TABLE XV—TRIODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Plate Current Ma.	Max. D.C. Grid Current Ma.	Amp. Factor	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Grid Voltage	Plate Current Ma.	D.C. Grid Current Ma.	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.					Grid to Fil.	Grid to Plate	Plate to Fil.											
3X150A3 3C37	150	6.3	2.5	1000	—	—	23	4.2	3.5	0.6	500	N.	—	—	—	—	—	—	—	—	—
150T [1]	150	5.0	10	3000	200	50	13	3.0	3.5	0.5	—	J.	2N	Class-C Amp. (Telegraphy)	3000	−600	200	35	—	—	450
3-150A3 152TH	150	5/10	12.5[1]/ 6.25	3000	450	85	20	5.7	4.5	0.8	40	J.	4BC	Class-C Amp. (Telegraphy)	3000	−300	250	70	27	—	600
														Class-B Amp. (Audio) [7]	3000	−150	67/335	430 [9]	3.0 [8]	20300	700
3-150A2 152TL						75	12	4.5	4.4	0.7			4BC	Class-C Amp. (Telegraphy)	3000	−400	250	40	20	—	600
														Class-B Amp. (Audio) [7]	3000	−260	65/335	675 [9]	3.0 [8]	20400	700
TW150	150	10	4.1	3000	200	60	35	3.9	2.0	0.8	—	J.	2N	Class-C Amp.-Oscillator	3000	−170	200	45	17	—	470
														Class-C Amp. (Telephony)	3000	−260	165	40	17	—	400
HK252-L	150	5/10	13/6.5	3000	500	75	10	7.0	5.0	0.4	125	N.	4BC	Class-C Amp.-Oscillator	3000	−400	250	30	15	—	610
														Class-C Amp. (Telephony)	2500	−350	250	35	16	—	500
HF200 HV18	150	10–11	3.4	2500	200	50	18	5.2	5.8	1.2	20	J.	2N	Class-C Amp. (Telegraphy)	2500	−300	200	18	8.0	—	380
														Class-C Amp. (Telephony)	2000	−350	160	20	9.0	—	250
														Class-B Amp. (Audio) [7]	2500	−130	60/360	460 [9]	8.0 [8]	16000	600
HD203A	150	10	4.0	2000	250	60	25	—	12	—	15	J.	T-3AB	Class-C Amplifier	—	—	—	—	—	—	375
HF250	150	10.5	4.0	2500	200	—	18	—	5.8	—	20	J.	2N	Class-C Amp.-Oscillator	2500	—	200	—	—	—	375
HK354 HK354C	150	5.0	10	4000	300	50	14	4.5	3.8	1.1	30	J.	2N	Class-C Amp. (Telegraphy)	4000	−690	245	50	48	—	830
														Class-C Amp. (Telephony)	3000	−550	210	50	35	—	525
														Grid-Modulated Amp.	3000	−400	78	3.0	12	—	85
														Class-B Amp. (Audio) [7]	3000	−205	65/313	630 [9]	20 [8]	22000	665
HK354D	150	5.0	10	4000	300	55	22	4.5	3.8	1.1	30	J.	2N	Class-C Amp. (Telegraphy)	3500	−490	240	50	38	—	690
														Class-C Amp. (Telephony)	3500	−425	210	55	36	—	525
HK354E	150	5.0	10	4000	300	60	35	4.5	3.8	1.1	30	J.	2N	Class C Amp. (Telegraphy)	3500	−448	240	60	45	—	690
														Class-C Amp. (Telephony)	3000	−437	210	60	45	—	525
HK354F	150	5.0	10	4000	300	75	50	4.5	3.8	1.1	30	J.	2N	Class-C Amp. (Telegraphy)	3500	−368	250	75	50	—	720
														Class-C Amp. (Telephony)	3000	−312	210	75	45	—	525
UE-468	150	10	4.05	2500	200	60	18	0.8	7.0	1.25	30	J.	Fig. 57	Class-C Amp. (Telegraphy)	2500	−300	200	18	8.0	—	380
														Class-C Amp. (Telephony)	2000	−350	160	20	9.0	—	250
														Class-B (Audio) [7]	2500	−130	320 [8]	410 [9]	2.5	16000	500
810 1627 [1]	175	10	4.5	2500	300	75	36	8.7	4.8	12	30	J.	2N	Class-C Amp. (Telegraphy)	2500	−180	300	60	19	—	575
		5.0	9.0											Class-C Amp. (Telephony)	2000	−350	250	70	35	—	380
														Grid-Modulated Amp.	2250	−140	100	2.0	4.0	—	75
														Class-B Amp. (Audio) [7]	2250	− 60	70/450	380 [9]	13 [8]	11600	725
8000	175	10	4.5	2500	300	45	16.5	5.0	6.4	3.3	30	J.	2N	Class-C Amp.-Oscillator	2500	−240	300	40	18	—	575
														Class-C Amp. (Telephony)	2000	−370	250	37	20	—	380
														Grid-Modulated Amp.	2250	−265	100	0	2.5	—	75
														Class-B Amp. (Audio) [7]	2250	−130	65/450	560 [9]	7.9 [8]	12000	725
GL-5C24	160	10	5.2	1750	107	—	8	5.6	8.8	3.3	—	N.	Fig. 26	Class-A Amp. (Audio)	1500	−155	107	—	—	8200 [5]	55
														Class-AB$_1$ Amp. (Audio) [7]	1750	−200	320 [8]	390 [9]	—	8000	240
RK63 RK63A	200	5.0 6.3	10 14	3000	250	60	37	2.7	3.3	1.1	—	J.	2N	Class-C Amp. (Telegraphy)	3000	−200	233	45	17	—	525
														Class-C Amp. (Telephony)	2500	−200	205	50	19	—	405
														Grid-Modulated Amp.	3000	−250	100	7.0	12.5	—	100

TABLE XV—TRIODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Plate Current Ma.	Max. D.C. Grid Current Ma.	Amp. Factor	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Grid Voltage	Plate Current Ma.	D.C. Grid Current Ma.	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.					Grid to Fil.	Grid to Plate	Plate to Fil.											
T200	200	10	5.75	2500	350	80	16	9.5	7.9	1.6	30	J.	2N	Class-C Amp. (Telegraphy)	2500	−280	350	54	25	—	685
														Class-C Amp. (Telephony)	2000	−260	300	54	23	—	460
F-127-A	200	10	4.0	3000	325	70	38	13	4	13	—	J.	Fig. 26	Class-C Amp. (Telegraphy)	3000	−250	250	47	18	—	600
														Class-C Amp. (Telephony)	2500	−300	200	58	25.2	—	420
														Class-B Amp. (Audio) [7]	2800	− 75	20/400	175 [9]	6.65 [8]	16600	820
822 822S	200	10	4.0	2500	300	60	30	8.5	13.5	2.1	20 30	J.	T-3AB 2N	Class-C Amp. (Telegraphy)	2500	−190	300	51	17	—	600
														Class-C Amp. (Telephony)	2000	− 75	250	43	13.7	—	405
														Class-B Amp. (Audio) [7]	3000	− 80	450 [8]	362 [9]	8.0 [8]	16000	1000
4C32	200	10	4.5	3000	300	60	30	5.5	5.8	1.1	60	J.	2N	Class-C Amp.-Oscillator	2000	−165	275	20	10	—	400
														Class-C Amp. (Telephony)	2000	−200	250	20	15	—	375
GL-592	200	10	5.0	3500	250	50	24	3.6	3.3	0.41	110	N.	Fig. 52	Class-C Amp.-Oscillator	2600	−240	250	45	18	—	425
														Class-C Amp. (Telephony)	2000	−500	250	50	—	—	—
4C34 HF300	200	11–12	4.0	3000	275	60	23	6.0	6.5	1.4	60 20	J.	2N	Class-C Amp. (Telegraphy)	3000	−400	250	28	16	—	600
														Class-C Amp. (Telephony)	2000	−300	250	36	17	—	385
														Class-B Amp. (Audio) [7]	3000	−115	60/360	450 [9]	13 [8]	20000	780
T814 HV12	200	10	4.0	2500	200	60	12	8.5	12.8	1.7	30	J	T-3AB	Class-C Amp. (Telegraphy)	2500	−240	300	30	10	—	575
														Class-C Amp. (Telephony)	2000	−370	300	40	20	—	485
														Class-B Amp. (Audio) [7]	2000	−160	50/275	350 [9]	7.0 [8]	14400	400
T822 HV27	200	10	4.0	2500	300	60	27	8.5	13.5	2.1	30	J.	T-3AB	Class-C Amp. (Telegraphy)	2500	−175	300	50	15	—	585
														Class-C Amp. (Telephony)	2000	−195	250	45	15	—	400
T-300	200	11	6.0	3000	300	—	23	6.0	7.0	1.4	—	—	—	Class-C Amp. (Telegraphy)	3000	−400	250	28	20	—	600
														Class-C Amp. (Telephony)	2000	−300	250	36	17	—	385
														Class-B (Audio) [7]	2500	−100	60/450	—	7½ [8]	—	750
806	225	5.0	10	3300	300	50	12.6	6.1	4.2	1.1	30	J.	2N	Class-C Amp. (Telegraphy)	3300	−600	300	40	34	—	780
														Class-C Amp. (Telephony)	3000	−670	195	27	24	—	460
														Class-B Amp. (Audio) [7]	3300	−240	80/475	930 [9]	35 [8]	16000	1120
3-250A4 250TH	250	5.0	10.5	4000	350	100	37	5.0	2.9	0.7	40	J.	2N	Class-C Amp. (Telegraphy)	2000	−120	350	100	34	—	500
														Class-C Amp. (Telephony)	3000	−210	320	75	42	—	750
														Grid-Modulated Amp.	3000	−160	125	4.5	20	—	125
														Class-B Amp. (Audio) [7]	3000	− 65	100/560	460 [9]	24 [8]	12250	1150
3-250A2 250TL	250	5.0	10.5	4000	350	50	14	3.7	3.1	0.7	40	J.	2N	Class-C Amp. (Telegraphy)	3000	−350	335	45	29	—	750
														Class-C Amp. (Telephony)	3000	−350	335	45	29	—	750
														Grid-Modulated Amp.	3000	−450	125	2.0	15	—	125
														Class-B Amp. (Audio) [7]	3000	−175	100/500	840 [9]	17 [8]	13000	1000
GL159	250	10	9.6	2000	400	100	20	11	17.6	5.0	15	J.	T-4BG	Class-C Amp.-Oscillator	2000	−200	400	17	6.0	—	620
														Class-C Amp. (Telephony)	1500	−240	400	23	9.0	—	450
														Class-B Amp. (Audio) [7]	2000	−100	30/660	400 [9]	4.0 [8]	6880	900
GL169	250	10	9.6	2000	400	100	35	11.5	19	4.7	15	J.	T-4BG	Class-C Amp.-Oscillator	2000	−100	400	42	10	—	620
														Class-C Amp. (Telephony)	1500	−100	400	45	10	—	450
														Class-B Amp. (Audio) [7]	2000	− 18	30/660	220 [9]	6.0 [8]	7000	900

TABLE XV—TRIODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Plate Current Ma.	Max. D.C. Grid Current Ma.	Amp. Factor	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Grid Voltage	Plate Current Ma.	D.C. Grid Current Ma.	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.					Grid to Fil.	Grid to Plate	Plate to Fil.											
204A 304A	250	11	3.05	2500	275	80	23	12.5	15	2.3	3	N.	T-1A	Class-C Amp. (Telegraphy)	2500	−200	250	30	15	—	450
														Class-C Amp. (Telephony)	2000	−250	250	35	20	—	350
														Class-B Amp. (Audio) [7]	3000	−100	80/372	500 [9]	18 [8]	20000	700
308B	250	14	4.0	2250	325	75	8.0	13.6	17.4	9.3	1.5	N.	T-2A	Class-C Amp. (Telegraphy)	1750	−345	300	—	—	—	350
															1500	−300	300	—	—	—	300
														Class-B Amp. (Audio) [7]	1750	−215	30/300	—	35 [8]	5200	575
HK454H	250	5.0	11	5000	375	85	30	4.6	3.4	1.4	100	J.	2N	Class-C Amp. (Telegraphy)	3500	−275	270	60	28	—	760
HK454-L	250	5.0	11	5000	375	60	12	4.6	3.4	1.4	100	J.	2N	Class-C Amp. (Telephony)	3500	−450	270	45	30	—	760
212E 241B 312E	275	14	4.0	3000	350	75	16	14.9	18.8	8.6	1.5	N.	T-2A T-2AA	Class-C Amp. (Telegraphy)	3500	−275	270	60	28	—	760
														Class-C Amp. (Telephony)	3500	−450	270	45	30	—	760
														Class-B Amp. (Audio) [7]	2000	−105	40/300	—	50 [8]	8000	650
300T [1]	300	8.0	11.5	3500	350	75	16	4.0	4.0	0.6	—	J.	2N	Class-C Amp. (Telegraphy)	2000	−225	300	—	—	—	400
HK304-L	300	5/10	26/13	3000	1000	150	10	12	9.0	0.8	—	N.	4BC	Class-C Amp. (Telephony)	1500	−200	300	75	—	—	300
527	300	5.5	135.0	—	—	—	38	19.0	12.0	1.4	200	N.	T-4B	Oscillator at 200 Mc.	Approximately 250 watts output						
HK654	300	7.5	15	4000	600	100	22	6.2	5.5	1.5	20	J.	2N	Class-C Amp. (Telegraphy)	2000	−380	500	75	57	—	720
														Class-C Amp. (Telephony)	2000	−365	450	110	70	—	655
														Grid-Modulated Amp.	3500	−210	150	15	15	—	210
3-300A3 304TH	300	5/10	25/12.5	3000	900	170	20	13.5	10.2	0.7	40	N.	4BC	Class-C Amplifier	1500	−125	667	115	25	—	700
														Class-B Amp. (Audio) [7]	3000	−150	134/667	420 [9]	6.0 [8]	10200	1400
3-300A2 304TL						150	12	8.5	9.1	0.6	40	N.	4BC	Class-C Amplifier	1500	−250	665	90	33	—	700
														Class-B Amp. (Audio) [7]	3000	−260	130/667	650 [9]	6.0 [8]	10200	1400
833A	300	10	10	3000	500	100	35	12.3	6.3	8.5	30	N.	T-1AB	Class-C Amp. (Telegraphy)	2000	−200	475	65	25	—	740
														Class-C Amp. (Telephony)	2500	−300	335	75	30	—	635
270A	350	10	4.0	3000	375	75	16	18	21	2.0	7.5	N.	T-1A	Class-C Amp. (Telegraphy)	3000	−375	350	—	—	—	700
														Class-C Amp. (Telephony)	2250	−300	300	80	—	—	450
849 [1]	400	11	5.0	2500	350	125	19	17	33.5	3.0	3	N.	T-1A	Class-C Amp. (Telegraphy)	2500	−250	300	20	8.0	—	560
														Class-C Amp. (Telephony)	2000	−300	300	30	14	—	425
831 [1]	400	11	10	3500	350	75	14.5	3.8	4.0	1.4	—	N.	T-1AA	Class-C Amp. (Telegraphy)	3500	−400	275	40	30	—	590
														Class-C Amp. (Telephony)	3000	−500	200	60	50	—	360

* Cathode resistor in ohms.

[1] Discontinued.
[2] Twin triode. Values, except interelement capacities, are for both sections in push-pull.
[3] Output at 112 Mc.
[4] Grid-leak resistor in ohms.
[5] Max. peak volts, plate pulsed.
[6] Per section.
[7] Values are for two tubes in push-pull.
[8] Max. signal value.
[9] Peak a.f. grid-to-grid volts.
[10] For single tube.

TABLE XVI—TETRODE AND PENTODE TRANSMITTING TUBES

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Screen Voltage	Max. Screen Dissipation Watts	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current Ma.	Screen Current Ma.	Grid Current Ma.	Screen Resistor Ohms	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.				Grid to Fil.	Grid to Plate	Plate to Fil.															
3A4	2.0	1.4 2.8	0.2 0.1	150	135	0.9	4.8	0.2	4.2	10	B.	7BB	Class-C Amp.-Oscillator	150	135	0	— 26	18.3	6.5	0.13	2300	—	—	1.2
HY63[1]	3.0	2.5 1.25	0.1125 0.225	200	100	0.6	8.0	0.1	8.0	60	O.	T-8DB	Class-C Amp.-Osc.	200	100	—	−22.5	20	4.0	2.0	—	0.1	—	3.0
													Class-C Amp. (Telephony)	180	100	—	— 35	15	3.0	2.0	—	0.2	—	2.0
6AK6	3.5	6.3	0.15	375	250	1.0	3.6	0.12	4.2	54	B.	7BK	Class-C Amp.-Oscillator	375	250	—	−100	15	4.0	3.0	—	—	—	4.0
6AQ5	8.0	6.3	0.45	350	250	2.0	7.6	0.35	6.0	54	B.	7BZ	Class-C Amp.-Oscillator	350	250	—	−100	47	7.0	5.0	—	—	—	11
6V6GT	8.0	6.3	0.45	350	250	2.0	9.5	0.7	7.5	10	O.	7AC	Class-C Amp.-Oscillator	350	250	—	−100	47	7.0	5.0	—	—	—	11
6AG7	9.0	6.3	0.65	375	250	1.5	13	0.06	7.5	10	O.	8Y	Class-C Amp.-Oscillator	375	250	—	— 75	30	9.0	5.0	—	—	—	7.5
RK64[1]	6.0	6.3	0.5	400	100	3.0	10	0.4	9.0	60	M.	T-5BB	Class-C Amp. (Telegraphy)	400	100	30	— 30	35	10	3.0	—	0.18	—	10
													Class-C Amp. (Telephony)	300	—	30	— 30	26	8.0	4.0	30000	0.2	—	6.0
1610	6.0	2.5	1.75	400	200	2.0	8.6	1.2	13	20	M.	T-5CA	Class-C Amp.-Oscillator	400	150	—	— 50	22.5	7.0	1.5	—	0.1	—	5.0
RK56	8.0	6.3	0.55	300	300	4.5	10	0.2	9.0	60	M.	T-5BB	Class-C Amp. (Telegraphy)	400	300	—	— 40	62	12	1.6	—	0.1	—	12.5
													Class-C Amp. (Telephony)	250	200	—	— 40	50	10	1.6	2800	0.28	—	8.5
RK23[1] RK25 RK25B[1]	10	2.5 6.3	2.0 0.9	500	250	8	10	0.2	10	—	M.	T-7C	Class-C Amp. (Telegraphy)	500	200	45	— 90	55	38	4.0	—	0.5	—	22
													Class-C Amp. (Telephony)	400	150	0	— 90	43	30	6.0	8300	0.8	—	13.5
													Suppressor-Modulated Amp.	500	200	−45	— 90	31	39	4.0	—	0.5	—	6.0
1613	10	6.3	0.7	350	275	2.5	8.5	0.5	11.5	45	O.	7S	Class-C Amp. (Telegraphy)	350	200	—	— 35	50	10	3.5	20000	0.22	—	9
													Class-C Amp. (Telephony)	275	200	—	— 35	42	10	2.8	10000	0.16	—	6.0
2E30	10	6.0	0.7	250	250	2.5	10	0.5	4.5	160	B.	7CQ	Class-C Amp.-Oscillator	250	200	—	— 50	50	10	2.5	—	0.2	—	7.5
													Class-AB$_2$ Amp. (Audio)[6]	250	250	—	— 30	40/120	4/20	2.3[7]	87[8]	0.2	3800	17
6F6 6F6G	12.5	6.3	0.7	400	275	3.0	6.5 8.0	0.2 0.5	13 6.5	10	O.	7AC	Class-C Amp.-Oscillator	400	275	—	−100	50	11	5.0	—	—	—	14
													Class-C Amp. (Telephony)	275	200	—	— 35	42	10	2.8	—	0.16	—	6.0
837 RK44[1]	12	12.6	0.7	500	300	8	16	0.2	10	20	M.	T-7C	Class-C Amp. (Telegraphy)	500	200	40	— 70	80	15	4.0	20000	0.4	—	28
													Class-C Amp. (Telephony)	400	140	40	— 40	45	20	5.0	13000	0.3	—	11
													Suppressor-Modulated Amp.	500	—	−65	— 20	30	23	3.5	14000	0.1	—	5.0
2E24	9.0	6.3[5]	0.65	500	200	2.3	8.5	0.11	6.5	125	O.	7CL	Class-C Amp. (Telephony)	400	180	—	— 45	50	8.0	2.5	27500	0.15	—	13.5
														500	180	—	— 45	54	8.0	2.5	40000	0.16	—	18.0
	13.5			600	200	2.5							Class-C Amp. (Telegraphy)	400	200	—	— 45	75	10.0	3.0	20000	0.19	—	20
														600	195	—	— 50	66	10	3.0	40500	0.21	—	27
2E26	13.5	6.3	0.8	600	200	2.5	13	0.2	7.0	125	O.	7CK	Class-C Amp. (Telegraphy)	600	185	—	— 45	66	10	3.0	41500	0.17	—	27
	9.0			500	200	2.3							Class-C Amp. (Telephony)	500	180	—	— 50	54	9.0	2.5	35500	0.15	—	18
													Class-AB$_2$ Amp. (Audio)[6]	500	125	—	— 15	22/150	32[7]	—	60[8]	0.36[7]	8000	54
802	13	6.3	0.9	600	250	6.0	12	0.15	8.5	30	M.	T-7C	Class-C Amp. (Telegraphy)	600	250	40	−120	55	16	2.4	22000	0.30	—	23
													Class-C Amp. (Telephony)	500	245	40	— 40	40	15	1.5	16300	0.10	—	12
													Suppressor-Modulated Amp.	600	250	−45	−100	30	24	5.0	14500	0.6	—	6.3
HY6V6-GTX	13	6.3	0.5	350	225	2.5	9.5	0.7	9.5	60	O.	7AC	Class-C Amp.-Oscillator	300	200	—	— 45	60	7.5	2.5	—	0.3	—	12
													Class-C Amp. (Telephony)	250	200	—	— 45	60	6.0	2.0	15000	0.4	—	10
HY60	15	6.3	0.5	425	225	2.5	10	0.2	8.5	60	M.	T-5BB	Class-C Amp. (Telegraphy)	425	200	—	−62.5	60	8.5	3.0	—	0.3	—	18
													Class-C Amp. (Telephony)	325	200	—	— 45	60	7.0	2.5	—	0.2	—	14
HY65[1]	15	6.3	0.85	450	250	4.0	9.1	0.18	7.2	60	O.	T-8DB	Class-C Amp.-Oscillator	450	250	—	— 45	75	15	3.0	—	0.5	—	24
													Class-C Amp. (Telephony)	350	200	—	— 45	63	12	3.0	—	0.5	—	16

TABLE XVI—TETRODE AND PENTODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Screen Voltage	Max. Screen Dissipation Watts	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current Ma.	Screen Current Ma.	Grid Current Ma.	Screen Resistor Ohms	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.				Grid to Fil.	Grid to Plate	Plate to Fil.															
2E25	15	6.0	0.8	450	250	4.0	8.5	0.15	6.7	125	O.	5BJ	Class-C Amp.-Oscillator	450	250	—	− 45	75	15	3.0	—	0.4	—	24
													Class-C Amp. (Telephony)	400	200	—	− 45	60	12	3.0	—	0.4	—	16
													Class-AB$_2$ Amp. (Audio) [6]	450	250	—	− 30	44/150	10/40	3.0	142 [8]	0.9 [7]	6000	40
306A	15	2.75	2.0	300	300	6.0	13	0.35	13	—	M.	T-5CB	Class-C Amp. (Telephony)	300	180	—	− 50	36	15	3.0	8000	—	—	7.0
307A RK-75	15	5.5	1.0	500	250	6.0	15	0.55	12	—	M.	T-5C	Class-C Amp. (Telegraphy)	500	250	0	− 35	60	13	1.4	20000	—	—	20
													Suppressor-Modulated Amp.	500	200	−50	− 35	40	20	1.5	14000	—	—	6.0
832 [3]	15	6.3	1.6	500	250	5.0	7.5	0.05	3.8	200	N.	7BP	Class-C Amp. (Telegraphy)	500	200	—	− 65	72	14	2.6	21000	0.18	—	26
		12.6	0.8										Class-C Amp. (Telephony)	425	200	—	− 60	52	16	2.4	14000	0.15	—	16
832A [3]	15	6.3	1.6	750	250	5.0	7.5	0.05	3.8	200	N.	7BP	Class-C Amp. (Telegraphy)	750	200	—	− 65	48	15	2.8	36500	0.19	—	26
		12.6	0.8										Class-C Amp. (Telephony)	600	200	—	− 65	36	16	2.6	25000	0.16	—	17
844 [1]	15	2.5	2.5	500	180	3.0	9.5	0.15	7.5	—	M.	T-5BB	Class-C Amp. (Telegraphy)	500	175	—	−125	25	—	5.0	—	—	—	9.0
													Class-C Amp. (Telephony)	500	150	—	−100	20	—	—	—	—	—	4.0
865	15	7.5	2.0	750	175	3.0	8.5	0.1	8.0	15	M.	T-4C	Class-C Amp. (Telegraphy)	750	125	—	− 80	40	—	5.5	—	1.0	—	16
													Class-C Amp. (Telephony)	500	125	—	−120	40	—	9.0	—	2.5	—	10
1619	15	2.5	2.0	400	300	3.5	10.5	0.35	12.5	45	O.	7AC	Class-C Amp. (Telegraphy)	400	300	—	− 55	75	10.5	5.0	9500	0.36	—	19.5
													Class-C Amp. (Telephony)	325	285	—	− 50	62	7.5	2.8	5000	0.18	—	13
													Class-AB$_2$ Amp. (Audio) [6]	400	300	0	−16.5	75/150	6.5/11.5	—	77 [8]	0.4 [7]	6000	36
5516	15	6.0	0.7	600	250	5.0	8.5	0.12	6.5	80	O.	7CL	Class-C Amp. (Telegraphy)	600	250	—	− 60	75	15	5.0	—	0.5	—	32
													Class-C Amp. (Telephony)	475	250	—	− 90	63	10	4.0	22500	0.5	—	22
													Class-AB$_2$ (Audio) [6]	600	250	—	− 25	36/140	1/24	4 [7]	80 [8]	0.16	10500	67
254A	20	5.0	3.25	750	175	5.0	4.6	0.1	9.4	—	M.	T-4C	Class-C Amplifier	750	175	—	− 90	60	—	—	—	—	—	25
6L6	21	6.3	0.9	400	300	3.5	10	0.4	12	10	O.	7AC	Class-C Amp.-Oscillator	400	300	—	−125	100	12	5.0	—	—	—	28
6L6G							11.5	0.9	9.5				Class-C Amp. (Telephony)	325	250	—	− 70	65	—	9.0	—	0.8	—	11
6L6GX	21	6.3	0.9	500	300	3.5	11	1.5	7.0	—	O.	7AC	Class-C Amp. (Telegraphy)	500	250	—	− 50	90	9.0	2.0	—	0.25	—	30
													Class-C Amp. (Telephony)	325	225	—	− 45	90	9.0	3.0	—	0.25	—	20
HY6L6-GTX	21	6.3	0.9	500	300	3.5	11	0.5	7.0	60	O.	7AC	Class-C Amp.-Oscillator	500	250	—	− 50	90	9.0	2.0	—	0.5	—	30
													Class-C Amp. (Telephony)	400	225	—	− 45	90	9.0	3.0	16000	0.8	—	20
T21	21	6.3	0.9	400	300	3.5	13	0.7	12	30	M.	T-6B	Class-C Amp. (Telegraphy)	400	250	—	− 50	95	8.0	3.0	—	0.2	—	25
													Class-C Amp. (Telephony)	350	200	—	− 45	65	17	5.0	—	0.35	—	14
RK49	21	6.3	0.9	400	300	3.5	11.5	1.4	10.6	—	M.	T-6B	Class-C Amp. (Telegraphy)	400	250	—	− 50	95	8.0	3.0	—	0.2	—	25
													Class-C Amp. (Telephony)	300	200	—	− 45	60	15	5.0	6700	0.34	—	12
1614	25	6.3	0.9	450	300	3.5	10	0.4	12.5	80	O.	7AC	Class-C Amp. (Telegraphy)	450	250	—	− 45	100	8	2.0	12500	0.15	—	31
													Class-C Amp. (Telephony)	375	250	—	− 50	93	7.0	2.0	10000	0.15	—	24.5
													Class-AB$_1$ Amp. (Audio) [6]	530	340	—	− 36	60/160	20 [7]	—	72 [8]	—	7200	50
RK41 [1]	25	2.5	2.4	600	300	3.5	13	0.2	10	30	M.	T-5BB	Class-C Amp. (Telegraphy)	600	300	—	− 90	93	10	3.0	—	0.38	—	36
RK39		6.3	0.9										Class-C Amp. (Telephony)	475	250	—	− 50	85	9.0	2.5	25000	0.2	—	26
HY61/807	25	6.3	0.9	600	300	3.5	11	0.2	7.0	60	M.	T-5BB	Class-C Amp. (Telegraphy)	600	250	—	− 50	85	9.0	4.0	33000	0.4	—	40
													Class-C Amp. (Telephony)	475	250	—	− 50	100	9.0	3.5	25000	0.2	—	27
													Class-AB$_2$ Amp. (Audio) [6]	600	300	—	− 30	200 [7]	10 [7]	—	—	0.1 [7]	—	80
815 [3]	25	12.6	0.8	500	200	4.0	13.3	0.2	8.5	125	O.	T-8FA [4]	Class-C Amp.-Oscillator	500	200	—	− 45	150	17	2.5	—	0.13	—	56
		6.3	1.6										Class-C Amp. (Telephony)	400	175	—	− 45	150	15	3.0	—	0.16	—	45
													Class-AB$_2$ Amp. (Audio) [3]	500	125	—	− 15	22/150	32 [7]	—	60 [8]	0.36 [7]	2000	54

TABLE XVI—TETRODE AND PENTODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Screen Voltage	Max. Screen Dissipation Watts	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current Ma.	Screen Current Ma.	Grid Current Ma.	Screen Resistor Ohms	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.				Grid to Fil.	Grid to Plate	Plate to Fil.															
254B	25	7.5	3.25	750	150	5.0	11.2	0.085	5.4	—	M.	T-4C	Class-C Amplifier	750	150	—	−135	75	—	—	—	—	—	30
1624	25	2.5	2.0	600	300	3.5	11	0.25	7.5	60	M.	T-5DC	Class-C Amp. (Telegraphy)	600	300	—	− 60	90	10	5.0	30000	0.43	—	35
													Class-C Amp. (Telephony)	500	275	—	− 50	75	9.0	3.3	25000	0.25	—	24
													Class-AB$_2$ Amp. (Audio) [6]	600	300	—	− 25	42/180	5/15	106 [8]	—	1.2 [7]	7500	72
3DX3	25	6.3	3.0	1500	200	—	—	—	—	250	S.	Fig. 40	Class-C Amp. (Telegraphy)	1000	200	—	−155	75	—	2.8	—	0.57	—	50
3E22 [3]	30	12.6	0.8	560	225	6.0	14	0.22	8.5	—	O.	83Y	Class-C Amp. (Telegraphy) [3]	600	200	—	− 55	160	20	7.0	20000	0.45	—	72
		6.3	1.6										Class-C Amp. (Telephony) [3]	560	200	—	− 50	160	20	6.5	18000	0.4	—	67
RK66	30	6.3	1.5	600	300	3.5	12	0.25	10.5	60	M.	T-5C	Class-C Amp.-Oscillator	600	300	—	− 60	90	11	5.0	—	0.5	—	40
													Class-C Amp. (Telephony)	500	—	—	− 50	75	8.0	3.2	25000	0.23	—	25
807	30	6.3	0.9	750	300	3.5	11	0.2	7.0	60	M.	T-5BB	Class-C Amp. (Telegraphy)	750	250	—	− 45	100	6	3.5	85000	0.22	—	50
1625		12.6	0.45									5AZ	Class-C Amp. (Telephony)	600	275	—	− 90	100	6.5	4.0	50000	0.4	—	42.5
													Class-AB$_2$ Amp. (Audio) [6]	750	300	—	− 32	50/240	5/10	92 [8]	—	0.2 [7]	6950	120
2E22	30	6.3	1.5	750	250	10	13	0.2	8.0	—	M.	5J	Class-C Amp.-Oscillator	500	250	22.5	− 60	100	16	6.0	15000	0.55	—	34
													Class-C Amp.-Oscillator	750	250	22.5	− 60	100	16	6.0	30000	0.55	—	53
													Suppressor-Modulated Amp.	750	250	−90	− 65	55	29	6.5	17000	0.6	—	16.5
3D23	35	6.3	3.0	—	—	—	6.5	0.2	1.8	250	M.	Fig. 54	Class-C Amp. (Telegraphy)	1500	375	—	−300	110	22	15	—	4.5	—	130
TB-35													Class-C Amp. (Telephony)	1000	300	—	−200	85	14	10	—	2.0	—	60
RK20 [1]	40	7.5	3.0	1250	300	15	14	0.01	12	—	M.	T-5C	Class-C Amp. (Telegraphy)	1250	300	45	−100	92	35	11.5	—	1.6	—	84
RK20A		7.5	3.25										Class-C Amp. (Telephony)	1000	300	0	−100	75	30	10	23000	1.3	—	52
RK46 [1]		12.6	2.5										Suppressor-Modulated Amp.	1250	300	−45	−100	48	44	11.5	—	1.5	—	21
													Grid-Modulated Amp.	1250	300	45	−142	40	7.0	1.8	—	1.5	—	20
HY69	40	6.3	1.5	600	300	5.0	15.4	0.23	6.5	60	M.	T-5D	Class-C Amp.-Oscillator	600	250	—	− 60	100	12.5	4.0	30000	0.25	—	42
													Class-C Amp. (Telephony)	600	250	—	− 60	100	12.5	5.0	30000	0.35	—	42
													Modulated Doubler	600	200	—	−300	90	11.5	6.0	35000	2.8	—	27
													Class-AB$_2$ Amp. (Audio) [6]	600	300	—	− 35	200 [7]	18 [7]	5.0 [7]	—	0.3 [7]	—	80
829 [1,3]	40	6.3	2.25	500	225	40	14.5	0.1	7.0	200	N.	7BP	Class-C Amp. (Telegraphy)	500	200	—	− 45	240	32	12	9300	0.7	—	83
		12.6	1.12										Class-C Amp. (Telephony)	425	200	—	− 60	212	35	11	6400	0.8	—	63
													Grid-Modulated Amp.	500	200	—	− 38	120	10	2.0	—	0.5	—	23
829A [1,3]	40	6.3	2.25	750	240	7.0	14.4	0.1	7.0	200	N.	7BP	Class-C Amp.-Oscillator	750	200	—	− 55	160	30	12	18300	0.8	—	87
		12.6	1.12										Class-C Amp. (Telephony)	600	200	—	− 70	150	30	12	13300	0.9	—	70
													Grid-Modulated Amp.	750	200	—	− 55	80	5.0	0	—	0.7	—	24
829B [3]	30	12.6	1.125	750	225	6	14.5	0.12	7.0	200	N.	7BP	Class-C Amp. (Grid Mod.)	500	200	—	− 38	120	10	2	—	0.5	—	23
3E29 [3]	28	6.3	2.25	600	225	7							Class-C Amp. (Telephony)	425	200	—	− 60	212	35	11.0	6400	0.8	—	63
	40			750	240	7							Class-C Amp. (Telegraphy)	500	200	—	− 45	240	32	12.0	9300	0.7	—	83
HY1269	40	6.3	3.5	750	300	5.0	16.0	0.25	7.5	6	M.	T-5DB	Class-C Amp.-Oscillator	750	300	—	− 70	120	15	4	—	0.25	—	63
		12.6	1.75										Class-C Amp. (Telephony)	600	250	—	− 70	100	12.5	5	35000	0.5	—	42
													Grid-Modulated Amp.	750	300	—	—	80	—	—	—	—	—	20
													Class-AB$_2$ Amp. (Audio) [6]	600	300	—	− 35	200 [7]	—	—	—	0.3	—	80
3D24	45	6.3	3.0	2000	400	10	6.5	0.2	2.4	125	L.	T-9J	Class-C Amp.-Oscillator	2000	375	—	−300	90	20	10	—	4.0	—	140
														1500	375	—	−300	90	22	10	—	4.0	—	105
715-B	50	26/28	—	—	—	—	—	—	—	—	—	—	Class-C Amp. (Telegraphy)	1500	300	—	—	125	—	—	—	—	—	—

TABLE XVI—TETRODE AND PENTODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Screen Voltage	Max. Screen Dissipation Watts	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current Ma.	Screen Current Ma.	Grid Current Ma.	Screen Resistor Ohms	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.				Grid to Fil.	Grid to Plate	Plate to Fil.															
5562	45	6.3	3.0	2000	400	8	6.5	0.2	1.8	120	M.	Fig. 54	Class-C Amp. (Telegraphy)	1500	375	—	−300	116	21	12	—	3.6	—	135
													Class-C Amp. (Telephony)	1000	300	—	−200	85	14	10	—	2.0	—	60
RK47	50	10	3.25	1250	300	10	13	0.12	10	—	M.	T-5D	Class-C Amp. (Telegraphy)	1250	300	—	− 70	138	14	7.0	—	1.0	—	120
													Class-C Amp. (Telephony)	900	300	—	−150	120	17.5	6.0	—	1.4	—	87
													Grid-Modulated Amp.	1250	300	—	− 30	60	2.0	0.9	—	4.0	—	25
312A	50	10	2.8	1250	500	20	15.5	0.15	12.3	—	M.	T-6C	Class-C Amp. (Telegraphy)	1250	300	20	− 55	100	36	5.5	—	0.7	—	90
													Class-C Amp. (Telephony)	1000	—	40	− 40	95	35	7.0	22000	1.0	—	65
													Suppressor-Modulated Amp.	1250	—	−85	− 50	50	42	5.0	22000	0.55	—	23
804	50	7.5	3.0	1500	300	15	16	0.01	14.5	15	M.	T-5C	Class-C Amp. (Telegraphy)	1500	300	45	−100	100	35	7.0	34000	1.95	—	110
													Class-C Amp. (Telephony)	1250	250	50	− 90	75	20	6.0	50000	0.75	—	65
													Grid-Modulated Amp.	1500	300	45	−130	50	13.5	3.7	—	1.3	—	28
													Suppressor-Modulated Amp.	1500	300	−50	−115	50	32	7 0	—	0.95	—	28
4D22	50	25.2	0.8	750	350	14	28	0.27	13	60	N.	Fig. 50	Class-C Amp. (Telegraphy)	750	300	—	−100	240	26	12	—	1.5	—	135
		12.6	1.6											600	300	—	−100	215	30	10	—	1.25	—	100
4D32		6.3	3.75									Fig. 51	Class-C Amp. (Telephony)	600	—	—	−100	220	28	10	10000	1.25	—	100
														550	—	—	−100	175	17	6	15000	0.6	—	70
													Class-AB_2 Amp. (Audio) [6]	600	250	—	− 25	100/365	26 [7]	70 [8]	—	0.45 [7]	3000	125
305A	60	10	3.1	1000	200	6	10.5	0.14	5.4	—	M.	T-4CE	Class-C Amp. (Telegraphy)	1000	200	—	−200	125	—	—	—	—	—	85
													Class-C Amp. (Telephony)	800	200	—	−270	125	—	—	—	—	—	70
HY67	65	6.3	4.5	1250	300	10	—	0.19	14.5	—	M.	T-5DB	Class-C Amp. (Telegraphy)	1250	300	—	− 80	175	22.5	10	—	1.5	—	152
		12.6	2.25										Class-C Amp. (Telephony)	1000	300	—	−150	145	17.5	14	—	2.0	—	101
													Grid-Modulated Amp.	1250	300	—	—	78	—	—	—	—	—	32.5
814	65	10	3.25	1500	300	10	13.5	0.1	13.5	30	M.	T-5D	Class-C Amp. (Telegraphy)	1500	300	—	− 90	150	24	10	50000	1.5	—	160
													Class-C Amp. (Telephony)	1250	300	—	−150	145	20	10	48000	3.2	—	130
													Grid-Modulated Amp.	1500	250	—	−120	60	3.0	2.5	—	4.2	—	35
4-65A	65	6.0	3.5	3000	400	10	8.0	0.08	2.1	160	N.	Fig. 55	Class-C Amp. (Telegraphy)	1500	250	—	− 75	125	25	12	—	1.6	—	138
													Class-C Amp. (Telegraphy)	1000	250	—	− 70	125	35	14	—	1.8	—	88
													Class-C Amp. (Telegraphy)	600	250	—	− 45	125	40	17	—	2	—	49
282A	70	10	3.0	1000	250	5	12.2	0.2	6.8	—	M.	T-4C	Class-C Amp. (Telegraphy)	1000	150	—	−160	100	—	—	—	—	—	33
													Class-C Amp. (Telephony)	750	150	—	−180	100	—	50	—	—	—	50
4E27/ 8001	75	5.0	7.5	4000	750	30	12	0.06	6.5	75	J.	T-7CB	Class-C Amp. (Telegraphy)	2000	750	—	−200	150	18	0.7	300000	0.2	—	230
													Class-C Amp. (Telephony)	2000	600	60	−200	100	8	0.6	240000	0.1	—	200
													Suppressor-Modulated Amp.	2000	500	−300	−130	55	45	3.0	—	0.4	—	35
HK257	75	5.0	7.5	4000	750	25	13.8	0.04	6.7	75	J.	T-7CB	Class-C Amp. (Telegraphy)	2000	500	60	−200	150	11	6.0	—	1.4	—	230
HK257B										120			Class-C Amp. (Telephony)	1800	400	60	−130	135	11	8.0	—	1.7	—	178
													Suppressor-Modulated Amp.	2000	500	−300	−130	55	27	3.0	—	0.4	—	35
828	80	10	3.25	2000	750	23	13.5	0.05	14.5	30	M.	5J	Class-C Amp. (Telegraphy)	1500	400	75	−100	180	28	12	40000	2.2	—	200
													Class-C Amp. (Telephony)	1250	400	75	−140	160	28	12	30000	2.7	—	150
													Grid-Modulated Amp.	1500	400	75	−150	80	4.0	1.3	—	1.3	—	41
													Class-AB_1 Amp. (Audio) [6]	2000	750	60	−120	50/270	2/60	240 [8]	—	0	18500	385

TABLE XVI—TETRODE AND PENTODE TRANSMITTING TUBES—*Continued*

Type	Max. Plate Dissipation Watts	Cathode		Max. Plate Voltage	Max. Screen Voltage	Max. Screen Dissipation Watts	Interelectrode Capacitances ($\mu\mu$fd.)			Max. Freq. Mc. Full Ratings	Base	Socket Connections	Typical Operation	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current Ma.	Screen Current Ma.	Grid Current Ma.	Screen Resistor Ohms	Approx. Grid Driving Power Watts	Class B P-to-P Load Res. Ohms	Approx. Output Power Watts
		Volts	Amp.				Grid to Fil.	Grid to Plate	Plate to Fil.															
RK28	100	10	5.0	2000	400	35	15	0.02	15	—	J.	5J	Class-C Amp. (Telegraphy)	2000	400	45	−100	150	55	13	21000	2.0	—	210
													Class-C Amp. (Telephony)	1500	400	45	−100	135	52	13	21000	2.0	—	155
													Suppressor-Modulated Amp.	2000	400	−45	−100	85	65	13	—	1.8	—	60
													Grid-Modulated Amplifier	2000	400	45	−140	80	20	4.0	—	0.9	—	75
RK48 RK48A	100	10	5.0	2000	400	22	17	0.13	13	—	J.	T-5D	Class-C Amp. (Telegraphy)	2000	400	—	−100	180	40	6.5	—	1.0	—	250
													Class-C Amp. (Telephony)	1500	400	—	−100	148	50	6.5	22000	1.0	—	165
													Grid-Modulated Amplifier	1500	400	—	−145	77	10	1.5	—	1.6	—	40
813	100	10	5.0	2250	400	22	16.3	0.2	14	30	J.	Fig. 28	Class-C Amp. (Telegraphy)	2250	400	0	−155	220	40	15	46000	4.0	—	375
													Class-C Amp. (Telephony)	2000	350	0	−175	200	40	16	41000	4.3	—	300
													Grid-Modulated Amplifier	2000	400	—	−120	75	3.0	—	—	—	—	50
													Class-B Amp. (Audio) [6]	2500	750	0	− 95	35/360	1.2/55	—	—	0.35	17000	650
850	100	10	3.25	1250	175	10	17	0.25	25	15	J.	T-3B	Class-C Amp. (Telegraphy)	1250	175	—	−150	160	—	35	—	10	—	130
													Class-C Amp. (Telephony)	1000	140	—	− 100	125	—	40	—	10	—	65
													Grid-Modulated Amplifier	1250	175	—	− 13	110	—	—	—	—	—	40
860	100	10	3.25	3000	500	10	7.75	0.08	7.5	30	M.	T-4CB	Class-C Amp.-Oscillator	3000	300	—	−150	85	25	15	—	7.0	—	165
													Class-C Amp. (Telephony)	2000	220	—	−200	85	25	38	100000	17	—	105
4-125A	125	5.0	6.2	3000	400	20	10.3	0.03	3.0	120	N.	Fig. 27	Class-C Amp. (Telegraphy)	3000	350	—	−150	167	30	9	—	2.5	—	375
													Class-C Amp. (Telegraphy)	2500	350	—	−330	150	30	13	—	6	—	300
RK28A	125	10	5.0	2000	400	35	15	0.02	15	—	J.	5J	Class-C Amp. (Telegraphy)	2000	400	45	−100	170	60	10	—	1.6	—	250
													Class-C Amp. (Telegraphy)	1500	400	45	−100	135	54	10	18500	1.6	—	150
													Grid-Modulated Amp.	2000	400	45	− 55	80	18	2.0	—	0.5	—	60
													Suppressor-Modulated Amp.	2000	—	−45	−115	90	52	11.5	30000	1.5	—	60
803	125	10	5.0	2000	600	30	17.5	0.15	29	20	J.	5J	Class-C Amp. (Telegraphy)	2000	500	40	− 90	160	45	12	—	2.0	—	210
													Class-C Amp. (Telephony)	1600	400	100	− 80	150	45	25	27000	5.0	—	155
													Suppressor-Modulated Amp.	2000	—	−110	−100	80	48	15	35000	2.5	—	53
													Grid-Modulated Amplifier	2000	600	40	− 80	80	20	4.0	—	2.0	—	53
4X-150A [9]	150	6.0	2.8	1000	300	15	14.1	0.02	4.7	165	N.	T-9J	Class-C Amp. (Telegraphy)	1000	250	—	− 80	200	39	7	—	0.69	—	148
														750	250	—	− 80	200	37	6.5	—	0.63	—	110
														600	250	—	− 75	200	35	6	—	0.52	—	85
PE340/ 4D23 [9]	150	5.0	7.5	4000	400	—	11.6	0.06	4.35	120	N.	Fig. 27	Class-C Amp. (Telegraphy)	3000	400	—	−290	200	27	7	—	2.6	—	450
													Class-C Amp. (Telephony)	2500	400	—	−425	180	27	9	—	4	—	350
													Class AB_2 Audio [6]	2500	400	—	− 95	284 [7]	7 [7]	—	—	1.8 [7]	19100	460
AT-340	150	5	7.0	4000	400	—	9.04	0.19	4.16	120	J.	Fig. 27	Class-C Amp.-Oscillator	3000	400	—	−500	165	75	—	—	2.4	—	—
RK65	215	5.0	14	3000	500	35	10.5	0.24	4.75	60	J.	T-3BC	Class-C Amp. (Telegraphy)	3000	400	—	−100	240	70	24	—	6.0	—	510
													Class-C Amp. (Telephony)	2500	—	—	−150	200	70	22	30000	6.3	—	380
4-250A	250	5.0	14.5	4000	600	50	12.7	0.06	4.5	85	N.	Fig. 27	Class-C Amp. (Telegraphy)	4000	500	—	−250	250	22	13	—	4.1	—	750
														2500	500	—	−100	325	70	22	—	3.7	—	562
861	400	11	10	3500	750	35	14.5	0.1	10.5	20	N.	T-1B	Class-C Amp. (Telegraphy)	3500	500	—	−250	300	40	40	—	30	—	700
													Class-C Amp. (Telephony)	3000	375	—	−200	200	—	55	70000	35	—	400

[1] Discontinued.
[2] Triode connection—screen grid tied to plate.
[3] Dual tube. Values for both sections, in push-pull. Interelectrode capacitances, however are for each section.
[4] Terminals 3 and 6 must be connected together
[5] Filament limited to intermittent operation.
[6] Values are for two tubes in push-pull.
[7] Max.-signal value.
[8] Peak grid-to-grid a.f. volts.
[9] Forced-air cooling required.

