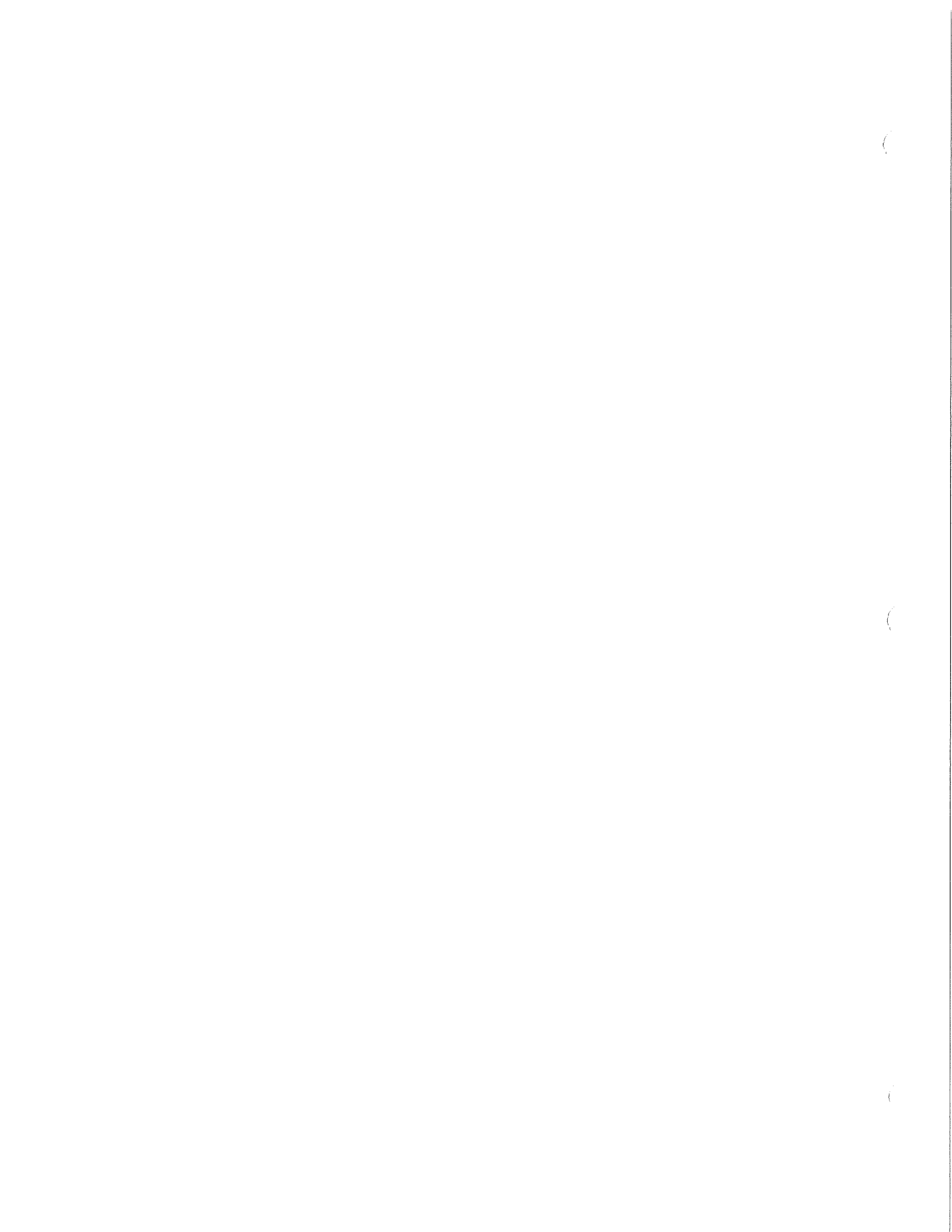
