This green LED is on when the system is playing a Pre-Recorded message.

SPEAKER PUSH-BUTTON:
Local Monitor ON/OFF

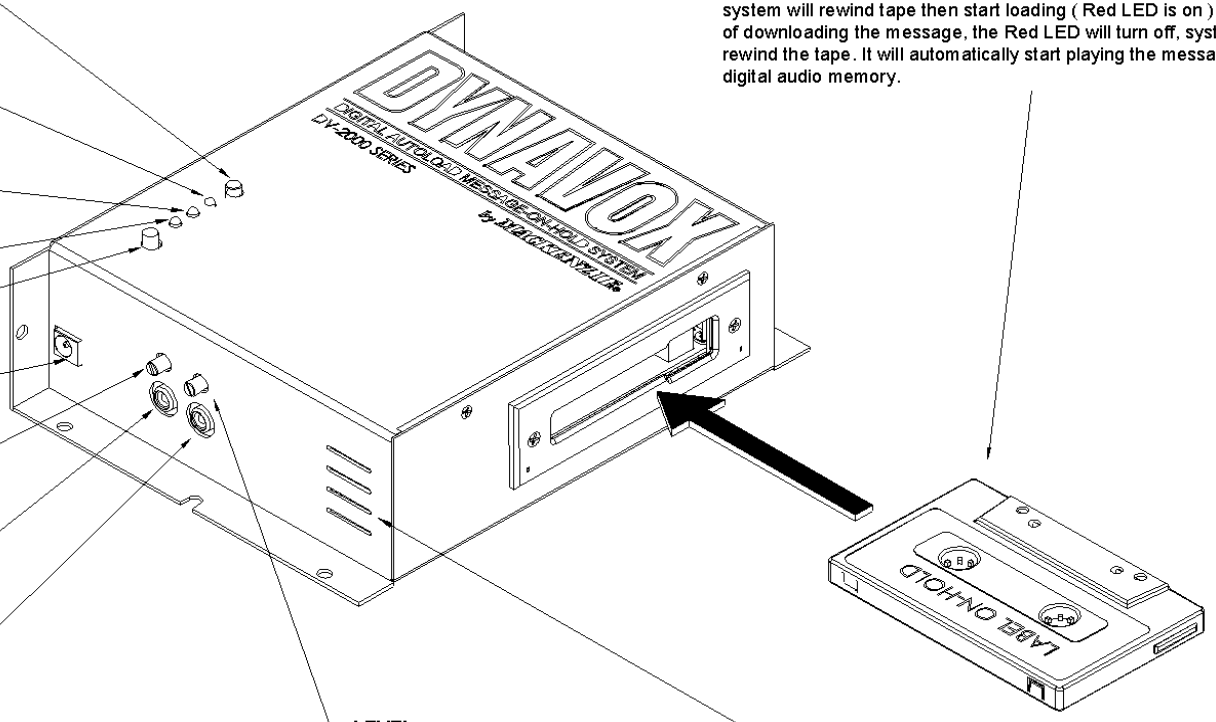
POWER:
Insert power adapter supplied.

APHEX:
Adjusts the amount of high frequency enhancement necessary to deliver the best overall system performance.

LINE OUT:
Audio output level at of to +4dB into 600 Ω, this is a standard level for most applications.

SPKR OUT:
Audio output level at up to 1.5W into 8 Ω use this output if more drive is needed to reach a more comfortable listening level.

NOTE:
It is recommended That you leave the Cassette Tape in the system for auto download operation.
Insert Pre-Recorded tape Cassette as shown (Tape Label, Facing Up), system will rewind tape then start loading (Red LED is on) at the end of downloading the message, the Red LED will turn off, system will rewind the tape. It will automatically start playing the message from the digital audio memory.



LEVEL:
Adjusts the volume to the line level or power audio outputs.

Monitor Speaker

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3.3. Pushbutton Descriptions

Two pushbuttons are provided on the DV-2000.

3.3.1. Eject/Record Stop Pushbutton

A momentary pushbutton, red in color. This button allows the user to stop the recording process, and/or eject the tape.

1. When the system is not recording, the button functions as an Eject button.
2. When the DV-2000 is recording audio, (whenever the Record LED is on) pressing this button momentarily will stop the recording and save the audio which was just recorded. The system will rewind the tape, but not eject it.
3. If the button is pressed momentarily while the DV-2000 is recording audio, and then pressed momentarily again, the system will stop the recording process, save the audio just recorded, and eject the cassette tape.
4. If this button is pressed and held for two seconds while the DV-2000 is recording, the audio just recorded will be deleted, and the tape will be ejected without being rewound.

