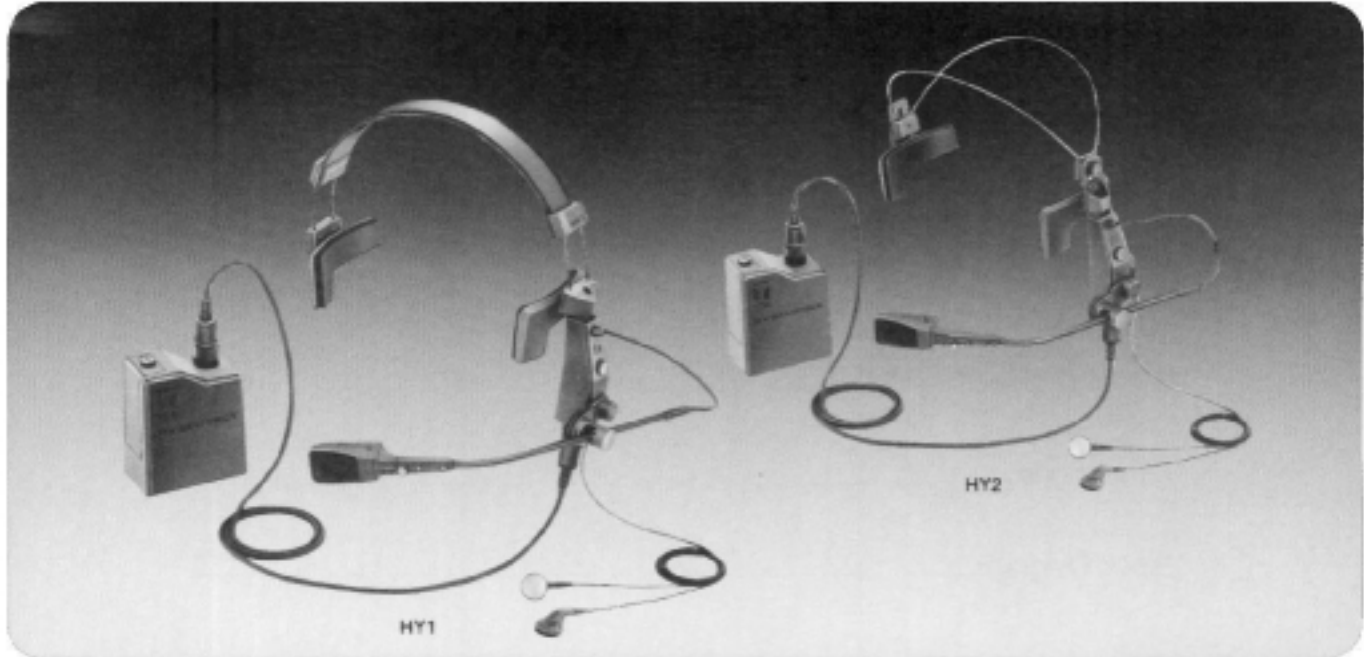


# PROFESSIONAL SOUND SYSTEM



## Headset Microphone

## Model HY1/HY2



### GENERAL DESCRIPTION

The TOA HY 1 and HY 2 are headset type microphones designed for professional level applications in recording, live sound reinforcement, and broadcast environments. Unlike the typical handheld or stand mounted mic, the "hands-free" configuration allows the user to concentrate on the performance rather than the microphone. The HY's feature a unique design which provides superb performance and number of functions never before available. They are ergonomically designed to ensure comfort and stability for sustained periods of time, without fatigue. The HY 1 and HY 2 are identical in design and function with the exception of the headband. The HY 1 headband is designed for extended wear, and the HY 2 headband is designed to be hidden in the user's hair.

The fixed-charge condenser mic element employs a back-electret type design with a gold-vaporized, extremely thin membrane (4 $\mu$ m) to provide superior performance and high stability. Frequency response is tailored to roll off the low end, producing a well balanced low frequency characteristic and eliminating problems associated with "proximity effect." (Proximity effect causes the mic to accentuate the low frequencies, and in extreme cases may cause the vocal to sound boomy and muffled.) A cardioid pickup pattern ensures that surrounding noise is rejected, allowing the vocal to be clear, clean and distinctive.

The HY headsets are equipped with an interchangeable mic capsule which is voiced for male vocal response (HMV), however, optional capsules are available. The HFV is voiced for female or tenor male vocals, and the HCM for limited bandwidth intercommunications. All mic capsules feature a red LED to give a visual indication of "mic live" status. A cough button is also provided on the headset to allow the user to turn the mic element off when necessary (the LED goes out).

The HY headsets are equipped with a sturdy beltpack which provides operating power, mixing, and stereo monitoring functions. The monitoring system is designed to allow the user to independently control monitor (foldback) sends and personal vocal level through the integral stereo headphone system, directly from the beltpack. An optional 15 foot extension cable (C15-HY) allows the beltpack to be isolated from the headset. The HY systems may be operated from two 1.5 volt "AA" batteries, or from an external phantom power supply.

