



MIX TAPE BAND-PASS FILTER

DV-12

INSTRUCTION MANUAL

DV-12
MIX TAPE BAND-PASS FILTER
INSTRUCTION
MANUAL

WARRANTY

NF CORPORATION certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from our factory.

All *NF* products are warranted against defects in materials and workmanship for a period of one year from the date shipment. During the warranty period of, *NF* will, at its option, either will repair the defective product without any charge for the parts and labor, or either repair or replace products which prove to be defective. For repair service under warranty, the product must be returned to a service center designated by *NF*. Purchaser shall be prepay shipping charge, duties, and taxes for the product to *NF* from another country, and *NF* shall pay shipping charge to returned the product to purchaser.

This warranty shall not apply to any defect, failure or damage caused by improper use, improper or inadequate maintenance and care or modified by purchaser or personnel other than *NF* representatives.

NF CORPORATION

FOREWORD

Thank you very much for procuring the DV-12 Mix Tape Band-Pass Filter. At the outset, please take a few minutes to read the Safety Precautions indicated in this manual in order to use this equipment safely and correctly.

- Warning and Caution notices

The following Warning and Caution notices appear in this manual. These must be observed in order to protect both the user from physical harm and the equipment from damage.

⚠ WARNING

Risk of serious and possibly fatal injury from electric shock or other cause.

⚠ CAUTION

Risk of damage to the equipment.

SAFETY PRECAUTION

Observe the following warnings and cautions in order to use this equipment safely. No responsibility or warranty is assumed for damages arising from use in a manner contrary to these warnings and cautions.

- Observe text instructions

This manual has been compiled in order to enable safe operation and use of this equipment. Be sure to read this manual before using the equipment.

Items designated by Warning advise of serious physical hazards. Be sure to observe these carefully.

- Be sure to connect ground

Be sure to properly connect the ground. By connecting the 3 conductor power cable to a grounded 3-terminal wall socket, the equipment is automatically grounded.

- Confirm power source voltage

Before connecting this equipment, check that the proper voltage is being supplied to the power outlet. Refer to the Grounding and Power Supply section of this manual.

- Use only the properly rated fuse

Improperly rated fuses present a fire hazard and other risks. Refer to the name and operating each section of this manual and confirm the fuse rating.

Be sure to disconnect the equipment from the power source before replacing the fuse.

- Smoke, odor, noise

In event smoke, peculiar odor or noise is emitted, immediately disconnect the power source and avoid and further operation. Contact service.

- Flammable gas

Do not use this equipment in the presence of flammable gas. There is danger of fire and explosion.

- Do not remove the covers

This equipment contains high voltages. Do not remove external covers. Refer all internal inspection and service to a qualified service technician who fully understands the hazards.

- Do not modify

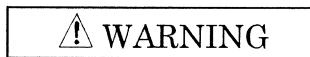
Do not use parts other than specified by the manufacturer and by no means attempt to modify the equipment. There is risk of personnel hazard and damage to the equipment. The manufacturer reserves the option of refusing service in such cases.

- Safety related symbols and indications

Following are general definitions of the symbols and indications used in the text on the product.



Advises of possible hazard to the user, as well as the need to consult this manual when using an operation or function.



Appears in the text and on the product to advise risk of fatal or otherwise serious physical injury.



Appears in the text and on the product to advise risk of damage to product.

CONTENTS

	Page
• Foreword-----	I
• Safety Precautions-----	II
• Section 1 Introduction-----	1
1-1 Outline -----	1
1-2 Specifications-----	2
1-3 Function of each section-----	3
1-4 Options-----	4
1-5 Block diagram-----	5
• Section 2 Preparation for use-----	7
2-1 Safety check-----	7
2-2 Unpacking and repacking-----	7
2-3 Configuration-----	7
2-4 Location -----	8
2-5 Grounding and power source-----	8
• Section 3 Operating instruction-----	9
3-1 Name and operating each section-----	9
3-2 How to operate-----	11
3-3 Options-----	13
3-4 Notes for operation-----	14
• Section 4 Maintenance-----	16
• Section 5 Standard data-----	17

CHART

	Page
Fig. 1-1 Block diagram-----	5
Fig. 1-2 External drawing-----	6
Fig. 3-1 The way of replacing a fuse-----	9
Fig. 3-2 Pin assignment-----	11
Fig. 3-3 Internal connecting configuration-----	13
Fig. 3-4 Panel description-----	15
Fig. 5-1 Band pass filter amplitude response-----	17
Table 1-1 Specifications-----	2
Table 1-2 Input characteristics-----	4
Table 2-1 Configuration list-----	7

1. INTRODUCTION

1-1 OUTLINE

The DV-12 is a filter set used when adjusting and inspecting a cassette tape recorder by using a mix-tape in which plural frequencies are recorded.

Using a mix-tape combined with the DV-12, it is possible to output the signal of necessary frequency by pushing buttons, so that comparing from former measuring method, the operation efficiency is much improved to eliminate searching and exchanging of a tape.

A pass band of the band pass filter is wide, approx. 12% at the point of -0.5dB, and cut-off response is sharp, approx. 35dB at 1/2 of and twice the center frequencies.