TABLE XVII—KLYSTRONS

Type	Freq. Range-Mc.	Cathode		Base Connections	Typical Operation	Beam Volts	Beam Ma. (Max.)	Beam Watts (Max.)	Control-Electrode Volts	Reflector Volts	Cathode Ma.	R.F. Driving Power Watts [4]	Output Watts
		Volts	Amp.										
2K25/ 723A-B	8702–9548	6.3	0.44	Fig. 60	Reflex Oscillator	300	32	—	—	−130/−185	25	—	0.033
2K-28 [5]	1200–3750	6.3	0.65	Fig. 61	Reflex Oscillator	300 [7]	45	—	300	−155/−290	30	—	0.140
2K33	23500–24500	6.3	0.65	Fig. 62	Reflex Oscillator	1800 [7]	—	—	−20/−100	−80/−220	[6]	—	0.04
2K34	2730–3330	6.3	1.6	Fig. 58	Oscillator-Buffer *	1900	150	450	−45	—	75	—	10–14
2K35	2730–3330	6.3	1.6	Fig. 58	Cascade Amplifier *	1500	150	450	0	—	75	0.005	5
2K41	2660–3310	6.3	1.3	Fig. 59	Reflex Oscillator *	1000	60	75	+24	−510	60	—	0.75
2K42 [3]	3300–4200	6.3	1.3	Fig. 59	Reflex Oscillator *	1000	60	75	0	−650	45	—	0.75
2K43 [3]	4200–5700	6.3	1.3	Fig. 59	Reflex Oscillator *	1000	60	75	0	−320	40	—	0.8
2K44 [3]	5700–7500	6.3	1.3	Fig. 59	Reflex Oscillator *	1000	60	75	0	−700	43	—	0.9
2K39 [3]	7500–10300	6.3	1.3	Fig. 59	Reflex Oscillator *	1000	60	75	0	−660	30	—	0.46
2K46	2730–3330 [1] 8190–10000 [2]	6.3	1.3	Fig. 58	Frequency Multiplier *	1500	60	60	−90	—	30	0.01/0.07	0.01–0.07
2K47	250–280 [1] 2250–3360 [2]	6.3	1.3	Fig. 58	Frequency Multiplier *	1000	60	60	−35	—	50	3.5	0.15
3K21 [3]	2300–2725	6.3	1.6	Fig. 58	Oscillator-Amplifier *	2000	150	450	0	—	125	1–3	10–20
3K22 [3]	3320–4000	6.3	1.6	Fig. 58	Oscillator-Amplifier *	2000	150	450	0	—	125	1–3	10–20
3K23 [3]	950–1150	6.3	1.6	Fig. 59	Reflex Oscillator *	1000	90	80	0	−300	70	—	1–2
3K27 [3]	750–960	6.3	1.6	Fig. 59	Reflex Oscillator *	1000	90	80	0	−300	70	—	1–2
3K30 (410R) [3]	2700–3300	6.3	1.6	Fig. 58	Oscillator-Amplifier *	2000	150	450	0	—	125	1–3	10–20
707B [5]	1200–3750	6.3	0.65	Fig. 61	Reflex Oscillator	300 [7]	45	—	300	−155/−290	30	—	0.140
QK159	2950–3275	6.3	0.65	Fig. 63	Reflex Oscillator	300	45	—	300	−100/−175	20	—	0.150
Z-668	21900–26100	—	—	—	Reflex Oscillator *	1700	—	15	—	−1700/−2300	—	—	0.02

[1] Input frequency.
[2] Output frequency.
[3] Tuner required.
[4] At max. ratings.
[5] Has demountable tuning cavity.
[6] Cathode current specified on each tube.
[7] G2 and G3 voltage.
* Forced-air cooling required.

Index

Text

The Catalog Section

In the following pages is a catalog-file of products of the principal manufacturers who serve the short-wave field. Appearance in these pages is by invitation—space has been sold only to those dependable firms whose established integrity and whose products have met with the approval of the American Radio Relay League.

INDEX OF ADVERTISERS

★ CATALOG SECTION ★

The Radio Amateur's Handbook

National

RADIO PRODUCTS

1948

National

EST. 1914

TIONAL COMPANY, INC.

.DEN, MASSACHUSETTS, U.S.A.

Modern Communications Receivers

by National NC EST. 1914

Building communications receivers to the standards set by our experienced engineering depart ment for over two decades, National has prided itself on the performance of its receivers i the specialized markets for which they have been designed.

National post-war receivers incorporate the newest circuit techniques and offer the operato the maximum value per dollar spent.

National standards are upheld in the 1948 receivers shown on these pages.

Your National distributor will have these modern receivers on display at your favorite radio store.

The Finest

NEW HRO-7

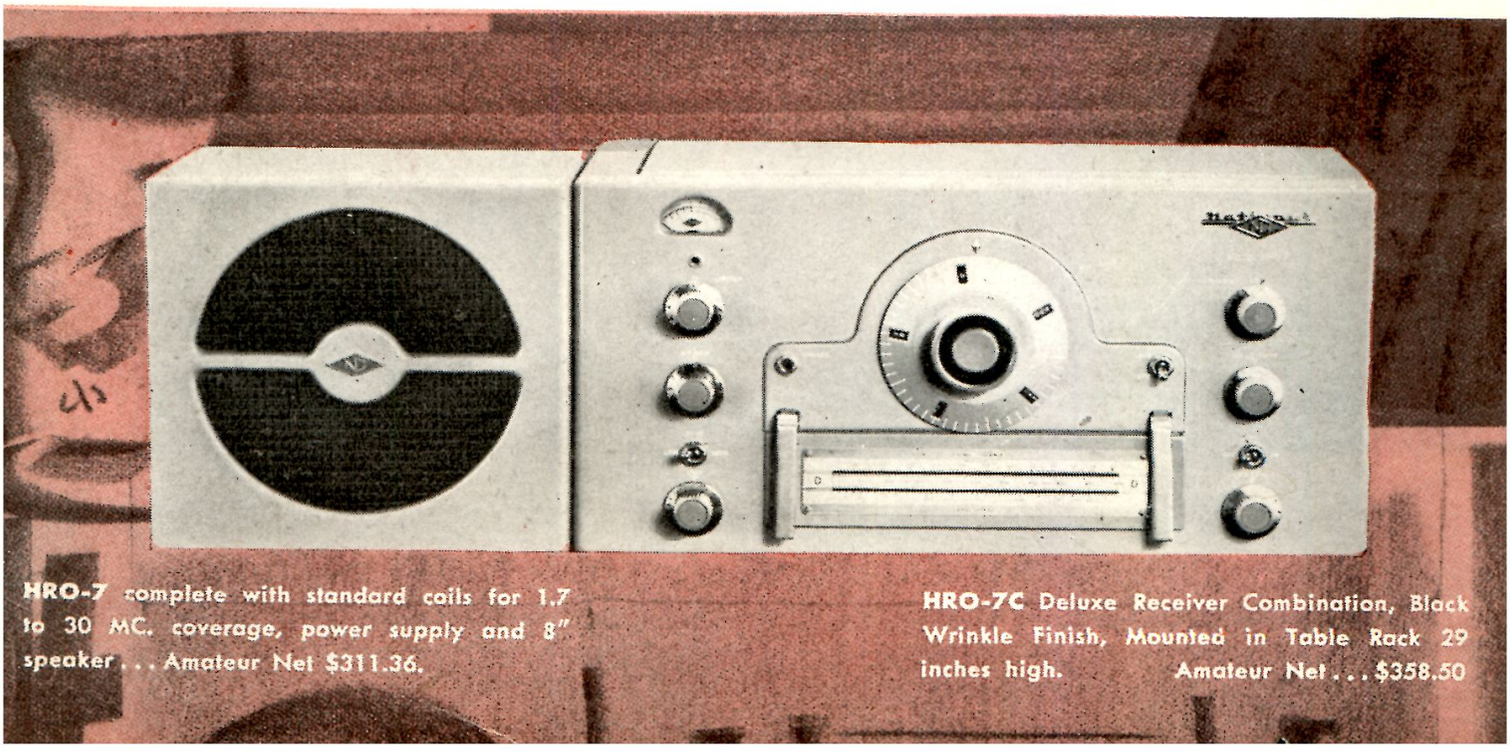
Known and used by hams the world over for 13 years, the old HRO now has a new successor — the HRO-7 — incorporating every one of its strong points and adding a number of modern refinements. Still present is excellent signal noise ratio and image rejection.

Brand new features include: automatic adjustable-threshold noise limiter; stabilized voltage supply for new high frequency oscillator; tone switch; accessory connector socket; and radio-phono switch.

Special improvements have been added, such as slide-rule type calibration on coil sets and lever-type handles to facilitate coi changing. The HRO-7 is housed in a stream lined gray cabinet with matching speaker

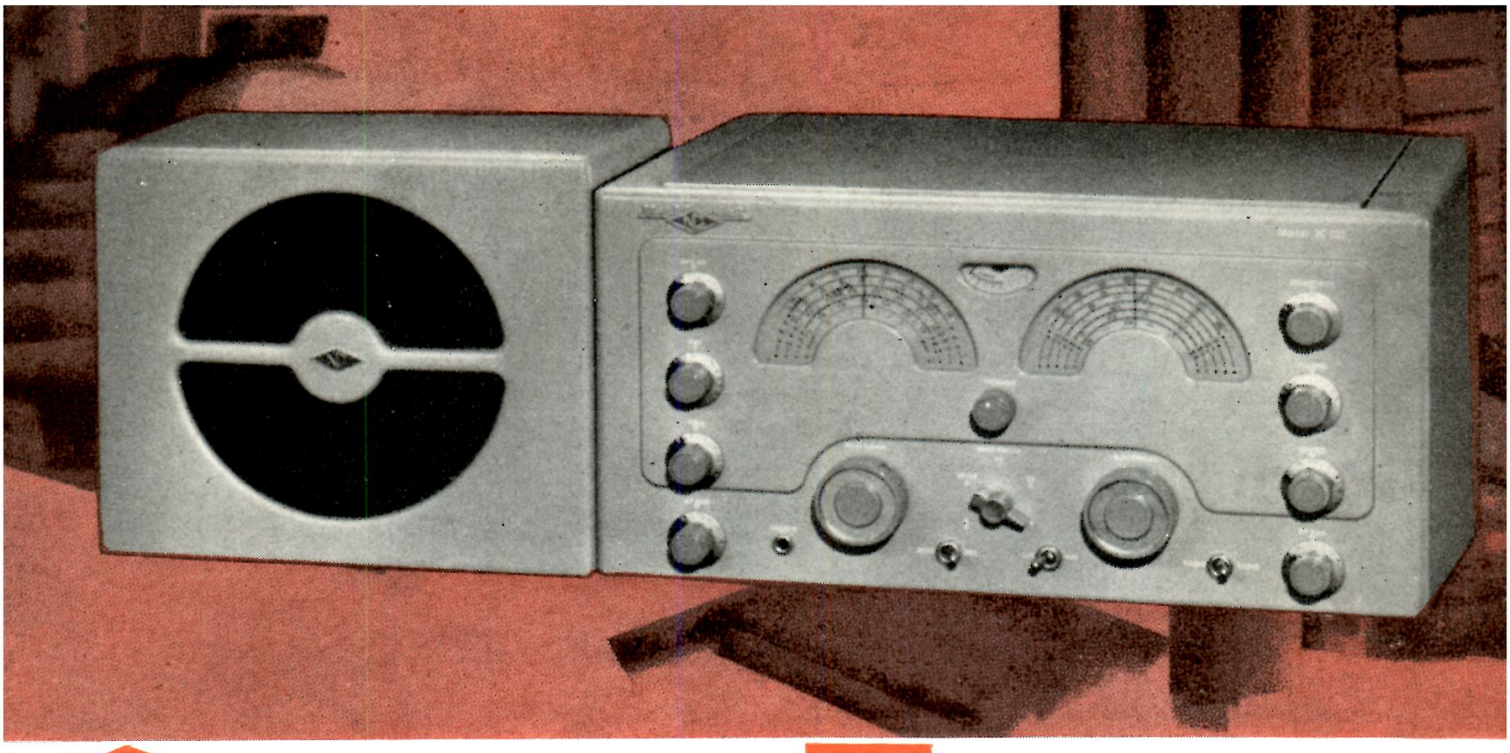
FEATURES:

- Frequency Range of 50 to 430 and 480 to 30,000 KC
- AM phone and code reception with maximum banc spread.
- Accessory Connector Socket.
- New automatic noise limiter with variable threshold
- 5 position wide range crystal filter with phasing control.



HRO-7 complete with standard coils for 1.7 to 30 MC. coverage, power supply and 8" speaker . . . Amateur Net $311.36.

HRO-7C Deluxe Receiver Combination, Black Wrinkle Finish, Mounted in Table Rack 29 inches high. Amateur Net . . . $358.50



NC-183 Newest in National's line of communications receivers is the band-switching NC-183, covering 0.54 to 31 Mc. plus the 6 meter band. Two r.f. amplifier stages provide excellent image rejection. National's latest crystal filter and automatic adjustable threshold double-diode noise limiter circuits are incorporated in the NC-183.

Adjustable sensitivity control for "S" meter operation on either c.w. or 'phone is a feature of this receiver. Stabilized voltage regulator circuits make the NC-183 an excellent performer on the highest frequencies. A push-pull audio output stage with separate 10" speaker allows excellent fidelity of output. These, plus other features, combine to make the NC-183 a really "hot" receiver. It will become a favorite with those stations that specialize in digging DX out of the background.

Supplied for 115 volts 50/60 cycle AC operation — easily adapted to 230 volts.

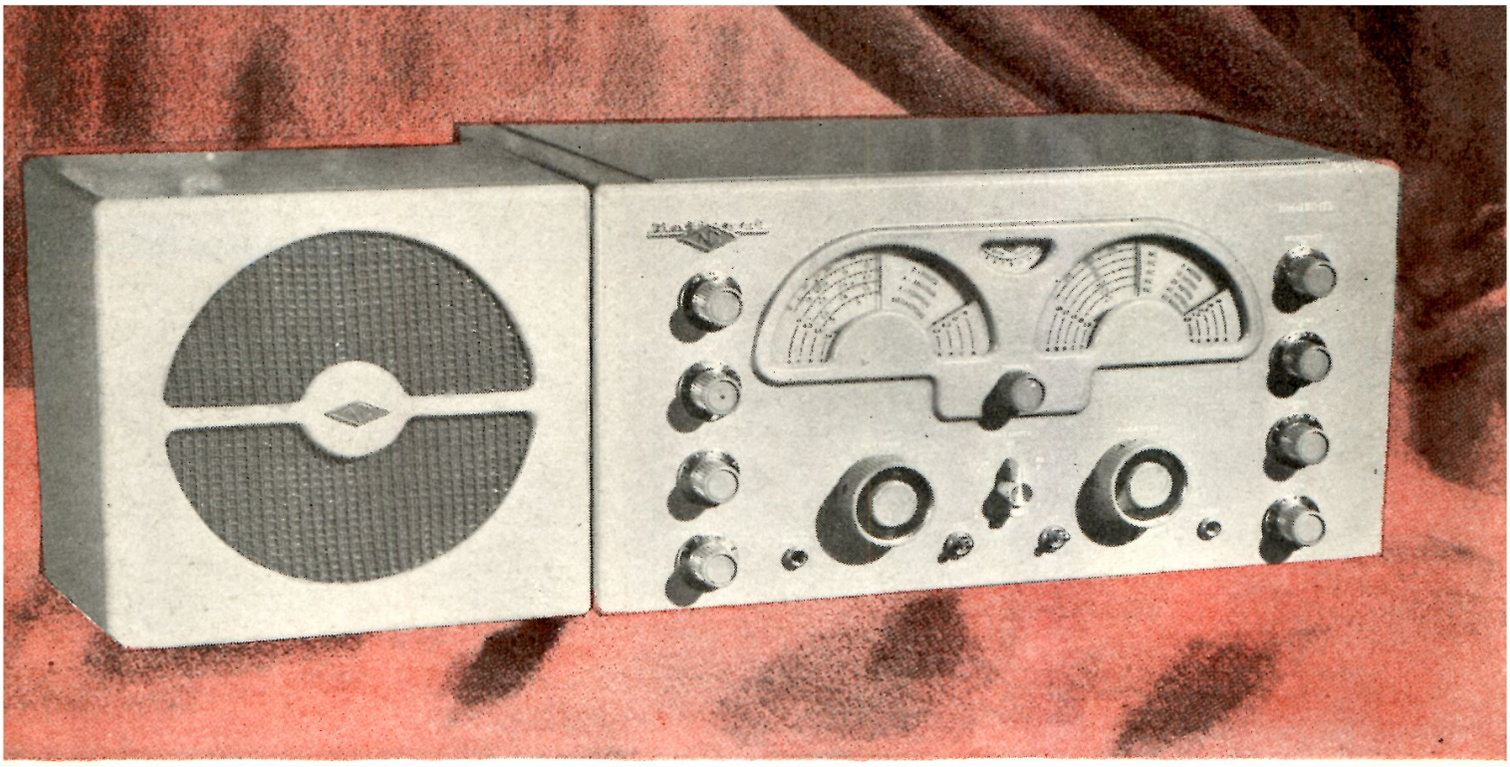
Amateur Net Price (complete with 10" speaker) . . **$269.00**

HFS An up-to-date successor to the famous National 1-10, the HFS is a new v.h.f. superheterodyne receiver with a super-regenerative second detector. The frequency range of the HFS is 27 to 250 mc., continuous coverage with six sets of coils.

The model HFS is capable of receiving CW and AM or FM signals, and is readily adaptable to portable or mobile operation. An antenna trimmer control is conveniently located on the front panel.

The HFS is extremely versatile in v.h.f. operation for an i.f. output jack is incorporated, permitting it to be used as a converter in conjunction with any conventional superhet receiver which tunes 10.7 mc. As a converter, the HFS and superhet combination results in dual conversion type superheterodyne operation with all its advantages, including excellent image rejection at all frequencies from 27 to 250 mc.

See your National Distributor for Amateur Net Price.



National NC-173

A new and versatile receiver, popularly priced, the new NC-173 has received favorable comment on the ham bands from operators whc have found it stepped up their percentage of successful QSO's.

The sensitivity and stability of the NC-173 will not only increase your traffic, but will add much to your operating pleasure.

OUTSTANDING FEATURES:

- Frequency Coverage from 540 KC. to 31 MC. plus 48-56 MC.
- Calibrated Amateur Bandspread on 6, 10-11, 20, 40 and 80 meter bands.
- 5 Position Wide Range Crystal Filter.
- Double-Diode Automatic Noise Limiter for Both Phone and C.W. Reception.
- A.V.C. for both Phone and C.W. Reception.
- S Meter with Adjustable Sensitivity for Phone and C.W.
- A.C. Powered — 110/120 or 220/240 volts, 50/60 Cycle.

Amateur Net (with speaker) **$189.50**

The New NC-57

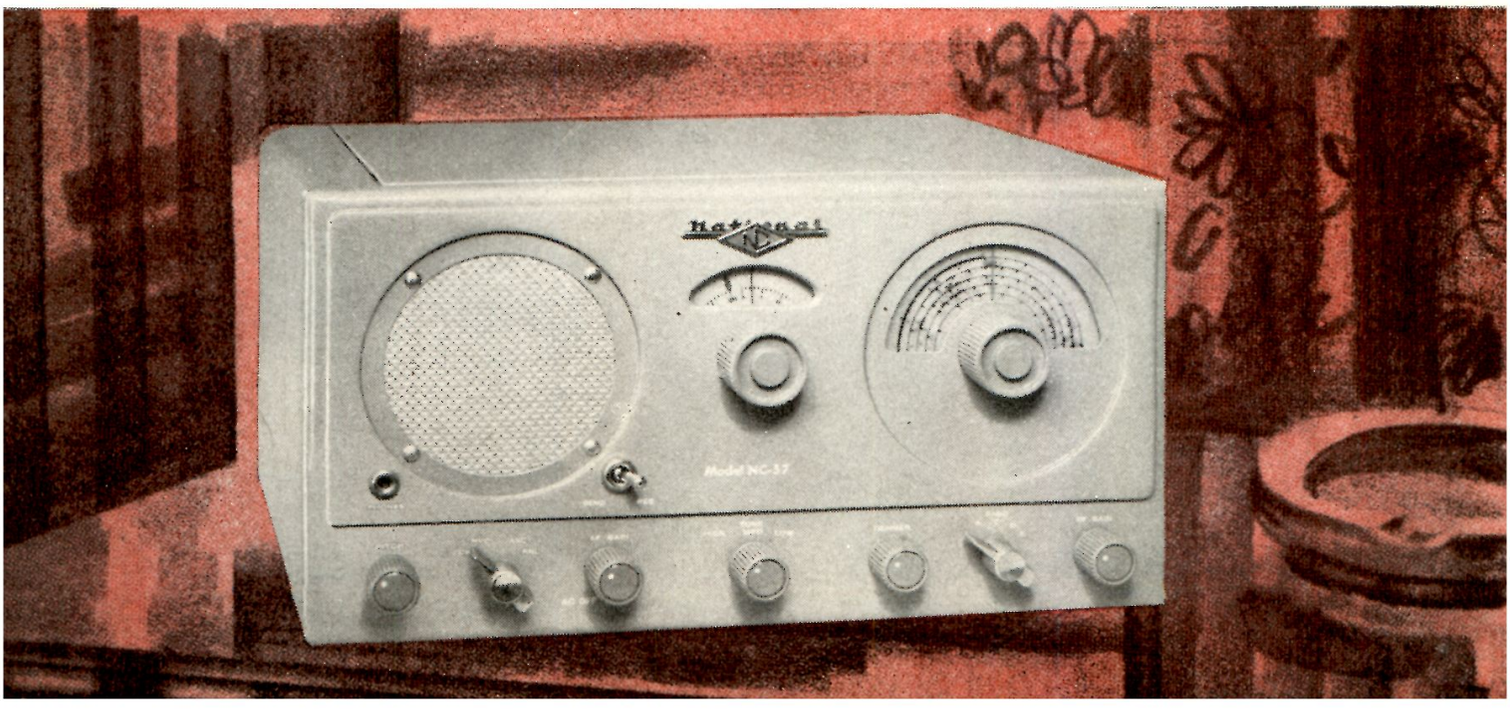
To meet the needs of the many hams who have asked for a sensitive, first-rate bandswitching receiver in the lower price bracket, complete with speaker and power supply in one cabinet, the National Company has developed the brand new NC-57.

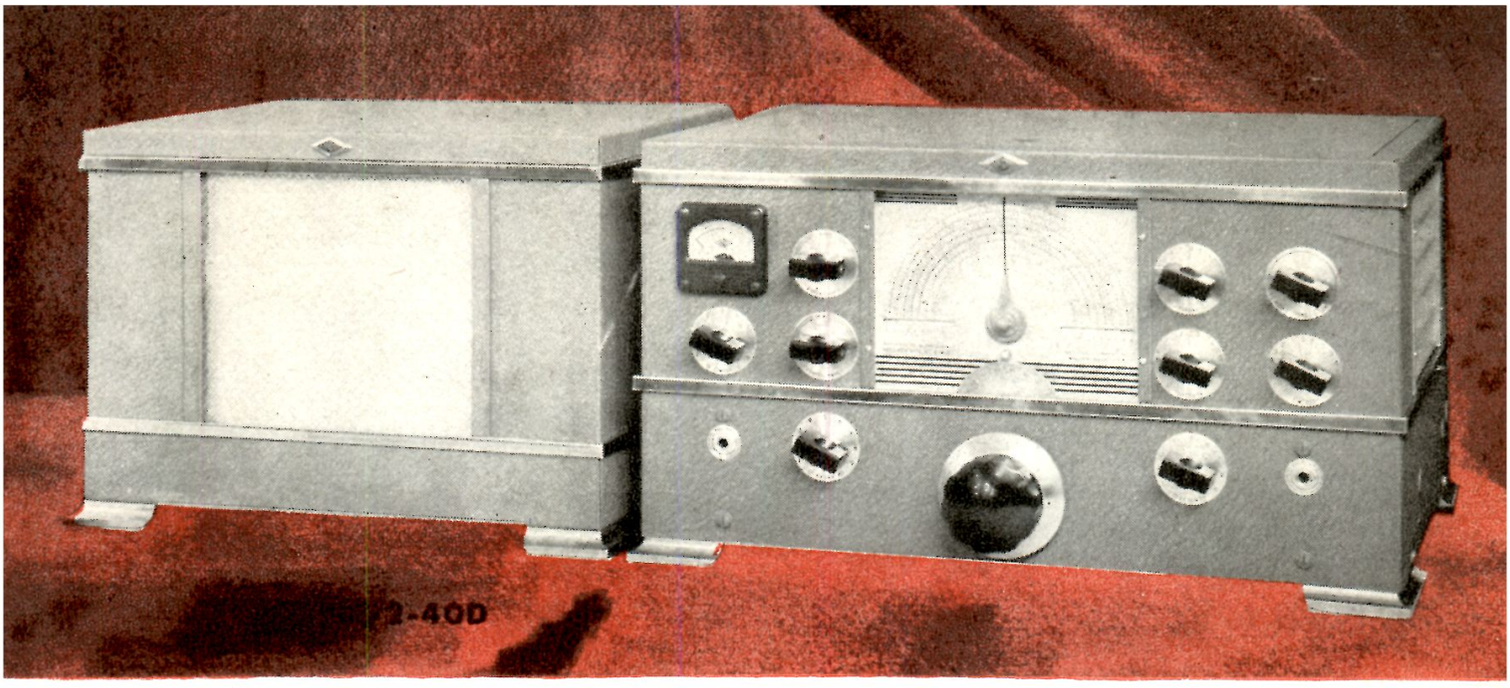
Although moderate in price, this little receiver incorporates features usually found in the more expensive models. Excellent tone quality, sensitivity, selectivity and high signal-to-noise ratio afford a level of performance which will be appreciated by any operator. A superb receiver for the beginner, the NC-57 will be found ideal as a standby in any amateur station.

FEATURES:

1. Continuous frequency coverage from 550 kc to 55 mc. Bandswitching in 5 ranges. Bandspread tuning at any frequency.
2. Seven tube superheterodyne (plus rectifier and voltage regulator).
3. Automatic Noise Limiter.
4. Built-in loudspeaker and A.C. power supply.
5. R. F. stage with panel controlled antenna trimmer.
6. Operates from 105-130 volts, 50-60 cycles A.C. (Provision for battery operation.)
7. Housed in a streamlined gray cabinet.

Amateur Net **$89.50**





The NC-2-40D

For hams who appreciate engineering, the NC-2-40D will be a thoroughly satisfying possession. Used by airlines and communications companies throughout e world, the NC-2-40D has become famous for its ability to ck up weak signals, and its fine stability.

10" speaker and a hi-fidelity push-pull audio system afrd tone quality that will please the most critical operator. series valve noise limiter minimizes noise pulses.

is is a receiver for the ham who demands superb perrmance.

ATURES:

Frequency Coverage from 490 to 30,000 kc. Four Amateur Bands (10-11, 20, 40 and 80 meters) with uniform bandspread.

3 Watts of undistorted audio.

5 Position wide range Crystal Filter.

Single control for band changing and tuning.

Temperature Compensation.

Amateur Net (with 10" speaker) **$241.44**

National NC-46

The National NC-46 is a communication-type A.C.-D.C. receiver of esceptional performance and unique design. Hams and SWLs having only D.C. available have found the NC-46 a most capable performer.

Many vessels of the Boston and Gloucester fishing fleets have this receiver aboard for entertainment while at sea, and as a supplement to their ship-to-shore radiotelephones.

In the lower price brackets the NC-46 is the foremost "quality" receiver on the market today.

The loudspeaker is housed in a separate matching cabinet.

FEATURES:

- Continuous frequency coverage from 540 Kc to 30 mc. Bandspread tuning at any frequency.
- Nine tube superheterodyne (plus rectifier).
- Automatic Noise Limiter.
- Operates from 105-130 Volts A.C. or D.C.
- Push-pull audio stage delivers 4 watts to speaker.
- Easy to read, slide-rule type dial.
- Amateur Net (with speaker) **$107.40**

Modern Radio Components

by National NC EST. 1914

National radio components have been standardized in radio circuits for many years. They have been voted the favorite brand by thousands of amateurs and the National NC signature has become a guarantee of quality.

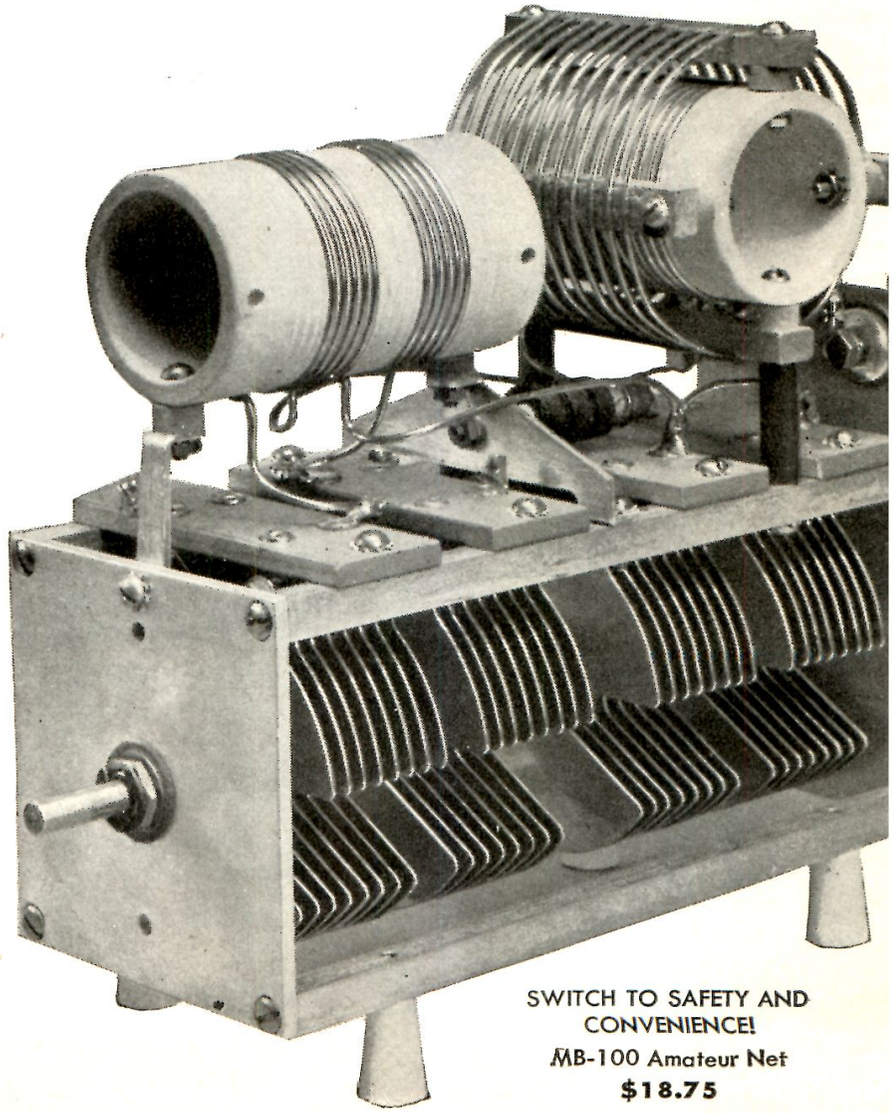
Listed in these few pages are typical National products. National's 1948 complete catalog of radio products, available soon, will feature new items, designed for present-day applications. In addition, hundreds of components will be listed and recognized as repeat performers by the designer or builder of radio equipment.

Get your copy of the new National catalog from distributor or write direct to factory.

NEW NATIONAL *MULTI-BAND TANK*

FEATURES:

- Tunes amateur bands from 80 to 10 meters with single 180° rotation of capacitor from front-of-panel.
- Link pick-up coil matches impedances up to 600 ohms.
- Split-stator capacitor rated at 1500 volts peak.
- Input 100 watts for push-pull or balanced single-ended operation.
- Dimensions 7½" long—7" high—3" wide.
- Rugged construction with ceramic insulation.



SWITCH TO SAFETY AND CONVENIENCE!

MB-100 Amateur Net

$18.75

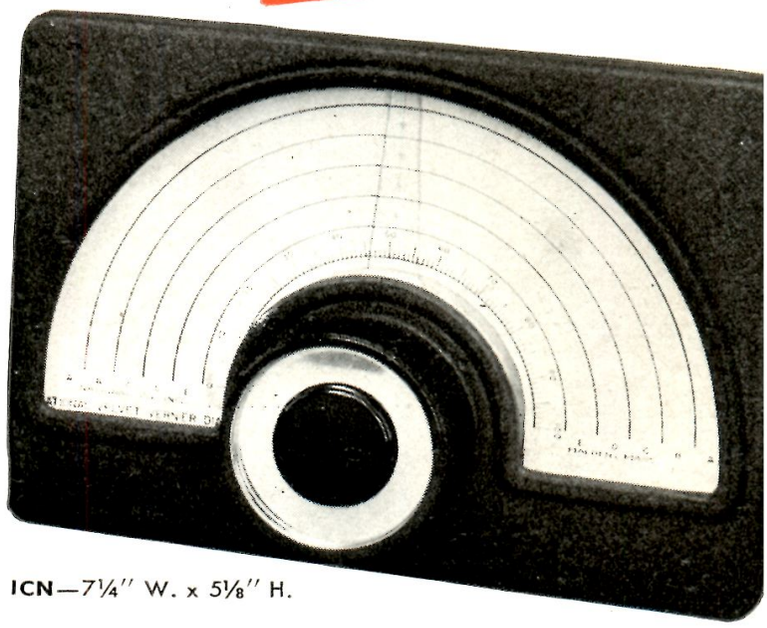
NATIONAL

For complete line see National 1948 catalog

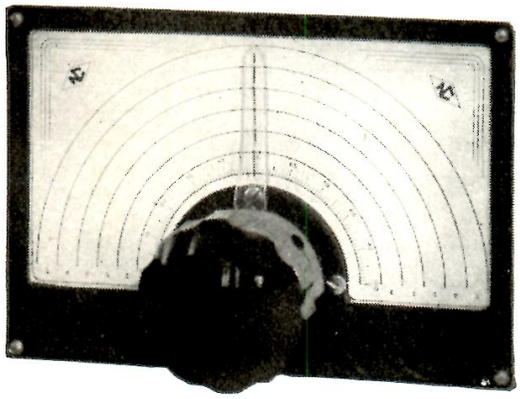
DIRECT CALIBRATION DIALS

Supplementing National's Famous ACN Dial — A Whole New Line of Dials Designed for Every Amateur's Requirements. Each one incorporates the noted Velvet-Vernier Mechanism, providing smooth action and no backlash.
ACN Amateur Net.....**$3.30**

With the introduction of the ICN, SCN and MCN dials, National has recognized and met the requirements of the amateur for a versatile line of dials for every size and shape of rig. All of these dials embody the same 5:1 drive ratio Velvet-Vernier mechanism that has made the ACN dial the standard of comparison among constructors everywhere. No other line of dials is so complete or permits such precision tuning.

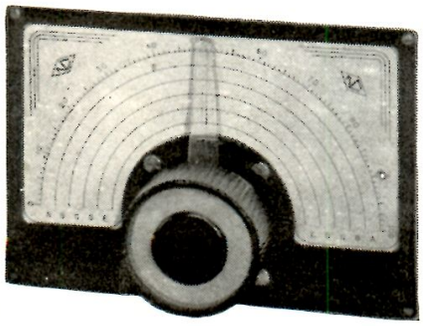


ICN—7¼" W. x 5⅛" H.



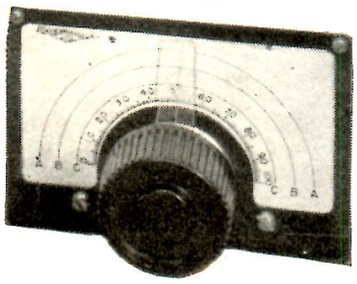
ACN
7¼" W.
5" H.

The ICN dial meets those hundreds of requests from amateurs the world over for an illuminated ACN dial. Two dial light brackets are mounted on the top rear corners of the dial and provide efficient and even illumination on all bands. The dial scale has been blanked out in semi-circular shape to prevent shadow casting. Dial scales are the same as those on ACN dial.
Amateur Net.....**$6.00**



SCN
6¼" W.
4 7/16" H.

The SCN dial provides the same dial scales as the ACN dial but in a reduced size. It is used where economy of panel-mounting space is desirable and where a smaller dial would be out of proportion with the size of the panel. A truly professional appearance can now be given your rig. Amateur Net. $3.00

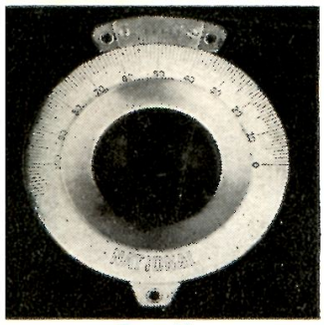


MCN
3⅞" W.
2¼" H.

The MCN dial has been scaled down to lend itself ideally to mobile installations and small converters and tuners. It may also be mounted on the standard 3-7/32" rack panel where such mounting may be desirable. The dial provides three calibrating scales and a 0-100 logging scale. On the rear side of the dial, (rear of panel) the mechanism extends ¼" below the dial frame. Amateur Net.....$2.70

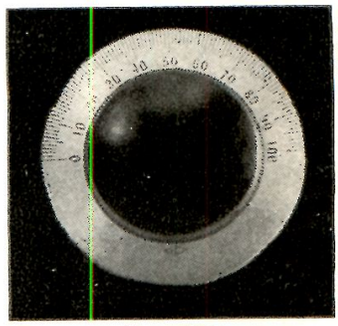
See this complete line of dials and other precision National parts at your nearest National distributor. Write to us direct for any information you may desire.

National NC EST. 1914

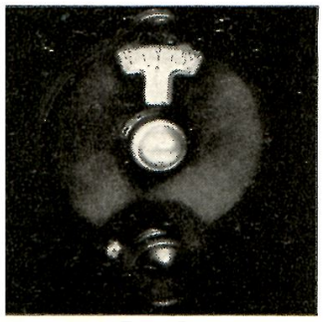


Type N

NATIONAL
VELVET VERNIER
DIALS



Type AM



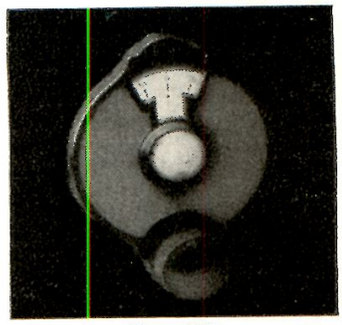
Type B

The four-inch N and AD Dials have engine divided and die stamped scales respectively. The N Dial has a decimal vernier; the AD Dial employs a pointer. The planetary drive has a ratio of 5 to 1, and is contained within the body of the dial. 2, 3, 4 or 5 scale. Fits ¼″ shaft. Specify scale.

N Dial.....**$4.50** Amateur Net
AD Dial.....**$2.84** Amateur Net

The original "Velvet Vernier" mechanism is now available in a metal skirted dial 3″ in diameter. The planetary drive has a ratio of 5 to 1. It is available with 2, 3, 4, 5 or 6 scale and fits ¼″ shaft.

AM Dial.....
$2.25 Amateur Net



Type BM

"VELVET VERNIER" DIAL, TYPE B

as a compact variable ratio 6 to 1 minimum, 20 to 1 aximum drive that is smooth and trouble free. The case black bakelite. 1 or 5 scale. 4″ diam. Fits ¼″ shaft.

Dial.....**$2.70** Amateur Net
M Dial, 3″ diam.....**$2.10** Amateur Net

DIAL SCALES

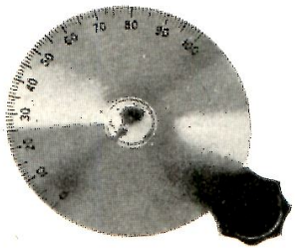
SCALE	DIVISIONS	ROTATION	DIRECTION OF CONDENSER ROTATION FOR INCREASE OF DIAL READING
1	0-100-0	180°	Either
2	0-100	180°	Counter Clockwise
3	100-0	180°	Clockwise
4	150-0	270°	Clockwise
5	200-0	360°	Clockwise
6	0-150	270°	Counter Clockwise

SPECIFY DIAL SCALE WHEN ORDERING

NON-VERNIER DIALS

Type R

Types O, L



Types K, M

TYPE R
$ .51
1⅝″ diameter

TYPE O
$1.00
3½″ diameter

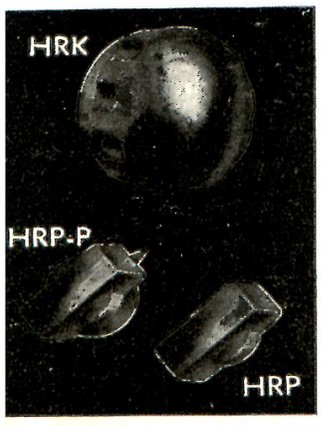
TYPE L
$1.95
5″ diameter

TYPE K
$1.50
3½″ diameter

TYPE M
$2.25
5″ diameter

R Dial scale 3 only but marked 10-0; O, K, L, M, scale 2. All fit ¼″ shafts.

KNOBS



HRK (Fits ¼″ shaft)..... **$.57**
Black bakelite knob 2⅜″ diam.

HRP-P (Fits ¼″ shaft)..... **$.24**
Black bakelite knob 1¼″ long and ½″ wide. Equipped with pointer.

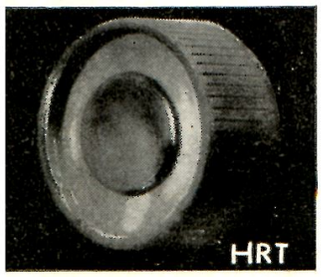
HRP..... **$.18**
The type HRP knob has no pointer, but is otherwise the same as the knob above.

The **HRT** is a new plastic tuning knob with a chrome plated appearance circle. The HRT knob fits a ¼″ dia. shaft and is 2⅛ in. dia. Black or Gray.

HRT Knob.....Amateur Net **$.75**

The **HRS** Knobs are a new plastic knob with a 1⅜″ dia. chrome plated skirt. HRS Knobs fit ¼″ dia. shafts. Three types are available as follows: Black or Gray.

HRS-1 Knob ON-OFF through 30° rotation..... **$.51**
HRS-2 Knob 5-0-5 through 180° rotation..... **$.51**
HRS-3 Knob 0-10 through 300° rotation..... **$.51**



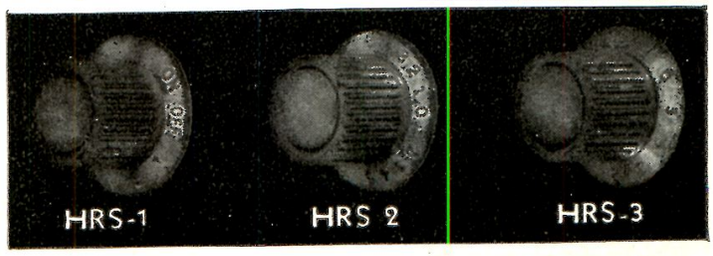
ACCESSORIES

ODL..... **$.33**
A locking device which clamps the rim of O,K,L and M Dials. Brass, nickel plated.

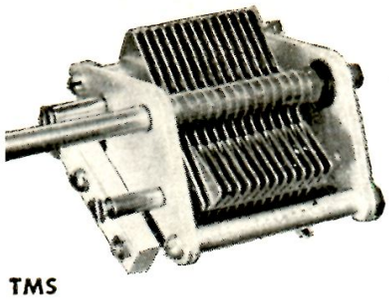
ODD..... **$.42**
Vernier drive for O,L, or other plain dials.

SB (Fits ¼″ shaft)..... **$.18**
A nickel plated brass bushing ½″ in diam.

RSL (Fits ¼″ shaft)..... **$.57**
Rotor Shaft Lock for TMA, TMC and similar condensers.

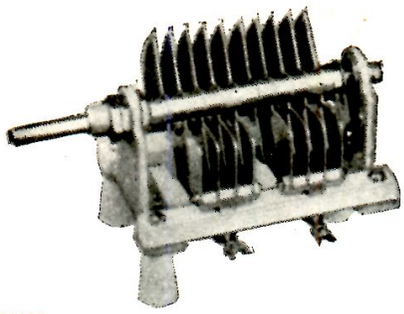


NATIONAL *TRANSMITTING* CONDENSERS



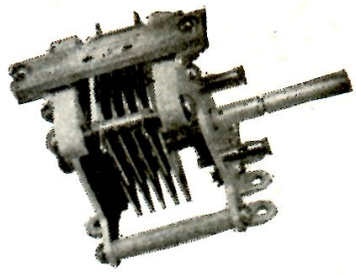
TMS

Maximum capacities of TMS series range from 35 mmfd. to 300 mmfd. Split-stator models available.



TMH

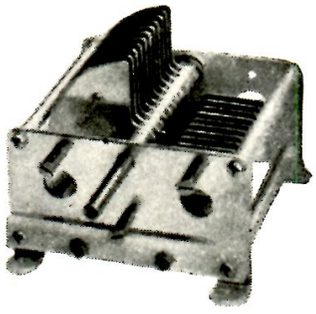
Maximum capacities of TMH series range from 35 mmfd. to 100 mmfd. Split-stator models available.



TMK

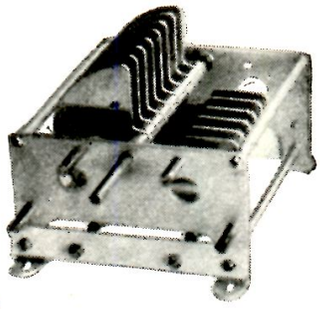
Maximum capacities of TMK series range from 35 mmfd. to 250 mmfd. Split-stator models available.

Series	Maximum Capacity	Minimum Capacity	Length	Air Gap	Peak Voltage	No. of Plates	Catalog Symbol	Net Price
TMS	**See Catalog**	**See Catalog**	**3″**	**.026″ .065″**	**1000v. 2000v.**	**See Catalog**	**See Catalog**	**See Catalog**
TMH	**See Catalog**	**See Catalog**	**3¾″ 5⅛″**	**.085″ .180″**	**3500v. 6500v.**	**See Catalog**	**See Catalog**	**See Catalog**
TMK	**See Catalog**	**See Catalog**	**2⅜″ 4⅞″**	**.047″**	**1500v.**	**See Catalog**	**See Catalog**	**See Catalog**
TMC	**See Catalog**	**See Catalog**	**3″ 6¾″**	**.077″**	**3000v.**	**See Catalog**	**See Catalog**	**See Catalog**
TMA	**See Catalog**	**See Catalog**	**4 9/16″ 12⅞″**	**.171″ .359″**	**6000v. 12,000v.**	**See Catalog**	**See Catalog**	**See Catalog**
TML	**See Catalog**	**See Catalog**	**8 5/16″ 18 1/16″**	**.469″ .719″**	**15,000v. 20,000v.**	**See Catalog**	**See Catalog**	**See Catalog**



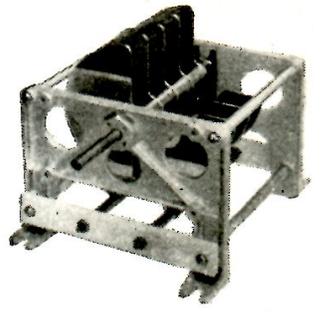
TMC

Maximum capacities of TMC series range from 50 mmfd. to 300 mmfd. Split-stator models available.



TMA

Maximum capacities of TMA series range from 50 mmfd. to 300 mmfd. Split-stator models available.

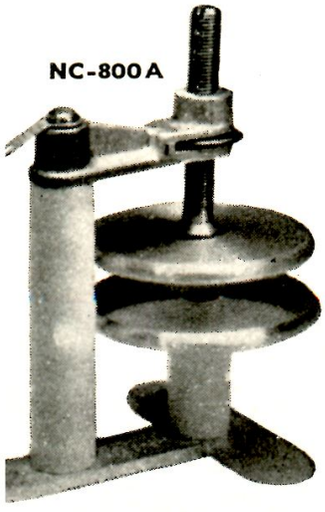


TML

Maximum capacities of TML series range from 50 mmfd. to 500 mmfd. Split-stator models available.