### FEATURES

1. Ergonomic "hands-free" design provides secure attachment to user's head, and allows comfortable wear without fatigue.
2. Smooth, extended "vocal" frequency response, and excellent transient response.
3. High quality, fixed-charge condenser microphone element with cardioid pick-up pattern. Interchangeable mic capsules allow precision response tailoring for optimum vocal performance.
4. Standard version is fitted with mic capsule designed for male vocal response (HMV). Optional capsules are available for female vocal, or male tenor vocal (HFV), and limited bandwidth intercommunications (HCM).
5. Integral stereo headphone monitoring system for "personalized" foldback and cueing functions.
6. Red LED lights to indicate "mic live" status.
7. Cough button.
8. Headset may be worn from either right or left side.
9. System may be powered from two 1.5 volt "AA" batteries, or an external phantom power supply.
10. Sturdy beltpack provides operating power, mixing and monitoring functions.

Assembly Diagram.....2

Operating Instructions.....3

Stereo Headphone Monitoring System.....4

Capsule Replacement.....5

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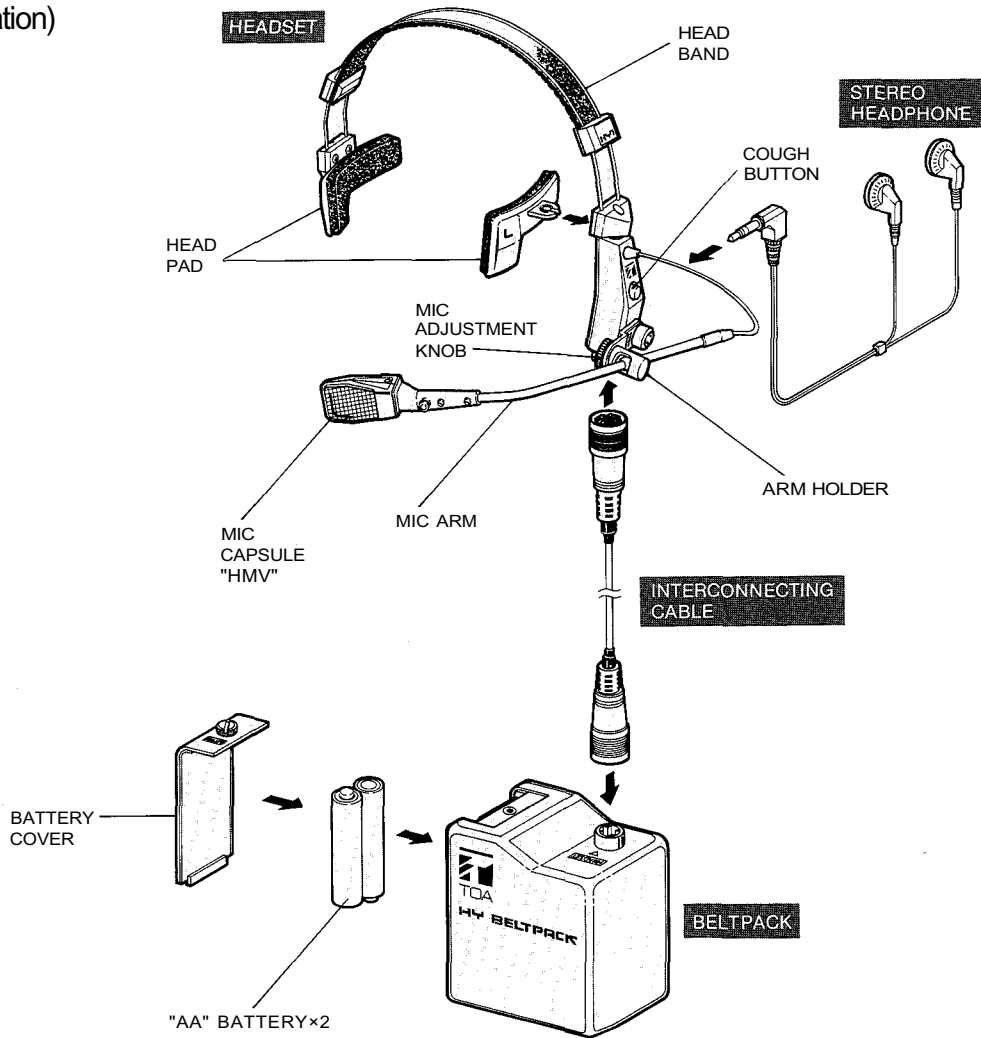
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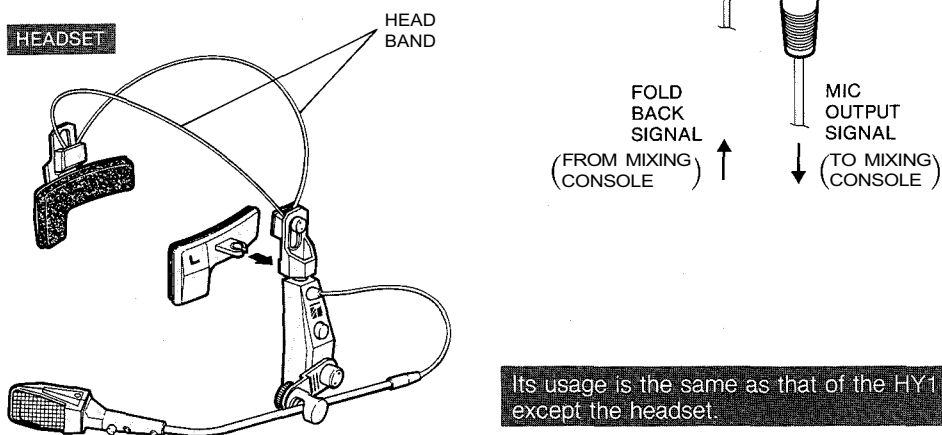
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# ● Assembly Diagram