A center frequency of the band pass filter is possible to be selected out of eight points. The eight points of frequency and THRU is possible to be changed by the frequency selection switch on the front panel. The DV-12 has an external control connector on the rear panel, so that it is also possible to be changed by an external signal.

The DV-12 is composed with two channels for stereo, it is possible to measure both L and R channel together. An AC voltmeter is to be connected to be the output terminal when measuring.

The power supply voltage of the DV-12 is AC100V or either of 120V or 230V. According to the power supply voltage, turn the power supply voltage selection switch.

• The merit of using mix-tape method

1. It is possible to measure an azimuth, frequency response, wow flutter and tape speed together by using the same test tape, so that it is useful to reduction of operation.
2. It is possible to change the signal according to the skill of operation, measuring with the least time.
3. The time of exchanging a test tape is reduced.
4. Wow and flutter / tape speed is set to fixed 3kHz output, and measuring wow and flutter after checking an azimuth and frequency response. it is possible to measure wow and flutter with no response time of a meter.
5. The cost of a test tape proves economical.

1-2 SPECIFICATIONS

The specifications of the DV-12 are as follows.

Table 1-1 Specifications

Number of channel	Input 2 channels (L and R) Output 2 channels (L and R)		
Center frequency(standard)	63,125,315,1k,6.3k,8k,10k,12.5kHz and THRU		
Accuracy of center frequency	Within $\pm 3\%$		
Frequency selection	Front panel : by push buttons External control : option OP-01		
Pass band Gain	$0 \pm 0.5\text{dB}$ (at 1kHz)		
Level deviation	$0 \pm 0.5\text{dB}$ (against 0dB at 1kHz)		
Attenuation	Approx. 35dB at 1/2 of and twice the center frequencies		
Fixed output for wow and flutter	3kHz or 3.15kHz output The output is set to derive from the R channel		
Input characteristics	Standard	OP-03(BTL input $\pm 14\text{V}$)	
	Impedance	1M Ω typ. (single-ended)	100k Ω typ.(differential input)
	Max. voltage	$\pm 5\text{V}$	$\pm 14\text{V}$
	Allowable Max. voltage	$\pm 15\text{V}$	$\pm 50\text{V}$
Output impedance	100 Ω or less (single-ended)		
Load resistor	10k Ω or more		
Noise level	200 μVrms or less (bandwidth of 500kHz)		
Harmonic distortion factor	0.05% or less (at 1kHz, $\pm 5\text{V}$ output)		
Crosstalk between channels	-70dB or less (at 1kHz, $\pm 5\text{V}$ output)		
Ambient Temp and Humidity range	Operating : 0 to 40°C, 10 to 80% RH no condensation Storage : -10 to 50°C, 10 to 80% RH no condensation		
Power requirements	AC100V/120V/230V $\pm 10\%$ selectable, 50Hz/60Hz, 5VA max.		
Insulation and Withstanding	Power input lines vs. chassis 50M Ω or more (DC 500V), AC 1500V for 1 minute		
Weight	2.1kg approx.		
Dimensions	225(W) \times 67(H) \times 250(D)mm (Excluding Protrusions)		

1-3 FUNCTION OF EACH SECTION

(1) Frequency selection switch

Select the center frequency. The center frequency of the internal band pass filter is changed by this switch.

The selected frequency is indicated by a LED lit.

(2) Power switch

The unit is powered on with a LED lit by turning the switch on.

(3) External control connector

This connector is used when center frequency is to be selected by an external signal. This connector is a 24-pin multi-connector and installed on rear panel. When using OP-01 Remote controller, Remote controller is to be connected to the connector.

(4) Output terminal of wow and flutter / tape speed

Fixed 3kHz or 3.15kHz output terminal for wow and flutter. Wow flutter meter is to be connected to the terminal.

(5) Input terminal

Terminals of each L and R channel input. The output of the tape recorder is to be connected to the terminals.

(6) Power supply voltage selection switch

According to the power supply voltage, turn the switch AC100V or either of 120V or 230V.

(7) Output terminal

Terminals of each L and R channel output. A measuring instrument and such like an AC voltmeter, a VU meter is to be connected to the terminal.

1-4 OPTIONS

(1) OP-01 Remote controller

Using the Remote controller, a remote control of center frequency selection of eight points and THRU is possible by connecting the Remote controller to the External control connector.

The length of a cord of the Remote controller is approx. 1.5meters. Therefore, a remote control at hand is possible.

(2) OP-03 BTL input $\pm 14V$

BTL input $\pm 14V$ is a differential input circuit used when measuring the output of a BTL amplifier and such like a car stereo. The difference of input characteristics between standard and OP-03 is as follows.

Install the circuit, please appoint the option when ordering the DV-12.

Table 1-2 Input characteristics

Input characteristics	Standard	OP-03 (BTL input $\pm 14V$)
Impedance	$1M\Omega$	$100k\Omega$
Max. voltage(signal + common mode input)	$\pm 5V$	$\pm 14V$
Allowable max. voltage(signal + common mode input)	$\pm 15V$	$\pm 50V$

1-5 BLOCK DIAGRAM

The block diagram of the DV-12 is as follows.