NATIONAL *NEUTRALIZING* CONDENSERS

NC-800A



NC-800A — The NC-800A disk-type neutralizing condenser is suitable for the RCA-800, 809, 35TG, HK-54, 5514 and similar tubes. It is equipped with a clamp to lock its setting. See Catalog for capacity and air gap for different settings.

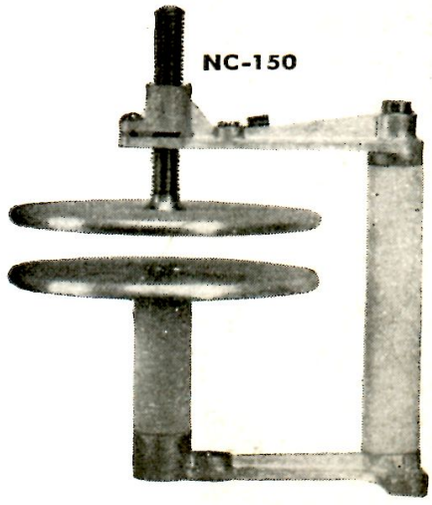
NC-75 — For 811, 812 etc.

NC-150 — For HK354, 250TH etc.

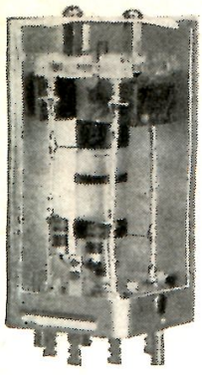
NC-500 — For WE-251, 450TH, 450TL, 750TL etc.

Disks are aluminum, insulation steatite.

NC-150



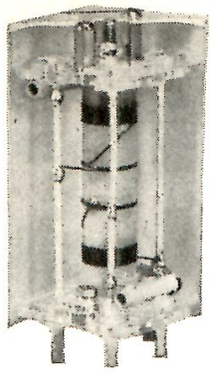
NATIONAL *I.F.* TRANSFORMERS



IFL, IFM, IFN and **IFO** transformers operate at 10.7 Mc. and are designed for use in AM or FM Superheterodyne receivers. The transformer cans are 1⅜″ square and stand 3⅛″ above the chassis. Two 6-32 spade bolts are provided for mounting.

The **IFO** transformer is a 10.7 Mc. FM discriminator transformer of the ratio type and is linear over a band of ± 100 kc.

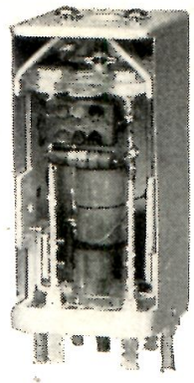
IFL FM Discriminator.....**$6.90** Net
IFM IF Transformer.....**$6.45** Net
IFN IF Transformer.....**$6.45** Net
IFO FM Ratio Discriminator...**$6.98** Net



The **IFN** transformer is a 10.7 Mc. i.f. transformer with a 100 Kc. pass band at 1.5 db attenuation. Approximate stage gain of 30 is obtained with IFN transformer and 6SG7 tube.

The **IFL** transformer is a 10.7 Mc. FM discriminator transformer suitable for use in conventional FM receiver discriminator circuit and is linear over a band of ± 100 Kc.

The **IFM** transformer is a 10.7 Mc. i.f. transformer with a 150 Kc. bandwidth at 1.5 db. attenuation. Approximate stage gain of 30 is obtained with IFM Transformer and 6SG7 tube.



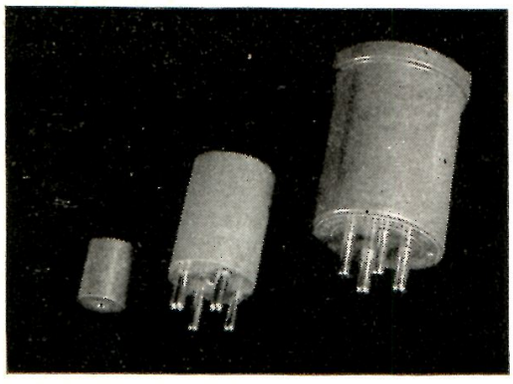
15 Mc. i.f. transformers suitable for ultra high frequency superheterodynes. They are made in two models with and without variable coupling. Approximate stage gain of 10 is obtained with **IFJ** or **IFK** transformer and 6AB tube.

IFJ, with variable coupling.....**$8.2**
Amateur N

IFK, with fixed coupling.....**$7.2**
Amateur N

N.B.F.M. Transformer — Type SA4842, as described in Nov. 47 *QST*. Amateur Net.....**$4.50**

NATIONAL *SMALL* PARTS



COIL FORMS

XR-1, Four prong .....**$.33**

XR-2, without prongs .....**$.24**

Molded of **R-39,** permitting them to be grooved and drilled. Coil form diameter 1″, length 1½″.

XR-3, molded of **R-39.** Diameter 9/16″, length ¾″. Without prongs **$.21**

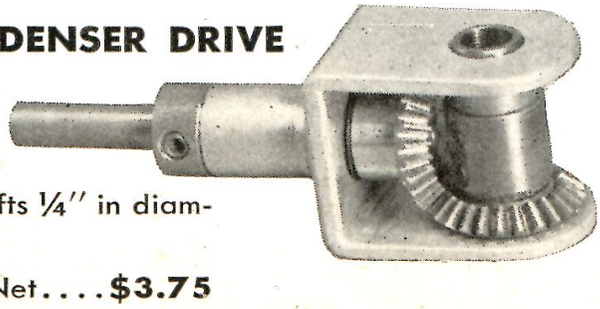
XR-4, Four prong..**$.51** **XR-5,** Five prong..**$.51** **XR-6,** Six prong..**$.60**

Molded of R-39, permitting them to be grooved and drilled. Coil form diameter 1½″, length 2¼″. A special socket is required for the six-prong form.

ADJUSTABLE MICA CONDENSER

M-30 — Type **M-30** is a small adjustable mica condenser with a maximum capacity of 30 mmf. Dimensions 13/16″ x 9/16″ x ½″. Isolantite base. This condenser has found many uses in innumerable electronic circuits.....Amateur Net **$.22**

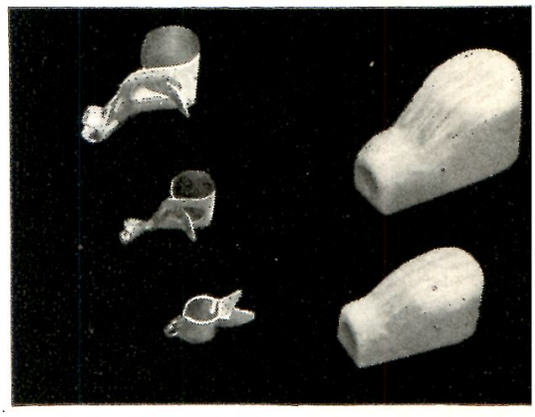
ANGLE CONDENSER DRIVE

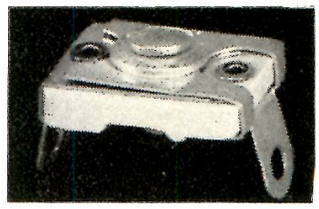


This sturdy angle drive has many uses and will drive single or dual shafts ¼″ in diameter.

ACD-1 Amateur Net....**$3.75**

GRID & PLATE GRIPS





National Safe Grid and Plc Caps have a ce amic body whi offers protecti against accident contact with high voltage caps on tubes.

National Grid and Plate Grips provide a secu and positive contact with the tube cap and yet a released easily by a slight pressure on the ear.

Type **12,** for 9/16″ Caps.....**$.C**

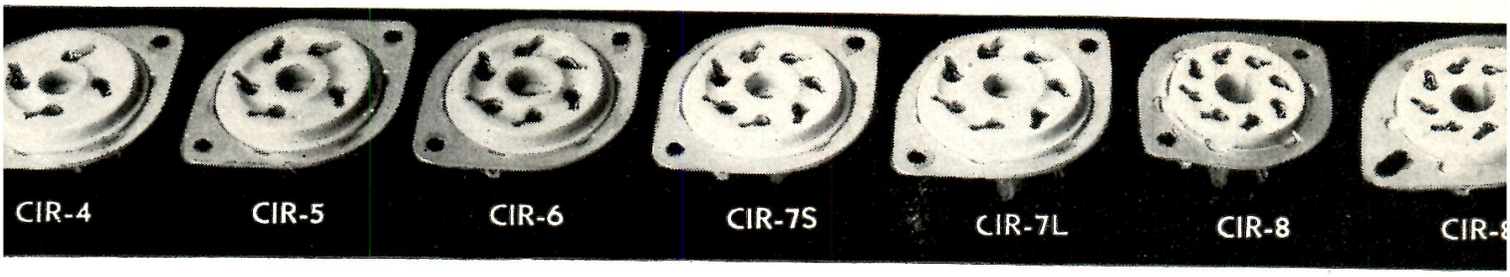
Type **24,** for ⅜″ Caps.....**$.C**

Type **8,** for ¼″ Caps.....**$.C**

SPP-9—Ceramic insulation. Fits 9/16″ diameter **$.2**

SPP-3—Ceramic insulation. Fits ⅜″ diameter **$.2**

CIR SERIES SOCKETS

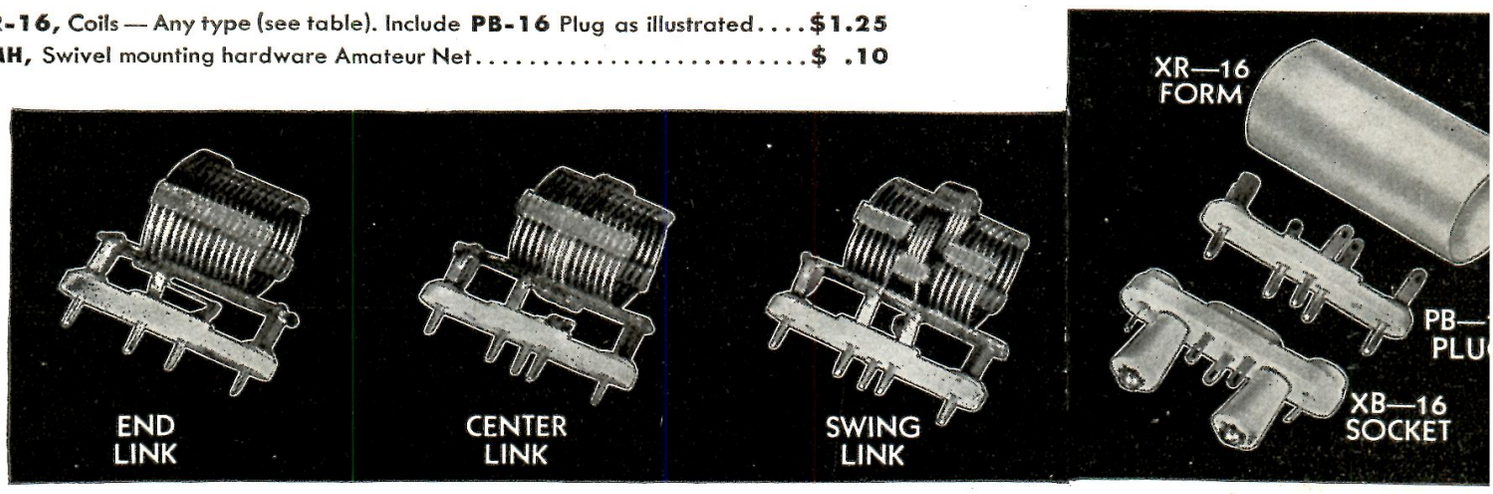


ype CIR Sockets feature low-loss steatite insu-ation, a contact that grips the tube prong for its ntire length, and a metal ring for six position mounting.

CIR 4, 5, 6, 7S, 8, 8E.....Amateur Net $ .27
CIR 7L.....Amateur Net $ .33

EXCITER COILS AND FORMS

R-16, Coils — Any type (see table). Include **PB-16** Plug as illustrated....$1.25
MH, Swivel mounting hardware Amateur Net.....$ .10



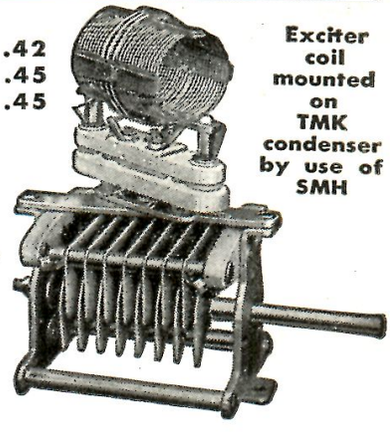
TYPE AR-16 (Air Spaced)

ıese air-spaced coils are suitable for use in ages where the plate input does not exceed 0 watts and are available in the sizes tabulated. apacities listed will resonate the coils at the low equency end of the band and include all stray rcuit capacities. All have separate link coupling ›ils and all fit the XB-16 Socket.

The XR-16 Coil Form also fits the PB-16 Plug and XB-16 Socket. It has a winding diameter of 1¼" and a winding length of 1¾".

Band	End Link	Cap Mmf	Center Link	Cap Mmf	Swinging Link	Cap Mmf
6 meter	AR16-6E	25	AR16-6C	25		
10 meter	AR16-10E	20	AR16-10C	20	AR16-10S	25
20 meter	AR16-20E	26	AR16-20C	26	AR16-20S	40
40 meter	AR16-40E	33	AR16-40C	33	AR16-40S	55
80 meter	AR16-80E	37	AR16-80C	37	AR16-80S	60

XR-16, Coil Form only....$ .42
PB-16, Plug-in Base Only..$ .45
XB-16, Plug-in Socket only.$ .45

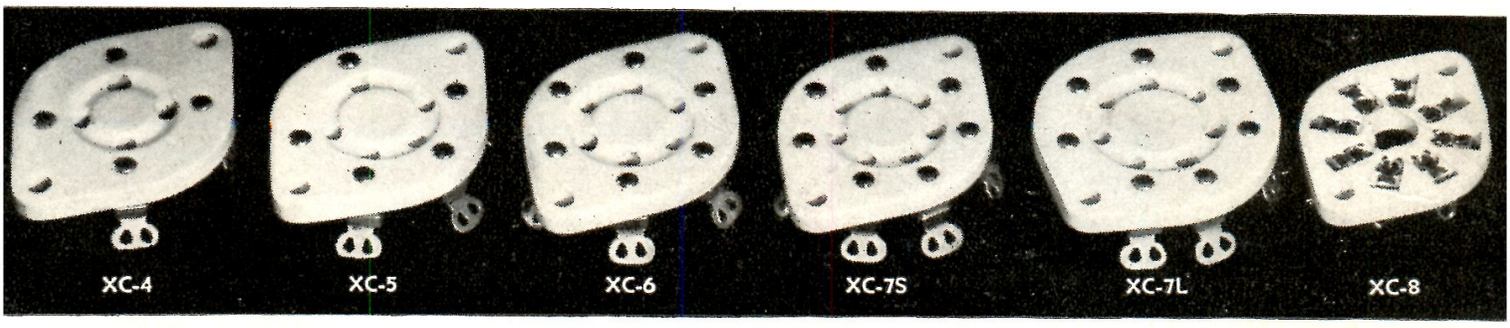


Exciter coil mounted on TMK condenser by use of SMH

XC SERIES SOCKETS

ıtional wafer sockets have exceptionally good contacts with gh current capacity together with low loss steatite insulation. l types have a locating groove to make tube or coil form in-rtion easy. These sockets are ideal in experimental layouts ıere coil or tube sockets are called for.

XC-4.....Amateur Net $ .36
XC-5.....Amateur Net $ .39
XC-6.....Amateur Net $ .42
XC-7S.....Amateur Net $ .45
XC-7L.....Amateur Net $ .45
XC-8.....Amateur Net $ .39



NATIONAL *R.F.* CHOKES

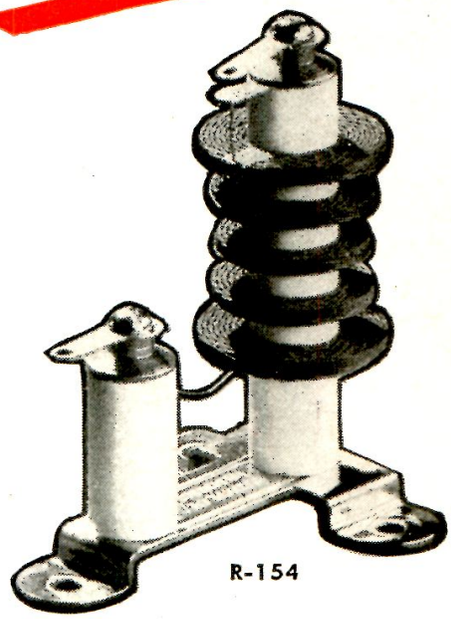
For complete line see National 1948 catalog

Makers of R.F. Chokes for every application, some of National's popular amateur chokes are listed.

R-300-U

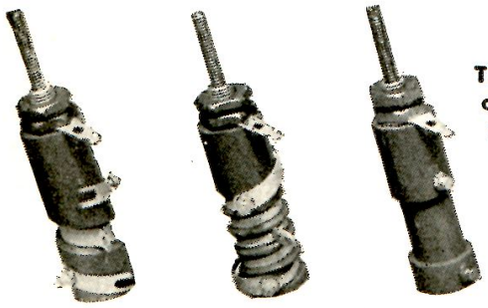
Type	Inductance	Current Rating	DC Resistance	Inductance Tolerance	Amateur Net
R-33	10. UH	33 MA.	1.0 Ohms ± 10%	10%	$ .35
R-50	2.5 MH	50 MA.	40. Ohms ± 10%	10%	.35
R-60	4.0 UH	500 MA.	.139 Ohms ± 10%	10%	.35
R-100	2.5 MH	125 MA.	42. Ohms ± 10%	10%	.35
R-100-S	2.5 MH	125 MA.	11. Ohms ± 10%	10%	.42
R-100-U	2.5 MH	125 MA.	41. Ohms ± 10%	10%	.42
R-154	1. MH	600 MA.	6. Ohms ± 10%	10%	1.75
R-300	1.0 MH	300 MA.	10. Ohms ± 10%	10%	.35
R-300	2.5 MH	300 MA.	17.5 Ohms ± 10%	10%	.35
R-300-S	1. MH	300 MA.	11. Ohms ± 10%	10%	.42
R-300-S	2.5 MH	300 MA.	7.5 Ohms ± 10%	10%	.42
R-300-U	1. MH	300 MA.	10. Ohms ± 10%	10%	.42

U — Type chokes have pigtail leads and insulator mount.
S — Type chokes have cotter-pin lug terminals and standoff insulator.



R-154

NATIONAL *HIGH-FREQUENCY* PARTS



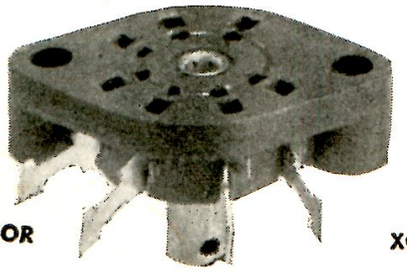
AR-2 AR-5 XR-50

The AR-2 and AR-5 coils are high Q permeability tuned RF coils. The AR-2 coil tunes from 75 Mc. to 220 Mc. with capacities from 100 to 10 mmfd. The AR-5 coil tunes from 37 Mc. to 110 Mc. with capacities from 100 to 10 mmfd.

AR-2 High Frequency Coil — Amateur Net.....$1.71
AR-5 High Frequency Coil — Amateur Net.....$1.46

The XR-50 coil forms may be wound as desired to provide a permeability tuned coil. The form winding length is $\frac{11}{16}$" and the form winding diameter is ½ inch. The iron slug is ⅜" dia. by ½" long.

XR-50 — Amateur Net $1.00



XOR

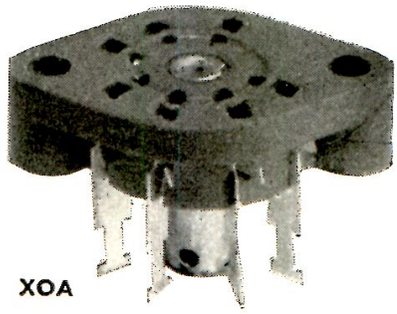
The XOR Socket is the same as the XOA Socket except that the contacts extend radially from base of socket.

XOR — Amateur Net $.50

The XOS tube shield is a two piece shield for the Miniature Button 7 Pin base tubes. The shield is available in three sizes corresponding to the $1\frac{3}{16}$", 1½" and 2" tube body heights.

XOS-1 For 1 3/16" high tube body Amateur Net .....$.48
XOS-2 For 1½" high tube body Amateur Net .....$.48
XOS-3 For 2" high tube body Amateur Net.....$.48

XOS



XOA

The XOA Socket is a socket for the Miniature Button 7 Pin base tubes. Low loss mica filled bakelite insulation. Mounts with two 4-40 screws. Socket contacts extend axially from base of socket.

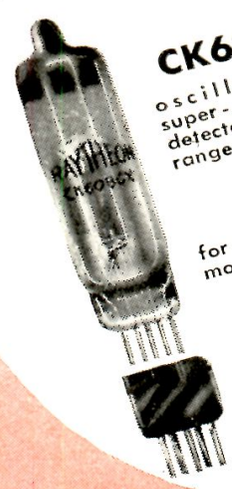
XOA — Amateur Net .....$.50

Space limitations allow presentation of very few National products. National also manufactures and distributes: Precision Condensers and Micrometer Dials; Receiving and Miniature Condensers; Insulators, Ceramics and Couplings, and many other items.

These are all listed in National's complete 1948 catalog — available at your radio store or direct from the factory.

2 NEW RAYTHEON SUBMINIATURES

Look over these two new members of the famous RAYTHEON subminiature line. Note in the table below their special characteristics. And remember: Since 1939 Raytheon has produced some *five million* long life subminiature tubes for commercial applications. There are more Raytheon subminiatures in use throughout the world than *all other makes combined.* Remember, too, that all Raytheon subminiatures can be either soldered in, or plugged into commercially available sockets.



CK608CX
oscillator and super-regenerative detector; frequency range 200-800 Mc.

RK61
for radio control of model airplanes.

For more information, see your nearest amateur radio supply house

Characteristics of RAYTHEON Subminiature Tubes

Type No.	Remarks	Bulb Size Inches	Heater Volts	Heater MA	Mutual Conductance Umhos	Power Output MW	Voltage Gain X	Typical Operating Conditions: Plate Volts	Plate Current MA	Screen Volts	Screen Current MA	Grid Volts
HEATER CATHODE TYPES												
CK605CX	Characteristics of 6AK5	0.38	6.3	200	5000			120	7.5	120	2.5	−2
CK606BX	Diode, equivalent to one-half 6AL5	0.28	6.3	150				150 ac	9.0 dc			
CK608CX	Triode UHF Oscillator, ¾ watts at 500 Mc	0.38	6.3	200	5000			120	9.0			−2
CK619CX	Triode High mu.	0.38	6.3	200	4000			250	4.0			−2
FILAMENT TYPES												
2E31	RF Pentode for pocket radio	0.28	1.25	50	500			22.5	0.4	22.5	0.3	0
2E35	Output Pentode for pocket radio	0.28	1.25	30	385	1.2		22.5	0.27	22.5	0.07	0
2E41	Diode Pentode for pocket radio	0.28	1.25	30	375		20	22.5	0.35	22.5	0.12	0
2G21	Triode Heptode for pocket radio	0.28	1.25	50	75 conv. cond.			22.5	0.20	22.5	0.30	
RK61	Gas Triode, Radio Control for model planes, etc.	0.52	1.4	50				45	1.5	special circuit		
CK502AX	Output Pentode	0.28	1.25	30	550	6.0		45	0.6	45	0.15	−1.25
CK503AX	Output Pentode	0.28	1.25	30	550	9.5		45	0.8	45	0.25	−2.0
CK505AX	Volt. Amp. Pent.	0.28	0.625	30	180		30	22.5	.125	22.5	0.04	0
CK506AX	Output Pentode	0.28	1.25	50	500	25		45	1.25	45	0.4	−4.5
CK507AX	Output Pentode	0.28	1.25	45	575	11		45	0.9	45	0.3	−2.0
CK510AX	Double Space Charge Tetrode Amplifier	0.28	0.625	50	65 ea. unit		150 both units	45	0.06			0
CK512AX	Low microphonic voltage amplifier	0.28	0.625	20	160		28	22.5	0.125	22.5	0.04	0
CK520AX	Output Pentode 5/8 volt filament	0.28	0.625	50	180	4.5		45	0.24	45	0.07	−2.5
CK521AX	Output Pentode 1 mw out at 10 volts	0.28	1.25	50	400	6.0		22.5	0.80	22.5	0.22	−3.0
CK522AX	Output Pentode 20 ma filament	0.28	1.25	20	450	1.2		22.5	0.30	22.5	0.08	0
CK551AXA	Diode-Pentode	0.28	1.25	30	235			22.5	0.17	22.5	0.04	0
CK553AXA	RF Pentode	0.28	1.25	50	550			22.5	0.42	22.5	0.13	0
CK556AX	Triode, UHF Oscillator for radio use	0.28	1.25	125	1600			135	4.0			−5.0
CK568AX	Triode, UHF Oscillator for radio use	0.28	1.25	70	650			135	1.9			−6.0
CK569AX	RF Pentode	0.28	1.25	50	1100			67.5	1.8	67.5	0.48	0
CK570AX	Electrometer Triode Max. grid current 5×10^{-13} amps.	0.28	0.625	20	125		1.5	12	0.22			−3

CK[33] RK[33]

FREE! Ask your dealer or write us direct for your copy of Raytheon's new "Characteristics Chart", giving all important characteristics of Raytheon's line of over 125 amateur and special purpose tubes.

RAYTHEON®
Excellence in Electronics

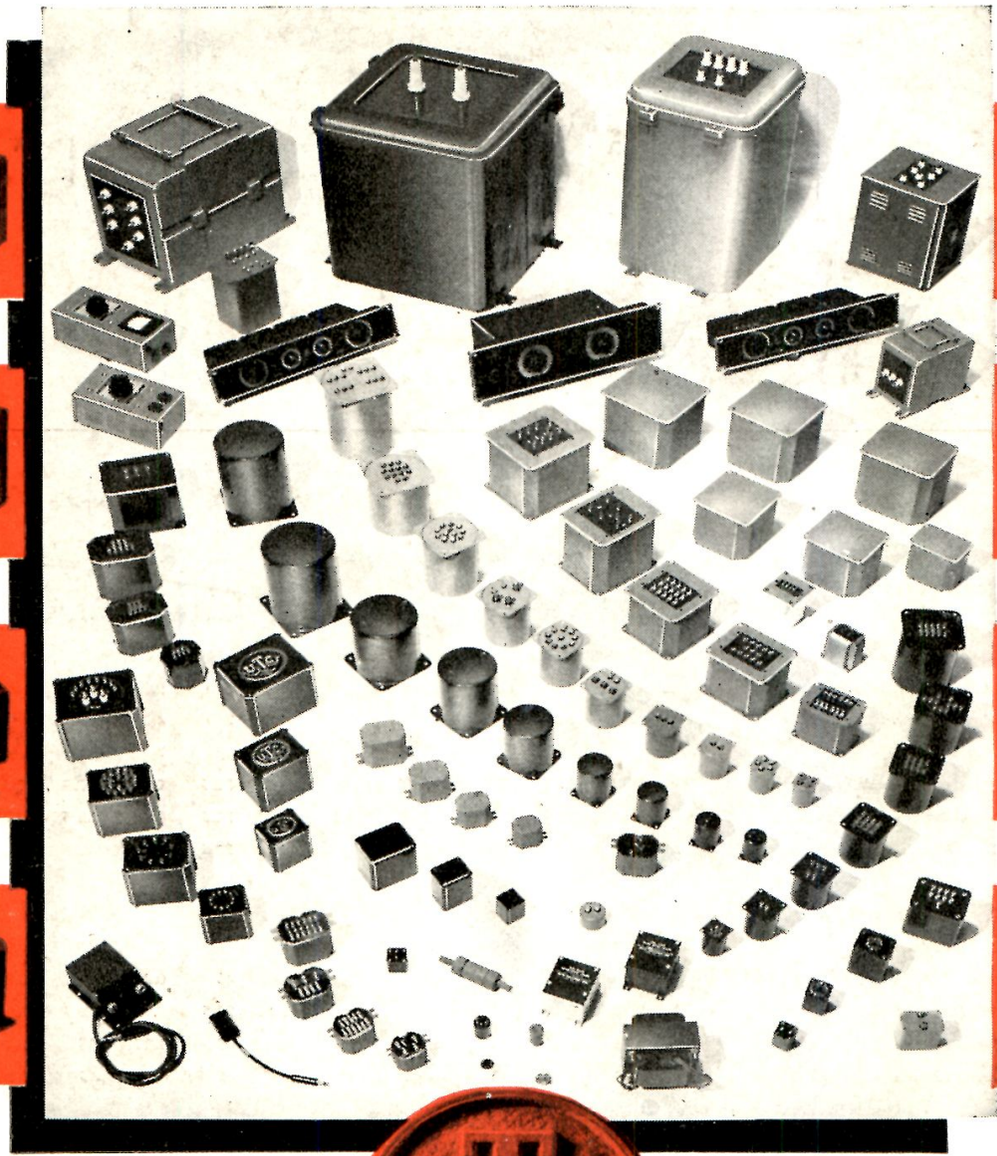
RAYTHEON MANUFACTURING COMPANY

Radio Receiving Tube Division, Special Tube Section

55 Chapel Street, Newton 58, Massachusetts

MICROWAVE TUBES — INDUSTRIAL TUBES — RADIO RECEIVING TUBES

TRANSFORMERS
FOR EVERY APPLICATION



LINEAR STANDARD

HYPERM ALLOY

ULTRA OMPACT

MMERCIAL GRADE

OUNCER

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SPECIAL SERIES

VARIABL INDUCTO

Foremost Manufacturers of Transformers to the Electronic Industry

United Transformer Corp.

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LISTEN, HAM OPERATORS—
2 OUT OF 3 ELECTRONIC
ENGINEERS PREFER AND USE

BURGESS BATTERIES

Use the Brand the Experts Choose—See Your Local Distributor—Buy Burgess!

Illustrated on this page are only a few of the many battery types popular with amateur radio operators. Your local Burgess distributor has fresh stocks for all your needs.

No. 10308. 45 volts. Popular heavy-duty type. Taps at —, +22½, +45. With spring clips or 3-hole socket. Size 8$\frac{1}{32}$" x 4$\frac{1}{32}$"x7$\frac{1}{16}$".

No. Z30. Popular small size 45 volt "B" battery. Top quality for long economical service. Plug-in socket. Size 3$\frac{3}{32}$"x2$\frac{5}{16}$"x 4$\frac{3}{32}$".

No. 4F. Most popular economy size 1½ volt "A" battery. Plug-in socket. Gives long dependable service. Rated 40 watt hours. Size 2$\frac{5}{8}$"x 2$\frac{5}{8}$"x 4$\frac{3}{32}$".

No. 2308. 45 volt "B" battery in smaller size. Taps at —, +22½, +45. Spring clip or plug-in terminals. Long service life. Size 8$\frac{1}{32}$"x2$\frac{29}{32}$"x 7$\frac{3}{16}$".

No. F4PI. Popular 6 volt plug-in "A" battery. Universal type. Gives dependable, economical service. Size 2$\frac{21}{32}$"x2$\frac{21}{32}$"x4$\frac{1}{8}$".

No. 4156. 22½ volt "B" battery. Equipped with screw terminals. Small and compact with long service life. Size 3$\frac{17}{32}$"x 2$\frac{1}{8}$"x2$\frac{21}{32}$".

New Honors for Burgess Quality

Burgess quality is recognized by the recent award of the Certificate of Merit for 1947 by the New York Museum of Science and Industry *in recognition of outstanding achievements in the development of improved dry batteries for a wide range of applications*. Burgess is the only dry battery manufacturer to receive this honor.

Burgess Batteries were important equipment on Operation Highjump in the Antarctica; and Burgess Batteries left at Little America seven years before operated perfectly in service on this last expedition.

The same careful engineering and laboratory-controlled manufacture in Burgess Batteries for amateur radio assures ham operators of long, dependable service.

BURGESS BATTERY COMPANY
DEPT. RAH-8 FREEPORT, ILLINOIS

THE SX-42 APPROACHES Classic

GREATEST CONTINUOUS FREQUENC

—from 540 kc. to 11

IN THE Model SX-42 Hallicrafters establishes a new high standard of receiver performance and versatility. Covering from 540 kilocycles to 110 megacycles, the SX-42 combines in one superbly engineered unit a top-flight standard and VHF communications receiver; standard, short-wave and FM broadcast receiver, and high fidelity phonograph amplifier.

The tremendous frequency range of the SX-42, greater continuous coverage than has ever before been available in a receiver of this type, is made possible by the development of a new "split-stator" tuning system and the use of dual intermediate frequency transformers. Reception of amplitude modulated and continuous wave telegraph signals is provided for throughout the entire range of the SX-42. In addition, a discriminator and two limiter stages are available on bands 5 and 6 (27 to 110 megacycles) to permit the reception of frequency modulated signals. Musical reproduction of true high fidelity is assured by an audio system with a response curve essentially flat from 60 to 15,000 cycles and an undistorted output of eight watts.

The controls of the SX-42 are arranged for maximum convenience and simplicity of

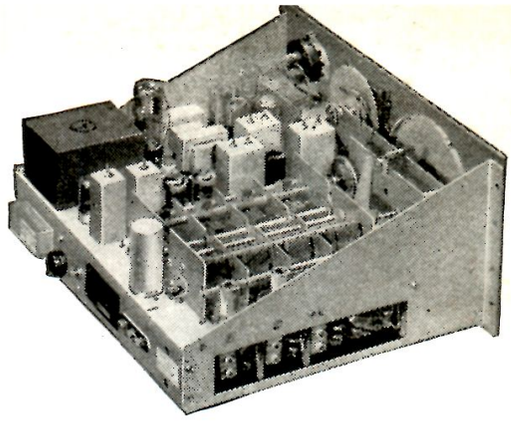
$275.00
Amateur Net

Elevating Base
B-42 — $7.50

Perfection

OVERAGE

e. AM • FM • CW



operation. MAIN TUNING and BAND-SPREAD knobs are mounted coaxially, focusing the tuning functions in a single precision-built unit. BAND-SWITCH and VOLUME are located at either side of the main dial. Auxiliary controls such as CRYSTAL PHASING, SENSITIVITY, etc., are logically placed so that those most frequently used are in the most accessible positions. Hallicrafters new system of color coding makes it possible for the entire family to enjoy this fine receiver. The normal control positions for standard broadcast reception are indicated by tiny red dots while FM adjustments are in green.

The main tuning knob is provided with a precision vernier scale which is separately illuminated through a small window in the one-piece Lucite main dial housing. The main tuning dial is calibrated in megacycles and is marked with channel numbers in the new FM band of 88 to 108 megacycles. The bandspread dial is calibrated for the amateur 3.5, 7, 14, 28, and 50 megacycle bands. An additional logging scale is provided on this dial for use in other ranges. The small locking knob mounted coaxially with the main and bandspread tuning knobs permits either to be rotated freely while holding the other firmly in position.

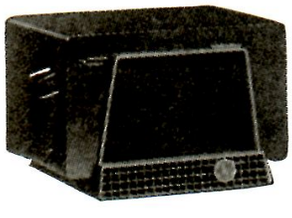
AMATEURS SAY: "Unsurpassed CW performance"

In addition to its many new features the SX-42 continues all of the time-tried advantages characteristic of Hallicrafters top models. Freedom from drift and maximum stability are provided by temperature compensation and the use of a type VR-150 voltage regulator tube. A crystal filter circuit combined with variable intermediate frequency channel width offers six different degrees of selectivity on the four lower bands (to 30 megacycles). CRYSTAL PHASING, CW PITCH, SENSITIVITY, and four-position TONE control for LOW, MED, HI FI, and BASS are all conveniently placed on the front panel as are RECEIVE/STAND-BY, NOISE LIMITER, and AVC switches.

The beauty and modern functional styling of this new receiver are self evident. Without in any way detracting from the "precision instrument" appearance which characterizes fine communications equipment, Hallicrafters designers have succeeded in creating a receiver which is not out of place in the most luxurious surroundings. The rich deep gray of the panel, satin chrome "airodized" top, and light gray lettering with touches of red and green combine with the precision-tooled controls and light translucent green of the illuminated dials and meter in a harmoniously integrated whole.

R-42 SPEAKER

This is the first speaker of its size to offer the splendid advantages of the bass reflex principle. Heretofore the famous Jensen-originated bass reflex reproduction has been available only in large cabinet speakers. Now in this sleek, highly functional design, matching the new line of Hallicrafters receivers, the bass reflex feature is available in a compact speaker that offers a new high quality of reproduction. The R-42 was designed as a companion piece to the SX-42 receiver but it may be used with any other receivers such as the SX-28 and the SX-43. The speaker size is 8 inches. Two-position switch on front panel for communications or high fidelity reception. Terminals on rear for 500-ohm line. R-42 size: 12½ in. deep, 11¾ in. high, 17 in. wide.



R-42 SPEAKER $29.50

DIMENSIONS: Model SX-42. Cabinet only, 20 inches wide by 9¾ inches high by 16 inches deep. Overall, 20 inches wide by 10¼ inches high by 18 inches deep.

WEIGHT: Model SX-42. Receiver only, approximately 52 pounds. Packed for shipment, approximately 65 pounds. Model B-42, adjustable base, packed for shipment, approximately 5 pounds.

hallicrafters RADIO

THE SX-43 OFFERS SIX BANDS:

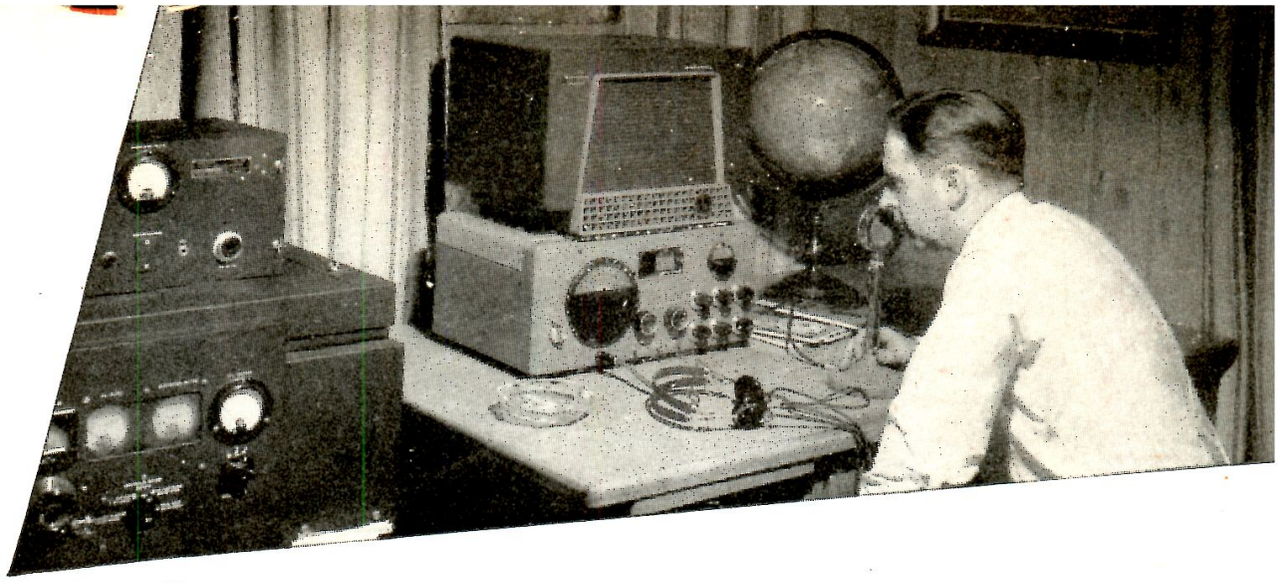
All the essential amateur frequencies from 540 kc. to 108 Mc.

$169.50
Amateur Net

THE Model SX-43 is designed for the discriminating amateur who demands excellent performance and wide frequency range at a medium price. This new member of the Hallicrafters line offers continuous coverage from 540 kilocycles to 55 megacycles and has an additional band from 88 to 108 megacycles. AM reception is provided on all bands except band 6, CW on the 4 lower bands and FM on frequencies above 44 Mc. In the band of 44 to 55 Mc., wide band FM or narrow band AM just right for narrow band FM reception is provided.

One stage of high gain tuned RF and a type 7F8 dual triode converter assure an exceptionally good signal-to-noise ratio. Image ratio on the AM channel on band 5 (44 to 55 Mc.) is excellent as the receiver is used as a double superheterodyne on this band. The new Hallicrafters dual IF transformers provide a 455 kilocycle IF channel for operating frequencies below 44 megacycles and a 10.7 megacycle IF channel for the VHF bands. Two IF stages are used on the 4 lower bands and a third stage is added above 44 megacycles. Switching of IF frequencies is automatic. The separate electrical bandspread dial is calibrated for the amateur 3.5, 7, 14, and 28 megacycle bands and in addition is used to tune the 44 to 55 and 88 to 108 Mc. VHF bands, the main tuning gang being disconnected on these frequencies.

Every important feature for excellent communications receiver performance is included in the SX-43. The crystal filter and expanding IF channel provide four variations of selectivity on the lower frequency bands. Temperature compensation for freedom from drift, series type noise limiter, permeability-adjusted "microset" inductances in the RF circuits, separate RF and AF gain controls, color coding for simplified operation by the entire family, beautiful styling, all destine this new Hallicrafters receiver for top place in the moderate price field.



Everything THE HAM ASKS FOR in a medium price receiver

OUTSTANDING FEATURE: Wide band FM, AM or narrow band FM on 44-55 megacycles.

CONTROLS: BAND SELECTOR, TUNING, BANDSPREAD, TONE, RECEIVE/STANDBY, NOISE LIMITER, CRYSTAL PHASING, SELECTIVITY, SENSITIVITY, VOLUME AND POWER OFF, RECEPTION, CW PITCH.

EXTERNAL CONNECTIONS: Antenna connections for doublet or single wire. Input impedance matches 300-ohm line except on broadcast band which is designed for single wire antenna. Speaker terminals for 500 or 5000 ohms. Phone jack on front panel. Phonograph input connector on rear of chassis. Socket for use with external power supply. Remote standby control connections in power socket. Power cord, plug.

PHYSICAL CHARACTERISTICS: The cabinet of the Model SX-43 is styled in the new Hallicrafters pattern and is finished in rich satin gray. Panel and chassis may be removed as a unit for servicing without disturbing any controls. "Airodized" steel top swings open on full length piano hinge for maximum accessibility. Panel lettering is in light gray with incidental red and green markings for standard and FM broadcast reception. Dials are indirectly illuminated and are a light translucent green.

TUBES: 1—6BA6 RF amplifier; 1—7F8 converter-oscillator; 1—6SG7 1st IF amplifier; 1—6SH7 2nd IF amplifier and second converter, band 5 AM; 1—6SH7 3rd IF amplifier (10.7 Mc.); 1—6H6 AM detector and noise limiter; 1—6AL5 FM detector; 1—6SQ7 1st AF amplifier; 1—6J5 beat frequency oscillator or second converter oscillator, band 5; 1—6V6 audio output tube; 1—5Y3 rectifier.

OPERATING DATA: The standard Model SX-43 is designed for operating on 105-125 volts, 50/60 cycle alternating current. The universal Model SX-43U may be operated on 110, 130, 150, 220, or 250 volts, 25 to 60 cycles, alternating current. The standard model draws 90 watts at 117 volts. When operated from external batteries the heaters require 3.8 amperes at 6 volts and the plate circuit draws 105 milliamperes at 270 volts.

DIMENSIONS: Model SX-43. Cabinet only, 18½ inches wide by 8½ inches high by 12 inches deep. Overall 18½ inches wide by 8⅞ inches high by 13 inches deep.

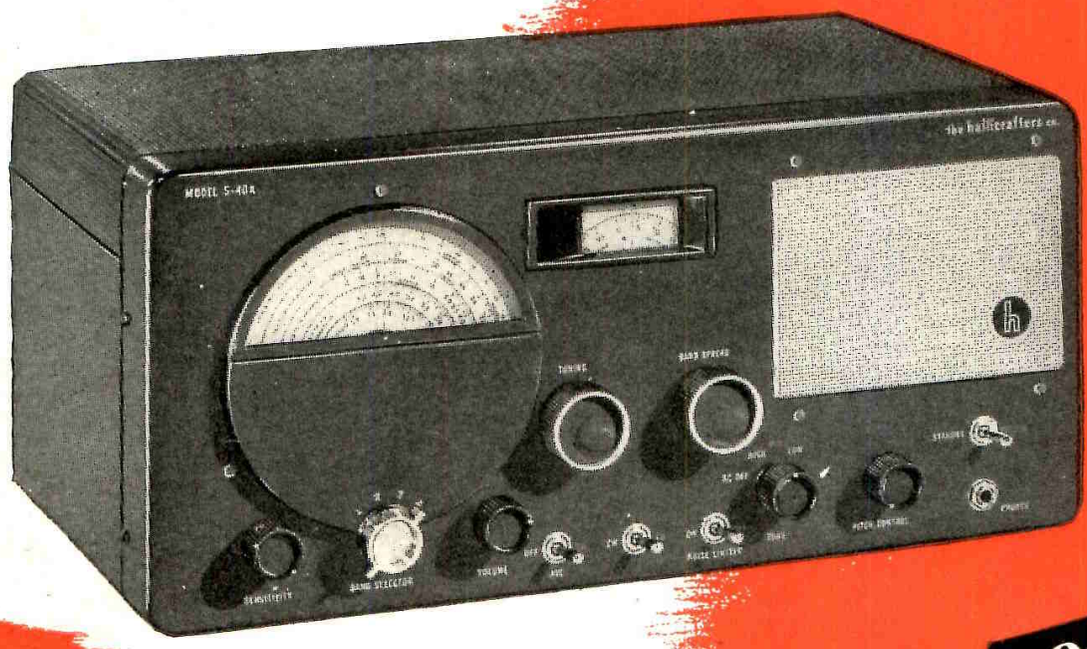
WEIGHT: Model SX-43. Receiver only, approximately 35 pounds. Packed for shipment, approximately 45 pounds.

R-44 SPEAKER

Offers for the first time in a professional style cabinet, the advantages of an oval speaker.

The large oval size plus ample baffling give excellent low frequency response. The cabinet proportions and finish provide a perfect match with any communications receivers. Especially designed as a companion unit to the SX-43, but it may also be used with the SX-25, SX-28, and SX-42. The speaker size is 6 x 9 inches. Two-position switch on front panel for communications on high fidelity reception. Terminals on rear for 500 ohm line. R-44 size: 18½ in. wide by 8½ in. high by 9⅝ in. deep $19.50

hallicrafters RADIO



S-40A

—it covers from 40 kc. to 43 Mc. and is called by hams

$89.50

"ONE OF THE GREATEST RECEIVER VALUES AVAILABLE"

THE sensational new S-40A with the finest performance ever presented in the popular price field is housed in a cabinet of true functional design—a completely new conception of receiver beauty and styling.

The Model S-40A incorporates many circuit refinements and features never before available in this price class. The RF section uses permeability adjusted "micro-set" inductances, identical with those in the most expensive Hallicrafters receivers. Automatic noise limiter, temperature compensated RF oscillator, beat frequency oscillator, separate RF and AF gain controls, three-position tone control, separate electrical bandspread, with inertia flywheel tuning, and many other features make this beautiful new receiver an outstanding value.

Overall frequency range—540 kilocycles to 43 megacycles in 4 bands:

Band 1—540 to 1700 kilocycles
Band 2—1.7 to 5.35 megacycles
Band 3—5.35 to 15.7 megacycles
Band 4—15.7 to 43 megacycles.

Adequate overlap is provided at the ends of all bands.