## HY1 (left-side operation)

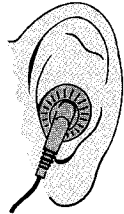


## HY2 (left-side operation)

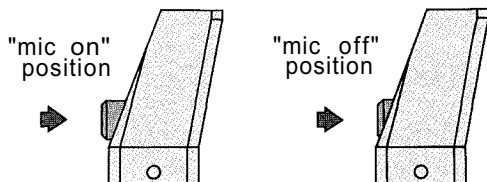


## <Assembly Instructions for left-side operation>

- Assemble the HY headset according to the assembly diagram.
- (A) Attach the head pad marked "L" to the left side of the headset, and the head pad marked "R" to the right side, by pressing firmly until they "snap" into place.  
(B) Connect the interconnecting cable to the headset and the beltpack, ensuring that the locking ring of each connector is fully engaged.  
(C) If the internal monitoring system is to be used, connect the stereo mini plug of the PH 5 headphone to the headphone jack of the headset. (Note: Other stereo headphones with an impedance of 16 ohms or greater may be used if desired.)
- Insert the "L" and "R" units of the headphone into the respective left and right ears as illustrated.

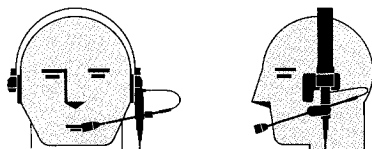


- Set the cough button to the "mic off" position.

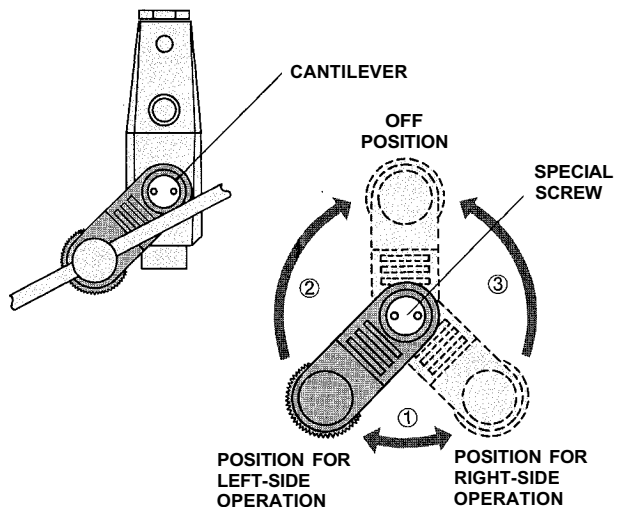


- Position the headset so the "L" and "R" head pads rest immediately above the respective "L" and "R" ears, and adjust the headband for a comfortable fit.
- Loosen the mic adjustment knob, and position the mic capsule approximately 10-25mm (1/2-1 inches) from the corner of the mouth. Ensure that the cantilever is positioned fully downward, and carefully tighten the mic adjustment knob to hold the mic arm in the desired location. You should experiment with the positioning of the mic capsule, in relation to the mouth, to determine the location that provides the best reproduction of your individual vocal tonality and performing style.

Note: The cantilever that connects the mic arm to the body of the headset allows you to swing the mic arm up and away from the face when necessary, and then reposition the mic arm to exactly the same location when desired.