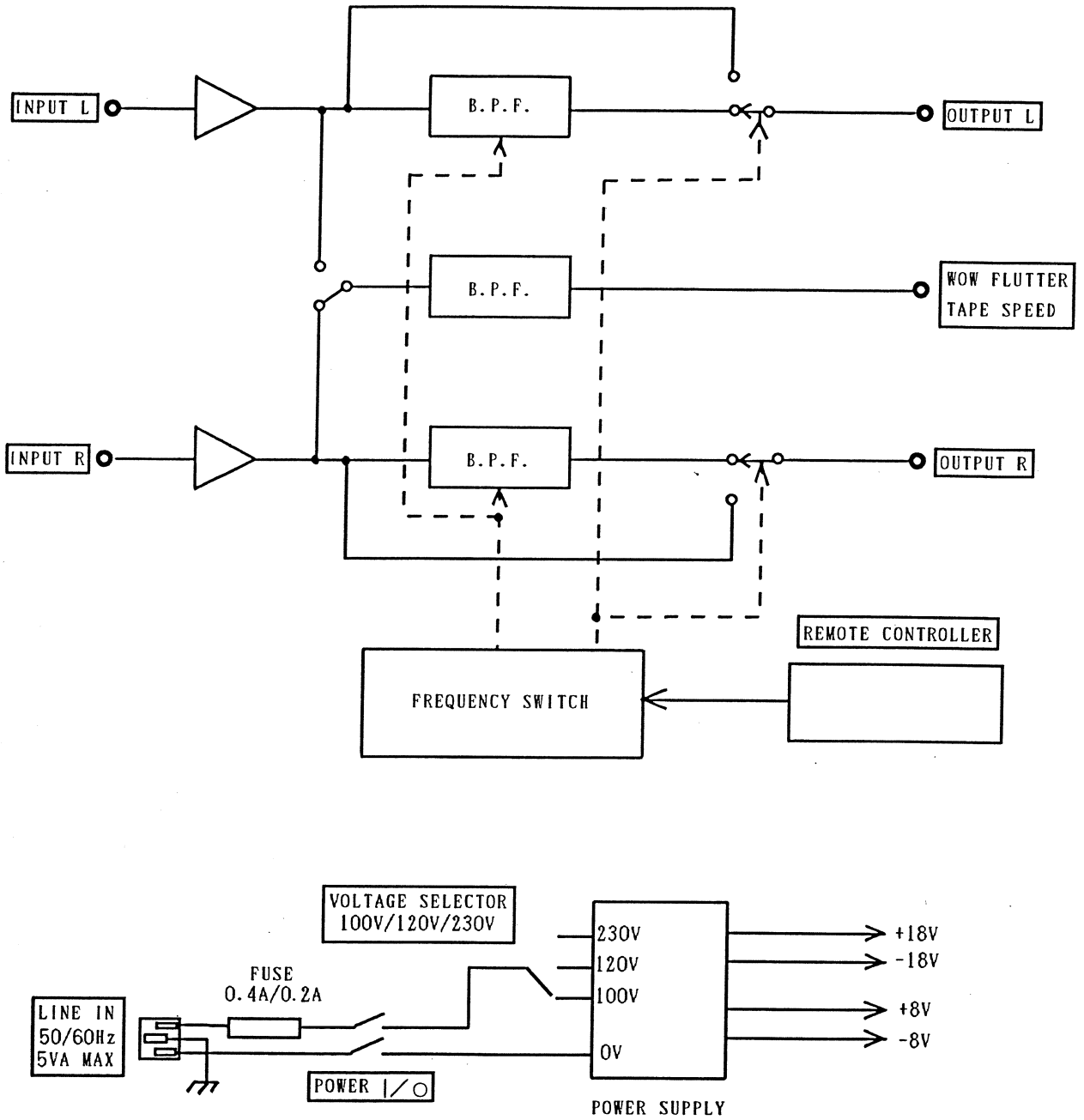


Fig. 1-1 Block diagram

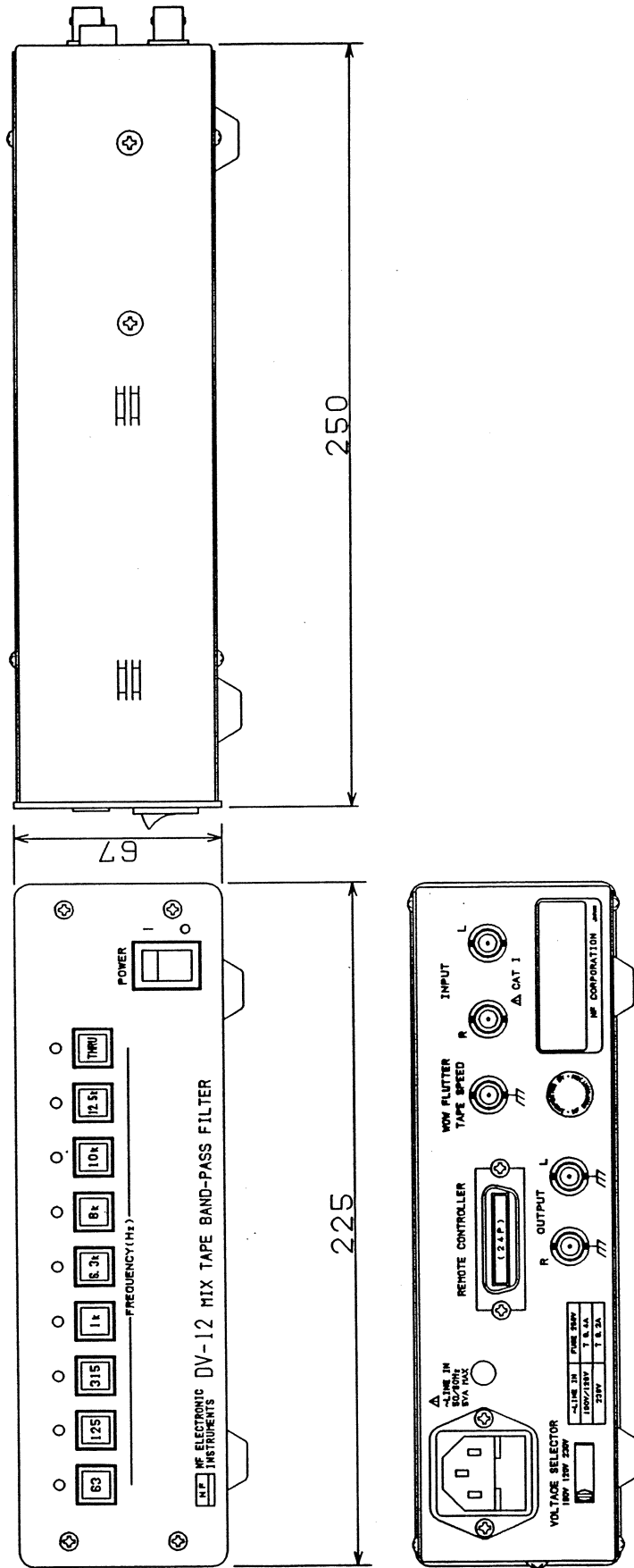


Fig 1-2 External drawing

2. PREPARATION FOR USE

2-1 SAFETY CHECK

Before using the DV-12, refer to the Safety precautions of this manual and confirm safety.

⚠ WARNING

Do not remove the covers.

This equipment contains dangerously high voltages. Do not remove external covers.

Refer all internal inspection and service to a qualified service technician who fully understands the hazards.

2-2 UNPACKING AND REPACKING

(1) Unpacking

After unpacking, check for any damage which may have been caused during transportation. Also check any shortage of accessories referring to 2-1 Configuration list.

(2) Repacking

When repacking the instrument for transportation, prepare a carton with proper strength and size and filters to protect the instrument appropriately.

2-3 CONFIGURATION

Table 2-1 lists the configuration list of the instrument.

Table 2-1 Configuration list

Main frame	1
Instruction Manual	1
Supplied accessories	
Power cable:(3-conductors, 2meters)	1 *
Adapter:(3-conductors to 2-conductors)	1 *
Fuse :(100V/120V: 0.4A or 230V: 0.2A)	
Time lag, 250V, Φ 5.2×20mm) . . .	1

* In the case of power supply voltage is AC100V

2-4 LOCATION

The tolerable ambient temperature and humidity ranges of the instrument are as follows. Moisture condensation must be absent.

Operating 0 to 40°C, 10 to 80% RH

Storage -10 to 50°C, 10 to 80% RH

Avoid installing the equipment in the following types of locations.

- Flammable gas

Do not use this equipment in the presence of flammable gas. There is danger of fire and explosion.

- In direct sunlight, near fire or heat source

It may cause some failure or error.

