PrecisionPower
Amplifiers, Signal Processors and Accessories
4829 South 38th Street
Phoenix, Arizona 85040-2964 U. S. A
602 - 437 - 5207
1-800-62-POWER

OPERATOR'S MANUAL

DCX 1000
Digitally Controlled Four-way Crossover

Absolutely State of the Art • Mobile Audio Electronics •

PrecisionPower
Amplifiers, Signal Processors and Accessories

MADE IN THE U.S.A.

TABLE OF CONTENTS

This Manual Was Printed on Recycled Stock

CONGRATULATIONS

Congratulations! You have taken advantage of our new Precision Power High Performance Mobile Audio Equipment. In your selection of our two channel amplifier, you will notice its unique capabilities, high-tech design, and use of "tomorrow's" technology today.

Precision Power is a proven world leader in mobile audio electronics. Specializing in the design, engineering, and manufacturing of our state-of-the-art amplifiers, crossovers, equalizers, and accessories. These products will help to further enhance your personal sound system.

To achieve optimum satisfaction and highest quality performance from your new amplifier, please read this manual thoroughly before installation. Keep the manual in a safe place and refer to it as you continue to refine your system. If you encounter difficulties during or after installation and are unable to resolve the problem, please contact your PPI dealer or call Precision Power during business hours (8am to 5pm MST) at 1-800-62-POWER for further assistance.

CAUTION The use of a high-powered stereo system may cause hearing loss or damage. While Precision Power systems are capable of "concert level" volumes with incredible accuracy, they are designed for you to enjoy the subtleties created by musicians for listening at reasonable sound pressure levels. The use of a high power stereo system may impair your ability to hear traffic sounds, thus may constitute a traffic hazard. PPI advises lower volume levels while driving.

FEATURES

- Ultra-Wide Bandwidth Circuitry
- Six Stereo Outputs
- Gold RCA Input Connectors
- Independent Level Controls
- Adjustable Gain
- Adjustable Clip Indicator

- 18 dB/Octave Crossover Slopes
- Tracking Crossover Points
- Adjustable Crossover Points
- Subsonic Filter at 20 Hz

- All Digitally Controlled
- Non-Volatile Memory
- Remote Controlled
- Two, Three, & Four-Way Modes
- Two User-Definable Presets
- Alphanumeric LCD Display
- LED Power Indicator
- 12-Volt Powered

- Two Year Warranty
- Made in the USA

GLOSSARY

The following terms are used within this manual. Since they may be unfamiliar, definitions are provided as follows.

Baud Rate — The rate at which each piece of information is transmitted or received.

Fiber Optic Cable — Light conducting cable used to transmit and receive information in the form of light instead of electricity.

Input Sensitivity or Gain — A measure of a device's input signal requirement to produce a desired ouput. "High" sensitivity implies a low input signal whereas "Low" sensitivity implies a higher input signal requirement.

Gain Control — A Control that allows adjustment to the DCX-1000 output level for varying input levels.

LED — Light Emitting Diode. Usually indicates power on/off and/or signal changes.

Phantom Power — Power supplied to PPI accessories through a Precision Power amplifier via the DIN cables

Remote Turn-On — Low current automatic switching circuit whch is connected to a power antenna lead and to the amplifier(s) via the blue wire on the speaker harness.

SPECIFICATIONS

Signal-to-Noise Ratio	100 dB V
Total Harmonic Distortion	<0.008%
Input Gain	-9 to +15 dB in 3 dB increments
Output Gain	OFF - -0.0 dB
Frequency Response (within bandpass) (Four-Way Outputs Summed)	±0.05 dB, 20 - 20 kHz
Low Crossover Frequency	20 Hz - 500 Hz
Mid Crossover Frequency	50 Hz - 1250 Hz
High Crossover Frequency	200 Hz - 5 kHz
Hi Level	OFF - -0.0 dB
Mid Level	OFF - -0.0 dB
Low Level	OFF - -0.0 dB
Sub Level	OFF - -0.0 dB
Clip Level	1V - 12V
High Pass Level Adjustment	OFF - -0.0 dB
Low Pass Level Adjustment	OFF - -0.0 dB
Subsonic Filter	-18 dB/Octave @ 20 Hz
Maximum Output (10K Ohm Load)	8 Vrms
Data Transmission of Fiber Optic Cable	9600 Baud Rate
Fiber Optic Transmission Distance	60 Meters
Accuracy (of analog functions)	±5%, typically better than ±2%
Power Requirements	+10 - +16 Vdc (+12 Vdc @ 750 mA nominal)
Dimensions	1"H x 6.78"W x 5.1"D