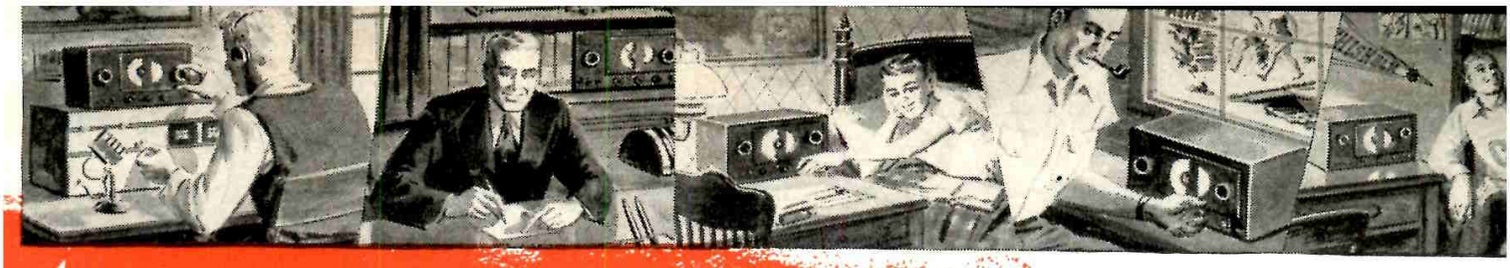
CONTROLS: SENSITIVITY (including "S" meter on/off switch), BAND SELECTOR, VOLUME, TUNING, BANDSPREAD, AVC ON/OFF, CW/AM, NOISE LIMITER ON/OFF, TONE AND AC ON/-OFF, PITCH CONTROL, STAND-BY/RECEIVE.

DIMENSIONS: Model S-40A. Cabinet only, 18½ inches wide by 8½ inches high by 9⅝ inches deep. Overall, 18½ inches wide by 9 inches high by 11 inches deep. Model SM-40 Meter. Overall, 5¾ inches wide by 4 inches high by 4½ inches deep.

WEIGHT: Model S-40A. Receiver only, approximately 28 pounds. Packed for shipment, approximately 33 pounds. Model SM-40. Meter only, approximately 1¾ pounds. Packed for shipment approximately 3 pounds.

MODEL SM-40 "S" METER

This new external "S" meter is available as an accessory and can be easily connected through a special socket on the rear of the receiver chassis. May also be used with other Hallicrafters models such as the S-20R, S-18, etc.



LOWEST PRICED COMMUNICATIONS RECEIVER

S-38

Amateur Net

$47.50

Goes Anywhere – Everywhere

. . . A REAL BUY

THE Model S-38 meets the demand for a truly competent communications receiver in the low-priced field. Styled in the postwar Hallicrafters pattern and incorporating many of the features found in its more expensive brothers, the S-38 offers performance and appearance far above anything heretofore available in its class. Four tuning bands, CW pitch control adjustable from the front panel, automatic noise limiter, self-contained PM dynamic speaker and "Airodized" steel grille, all mark the S-38 as the new leader among inexpensive communications receivers.

The S-38 is an especially fine receiver for younger people just beginning to find the unending fascination offered by radio as a hobby. In addition to being a good standby receiver for any amateur, the S-38 has unlimited uses. Its compact functional design, its high performance on both short waves and standard broadcast reception make it an ideal receiver for use in den or library, in college dormitory, at camp or cottage or in any room around the house wherever a good extra receiver at a low cost is desired.

FEATURES

Overall frequency range—540 kilocycles to 32 megacycles in 4 bands:

Band 1—540 to 1650 kc.
Band 2—1.65 to 5 Mc.
Band 3—5 to 14.5 Mc.
Band 4—13.5 to 32 Mc.

Adequate overlap is provided at ends of all bands.
Main tuning dial accurately calibrated.
Separate electrical bandspread dial.
Beat frequency oscillator, pitch adjustable from front panel.
AM/CW switch. Also turns on automatic volume control in AM position.
Standby/receive switch.
Automatic noise limiter.
Maximum audio output—1.6 watts.
Internal PM dynamic speaker mounted in top.
Controls arranged for maximum ease of operation.
105-125 volt AC/DC. Resistor line cord for 210-250 volt operation available.
Speaker/phones switch.

CONTROLS: SPEAKER/PHONES, AM/CW, NOISE LIMITER, TUNING, CW PITCH, BAND SELECTOR, VOLUME, BANDSPREAD, RECEIVE/STANDBY.

EXTERNAL CONNECTIONS: Antenna terminals for doublet or single wire antenna. Ground terminal. Tip jacks for headphones. Line cord and plug.

OPERATING DATA: The Model S-38 is designed to operate on 105-125 volts AC or DC. A special external resistance line cord can be supplied for operation on 210 to 250 volts AC or DC. Power consumption on 117 volts is 29 watts.

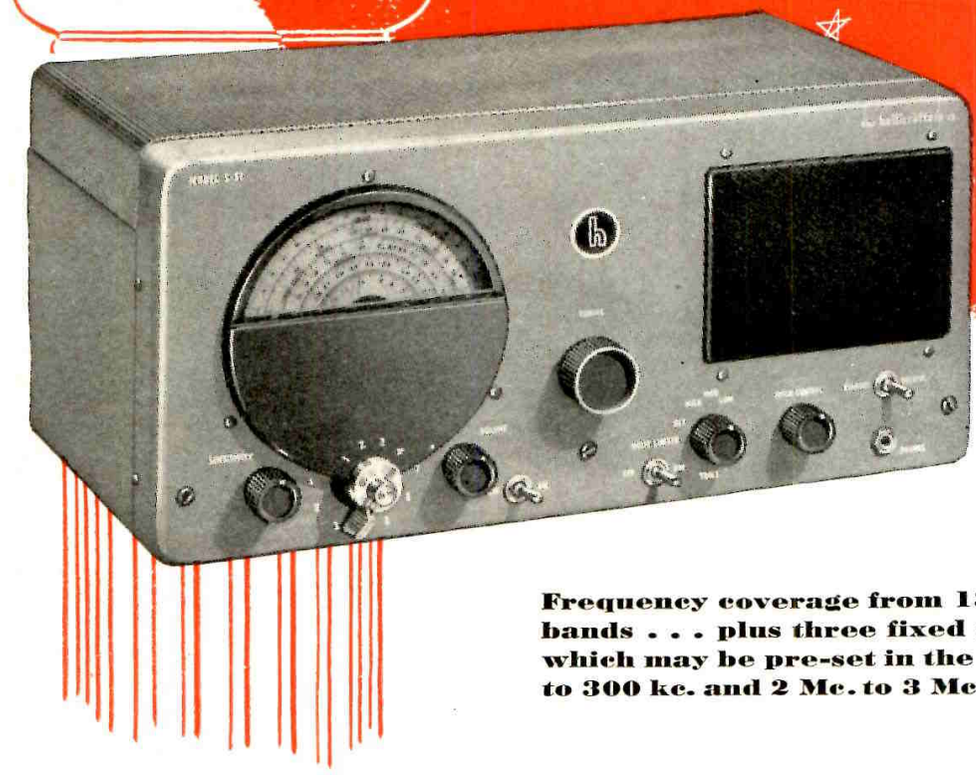
DIMENSIONS: Model S-38, Cabinet only, 12⅞ inches wide by 6⅞ inches high by 7⅞ inches deep. Overall, 12⅞ inches wide by 7⅜ inches high by 8⅝ inches deep.

WEIGHT: Model S-38, Receiver only, 11 pounds. Packed for shipment, 13½ pounds.

hallicrafters RADI

For land—sea—air communications

S-51 NEW RECEIVER



- Low price
- Highly dependable

Prices on Request

Frequency coverage from 132 kc. to 13 Mc. in 4 bands . . . plus three fixed frequency channels which may be pre-set in the range between 200 to 300 kc. and 2 Mc. to 3 Mc.

YACHTSMEN, mariners, pilots and all who depend on specialized communications equipment for safe land, sea and air operations will find in the S-51 just what they have been looking for. Covering from 132 kc. to 13 Mc., the S-51 provides reception on all important channels — airport towers, Coast Guard stations, weather stations and other vital communications outlets. Maximum convenience is assured through the use of a directly calibrated main tuning dial and the division of bands so that calling and working frequencies lie in the same band.

Styled to match the balance of the highly functional Hallicrafters line, the S-51 is especially rugged. Precautions have been taken to protect the model against the hazards of salt sea atmosphere. Trimmer condensers are treated to maintain their adjustment, transformers are impregnated and the chassis is heavy cadmium plated to resist the roughest sort of treatment. Temperature compensation for freedom from drift and permeability adjusted "microset" inductances in RF circuits add to the receiver's

Two outstanding features set the S-51 well above average:

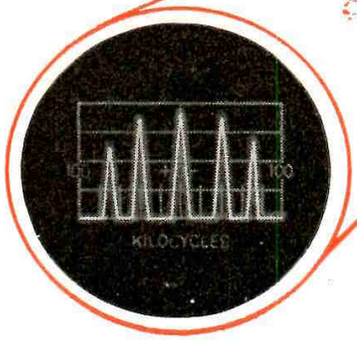
1. VERSATILITY. The S-51 can be used practically anywhere. Equipped for 110 volt AC/DC operation, provision is made for the addition of power supply combinations permitting operation from either 6, 12 or 32 volt batteries.

2. FIXED FREQUENCIES. Besides the four tuning ranges covered by regular tuning controls there are three fixed frequency channels which can be pre-set to be brought in with a flick of the switch. Provision is made for pre-setting on one fixed frequency between 200 to 300 kc. and on two frequencies between 2 Mc. and 3 Mc. Private pilots, who from home or airport want to keep constantly tuned to a certain weather station, sailors and yachtsmen who must keep in regular touch with certain Coast Guard stations and others who depend on fast, regular communications over fixed frequencies, will find the S-51 invaluable in this regard.

In addition to other features the S-51 has a beat frequency oscillator with pitch variable from the front panel; combined a.v.c. and b.f.o. switch;

SEE WHAT YOU'RE LOOKING FOR

Ten Tubes Including Cathode Ray Tube
$49.50 Amateur Net



LOTS MORE QSL's with the Skyrider Panoramic SP-44

HALLICRAFTERS Skyrider Panoramic, Model SP-44 is actually a "third hand" to help you reach for new horizons in ham radio. You get lots more QSL's with the Hallicrafters Panoramic because you can "see" and "feel" your way over a wide stretch of the radio spectrum. The Panoramic shows not only the received signal but every signal 100 kc. on either side of the received signal . . . provided visual sweepwidth is set at maximum. By making a wide range of radio signals visible a new dimension is added to the field of radio operating. Listed opposite are a few of the things Panoramic enables you to do:

1. Spot frequency modulation or parasitics on an amplitude modulated signal.
2. Measure percentage of modulation and the quality of the signal being transmitted under all conditions.
3. Read signal strength instantaneously, aiding in quickly adjusting the output stages of the transmitter or the field pattern of directional antennas.
4. Check other frequencies against known standards or the receiver calibrations. Any frequency drift can be spotted immediately.
5. Show where and how much to shift frequency to avoid interference once a QSL is under way.

Precision instruments for VERY HIGH FREQUENCY WORK

VHF

S-37

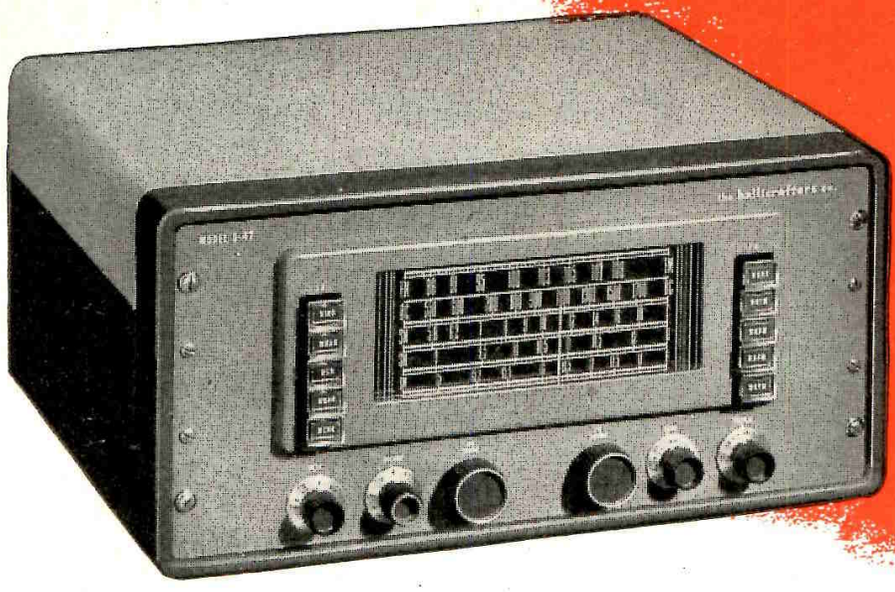
THE Model S-37 has been designed to fill the need for very high frequency equipment with the performance characteristics of Hallicrafters top communications receivers, and a frequency range extending above 200 Mc. Basically similar to the Model S-36A this new receiver incorporates the latest developments in VHF circuit design and provides sensitivity and selectivity in the range from 130 to 210 Mc. that is in every way comparable to the performance of fine communications receivers on the standard frequencies.

A new pre-loaded gear drive with separate bandspread dial provides ease of tuning, and the entire range of the receiver is covered without band-switching. Two RF stages are used and in conjunction with an intermediate frequency of 16 Mc. assure an amazingly high ratio of image rejection. Hermetically sealed transformers and capacitors make the Model S-37 suitable for use in any climate.

This new receiver again emphasizes Hallicrafters pre-eminence in the commercial production of VHF equipment.

$591.75
Amateur Net

hallicrafters RADIO

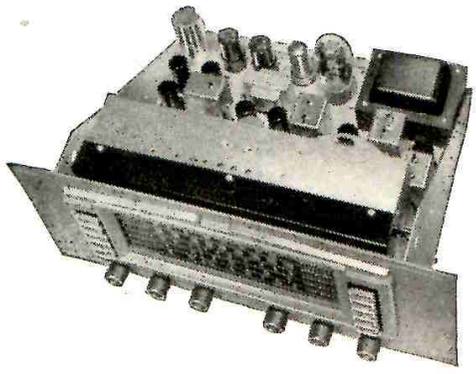


S-47

AM-FM RECEIVER FOR SPECIALIZED INSTALLATIONS

A superb radio chassis with push button tuning

HERE is a brand new kind of receiving instrument, designed by Hallicrafters to fill a long felt need. It is a 14 tube (plus rectifier) AM and FM receiver with an overall frequency range of 535 kc. to 108 Mc. in three bands with five positions on the band switch. A new development is the addition of push button controls for FM tuning. There are push button controls for the AM tuning also. This is a high precision, fine quality receiver that will have numerous applications in homes, schools or public institutions or in any location where a good specialized radio installation is needed. Styled to match the new Hallicrafters line, the S-47 receiver lends itself perfectly to "custom" installations of your own choosing—such as in specially designed cabinets in bookcases or built-in sound systems for fine homes. Here is radio that is all radio, made simple to operate with the push button controls and the wide, easily read dial.



S-47 C CHASSIS ONLY

Same chassis, available without the steel cabinet. Overall dimensions: 8-11/16 in. high, 16 in. deep, 18-15/16 in. wide $189.50

CONTROLS: BAND SELECTOR AND PHONO SWITCH, AM TUNING, FM TUNING, FIVE AM PUSH BUTTONS, FIVE FM PUSH BUTTONS, VOLUME, TREBLE TONE AND AM SELECTIVITY, BASS TONE AND POWER ON/OFF.

EXTERNAL CONNECTIONS: Antenna connections for single wire or doublet AM antenna and doublet FM antenna. AC power cord. Power outlet for phono motor connection. Phono input socket. 500 ohm speaker terminals.

OPERATING DATA: The Model S-47 receiver is designed for operation on 105-125 volts 50/60 cycle alternating current. The power drain is 100 watts. It may be used with any speaker having 500/600 ohm input.

OVERALL DIMENSIONS: S-47 (with steel cabinet) 8-11/16 in. high, 16½ in. deep, 20 in. wide $200.00

Amateur Net

Modernize YOUR OLD TRANSMITTER

New Variable Master Oscillator . . . the Model HT-18

HERE is the hottest transmitter item available today! Narrow band FM and calibrated 5-band V.F.O. complete in one compact cabinet with all coils and power supply built in. These outstanding features have never before been available in one low-priced unit, including low frequency drift, low FM distortion, low hum and noise level, excellent keying, voltage regulators, and low impedance output circuit.

This is the unit you have been waiting for to modernize your old transmitter, whether it is a 50-watt or a one-kilowatt station.

The HT-18 is also a valuable tool for antenna tuning on all ham bands. Run a quick response curve of the antenna to find the best operating frequency.

Do you have B.C.I. trouble? Simple; just add an HT-18 on narrow band FM and watch the neighbors smile and say "Hello" again.

- ★ **Directly calibrated for easy operation**
- ★ **Incorporates narrow band FM**
- ★ **As easy to tune as a modern receiver**
- ★ **Excellent stability**
- ★ **Good clean keying**

$110.00
Amateur Net

hallicrafters RADI

Choose the HT-9 TRANSMITTER

For power . . . 100 watts

For price . . $350.00

Amateur Net
(Less coils
and crystals)

HALLICRAFTERS Model HT-9 is an ideal medium power transmitter. Designed for maximum flexibility and convenience, it is completely self-contained, requiring only a microphone or key, antenna, and source of AC power to go on the air.

Five individual plug-in tuning units and crystals may be accommodated in the exciter section simultaneously. Band switching is easily accomplished by changing one coil in the final amplifier and selecting the desired exciter frequency by means of a panel switch. Exciter units are pre-tuned and the only additional operation needed is a slight adjustment of the final tank tuning capacitor.

Separate meters are provided for the power amplifier plate and grid circuits and a third meter may be switched into either the exciter or modulator cathode circuits. All controls are conveniently arranged on the panel and a safety interlock switch is provided for protection against accidental shock when cabinet is opened.

FIRST of its kind

. . . a low power, high quality, low price TRANSMITTER

HT-17

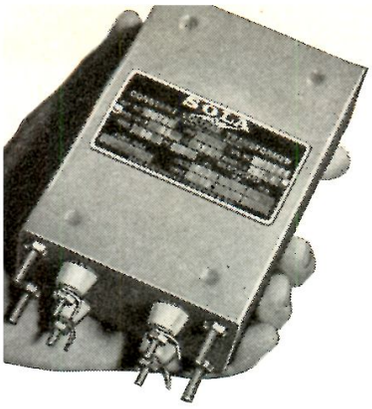
$69.50 (Less coils and crystals)

Amateur Net

THE Model HT-17 offers real Hallicrafters transmitter performance with maximum convenience and economy. No larger than a small receiver and styled to match the postwar Hallicrafters line, this new transmitter provides an honest 10 to 20 watts of crystal-controlled CW output on the amateur 3.5, 7, 14, 21, and 28 negacycle bands.

A pi-section matching network is an integral part of the plate circuit and, together with an adjustable link, provides coupling to any type of antenna or permits the HT-17 to be used as an exciter for a high power final amplifier. The oscillator stage uses a type 6V6-GT tube and is automatically switched to a Tritet circuit when coils for the three higher bands are plugged in. Full output on the 14, 21, and 28 megacycle bands is obtained with 7 megacycle crystals. A type 807 tube is used in the final amplifier, and the self-contained power supply, for 105-120 volt AC operation, employs a 5Y3-GT rectifier. Connections are provided for an external modulator. The "Airodized" steel top opens on a full length piano hinge for maximum accessibility and ease in changing coils and crystals A pilot lamp is provided on front panel for tuning. Coil sets extra.

hallicrafters RADIO

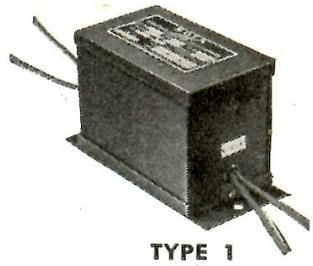


TYPE 11

SMALL, LOW-COST, SOLA CONSTANT VOLTAGE TRANSFORMERS FOR CHASSIS MOUNTING

Reliable communications equipment must have stabilized voltage—and the right place to provide for it is in the equipment itself. These three types of SOLA Constant Voltage Transformers have been specifically designed for "built-in" applications. They are low in cost and their use will often permit the elimination of other components. For complete information consult Bulletin 34CV-102, available on request.

TYPE 12



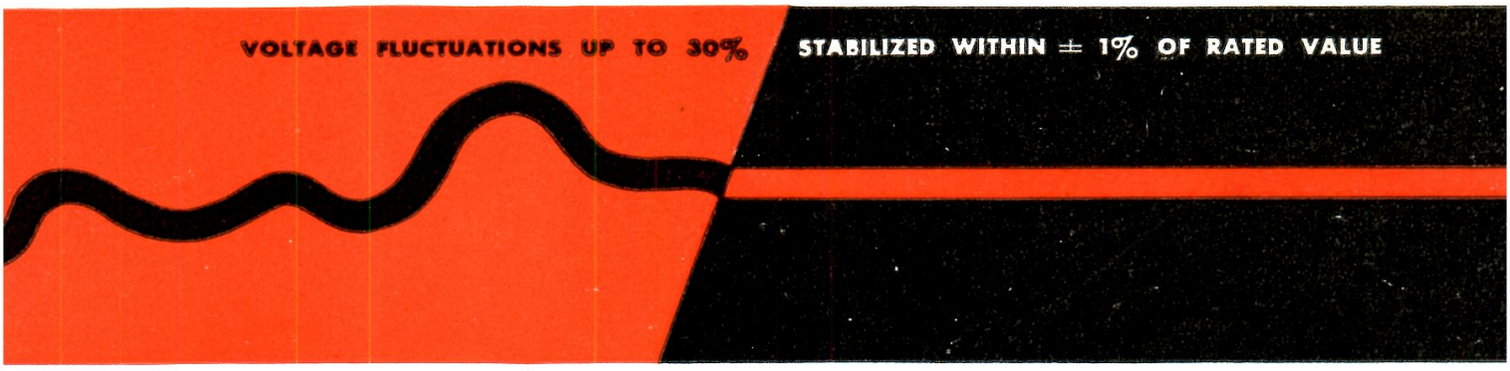
TYPE 1

	Catalog Number	Output Capacity in VA	Input Volts	Output Volts	Dimensions in Inches A	B	C	E	F	Approx. Shipping Weight	List Price Each
TYPE 1	30488	15	95-125	6.0	5 11/16	2 5/8	3 7/16	5 1/16		6	$15.00
	30492	15	95-125	6.3	5 11/16	2 5/8	3 7/16	5 1/16		6	15.00
	30498	15	95-125	115.0	5 11/16	2 5/8	3 7/16	5 1/16		6	15.00
TYPE 11	30785	17	95-125	6.3	5 13/16	3 21/32	2 19/32	3	2	5 1/2	20.00
	30955	17	95-125	115.0	5 13/16	3 21/32	2 19/32	3	2	5 1/2	20.00
TYPE 12	301002	15	95-125	6.3	5 5/16	3 1/2	2 1/4	3	1 1/2	2 1/2	18.50
	301003	15	95-125	115.0	5 5/16	3 1/2	2 1/4	3	1 1/2	2 1/2	18.50

*Condenser supplied as separate unit.

DIMENSIONS:
A: Overall Length
B: Overall Width
C: Overall Height
E & F: Mounting Dimensions

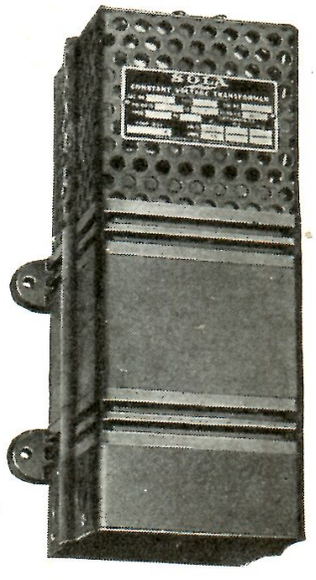
Prices subject to chang without notice.



TYPE 2

FOR COMMUNICATIONS EQUIPMENT NOW IN SERVICE

Where provision for constant voltage protection has not been made within the equipment itself, these standard SOLA Constant Voltage Transformers can be easily installed. They require no supervision or maintenance, are instantaneous in operation and they protect both themselves and the equipment against short-circuit. Other capacities ranging from 10VA to 15KVA fully described in Bulletin 34CV-102, available on request.



TYPE 3

	Catalog Number	Output Capacity in VA	Input Volts	Output Volts	Dimensions in Inches A	B	C	E	F	Approx. Shipping Weight	List Price Each
PE 2	30804	30	95-125	115.0	8 9/16	4 3/16	4 3/8	7 13/16	2 3/8	12	$17.00
	30805	60	95-125	115.0	8 13/16	4 3/16	4 3/8	8 1/16	2 3/8	13	24.00
	30806	120	95-125	115.0	9 11/16	4 3/16	4 3/8	8 15/16	2 3/8	17	32.00
PE 3	30807	250	95-125	115.0	11 5/8	6 15/16	5 5/8	3 1/4	6 1/8	30	52.00
	30M807	250	190-250	115.0	11 5/8	6 15/16	5 5/8	3 1/4	6 1/8	30	52.00
	30808	500	95-125	115.0	14 1/2	6 15/16	5 5/8	5	6 1/8	40	75.00
	30M808	500	190-250	115.0	14 1/2	6 15/16	5 5/8	5	6 1/8	40	75.00

SOLA Constant Voltage Transformers

THERE'S AN RCA TUBE

RCA Power Tube Chart for Amateur Transmitters

CW, FM, AND PHONE TO 30 Mc.

This table has been set up to give suitable choice of tubes for the final and for a preceding stage to drive the final. A choice of buffer, doubler or oscillator driver stage is provided. The tubes shown have been chosen conservatively to provide ample driving power at 30 Mc even in circuits having higher than usual losses.

Final Amplifier			Tube Types for Driving Final Amplifier (CW, FM and Phone)			Class B Modulator
Input Power Watts		Tube Type	As Buffer	As Doubler	As Oscillator	Tube Type
CW & FM	Phone					
40	27	1-2E26	2E26 6AK6 6AG7 6F6	2E26 6N7 6AG7 6V6GT 6F6	2E26 6F6 6AG7 6V6GT	2-6L6 (AB_1) 2-6F6 (AB_2)
75	54	2-2E26	2E26 802 6AG7 807 6F6	2E26 6L6 6AG7 802 6F6 807	2E26 6L6 6AG7 802 6F6 807	2-2E26 1-815 2-807
75	60	1-815				
75	60	1-807				
150	120	2-807	2E26 802 6F6 807	2E26 6N7 6F6 802 6L6 807	2E26 6V6GT 6F6 802 6L6 807	2-807 2-811
225	150	1-812	2E26 807 802	2E26 802 6L6 807	2E26 802 6L6 807	2-807 2-811
225	150	1-811	2E26 807 802	807 811 809 814	807 814	2-807 2-811
300	240	1-8005	2E26 807 802	807 811 809 814	807 814	2-811 2-808 2-8005
300	200	1-808				
450	300	2-812	2E26 809 802 812 807 815	807 814 809 815 811	807 815 814	2-811 2-808 2-8005
450	300	2-811	2-2E26 809 2-802 812 807 815	2-807 811 809 814	2-807 1-828 1-814	2-811 2-808 2-8005
500	375	1-4-125A/ 4D-21	2E26 802 807	2E26 6L6 802 807	2E26 802 6L6 807	2-811 4-807 2-8005
500	400	1-813				
600	400	2-808	2-2E26 811 807 812 809 815	2-807 809 812 811 814	2-807 814	2-811 2-808 2-8005
600	480	2-8005				
750	500	1-8000	807 811 809 812 814	807 811 809 814	807 814	4-811 2-8005
750	500	1-810	809 812 811 814	808 814 811 828	not recommended	4-811 2-8005
1000	600	1-806				
1000	750	2-4-125A/ 4D21	2E26 807 802 815	2E26 802 2-6L6 807 815	2E26 802 2-6L6 807 815	2-810 2-8000 4-8005
1000	800	2-813				
1000	835	1-833A	808 812 809 814 811 8005	808 814 811 828	not recommended	2-810 2-8000 4-8005
1000	1000	2-8000	2-807 811 2-809 812 814	808 811 2-809 814	not recommended	2-810 2-8000 4-8005
1000	1000	2-810	808 812 2-809 814 811 8005	808 813 811 828	not recommended	2-810 2-8000 4-8005

FOR EVERY AMATEUR SERVICE

RCA POWER TRIODES

806	1000 watts input* at 30 Mc.
808	300 watts input* at 30 Mc.
810	750 watts input* at 30 Mc.
811	225 watts input* at 60 Mc.
812	225 watts input* at 60 Mc.
833-A	1000 watts input* at 30 Mc.
8005	300 watts input* at 60 Mc.

RCA BEAM POWER TUBES

2E26	33 watts input* at 150 Mc.
807	75 watts input* at 60 Mc.
813	500 watts input* at 30 Mc.
815	68 watts input* at 150 Mc.
829-B	120 watts input* at 200 Mc.

RCA RECTIFIERS AND THYRATRONS

5R4-GY Full-wave, vacuum type. With choke input, 175 ma. at 750 volts.

816 Half-wave, mercury-vapor type. Two tubes in full-wave, 250 ma. up to 2380 volts.

866-A Half-wave, mercury-vapor type. Two tubes in full-wave, 500 ma. up to 3180 volts.

2050 Gas thyratron. Up to 200 ma. at 400 volts in grid-controlled full-wave circuit.

5557 Mercury-vapor thyratron. Up to 1 amp. at 1500 volts in full-wave choke-input circuit.

RCA UHF AND VHF TUBES

2C43	20 watts input* at 1500 Mc.
4-125A/4D21	500 watts input* at 125 Mc.
6C24	1000 watts input* at 160 Mc.
826	130 watts input* at 250 Mc.
8025-A	50 watts input* at 500 Mc.

*Maximum value, class C telegraphy service.

• RCA has a popular tube for every amateur service, every power and every active band. A few of the best-known types in each classification are listed.

In addition, there are special-application types, such as *voltage regulators, phototubes, acorns, kinescopes, iconoscopes,* and the well-known *receiving types* in metal, glass, and miniature.

Your local RCA Tube Distributor has complete technical data on all RCA tube types. Contact him for further information, or write RCA, Commercial Engineering, Section M-67, Harrison, New Jersey.

Free—RCA Headliners for Hams

. . . 4-page folder, gives power tube voltages, currents, driving power, dissipations, etc., for each tube service. Indispensable to every Amateur who builds transmitting equipment. Ask your RCA Tube Distributor for a copy of Headliners, or write RCA, Commercial Engineering, Section M-35, Harrison, New Jersey.

THE FOUNTAINHEAD OF MODERN TUBE DEVELOPMENT IS RCA

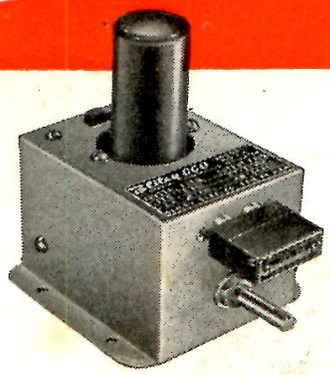
TUBE DEPARTMENT

RADIO CORPORATION of AMERICA

HARRISON, N. J.

Bliley

CRYSTALS AND CRYSTAL CONTROLLED OSCILLATORS



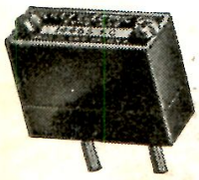
CCO — CRYSTAL CONTROLLED OSCILLATOR — MODEL 2A

For 2-6-10-11 Meters

With this basic oscillator, employing a 6AG7 tube, the advantages of VHF crystal control are easily achieved. Has direct output on 6-10-11 meters and ample output to drive tripler stage on 2 meters. Single tuning control, bandswitch and crystal socket are mounted on outside of painted metal subchassis with power and output terminals at back. Uses Bliley AX2 2 meter crystals for output on 10 and meters, new Bliley AX3 crystals for 6 a 2 meter operation. Ideal as nucleus f new construction or conversion of existi equipment.

Supplied less tube and crystal . . . . . **$9.**

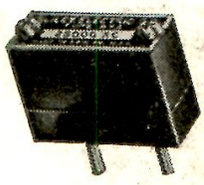
AMATEUR FREQUENCY CRYSTALS



TYPE AX2

These high stability advanced design crystals are plated to insure long term precision and reliability. Calibrated to ±.002% with drift less than .0002% per degree Centigrade. Holder pins spaced on .486″ centers.

Supplied	Range	Price
± 2 Kc	3500— 4000 Kc	$2.80
± 2 Kc	7000— 7425 Kc	2.80
±30 Kc	12500—13500 Kc	3.95
±30 Kc	13580—13714 Kc	3.95
±30 Kc	14000—14850 Kc	3.95



TYPE AX3

A new third overtone crystal unit produced for use in the Bliley CCO-2A. Has exceptionally high activity at operating frequency. Calibration accurate to ±.003% in CCO-2A with drift less than .0002% per degree Centigrade. Plated crystal is mounted in gasket sealed holder with pins spaced .486″ centers.

Supplied	Range	Price
±5 Kc	24000—24333 Kc	$3.95
±5 Kc	25000—25500 Kc	3.95

TYPE CF6 455 Kc

Single signal filter crystal unit. Exceptionally low holder capacity permits sharp signal discrimination in filter network of general communications receivers. Frequency 455 Kc free from spurious responses within ±7 Kc.

Price **$4.50**

TYPE CF3 455 Kc

Single signal filter crystal unit. Frequency 455 Kc, ±5 Kc—free from spurious responses within ±7 Kc of fundamental. Designed for intermediate frequency filter in general communications receivers.

Price **$5.00**

TYPE MC9 3105 Kc

This unit is suggested for use in p vate aircraft transmitters operati at 3105 Kc. The crystal is guarante to be within ±.02% of 3105 Kc any temperature between O° C a 50° C and is factory tested for pe formance over this temperature rang Plug-in type holder is gasket seal against moisture and humidity.

Price **$5.50**

TYPE VX2 3105 Kc

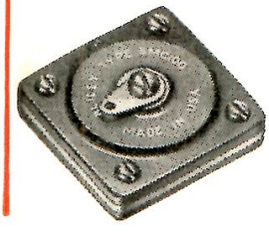
Designed for applications where spa is at a premium, this unit is reco mended for private aircraft comm nication at 3105 Kc. Guaranteed maintain frequency within ±.02 at any temperature between O° C a 50° C. Solder lug connections perm mounting under chassis and asse bly is gasket sealed against moistu and humidity.

Price **$5.00**

TYPE KV3 100 Kc

A precision crystal designed for u in secondary standards. Crystal silver plated and mounted betwe wire supports which are soldered the plated surfaces. Exceptional low drift crystal is adjustable to e actly 100 Kc at 25° C when used recommended oscillator circuit.

Price **$6.95**



TYPE SMC100 100-1000 Kc

Dual frequency crystal provid either 100 Kc or 1000 Kc frequen source. When used in recommend oscillator circuit 1000 Kc frequen is within ±.05% at 25° C and 1 Kc frequency can be adjusted zero beat at 25° C. Suggested for si nal generators used in alignment radio receivers.

Price **$8.75**

For complete dimensional information consult Bulletin 35 available at any Bliley distributor.

Bliley CCO CRYSTAL CONTROLLED OSCILLATO

For instant channel selection and frequency accuracy, radio service technicians use this Bliley test instrument. It provides direct crystal control for alignment. Write for descriptive Bu letin 32.

Complete with 7 Bliley crystals, tubes and concentric output cable..... **$69.50**

MICRO MS SWITCH

A DIVISION OF FIRST INDUSTRIAL CORPORATION

Freeport, Illinois

Branch Offices

CHICAGO 6..308 W. Washington Street
NEW YORK 17.....101 Park Avenue
CLEVELAND 3.....4900 Euclid Avenue
LOS ANGELES 14...1709 West 8th Street
BOSTON 16.....126 Newbury Street

•

The Precise, Small Lightweight, Sensitive Switch for Radio Applications

Micro Switch precision snap-action switches have proved invaluable for applications that call for switching substantial amounts of power by a unit operating in a small space. Micro Switch products are important electrical switching units for electrical mechanisms that make change, package products, control temperatures, heat water, bottle fluids, limit machine tools, record airplane flights, control electronic tubes and perform thousands of other diversified electrical control functions.

MICRO SWITCH Products Meet These Requirements

Small Size . . . No larger than your thumb, the basic, plastic enclosed switch measures 11/16″ x 27/32″ x 1 15/16″.

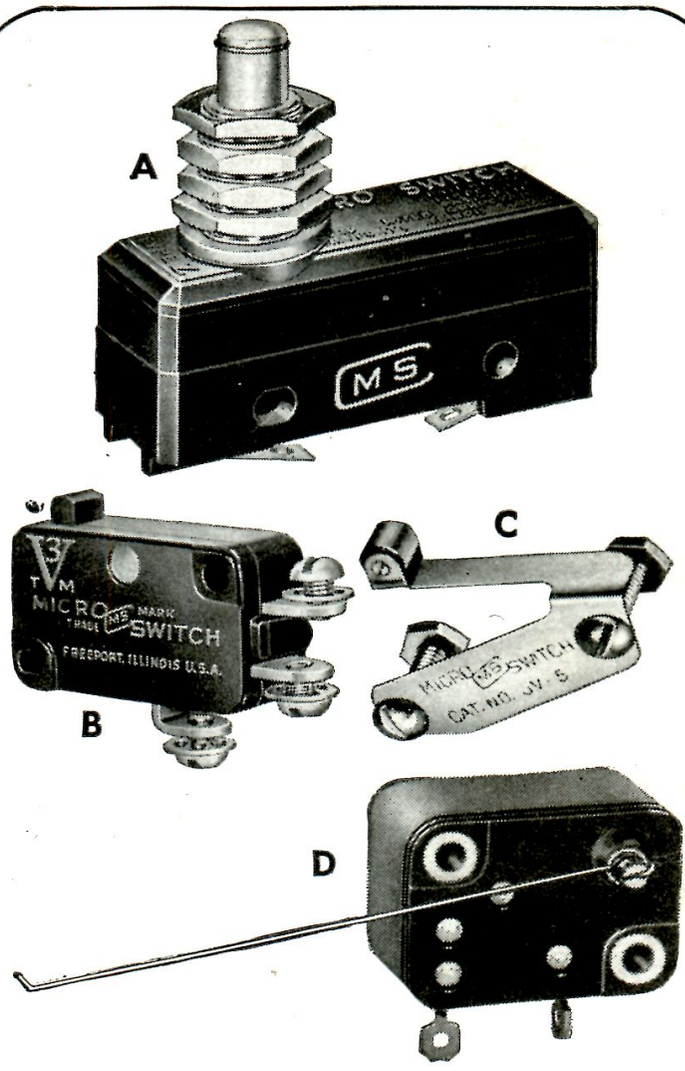
Light Weight . . . With pin-type plunger, the plastic enclosed switch weighs less than one ounce.

Long Life . . . Patented three-bladed beryllium copper spring gives millions of accurate repeat operations.

Small Operating Force . . . Force required to operate the switch may be as little as one ounce . . . or as much as 60 ounces.

Small Operating Movement . . . Movement of the operating plunger may be as little as .0004″.

Good Electrical Capacity . . . Switch is Underwriters' listed and rated at 1200 V.A. at 125 to 460 volts a.c.



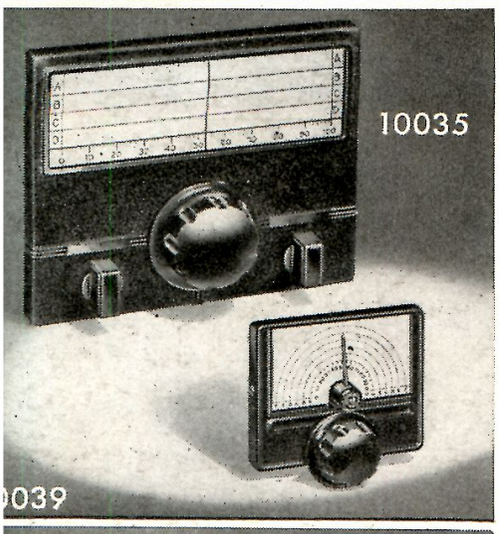
A. General Purpose Basic Switch with panel mounting. This "MICRO" basic switch is handy and useful as a door switch, or as a manual or mechanical push button switch. The threaded stem, with two thin brass hex nuts and two steel lock nuts aids adjustable location with respect to the panel. The internal switch mechanism is protected from excessive overtravel by a stop ring located near the tip of the plunger. This type switch proves both handy and useful.

B. The "MICRO" V3-1 Small Precise Switch. For a switch that must perform in small quarters the "MICRO" V3-1 switch is of a size to meet these requirements. Small but accurate and dependable the V3-1 is provided with two mounting holes, one elongated to provide greater accuracy in locating. Flat bosses on side add to ease of stacking or grouping when requirements demand they be used that way.

C. JV-5 Actuator for use with V3-1 Switch. The JV-5 Auxiliary Actuator with roller is designed for rapid cam or slide actuation of the V3-1 switch. The frame is stainless steel with the oil-impregnated bronze bearing serving as the roller.

D. The "MICRO" V3-12 Switch. Low torque features this switch which can be actuated with .14 ounce-inches—practically a feather touch. Pretravel of the actuating arm is 20° maximum with overtravel 20° minimum. It also features high resistance to shock, and in addition has clean make and break without contact bounce. Being enclosed keeps out dust and dirt and assures trouble-free operation. Time-tested and proved dependability, based on experience gained in making millions of switches, gives users an assurance of freedom from trouble. Actuating wire not furnished.

JAMES MILLEN
MALDEN · MASSACHUSETTS

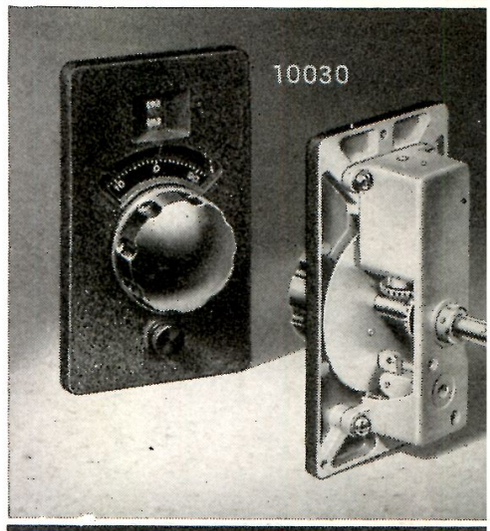


INSTRUMENT DIALS

The No. 10030 is an extremely sturdy instrument type indicator. Control shaft has 1 to 1 ratio. Veeder type counter is direct reading in 99 revolutions and vernier scale permits readings to 1 part in 100 of a single revolution. Has built-in dial lock and ¼" drive shaft coupling. May be used with multi-revolution transmitter controls, etc., or through gear reduction mechanism for control of fractional revolution capacitors, etc., in receivers or laboratory instruments.

The No. 10035 illuminated panel dial has 12 to 1 ratio; size, 8½" x 6½". Small No. 10039 has 8 to 1 ratio; size, 4" x 3¼". Both are of compact mechanical design, easy to mount and have totally self-contained mechanism, thus eliminating back of panel interference. Provision for mounting and marking auxiliary controls, such as switches, potentiometers, etc., provided on the No. 10035. Standard finish, either size, flat black art metal.

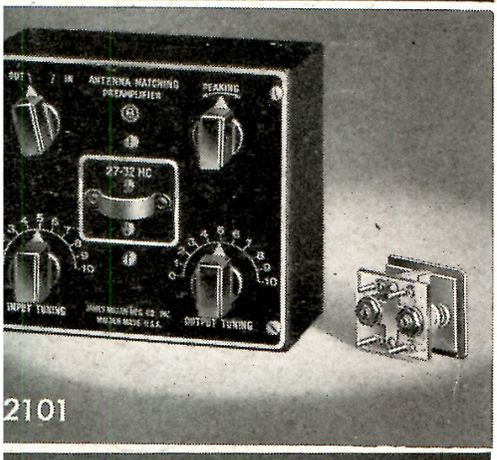
No. 10039 ..... $ 2.70
No. 10030 ..... 25.00
No. 10035 ..... 6.00



PANEL MARKING TRANSFERS

The panel marking transfers have ⅛" block letters. Special solution furnished. Must not be used with water. Equally satisfactory on smooth or wrinkle finished panels or chassis. Ample supply of every conceivable word or marking required for amateur or commercial equipment.

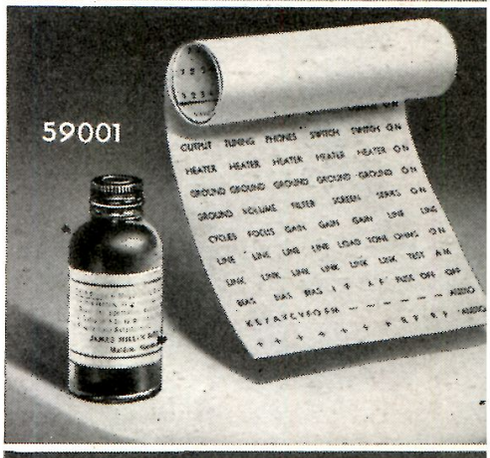
No. 59001, white letters $1.25
No. 59002, black letters 1.25



R9'er MATCHING PREAMPLIFIER

The Millen 92101 is an electronic impedance matching device and a broad-band preamplifier combined into a single unit, designed primarily for operation on 6 and 10 meters. Coils for 20 meter band also available.

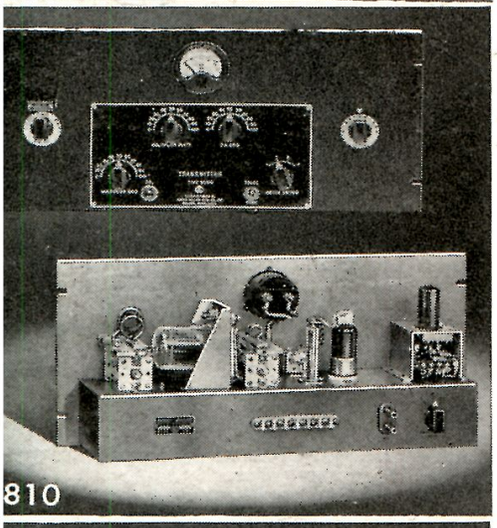
No. 92101, less tubes $24.75



HIGH FREQUENCY TRANSMITTER

The No. 90810 crystal control transmitter provides 75 watt output (higher output may be obtained by the use of forced cooling) on the 10–11, 6 and 2 meter amateur bands. Provisions are made for quick band shift by means of the new 48000 series high frequency plug-in coils.

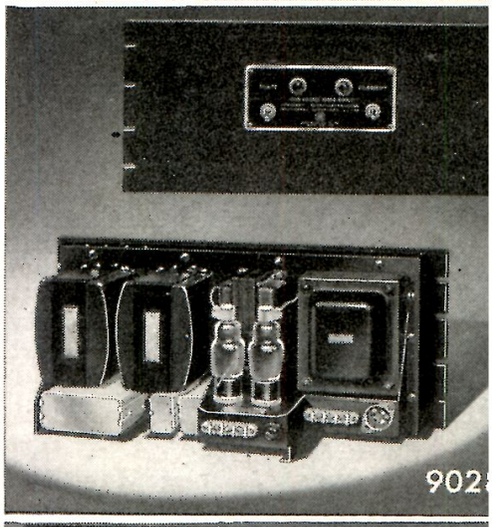
No. 90810, less tubes and crystals $69.75



HIGH VOLTAGE POWER SUPPLY

The No. 90281 high voltage power supply has a d.c. output of 700 volts, with maximum current of 250 ma. In addition, a.c. filament power of 6.3 volts at 4 amperes is also available so that this power supply is an ideal unit for use with transmitters, such as the Millen No. 90800, as well as general laboratory purposes. The power supply uses two No. 816 rectifiers and has a two section pi filter with 10 henry General Electric chokes and a 2-2-10 mfd. bank of 1000 volt General Electric Pyranol capacitors. The panel is standard 8¾" x 19" rack mounting.