- Turn the beltpack power switch to "OFF," and rotate the monitor level volume control to "MIN" and the monitor balance control to its center position. Connect an XLR cable between the MIC OUTPUT of the beltpack, and a low-Z input of a mixer or sound system. If the integral monitoring system is to be used, insert a stereo or mono 1/4" phone plug into the LINE INPUT JACK, and slide the line mode selector switch to the appropriate setting.
- Place the beltpack power switch in the "ON" position. Set the COUGH BUTTON to the "ON" position, and the red LED will light to indicate "mic live" status. Rotate the MONITOR LEVEL VOLUME CONTROL to obtain a desirable level in the headphones, and adjust the MONITOR BALANCE CONTROL to obtain the proper "mix" between the direct vocal and the line input monitor signal.
- For right-side operation, reverse the positions of the "L" and "R" head pads. The MIC ARM should be reversed by carefully pulling the CANTILEVER out away from the headset (just enough for clearance) and swinging it to the other side; then gently lower the arm to the surface of the headset. Orient the red LED of the mic capsule toward the face, by first loosening the MIC ADJUSTMENT KNOB, turning the shaft, and then retightening the knob.



### Caution:

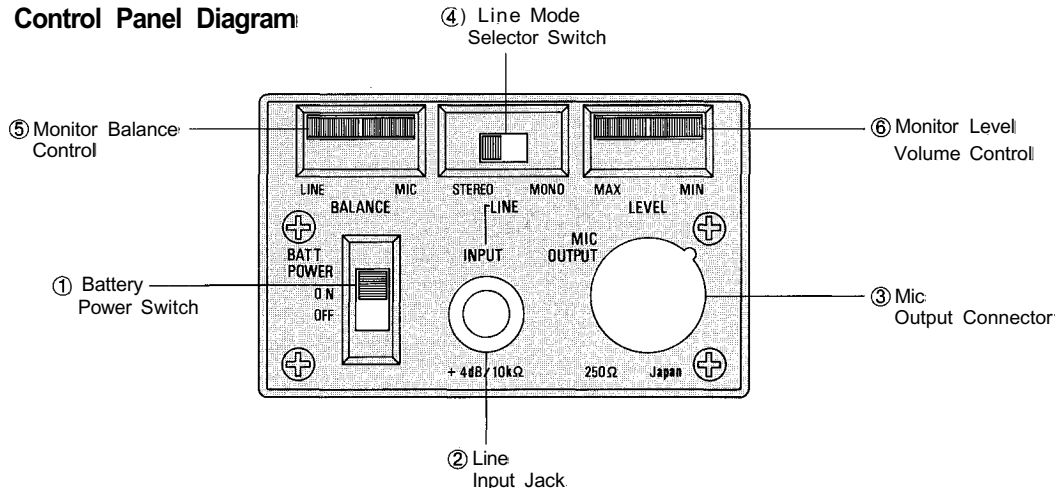
Do not loosen or remove the special screw which attaches the cantilever to the body of the headset. The special screwdriver included with the HY headset is intended only for repair purposes.

# ● Stereo Headphone Monitoring System

The stereo headphone monitoring system was designed to monitor the vocal, direct from the mic capsule, and mix it with an external line level input signal, such as a monitor (foldback) signal from a mixing console. The combined signals are sent to the stereo headset after being amplified by the beltpack's stereo amplifier. This allows the user to adjust his own mixing balance and master sound level independently of other performers. Disconnecting the headset phone makes it possible to use the headset only as a microphone.

The monitoring system is powered by two 1.5 volt "AA" dry cell batteries, which are housed in the beltpack. To operate the unit, turn the battery power switch to the "ON" position. Please note that even though the HY headset is designed to operate from an external "Phantom" power supply, the monitoring system, because of its relatively high power requirements, still requires power from the batteries in the beltpack.

## Control Panel Diagram



### ① Battery Power Switch and Phantom power supplies:

This switch turns the beltpack battery power supply on or off. Setting the switch to ON supplies battery power to the mic capsule as well as to the headphone monitoring system. If phantom power is supplied from an external source to the beltpack, the mic capsule is automatically switched to the external source for its operation, regardless of the position of the BATTERY POWER SWITCH.

#### NOTE:

The headphone monitoring system always requires battery power from the beltpack, due to the relatively high power requirements common to this type of system.

### ② Line Input Jack:

This jack accepts any line level input signal, and is rated +4dB 10K-ohms. The jack would typically be connected to either a stereo or mono send from a mixing console. It also serves very well as an input for a tape deck or other pre-recorded music source, except a magnetic turntable. Set the LINE MODE SELECTOR SWITCH to STEREO or MONO according to the type of 1/4" phone plug which is inserted into this jack.

### ③ Mic Output Connector:

The vocal signal from the headset microphone is routed to this XLR connector. The signal available at this output is not affected by the settings of either the MONITOR BALANCE CONTROL or the MONITOR LEVEL VOLUME CONTROL. The output impedance is 250 ohms balanced, and would typically be connected to a low impedance XLR connector of a mixing console or powered sound system.

### ④ Line Mode Selector Switch:

The switch setting should be determined by the type of 1/4" plug (stereo or mono) which is inserted into the LINE INPUT jack. Place the switch in the STEREO position when a stereo plug is inserted, and to MONO when a mono plug is inserted. Setting the switch to the MONO position when a stereo signal is inserted will cause the "R" signal to be disconnected from the circuitry, and only the "L" signal will be heard through the headphones. Please see the block diagram for a full understanding of the signal flow path.

