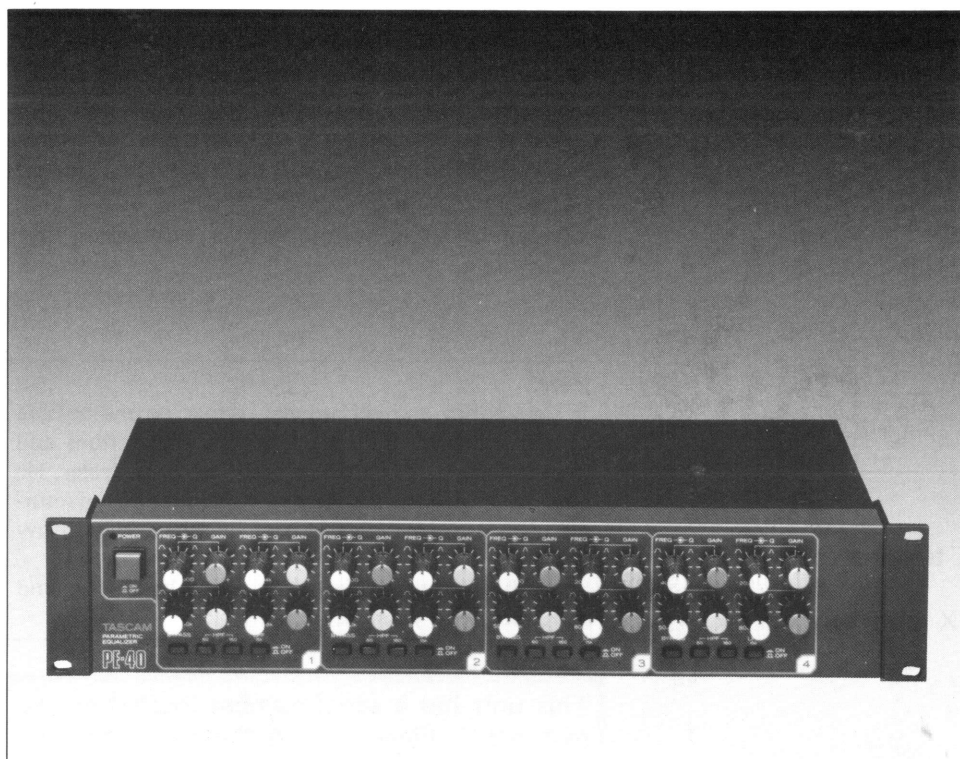


# TASCAM

TEAC Production Products

# PE-40

Parametric Equalizer



**OWNER'S MANUAL**

5700038000

# SAFETY INSTRUCTIONS

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## PREPARATION

- BEFORE OPERATING APPLIANCE, read and understand all the following Safety Instructions as well as operating instructions in the Owner's Manual.
- HEED all WARNINGS and FOLLOW all INSTRUCTIONS – in these Safety Instructions, in the Owner's Manual, and on the appliance itself.
- RETAIN the INSTRUCTIONS for reference when needed.

## LOCATION AND HOOKUP

- Appliance should not be used near water or in areas of high humidity – for example, near a swimming pool or in a damp basement.
- Appliance should not be used near heat sources such as heat radiators, stoves, direct sunlight.
- Appliance should be located so that its position does not interfere with proper ventilation. Make sure that air vents on the appliance are not blocked from air by such objects as other appliances, draperies, walls, or carpets.
- Appliance should not be suspended from ceilings or walls except as specifically recommended by the manufacturer.
- Similarly, appliance should not be used with a cart or stand except as specifically recommended by the manufacturer.
- Appliance should be used only on power line sources as indicated in the Owner's Manual and as marked on the appliance itself.
- If appliance requires grounding, or polarization of power source, follow instructions in the Owner's Manual for proper connections.
- If appliance is to be used with an Outdoor Antenna, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. The example shown on the back is for an FM/TV antenna installation. However, the basic grounding circuit and conductor size will also apply to external AM antenna installations.
- The Outdoor Antenna should be located as far as possible away from power lines.
- Power supply cords of the appliance should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the points where they exit from the appliance.