3.3.2. Speaker pushbutton

A locking pushbutton, black in color, which controls the monitor speaker located on the front of the unit. Pressing this button will activate the monitor speaker, allowing the local user to hear the audio being output by the DV-2000. Releasing the button will deactivate the monitor speaker.

The volume of the monitor speaker is determined by the volume setting of the audio output. If the phone system requires a particularly low level from the DV-2000, the volume of the monitor speaker will also be low.

Note: Do not adjust the audio output level adjustment in order to hear the monitor speaker level better. Doing this will adjust the level of the Message-On-Hold output which may not be acceptable.

3.4. LED (Light Emitting Diodes) Descriptions

Three LEDs are provided on the top of the DV-2000 to display the current status of the system.

Eject LED

This yellow LED will light whenever there is no tape inside the system. When a tape is inserted, and loaded into the machine, this LED will go out.

Record LED

This red LED will light when the DV-2000 starts recording an audio program, and will go out when the recording process stops. The Record LED will blink one time when the DV-2000 is powered on, indicating that the memory is operational.

M-0-H LED

This green LED will light when the DV-2000 is playing a previously recorded message.

3.5. Audio Adjustments

There are two potentiometers on the DV-2000 allowing the user to tailor the audio output level and high frequency response. These potentiometers are located on the front side of the device directly above the audio output connectors.

3.5.1. Audio level

The level of both the LINE OUT and SPKR OUT are simultaneously adjusted using the audio level adjustment potentiometer. Turning this potentiometer counter clockwise will lower the audio level. Turning this potentiometer clockwise will raise the audio level.

3.5.2. Aphex®

This special, psycho-acoustical processing extends the high frequency response of the DV-2000. Turning this potentiometer clockwise amplifies the high frequencies while turning it counterclockwise attenuates the high frequencies.

3.6. Connections

There are several connectors on the front side of the device.

DC Power

2.5mm Barrel connector. The system is powered by 12VDC. Use only the AC-DC power adapter supplied by the manufacturer to guarantee proper operation.

Line Level Audio Output (LINE OUT)

RCA connector. A 600 ohm, transformer isolated, audio output. When installing the DV-2000, connect this output to the phone system first.

Amplified Audio Output (SPKR OUT)

RCA connector. An amplified, 2 watt into 8 ohm, audio output. Use this audio output if the audio from the Line output can't drive the on-hold circuit to a high enough level.

4. POWER FAILURE RECOVERY

The DV-2000 uses FLASH memory which is not dependent upon power or battery backup to retain its memory. This eliminates problems associated with brownouts or unexpected power losses. When power is returned, the system will immediately start the operation it was in prior to power being removed.

5. TROUBLESHOOTING GUIDE

No LEDs are active on the DV-2000.

- Just after a tape is inserted, and before audio is detected by the DV-2000, all LEDs will be off.
- Verify that the AC-DC power adapter is plugged into non-switched AC power outlet.
- Verify that the power connector is plugged completely into the jack on the DV-2000.

The system will not mechanically load the tape into the system

- Push the cassette tape completely into the DV-2000.
- Verify that the AC-DC power adapter is plugged into non-switched AC power outlet.
- Verify that the power connector is plugged completely into the jack on the DV-2000.

The Record LED never comes on after the cassette tape is loaded into the system

- Verify that the tape was inserted right side up.
- If the tape is blank, the Record LED will never come on.
- Verify that the nominal level of the audio recorded on the tape is over -20dB.

After recording the tape, the tape ejected, and the system is not playing a message.

- If the user pressed, and held the edit/eject button during the record, the system will eject the tape immediately and delete the recorded audio.
- Verify that the tape was inserted with the audio recorded side facing side up.
- If there is no audio on the tape, it will eject it automatically when it reaches the end of the tape.

Can not hear anything through the on-hold circuit

- If both Record and M-0-H LEDs are off, there is no audio being output by the system.
- Verify that the RCA to RCA connector is securely attached to the DV-2000 and the phone system.
- Turn the output level adjustment clockwise to increase the audio output level.
- Use the 8 ohm output instead of the line level output.

Can not hear anything through the monitor speaker

- If both Record and M-0-H LEDs are off, there is no audio being output by the system.
- Press the Speaker button so that it locks in the depressed position.
- If the level of the audio output is adjusted very low, the level from the monitor speaker will also be very low.