### ⑤ Monitor Balance Control:

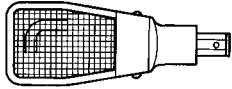
This control adjusts the balance or "mix" heard through the stereo headphone system, between the direct vocal from the headset mic, and the line input signal. The volume of the direct vocal increases in relation to the level of the line input signal as the control is rotated toward "MIC," and decreases as the control is rotated toward "LINE."

### ⑥ Monitor Level Volume Control:

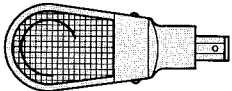
This control adjusts the volume level heard through the stereo headphone system. It does not in any way effect the output of the mic signal through the MIC OUTPUT connector.

## ● Capsule Replacement

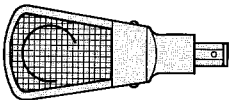
"HMV" capsule (accessory)



"HFV" capsule (option)



"HCM" capsule (option)

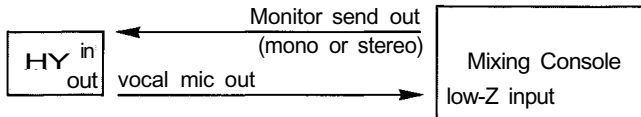


LOCK SCREW

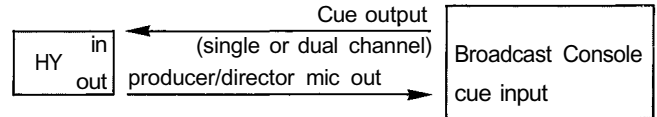
Loosen the lock screw, replace the mic capsule carefully, and tighten the lock screw.

## ● HY Applications Guide

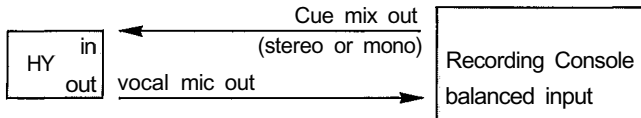
### LIVE ON-STAGE



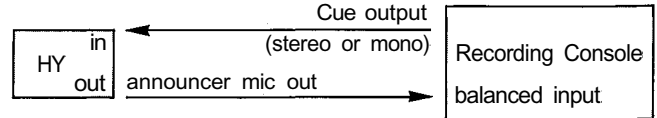
### BROADCAST PRODUCTION



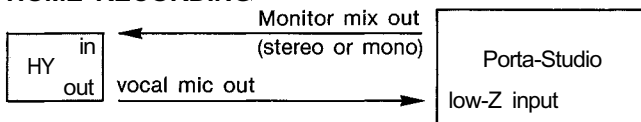
### RECORDING STUDIO



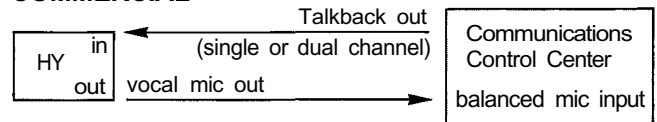
### VIDEO POST PRODUCTION



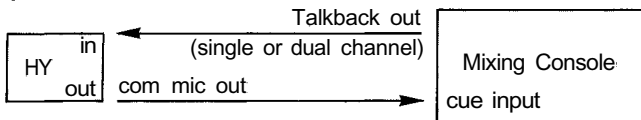
### HOME RECORDING



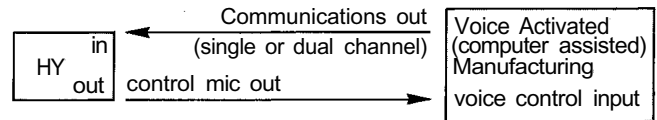
### COMMERCIAL



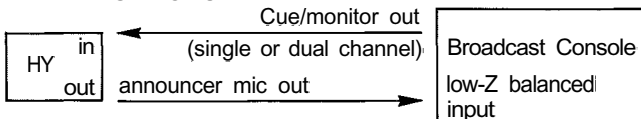
### STAGE CREW COMMUNICATIONS



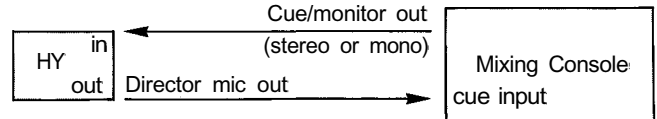
### INDUSTRIAL



### LIVE BROADCAST



### INSTITUTIONAL



# ● HY1/HY2 Specifications

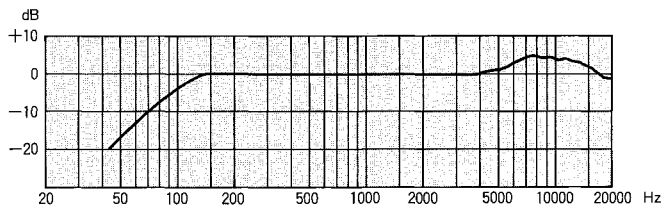
## <Construction>

- Headset
- Mic Capsule "HMV"
- Beltpack
- Interconnecting Cable
- Stereo Headphone