INTRODUCTION

The DCX-1000 is a two, three, or four-way active electronic crossover intended for use in multiple amplifier systems. All of the DCX-1000's functions are digitally controlled. By defining the crossover parameters digitally, repeatability is insured. Through the use of high tolerance parts, the indicted analog functions will typically be within 2% of the displayed value.

A sharp 18 dB/Octave third order subsonic high pass filter on the input eliminates subsonic frequencies form interfering with low frequency performance and also helps prevent intermodulation distortion.

All of the crossover filters in the DCX-1000 are tracking third order (18 dB/Octave) Butterworth- which yield the best combination of amplitude and phase response while precisely defining the intended pass bands. Assuming all the output levels are set equally, the tracking filters help maintain a flat frequency response of the 2 way and 4 way outputs, regardless of the crossover frequencies. Unless you desire it, the crossover will not introduce any equalization into your system Equalization (overlapping or staggering of the crossover points) may be introduced by not using all of the outputs or by using the two and four-way outputs in different combinations.

The input gain can be varied between -9 and +15 dB, allowing compensation for the variations found in head unit output levels. An independent level control on each output, also allows you to fine tune your system without resorting to adjusting the controls on each individual amplifier. There is a peak responding clip indicator that can be set to warn you when your system is reaching it's maximum undistorted output level. The DCX is supplied with two user definable presets. They are stored in a non-volatile microprocessor, virtually indefinitely.

The built-in isolated pulse width modulated power supply eliminates the need to have an amplifier that provides phantom power. If your system has phantom powered accessories, the DCX-1000 passes the phantom voltage through it's DIN connectors. The DCX is transparent to phantom power; it will neither affect nor supply phantom power.

The optional remote control duplicates the key and display functions of the DCX. You can conveniently mount the DCX near other components in your system while retaining remote control. Fiber optic cables eliminate the troublesome ground loops that are so easily introduced into the complex wiring found in most high-end systems. Even if the remote control is not permanently installed, it can be especially helpful when initially tuning the system.

POWER

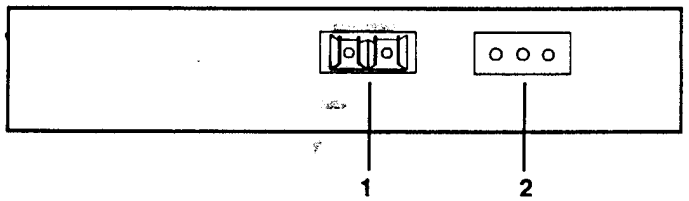
The DCX-1000 is powered from the vehicle's 12-volt battery or any standard 12-volt DC supply. It is connected to +12 volts, chassis ground, and a remote switching +12 volt source for turn-on by means of a 3-wire harness, which is provided. This harness plugs into a mating socket on the rear panel of the DCX. (Refer to Fig. A) The wires are color coded as follows:

+12 Volts ..... Red Wire
Chassis Ground ..... Black Wire
Remote Turn-On ..... Blue Wire

A fuse is not required within the harness since the +12 volt connection is fused inside the unit. The internal fuse in **NOT** user-replaceable. If the DCX-1000 does not power up, contact your dealer or call Precision Power at 1-800-62-POWER for assistance.

The DCX-1000 does not provide "phantom" power. A Precision Power amplifier will provide the "phantom" power to other accessories within the system via the DIN cables. The DCX will pass the voltage through it's DIN connectors, being transparent to the "phantom" power; it will neither affect nor supply "phantom" power it will simply pass it along.