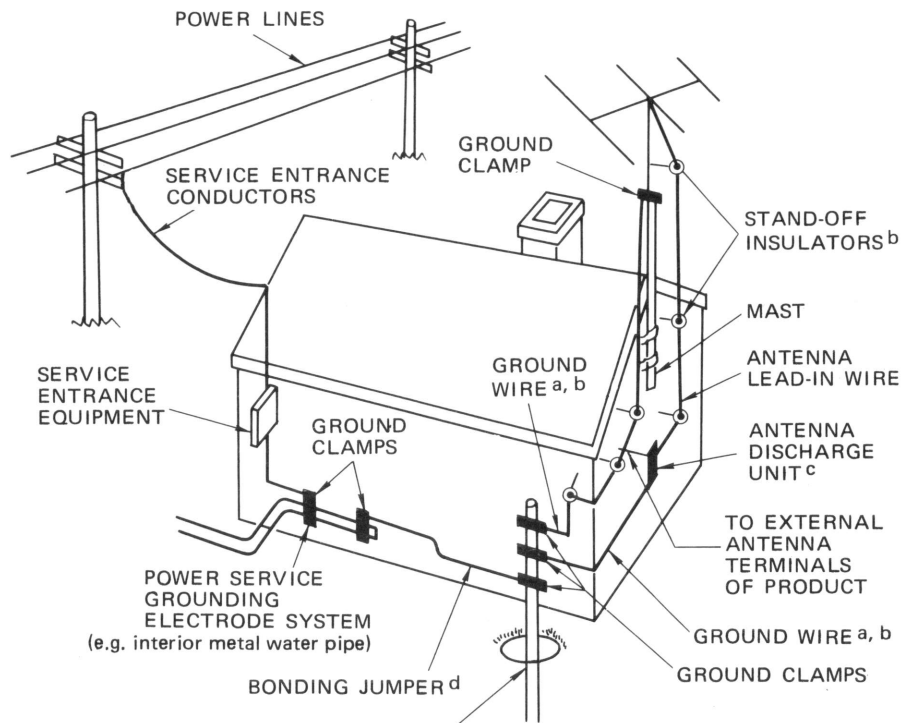
## MAINTENANCE

- Cleaning of the appliance should be done only as recommended by the manufacturer.
- In extended periods of non-use, the appliance should be unplugged from the power line source.
- Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- The appliance should be serviced by qualified service personnel when:
  - A. The power supply cord or the plug has been damaged;
  - B. Objects have fallen, or liquid has been spilled into the appliance;
  - C. The appliance has been exposed to rain;
  - D. The appliance does not appear to operate normally or exhibits a marked change in performance;
  - E. The appliance has been dropped, or the enclosure damaged.

## SERVICING

The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**EXAMPLE OF ANTENNA GROUNDING ACCORDING  
TO NATIONAL ELECTRICAL CODE INSTRUCTIONS  
CONTAINED IN ARTICLE 810 – "RADIO AND  
TELEVISION EQUIPMENT"**



OPTIONAL ANTENNA GROUNDING ELECTRODE DRIVEN 8 FEET (2.44 m) INTO THE EARTH IF REQUIRED BY LOCAL CODES. SEE NEC SECTION 810 – 21 (f).

**a**  
Use No. 10 AWG (5.3 mm<sup>2</sup>) copper or No. 8 AWG (8.4 mm<sup>2</sup>) aluminum or No. 17 AWG (1.0 mm<sup>2</sup>) copper-clad steel or bronze wire, or larger, as ground wire.

**b**  
Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83 m) apart.

**c**  
Mount antenna discharge unit as closely as possible to where lead-in enters house.

**d**  
Use jumper wire not smaller than No. 6 AWG (13.3 mm<sup>2</sup>) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21(j).

## **Voltage Conversion** (General Export Model Only)

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### **Before Operating the Equipment**

Please check that the voltage specified on the unit and on the packing carton conforms to the voltage available in your area. If it does not, voltage conversion of the PE-40 is necessary.

BE SURE TO REMOVE THE POWER CORD FROM THE AC OUTLET BEFORE REMOVING THE OUTER CASE AND REPOSITIONING THE VOLTAGE CONVERSION PLUG.

1. Remove the bottom panel of the unit by removing the screws.
2. Locate the voltage selector plug near the transformer inside the unit.
3. Pull out the plug and reinsert it so that the desired voltage appears in the cut-out window of the plug.

