

NO	12-2
S.I.E.	
23 C	

12-6-40

GENERAL

The 23C Speech Input Equipment is an a-c operated amplifier assembly capable of providing speech input facilities for two studios in small radio broadcasting systems. When more studios are required it is adaptable for use in conjunction with other equipments of the same type, the outputs of which may be coordinated in a master control room.

The equipment includes four microphone input circuits with pre-mixing amplifiers, and one input circuit for incoming program lines, all of which are combined in a 5-channel mixer. A three stage amplifier, with master gain control, following the mixer amplifies the signals to the level required for outgoing program lines or output switching systems in master control rooms. An indirectly lighted volume indicator meter is connected across the output circuit and terminals are provided for an extension meter. The equipment also includes a monitoring amplifier with provision for operating three loud speakers. Cut-off relays operated from contacts on the microphone keys are included in the loud speaker circuits.

Switching keys are provided for selecting any of four microphones or equivalent program sources in each of two studios. A "talk-back" key substitutes a microphone in the control room for the studio microphone for talking back into the studio during rehearsals or for making announcements from the control room. The program line input circuit has four keys arranged to connect any one of four incoming program lines to the mixer circuit or to the monitor amplifier for preliminary monitoring. An output switching key connects the output of the equipment to either of two outgoing program lines and in the intermediate position terminates the amplifier in 600 ohms. A key at the input of the monitoring amplifier connects it to the output of the line amplifier for normal monitoring or to an incoming program line or other external circuit on which monitoring is desired.

ELECTRICAL CHARACTERISTICS

- Gain - 96 db through microphone channels
64 db through program line channel
- Mixer Controls - 20 steps - 17 steps of 1-1/2 db each tapering to cut off on last three steps
- Master Gain - 20 steps - 17 steps of 2 db each tapering to cut off on last three steps
- Operates From - Microphone Circuits - 30 or 250 ohms
(Equipment is normally supplied for use with 30 ohm microphones. For 250 ohm microphone connections on terminal strip must be changed)
- Program Line Circuit - 600 ohms.
- Internal Input Impedance -)Microphone Circuits - Open Circuit.
- Program Line Circuit - 600 ohms.
- Operates Into - 600 ohms.
- Internal Output Impedance - 600 ohms.
- Output Power - See curves of distortion vs output level.
- Output Noise - Approximately 58 db (unweighted) below signal level (+18 vu) with gain and mixer controls set for input level from microphone of -60 vu - one channel - approximately 44 db (unweighted) below signal level (+18 vu) at maximum gain - one channel.
- Power Supply - 105-125 volts, 50-60 cycles a-c - approximately 90 watts. Power for relay and signal light operation (12 volts d-c, .25 ampere) must be supplied from external source. Western Electric K3-7593 Rectifier is recommended.

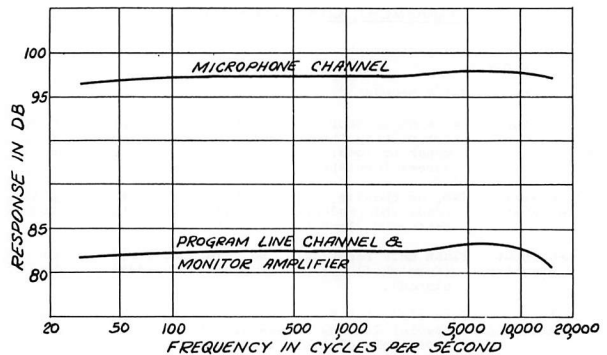
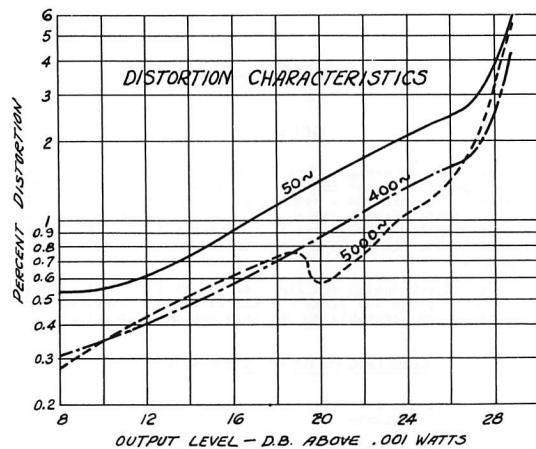
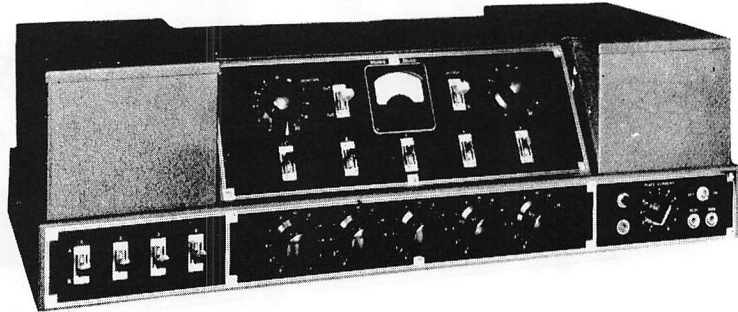
MONITOR AMPLIFIER