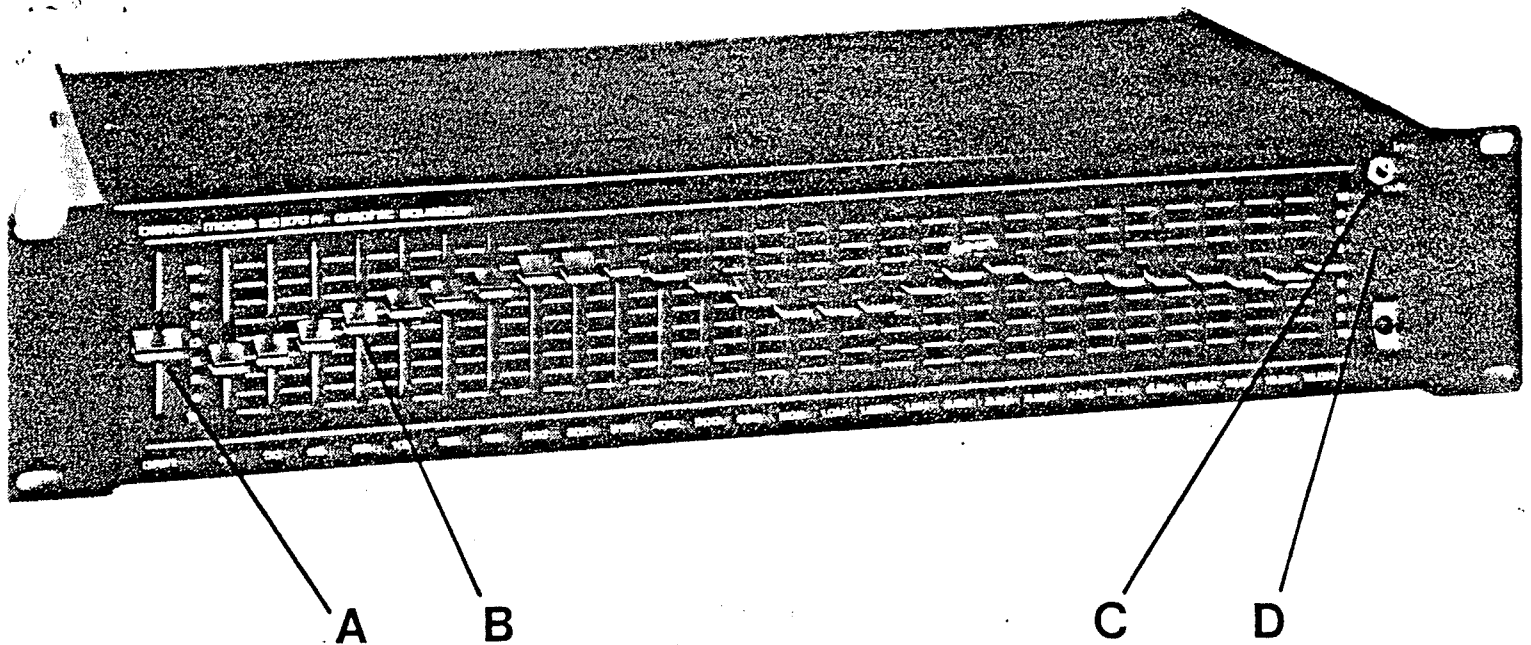