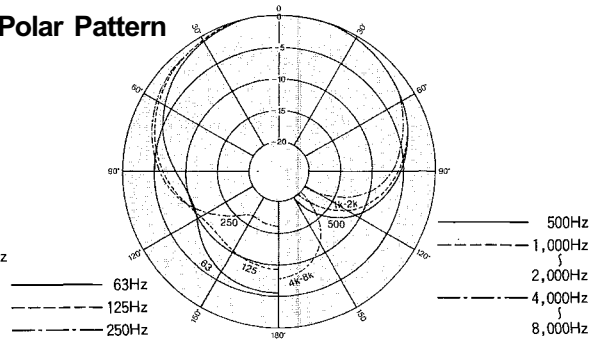
## <Microphone>

Mic capsule	HMV (accessory)	HFV (option)	HCM (option)
<b>Application</b>	Male vocals	Female vocals or male tenor vocals	Communication
<b>Type</b>	Fixed-charge (back-electret) condenser		
<b>Frequency response</b>	70-20,000 Hz	60-20,000 Hz	100-20,000 Hz
<b>Polar pattern</b>	Cardioid		
<b>Impedance</b>	250 ohms balanced		
<b>Output levels (.1,000 Hz)</b>			
Open circuit voltage (OdB = 1V/ $\mu$ bar)	-77 dB	-74 dB	-77 dB
Power level (OdB=1mW/10 $\mu$ bars)	-57 dB	-54 dB	-57 dB
EIA rating Gm (OdB = 1 mW/0.0002 $\mu$ bar)	-149 dB	-146 dB	-149 dB
<b>Equivalent noise level</b>	35 dB (A-weighted)		
<b>Maximum SPL</b>	122dB(at 1,000 Hz 1%THD)		
<b>Phasing</b>	Positive pressure on diaphragm produces positive voltage at pin 2		
<b>Power supply</b>	Two 1.5 volt "AA" batteries or 9 to 52 volts phantom power supply (Phantom power supply has automatic priority over batteries)		
<b>Current drain</b>	0.8 mA (9V phantom)-5.3 mA (52V phantom)		
<b>Output connector</b>	XLRM type		

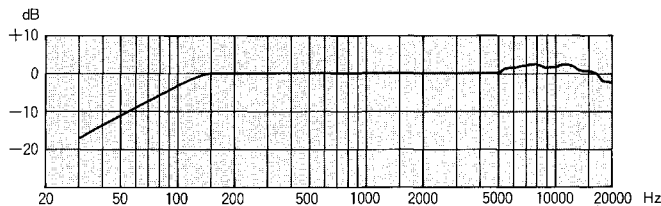
### HMV capsule Frequency Response



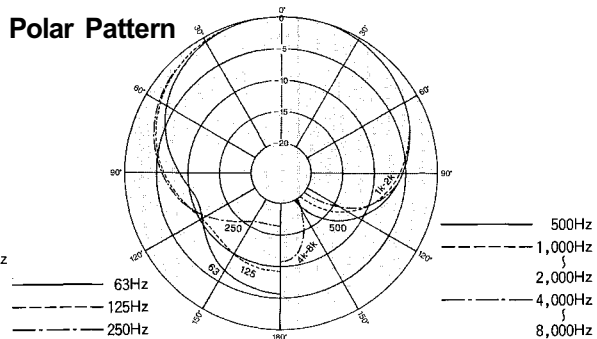
### Polar Pattern



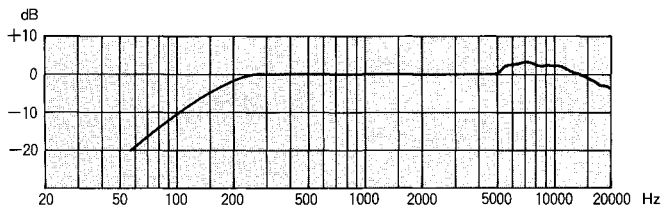
### HFV capsule Frequency Response



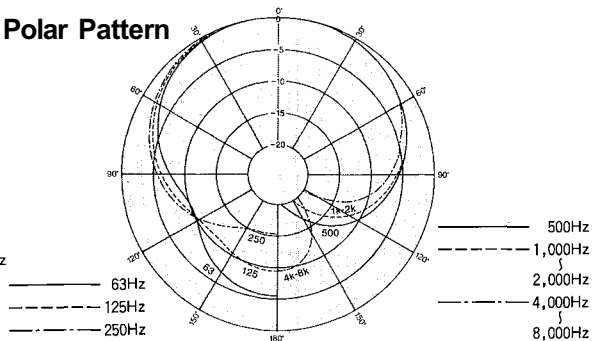
### Polar Pattern



### HCM capsule Frequency Response



### Polar Pattern



## ● HY1/HY2 Specifications

### <Monitor amplifier>

#### Maximum output

55mW/ch (18 ohms load 10%THD)