FIG. A Rear Panel of the DCX-1000



1. Fiber Optic Port
   left: Blue Port
   right: Gray or Black Port
2. 3-Pin Power Socket

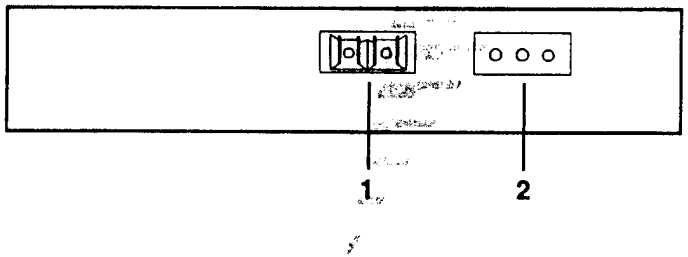
FIBER OPTIC REMOTE CONTROL (Optional)

When using the RCM-1000 (Remote Control Module) refer to the instructions supplied with it. The DCX-1000 is shipped with its optical ports plugged to prevent contamination from dirt and light. (Refer to Fig. A) If the optional remote control is not used leave the ports plugged at all times. Keep these plugs for future use when moving/packing the DCX. If the fiber optic ports should ever need to be cleaned, use a cotton tipped swab and isopropyl alcohol.

The DCX-1000 can use either the duplex or simplex fiber optic cable. Precision Power supports both. This connector provides a convenient termination and is keyed to prevent incorrect insertion. Simply plug the duplex cable directly into the fiber optic ports. If the cable fails to click securely into place, turn the connector upside down and try again.

When using two separate fiber optic cables, (simplex), the blue plug mates with the blue connector (receiver), and the gray lug mates with the black connector (transmitter). When properly inserted, the cable will snap into place.

FIG. A Rear Panel of the DCX-1000



1. Fiber Optic Port
   left: Blue Port
   right: Gray or Black Port
2. 3-Pin Power Socket

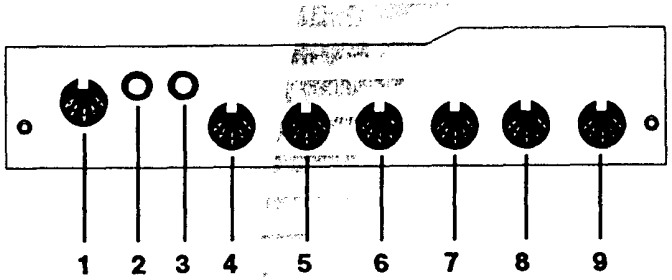
INPUTS

Located on the right side panel of the DCX-1000 (Refer to Fig. B) is a set of RCA-jacks, left and right. A DIN-jack is paralleled to the inputs utilizing PPI's flexibility and convenience. The DIN-jack can be used to pass along Phantom power from a PPI amplifier to PPI accessories, such as another crossover or an equalizer.

OUTPUTS

There are six DIN-jack outputs located on the right side of the DCX-1000. (Refer to Fig. B) They are Sub, Low, Mid, High, LP 2W (Low Pass 2-Way), and HP 2W (High Pass 2-Way). These outputs connect directly to the DIN inputs of other Precision Power components, such as an amplifier or equalizer. A DIN-to-RCA adapter is available for connection to other manufacturer's products.

FIG. B Right Side of the DCX-1000



1. DIN Input
2. RCA Left Input
3. RCA Right Input
4. Sub Output
5. Low Output
6. Mid Output
7. High Output
8. LP 2W Output
9. HP 2W Output

There are five push buttons ("softkeys") located on the front panel of the DCX-1000. (Refer to Fig. C) They are as follows:

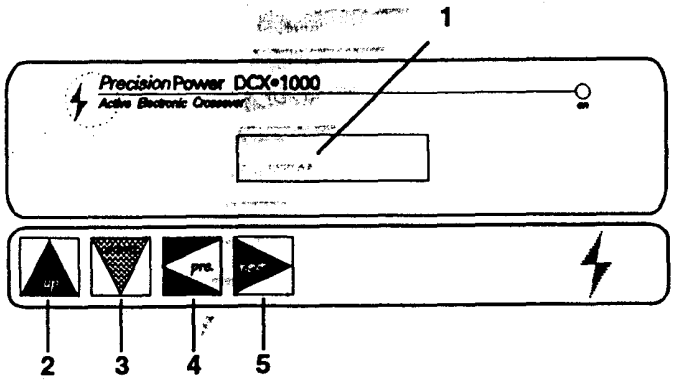
UP increases the parameter being displayed