## **Note for U.K. Customers**

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### **U.K. Customers Only:**

Due to the variety of plugs being used in the U.K., this unit is sold without an AC plug. Please request your dealer to install the correct plug to match the mains power outlet where your unit will be used as per these instructions.

### **IMPORTANT**

The wires in this mains lead are coloured in accordance with the following code:

<b>BLUE:</b>	<b>NEUTRAL</b>
<b>BROWN:</b>	<b>LIVE</b>

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals of your plug, proceed as follows.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

# Introduction

The PE-40 is a 4-channel, 4-band parametric equalizer with three control knobs — concentric and separate; for each band and channel to allow continuous adjustments of the frequency range, gain and Q-factor. Also included is a bypass switch that facilitates “bypassing” of the equalizer circuit, and High and Low pass filters. The PE-40 and its self powered electronics provides you with a convenient and flexible means of sound tailoring when “stacked” together with a TASCAM M-30 or M-35 Recording Mixer and/or with one of TASCAM’s 38, 34 or 32 Multitrack Tape Recorders.

## Features

- EIA standard 19-inch rack mount type
- 4-channel, 4-band, 3-knob, continuously adjustable parametric type equalizer
  - High: 800 Hz — 16 kHz, Gain:  $\pm 15$  dB, Q factor: 1.1 — 5
  - Mid-high: 500 Hz — 10 kHz, Gain:  $\pm 15$  dB, Q factor: 1.1 — 5
  - Mid-low: 200 Hz — 4 kHz, Gain:  $\pm 15$  dB, Q factor: 1.1 — 5
  - Low: 40 Hz — 800 Hz, Gain:  $\pm 15$  dB, Q factor: 1.1 — 5
- Equalizer BYPASS switch
- Filter selector switches
  - HPF: 160 Hz, 6 dB/OCT
  - HPF: 60 Hz, 18 dB/OCT
  - LPF: 15 kHz, 12 dB/OCT
- IN(put) with FOLDBACK terminals x 4 (-10 dB)
- LINE OUT(put) with AUX OUT terminals x 4 (-10 dB)
- Self powered electronics

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

## Table of Contents

Introduction .....	2
Specifications .....	3
Rack Mounting .....	3
Features and Controls .....	4 — 6
Applications .....	7
Block Diagram .....	7
Schematic Diagram .....	Insert
Voltage Conversion	
Note for U.K. Customers	

## Environmental Considerations

These conditions apply to the PE-40 as well as to the other TASCAM equipment being used.

- Avoid temperatures beyond the range of 5°C to 30°C (40°F to 87°F).
- Avoid extremely dirty or dusty environments.
- Avoid using AC power inputs that fluctuate greatly.
- Avoid areas where there is extremely high humidity.

### Note:

If you notice any differences, either on the outside or the inside of the unit from the illustrations and descriptions in this manual, talk to your dealer. He may have revision sheets that will show manufacturing changes, or notifications of how to deal with any changes in set-up procedures. Save this manual, refer to it when necessary, and good luck with your PE-40.

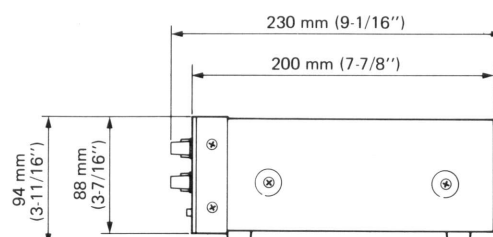
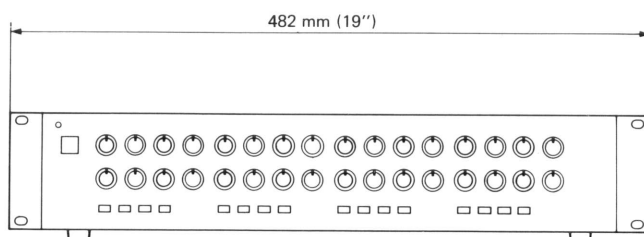
This unit has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.