EQ 28/8 & EQ 282/8

Operation Manual







A. GAIN CONTROL

THE GAIN CONTROL PROVIDED +12dB OF BOOST, OR -12dB OF ATTENUATION FOR LEVEL MATCHING. USED FOR GAIN BOOST TO RESTORE GAIN LOSSES DUE TO EQUALIZATION SETTINGS, THE GAIN CONTROL CIRCUIT UTILIZES THE VARIABLE FEEDBACK CONCEPT. THE GAIN IS ADJUSTED BY THE RATIO OF THE INPUT, VERSUS THE FEEDBACK VOLTAGES DETERMINED BY THE SETTING OF THE GAIN CONTROL ITSELF. THE ADVANTAGES OF THE VARIABLE FEEDBACK GAIN CONTROL CIRCUIT ARE LOWER NOISE, INCREASED INPUT VOLTAGES, AND GREATER HEADROOM CAPABILITIES.

B. FILTER CONTROLS 40HZ TO 16KHZ

EACH FILTER CONTROL PROVIDES +12dB OF BOOST OR -12dB OF ATTENUATION ON THE STANDARD ISO 1/3-OCTAVE FREQUENCY CENTERS (27 BANDS TOTAL). EACH OIL-DAMPED, ALL-METAL SLIDE CONTROL GRAPHICALLY DISPLAYS THE FREQUENCY RESPONSE. A VERY LOW NOISE, LOW DISTORTION, MINIMUM PHASE SHIFT OP-AMP BAND PASS FILTER IS USED IN EACH 1/3-OCTAVE FILTER OF THE BIAMP EQ/270A EQUALIZER. THESE FILTERS ARE OF THE COMBINING TYPE TO COMBINE WITH ADJACENT FILTERS WHEN BOOSTED OR ATTENUATED. THIS DESIGN PROVIDES FOR EXCELLENT RESPONSE SHAPING CHARACTERISTICS. EACH FILTER MAINTAINS CONSTANT "Q" AND CONSISTANT IN BOTH CUT AND BOOST MODES. HIGH QUALITY COMPONENTS ARE USED THROUGHOUT THE FILTER CIRCUIT TO MINIMIZE FREQUENCY DRIFT AND MAINTAIN ACCURACY IN THE DEGREE OF BOOST OR ATTENUATION. EACH FILTER IS FACTORY CALIBRATED TO WITHIN $\pm 1.0\%$ OF CENTER FREQUENCY. LONG TERM FREQUENCY DRIFT IS LESS THAN $\pm 2.0\%$.

C. EQ IN-OUT

THE EQ IN-OUT SWITCH BYPASSES THE EQUALIZER AND ALL GAIN CIRCUITS. COMPARISONS BETWEEN EQUALIZED AND UNEQUALIZED SOUND SYSTEMS CAN BE MADE BY USING THIS BYPASS SWITCH, WITHOUT CHANGES IN LEVEL.

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D. OVERLOAD INDICATOR

THE LED OVERLOAD INDICATOR FLASHES ON AT 3dB BELOW MAXIMUM OUTPUT. IF THIS CONDITION OCCURS, LOWERING THE GAIN CONTROL SETTING TO PREVENT OVERLOADING IS SUGGESTED.

INPUT SELECTOR

THE INPUT IMPEDANCE SELECTOR SWITCH, (LOCATED ON THE REAR PANEL), TERMINATES THE INPUT TO THE CORRECT LINE IMPEDANCE. EITHER 600 OHMS OR 50K, BALANCED OR UNBALANCED.

WHEN DRIVING THE INPUT WITH A LINE TRANSFORMER, THE SELECTOR SWITCH SHOULD BE PLACED IN THE 600 OHM POSITION.