DOWN decreases the parameter being displayed

PREVIOUS displays menu prior to the one presently displayed

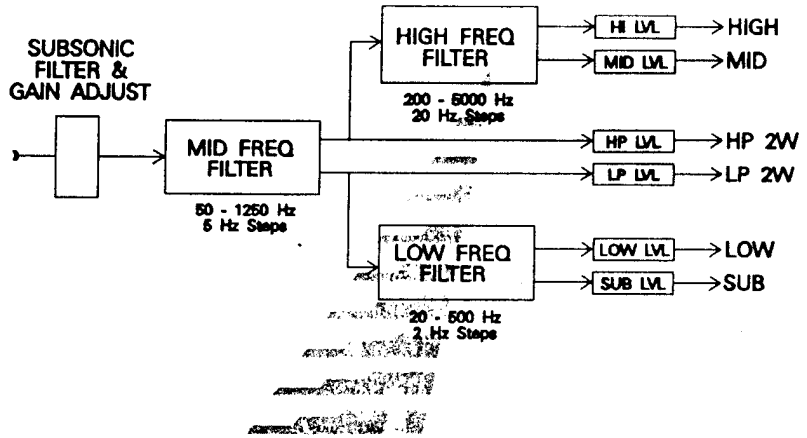
NEXT advances the amplifier/accessory to the next menu

FIG. C Front Panel of DCX-1000



1. LCD Display
2. UP softkey up
3. DOWN softkey down
4. PREVIOUS softkey pre
5. NEXT softkey next

BLOCK DIAGRAM



The DCX-1000's block diagram is shown above. The DCX can be thought of as three independently tracking two-way crossovers. The output of the first crossover is fed to the input of the following crossovers.

The input is first applied to the subsonic high-pass filter and then to the input gain adjust circuit, thus input gain adjustment affects all of the DCX's outputs. The output of the gain adjust stage is connected to the first tracking crossover, MID FREQ filter.

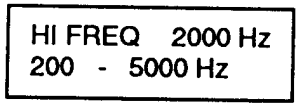
All the frequencies above the MID FREQ will be sent to the HIGH FREQ filter and the 2-way high pass output, HP 2W; those below the MID FREQ will be sent to the LOW FREQ filter and the 2-way low pass output, LP 2W. An individual level adjustment is provided for the LP 2W output and the HP 2W output. Use of only the 2-way outputs would result in a conventional two-way tracking crossover

The outputs of the HIGH FREQ and LOW FREQ filters are all passed to the output level adjust stages and then made available via the DIN connectors. Use of only the SUB, LOW, MID, and HIGH outputs would result in a conventional 4-way crossover, with the three crossover points being defined by LOW FREQ, MID FREQ, and HIGH FREQ respectively.

DISPLAY MENUS

The following are the DCX-1000 display menus in the sequence they are displayed upon powering up your unit. When the DCX is shut off and then powered up again the display returns to these menus. The displays are shown using the factory presets.

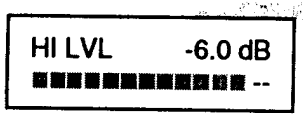
Precision Power DCX-1000	**Initial Power Up Display** Name and serial number of product. **Option 1:** Use the **up** and **down** softkeys simultaneously for the factory preset. **Option 2:** Use the **next** softkey to continue setting your own presets.
PPI - FACTORY PRESETS LOADED	**Factory Preset - Option 1** The factory presets are now loaded. In order for them to come on directly after powering up your unit you will need to save this setting. Using the **next** softkey, bypass all menu settings until the SAVE TO PRESET menu is displayed. Save to either preset 1, by pushing the **up** softkey, or to preset 2, by pushing the **down** softkey.
-------DCX-1000------- DISPLAY CONTRAST	**Contrast Display - Option 2** Select the **up** or **down** softkey to adjust the contrast.
USING PRESET: 2* UP = 1 DOWN = 2	**Preset Display 1** Tells you which preset is currently being used. Select the **up** or **down** softky to change preset. The asterisk (*) indicates that current changes were not saved. The asterisk will remain until you either power down, save preset, or make additional changes and save them.
GAIN -0.0 dB ■■■■■■■■■■■■-----	**Input Gain Adjustment** The goal is to get the greatest possible signal level without overloading the DCX-1000. This control allows you to match the loudness of the source units with different output levels. The gain ranges from -9.0 dB to +15.0 dB. Select the **up** or **down** softkey to adjust the gain.