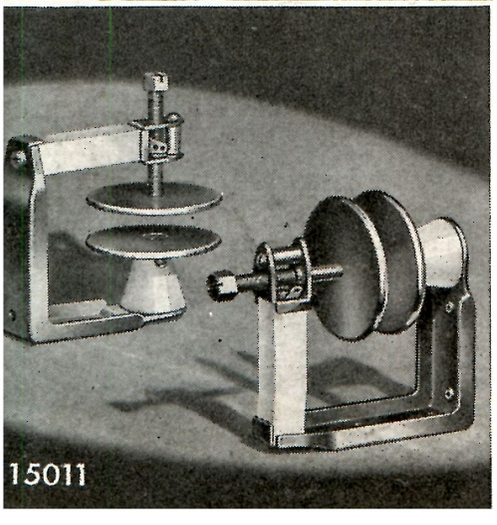
No. 90281, less tubes $84.50



NEUTRALIZING CAPACITOR

Designed originally for use in our own No. 90881 Power Amplifier, the No. 15011 disc neutralizing capacitor has such unique features as rigid channel frame, horizontal or vertical mounting, fine thread over-size lead screw with stop to prevent shorting and rotor lock. Heavy rounded-edged polished aluminum plates are 2" diameter. Glazed Steatite insulation.

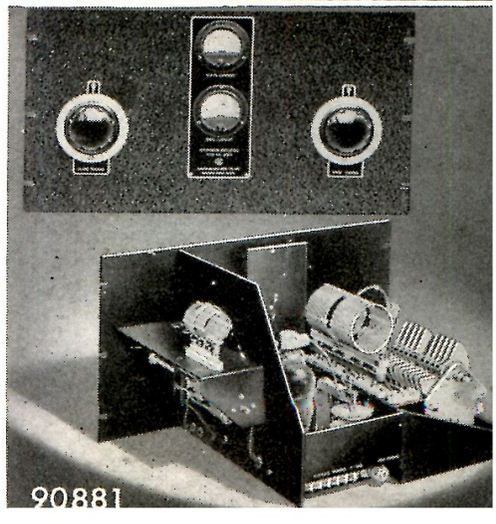
No. 15011 ..... $3.15



RF POWER AMPLIFIER

This 500 watt amplifier may be used as the basis of a high power amateur transmitter or as a means for increasing the power output of an existing transmitter. As shipped from the factory, the No. 90881 RF power amplifier is wired for use with the popular RCA or G.E. "812" type tubes, but adequate instructions are furnished for readjusting for operation with such other popular amateur style transmitting tubes as Taylor TZ40, Eimac 35T, etc. The amplifier is of unusually sturdy mechanical construction, on a 10½" relay rack panel. Plug-in inductors are furnished for operation on 10, 20, 40 or 80 meter amateur bands. The standard Millen No. 90800 exciter unit is an ideal driver for the new No. 90881 RF power amplifier.

No. 90881, with one set of coils, but less tubes $89.50



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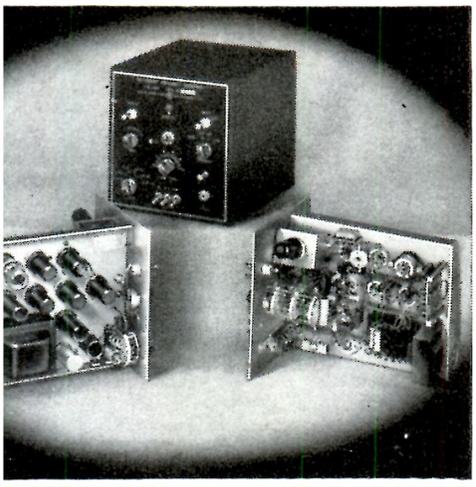
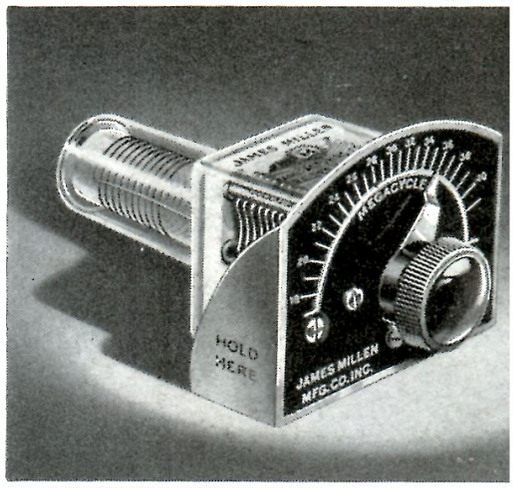


SECONDARY FREQUENCY STANDARD

A precision frequency standard for both laboratory and production uses, adjustable output, provided at intervals of 10, 25, 100 and 1000 kc, with magnitude useful to 50 mc. Harmonic amplifier with tuned plate circuit and panel range switch. 800 cycle modulator with panel control switch. In addition to oscillators, multivibrators, modulators and amplifiers, a built-in detector with phone jack and gain control is incorporated. Self-contained power supply.

Model 90505, with tubes..... $155.00



ABSORPTION WAVEMETERS

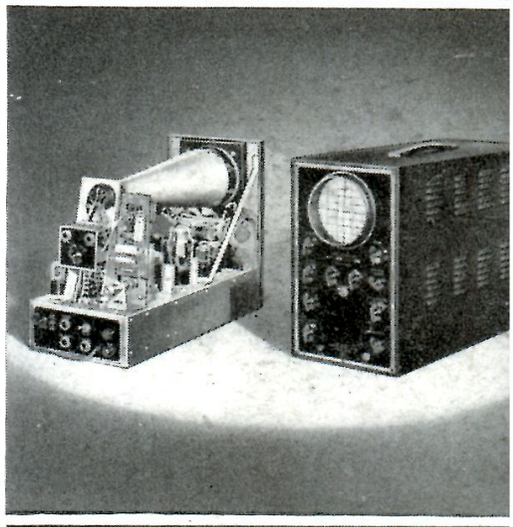
The 90600 series of absorption wavemeters are available in several styles and many different ranges. Most popular is kit of four units, covering range of 3.0 to 140 mc.

Model 90600..... $18.00

FREQUENCY CALIBRATORS

The cavity type frequency calibrator covers a range of 200 to 700 mc., with a maximum error of not over 0.25%. This range is covered by two plug-in cavity type tuning units, which may be easily interchanged. The calibrator consists of an accurately calibrated cavity-type tuning unit, a crystal detector, a two-stage video amplifier and a peak reading VT voltmeter.

Model 90630, with tubes..... $375.00



SYNCHROSCOPES

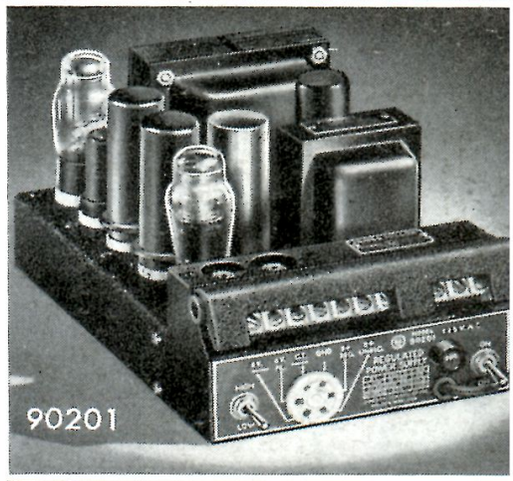
The 5″ synchroscopes are available with and without detector-video strips.

Model P-4, with tubes..... $300.00
Model P-4E, with tubes..... 395.00

OSCILLOSCOPES

The basic type 2″ oscilloscope is complete with power supply, focusing and centering controls and 60 cycle sweep, for use in normal form for transmitter monitoring or as basic unit for addition of specially designed external sweeps, amplifiers, etc., for specialized applications.

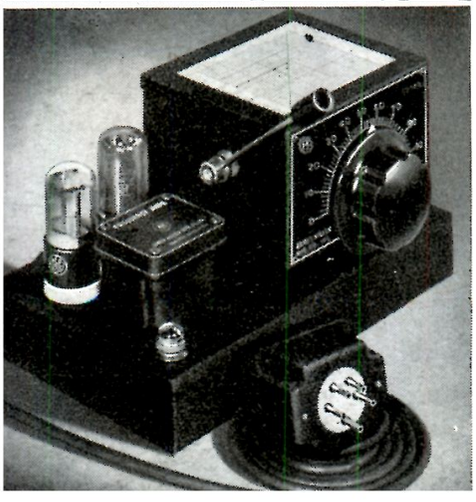
Model 90902, less tubes..... $42.50



REGULATED POWER SUPPLIES

A compact, uncased, regulated power supply, either for table use in the laboratory or for incorporation as an integral part of larger equipments. 50 watts, with regulated voltage from 0 to 200 volts.

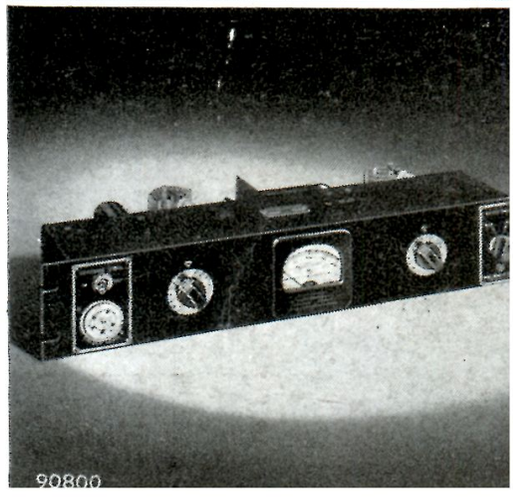
Model 90201, less tubes..... $100.00



FREQUENCY SHIFTER

A favorite frequency shifter, plugs in, in place of crystal, for instant finger-tip control of carrier frequency. Low drift, chirpless keying, vibration immune, big band spread, accurate calibration.

Model 90700, with tubes..... $42.50



50 WATT TRANSMITTER

Based on an original Handbook design, this flexible unit is ideal for either low power amateur band transmitter use or as an exciter for high power PA stages.

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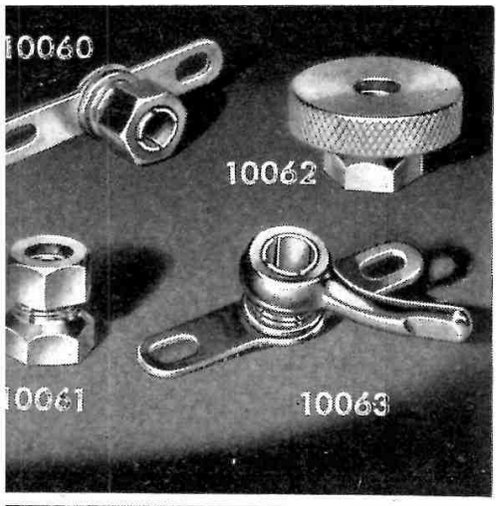


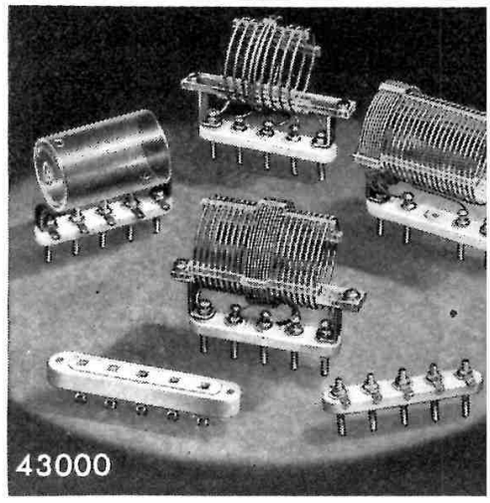
SHAFT LOCKS

In addition to the original No. 10060 and No. 10061 "DESIGNED FOR APPLICATION" shaft locks, we can also furnish such variations as the No. 10062 and No. 10063 for easy thumb operation as illustrated above. The No. 10061 instantly converts any plain "¼ shaft" volume control, condenser, etc. from "plain" to "shaft locked" type. Each to mount in place of regular mounting nut.

No. 10060	$.36
No. 10061	.36
No. 10062	.45
No. 10063	.45

TRANSMITTING TANK COILS

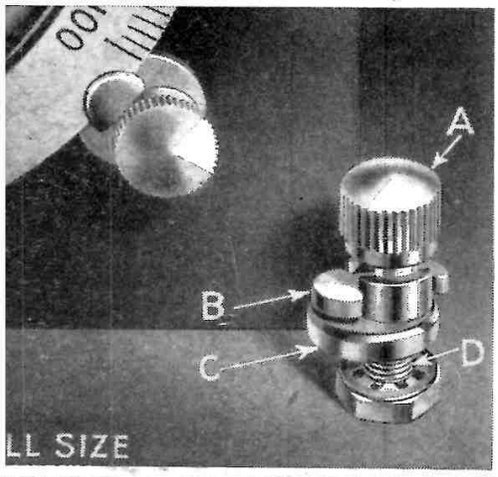
A full line—all popular wattages for all bands. Send for special catalog.



DIAL LOCK

Compact, easy to mount, positive in action, does not alter dial setting in operation! Rotation of knob "A" depresses finger "B" and "C" without imparting any rotary motion to Dial. Single hole mounted.

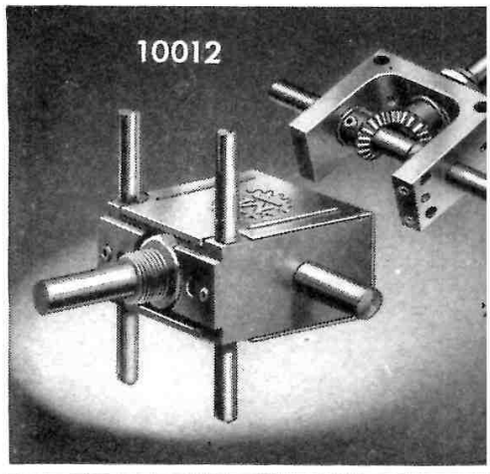
No. 10050 ..... $.45



RIGHT ANGLE DRIVE

Extremely compact, with provisions for many methods of mounting. Ideal for operating potentiometers, switches, etc., that must be located, for short leads, in remote parts of chassis.

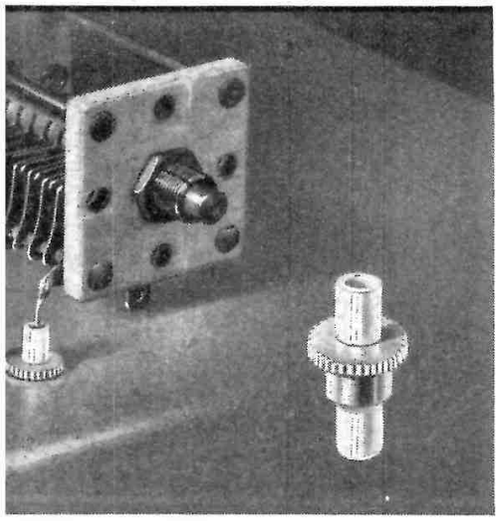
No. 10012 ..... $3.75



THRU-BUSHING

Efficient, compact, easy to use and neat appearing. Fits ¼" hole in chassis. Held in place with a drop of solder or a "nick" from a crimping tool.

No. 32150 ..... $.05



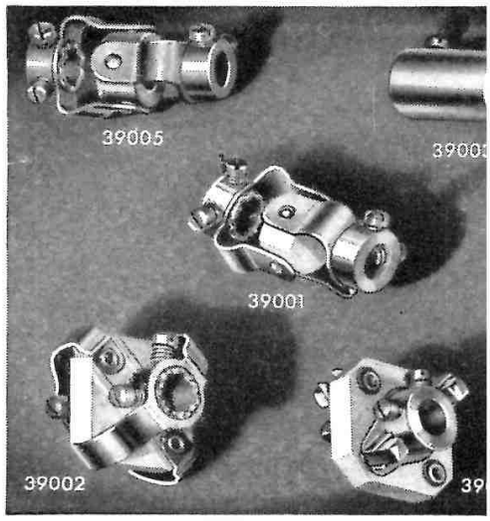
FLEXIBLE COUPLINGS

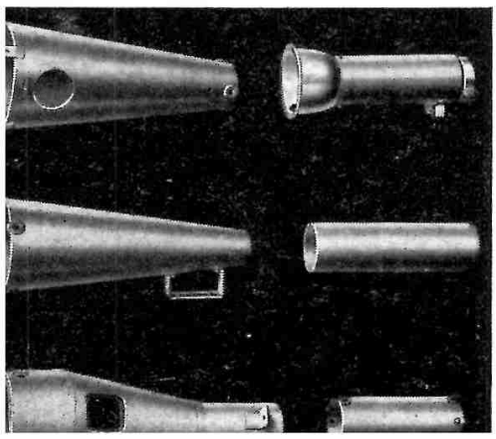
The No. 39000 series of Millen "Designed for Application" flexible coupling units include, in addition to improved versions of the conventional types, also such exclusive original designs as the No. 39001 insulated universal joint and the No. 39006 "slide-action" coupling (in both steatite and bakelite insulation).

The No. 39006 "slide-action" coupling permits longitudinal shaft motion, eccentric shaft motion and out-of-line operation, as well as angular drive without backlash.

The No. 39005 is similar to the No. 39001, but is not insulated and is designed for applications where relatively high torque is required. The steatite insulated No. 39001 has a special anti-backlash ball and socket grip feature, which, however, limits its serviceable operation to torques of six inch-pounds, or less. All of the above illustrated units are for ¼" shaft and are standard production type units.

No. 39001	$.36
No. 39002	.36
No. 39003	.21
No. 39005	.36
No. 39006	.36



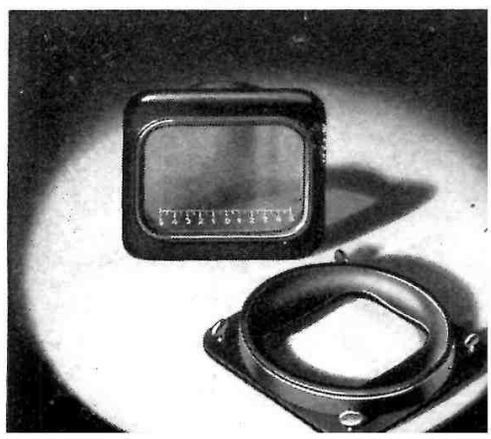


CATHODE RAY TUBE SHIELDS

For many years we have specialized in the design and manufacture of magnetic metal shields of nicoloi and mumetal for cathode ray tubes in our own complete equipment, as well as for applications of all other principal complete equipment manufacturers. Stock types as well as special designs to customers' specifications promptly available.

BEZELS FOR CATHODE RAY TUBES

Bezel of cast aluminum with black wrinkle finish. Complete with neoprene cushion, green lucite filter scale and four "behind the panel" thumb screws for quick detachment from panel when inserting tube.



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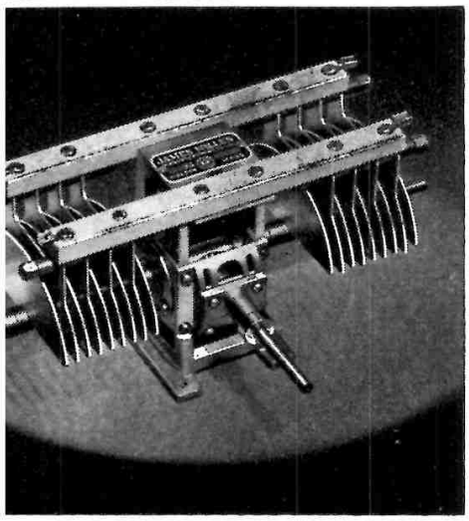
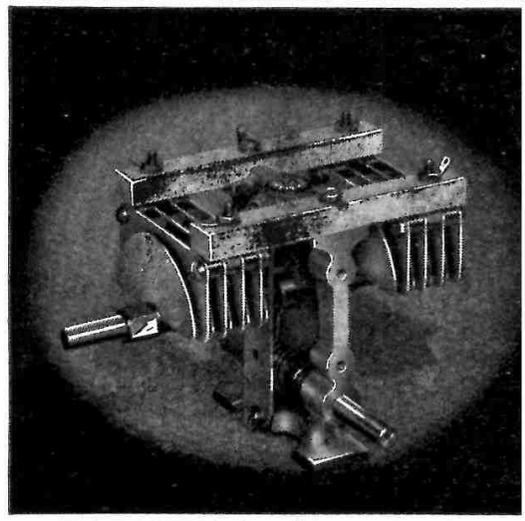


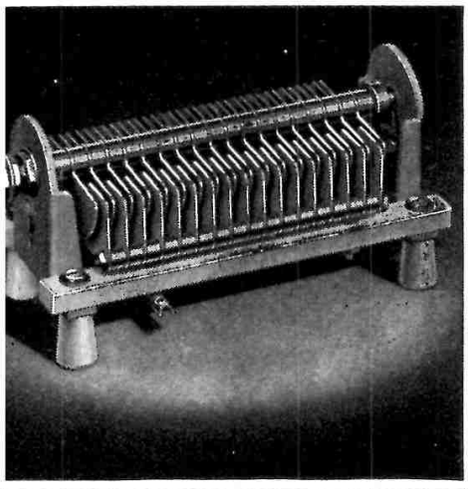
04000 and 11000 SERIES TRANSMITTING CONDENSERS

A new member of the "Designed for Application" series of transmitting variable air capacitors is the 04000 series with peak voltage ratings of 3000, 6000, and 9000 volts. Right angle drive, 1–1 ratio. Adjustable drive shaft angle for either vertical or sloping panels. Sturdy construction, thick, round-edged, polished aluminum plates with 1¾" radius. Constant impedance, heavy current, multiple finger rotor contactor of new design. Available in all normal capacities.

The 11000 series has 16/1 ratio center drive and fixed angle drive shaft.

Code	*Volts*	*Capacity*	*Price*
11035	3000	35	$ 6.90
11050	3000	50	7.14
11070	3000	70	7.80
04050	6000	50	16.00
04060	9000	60	18.00
04100	6000	90	18.00
04200	3000	205	20.00

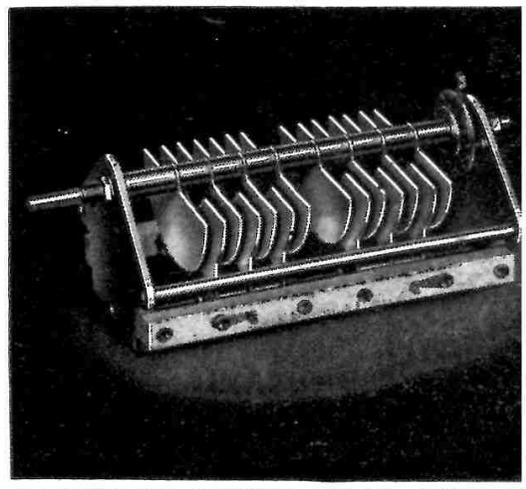


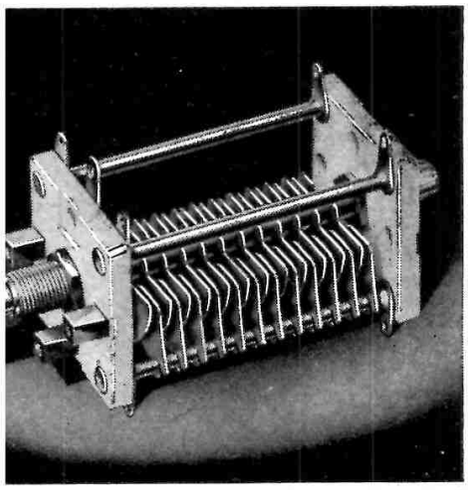


12000 and 16000 SERIES TRANSMITTING CONDENSERS

Rigid heavy channeled aluminum end plates. Isolantite insulation, polished or plain edges. One piece rotor contact spring and connection lug. Compact, easy to mount with connector lugs in convenient locations. Same plate sizes as 11000 series above.

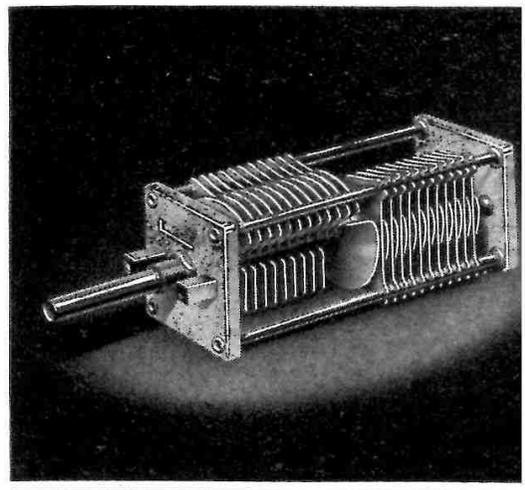
The 16000 series has same plate sizes as 04000 series. Also has constant impedance, heavy current, multiple finger rotor contactor of new design. Both 12000 and 16000 series available in single and double sections and many capacities and plate spacing.

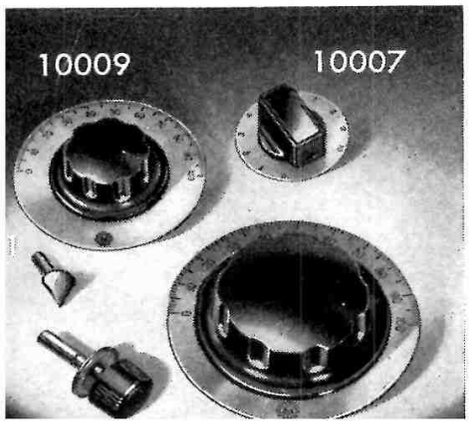




THE 28000–29000 SERIES VARIABLE AIR CAPACITORS

"Designed for Application," double bearings, steatite end plates, cadmium or silver plated brass plates. Single or double section .022" or .066" air gap. End plate size: 19/16" x 11/16". Rotor plate radius: ¾". Shaft lock, rear shaft extension, special mounting brackets, etc., to meet your requirements. The 28000 series has semi-circular rotor plate shape. The 2900 series has approximately straight frequency line rotor plate shape. Prices quoted on request. Many stock sizes.





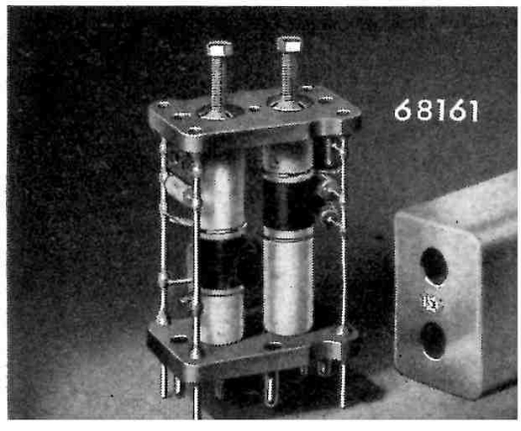
DIALS

Just a few of the many stock types of small dials and knobs are illustrated herewith. 10007 is 1⅝" diameter, 10009 is 2½" and 10008 is 3½".

No. 10007	$ .60
No. 10008	1.00
No. 10009	.85
No. 10021	.15
No. 10065	.36

I.F. TRANSFORMERS

The Millen "Designed for Application" line of I.F. transformers includes air condenser tuned, mica condenser tuned and permeabil-



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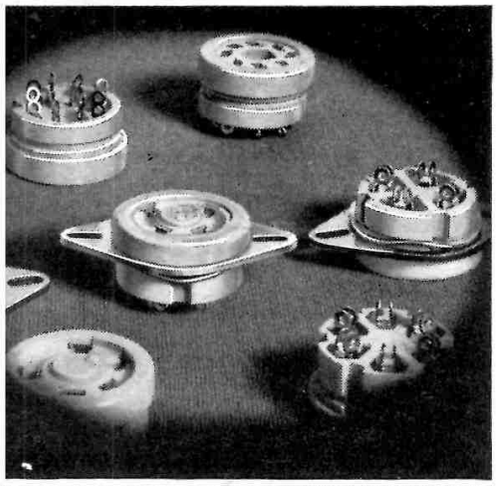


TUBE SOCKETS DESIGNED FOR APPLICATION

MODERN SOCKETS for MODERN TUBES! Long Flashover path to chassis permits use with transmitting tubes, 866 rectifiers, etc. Long leakage path between contacts. Contacts are type proven by hundreds of millions already in government, commercial and broadcast service, to be extremely dependable. Sockets may be mounted either with or without metal flange. Mounts in standard size chassis hole. All types have barrier between contacts and chassis. All but octal and crystal sockets also have barriers between individual contacts in addition.

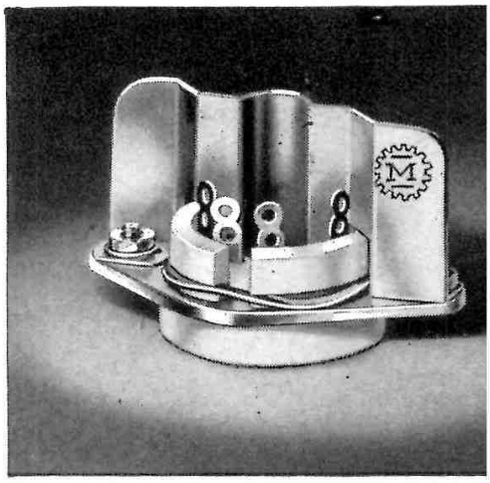
The No. 33888 shield is for use with the 33008 octal socket. By its use, the electrostatic isolation of the grid and plate circuits of single-ended metal tubes can be increased to secure greater stability and gain.

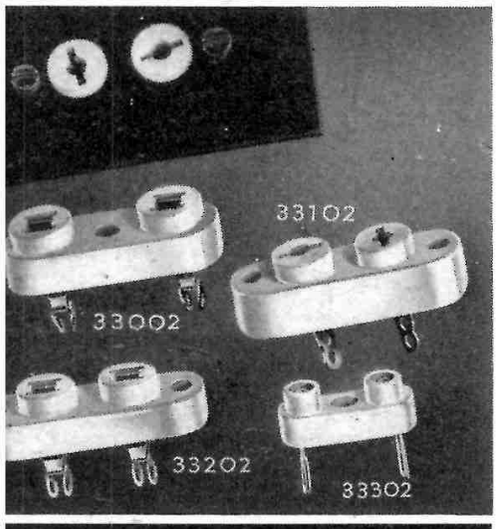
The 33087 tube clamp is easy to use, easy to install, effective in function. Available in special sizes for all types of tubes. Single hole mounting. Spring steel, cadmium plated.

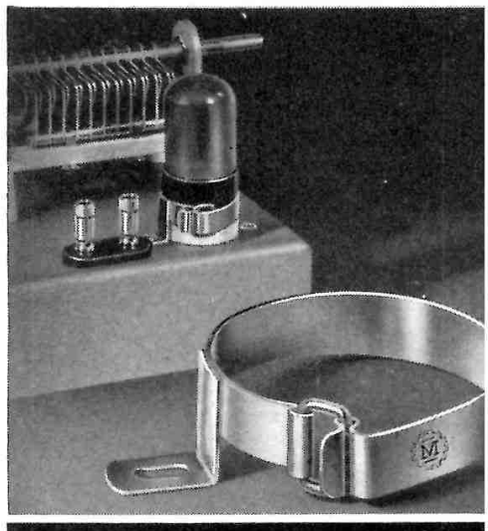
Cavity Socket Contact Discs, 33446 are for use with the "Lighthouse" ultra high frequency tube. This set consists of three different size unhardened beryllium copper multi-finger contact discs. Heat treating instructions forwarded with each kit for hardening after spinning or forming to frequency requirements.

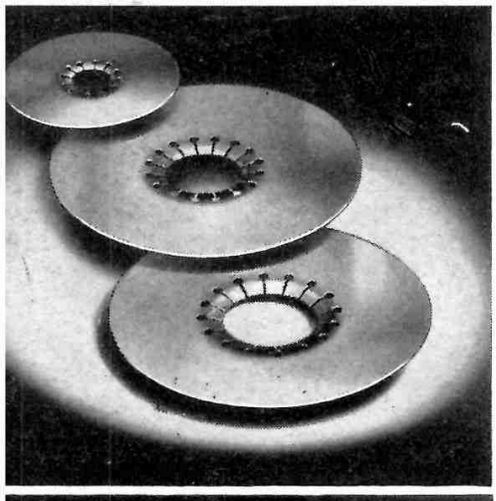
Voltage regulator dual contact bayonet socket, 33991 black Bakelite insulation and 33992 with low loss high leakage mica filled Bakelite insulation.

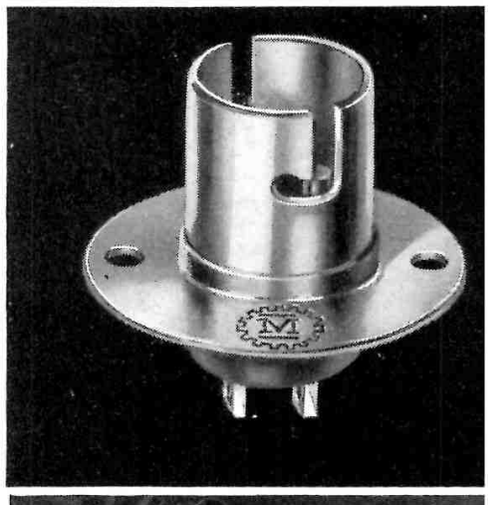
No. 33004	$ .27
No. 33005	.27
No. 33006	.27
No. 33007	.34
No. 33008	.27
No. 33888	.18
No. 33087	.30
No. 33002	.25
No. 33102	.25
No. 33202	.25
No. 33302	.21
No. 33446	5.00
No. 33991	.45
No. 33992	.55







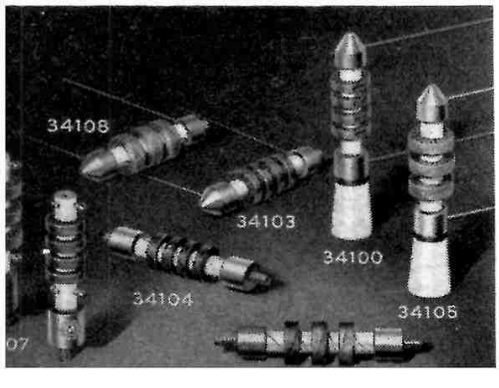


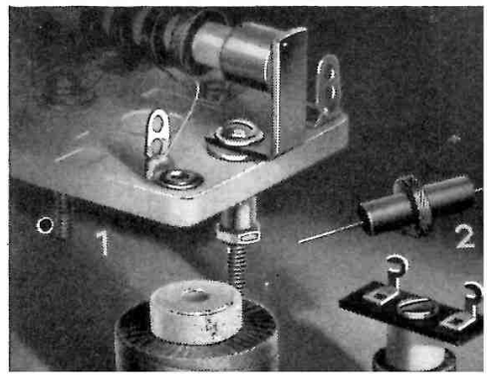


RF CHOKES

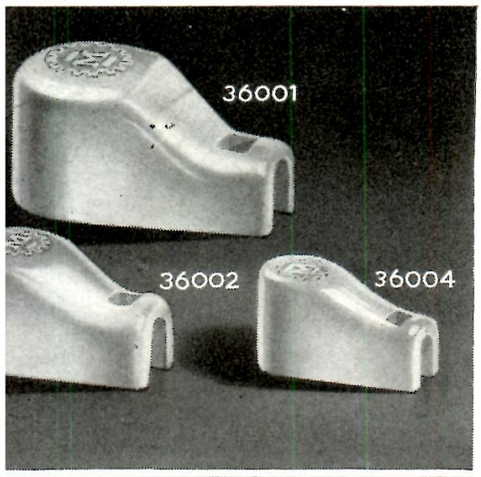
Many have copied, few have equalled, and none have surpassed the genuine original design Millen Designed for Application series of midget RF Chokes. The more popular styles now in constant production are illustrated herewith. Special styles and variations to meet unusual requirements quickly furnished on high priority.

General Specifications: 2.5 mH, 250 mA for types 34100, 34101, 34102, 34103, 34104, and 1 mH, 300 mA for types 34105, 34106, 34107, 34108, 34109.





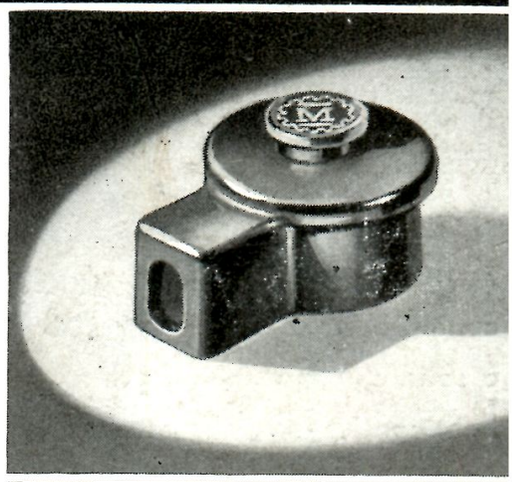
JAMES MILLEN
MALDEN · MASSACHUSETTS



CERAMIC PLATE OR GRID CAPS

Soldering lug and contact one-piece. Lug ears annealed and solder dipped to facilitate easy combination "mechanical plus soldered" connection of cable.

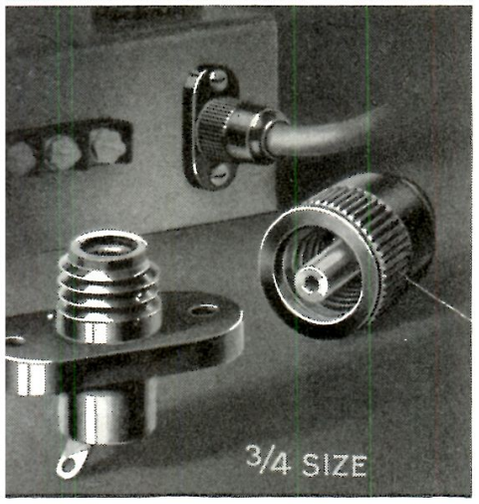
No. 36001—9/16"	$.21
No. 36002—⅜"	.21
No. 36004—¼"	.21



SNAP LOCK PLATE CAP

For Mobile, Industrial and other applications where tighter than normal grip with multiple finger 360° low resistance contact is required. Contact self-locking when cap is pressed into position. Insulated snap button at top releases contact grip for easy removal without damage to tube.

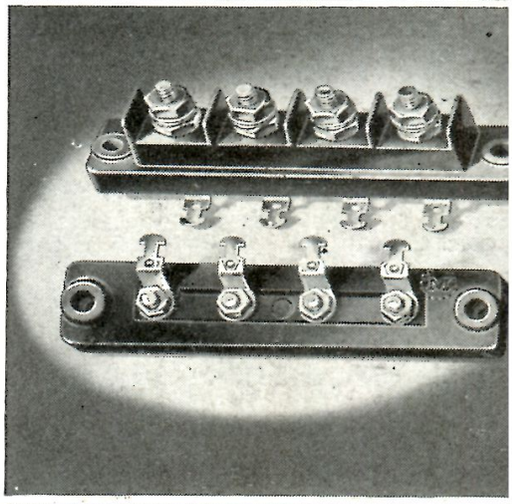
No. 36011—9/16"	$.60



SAFETY TERMINAL

Combination high voltage terminal and thru-bushing. Tapered contact pin fits firmly into conical socket providing large area, low resistance connection. Pin is swivel mounted in cap to prevent twisting of lead wire.

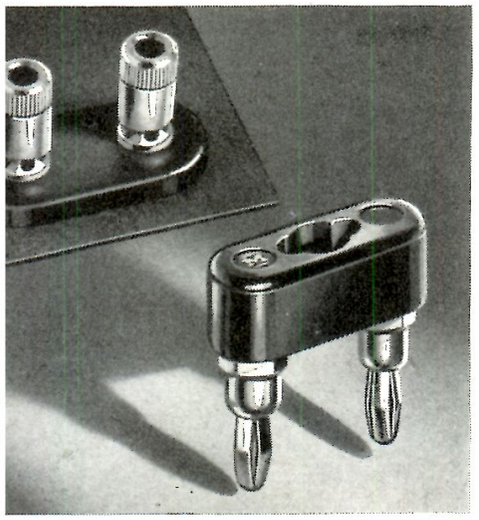
No. 37001, Black or Red	$.40
No. 37501, Low loss	.55



TERMINAL STRIP

A sturdy four-terminal strip of molded black Textolite. Barriers between contacts. "Non turning" studs, threaded 8/32 each end.

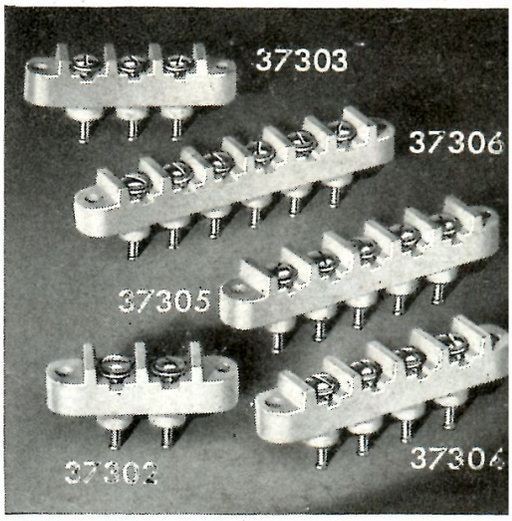
No. 37104	$.60



POSTS, PLATES and PLUGS

Designed for Application! Compact, easy to use. Made in black and red regular bakelite as well as low loss brown mica filled bakelite for R.F. uses. Posts have captive head.

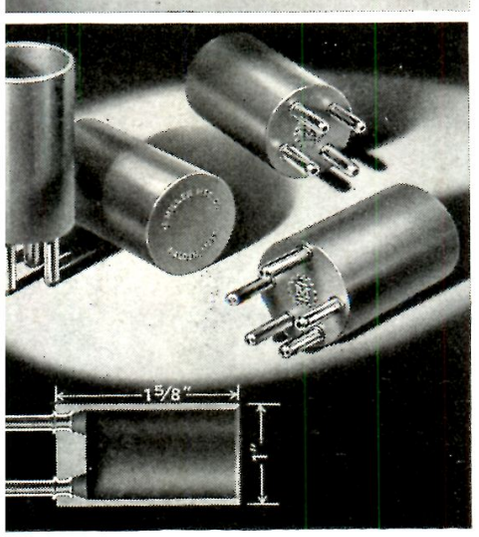
No. 37202 Plates	$.30
No. 37212 Plugs	.70
No. 37222 Posts	.40



STEATITE TERMINAL STRIPS

Terminal and ug are one piece. Lugs are Navy turret type and are free floating so as not to strain steatite during wide temperature variations. Easy to mount with series of round holes for integral chassis bushings.

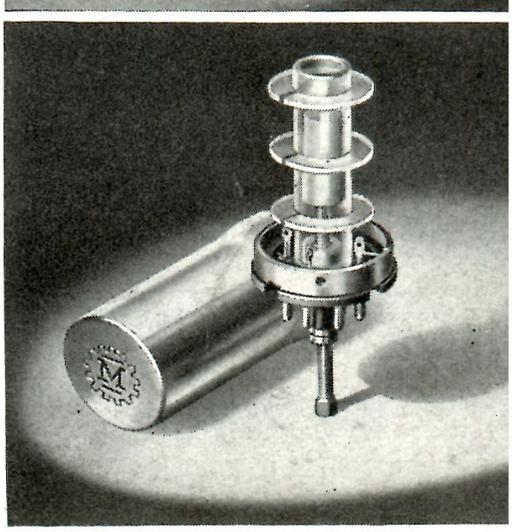
No. 37302	$ .60
No. 37303	.70
No. 37304	.80
No. 37305	.90
No. 37306	1.00



MIDGET COIL FORMS

Made of low loss mica filled brown bakelite. Guide funnel makes for easy threading of leads through pins.

No. 45000	$.45
No. 45004	.45
No. 45005	.35



TUNABLE COIL FORM

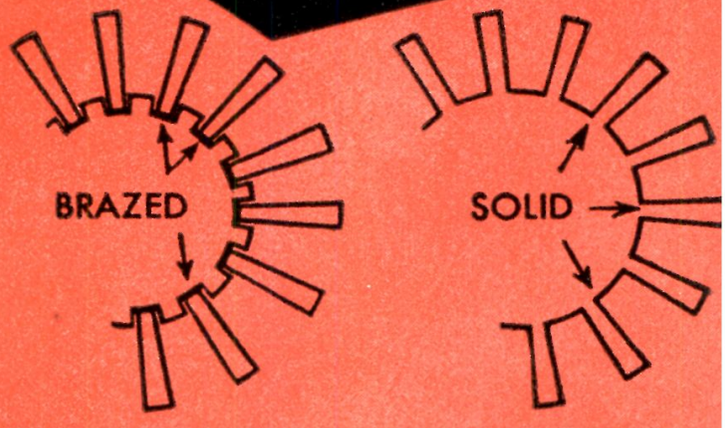
Standard octal base of low loss mica-filled bakelite, polystyrene ½" diameter coil form, heavy aluminum shield, iron tuning slug of high frequency type, suitable for use up to 35 mc. Adjusting screw protrudes through center hole of standard octal socket.

No. 74001, with iron core	$1.85
No. 74002, less iron core	1.50

the LITTLE differences

We know that our brazing techniques are as good as can be . . . but we also know that you can't always be sure of perfect heat conduction through the brazed metals.

For that reason, we've developed a method of cutting our radiators for the 8002-R out of a solid chunk of metal; giving us a perfect heat conducting path between the core and its fins. This prevents "spot heating" of the tube's copper anode.



It's quite a trick to slice those cooling fins so that they radiate equally from the center and do not vary in thicknes. But we mastered it!

And we have hundreds of other "little differences" in the design and construction of the many, many types of transmitting, rectifying and special purpose tubes that comprise the extensive Amperex line.

It's these little differences that combine to make the BIG difference when you

re-tube with Amperex

make the BIG difference

AMPEREX ELECTRONIC CORP.
25 WASHINGTON STREET, BROOKLYN 1, N. Y.
In Canada and Newfoundland: Rogers Majestic Limited
11-19 Brentcliffe Road, Leaside, Toronto, Ontario, Canada

Collins

transmitters, exciters, receiver and variable frequency oscillator for Amateurs

The Collins ham gear illustrated and described on the following three pages is all of completely new postwar design. It is engineered specifically for amateurs, and reflects a long, successful experience in developing the most advanced types of radio communication equipment for amateur, commercial and military uses.

Collins engineering is evident in every detail of this equipment, from input to output. Cabinets, chassis units, and critical components such as variable pitch machine-wound coils (for precise linear tuning) are Collins-made. Purchased components are made to Collins specifications and must meet those specifications under searching tests before acceptance. Assembly, wiring, sub-assembly and assembly tests, final tests and adjustments, are held to wartime standards.

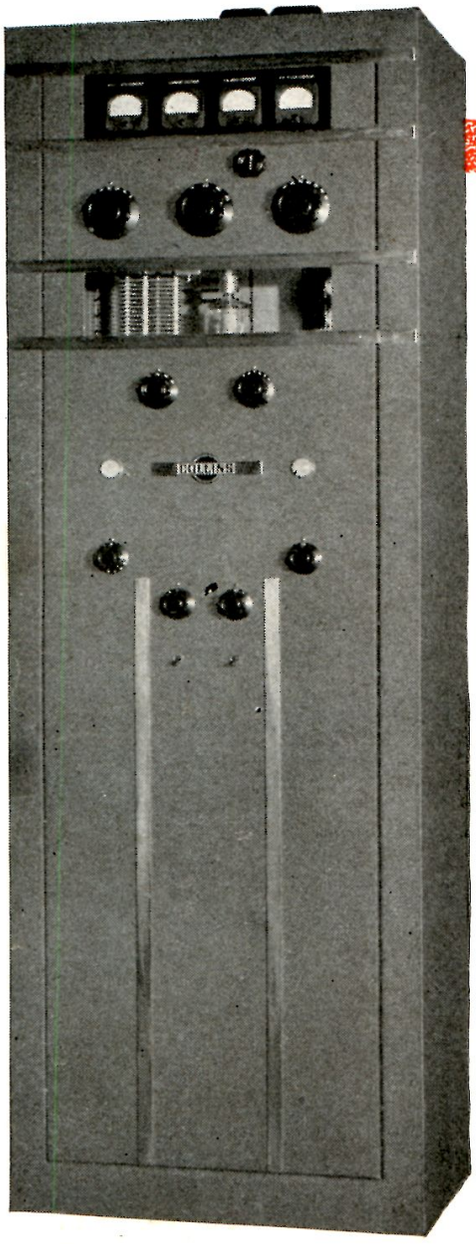
It is our intention to furnish the serious amateur with equipment that will give him the best performance that can be had, at reasonable cost. Users of this new equipment are expressing enthusiastic satisfaction.

Write to any of our offices, below, for illustrated bulletins fully describing the Collins amateur equipment in which you are interested.

For best results in amateur radio, it's . .

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 West 42nd Street, New York 18, N. Y. • 458 South Spring Street, Los Angeles 13, Cal.