INPUT AND OUTPUT JACKS

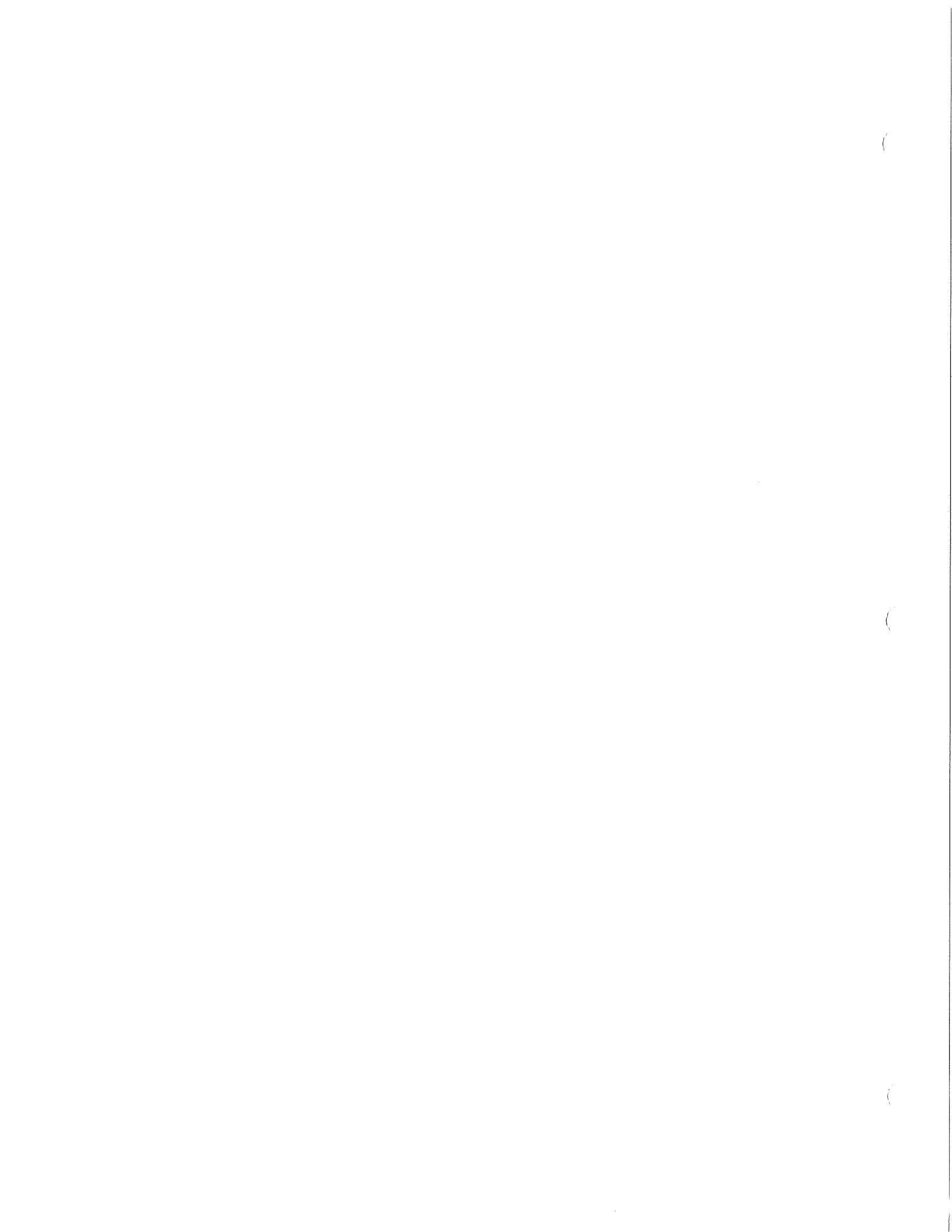
THREE JACKS ARE PROVIDED FOR EACH INPUT AND OUTPUT. A STANDARD XLR TYPE CONNECTOR IS PROVIDED IN THE BALANCED MODES. A STANDARD $\frac{1}{4}$ " TWO CONDUCTOR PHONE PLUG IS TO BE USED FOR UNBALANCED INPUT OR OUTPUT. A STANDARD STEREO 3 CONDUCTOR $\frac{1}{4}$ " PHONE PLUG IS USED FOR BALANCED INPUT OR OUTPUT. IN MANY APPLICATIONS IT BECOMES NECESSARY TO USE THESE CONNECTORS TO INTERFACE WITH OTHER PROFESSIONAL PRODUCTS.

EITHER OF THE $\frac{1}{4}$ " JACKS OR BOTH PHONE INPUTS MAY BE USED FOR UNBALANCED LINES.

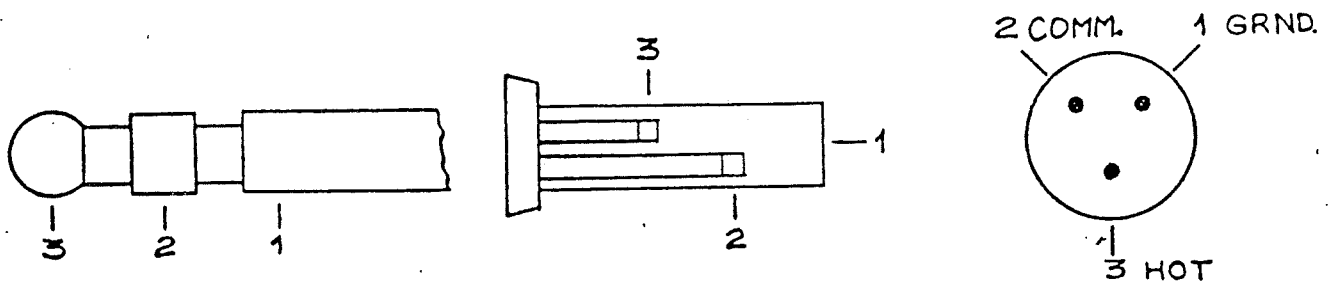
THE OUTPUT CIRCUIT USES THE PARAPHASE DRIVE CONCEPT TO PROVIDE A DIFFERENTIAL VOLTAGE TO THE BALANCED OUTPUTS. THIS ALLOWS THE EQ/270A ITS HIGH HEADROOM CAPABILITY. THE UNBALANCED OUTPUT USES HALF OF THE PARAPHASE DRIVE AND ALSO HAS HIGH HEADROOM CHARACTERISTICS. BOTH OUTPUTS ARE IN PHASE WITH EQ INPUT (EQ IN OR OUT), AND ARE FULLY PROTECTED. THE ADVANTAGES OF PARAPHASE OUTPUTS ARE HIGH SLEW RATE, LOWER DISTORTION, LOW NOISE, MORE HEADROOM AND EXTENDED FREQUENCY RESPONSE.