Model Number \_\_\_\_\_  
Serial Number \_\_\_\_\_

## Specifications

<b>Input</b>	
Input Impedance:	50 k ohms
Nominal Input Level:	-10 dB (0.3 V)
Maximum Input Level:	+18 dB (7.9 V)
<b>Output</b>	
Output Impedance:	100 ohms
Nominal Load Impedance:	1 k ohms
Minimum Load Impedance:	500 ohms
Nominal Output Level:	-10 dB (0.3 V)
Maximum Output Level:	+18 dB (7.9 V)
Foldback:	Connected to input terminals in parallel
Aux. Output:	Connected to output terminals in parallel
<b>Equalizer:</b>	
Type:	Peak/Dip Parametric, 4 Bands
Level:	±15 dB
Q:	1.1 to 5
<b>Frequency:</b>	
High (800 – 16,000):	800 to 16,000 Hz
Middle-high (500 – 10,000):	500 to 10,000 Hz
Middle-low (200 – 4,000):	200 to 4,000 Hz
Low (40 – 800):	40 to 800 Hz
<b>Filter:</b>	
High Pass (160):	160 Hz, 6 dB/oct.
High Pass (60):	60 Hz, 18 dB/oct.
Low Pass (15 k):	15,000 Hz, 12 dB/oct.
Signal-to-Noise Ratio*:	83 dB/80 dB (A weighted/unweighted 20 to 20,000 Hz)
Cross Talk*:	Better than 70 dB
Total Harmonic Distortion*:	Less than 0.015 % (1 kHz, Nominal Input Level)
Power Requirements:	120 V AC, 60 Hz, 14 W (U.S.A./Canada Model)
	220 V AC, 50 Hz, 14 W (Europe Model)
	240 V AC, 50 Hz, 14 W (U.K./Australia Model)
	100/120/220/240 V AC, 50/60 Hz, 14 W (General Export Model)
Dimensions (W x H x D):	482 x 88 x 230 mm (19" x 3-7/16" x 9-1/16")
Weight:	4.7 kg (10-6/16 lbs)
Standard Accessory:	Rack Mount Angles

\*Measured with equalizer GAIN knob set center – flat frequency response.  
Changes in specifications and features may be made without notice or obligation.

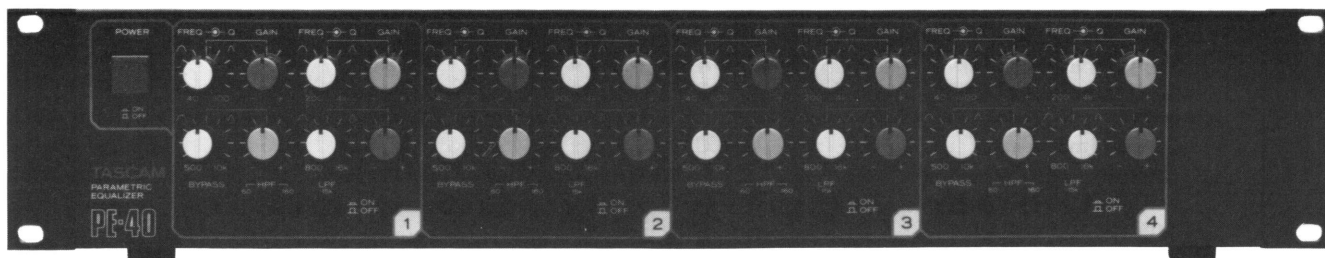


## Rack Mounting

The PE-40 is designed to be mounted on an EIA standard 19-inch rack, preferably the TASCAM CS-607 Console Rack. For this purpose, mounting holes are provided on both the left and right sides of the front

panel to which the appropriate screws and washers, each two, are to be inserted. The panel height of the PE-40 is the equivalent to 2 EIA standard units (88 mm or 3-7/16").

## Features and Controls



The equalizer:

The 4-channel, 4-band, 3-knob self powered PE-40 parametric equalizer features more sophisticated and versatile functions than a conventional graphic equalizer. An advantage of this type of equalizer would be the capability of being able to adjust the Q factor after a specific frequency band has been attenuated or boosted, and at the same time, continuously varying the position of the center frequency. All continuously adjustable.

As the adjustable range of each band is so expanded that the adjacent bands overlap each other, the operation flexibility is enlarged.

### ① FREQ Control Knob

Continuously adjustable and when rotated left, the center frequency shifts to a lower frequency. When rotated right, it shifts to a higher frequency.

### ② Q Control Knob

In the PE-40, Q indicates the degree of "contraction or expansion" of a specified frequency which is being boosted or attenuated through the GAIN control knobs.