#### Line input

+4 dB/10 kilo-ohms  
("BALANCE": center "LEVEL": max 2mW output)

#### Frequency response

110-15,000 Hz (mic)  
35-15,000 Hz (line input)

#### Power supply

Two 1.5 volt "AA" batteries

### <Stereo headphones>

#### Driver unit

∅ 15mm (∅0.59")

#### Frequency response

50-20,000 Hz

#### Impedance

18 ohms

#### Sensitivity

102dB/mW

### <Battery life (alkaline batteries)>

12 hours (maximum monitor level)

60 hours (1mW monitor level)

80 hours (without monitoring)

Batteries should be replaced when the LED indicator does not light brightly.

### <Net weight>

headset: 105 grams (3.7 oz) /HY1

85 grams (3.0 oz) /HY2

Beltpack: 265 grams (9.3 oz) including batteries

HMV capsule: 15 grams (0.5 oz)

Interconnecting cable: 34 grams (1.2 oz)

Stereo headphone: 10 grams (0.4 oz) including cord

### <Standard accessories>

Hard case

Special screwdriver

### <Optional accessories>

HFV: Replacement capsule for female or tenor male vocals

HCM: Replacement capsule for communication

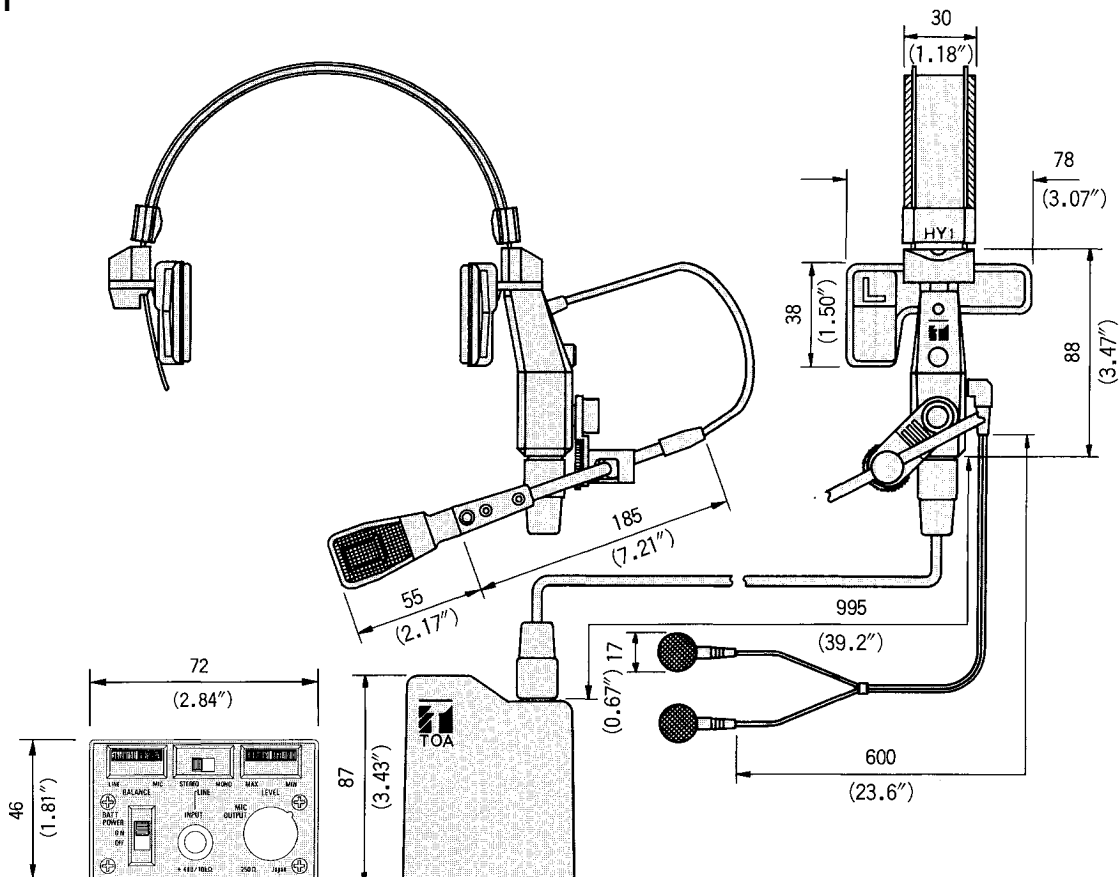
C15-HY: Extension cable (15 ft)

C15-M: XLR to XLR cable (15 ft)

C20-M: XLR to XLR cable (20 ft)