- Gain - 51 db working from 600 ohms through input transformer T9. When connected to output of line amplifier for normal monitoring output of monitor amplifier is approximately 18 db above output of line amplifier.
- Gain Control - 19 - 2 db steps and "OFF" position.
- Operates From - 600 ohms when connected to external circuits.
- Internal In-) - 600 ohms when used with input transformer T9 for monitoring
Impedance) - ing external circuits.
- Operates into - 750 ohms - Three 250 ohm loud speakers in series or combination of 250 ohm loud speakers and 250 ohm load resistors in series.
- Internal Output Impedance - 450 ohms.
- Output Power - 2.5 watts with approximately 5% distortion at 400 cycles. 1.5 watts with approximately 1% distortion at 400 cycles. (Divided between three loud speakers).

VACUUM TUBES

(Must be ordered separately)

- 7 - RCA 1603 Vacuum Tubes
- 2 - RCA or equivalent 42 Vacuum Tubes
- 1 - RCA or equivalent 83V Vacuum Tube

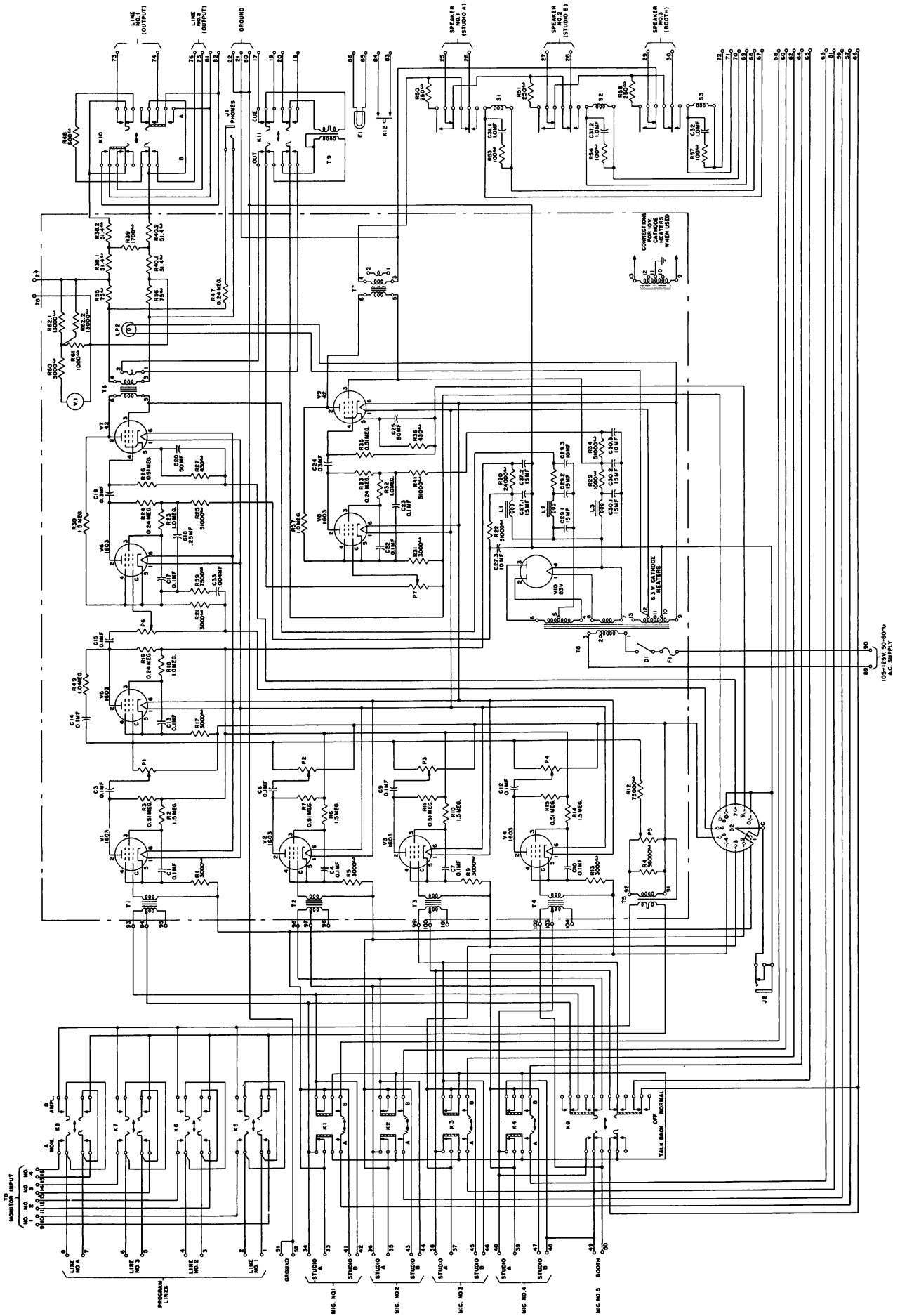


EQUIPMENT CHARACTERISTICS

- Dimensions - 34" long, 14-1/2" wide, 9-3/4" high
- Weight - Approximately 110 pounds
- Construction - Console Type Cabinet designed to mount on table.
- Finish - Chassis and covers - dark gray crinkled lacquer. Control Panels - black photo-etched.