The continuously adjustable Q factor increases as the Q knob is turned right (  $\wedge$  ), and decreases as it is turned to the left (  $\vee$  ).

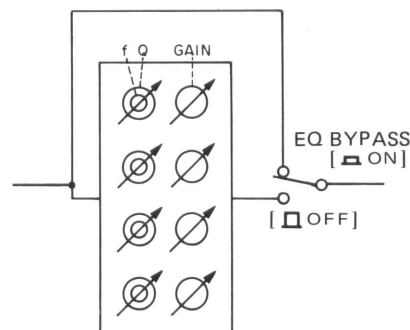
This facility becomes very useful when it becomes necessary to cut the unwanted resonance when a spring reverb unit is employed, or when it comes to the critical tailoring of the vocal and drum sounds.

### ③ GAIN Control Knob

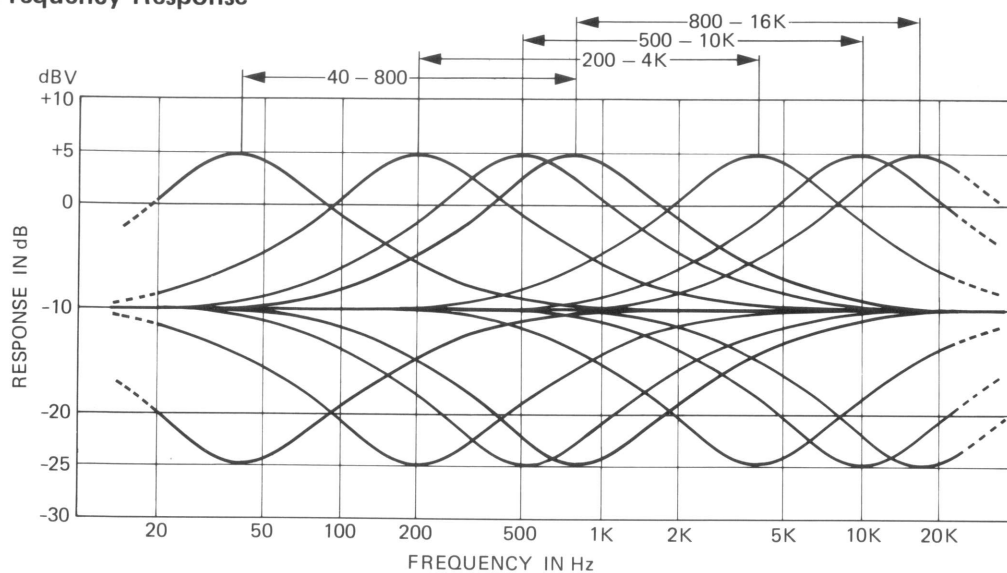
A continuously adjustable range of  $\pm 15$  dB. A full rightwards rotation will provide a maximum boost of +15 dB. A -15 dB reduction in gain can be provided by turning the control to the leftmost position.

### ④ BYPASS Switch

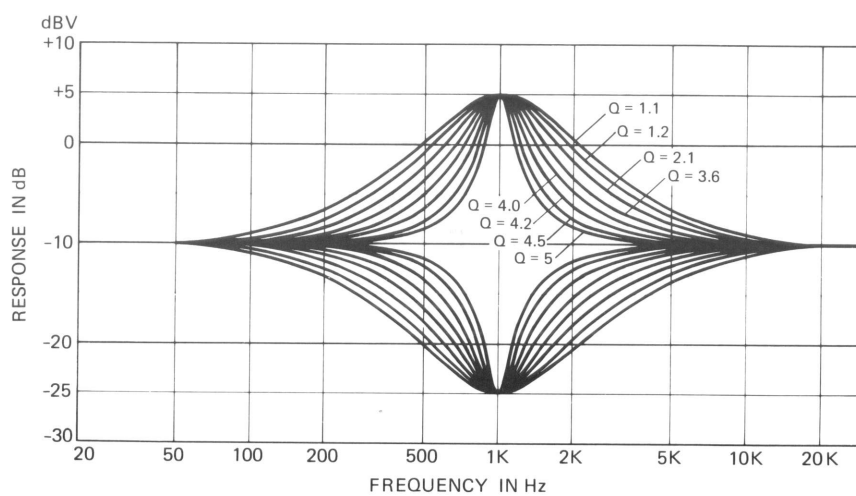
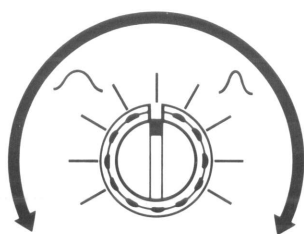
With this switch in the ON (  $\square$  ) position, the equalizer circuit is bypassed which allows you to be able to hear the sound prior to passing through the equalizer circuit.