- Corrosive gas, moisture, dust or high humidity

It may cause the equipment corroded or some failure.

- Strong magnetic or electromagnetic fields

It may cause some error.

- Strong vibration

It may cause some failure or error.

2-5 GROUNDING AND POWER SOURCE

(1) Grounding

WARNING

This equipment must be grounded in order to prevent electric shock accidents.

Confirm the protective ground terminal is connected to ground before connecting the equipment for measurements. The DV-12 protective ground is connect to ground by the 3-prong power supply plug.

Use the supplied power supply cable to connect to a 3-terminal power outlet that has a protective ground contact.

(2) Power source

CAUTION

Be sure to observe the following in order to prevent damage to the equipment.

Confirm the power source voltage is within the range specified for the DV-12.

The DV-12 operates from the following commercial power source.

Power supply voltage range: AC100V/120V/230V±10%

Power supply frequency range: 50Hz/60Hz

Power consumption: MAX.5 VA

3. OPERATING INSTRUCTION

3-1 NAME AND OPERATION EACH SECTION

① _____ frequency selection switch

Select the center frequency. The center frequency of the internal band pass filter is changed by this switch.

The selected frequency is indicated by a LED lit.

② POWER I/O Power switch

The unit is powered on with a LED lit by turning the switch on.

③ _____ Power receptacle

This is to be connected by the power cord. The connector is united with a fuse folder. Including a spare fuse, this holds two time lag, 250V fuses inside.

Replacing a fuse, refer to the "Fig.3-1 The way of replacing a fuse".

Specified rating of a fuse of the DV-12 are as follows.