REFERENCES

- ESXX-676545 - Assembly Part 1
- ESXX-676546 - Assembly Part 2
- ESR-676541 - Schematic
- ESXX-676547 - Wiring Diagram - Part 1
- ESXX-676548 - Wiring Diagram - Part 2
- ESA-746718 - Frequency Response Characteristics
- ESA-746719 - Frequency Response Characteristics
- E3A-746720 - Power Output vs Distortion
- ESA-746721 - Power Output vs Distortion
- ESA-746722 - Gain vs Noise Characteristics
- ESA-746723 - Gain vs Noise Characteristics
- Instruction Bulletin No. 1009E
- Photographs 92290, 92291, 92292, 92293



Desig. No.	Apparatus	Desig. No.	Apparatus	Desig. No.	Apparatus
C1,C3,C4,C6, C7,C9,C10, C12,C13,C14, C15,C17,C22	Cornell-Dub. Type TVC6P1-4 0.1 mf, d-c W. V. 600 maximum	K1,K2,K3,K4 K5,K6,K7,K8	2APF Key Units) 2BF Key Units	R1,R5,R9, R13,R17,R31	3000 Ohms
C19,C24	Cornell-Dub. Type 4 Cond. .03 mf, d-c W. V. 600 maximum	K9	2BD Key Unit } with KS-10011 Handle	R2,R6,R10 R14	1.5 Megohms
C20,C25	P. R. Mallory & Co. Type BB-19 50 mf, d-c W. V. 50 max.	K10	2AP Key Unit	R3,R7,R11, R15,R26,R35	0.5 Megohm
C27.1,C27.2, C27.3,C29.1, C29.2,C29.3, C30.1,C30.2, C30.3	P. R. Mallory & Co. Type FPT390 15-15-10 mf, d-c Working Voltage 450 max.	K11 K12	2GR Key Unit) D-97414 Key	R4	37,500 Ohms } I.R.C. Type BT-1/2 Res. ± 10 Per Cent
C31.1,C31.2	139C Cond., 1.0-1.0 mf	L1	221A Retardation Coil	R12	75,000 Ohms
C32	141A Cond., 1.0 mf	L2, L3	221H Retardation Coils	R18,R23 R32,R49	1.0 Megohm
C33	Cornell-Dub. Type 4 Cond. .004 mf ± 5 per cent, d-c W. V. 600 max.	LP2	Mazda #40 Pilot Light Lamp	R19,R24, R33,R47	0.25 Megohm
C23	Cornell-Dub. Type TVC6P1-6 .1 mf, d-c W.V. 600 Max.	LPS1	47A Lamp Socket with 2H Lamp Cap	R21	3000 Ohms } I.R.C. Type BT-1/2 Res. ± 5 Per Cent
C18	Cornell-Dub. Type TVC6P25-6 .25 mf, d-c W.V. 600 Max.	LPS2	Crowe Nameplate and Mfg. Co. #6 Pilot Light Socket	R59	7500 Ohms
D1	H. & H. #20922 S.P.S.T. Switch with 3/8" mtg. sleeve, pear shaped handle and 2 round lock- ing nuts. Ni. pl. finish.	M1	KS-0297 Meter	R27,R36	410 Ohms } I.R.C. Type BW-1 Res. ± 5 Per cent
D2	Yaxley Mfg. Co. Type RL single section, one circuit, shorting type, 11 position switch with #A-13107-1 shorting shoe.	F1,F2,P3, P4,P5	Pot. per ESO-676552-2	R60	2935 Ohms
E1	2F Lamp	F6	Pot. per ESO-676552-1 } with KS-10018 Knob	R61	1124 Ohms
F1	Bussman Mfg. Co. 1 Amp. Fustat #901 with Fustat Adapter #A01	P7	Pot. per ESO-676552-3	R62	6535 Ohms ± 5 Per cent I.R.C. Type BW-2 Res.
FM1	Bryant #59108 Receptacle	R38.1,R38.2 R40.1,R40.2	19N1 Res., 51.4-51.4 Ohms	R28,R29	1000 Ohms ± 10 Per Cent I.R.C. Type MW-2 Res.
J1,J2	218J Jacks	R39	18DS Res., 1700 Ohms	R48	600 Ohms ± 10% } Clarostat Type :50,R51,R58 } FX 5 Inches R53,R54,R57 } Fabric Length Res.
		R55,R56	18ED Res., 75 Ohms	S1,S2,S3	R118 Relays with R1 Relay Covers
		R20	25000 Ohms	T1,T2,T3,T4	618B Input Transformers
		R22,R34, R25,R41	50,000 Ohms } I.R.C. Type BT-1 Res. ± 10 Per Cent	T5,T9	285E Input Transformers
		R30	2.0 Megohms	T6,T7	160C Output Transformers
		R37	1.0 Megohm	T8	352N Transformer