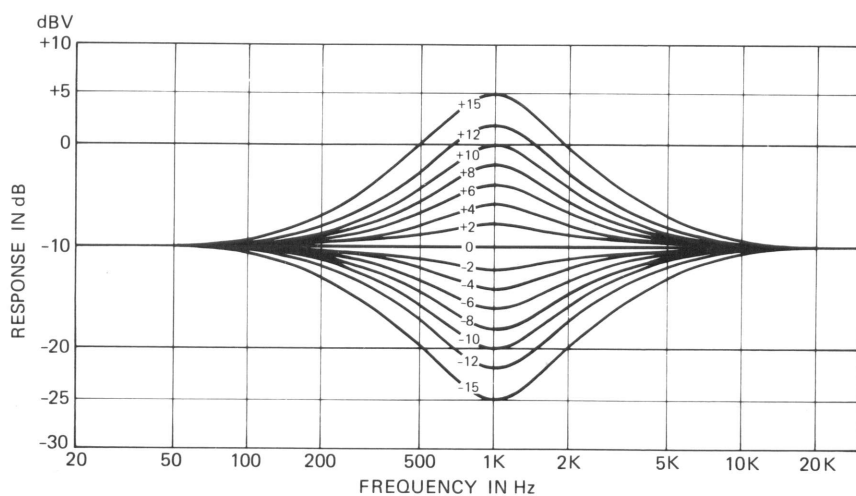
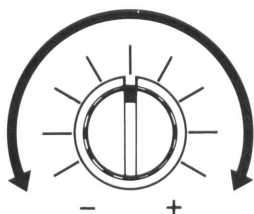
## 4-Band Frequency Response



## Q-factor Response



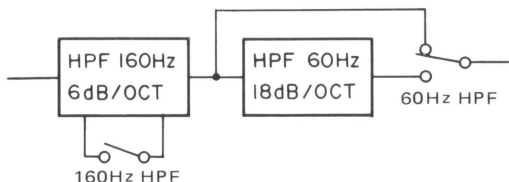
## GAIN (Level) Response





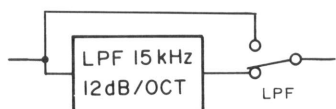
### 5 HPF (High Pass Filters)

Setting this switch to ON (  $\blacksquare$  ) engages the filter. The 160 Hz (6 dB/OCT) switch may be used to reduce "howling" in PA applications, while the 60 Hz (8 dB/OCT) switch, when engaged, will suppress the undesirable, extremely low frequency signals such as rumble or motor noise which are sometimes contained when the audio tapes or discs are reproduced.

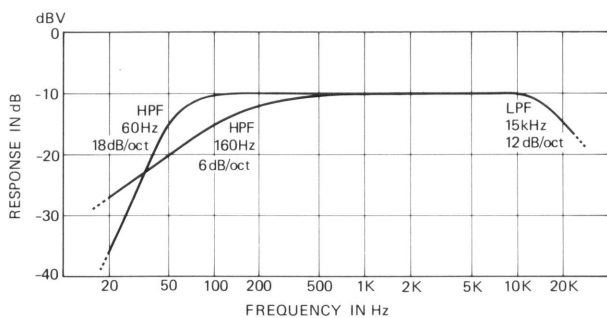


### 6 LPF (Low Pass Filter)

Setting this switch to ON (  $\blacksquare$  ) engages the filter to reduce the undesirable high frequency noises contained in the tape.



\*Be sure to set this switch to OFF (  $\square$  ) when filtering is no longer required.

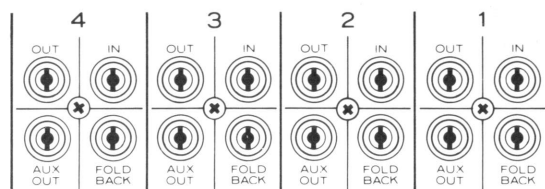


HPF/LPF Response

### 7 POWER Switch

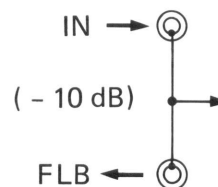
When depressed (  $\blacksquare$  ON), the LED above lights. Press again (  $\square$  OFF) to turn off.