CAUTION!

A STANDARD TWO CONDUCTOR PATCH PLUG SHOULD NOT BE PLUGGED INTO THE BALANCED OUTPUT JACK. THIS WOULD SHORT OUT THE 180° SIGNAL TO GROUND, PREVENTING THE UNIT FROM FUNCTIONING UNTIL THE SHORT IS REMOVED. HOWEVER, A SECOND UNBALANCED OUTPUT CAN BE FOUND BY USING ONLY THE TIP OF A STEREO PLUG FROM THE BALANCED OUTPUT STEREO $\frac{1}{4}$ " PHONE JACK.



HOOKUP OF STEREO 1/4" PHONE TO BALANCED LINE



TRANSFORMERLESS BALANCED INPUTS

TRANSFORMERLESS BALANCED INPUT CIRCUITS EMPLOYED IN THE BIAMP EQ/270A OFFER MANY ADVANTAGES OVER TRANSFORMER COUPLED LINES:

- *HIGHER SLEW RATE
- *BETTER HUM
(NO TRANSFORMER MAGNETIC
HUM PICK-UP)
- *LOWER DISTORTION
- *EXTENDED FREQUENCY
RESPONSE
- *BETTER HEADROOM

(WITHOUT SATURATION PROBLEMS OF TRANSFORMERS)

UNITY GAIN AND THE CORRECT PHASING FOR BOTH BALANCED AND UNBALANCED INPUTS ARE MAINTAINED IN THE EQ/270A TRANSFORMERLESS CIRCUIT.

INTERCONNECTING TRANSFORMERLESS BALANCED LINES IS MADE EASY BY SIMPLY PLUGGING THEM TOGETHER. IMPEDANCE MATCHING IS NO LONGER A PROBLEM WITH TRANSFORMERLESS BALANCED INPUTS.

BIAMP'S EQ/270A HAS BEEN DESIGNED WITH THE ABILITY OF AN OP-AMP TO AMPLIFY A DIFFERENTIAL INPUT VOLTAGE WHILE REJECTING ANY COMMON MODE VOLTAGES. THE DIFFERENTIAL VOLTAGE IS APPLIED TO BOTH THE INVERTING AND NON-INVERTING INPUTS OF THE OP-AMP (SEE BLOCK DIAGRAM) THEN AMPLIFIED AND COUPLED TO THE NEXT STAGE. THIS ALLOWS THE STAGE TO REJECT ANY COMMON MODE VOLTAGES PRESENT AT THE INPUT OF THE STAGE. COMMON MODE VOLTAGES WOULD INCLUDE RADIO FREQUENCY INTERFERENCE AND HUM, USUALLY PICKED UP BY PATCH CORDS INTERFACING OTHER AUDIO COMPONENTS OF THE SYSTEM.