## ● Dimensions

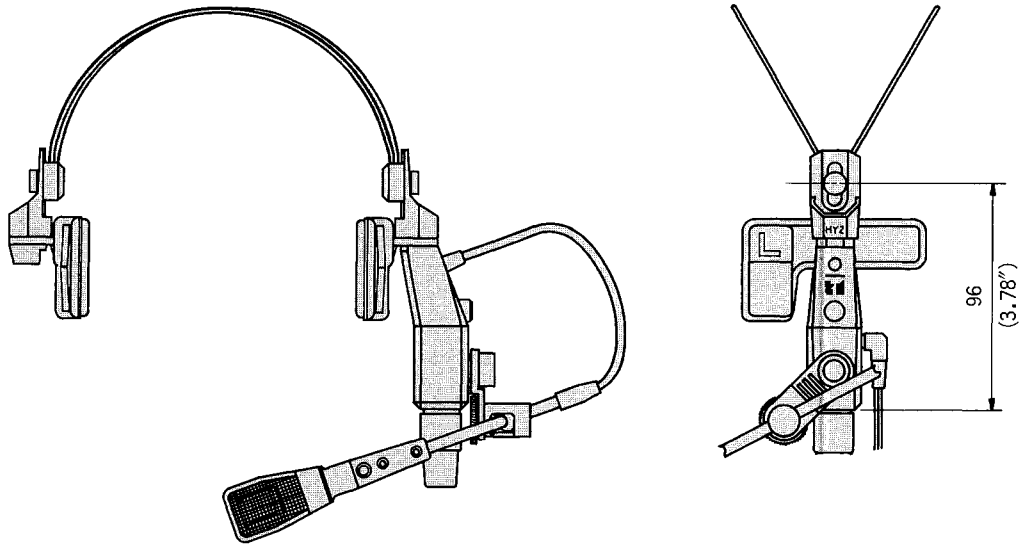
### HY1



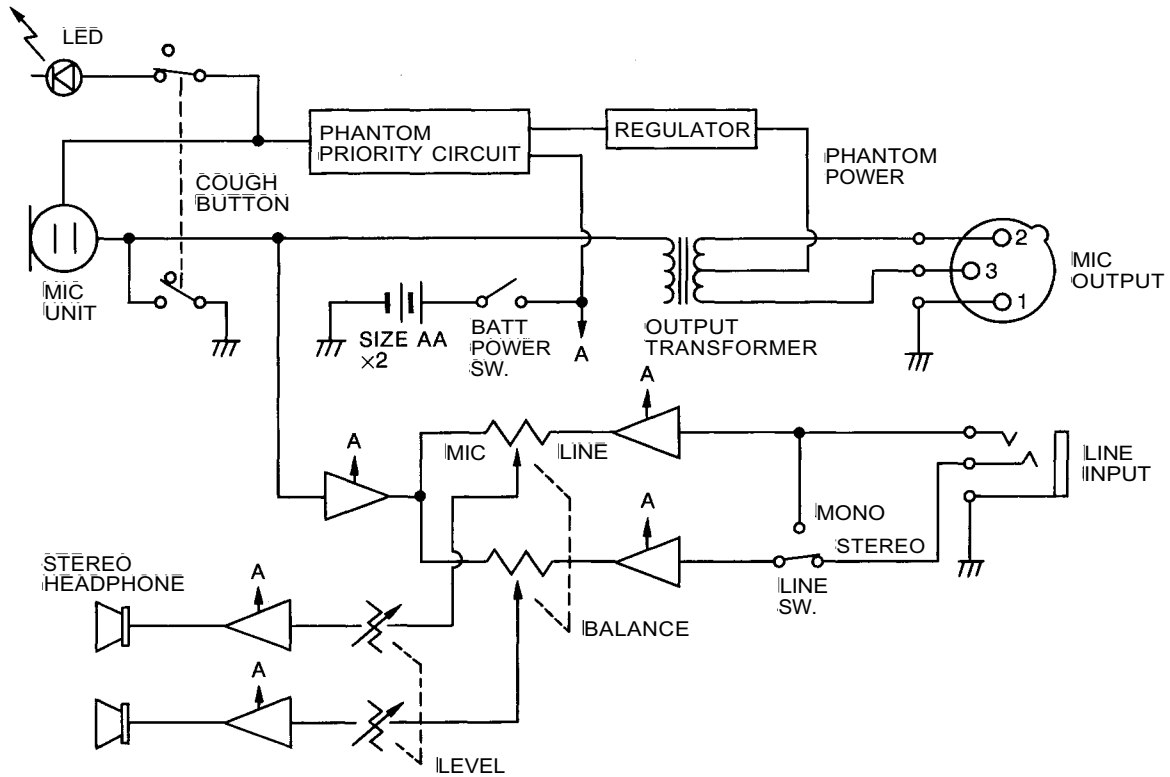


## ● Dimensions

HY2 (same as that of the HY1 except the headset)



## ● Block Diagram





TOA

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KOBE, JAPAN

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