## Connection Terminals



### IN/FOLDBACK Terminals

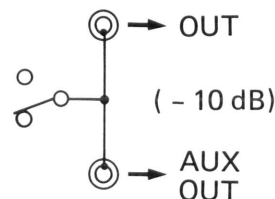
IN terminals accept input signal and the same signal can be sent back out via the FOLDBACK terminals to other external equipment, such as an amplifier, audio mixer, etc., without passing through the equalizer.



**\*Note:** The same signal should not be sent to the IN and FOLDBACK terminals at the same time. The simultaneous feeding of the same signal to these terminals will place a strain on the electronics and lead to malfunction.

### OUT/AUX OUT Terminals

The "equalized" or "bypassed" signal appears at OUT terminals with the AUX OUT terminals connected in parallel to perform related functions.



### AC Power Cord

If your unit is a General Export model, see "VOLTAGE CONVERSION" printed in the insert.

U.K. customers are requested to refer to "Note for U.K. Customers" of the same insert.

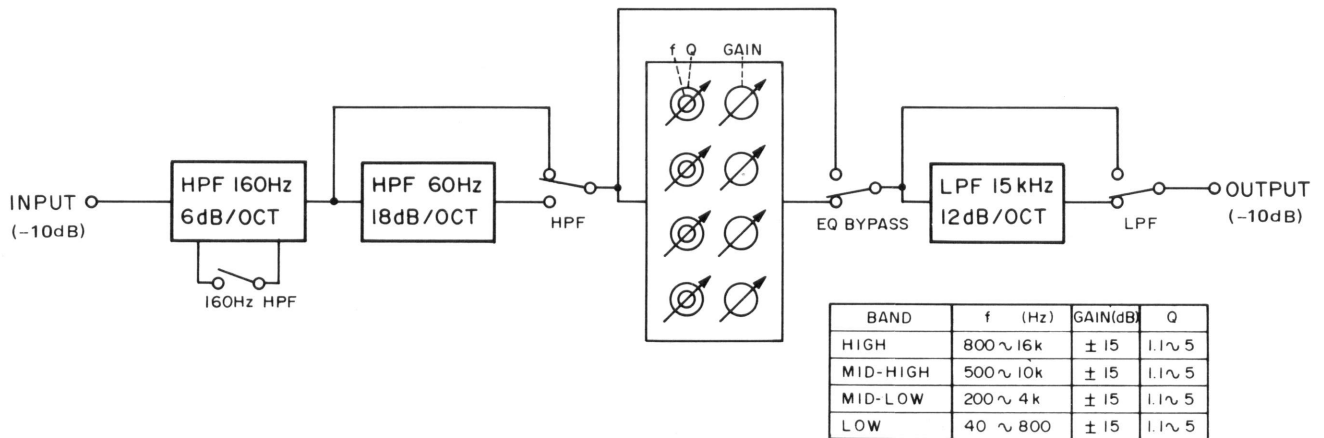
## Applications

The PE-40 is ideal for versatile sound creation and is indispensable in meeting the demand of fulfilling various application requirements of multitrack recording, PA application, or mix down operation with a recording mixer, permitting minute tailoring of the sounds of drums, electro-rhythm equipment and synthesizers. You can personally tailor or "spicen" your music by combining the PE-40 with any of the various sound processors available. As there are four separate equalizer circuits, one for each channel incorporated into the PE-40, a single PE-40 will provide you with a variety of application possibilities. To give you an example, two

echo units can be connected to comprise a stereo echo system, in which the dry signals are sent directly to the PE-40 and the wet signals are sent to the PE-40 for routing together to the mixer. The Equalizer can be placed before or after a sound processor so that the signals are handled either before entering the processor, or after. And if applications call for, the wet and dry signals can be simultaneously or independently controlled through the PE-40.

**Note:** Wet signals are the signals that are processed through a signal processor, and dry signals are the signals that are not.

## Block Diagram



# **TASCAM**

TEAC Production Products

# **PE-40**

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