30K-1 TRANSMITTEI

500 watts CW, 375 watts phone inpı

The Collins 30K-1 is a versatile, reliable bandswitching transmitter f the 80, 40, 20, 15, 11 and 10 meter bands. It has an audio peak clippi circuit which permits running the audio gain at a high level, thus mai taining a high level of modulation. With the circuit set to become ope ative at 90% modulation, the carrier will not be overmodulated; and t increased audio power in the carrier side bands strengthens the sign and improves intelligibility.

Bandswitching eliminates coil changing with the exception of t antenna tuning network, in which an antenna impedance matching c cuit is incorporated. Two separate plug-in coils are supplied for th position, one covering 80 and 40 meters, the other covering 20, 15, 11 a 10 meters. This circuit efficiently couples the 30K-1 to any antenna transmission lines approximating an integral number of ¼ or ½ wa lengths.

TUBE LINE-UP:
1—4-125A r-f power amplifier
1—6SJ7 speech amplifier
1—6SN7 audio amplifier
1—6H6 speech clipper
1—6B4G modulator driver
2—75TH Class B modulators
1—5R4GY bias rectifier
1—5R4GY low voltage rectifier
2—866A high voltage rectifiers

Dimensions: 22″ wide, 16½″ deep, 66½″ high.

Power source: 115 volts a-c, 60 cps, single phase.

Net price (complete with tubes), including 310A-1 Exciter Ur (complete with tubes), Microphone Cord, R.F. Cable, Power Cabl and Instruction Book, F.O.B. Cedar Rapids, Iowa.....$1,450.

310A EXCITER UNIT

The bandswitching 310A exciter unit for the 30K-1 has a highly stable permeability tuned oscillator. All circuits are ganged together and controlled by a single tuning knob. The band-lighted dial is calibrated directly in frequency and is adjusted at the factory to an accuracy of better than one dial division on 40 meters. Accuracy on the other bands is directly proportional to the harmonic utilized. The output circuit is also adjusted at the factory for proper excitation of the 30K-1.

Dimensions: 17¼″ wide, 12½″ deep, 10½″ high.

Power source: 115 volts a-c, 60 cps, single phase.

TUBE LINE-UP:
1—6SJ7 PTO
1—6AG7 buffer amplifier
1—6AG7 doubler
1—807 multiplier
1—807 output
2—VR105 voltage regulato
1—5R4GY rectifier
1—6x5 bias rectifier

FINEST COLLINS EVER MADE

75A RECEIVER

80, 40, 20, 15, 11 and 10 meter bands

Double conversion and crystal filter controls, with a high frequency first i-f and a low frequency second i-f, provide approximately 50 db image rejection, even on 10 meters, and a band width that is variable in 5 steps from 4 kc to 200 cycles at 2X down. A 2 microvolt r-f signal across the antenna terminals gives normal output with approximately 6 db signal to noise ratio. Precision quartz crystals in the first conversion circuit, the inherent accuracy and stability of the Collins v.f.o. in the second conversion circuit, and linearity and lack of backlash in the tuning mechanism, all contribute to extreme accuracy and stability. Visual tuning is adjusted at the factory to better than 1 division of the band-lighted dial, which reads directly in frequency. Line voltage fluctuations from 90 to 120 volts cause the pitch of a code signal to change less than 100 cycles at 21,500,000 cycles (no voltage regulator tube used).

Dimensions: 21⅛" wide, 12¼" high, 13⅞" deep.

Power source: 115 volts a-c, 60 cps, single phase.

Net price, complete with 14 tubes (including rectifier), Speaker and Cabinet assembly, and Instruction Book, F.O.B. Cedar Rapids, Iowa. . . . $375.00

32V TRANSMITTER

50 watts CW, 120 watts phone

A receiver-type cabinet houses the complete band-switching transmitter—r-f (v.f.o. controlled), audio, power supply, and a network for antenna tuning and impedance matching. The v.f.o. is more accurate and stable than most crystals used by amateurs. All stages except the final are permeability tuned. The 32V can be visually tuned with a high degree of accuracy directly in frequency on the band-lighted dial. Audio distortion is less than 8% at 90% modulation with 1000 cps input. The frequency response is within 2 db from 200-3000 cps. Frequency coverage: 80, 40, 20, 15, 11 and 10 meter bands. The 32V may be used for either permanent or portable installations. The only requirements are a simple antenna, a 115 volt a-c power source, and a key or microphone. It may also be used to drive a kilowatt final r-f stage and modulator.

Net price, complete with tubes and Instruction Book, F.O.B. Cedar Rapids, Iowa. $475.00

TUBE LINE-UP:

1—6SJ7 oscillator
1—6AK6 class A r-f buffer
1—6AG7 harmonic amplifier
1—7C5 buffer doubler
1—7C5 buffer doubler
1—4D32 r-f power amplifier
1—6SL7 audio amplifier
1—6SN7 audio amplifier
2—807 modulators
1—5Z4 L. V. rectifier
2—5R4GY H. V. rectifiers
1—OA3/VR75 bias regulator

COLLINS PTO EXCITER UNITS

The Collins 310B-1 and 310C-2 exciters provide not only the flexibility and convenience of variable frequency, but also the accurate calibration and high stability inherent in the Collins 70E-8 permeability tuned oscillator. Frequency is read directly from the dial with precision comparable to that of crystals. There are no reference charts or curves to interpolate. Like all Collins equipment shown on these pages, the 310B-1 and 310C-2 are engineered for extreme frequency stability in spite of line voltage fluctuations.

Both of these exciters have self-contained power supplies. A third, the 310C-1, is similar to the 310C-2, minus power supply.

Net prices, complete with tubes and Instruction Book, F.O.B. Cedar Rapids, Iowa.

310B-1 Exciter Unit	**$190.00**
310C-1 Exciter Unit	**85.00**
310C-2 Exciter Unit	**100.00**

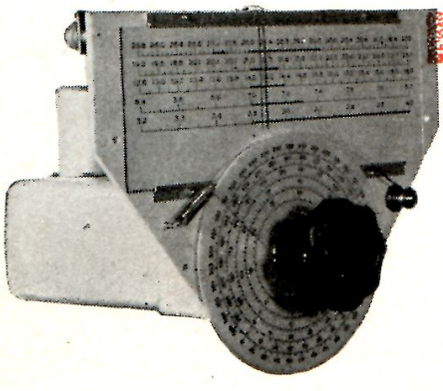
310B-1

The 310B-1 is a versatile bandswitching exciter unit, conservatively rated at 15 watts output on all amateur bands under 32 megacycles, and can be used as a complete low power cw transmitter. It has ample drive for a kilowatt final utilizing the new pentode tubes available. With additional multiplication it makes an excellent frequency control for amateur bands in the VHF and UHF regions.

310C-2

The 310C-2 consists of a 70E-8 PTO and a multiplier, with an r-f output of approximately 80 volts rms across 40,000 ohms. Its frequency range is from 3.2 mc to 4.0 mc. Its output can be plugged into the crystal socket, or applied to the grid of an 807 buffer stage, thus providing a versatility far greater than any number of crystals, while at the same time maintaining crystal accuracy and stability.

70E-8 VARIABLE FREQUENCY OSCILLATOR



The Collins 70E-8 v.f.o., which is incorporated in the 310B-1, 310C-1 and 310C-2 exciters above, may be purchased separately as illustrated. It is permeability tuned, and has a linear range of 1600 kc-2000 kc. Its overall accuracy and stability are of a very high degree. A secondary frequency standard, continually checked against WWV, is used in the factory calibration of the 70E-8. A special corrector mechanism in the oscillator produces the linear calibration curve. Sixteen turns of the vernier dial are required to cover the 400 kc range. This v.f.o. may be used in an exciter, or in many types of measuring instruments such as heterodyne frequency meters and band-edge spotters.

Net price, complete with tube, Collins type 305H-2 Dial Assembly and Instruction Book, F.O.B. Cedar Rapids, Iowa.....$40.00

You're Looking at the Finest—

—a complete Hammarlund station

The **"HQ-129-X" RECEIVER** is designed to meet the demands of the most critical amateurs. Its design includes every feature essential to finest performance.

The "HQ-129-X" has a continuous range from .54 to 31 megacycles in six separately calibrated bands with continuous bandspread on the four higher bands. In addition, the bandspread dial is calibrated for each of the four most important amateur bands—3.5–4 mc, 7–7.3 mc, 14–14.4 mc and 28–30 mc.

The "HQ-129-X" has the Hammarlund patented variable wide-band crystal filter which works exceptionally well on phone or short wave broadcast signals. There are many other features: Variable antenna compensator, beat oscillator, voltage regulator, series noise limiter, send-receive switch, automatic volume control, calibrated "S" meter, audio gain control, sensitivity control—plus all that goes into a receiver built by engineers who have spent a lifetime designing commercial communication equipment.

The "HQ-129-X" is available complete in a two-tone gray finish including tubes and a 10 inch P. M. dynamic speaker.

"HQ-129-X" with speaker.....**Net Price $189.15**

Send for twenty-page technical booklet

The **"FOUR-20" TRANSMITTER** is a complete crystal controlled CW unit with a full 20 watts output at the antenna terminals on all amateur bands from 80 through 10 meters. The oscillator and multiplier stages are controlled by MONO-SEQUENCE tuning, a Hammarlund development which tunes four circuits to four different, but harmonically related frequencies, by means of one control.

All stages except the final can be switched to any band by means of the band change switch. The final stage uses plug-in coils. Stability is assured by means of an improved oscillator circuit. A tap on the output coil assures a match between the output of the transmitter and any transmission line from 50 to 600 ohms.

FOUR-20 with 10 meter coil.....**Net Price $120.00**
20 meter coil.....**Net Price 2.70**
40 meter coil.....**Net Price 2.70**
80 meter coil.....**Net Price 2.70**

The **"FOUR-11" MODULATOR** is designed for use with the Four-20 when phone operation is desired. A complete audio system with built-in power supply the Four-11 will produce more than enough power to modulate the 807 final of the transmitter.

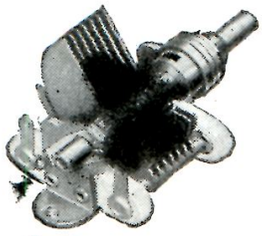
FOUR-11 with 8000 ohm output.....**Net Price $72.50**
FOUR-11 with 600 ohm output.....**Net Price 73.50**

Send for technical booklet

HAMMARLUND MANUFACTURING CO., INC., 460 West 34th Street, New York 1, N. Y.

HAMMARLUND

SINCE 1910

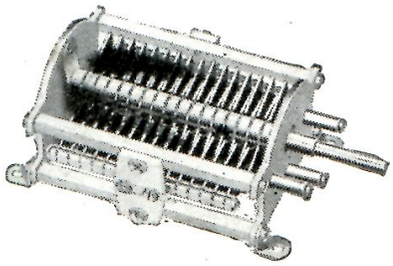


"MC" MIDGET CAPACITORS

Split type rear bearings and noiseless wiping contact. Isolantite insulation. All contacts riveted or soldered. Vibration proof. Nickel plated soldered brass plates.

Code	Capacity	Net
MC-20-S	20 mmf.	$1.80
MC-35-S	35 mmf.	1.86
MC-50-S	50 mmf.	1.92
MC-50-M	50 mmf.	1.92
MC-75-S	80 mmf.	2.04
MC-75-M	80 mmf.	2.04
MC-100-S	100 mmf.	2.16
MC-100-M	100 mmf.	2.16
MC-140-S	140 mmf.	2.34
MC-140-M	140 mmf.	2.34
MC-200-M	200 mmf.	2.58
MC-250-M	260 mmf.	2.70
MC-325-M	320 mmf.	2.94

"M"—Midline Plates. "S"—Straight Line Cap. Plates.

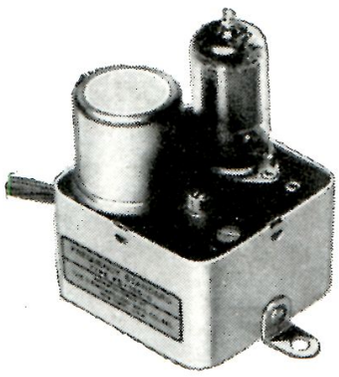


"MTC" TRANSMITTING CAPACITORS

Isolantite insulation. Base or panel mounting. "B" models have rounded plate edges, "C" types have plain plate edges.

Code	Capacity	Net
MTC-20-B	20 mmf.	$4.05
MTC-100-B	100 mmf.	5.25
MTC-150-C	150 mmf.	5.85
MTC-250-C	260 mmf.	4.65
MTC-350-C	365 mmf.	4.80

"FS-135-C" FREQUENCY STANDARD



The FS-135-C is a compact frequency standard which can be built into almost any receiver. A special 100 KC crystal generates marker signals ever 100 KC throughout the entire range of the receiver. The crystal frequency can be adjusted to zero beat with WWV and once this adjustment has been made the accuracy of the unit equals that of a costly frequency standard.

Code	Net
FS-135-C	$14.25

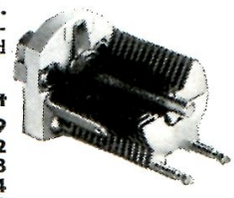
FLEXIBLE COUPLINGS

Designed for both insulated and non-insulated applications. The FC-46-S is insulated for 5000 volts with silicone treated ceramic. Overall depth 13/16", diameter 1 1/4". The FNC-46-S is a non-insulated coupling. Overall depth 23/32", diameter 1 1/4".

Code	Net
FC-46-S—Insulated	$ .66
FNC-46-S—Non-insulated	.66

MIDGET "APC" CAPACITORS

This new midget variety of the well known APC condenser is designed for use where space is limited. Size of 100 mmf, 1 5/16" x 25/32" x 1 5/64". Mounting holes 17/32" apart. Ideal for H.F. circuits. Isolantite insulation. Nickel plated soldered brass plates.



Code	Capacity	Net
MAPC-15	15	$ .99
MAPC-25	25	1.02
MAPC-35	35	1.08
MAPC-50	50	1.14
MAPC-75	75	1.26
MAPC-100	100	1.38

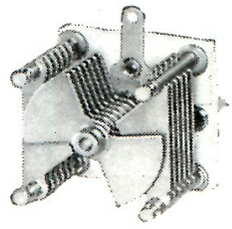
"APC" MICRO CAPACITORS

For H.F. and very H.F. For I.F. tuning, trimming R.F. Coils or gang capacitors, general padding, etc. Constant capacity under any condition of temperature or vibration. Size 100 mmf. 1 7/32" x 15/16" x 1 7/32". Isolantite base. Nickel plated soldered brass plates.

Code	Capacity	Net
APC-25	25 mmf.	$1.02
APC-50	50 mmf.	1.14
APC-75	75 mmf.	1.26
APC-100	100 mmf.	1.38
APC-140	140 mmf.	1.62

BUTTERFLY CAPACITOR

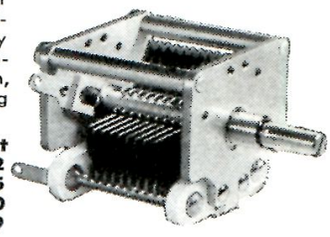
Designed for use in VHF and UHF applications where the butterfly design is indispensable. Can be used as a single series unit or as a split stator with grounded rotor. Low-loss ceramic end panel, approximately 1 3/8" square.



Code	MMF. Cap. per Sec. Max.	Min.	Series Cap. Max.	Min.	Net
BFC-12	14.5	3.5	7.9	2.2	$1.50
BFC-25	27.5	5.0	14.5	3.0	1.68
BFC-38	40.5	6.3	21.0	3.7	1.98

"RMC" CAPACITOR

Sturdy frame consists of 3/32" aluminum end plates reinforced by three horizontal bars which hold the assembly absolutely rigid. Brackets are provided for mounting either side down, or to a front panel with spacing pillars.

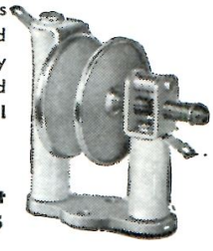


Code	Capacity	Net
RMC-50-S	50. mmf.	$2.22
RMC-100-S	105. mmf.	2.55
RMC-140-S	143.5 mmf.	2.70
RMC-325-S	327. mmf.	3.39

"NZ-10" NEUTRALIZING CAPACITOR

The improved design of the NZ-10 features smooth micrometer capacity adjustment and positive locking. Aluminum plates are smoothly rounded to prevent flashover. Low loss glazed steatite insulators. Aluminum base. Horizontal adjustment.

Dimensions: 2 15/16" high x 1 13/16" deep.



Code	Capacity	Net
NZ-10	2.3—10 mmf.	$3.15

PRICES AND ITEMS SUBJECT TO CHANGE WITHOUT NOTICE. WRITE FOR COMPLETE CATALOG.

HAMMARLUND MANUFACTURING CO., INC., 460 West 34th Street, New York 1, N. Y.

SERIES 600 "SUPER-PRO"

DESCRIPTION

Cheers from the experts—The new Series 600 SUPER-PRO is the finest communications receiver that money can buy. No "warmed over" model, the Series 600 is entirely new in electrical concept and mechanical design—truly "years ahead" of present day receivers. When you check this entirely new SUPER-PRO for such things as image rejection, stability, calibration accuracy, etc. . . . you will find performance that you would not have thought possible. You'll find that "years ahead" in design mean "years ahead" in performance.

Band changing in the new SUPER-PRO is accomplished by means of an ingeniously designed rotary turret which places the coil assemblies of the two R.F., Mixer and Oscillator stages directly adjacent to their respective sections of the four gang tuning condenser where they are electrically most efficient.

By means of the mechanical system used in the SUPER-PRO 600-X both the main and band spread dials are tuned simultaneously with one control and the need for first setting the main dial is eliminated. The dial drive mechanism is entirely gear coupled to the main tuning condenser, producing the kind of calibration accuracy usually associated only with costly laboratory standards.

A double conversion circuit affords two advantages—the high frequency I.F. channel produces so great a degree of image suppression that image response in the receiver is negligible even at the highest frequencies—the low frequency (455 KC) I.F. channel makes possible a receiver of extreme selectivity. The 455 KC I.F. channel has the famous SUPER-PRO crystal filter.

RANGE

Band 1 • 540 Kc—1.35 MC
2 • 1.35 MC—3.5 MC
3 • 3.5 MC—7.0 MC
4 • 7.0 MC—14.4 MC
5 • 14.4 MC—29.7 MC
6 • 29.7 MC—54 MC

CALIBRATED BAND SPREAD

80, 40, 20, 10 and 6 meter amateur bands.

TUBES

17 tubes (plus 5U4G rectifier and VR150 voltage regulator) as follows:

Three—6BA6's	One—6SN7GT
Two—6BE6's	Two—6H6
Two—6C4's	One—6J5
Four—6SG7's	Two—6V6GT's

SELECTIVITY

Variable in 6 steps, three with crystal out and three with crystal in. From wide band high fidelity to razor sharp single signal reception.

SENSITIVITY

The sensitivity is better than 2 microvolts throughout the entire frequency range of the receiver, based on a 10 DB signal plus noise to noise ratio.

PRICE

SPC-600-X receiver (Table Model) with PM Speaker and Speaker Cabinet $395.00 Net.

Write For Technical Booklet

PRICES SUBJECT TO CHANGE WITHOUT NOTICE, SLIGHTLY HIGHER ON WEST COAST

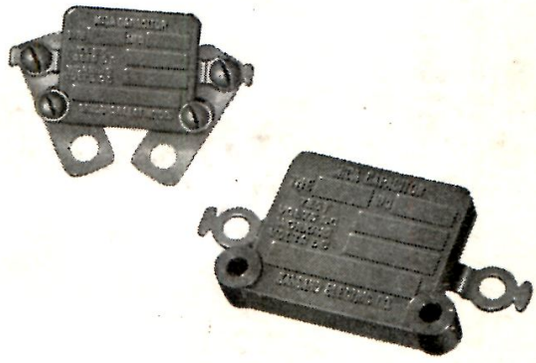
HAMMARLUND MANUFACTURING CO., INC., 460 West 34th Street, New York 1, N. Y.

"Particular People--

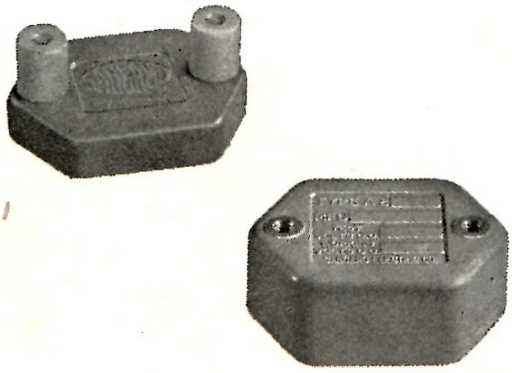
those folk at Sangamo! They know that top-notch rigs need precise, stable capacitors to stay on the air—and they have been making just such dependable capacitors for a quarter of a century."

Old-time hams recognize Sangamo Quality . . . Get acquainted with the Sangamo line today. Your jobber can supply you.

Type 71 Diaclor Impregnated Capacitors
600 to 6000 W.V.D.C.



Type H Mica Capacitors
600 to 2500 W.V.D.C.



Type A Mica Capacitors
600 to 2500 W.V.D.C.

Type E Mica Capacitors
Specifically Designed for Hams

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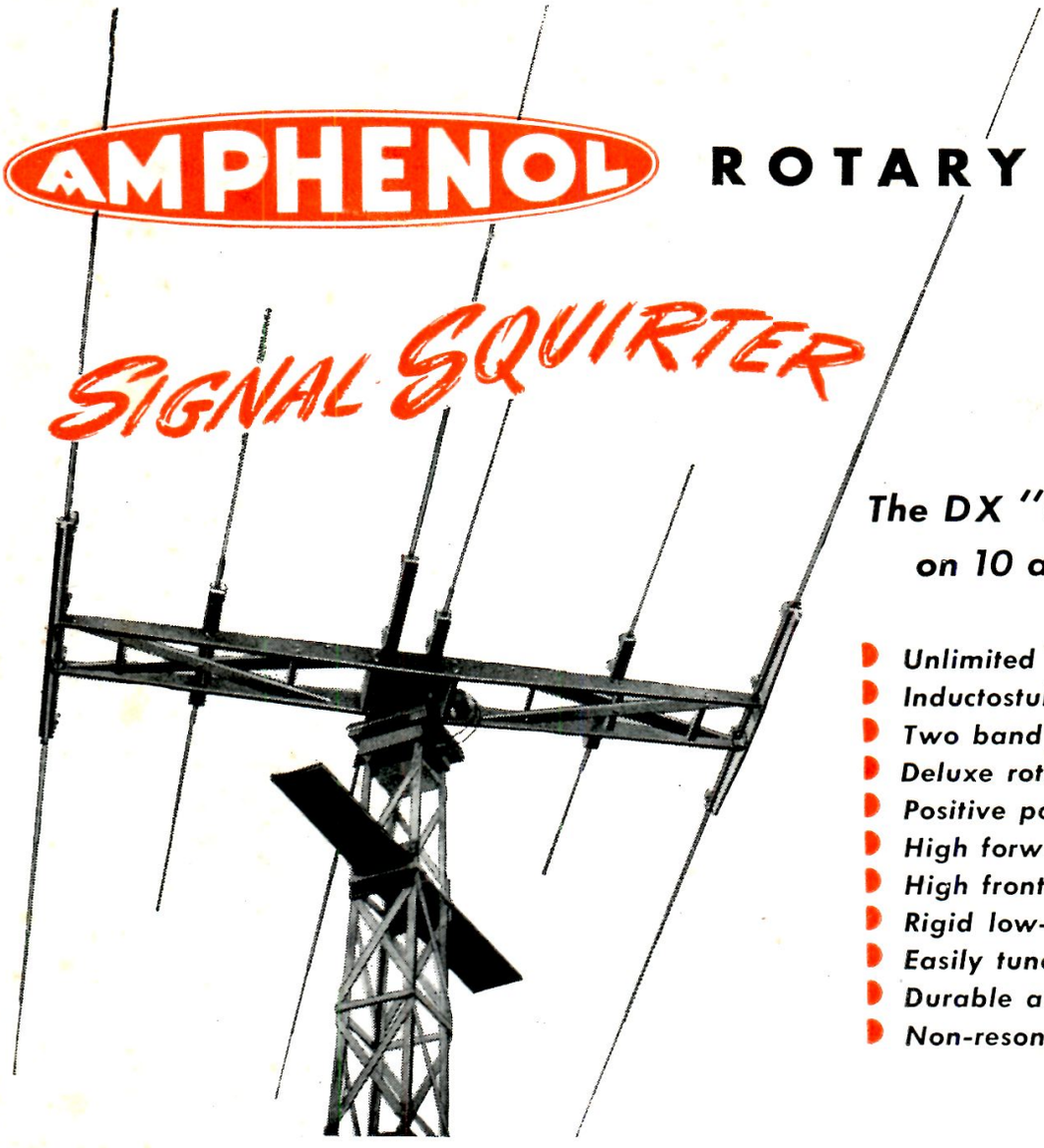
SC472

AMPHENOL ROTARY BEAM

SIGNAL SQUIRTER



The DX "Champ" on 10 and 20 Meters

- *Unlimited rotation either direction*
- *Inductostub matched coupling*
- *Two band operation*
- *Deluxe rotator*
- *Positive position lock*
- *High forward directivity*
- *High front-to-back ratio*
- *Rigid low-loss elements*
- *Easily tuned*
- *Durable and efficient*
- *Non-resonant transmission line*

Extremely effective for reception as well as transmission, the Deluxe Dual-Three Signal Squirter is the first rotary beam offering full performance on both 10 and 20 meters.

Each of the two three-element arrays is coupled to the line with a separate Inductostub inductive coupling. Match between antenna and line is so simplified that the Signal Squirter can be assembled, installed and operated without tedious, complicated adjustments.

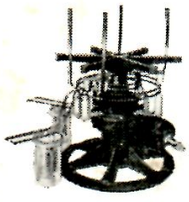
The strong Deluxe Rotator weighs only 56 pounds. Base and top diameters only 15 inches. Rotator delivers ample torque through precision reducing gears actuated by non-interfering motor.

The selsyn indicator is synchronized with the array.

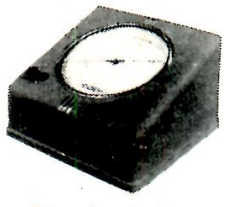
Signal Squirter Kit includes Rotator with mounted Inductostub assembly, direction indicator, center section, elements and insulators with all hardware ready for installation.

See your Jobber, or write today for complete details.

Manufactured under Mims patent number 2,292,791.



Deluxe Rotator



Direction Indicator

To assure top performance, thousands of alert amateurs also depend on Amphenol for: Twin-lead transmission line, plastic window pane, Silicone compound, stand-off and screw eye insulators, line spreaders, and a complete line of communications components!

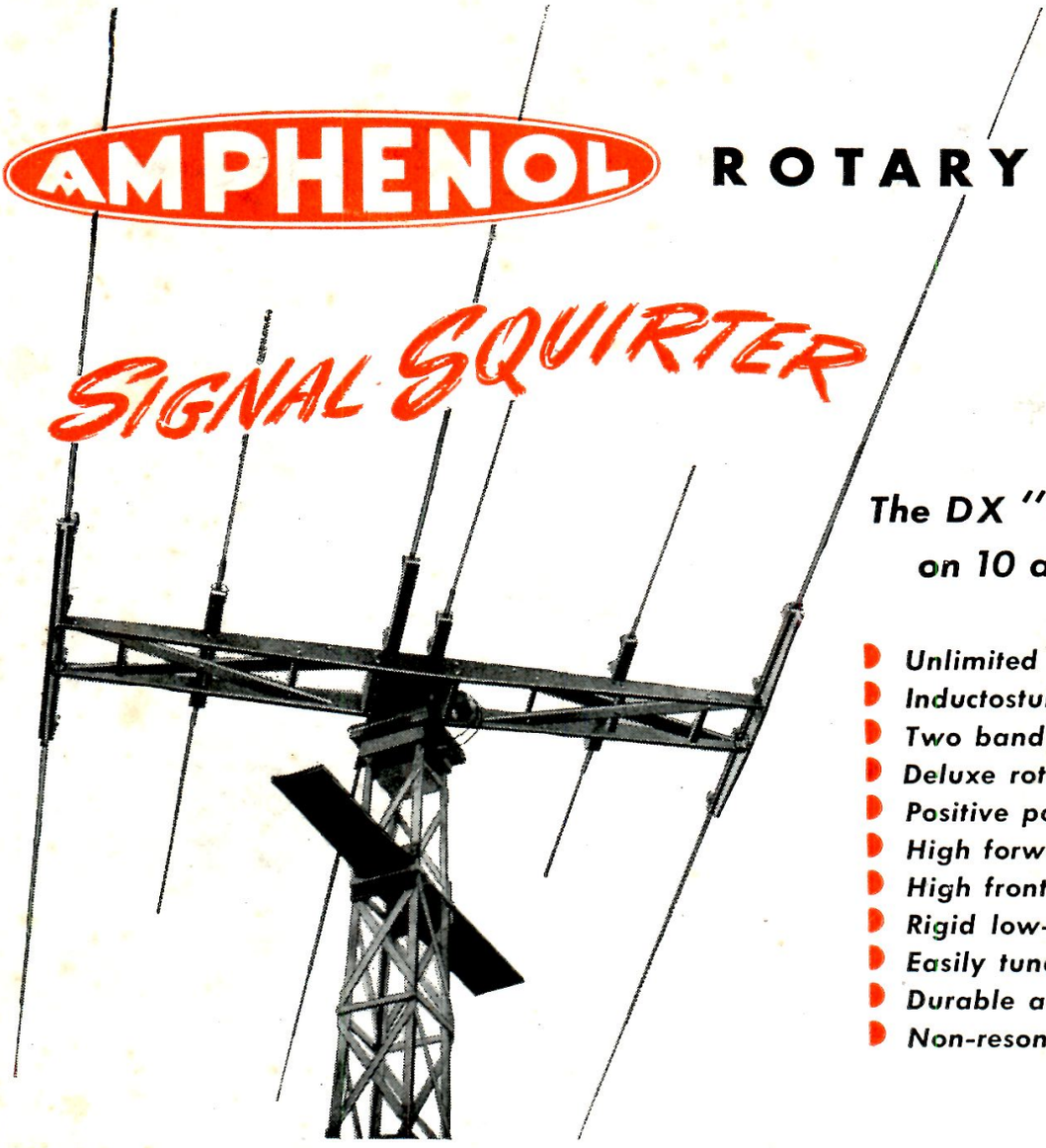
AMERICAN PHENOLIC CORPORATION

1830 S. 54th AVE., CHICAGO 50, ILLINOIS

COAXIAL CABLES AND CONNECTORS • INDUSTRIAL CONNECTORS, FITTINGS AND CONDUIT • ANTENNAS • RADIO COMPONENTS • PLASTICS FOR ELECTRONICS

AMPHENOL ROTARY BEAM

SIGNAL SQUIRTER



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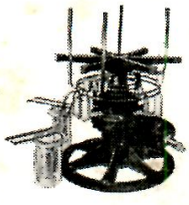
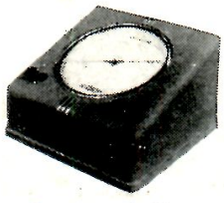


Deluxe Rotator



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RADIO'S NEWEST MULTI-PURPOSE INSTRUMENT

MEASUREMENTS

Model 59

MEGACYCLE METER

The Model 59 consists of a compact oscillator connected by a flexible cord to its power supply. The instrument is a variable frequency oscillator, an absorption wave-meter, an oscillating detector and a tuned circuit absorption detector. The engineer, technician, service man or amateur will find the Model 59 a most versatile instrument suitable for many applications.

SPECIFICATIONS:

FREQUENCY:
2.2 Mc. to 400 Mc.; seven plug-in coils.

MODULATION:
CW or 120 cycles; or external.

DIMENSIONS:
Power Unit, 5⅛" wide; 6⅛" high; 7½" deep. Oscillator Unit, 3¾" diameter; 2" deep.

POWER SUPPLY:
110-120 volts, 50-60 cycles; 20 watts.

MODEL 59 APPLICATIONS:

- For the determination of the resonant frequency of tuned circuits, antennas, transmission lines, by-pass condensers, chokes or any resonant circuit.
- For measuring capacitance, inductance, Q, mutual inductance.
- For preliminary tracking and alignment of receivers.
- As an auxiliary signal generator; modulated or unmodulated.
- For antenna tuning and transmitter neutralizing, power off.
- For locating parasitic circuits and spurious resonances.
- As a low sensitivity receiver for signal tracing.

Descriptive Circular on Request

MANUFACTURERS OF
Standard Signal Generators
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FM Signal Generators
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2

There's a C-D capacitor

CORNELL-DUBILIER CAPACITORS

have long been noted for their extra measure of dependability and stability of electrical characteristics. Today — as radio digs deeper and deeper into V-H-F and U-H-F — this C-D "extra" gives hams complete assurance of accurate tuning, frequency stability, and uninterrupted operation.

Cornell-Dubilier Electric Corporation, Dept. AH8, South Plainfield, N. J. Other plants at New Bedford, Worcester and Brookline, Massachusetts, and Providence, Rhode Island.

KEEP YOUR RIG ON THE AIR — ON YOUR FREQUENCY WITH THESE C-D CAPACITORS

TYPE TJU

Dykanol transmitter filter capacitor — compact, safety-rated, supplied with universal mounting clamp and heavily-insulated terminals. Hermetically sealed against all climatic conditions. Housed in sturdy steel container, aluminum-painted non-corrosive finish. Can be mounted in any position. Extra high dielectric strength. Conservative D-C rating — triple tested. Wide range of capacity and voltage values available.

TYPE 59

Mica transmitter capacitor — extremely adaptable, dependable under the most severe operating conditions. In low-loss, white glazed ceramic case. Low-resistance, wide-path terminals. Can be mounted individually or stacked in groups for series or parallel combinations. For grid and plate blocking, coupling, tank and by-pass applications in hi-power ham transmitters.

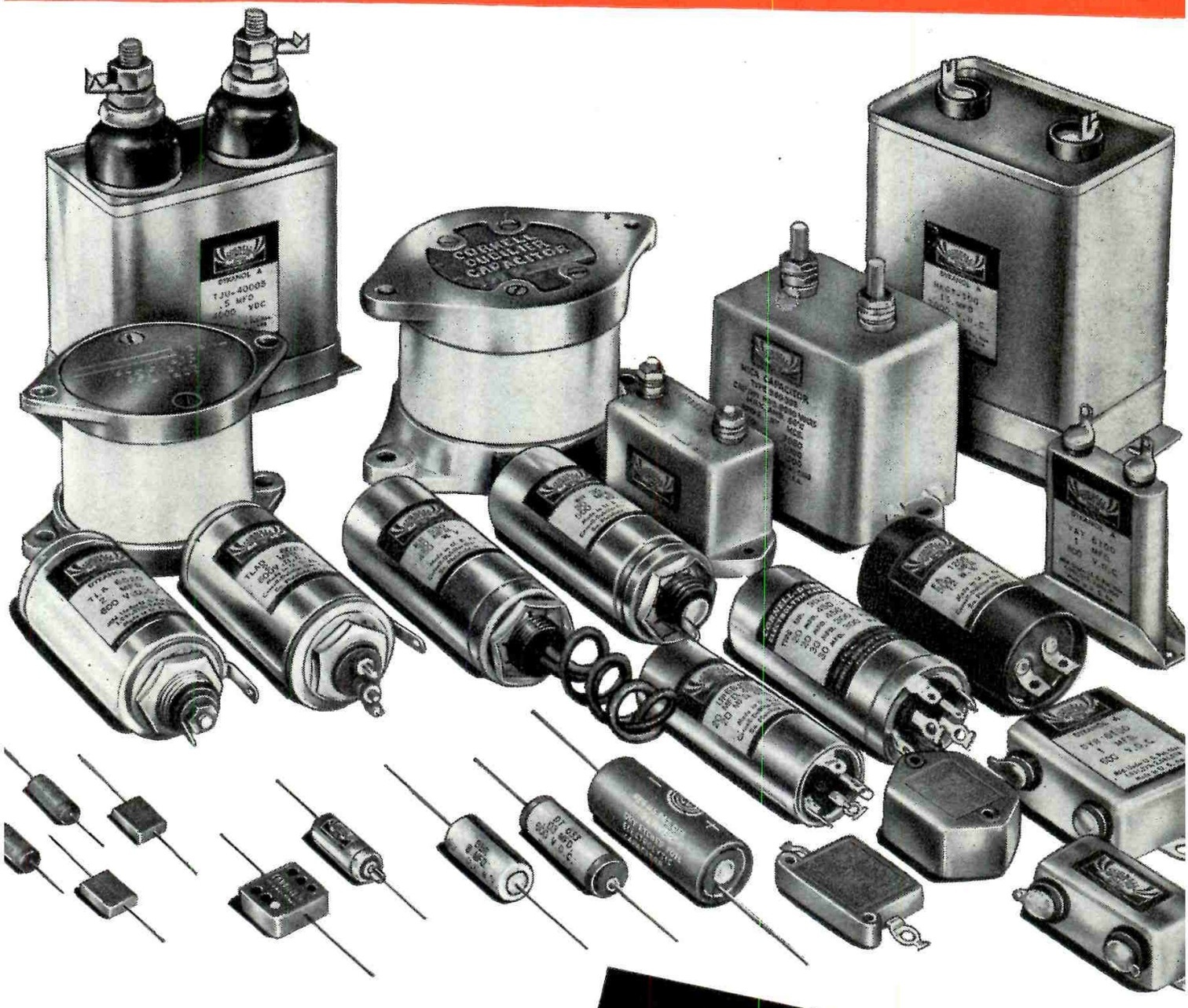
TYPE 6

Mica transmitter capacitor for medium power rigs — designed for R-F applications where size and weight must be kept at minimum. Exclusive C-D patented series-stack mica construction. Impregnated for low loss, high insulation, prevention of air voids. Suited for grid, plate, coupling, tank and by-pass uses.

TYPE 1R

C-D "Silver-Mike" Silvered Mica Capacitors are for use in high Q electronic circuits where frequency stability and minimum loss must be maintained. They are ideally suited for use in circuits where the LC product must be maintained constant. All units are rated at 500 V.D.C. and tested at 1,000 V.D.C.

for every ham application



WRITE FOR YOUR FREE COPY OF CATALOG NO. 200

Gives helpful information and data on C-D's complete line of Capacitors for every ham application.

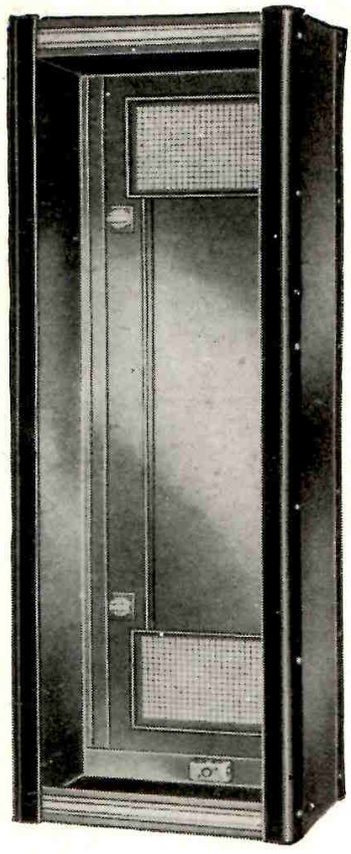
CORNELL-DUBILIER

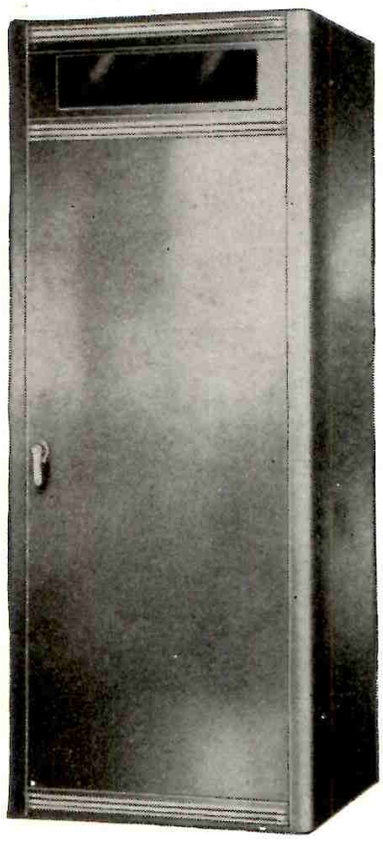
WORLD'S LARGEST MANUFACTURER OF

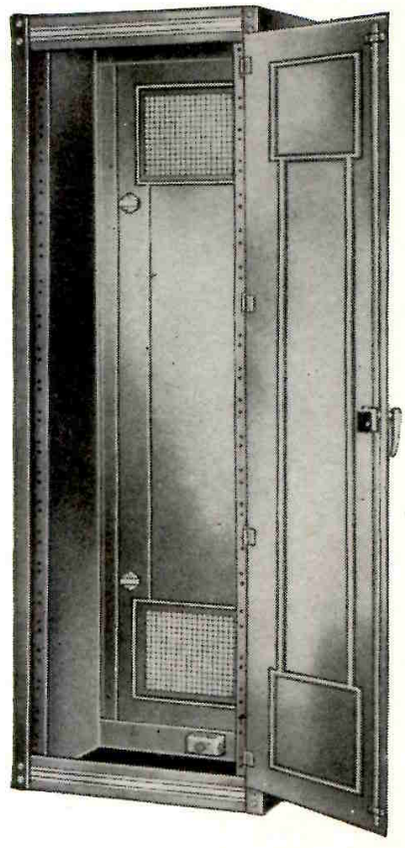
CAPACITORS

PAR-METAL *Standard* RACKS, CABINETS CHASSIS, PANELS

ADAPTABLE FOR EVERY REQUIREMENT

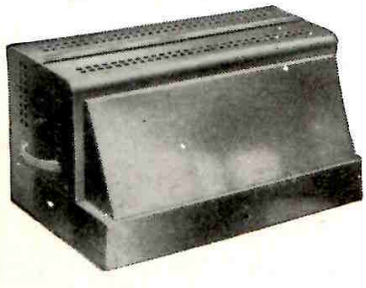


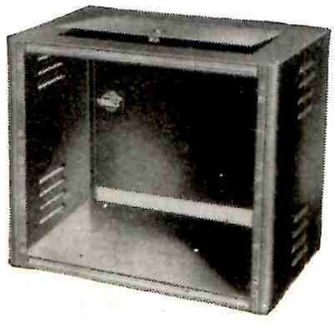




Par-Metal Housings for Electronic Apparatus, offer new features, including beautiful streamlined design, rugged construction, and adaptability. Eliminate need for Special Made-to-Order units on many jobs. Par-Metal offers *standard ready-to-use* housings for every type of transmitting or receiving apparatus.

Par-Metal offers all the essential equipment needed to build up any sort of a job—from a Small Receiver to a DeLuxe Broadcasting System.





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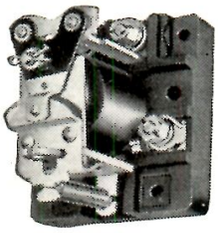
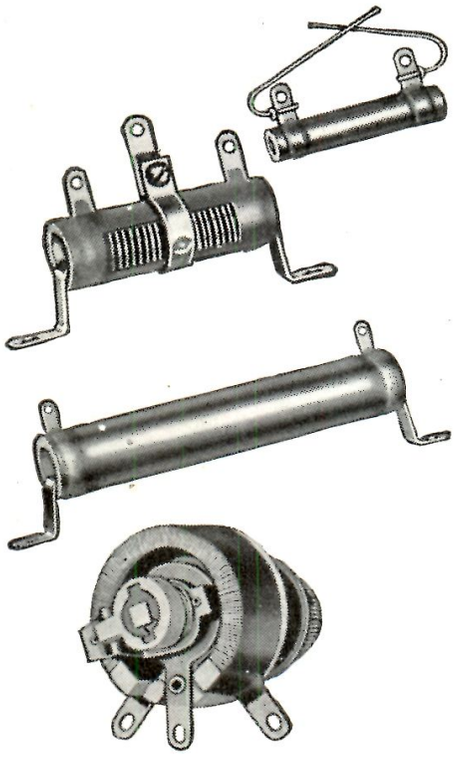
PAR-METAL PRODUCTS CORPORATION

32-62 49th Street, Long Island City 3, N. Y.

EXPORT DEPT.: ROCKE INT. CORP., 13 E. 40th St., New York 16, N. Y.

your basic 3R's for correct current control





Ward Leonard RELAYS

RELAYS—provide convenient circuit control, protection, and greater operating efficiency . . . help reduce length of connecting leads. Amateur Relays available from stock: Antenna Change-Over, Antenna Grounding, Keying, Band Switching, RF Break-In, Safety, Overload, Underload, Latch-In, Remote Control, Sensitive, Time Delay. Also Industrial and General-Purpose Relays.

Ward Leonard RESISTORS

RESISTORS — exclusive features of VITROHM wire-wound resistors insure that *extra* performance needed in critical circuits. Fixed type in 8 stock sizes from 5 to 200 watts. Adjustable type in 7 stock sizes from 10 to 200 watts. Wide range of resistance values. Stripohm, Discohm, and Plaque types also available.

Ward Leonard RHEOSTATS

RHEOSTATS— for fixed or variable close control. Protected by tough, acid resistant, crazeless vitreous enamel. Sizes: 25, 50, 100, and 150 watts, in wide range of resistances.

Authorized Distributors Everywhere

WARD LEONARD ELECTRIC COMPANY
Radio and Electronic Distributor Division
53-K West Jackson Blvd., Chicago 4, U. S. A.

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Write for Amateur Relay Catalog No. D-111, and for Resistor-Rheostat Catalog No. D-2.

WARD LEONARD

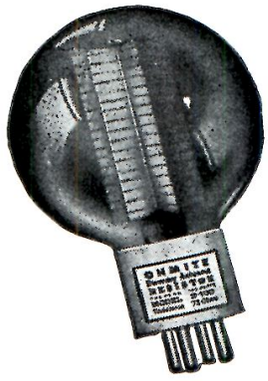
RELAYS • RESISTORS • RHEOSTATS

Electric control devices since 1892

Be Right with OHMITE

BROWN DEVIL RESISTORS

Small, extra sturdy, wire wound, vitreous enameled resistors for voltage dropping, bias units, bleeders, etc. Proved right in vital installations the world over. In 5, 10 and 20-watt sizes in values to 100,000 ohms.



DUMMY ANTENNA RESISTORS

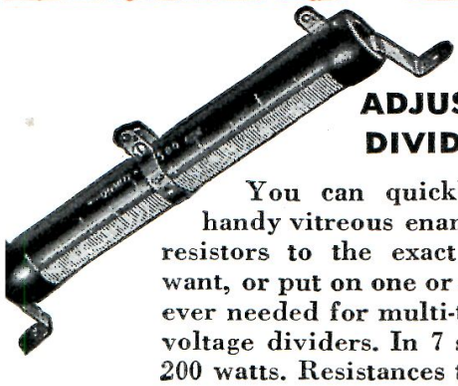
To check r.f. power, determine transmission line losses, check line to antenna impedance match. Helps tune up to peak efficiency. Noninductive, non-capacitive, constant in resistance. 100 and 250-watt, in various resistances.

CENTER TAPPED RESISTORS

For use across tube filaments to provide an electrical center for the grid and plate returns. Center tap accurate to plus or minus 1%. Wirewatt (1 watt) and Brown Devil (10 watt) units, in resistances from 10 to 200 ohms.

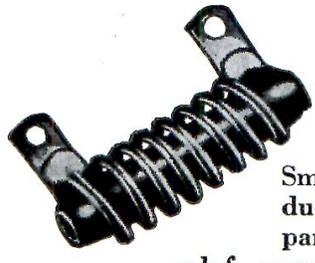
NEW HIGH FREQUENCY CHOKES

Single layer wound on low power factor steatite or bakelite cores, with moistureproof coating. Seven stock sizes for all frequencies from 3 to 520 mc. Two units rated 600 ma, all others are rated 1000 ma.



ADJUSTABLE DIVIDOHMS

You can quickly adjust these handy vitreous enameled Dividohm resistors to the exact resistance you want, or put on one or more taps wherever needed for multi-tap-resistors and voltage dividers. In 7 sizes from 10 to 200 watts. Resistances to 100,000 ohms.