AC100V/120V: 0.4A

AC230V : 0.2A

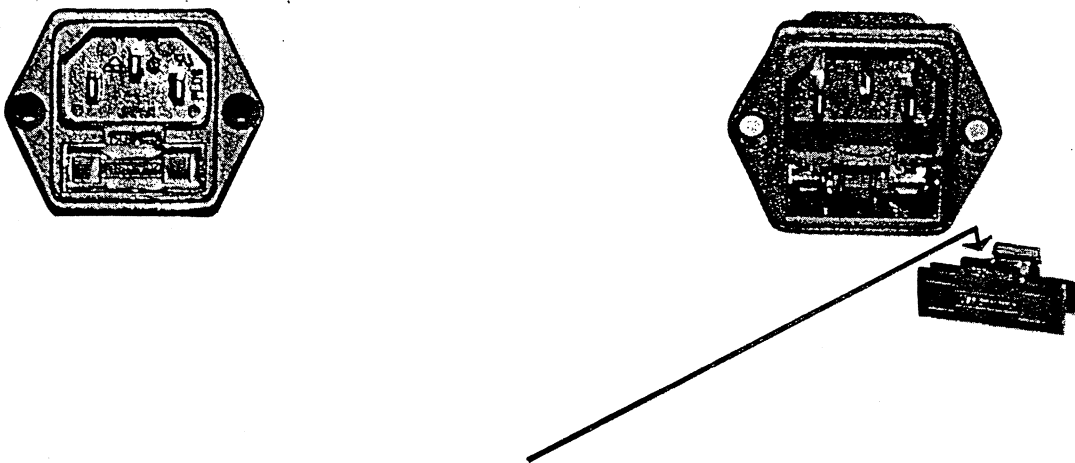
Time lag, 250V, Φ 5.2×20mm

According to the power supply voltage, specified rating of a fuse differs.

⚠WARNING

Use only a fuse with the specified rating.

There is risk of fire from an improperly rated fuse. Be sure to disconnect the power cord before replacing the fuse.



Removing the cover by hitching a thin pointed edge of a screwdriver here

Fig. 3-1 The way of replacing a fuse

④ REMOTE CONTROLLER External control connector

This connector is used when center frequency is to be selected by an external signal. This connector is a 24-pin multi-connector and installed on rear panel. When using OP-01 Remote controller, Remote controller is to be connected to the connector.

⑤ WOW FLUTTER TAPE SPEED Output terminal of wow and flutter / tape speed

Fixed 3kHz or 3.15kHz output terminal for wow and flutter / tape speed. Wow flutter meter is to be connected to the terminal.

⚠CAUTION

Do not apply any signal source to the output terminal of the DV-12. It may cause some failure.

⑥ INPUT L,R Input terminal

Terminals of each L and R channel input. The output of the tape recorder is to be connected to the terminals.

⚠CAUTION

Do not apply a signal exceeding $\pm 15V$ to the input terminal . It may cause some failure.

⑦ VOLTAGE SELECTOR Power supply voltage selection switch

According to the power supply voltage, turn the switch AC100V or either of 120V or 230V.

⑧ OUTPUT L,R Output terminal

Terminals of each L and R channel output. A measuring instrument and such like an AC voltmeter, a VU meter is to be connected to the terminal.

⑨ _____ Inspection clearance certifying label

This label is to certify that this unit satisfies the published specifications and our quality standard, and that has passed our inspection.

⑩ _____ Serial No. label

Indicates the unit's serial number.

3-2 HOW TO OPERATE

(1) Power on

After confirming that the power supply voltage according to the actual main voltage, turn the power switch on. The frequency of this unit will be set to THRU when powered on.

(2) Filter switching

Set the test tape and set the tape recorder to replay status. With the THRU button pressed, composite waveforms by-passing a band pass filter will be output directly. Press any one button for frequency selection enables any one from the composite waveforms in the test tape to be selected and output.

(3) Measurement of wow and flutter / tape speed

A 3kHz or 3.15kHz signal is to be output from the WOW FLUTTER TAPE SPEED output terminal on the rear panel, with which the measurement of wow and flutter or tape speed is possible. The output is set to derive from the R channel.

(4) External selection of frequency

A remote control of frequency selection is possible by using the external control terminal on the rear panel. The plug type is Amphenol 57-30240.

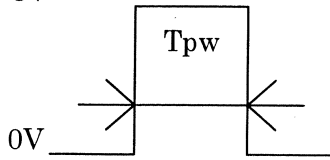
The control signal is +8V positive logic. The connector corresponds to frequencies as follows.

12	Unusable	24	Unusable
11	GND	23	GND
10	Unusable	22	Unusable
9	THRU	21	+8V
8	12.5kHz	20	+8V
7	10kHz	19	+8V
6	8kHz	18	+8V
5	6.3kHz	17	+8V
4	1kHz	16	+8V
3	315Hz	15	+8V
2	125Hz	14	+8V
1	63Hz	13	+8V

Fig. 3-2 Pin assignment

⚠ CAUTION

+8V



The external control signal should be a pulse or contact signal as above.

$$T_{pw} \geq 3\text{msec}$$

A switch for an external control should be a contact switch, that is ON status by the switch just pushed and OFF status by the switch untouched. A switch with which ON status is held when pushed should not be used.

3-3 OPTIONS

(1) OP-01 Remote controller

The cable attached to the remote control box should be connected to the rear panel multiconnector of the DV-12 and locked with a clasp. External control is possible by the push button of the box. The frequency setting via panel switches is also possible when the box is connected.