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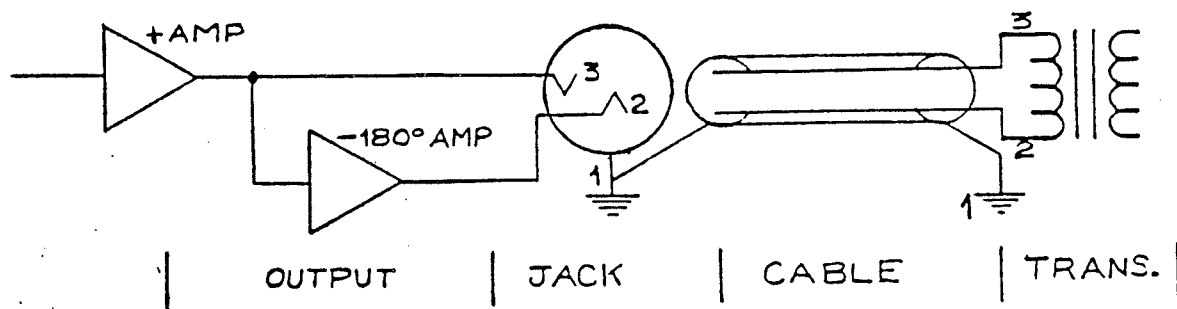
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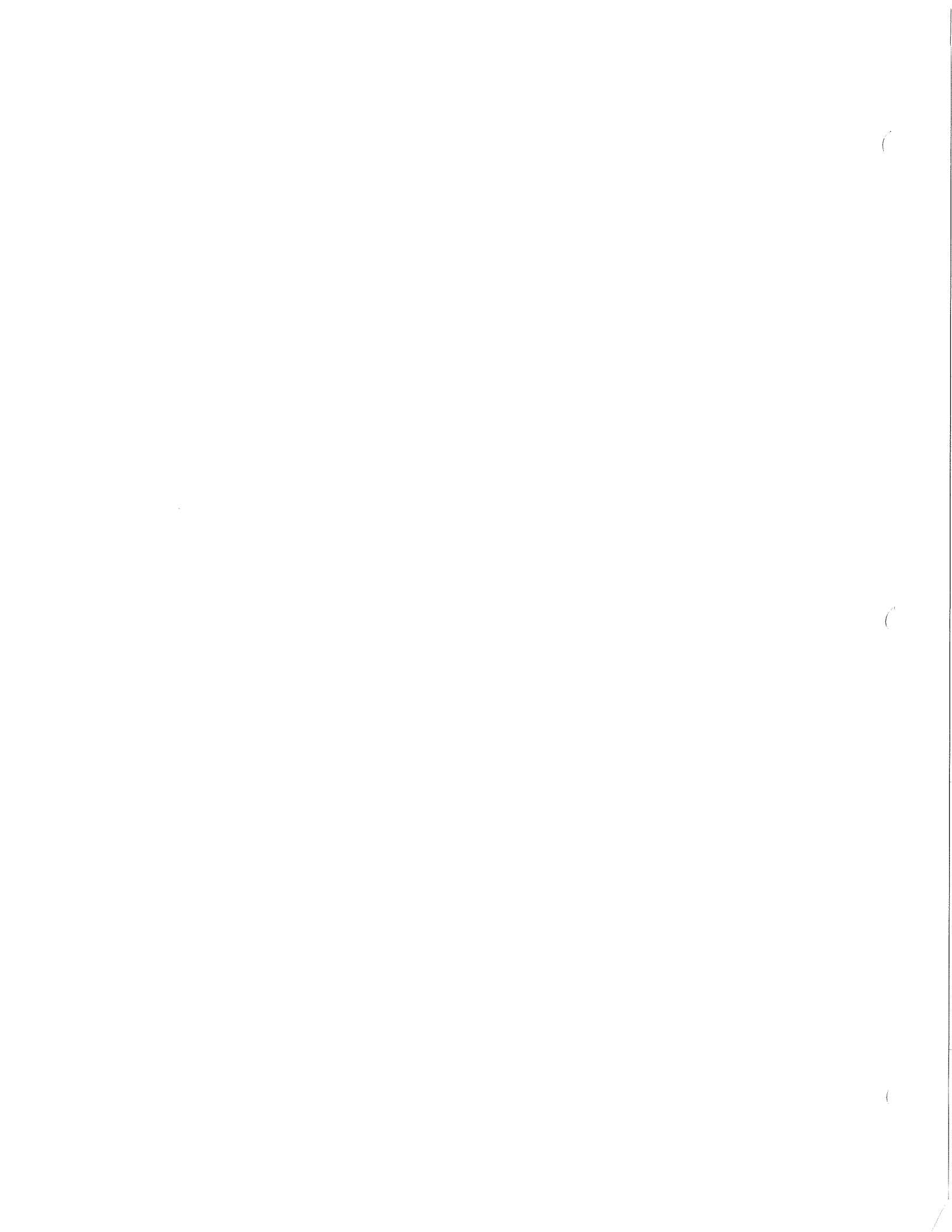
COMMON MODE REJECTION ADJUSTMENT