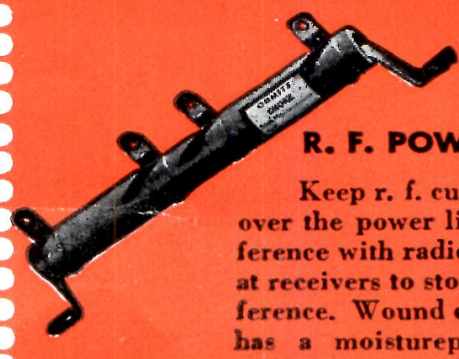


PARASITIC SUPPRESSOR

Small, light, compact noninductive resistor and choke in parallel, designed to prevent u.h.f. parasitic oscillations which occur in the plate and grid leads of push-pull and parallel tube circuits. Only 1¾" long over-all and ⅝" in diameter.

FIXED RESISTORS

Resistance wire is wound over a ceramic core, permanently locked in place, insulated and protected by Ohmite vitreous enamel. Terminated by lugs. 25, 50, 100, 160 and 200-watt stock sizes, in resistances from 1 to 250,000 ohms.



R. F. POWER LINE CHOKES

Keep r. f. currents from going out over the power line and causing interference with radio receivers. Also used at receivers to stop incoming r. f. interference. Wound on a ceramic core and has a moistureproof coating. Three stock sizes, rated 5, 10, and 20 amp.

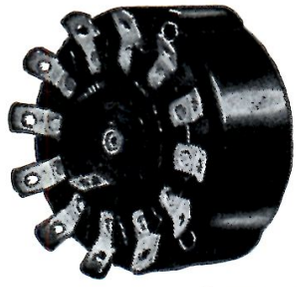
RHEOSTATS...RESISTORS...CHOKES...

POTENTIOMETERS...SWITCHES

Accurate ★ Dependable ★ Long-lived

CLOSE-CONTROL RHEOSTATS

Insure permanently smooth, close control in communication, electronic and electrical devices. Widely used in industry. All ceramic, vitreous enameled. 25, 50, 75, 100, 150, 225, 300, 500, 750 and 1000-watt sizes.

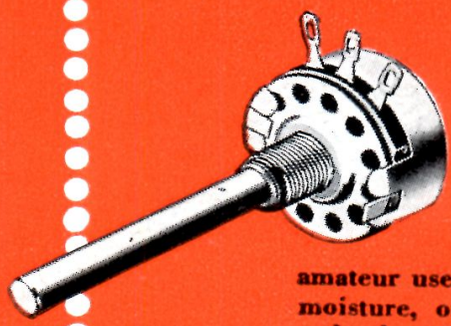


HIGH-CURRENT TAP SWITCHES

Compact, all ceramic, multi-point rotary selectors for A.C. use. Silver to silver contacts. Rated at 10, 15, 25, 50 and 100 amperes, with any number of taps up to 11, 12, 12, 12, and 8 respectively. Single or tandem.

RB-2 DIRECTION INDICATOR POTENTIOMETER

A compact, low cost unit used in a simple potentiometer circuit as a transmitting element to indicate, remotely, the position of a rotary-beam antenna. Used with a 0-1 milliammeter and 6-v. battery.

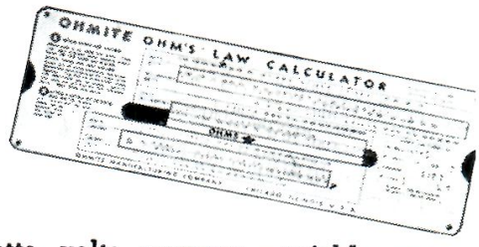


MOLDED COMPOSITION POTENTIOMETER

A high quality 2-watt unit with a good margin of safety, for industrial and amateur use. Unaffected by heat, cold, moisture, or length of service. *Sold only through Ohmite distributors.*

LITTLE DEVIL INDIVIDUALLY MARKED INSULATED COMPOSITION RESISTORS

New, tiny, molded fixed resistors each marked with resistance and wattage rating. ½ Watt, 1 watt, and 2 watt sizes, ±10% tolerance. Also ±5% in ½ and 1-watt sizes. 10 Ohms to 22 megohms. *Sold only through Ohmite distributors.*



HANDY OHM'S LAW CALCULATOR

Figures ohms, watts, volts, amperes—quickly, easily. Solves any Ohm's Law problem with one setting of the slide. New pocket size—9"x3" has all computing scales on one side. Resistor color code on back. Send 25¢ in coin to cover handling cost.

OHMITE

OHMITE MANUFACTURING COMPANY
4840 Flournoy Street, Chicago, U. S. A. Cable "Ohmiteco"

SEND FOR FREE CATALOG

Stock catalog lists hundreds of units, gives helpful information.

IT'S SYLVANIA

RADIO TUBES—CRYSTAL DIODES—

Lock-In Tube

Germanium Crystal Diode 1N34

. . . and Duo-Diode 1N35

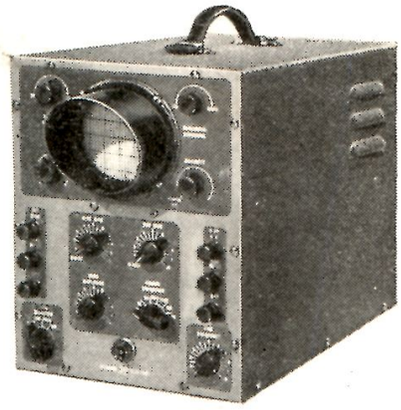
It can never be a hit or miss proposition when it comes to radio tubes manufactured by Sylvania Electric. Experiments for new and better materials for further improving Sylvania Radio Tubes are carried on constantly.

The famous Lock-In Tube, for example, is so mechanically rugged, so efficient electrically, that it can handle high and ultra-high frequency circuits with ease.

These diodes are well adapted for use as second detectors and d-c restorers in television receivers; frequency discriminators in FM circuits; first detectors; modulators and demodulators.

Supplied in tiny cartridges, they require no heater supply or adjustment and may be wired directly into circuits by means of tinned copper leads.

ELECTRONIC DEVICES



3-inch Cathode Ray Tube Oscilloscope, Type 131

This instrument is especially useful in rapid receiver alignment and trouble-shooting. Controls are easily accessible. Hood shades face of cathode ray tube permitting use of instrument in well-lighted room. This 3-inch cathode ray tube is shock-mounted and shielded against stray fields.

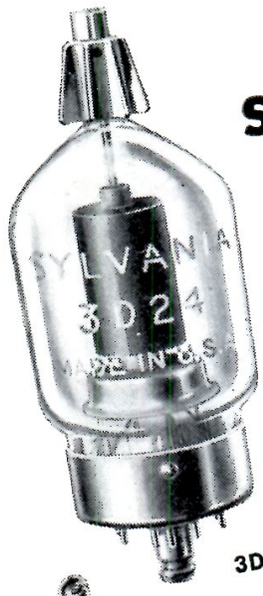
Cabinet is steel construction, ventilated with louvers, and finished in attractive pearl-gray baked enamel. Easily carried; weighs only 18 pounds. Eight-foot power cord provided for quick installation.

SYLVANIA

KERS OF RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES;

FOR . . .

TRANSMITTING TUBES— SPECIAL ELECTRONIC TUBES—



3D24

First of Sylvania's new line of transmitting tubes, the 3D24 is a four-electrode amplifier and oscillator with 45 watt anode dissipation. An outstanding development is the electronic graphite anode, which allows high plate dissipation for small area and maintains constant inter-electrode relationship and uniform tube characteristics.

GG-304

GB-302

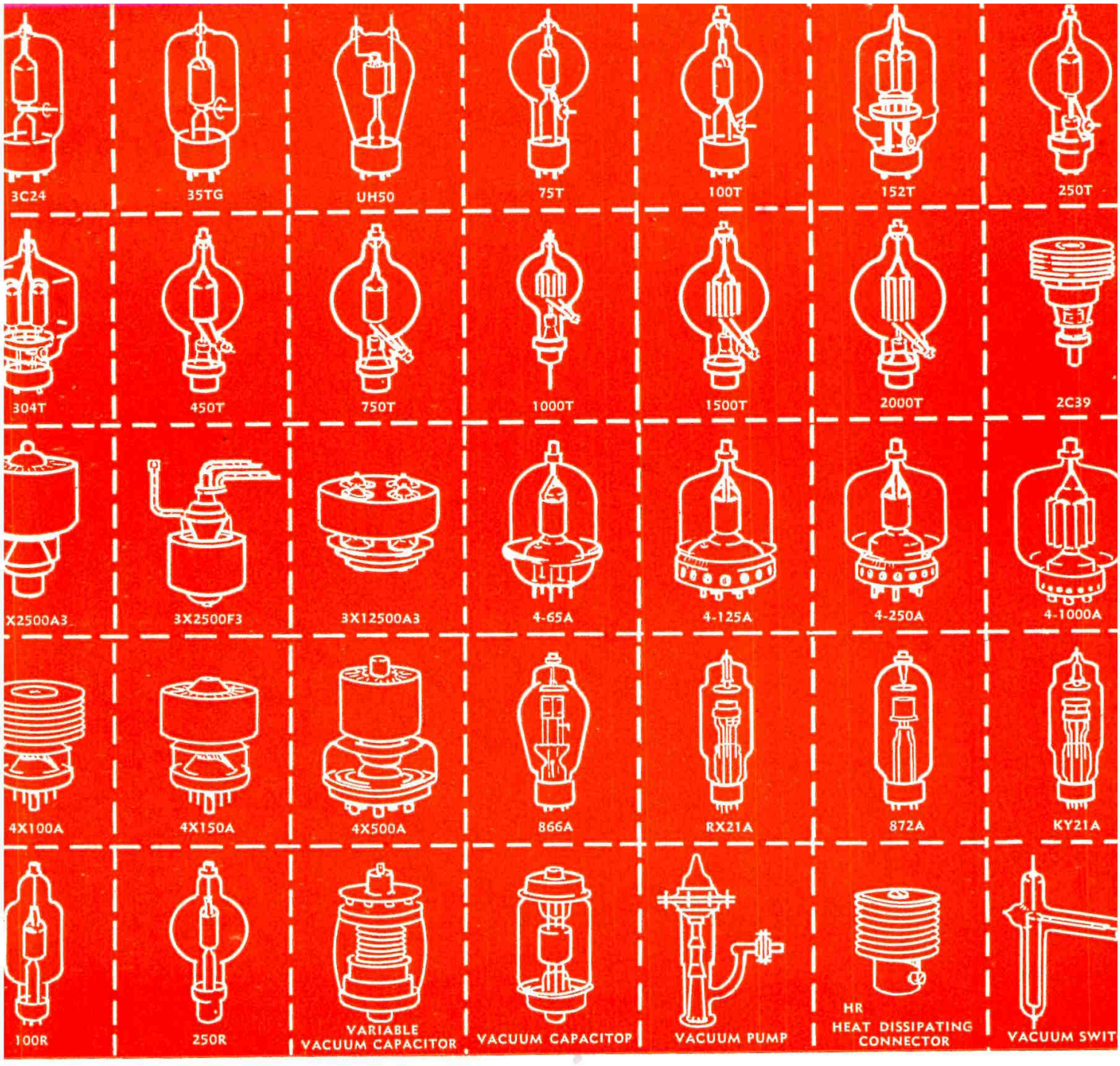
For the first time, counter tubes with *stable, uniform characteristics* are now available for practical use in the field of radioactivity. The GB-302 beta-ray tube will be very valuable in tracer techniques in industry, research and medicine, especially in medical diagnosis and therapy. Sylvania Type GG-304, the gamma-ray counting companion to the GB-302, is useful in radiological safety surveys and other applications where gamma radiation must be efficiently measured. In addition, the GG-304 can be used for cosmic ray studies, particularly in coincidence work.

These quality products of Sylvania Electric indicate the scope of manufacturing facilities constantly serving all phases of the radio industry.

Sylvania Electric Products Inc., Radio Tube Division, Emporium, Pa.

ELECTRIC

FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS



Listed on these pages are Eimac tubes, "proven in service" for more than a decade in the most outstanding electronic equipment in operation. When you invest in a product trade marked "Eimac" you are assured of the utmost in performance and dependability . . . backed by the reputation of America's foremost manufacturer of high-frequency transmitting tub

Further data and application notes are available, write direct, or see your dealer.

EITEL-McCULLOUGH, INC., 184 San Mateo Avenue, San Bruno, California

Eimac REG. U. S. PAT. OFF. TUBES

EIMAC TUBES

	EIMAC TUBE TYPES	ELECTRICAL							MECHANICAL				MAX. RATINGS						TUBE PRICE	RECOMMENDED HR. HEAT DISSIPATING CONNECTORS	
		FIL. VOLTS	FIL. AMPS.	AMP. FACTOR	GRID-PLATE, UUF	INPUT UUF	OUTPUT, UUF	TRANSCONDUCTANCE UMHOS	BASE	BASING	MAX. LENGTH, INCHES	MAX. DIAMETER INCHES	PL. VOLTAGE	PL. CURRENT, MA.	SCREEN VOLTAGE	SCREEN DISSIPATION	GRID DISSIPATION, WATTS	PL. DISSIPATION WATTS		PLATE	GRID
TRIODES	25T	6.3	3.0	.29	1.6	2.4	0.4	2500	M8-071	3G	4.38	1.43	2000	75	...	..	7	25	$ 6.00	HR-1	...
	3C24	6.3	3.0	25	1.6	1.8	0.2	2500	M8-071	3G	4.38	1.43	2000	75	...	..	8	25	6.00	HR-1	HR-1
	35T	5.0	4.0	30	1.9	4.0	0.2	2850	M8-078	3G	5.5	1.81	2000	150	...	..	15	50	7.00	HR-3	...
	35TG	5.0	4.0	30	1.9	1.9	0.2	2850	M8-078	2M	5.75	1.81	2000	150	...	..	15	50	8.00	HR-3	HR-3
	UH50	7.5	3.25	13	2.4	2.2	0.4	....	M8-078	2M	7.0	2.69	1250	125	...	..	13	50	15.00	HR-2	HR-2
	75TH	5.0	6.5	20	2.3	3.5	0.25	4150	M8-078	2M	7.25	2.81	3000	225	...	..	16	75	10.50	HR-3	HR-2
	75TL	5.0	6.5	11	2.3	2.2	0.4	3350	M8-078	2M	7.25	2.81	3000	225	...	..	13	75	10.50	HR-3	HR-2
	2C39*	6.3	1.1	..	1.95	6.5	0.30	21,000	.....	...	2.75	1.26	1000	100	...	..	3	100	30.00	...	...
	100TH	5.0	6.2	40	2.0	2.9	0.4	5500	M8-078	2M	7.75	3.19	3000	225	...	..	20	100	15.00	HR-6	HR-2
	100TL	5.0	6.5	12	2.3	2.0	0.4	2300	M8-078	2M	7.75	3.19	3000	225	...	..	15	100	15.00	HR-6	HR-2
	152TH	5 or 10	13 or 6.5	20	4.7	7.0	0.5	8300	5000B	4BC	7.63	2.56	3000	450	...	..	30	150	24.00	HR-5	HR-6
	152TL	5 or 10	13 or 6.5	11	5.0	4.8	0.8	7150	5000B	4BC	7.63	2.56	3000	500	...	..	25	150	24.00	HR-5	HR-6
	3C37*	6.3	2.4		3.50	4.25	0.60	8000	.....	...	3.10	1.50	1000	....	...	..	...	150	45.00	...	...
	250TH	5.0	10.5	37	2.9	5.0	0.7	6650	5001B	2N	10.13	3.81	4000	350	...	..	40	250	27.50	HR-6	HR-3
	250TL	5.0	10.5	13	3.5	3.0	0.5	2650	5001B	2N	10.13	3.81	4000	350	...	..	35	250	27.50	HR-6	HR-3
	304TH	5 or 10	26 or 13	20	9.4	14.0	1.0	16,700	5000B	4BC	7.63	3.56	3000	900	...	..	60	300	50.00	HR-7	HR-6
	304TL	5 or 10	26 or 13	11	10.0	10.0	1.5	16,700	5000B	4BC	7.63	3.56	3000	1000	...	..	50	300	50.00	HR-7	HR-6
	450TH	7.5	12.0	38	4.7	8.1	0.8	6650	5002B	4AQ	12.63	5.13	6000	500	...	..	80	450	70.00	HR-8	HR-8
	450TL	7.5	12.0	19	5.0	6.6	0.9	6060	5002B	4AQ	12.63	5.13	6000	500	...	..	65	450	70.00	HR-8	HR-8
	750TL	7.5	21.0	15	4.5	6.0	0.8	3500	5003B	4BD	17.0	7.13	6000	1000	...	..	100	750	150.00	HR-8	HR-8
	1000T	7.5	16.0	30	4.0	6.0	0.6	9050	5004B	4AQ	12.63	5.13	6000	750	...	..	80	1000	125.00	HR-9	HR-9
	1500T	7.5	26.0	24	7.0	9.0	1.3	10,000	5005B	4BD	17.0	7.13	6000	1250	...	..	125	1500	200.00	HR-8	HR-9
	2000T	10.0	26.0	20	9.0	13.0	1.5	11,000	5006B	4BD	17.75	8.13	6000	1750	...	..	150	2000	250.00	HR-8	HR-9
	3X2500A3*	7.5	48	20	20	48	1.2	20,000	.....	..	9.0	4.25	5000	2000	...	..	125	2500	165.00	...	...
	3X2500F3*	7.5	48	20	20	48	1.2	20,000	.....	..	9.0	4.25	5000	2000	...	..	125	2500	165.00	...	...
	3X12500A3*	7.5	192	20	95	240	5.	80,000	.....	..	9.5	11.1	5000	800	...	..	600	12,500	700.00	...	...
TETRODES	4-65A	6.	3.5	5	.08	8.	2.1	4000		..	4.25	2.31	3000	150	400	10	5	65	14.50	HR-6	...
	4X100A*	6.	2.8	4.5	.02	14.1	4.7	12,000	.....	..	2.56	1.62	1000	250	300	15	4	100	28.00	...	...
	4-125A	5.0	6.2	6.2	0.03	10.3	3.0	2450	5008B	..	5.69	2.72	3000	225	400	30	5	125	25.00	HR-6	...
	4X150A*	6.	2.8	4.5	.02	14.1	4.7	12,000	.....	..	2.5	1.75	1000	250	300	15	4	150	31.00		
	4-250A	5.0	14.5	..	0.06	12.7	4.5	4000	5008B	...	6.38	3.56	4000	350	600	50	5	250	36.00	HR-6	...
	4X500A*	5.0	12.2	..	0.05	11.1	3.75	5200	.....	...	4.32	2.57	4000	300	450	30	5	500	85.00	...	...
	4-1000A	7.5	21	7.2	.24	27.2	7.6	10,000	.....	5BK	9.25	5.	6000	700	1000	75	25	1000	108.00	HR-8	...

*External Anode requiring forced-aircooling.
†Cathode Current.

EIMAC RECTIFIERS

• Fits Johnson No. 122-247 or 122-101

	MERCURY VAPOR RECTIFIERS				HIGH VACUUM RECTIFIERS			
	866A (866)	RX21A (RX-21)	872A (872)	KY21A (KY-21) (Grid Control)	100-R	2-150A (152-R)	2-150D (152-RA)	250-R
1. Filament Voltage	2.5	2.5	5.0	2.5	5.0	5.0	5.0	5.0
2. Filament Current	5.0 amperes	10 amperes	7.5 amperes	10 amperes	6.5	13.0	13.0	10.5
3. Peak Inverse Voltage	10,000	11,000	10,000	11,000	40,000	30,000	30,000	60,000
4. Peak Plate Current	1.0 amperes	3 amperes	5.0 amperes	3 amperes				
5. Average Plate Current	.25 amperes	.75 amperes	1.25 amperes	.75 amperes	.100 amperes	.150 amperes	.150 amperes	.250 amperes
Price	$1.75	$8.00	$7.50	$10.00	$13.50	$15.00	$15.00	$20.00

EIMAC VACUUM CAPACITORS

Type	VC6-20	VC12-20	VC25-20	VC50-20	VC6-32	VC12-32	VC25-32	VC50-32
Capacity	6-mmfd	12-mmfd	25-mmfd	50-mmfd	6-mmfd	12-mmfd	25-mmfd	50-mmfd
Rating RF Peak	20-KV	20-KV	20-KV	20-KV	32-KV	32-KV	32-KV	32-KV
Price	$12.00	$13.50	$16.50	$20.00	$14.00	$16.00	$19.00	$22.50

HEAT DISSIPATING CONNECTORS

Type	Hole Dia.	Price	HR-5	.125	$ .80
HR-1	.052	$ .60	HR-6	.360	.80
HR-2	.0625	.60	HR-7	.125	1.60
HR-3	.070	.60	HR-8	.570	1.60
HR-4	.1015	.80	HR-9	.570	3.00

EIMAC DIFFUSION PUMP

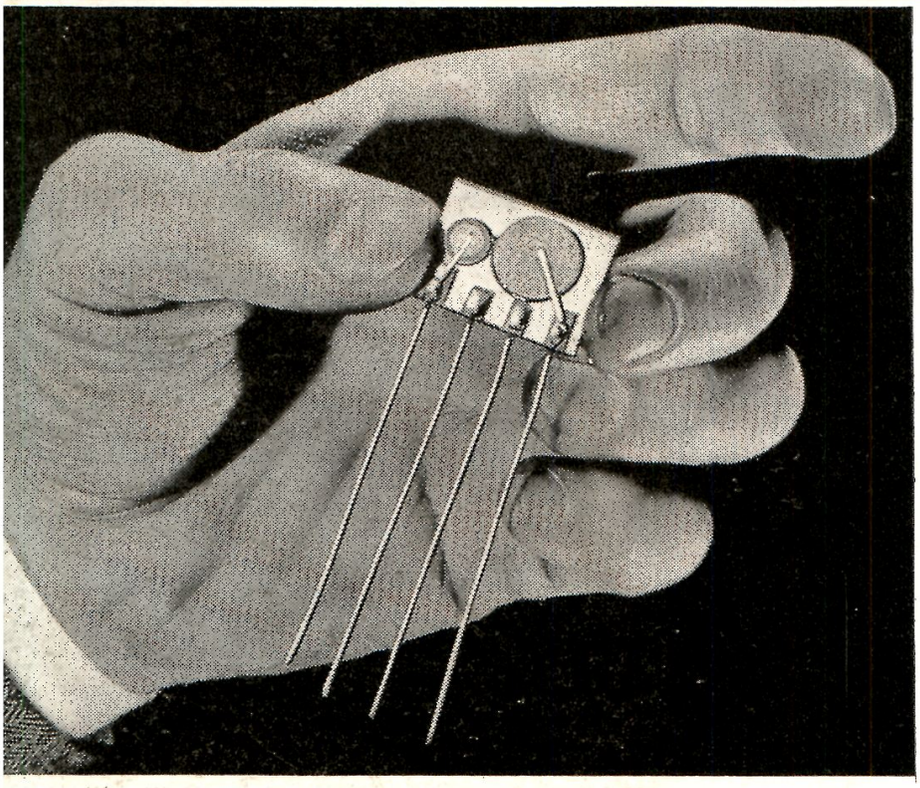
HV-1 Diffusion Pump	PRICE ON APPLICATION
An air-cooled vacuum pump of the oil-diffusion type. Capable of reaching an ultimate vacuum of 4 x 10^{-7} mm. of mercury when used with a suitable mechanical forepump. Speed (without baffle) approximately 67 liters/second at 4 x 10^{-4} to 4 x 10^{-5} mm.	
Eimac Pump Oil	

EIMAC VACUUM SWITCHES

TYPE	GENERAL DATA	PRICE
VS-2...	Single pole double throw switch within a high vacuum adaptable for high voltage switching. Contact spacing .015". Switch will handle R-f potentials as high as 20 Kv. In DC switching will handle approximately 1.5 Amps at 5 Kv.	$12.00
VS-1...	Same as above except for slightly smaller glass tubulation.	$12.00

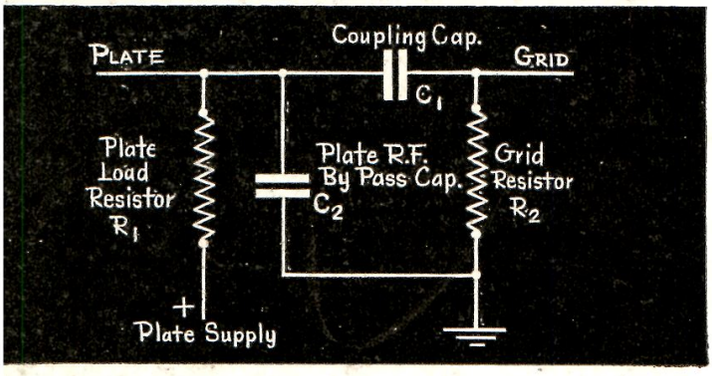
LOOK TO Centralab

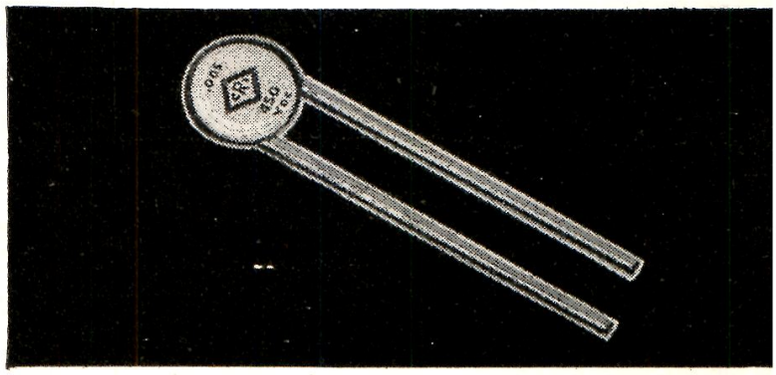
First in component research that means lower costs for the electronic industry.



Here are Exclusive New CENTRALAB Developments

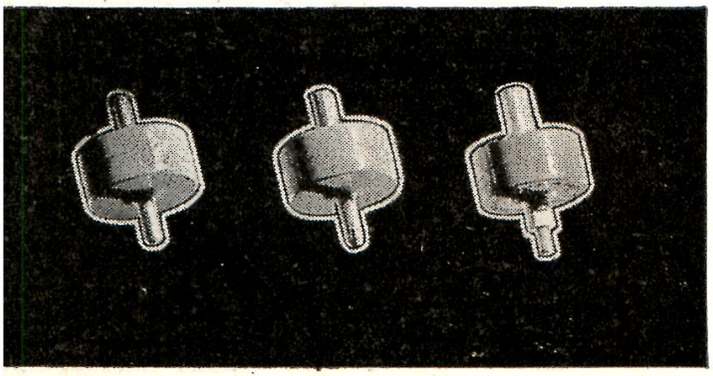
NEW Multi-Unit "Couplate" assures fast, precision wiring on interstage couplings. First commercial application of the "printed circuit", the *Couplate* is a complete interstage coupling circuit which combines into one compact unit the plate load resistor, the grid resistor, the plate by-pass capacitor and the coupling capacitor.

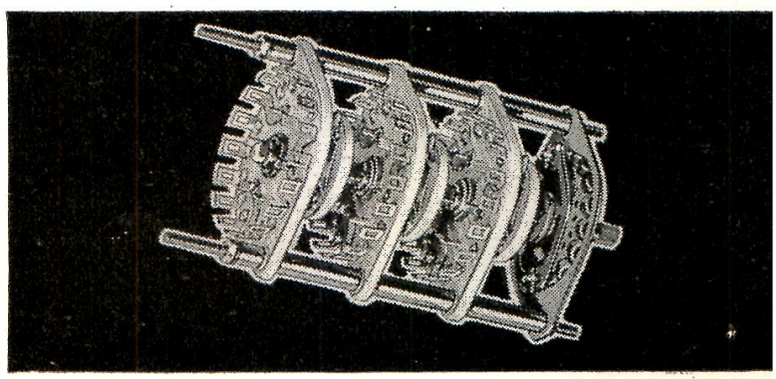




Each Couplate is an integral assembly of "Hi-Kap" capacitors and resistors closely bonded to a ceramic plate and mutually connected by metallic silver paths "printed" on the base plate.

In addition, Centralab has just announced a sensational new quality line of miniature ceramic disc capacitors. Permanent Ceramic-X stability of Hi-Kaps assures utmost reliability in small physical size and low mass weight.



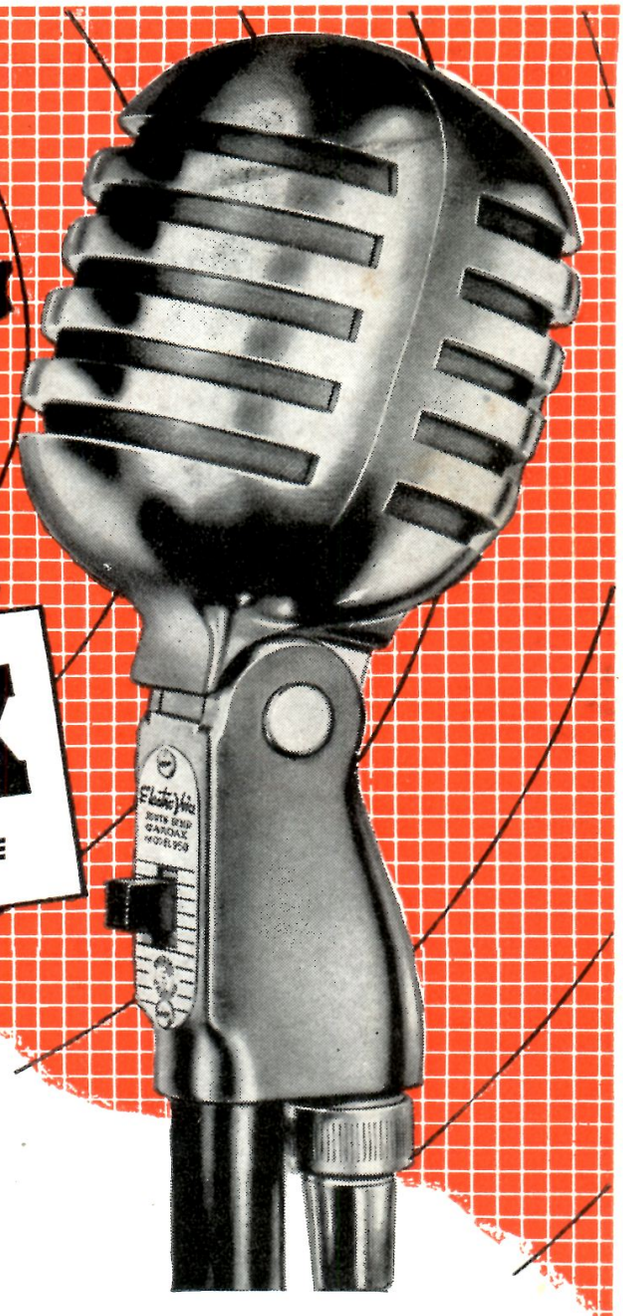


For television units, "Hi-Vo-Kaps" offer high voltage, small size . . . as filter and by-pass capacitors in video amplifiers for high DC voltages with small component AC voltages. Choice of three terminal types.

Specially designed for transmitters, power supply converters, X-ray equipment, etc., CRL medium-duty Power Switch gives efficient performance up to 20 megacycles. Minimum life operation of 25,000 cycles without failure.

Speak out... and be Heard!

Overcome Room Reverberation... Cut through **QRM**



THE CARDAX

CARDIOID CRYSTAL MICROPHONE

The Only High Level Cardioid Crystal Microphone with Dual Frequency Response

You can sit back and relax . . . when you call with the CARDAX. E-V Mechanophase* unidirectivity overcomes room reverberation, permits working at greater distance from microphone. Dual Frequency Response gives you high fidelity for clear channel or rising characteristic for *extra crisp* speech signals that cut through QRM. Brings *more* and *better* QSO's. For DX or Rag-Chewing, there's nothing like it! Smart looking, too! CARDAX, Model 950, lists at $39.50.

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Crystal—Model 910
Dynamic—Model 610

High Fidelity Dynamic Model 630

"Comet" Crystal Model 902
Dynamic—Model 601

Send for Catalog 101
Get valuable data on today's most complete microphone line.

*Patent Pending. Crystal Microphones Licensed under Brush Patents

BUY FROM Centralab

Makers of a complete line of components for the electronic industry.

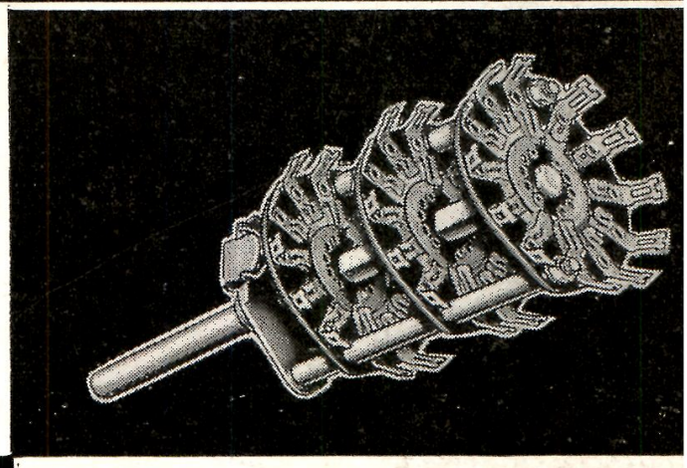
SWITCHES . . . complete line featuring high quality, rugged construction for every type of electronic and industrial application.

1) "H" Index: (at right) primarily for band change and general tap switch applications. Spring and ball mechanism. Life test — 5 positions — 10,000 cycles.

2) Tone Switch: 3-4-6-8-9 or 10 clips available in tone switch group. All rated at 6 watts. Contact resistance less than 2¾ milliohms.

3) Lever Switch: features coil spring mechanism with index spring replaceable without removal of switch from chassis. Life test — 50,000 cycles.

4) Power Switch: designed for special industrial and electronic uses. Efficient performance up to 20 megacycles. Life test — 25,000 cycles.



CONTROLS . . . full line featuring dependable performance, long life, low noise level and wide range of possible variations.

1) "R" Radiohms: two types — wire wound rated at 3 watts, composition rated at 1 watt. Both types can be twinned.

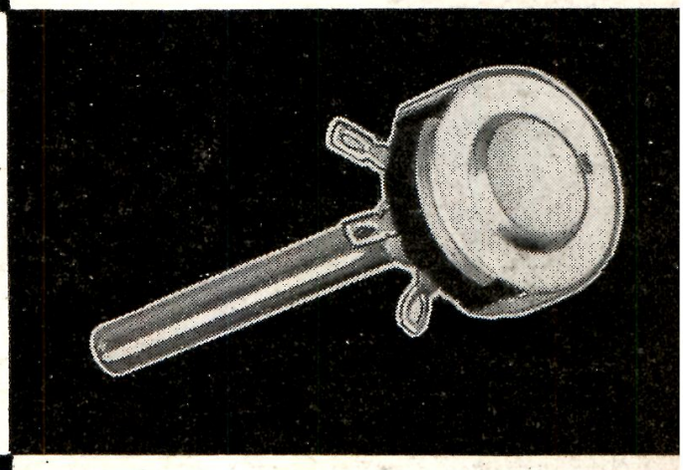
2) "E" Radiohms: Composition type. Rubbing contact. 6 different resistance tapers. Rated at ¼ watt.

3) "M" Radiohms: most versatile control of all. Composition type. Rated at ½ watt. Many variations possible.

4) "1" Radiohms: no bigger than a dime, for miniature receivers, amplifiers. Rating 1/10 watt. Low noise level.

5) Switch Covers: five types for "R" Radiohms, 4 types for "M" Radiohms, 1 type for "E" Radiohms. Rated at 3 amp. 125 volts, 1 amp. 250 volts.

6) Rheostats: for small motor speed controls, charging rate adjusters, etc. Two sizes available: 25 and 50 watt.



CAPACITORS . . . made with Centralab's high dielectric constant Ceramic X, combining economy, size and dependability.

1) TC Tubulars: stable, no change with aging, humidity or temperature. 4 sizes from 860 to 1 mmf., rated at 500 WVDC.

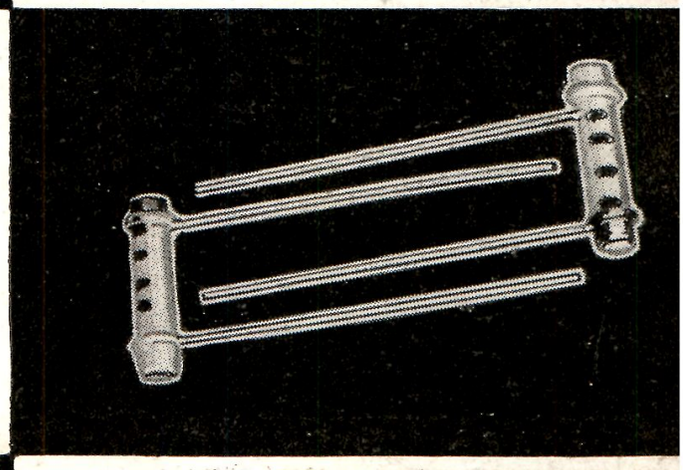
2) BC Tubulars: for use where temperature compensation is unimportant. 4 tube sizes, .000010 to .01 mfd., 500 WVDC.

3) High Accuracy: for rigid frequency control applications. Capacity tolerance, ± 5%. Working voltage 500 volts DC.

4) High Voltage: Capacity tolerance ± 10%. 5 sizes from 5000 to 15,000 WVDC. Flash test 10,000 to 30,000 VDC.

5) Disc: miniature disc capacitors combining reliability with small size, low weight. Dia. ⅝". Thickness 5/32".

6) Trimmers: four basic types. 500 WVDC. Flash test 1100 VDC. Power factor, less than 0.2% at 1 megacycle.

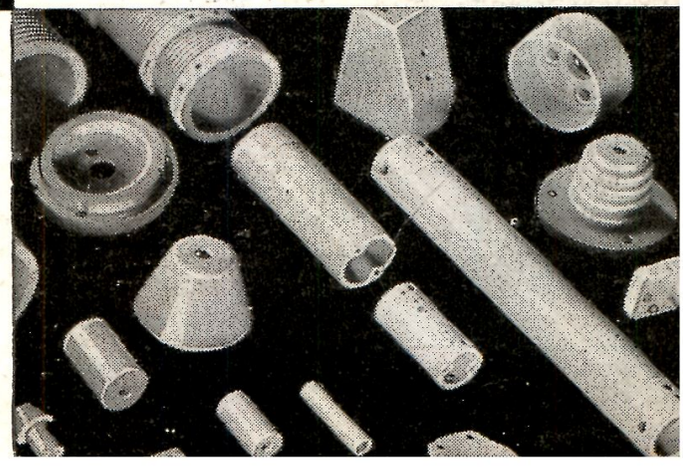


CERAMICS . . . engineered for special applications requiring specific properties of hardness, coefficient of expansion, porosity. Available to manufacturers only.

1) Steatite: Uniform white, high dielectric strength, high mechanical strength, low dielectric loss at high frequencies. Impervious to moisture and common acids, will withstand high temperature and its characteristics remain stable with age.

2) Centradite: For use where low thermal expansion and high resistance to heat shock is desired. Composed chiefly of Cordierite, a magnesium aluminum silicate crystalline material. Low in porosity. Variations available.

3) Zirconite: Has low coefficient of expansion and good thermal shock properties plus high strength characteristics. For extruded or wet-pressed shapes. Variations available.



CENTRALAB *Division of* GLOBE-UNION INC.

PLUS VALUES...

THEY MEAN YOUR DOLLARS BUY MORE WHEN YOU CHOOSE GENERAL ELECTRIC TUBES!

+1 **There's a G-E tube distributor near you,** ready and glad to consult with you on selecting the right tube for any application. He deals with scores of other amateurs, and based on their experience and preferences, can help make sure your dollars are shrewdly invested. His stocks are substantial; his service of a high standard that fully warrants the statement "Your G-E tube distributor is local ham-tube headquarters."

+2 **Lighthouse Larry** — G.E.'s up-to the-minute home-office ham who lives, breathes, and sleeps amateur radio —likes nothing better than to hear from you and discuss your technical problems. The answers you get from him are especially helpful because Larry has at hand the research, engineering, and test facilities of the General Electric Company which is actively engaged in all phases of the radio industry. Lighthouse Larry will be glad to guide you personally in every step of your progress as a ham.

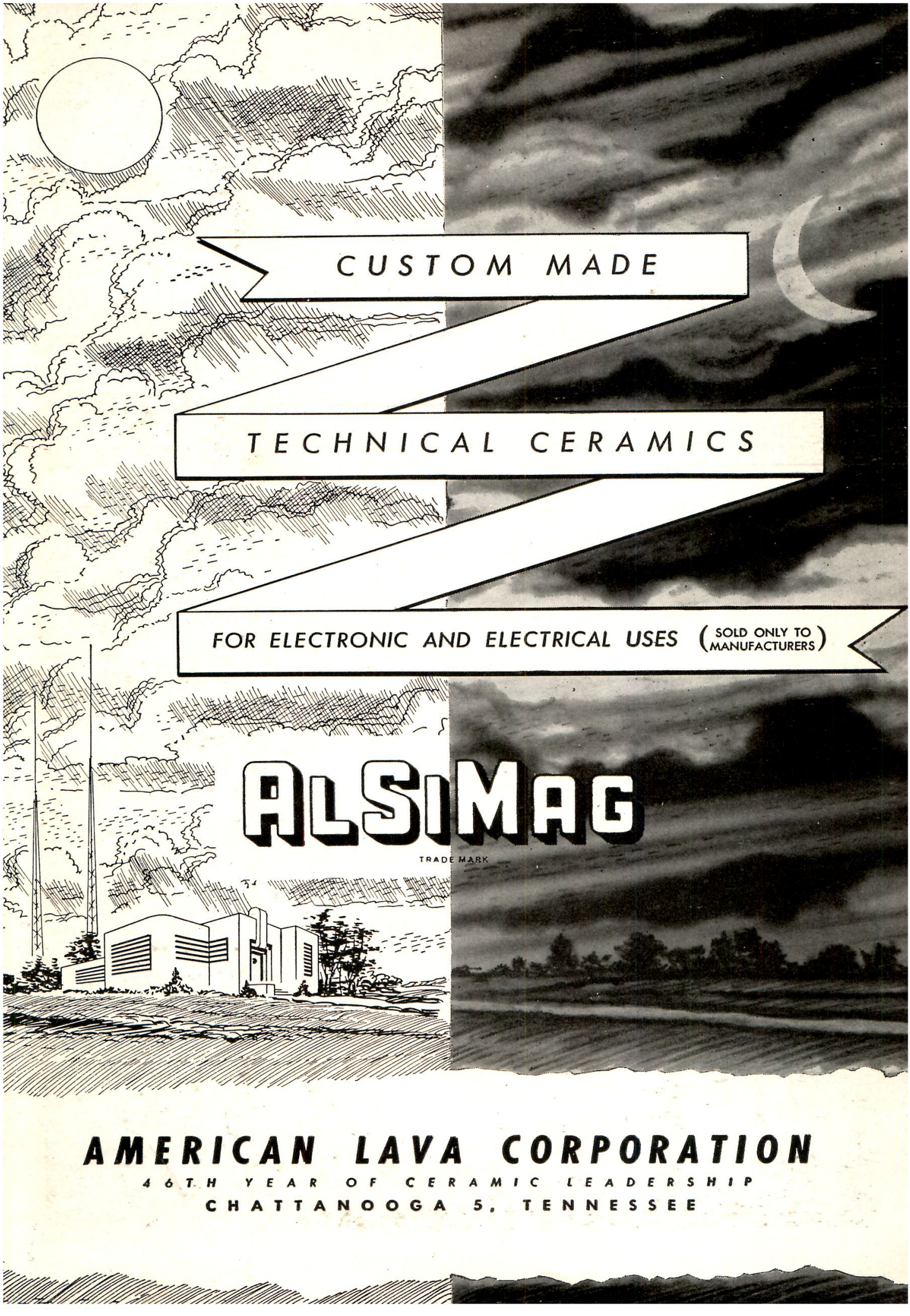
+3 **G.E.'s Ham News** — 8 fact-filled pages of timely hints for alert amateurs — keeps you abreast of latest circuit developments. You owe it to yourself to see your G-E tube distributor regularly for the newest bimonthly edition. The R-9 Pre-amplifier, the new Guillotine Converter— these are two of the important designs already announced in *Ham News,* with full instructions on how to build. Don't miss a copy!

PLUSSES like these are cartoned with every G-E ham tube. The General Electric monogram signifies not just a product, but the full, helpful service that goes with that product. And, most important of all, *you can count on* G-E tube quality, dependability, advanced design, as solid foundation stones for the efficient performance of your rig! *Electronics Department, General Electric Company, Schenectady 5, New York.*

—and other popular G-E ham types (a complete line) as listed with ratings and prices in Booklet ETX-19. Ask your G-E tube distributor for your free copy.

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC



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46TH YEAR OF CERAMIC LEADERSHIP

CHATTANOOGA 5, TENNESSEE

PR CRYSTALS

SINCE 1934

ACCURACY — STABILITY
ACTIVITY — HIGH OUTPUT
DEPENDABILITY *at Low Cost*

For years PR Precision Crystals have set performance standards in all types of service . . . amateur, commercial, marine, broadcast, mobile, police, aircraft. PRs are the foremost choice of amateurs . . . the most critical users of crystals today. PR Crystals have earned this reputation by LOW DRIFT characteristics, less than 2 cycles per MC per degree Centigrade . . . HIGH OUTPUT AND DEPENDABILITY even at highest permissible crystal currents . . . ACCURACY within .01 per cent of specified frequency . . . HIGH ACTIVITY especially desirable for break-in CW operation . . . X-ray orientation . . . CONTAMINATION AND MOISTURE-PROOF through permanent gasket seal . . . ½-inch pin spacing. Every PR is UNCONDITIONALLY GUARANTEED. Your EXACT FREQUENCY (Integral Kilocycle) WITHIN AMATEUR BANDS, AT NO EXTRA COST. See your jobber for PRs. His stock is complete for ALL BANDS. Accept no substitute. — Petersen Radio Company, Inc., 2800 West Broadway, Council Bluffs, Iowa. (Telephone 2760)

COMMERCIAL
PR Type Z-1

Frequency range 1.5 to 10.5 MC. Designed for rigors of all types of commercial service. Calibrated .005 per cent of specified frequency. Weight less than ¾ ounce. Sealed against moisture and contamination. Meets FCC requirements for all types of service.