(2) OP-03 BTL Input $\pm 14V$

The DV-12 with an indication of BTL on the front panel has been modified to have a differential input for connection with BTL output. Either HOT and COLD of the BNC terminals of L and R input is isolated from the chassis and COLD (ground) of the output BNC terminals. Therefore, connection of the logic input to speaker's terminals is possible without attention to the polarity. The input circuit for BTL can be used also when connected to a single-ended output signal.

The maximum input voltage of the DV-12 is $\pm 14V$ for OP-03. However, please make sure to adjust the output of a tape recorder so that the input will not be overloaded by keeping the maximum input voltage of the DV-12.

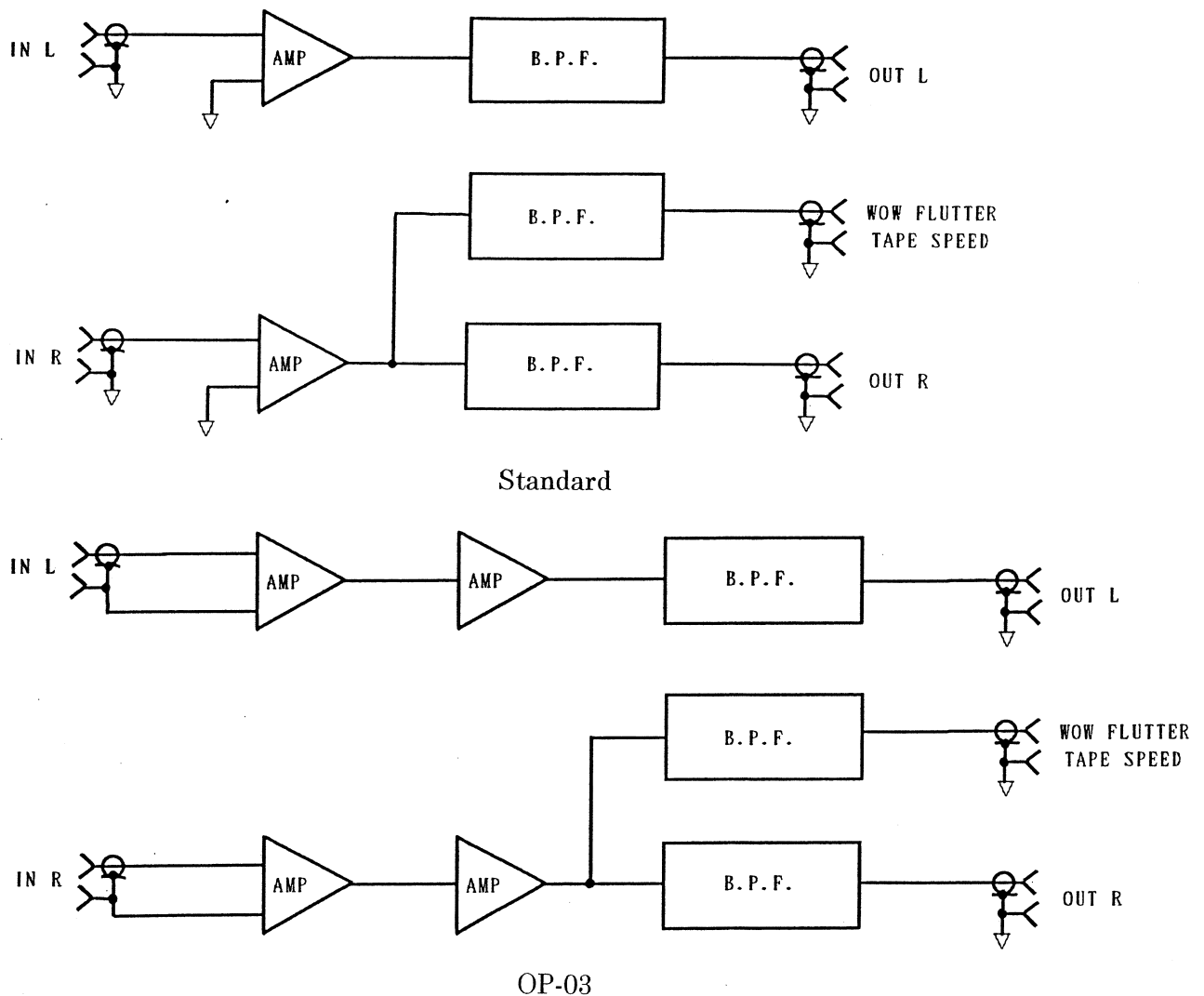


Fig. 3-3 Internal connecting configuration

3-4 NOTES FOR OPERATION

⚠WARNING

In event smoke, peculiar odor or noise is emitted, immediately disconnect the power source and avoid and further operation.