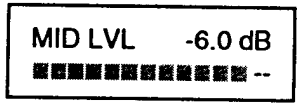
High Frequency Crossover Point
Defines the high pass crossover point on the High output and the low pass crossover point on the Mid output. Select the **up** or **down** softkey to adjust frequency.

Mid Frequency Crossover Point
Defines the high pass crossover point on the Mid output and the low pass crossover point on the Low output. Select the **up** or **down** softkey to adjust frequency.

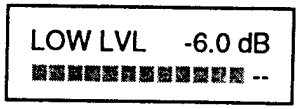
Low Frequency Crossover Point
Defines the high pass crossover point on the Low output and the low pass crossover point on the Sub output. Select the **up** or **down** softkey to adjust frequency.



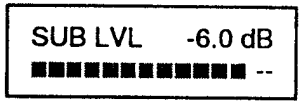
High Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the high output level.



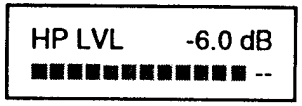
Mid Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the mid output level.



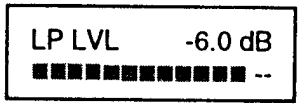
Low Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the low output level.



Sub Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the sub output level.

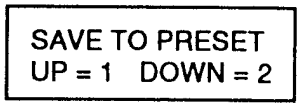


High Pass Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the high pass output level.



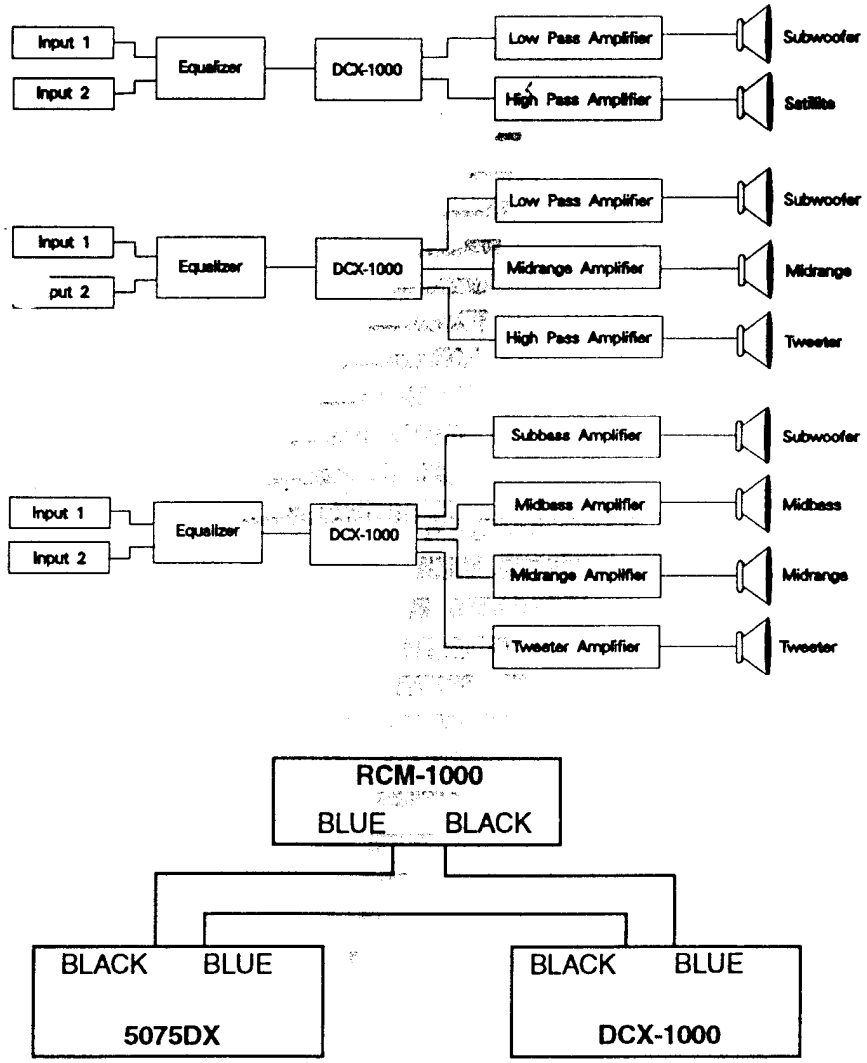
Low Pass Level Adjustment
Defines the amplitude of the signal level. The maximum level is -0.0 dB (no attenuation), the minimum level is OFF. Use the **up** or **down** softkeys to adjust the low pass output level.