THIS ADJUSTMENT IS FACTORY SET TO APPLY COMMON MODE VOLTAGE TO TRANSFORMERLESS INPUT OP-AMP. DO NOT MOVE THIS CONTROL UNLESS THE EQ OUTPUT IS BEING MONITORED BY A HARMONIC DISTORTION ANALYZER.

INTERFACING TRANSFORMERLESS OUTPUT TO TRANSFORMER BALANCED LINES

THE OUTPUT OF THE BIAMP EQ/270A CAN DRIVE ANY LINE TRANSFORMER 600 OHMS OR UP. BECAUSE OF THE HIGH OUTPUT CAPABILITY OF THE EQ/270A, (+26.6 dBM @ 600 OHMS BALANCED), MOST LINE TRANSFORMERS WILL SATURATE BEFORE THE OUTPUT WILL CLIP. THEREFORE, NOTE THE CAPABILITY OF YOUR TRANSFORMERS FOR SETTING YOUR MAXIMUM LINE LEVELS. IT IS PERMISSABLE TO DRIVE MORE THAN ONE TRANSFORMER AS LONG AS THE IMPEDANCE OR LOAD DOES NOT GO BELOW 600 OHMS.





EQ/270A ELECTRICAL SPECIFICATIONS

FREQUENCY RESPONSE	$\pm 1.0\text{dB}$ 10HZ TO 90KHZ $\pm 0.1\text{dB}$ 15HZ TO 30KHZ
DISTORTION - THD	LESS THAN 0.006%
10 VOLTS P-P OUTPUT 10HZ TO 20KHZ	
IM	LESS THAN 0.004%
HUM AND NOISE	
ODBV REFERENCE	-90dB
BELOW FULL RATED OUTPUT	115dB
EQ CHARACTERISTICS	
RANGE	$\pm 12\text{dB}$
BAND CENTERS (27) STANDARD ISO FREQUENCIES	40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1K 1.25K, 1.6K, 3K 2.5K, 3.15K, 4K 5K, 6.3K, 8K, 10K, 12.5K, 16K
FILTER BANDWIDTH	1/3 OCTAVE AT 3dB POINT WITH 6dB OF ATTENUATION
FREQUENCY TOLERANCE	$\pm 2\%$ OF BAND CENTERS, FACTORY CALIBRATED TO WITHIN $\pm 1\%$
INPUT IMPEDANCE	600 OHMS OR 50K OHM (SWITCH ON REAR PANEL)
MAXIMUM INPUT LEVEL	+24dB
OUTPUT CAPABILITIES	21.25 VAC RMS, 26.6dBV, 10K OHM, BALANCED 10.50 VAC RMS, 20.4dBV, 10K OHM, UNBALANCED 16.50 VAC RMS, 26.6dBV, 600 OHM BALANCED 7.00 VAC RMS, 19.1dBV, 600 OHM UNBALANCED LED OVERLOAD INDICATOR FLASHES AT +22



EQ/270A ELECTRICAL SPECIFICATIONS
(CONTINUED)

LEW RATE	8 VOLTS PER MICRO SECOND
FILTER INTERACTION SAME MIXER	NO MORE THAN ± 0.375 dB
ADJACENT FILTER	5dB FOR PROPER COMBINING ACTION AND MINIMUM RIPPLE
COMMON MODE REJECTION RATE	70dB @ 1KHZ
LED OVERLOAD INDICATOR	TURNS ON AT 3dB BELOW MAXIMUM OUTPUT
CHASSIS/CIRCUIT GROUND	SCREW TERMINAL BLOCK WITH JUMPER
LINE VOLTAGE	117 VAC 50/60HZ (EXPORT 220 VAC 50/60HZ)
DIMENSIONS	483MM (19") WIDE 88.9MM (3½") HIGH 254MM (10") DEEP
WEIGHT	11 POUNDS (SHIPPING WEIGHT)