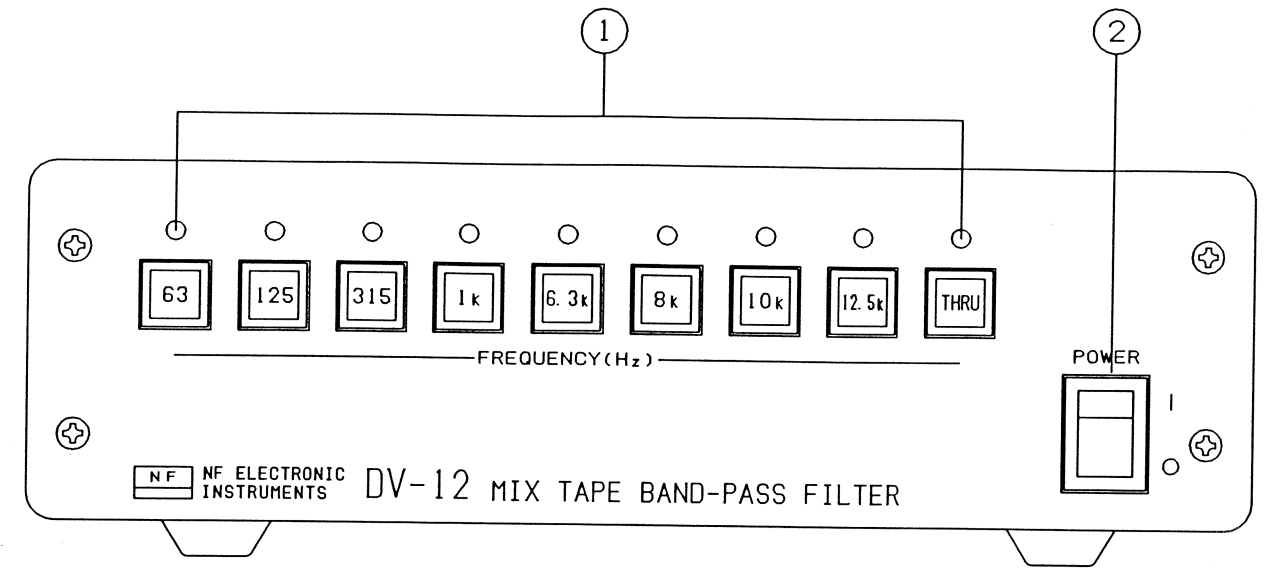
⚠CAUTION

The tape recorder-measurement equipment is a very sensitive unit, therefore we strongly request the user not to use this equipment nearby radio disturbances sending equipment.

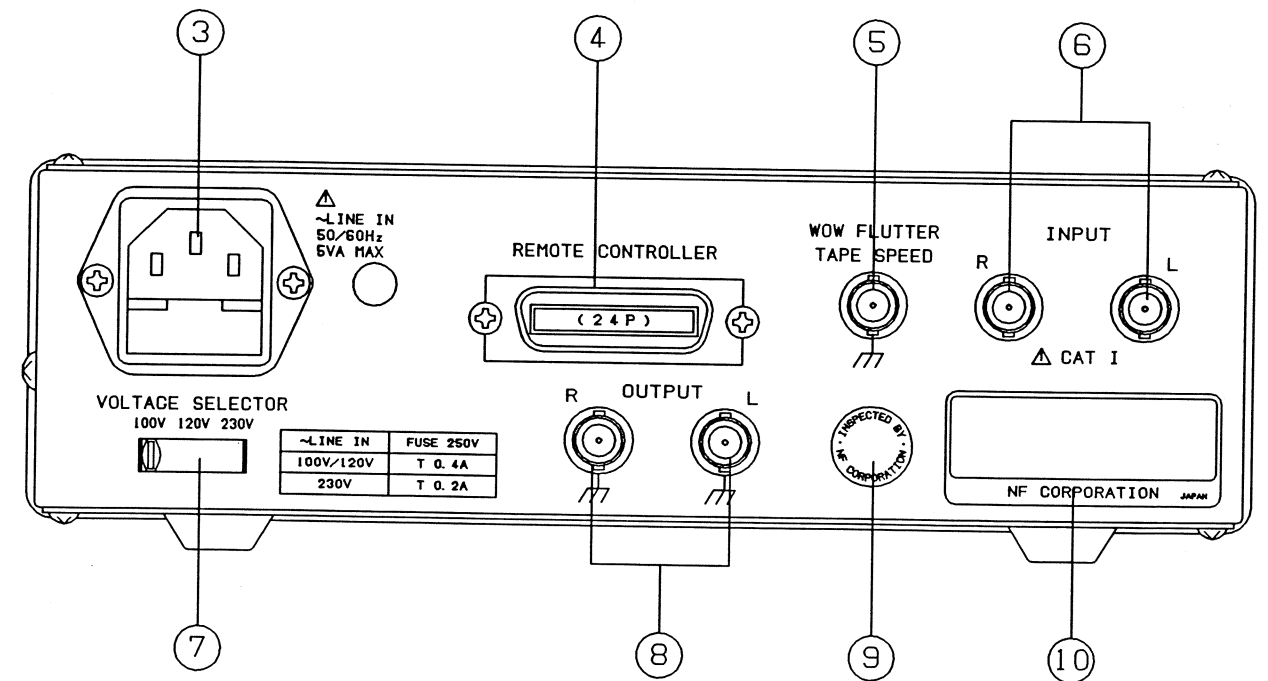
Please make sure not to use the equipment in areas where such problems occur.

Should you recognize problems please contact the local distributor for help and advice.

Observe the warnings and cautions of this manual in order to use this equipment safely.