Output Clip Level Adjustment
Lights when overall system has reached it's maximum undistorted output level. It is adjustable to match amplifier's maximum power level from 1 V - 12 V. Select the **up** or **down** softkeys to adjust the clip level.



Save to Preset
Saves the changes that were currently implimented. Save to either preset 1, by pushing the **up** softkey, or to preset 2, by pushing the **down** softkey.

ΛVΛVΛV SAMPLE HOOKUP CONFIGURATIONS



This sample is shown using simplex cable.
Precision Power is currently designing more fiber optic devices.
Precision Power is State of the Art

THANK YOU ΛVΛVΛVΛVΛV

Thank you again for choosing Precision Power's DCX-1000 to enhance your system. Your complete satisfaction is important to us. If you have any comments please feel free to write us.

To update your system with our state-of-the-art equipment we invite you to try our other products. Please consult your PPI dealer for further information.

Precision Power is the competitive edge.

LIMITED WARRANTY

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Precision Power, Inc. (PPI) warrants its amplifiers and accessories to be free from defects in materials and workmanship under normal use and service for a period of two years from the date of original purchase. The extent and conditions of PPI's Limited Warranty are as follows:

1. PPI warrants that it will either repair or replace at no charge any unit which PPI's examination discloses to be defective and under warranty, provided the defect occurs within two year from the date of purchase, and the product is returned immediately to PPI.

2. The date of purchase of a PPI Amplifier and/or Accessory must be established by an original sales receipt which must accompany the article being returned for warranty work.

3. The provisions of this warranty shall not apply to any PPI unit used for a purpose for which it is not designed, which has been repaired or altered in any way, or which has been connected, installed, or adjusted other than in accordance with the instructions furnished in PPI's owner's manual. Nor shall this warranty apply to any part which has been subject to misuse, neglect, or accident.

4. PPI does not authorize any other person to assume any other liability in connection with its products. THIS WARRANTY IS THE ONLY EXPRESS WARRANTY MADE BY PPI APPLICABLE TO ITS PRODUCTS. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO PPI'S AMPLIFIERS AND/OR ACCESSORIES IS LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY. PPI SHALL NOT BE LIABLE FOR THE INCIDENTAL, CONSEQUENTIAL, OR COMMERCIAL DAMAGES RESULTING FROM THE BREACH OF THIS WRITTEN WARRANTY. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts; so the above limitations or exclusions may not apply to you.

5. Your unit will be serviced on an in-warranty basis within the warranty period for the correction of warranted defects. Do not return the article to your dealer. Return the article including your name, telephone number, and return address with the description of the problem to:

Precision Power
Warranty Department
4829 S. 38th Street
Phoenix, AZ 85040

TO RETURN ARTICLES OUT OF WARRANTY. Return the article, postage prepaid, in the original protective carton. Include in the package a description of the problem and, if desired, a request for an estimate of repair costs. Unless a request for an estimate is included, the unit will be repaired as necessary. Fifty dollars ($50.00) labor, plus parts will be charged for all product repairs. The repaired unit will be returned to the customer with an itemized statement, C.O.D.

NOTES