6. WARRANTY, SERVICE & RETURNS

The industrial grade housing and quality construction of the Mackenzie DV-2000 virtually eliminates the need for service or maintenance. There are no user-serviceable components within the Mackenzie DV-2000. Refer all servicing to the factory.

6.1. Warranty Coverage

The Mackenzie DV-2000 is tested and checked before shipment and is guaranteed against defective material or workmanship for a period of three (3) years from the date of purchase. Should trouble ever develop, contact the Factory directly by telephone or in writing. If it is determined that the equipment requires Factory service, return it to the Factory. If our inspection shows that the trouble was caused by defective material or workmanship, we will repair or replace the equipment without charge and return it prepaid. Repairs made necessary by abuse, improper use, unauthorized service or maintenance, and/or improper installation, as well as out of warranty repairs, will be charged at our regular repair prices in effect at the time. The obligation under this warranty shall be limited to the replacement, repair or refund of any such defective device within the warranty period. This warranty is in lieu of and excludes all other warranties, expressed or implied, and in no event shall MACKENZIE be responsible for damage to other equipment or property, for any anticipated profits, consequential damages, loss of item, or other operation or use of this product, and MACKENZIE'S maximum liability shall not ever be greater than the price paid for the equipment. This warranty gives you specific legal rights. Your rights may vary from state to state. Inquiries regarding use, repair and service should be made to:

MACKENZIE LABORATORIES, INC.
1163 Nicole Court, Glendora, CA 91740 USA
Telephone: (909) 394-9007; FAX No: (909) 394-9411
Email: info@macklabs.com; WWW: www.macklabs.com

6.2. What we ask you to do

To get warranty service for your DV-2000, you must provide proof of the date of original purchase. In the event you need to ship your DV-2000 to the factory for service, call us for a return authorization number. When you ship your DV-2000, you must prepay all shipping costs. We suggest that you retain your original packing material in the event that you need to ship your DV-2000. When sending your DV-2000 to the factory, include your name, address, phone number, proof of date of purchase, and a description of the operating problem. After repairing or replacing your DV-2000, we will ship it to your return address at no cost to you within the USA. Repair or replacement of your DV-2000 at our factory is your exclusive remedy.

6.3. What this warranty does not cover

This warranty does not cover defects resulting from accidents, damage while in transit to factory, alterations, unauthorized repairs, failure to follow instructions, misuse, fire, flood, and acts of God.

Notes

Warranty & Registration Card for the DV-2000 - Digital Autoload, Message-On-Hold System

Date: _____ Serial No.: _____

Purchaser: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Purchased From: _____ Date: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Return warranty card via fax to (909) 394-9411 or mail to:

Mackenzie Laboratories Inc., 1163 Nicole Court, Glendora, CA 91740 USA.

Mackenzie Product Lines

Message On Hold & Storecasting - Mackenzie's full line of digital Message-On-Hold systems, turn your telephone into a powerful marketing tool. The DYNAVOX series offers maintenance free digital playback with tape, modem or satellite download. Several varieties are available with advanced features such as Music-Thru, individual message enable/disable, message sequencing and more.

Digital Message Repeaters - Mackenzie's line of Digital Message repeaters are the .ideal audio and video solutions for Information, Amusement, Entertainment, Museum and Exhibit applications. Self contained solid state systems offer unparalleled reliability. A variety of channel, connection, bandwidth and memory configurations are available.

Fire Alarm & Life Safety - Mackenzie's line of Fire Alarm and Life Safety Digital Message Repeaters offer advanced features and unsurpassed reliability. These products offer the maintenance free operation of digital playback and are UL compliant for Life Safety with self test and full supervision. Large memory capacity, random access, multiple channel and field recording/programming are available.

Page Stacker / Feedback Eliminator - Mackenzie's FE series of Digital Page Stacker/ Repeater and Feedback Eliminators offer advanced features for the most difficult paging and intercom applications. A unique design makes feedback virtually impossible by recording then repeating pages which opens the loop between the input microphone and speakers. Various models are available to support simple repetition, multiple page stacking and multiple input channels.

Transit - Mackenzie is making a difference in transit applications with innovative solutions for ADA compliance and Passenger Information Systems. These products address a variety of audio and text messaging requirements and support both in-vehicle and wayside installations.

_____
_____
_____
Return Address

Mackenzie Laboratories, Inc.
1163 Nicole Court
Glendora, CA 91740 USA