Front panel



Rear panel

Fig. 3-4 Panel description

4. MAINTENANCE

⚠WARNING

Only use a fuse with the specified rating. There is risk of fire from an improperly rated fuse.

Be sure to disconnect the power cord before replacing the fuse.

In case that a fuse blows again after the replacement, disconnect the power cord from the mains and contact our sales network.

Specified rating of a fuse of the DV-12 are as follows.

AC100V/120V: 0.4A

AC230V : 0.2A

Time lag, 250V, Φ 5.2×20mm

According to the power supply voltage, specified rating of a fuse differs.

Trimmers on the printed circuit board have been adjusted before shipment. Please leave re-adjustment to the authorized engineers of *NF CORPORATION*.

Contact our sales network regarding calibration and repair.

5. STANDARD DATA

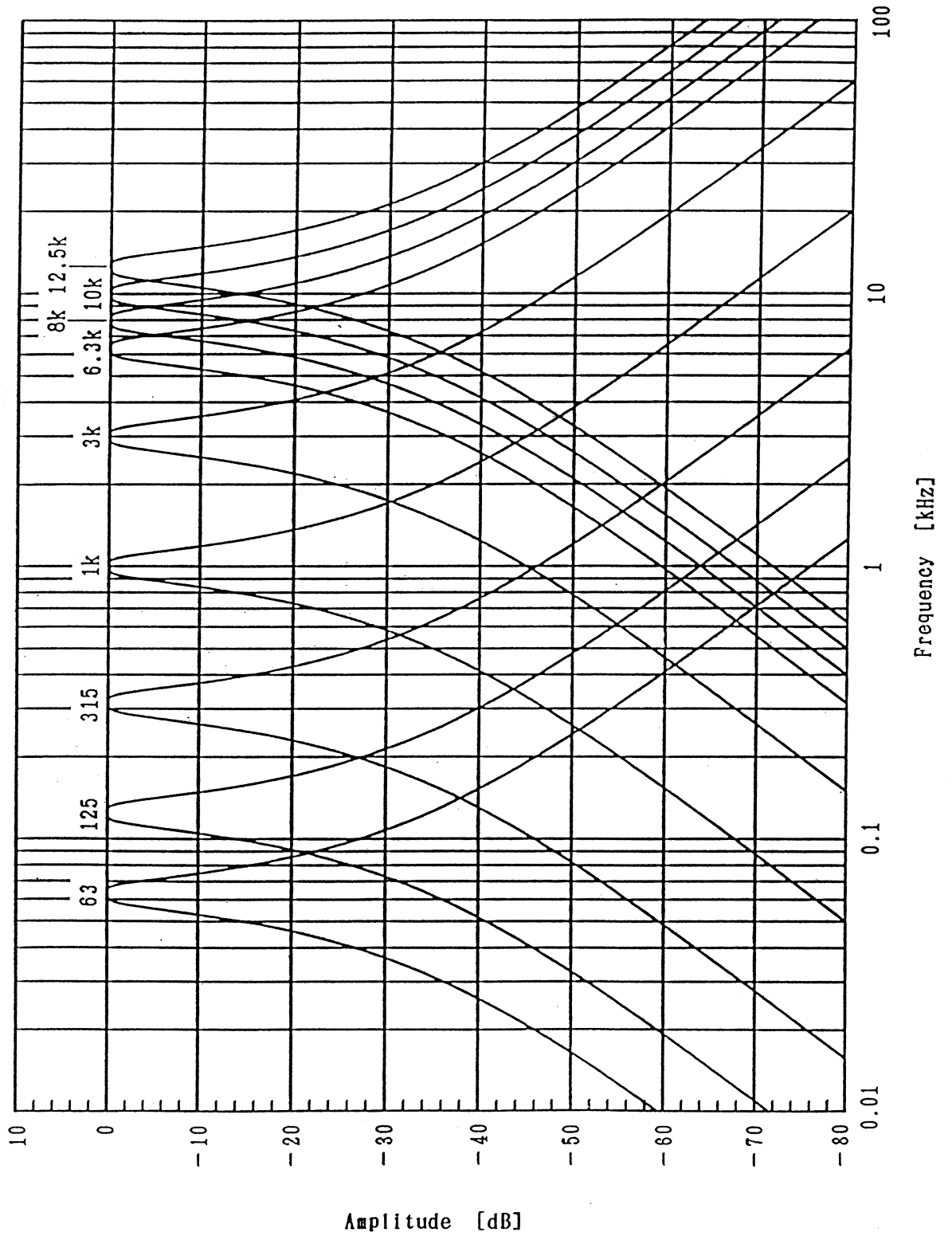


Fig. 5-1 Band pass filter Amplitude response

If there are any misplaced or missing pages, we will replace the manual. Contact the sales representative.

NOTES

- Reproduction of the contents of this manual is forbidden by applicable laws.
- The contents of this manual may be revised without notice.
- Information provided in this manual is intended to be accurate and reliable. However, we assume no responsibility for any damage regarding the contents of this manual.
- We assume no responsibility for influences resulting from the operations in this manual.

Copyright *NF CORPORATION*

NF CORPORATION

6-3-20, Tsunashima Higashi, Kohoku-ku,

Yokohama 223-8508

JAPAN

Phone 81-45-545-8128 Fax 81-45- 545-8187