80 and 40 METERS
PR Type Z-2

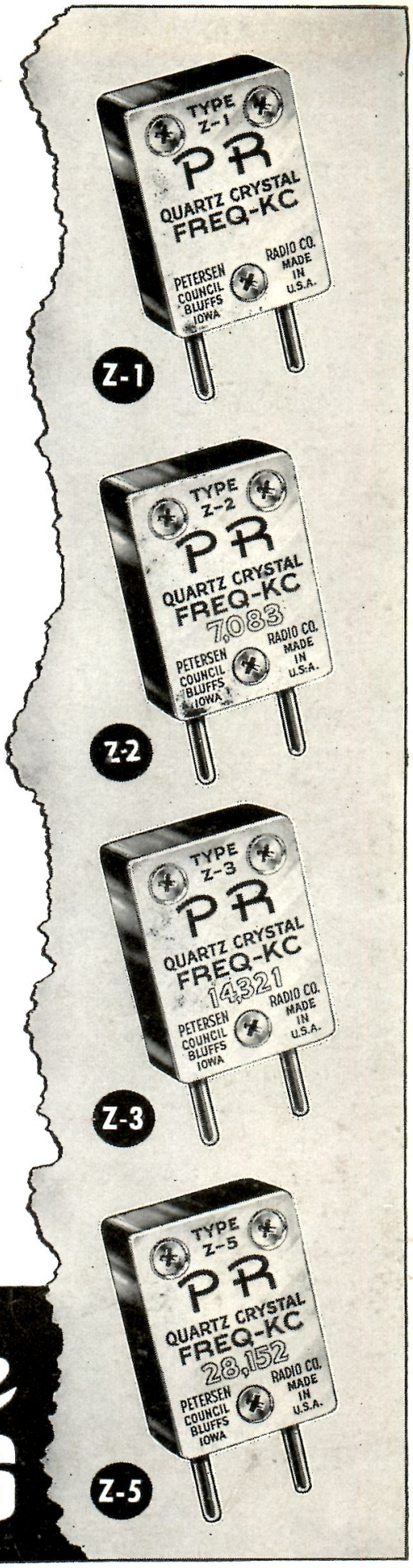
Rugged. Low drift fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed..... $2.75 Net

20 METERS
PR Type Z-3

Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation. $3.75 Net

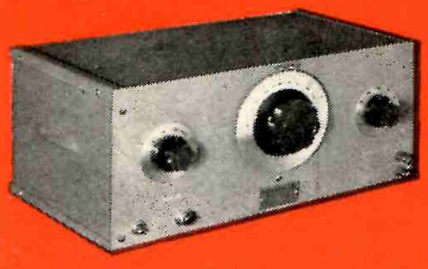
10 METERS
PR Type Z-5

Harmonic oscillator for "straight through" mobile operation and for frequency multiplying to VHF. Heavy output in our special circuit.....$5.00 Net



PR *Precision* CRYSTALS

hp ...for all important electronic measurements



-hp- 200C Resistance-Tuned Audio Oscillator

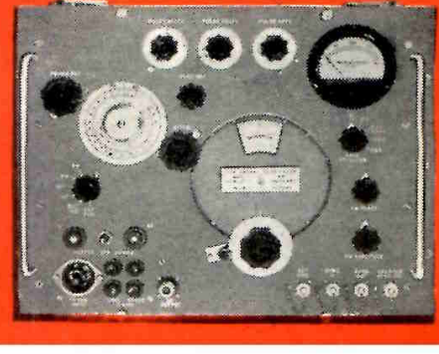
-hp- 330B Noise and Distortion Analyzer

-hp- 400A Vacuum Tube Voltmeter

-hp- 450A Amplifier

	INSTRUMENT	FREQUENCY	CALIBRATION
AUDIO OSCILLATORS	200A	35 cps to 35 kc	Dial Scale—35-350 cps Calibration Points— Ranges—3 (1, 10, 100 times dial calibration
	200B	20 cps to 20 kc	Dial Scale—20-200 cps Calibration Points— Ranges—3 (1, 10, 100 times dial calibration
	200C	20 cps to 200 kc	Dial Scale—20-200 cps Calibration Points— Ranges—4 (1, 10, 100, 1000 times dial calibrat
	200D	7 cps to 70 kc	Dial Scale—7-70 cps Calibration Points—7 Ranges—4 (1, 10, 100, 1000 times dial calibrat
	202D	2 cps to 70 kc	Dial Scale—7-70 cps Calibration Points—7 Ranges—4 (1, 10, 100, 1000 times dial calibrati Dial Scale A—2-50 cps Calibration Points-
	200I	6 cps to 6 kc	Dial Scale A—6-20 cps Calibration Points—1 Ranges—3 (1, 10, 100 times dial calibration Dial Scale B—20-60 cps Calibration Points— Ranges—3 (1, 10, 100 times dial calibration
	201B	20 cps to 20 kc	Dial Scale—20-200 cps Calibration Points—95 Ranges—3 (1, 10, 100 times dial calibration
AUDIO SIGNAL GENERATORS	205A	20 cps to 20 kc	Dial Scale—20-200 cps Calibration Points—80 Ranges—3 (1, 10, 100 times dial calibration
	205AG	20 cps to 20 kc	Dial Scale—20-200 cps Calibration Points—80 Ranges—3 (1, 10, 100 times dial calibration
	205AH	1 kc to 100 kc	Dial Scale—1-10 kc Calibration Points—130 Ranges—2 (1, 10 times dial calibration)

FUNCTION	INSTRUMENT	FREQUENCY	ACCURACY
LOW FREQUENCY STANDARD	100A	Output— 100 kc, 10 kc, 1 kc, 100 cps	±0.01% over room tempera variation of 33° C
	100B	Output— 100 kc, 10 kc, 1 kc, 100 cps	±0.001% from −10° C to +50° C
SQUARE WAVE GENERATOR	210A	Input— 20 cps to 100 kc	Square within ±1% fron 20 cps to 10 kc
WAVE ANALYZER	300A	Measurement Range— 30 cps to 16 kc	Frequency—±3% Voltage overall—±5%
DISTORTION ANALYZERS	320A	Measures at— 400 cps and 5 kc	Less than ±5% (at distortions of 30% or le
	320B	Measures at— 50 cps, 100 cps, 400 cps, 1 kc, 5 kc and 7.5 kc	Less than ±5% (at distortions of 30% or le
	325B	Measures at— 30 cps, 50 cps, 100 cps, 400 cps; 1 kc, 5 kc, 7.5 kc, 15 kc	Voltmeter overall—±3% Distortion—Less than ±5 (at distortion of 30% or le
	330B	Measurement Range— 20 cps to 20 kc	Voltmeter overall—±3% Distortion—±3% for distortion levels as low as
ATTENUATOR	350A	Max. input—100 kc	Each Resistor—±0.5% Response—Accumulative Error at 100 kc approx. 1 db in 50 db
VACUUM TUBE VOLTMETERS	400A	Measurement Range— 10 cps to 1 mc	10 cps to 100 kc—±3% 100 kc to 1 mc—±5%
	410A	Measurement Range— 20 cps to 700 mc	±3% AC and DC Frequency Response flat wit 1 decibel 20 cps to 700 m
AMPLIFIER	450A	10 cps to 10,000,000 flat within ±½ db	40 or 20 db gain ±½ db
ELECTRONIC FREQUENCY METER	500A	Measurement Range— 5 cps to 50 kc in 10 ranges	±2% of full scale
ELECTRONIC TACHOMETER	505A	An Electronic Frequency Meter and a Tachometer Assembl calibrated to measure speeds up to 3,000,000 R.P.M.	
UHF SIGNAL GENERATORS	610A	500 to 1350 mc	±1 db over entire range
	616A	1800 to 4000 mc	±1 db over entire range
REGULATED POWER SUPPLY	710A		



-hp- precision instruments combine in one compact unit, the essential qualities of speed, accuracy and versatility. They are ideal for use anywhere...in laboratory, broadcasting, production or amateur radio.

FREQUENCY RESPONSE	STABILITY	ACCURACY OF CALIBRATION	POWER OUTPUT INTO RATED LOAD	LOAD IMPEDANCE	DISTORTION AT RATED OUTPUT	HUM LEVEL BELOW RATED OUTPUT
±1 decibel, 20 cps to 15 kc	±2%	±2%	1 watt	500 ohms	less than 1%	60 db
±1 decibel, 20 cps to 15 kc	±2%	±2%	1 watt	500 ohms	less than 1%	60 db
±1 decibel, 20 cps to 150 kc	±2%	±2%	100 milliwatts	1000 ohms	less than 1% 20 cps to 20 kc	60 db
±1 decibel, 7 cps to 70 kc	±2%	±2%	100 milliwatts	1000 ohms	less than 1% 10 cps to 20 kc	60 db
±1 decibel, 7 cps to 70 kc ±2 decibels, 2 cps to 7 cps	±2%	±2%	100 milliwatts	1000 ohms	less than 2% 7 cps to 70 kc	60 db
±1 decibel, 6 cps to 6 kc	±2% or ±1% with Standardization	±2%	100 milliwatts	1000 ohms	less than 1% 10 cps to 6 kc	60 db
±1 decibel, 20 cps to 20 kc	±2% or ±1% with Standardization	±2%	3 watts	600 ohms	less than 1% at 3 watts (less than ½% at 1 watt)	60 db
Down 2.0 decibels at 20 cps Down 1.0 decibel at 20 kc at full output	±2% or ±1% with Standardization	±2%	5 watts	50, 200, 500, 5000 ohms (all ct)	less than 1% 30 cps to 20 kc at rated output	60 db below output or 90 db below zero level whichever is larger
enerator—down 2.0 db at 20 cps wn 1.0 db at 2.0 kc at full output meter—within ±0.2 db of 400 cps ref. from 20 cps to 20 kc	±2% or ±1% with Standardization	±2%	5 watts	Generator—50, 200, 500, 5000 ohms (all ct) Voltmeter—5000 ohms input impedance	less than 1% 30 cps to 20 kc at rated output	60 db below output or 90 db below zero level whichever is larger
db from 10 kc ref. 1 kc to 100 kc at full output	±1% after ½ hour warm-up	±2%	5 watts	50, 200, 500, 5000 ohms (all ct)	less than 1% at 1 watt 3% at 5 watts	65 db below output or 65 db below zero level whichever is larger

VOLTAGE	IMPEDANCE	MISCELLANEOUS CHARACTERISTICS
Output—5 volts into 1000 ohms	Load—Not less than 1000 ohms	Wave Shape—Sinusoidal— total distortion not more than 4% on open circuit
Output—5 volts into 1000 ohms	Load—Not less than 1000 ohms	Wave Shape—Sinusoidal— total distortion not more than 4% on open circuit
Input—min. 2; max. 200 Output—60 v peak to peak on open circuit	Input—25,000 ohms Internal—Each side, 500 ohms to ground	Wave Shape—Square (1 microsecond to 90% of maximum) Attenuator—70 db in 5 db steps
Input—1 mv to 500 v	Input—200,000 ohms	Variable Selectivity at 40 db down from resonance: max. selectivity is 30 cps, min. selectivity is 145 cps. Dial Calibration Points—62
Max. Input—100 v	Analyzer Input—20,000 ohms Detector Input—Should be not less than 100,000 ohms	Max. Attenuation: Fundamental—more than 60 db (.1%), Second and higher harmonics—less than 5%. Filters—Tuned to nominal frequencies within ±5% (non-adjustable). Attenuator—70 db in 1 db steps.
Max. Input—100 v	Analyzer Input—20,000 ohms Detector Input—Should be not less than 100,000 ohms	Max. Attenuation: Fundamental—more than 60 db (.1%), Second and higher harmonics—less than 5%. Filters—Tuned to nominal frequencies within ±5% (non-adjustable). Attenuator—70 db in 1 db steps.
Voltmeter Measurement Range—.01 v to 300 v in 9 ranges Distortion—min. input 1 v for .1% distortion Noise—min. input .003 volts for full scale	Amplifier Input— 200,000 ohms shunted by approx. 24 mmfd Voltmeter Input— 1 megohm (min.) shunted by approx. 32 mmfd	Max. Attenuation: Fundamental—more than 60 db (.1%), Second and higher harmonics—less than 5%. Filters—Tuned to nominal frequencies within ±5% (adjustable –1%). Voltmeter—Average Reading (calibrated in rms volts and in db above a 1 mw. 600 ohm level).
Voltmeter measurements— .01 v to 300 v in 9 ranges Distortion—min. input 1 v for .1% distortion Noise—minimum input—0.0003 v for full scale	Amplifier Input—200,000 ohms shunted by approx. 24 mmfd Voltmeter Input—1 megohm (min.) shunted by approx. 32 mmfd	Max. Attenuation: Fundamental—more than 60 db (0.1%) Second and higher harmonics—less than 10% Voltmeter—Average reading (calibrated in rms volts and db above a 1 mw. 600 ohm level)
Maximum Input—50 v	Input—500 ohms—one side grounded Output—500 ohms—one side grounded	Attenuation—110 db in 1 db steps
Measurement Range— .03 v to 300 v in 9 ranges	Input— 1 megohm (min.) shunted by approx. 16 mmfd	Voltmeter—Average Reading (calibrated in rms volts and in db above a 1 mw. 600 ohm level)
Measurement Range— 1 to 300 VAC in 6 ranges 1 to 1000 VDC in 7 ranges	Input—AC—8 megohms in parallel with 1.3 mmf at frequencies below 10 mc Input—DC—100 Megohms	AC Voltmeter—Peak reading instrument will indicate voltage to 3000 mc Ohmmeter: 0.2 ohms to 500 megohms in 7 ranges
Output 10 volts 1% distortion	Input—1 megohm Output—3000 ohms or more	Increases sensitivity of 400A, 100 times
Input—0.5 v to 200 v	Input—50,000 ohms	Separate External Attachments—1. Photocell Input (jack provided), 2. Esterline-Angus 1 mil, 1400 ohm Automatic Recorder (jack provided)
Output 0.1 microvolts to 0.1 volts	50 ohm line coaxial type N connector	Internal pulse modulation. External pulse and amplitude modulation.
Output 0.1 microvolts to 0.1 volts	50 ohm line coaxial type N connector	Internal pulse and FM modulation. External pulse modulation.
180 to 360 VDC (regulated) 6.3 VAC ct (unregulated)		Output constant within approx. 1% for loads from 0 to 75 ma and for line-voltage variations of ±.0%. Noise and hum less than 0.005 v.

Brief specifications of these nationally known instruments are shown here. Full details are available in the new -*hp*- catalog. Write for your free copy, today.

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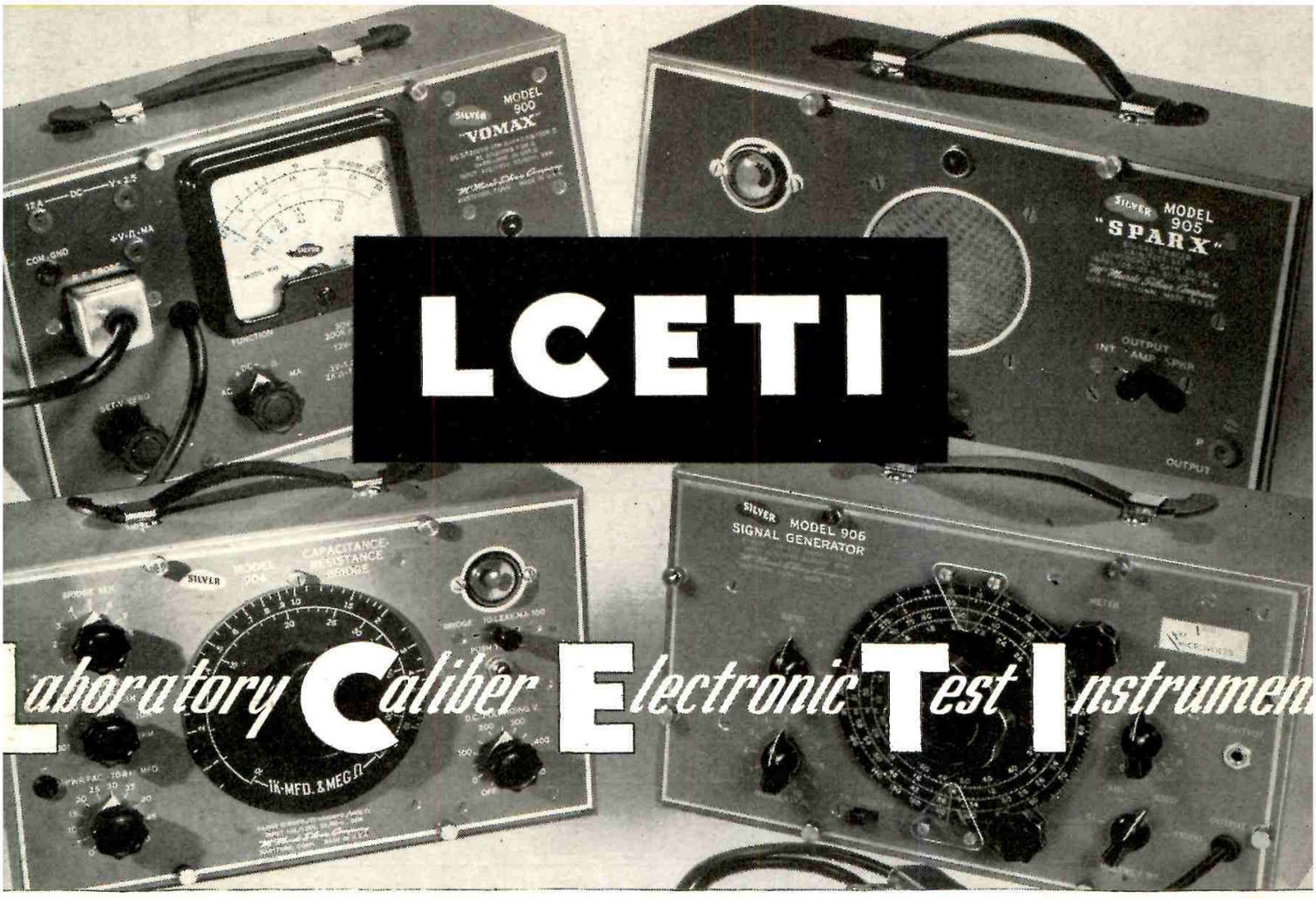
***hp* laboratory instruments**



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nder war pressure McMurdo Silver devised ew techniques to lift the manufacture of lab-ratory-type instruments out of the costly odel-shop. He discovered how to put them on ne low-cost, high-volume production line. The esult is instruments of laboratory precision, ccuracy, dependability . . . at prices far below hat you'd expect to pay. These are the same lentical **L**aboratory **C**aliber **E**lectronic **T**est nstruments the big manufacturers, universi-es and the government select.

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MODEL 906 FM/AM SIGNAL GENERATOR: 8 ranges calibrated ±1% accurate, 90 kc. thru 210 mc. 0-100% variable 400~AM; 0-500 kc. variable FM sweep built-in. Metered microvlts; variable 0-1 volt. Strays *lower* than $500 laboratory generators. Only $99.50 net.

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MODEL 904 CONDENSER/RESISTANCE TESTER: Measures accurately ¼ mmfd. thru 1,000 mfd.; ¼Ω thru 1,000 megΩ . Internal 0-500 V. variable d.c. polarizing voltage. Measures condensers *with rated d.c. volts applied*. Only $49.90 net.

MODEL 905 "SPARX" SIGNAL TRACER: Visual *and audible* tracing; also tests phono pickups, microphones, speakers, PA amplifiers. Is your shop test-speaker, too. 20~ thru 200 mc.; PM speaker; mains-insulated transformer power supply. Only $39.90 net.

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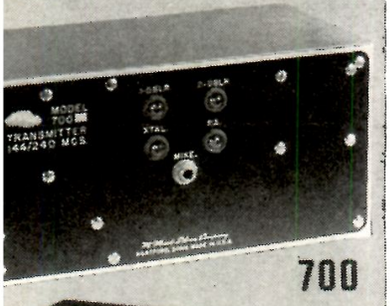
MODEL 908 MICROMATCH standing wave ratio and r.f. wattmeter will let you put more power into your antenna — from your present transmitter — for only **$29.90.**

MODEL 800 U.H.F. RECEIVER is E. P. Tilton's A.R.R.L. HANDBOOK, "T.R.F. Superregenerative Receiver" — the sweetest performing 2½ and 1¼ meter, non-radiating receiver we've seen — in finished commercial form for only **$39.75** less tubes and power supply.

MODEL 700 U.H.F. TRANSMITTER is xtal controlled for maximum signaling effectiveness in 2½ and 1¼ meter bands, yet costs you only **$36.95** less tubes and power supply.

MODEL 701 TRANSMITTER goes into more amateur stations to produce more CW and phone DX than anything else, it seems. A 6AQ5 Tritet drives an 807 to 75 watts CW, 30 watts phone, input, 80 through 6 meters. Modulator is built-in. Less coils (3 per band at $.50 ea.), power supply, 4 tubes and crystal, it's the outstanding transmitter "buy" at **$36.95.**



MODEL 801 RECEIVER covers 450 kc. through 60 mc., consisting of r.f. stage, regenerative detector, two a.f. stages and built-in speaker, it's the old reliable standby — just the thing for portable, emergency, test — and serious ham reception. **$29.95** for 6.3 volt operation; **$28.95** for 1.5 volt dry battery tubes; coils, **$1.00** per pair.

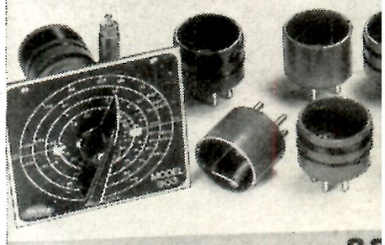
MODEL 703 is new — a pre-tuned bandpass freq. multiplier. Driven by any VFO or xtal, it puts you in any band 80 through 6 meters, on selected freq. as fast as you can turn two knobs. Its 807 gives 40 watts max. output and instant control of every band. Price **$49.90.**

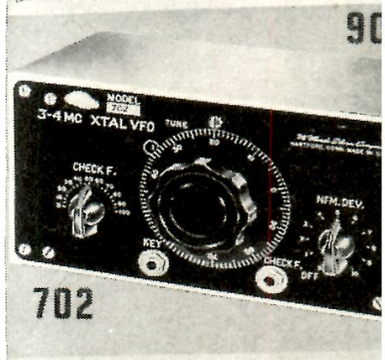
MODEL 802 SUPER-HETERODYNE RECEIVER is an amateur-band-only receiver using i.f. regeneration to give variable phone up to single-signal CW selectivity. Following A.R.R.L. HANDBOOK teachings, it provides more than usual 8-tube results, over 7 feet of band spread on 80, 40, 20, 16, 11, 10 and 6 meter bands, all for only **$38.95** less tubes, power supply and coils at **$1.00** per pair.

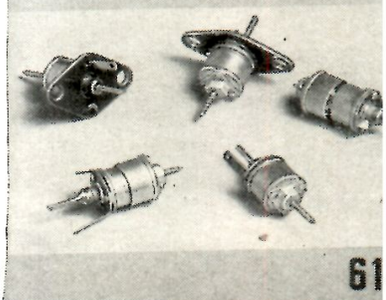
MODEL 903 ABSORPTION WAVEMETER is close to the most useful instrument in any shack. Thousands in use attest its prime necessity. Price is but **$3.30** net, plus **$.65** ea. for plug-in coils covering 1600 kc. up to 500 mc.

MODEL 702 VFO includes NFM. Covering 3,000 through 4,000 kc., its 3-watt output may be multiplied 80 through 2½ meters. It's something brand new — a crystal controlled VFO including and using a 5 mc. xtal frequency standard to give complete break-in operation, superbly clean keying — the VFO you've dreamed would come. Only **$49.90** less tubes, including power supply.

TYPE 619 AIR TRIMMER CAPACITORS are high Q, low-loss, good up beyond 500 mc. for tuning, trimming, coupling, etc. 3 mmfd. to 30 mmfd. spread out over 3 complete revolutions for easy adjustment. Like all SILVER instruments, price is more than right—only **$.30** ea., net.







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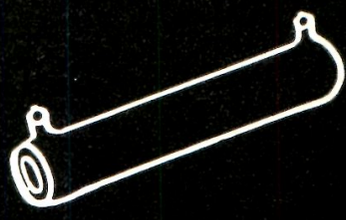
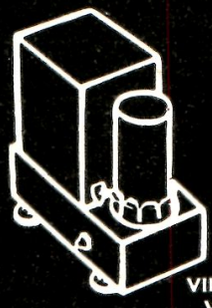


FIXED AND ADJUSTABLE RESISTORS



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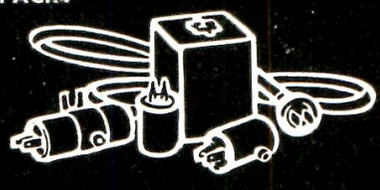

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HYTRON TRANSMITTING AND SPECIAL PURPOSE TUBES CONTINUOUS COMMERCIAL SERVICE RATINGS

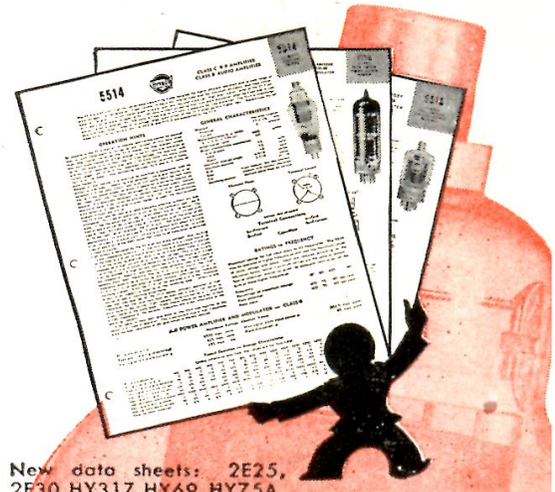
escription	Type No.	Filament Ratings Volts	Amps	Type	Max Plate Volts	Max Plate Ma	Max Plate Dis	Amateur Net Price
LOW AND AEDIUM MU RIODES	10Y	7.5	1.25	Thor	450	65	15	$1.60
	HY24	2	0.13	Oxide	180	20	2	1.50
	801A/801	7.5	1.25	Thor	600	70	20	3.00
	864	1.1	0.25	Oxide	135	5	—	1.20
	1626	12.6	0.25	Cath	250	25	5	1.60
GH-MU RIODES	HY31Z §	6	2.55	Thor	500	150*	30*	3.95
	HY1231Z §	6 12	3.2 1.6	Thor	500	150*	30*	4.50
	5514※	7.5	3	Thor	1500	175	65	3.95
VHF RIODES	2C26A	6.3	1.15	Cath	3500	NOTE	10	7.75
	HY75A※§	6.3	2.6	Thor	450	90	15	3.95
	HY114B§	1.4	0.155	Oxide	180	12	1.8	2.25
	HY615	6.3	0.175	Cath	300	20	3.5	2.25
	955	6.3	0.15	Cath	200	8	1.8	3.10
	9002	6.3	0.15	Cath	200	8	1.8	2.15
BEAM NTODES AND NTODES	2E25※§	6	0.8	Thor	450	75	15	3.95
	2E30§	6	0.65	Oxide	250	60	10	2.25
	3D21A	6.3	1.7	Cath	3500	NOTE	15	7.50
	HY69§	6	1.6	Thor	600	100	30	3.95
	807	6.3	0.9	Cath	600	120	25	2.30
	837	12.6	0.7	Cath	500	80	12	4.15
	HY1269§	6 12	3.2 1.6	Thor	750	120	30	4.50
	1625	12.6	0.45	Cath	600	120	25	2.30
	5516§	6	0.7	Oxide	600	90	15	5.95
CORNS MINIA- TURES	954	6.3	0.15	Cath	Sharp cutoff pentode			4.90
	9001	6.3	0.15	Cath	Sharp cutoff pentode			2.70

	Type No.	Filament Ratings Volts	Amps	Type Rect	Peak Plate Ma	Max D-C Ma†	Inv Peak Pot.	Amateur Net Price
CTIFIERS	816	2.5	2.0	Mer	500	250	5000	$1.25
	866A/866	2.5	5.0	Mer	1000	500	10000	1.75
	1616	2.5	5.0	Vac	800	260	6000	7.50

	Type No.	Average Operating Voltage	Operating Ma Min	Operating Ma Max	Av Volts Reg	Min Starting Voltage	Amateur Net Price
ASEOUS OLTAGE REGU- ATORS	OA2	150	5	30	2	185	$2.30
	OB2	108	5	30	1	133	2.30
	OC3/VR105	108	5	40	2	133	1.20
	OD3/VR150	150	5	40	3.5	185	1.20

oth sections of twin triode. NOTE: Special pulse tube, not recommended for c-w, consult Hytron Commer- il Engineering Dept. for data. #5514 supplants the HY30Z, HY40, HY40Z, HY51A, HY51B, and HY51Z; HY75A the HY75, and the 2E25 the HY65. †Current for full wave. §Instant-heating.

r better reception, it's also Hytron — GT, G, lock-in, or miniature.



New data sheets: 2E25, 2E30, HY31Z, HY69, HY75A, HY1231Z, HY1269, 5514, 5516. Free.

Keep up to date with the Hytron Reference Guide for Miniature Electron Tubes. Free.

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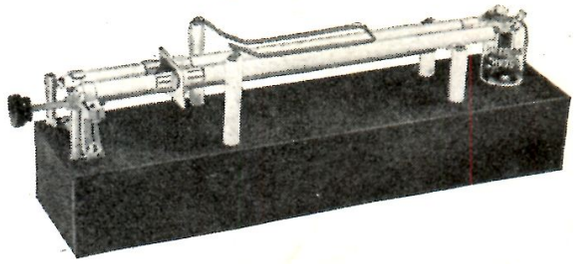
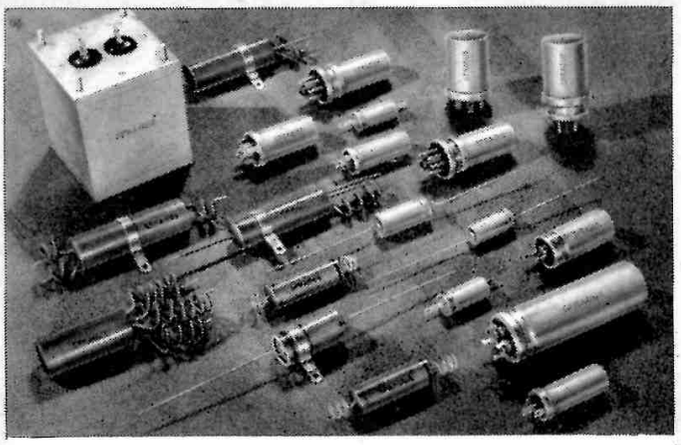


Simple, sure-fire vfo for 1¼ or 2 meters. HY-Q 7: kit: unassembled, $9.95; assembled, $11.95

Here's Capacitor Dependability!

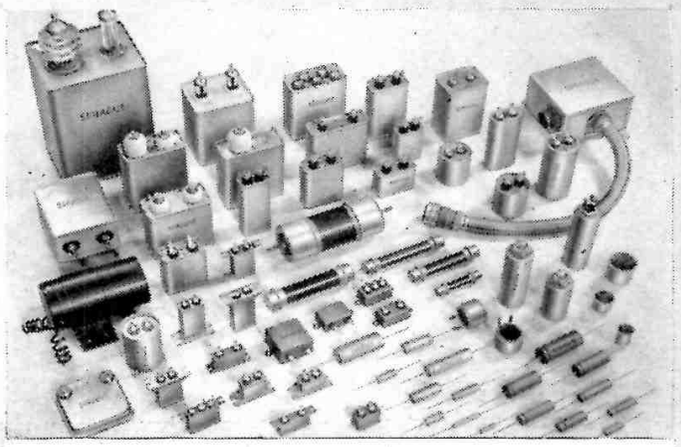
Shown here are a few of more than 9675 capacitor and *Koolohm resistor types that Sprague produces every year. Many of these are for critical industrial applications, others for national defense and ultra-exacting scientific needs.

From this vast array come the capacitors that are carefully selected for amateur radio uses—types that mean more for your money because they're better engineered, built more dependably. Catalog on request.



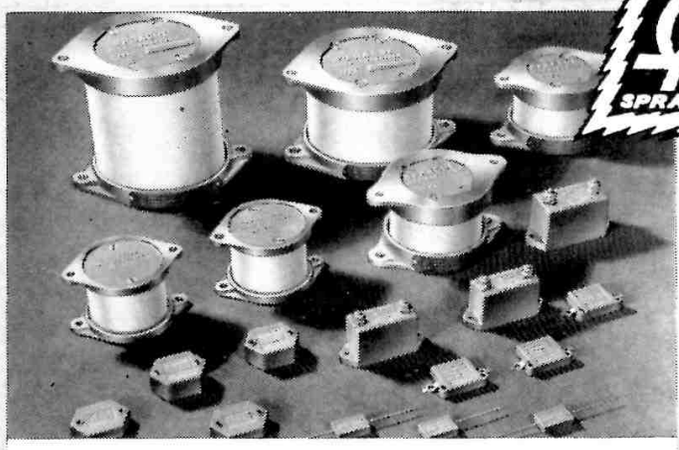
DRY ELECTROLYTICS

Sprague offers the most diversified dry electrolytic capacitor line ever presented for standard distributor stock. Tiny "Atom" midgets; self-mounting multi-section units; high-capacity, low-voltage tubulars; rectangular and cylindrical shapes; lug, bracket and self-mounting types; terminals and lead connections and many others!



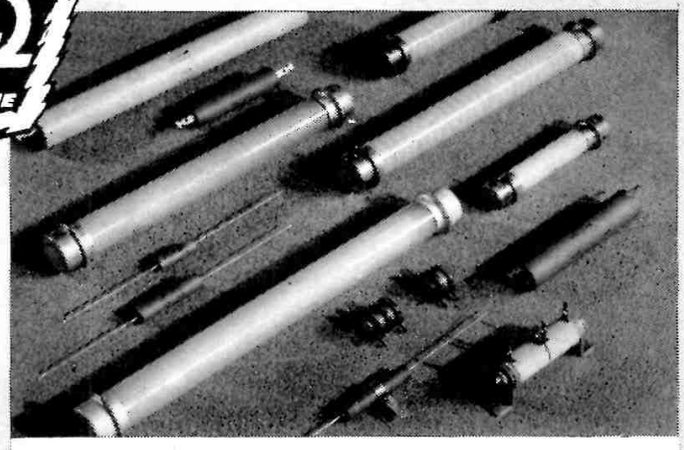
PAPER DIELECTRICS

Standard Sprague paper dielectric capacitors for amateur use include 15 types and over 250 items. Chief among them are three small, popularly priced transmitting types that are both filled and impregnated with *KVO, the exclusive Sprague dielectric. And don't forget the TC Tubular By-pass types—"Not a failure in a million!"



MICA DIELECTRICS

Sprague distributors carry complete stocks of popular mica capacitors including all needed capacities and voltage ratings—in sizes from "postage stamp" silvered micas to high-voltage ceramic-jacketed units. All provide maximum quality for R-F applications where low power factor and high insulation resistance at high frequencies are essential.



*KOOLOHM RESISTORS

Sprague Koolohm Resistors are wound with wire insulated before winding with a flexible ceramic coating that is impervious to heat as high as 1000° C. Doubly protected by glazed ceramic shells and moisture resistant seals. Insulated for 10,000 volts resistance breakdown to ground. Larger, sturdier wire sizes in smaller resistors. Use Koolohms at full wattage ratings—anywhere!

*Trademarks Reg. U. S. Pat. Off.

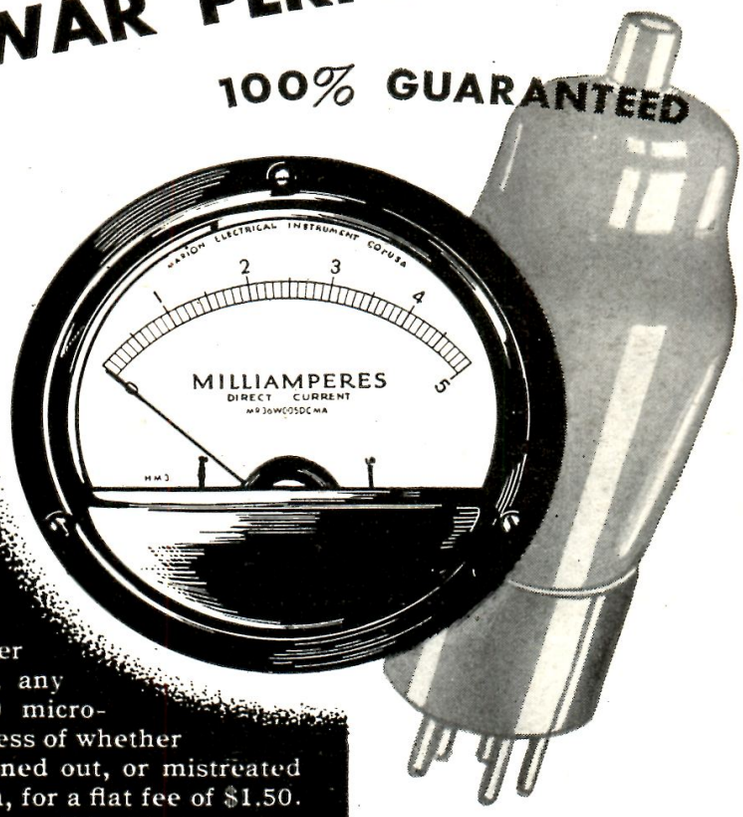
SPRAGUE

PIONEERS OF ELECTRONIC AND ELECTRICAL PROGRESS

TRULY HERMETICALLY SEALED . . . FOR POST-WAR PERFORMANCE

100% GUARANTEED

SEALED LIKE A VACUUM TUBE



Marion Glass-To-Metal Truly Hermetically Sealed Electrical Indicating Instruments are guaranteed for six months. You get top performance . . . critical accuracy . . . at a cost no more than that of most competitive unsealed instruments.

Additional economy is offered in Marion's special replacement offer. After the initial six-month guarantee expires, any $2\frac{1}{2}$" and $3\frac{1}{4}$" type, ranging from 200 microamperes upward, will be replaced, regardless of whether the instrument has been overloaded, burned out, or mistreated . . . provided the seal has not been broken, for a flat fee of $1.50. Instruments with sensitivity greater than 200 microamperes will be replaced for $2.50.

MARION "4 FOR 1" FEATURE

Interchangeable Round and Square Colored Flanges . . . one instrument can thus fill four different needs:

1. ROUND
2. ROUND FOR STEEL PANEL
3. RECTANGULAR
4. RECTANGULAR FOR STEEL PANEL

Stop in at your nearest radio supply shop today and see the best *in electrical indicating instruments . . . the Marion line.*

MORE EXTRAS WITH MARION "HERMETICS"—

DURABLE

. . . Unaffected by extremes of heat or cold . . . permanently protected against dust, dirt, moisture . . . instrument malfunctioning eliminated.

SHIELDED

. . . Heavy steel case gives magnetic and electrostatic shielding so important in modern high frequency equipment.

INTERCHANGEABLE

. . . The Marion case, with its high conductivity plating, eliminates the need for separate shielding and permits interchangeability on any type of panel without affecting calibration.

DRESSY!

. . . Marion "hermetics" are supplied with either round or square flanges in black . . . or any one of 12 iridescent colors at no extra cost.

MARION ELECTRICAL INSTRUMENT CO.

MANCHESTER, NEW HAMPSHIRE

Export Division 458 Broadway New York 13, U. S. A. Cables: MORHANEX

THE NAME "MARION" MEANS THE "MOST" IN METERS

IN CANADA: THE ASTRAL ELECTRIC COMPANY, SCARBORO BLUFFS, ONTARIO

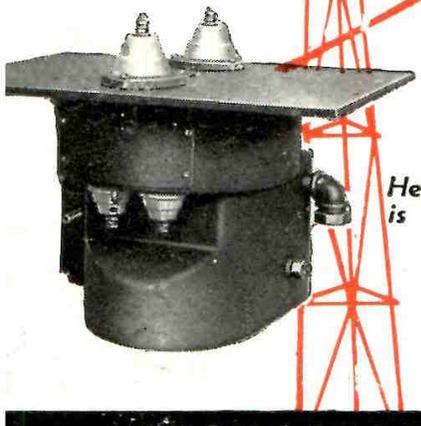
'6

ROTOMATIC BEAM

LATEST ADDITION TO FAMOUS JOHNSON LINE

The solution to QRM on the crowded DX bands is the new JOHNSON Rotomatic Antenna Array It's strong, light, has broad band characteristics, and provides tremendous increase in signal strength. Two band operation is possible with the Deluxe model. Two 3-element arrays can be matched and fed with the same efficient open wire transmission line. On ten, as many as four elements can be used.

The drive unit is really **heavy-duty** — providing rotation through 360° at 1½ RPM. May be purchased without motor for hand drive. The combined direction indicator, with great circle map and beam control is a marvel of operating efficiency — where speed counts as never before.



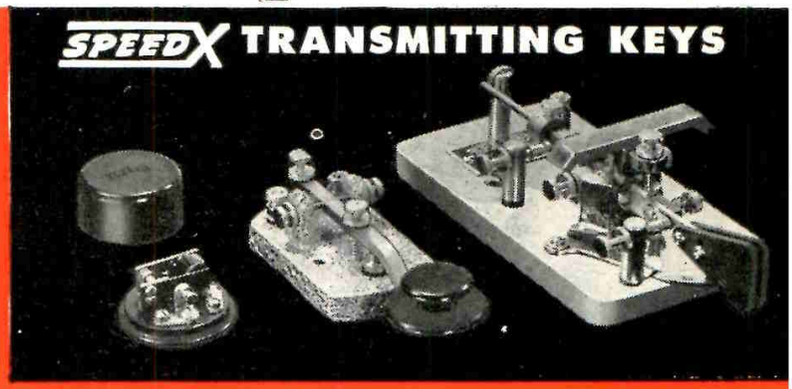
Heavy-duty drive unit is self-lubricating and fully enclosed.

New direction indicator and beam control is Selsyn motor operated.

INSULATORS

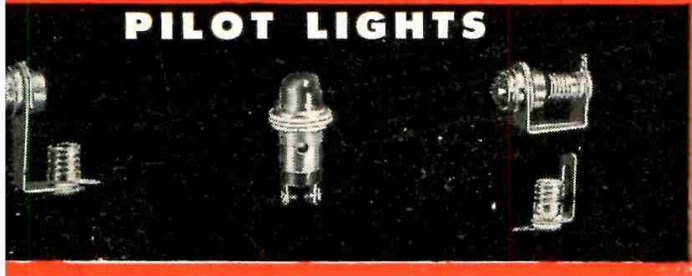
OHNSON Insulators are specifically designed to andle high RF with low loss. They possess, in addition, gical proportions, clean-cut accurate molding, and igh grade nickel plated brass hardware with milled — ot stamped — nuts. The Johnson line includes stand-ff, cone, thru-panel, antenna, feeder and strain nsulators.

SPEED X TRANSMITTING KEYS



The Speed X line, long a leader in its field, is now manufactured by JOHNSON. It includes everything from buzzers to high speed semi-automatic keys. Pictured are the hand key, Model 326, and beautiful chrome finish, new and improved Model 501 semi-automatic. Model 501, Amateur Model 515 and Junior 510 also available in left hand models.

PILOT LIGHTS

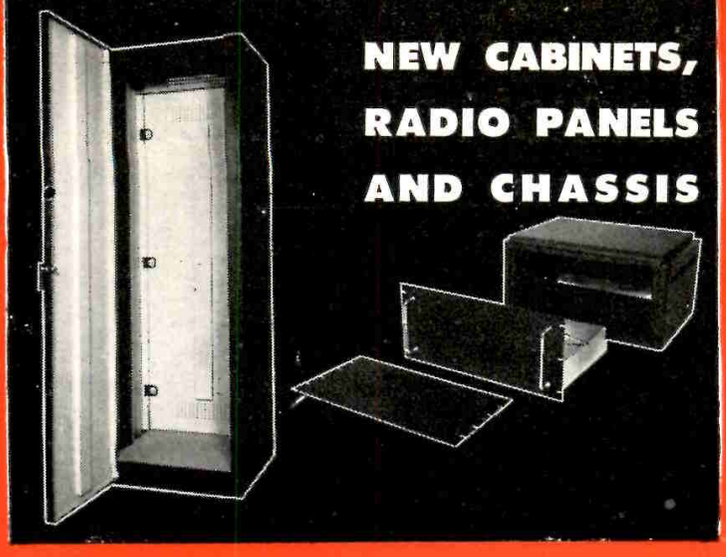


o round out its line, JOHNSON recently purchased he entire Gothard line of fine pilot lights. The Gothard ine is a complete line and will be maintained to pro-ide a wide choice and permit selection of a light which will more exactly meet your needs. All metal

TUBE SOCKETS

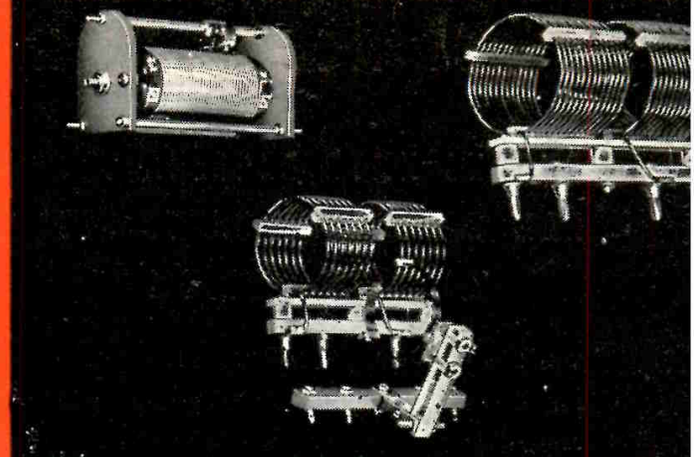
JOHNSON Tube Sockets have consistently led the way to better design for better results. Present day demands for ever better radio-electronic circuits and equipment are more than adequately met with JOHNSON Tube Sockets. Superior in mechanical

NEW CABINETS, RADIO PANELS AND CHASSIS



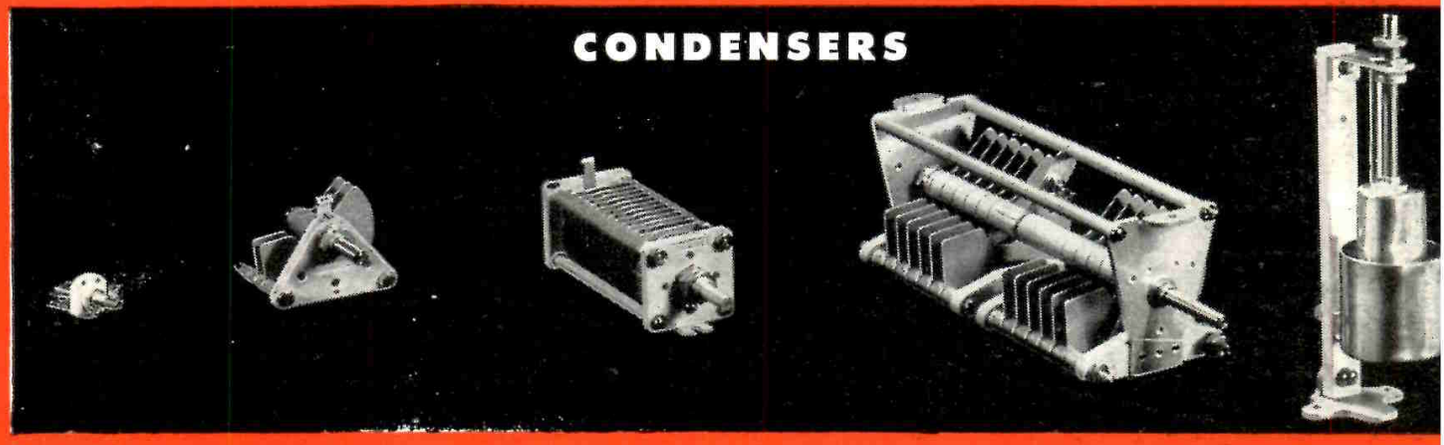
The skill of JOHNSON in building cabinets for its Phasing and Antenna Coupling Equipment is now directed to mass production of cabinets, racks, panels and chassis. They are professional in appearance, characteristically reasonable in price. A unique feature is the ventilation system which permits units to be placed flush side-by-side. Chassis have a new type flush joint which eliminates sharp and protruding edges.

NEW, FINER TRANSMITTER CO



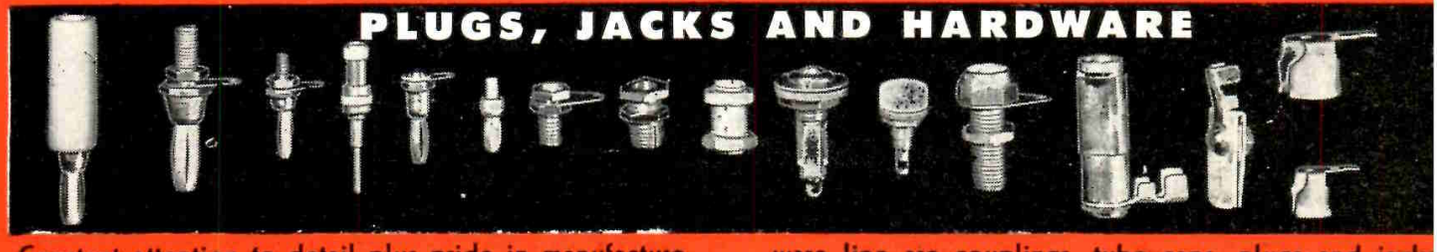
JOHNSON is the first to offer the amateur a comple line of transmitting inductors with commercial ef ciency. New plug-in link pick-up coils make possib efficient impedance matching to the transmission lin Correct LC ratio with either high or low voltage tube can be secured by the purchase of only one addition coil in the series for operation from 6 to 80 mete Also pictured is the JOHNSON Rotary Inducto

CONDENSERS



Dependable performance is the yardstick by which quality of condensers is measured. Every JOHNSON condenser is precision engineered not only for superlative performance but for durability as well. The exacting requirements of amateur, commercial broadcast and industrial operation are rigidly met for your complete satisfaction. What's more, JOHNSON makes a condenser for every stage of the amateur transmitter from oscillator through the final amplifier. Whatever your requirements, the choice of JOHNSON condensers is complete.

PLUGS, JACKS AND HARDWARE



Constant attention to detail plus pride in manufacture make JOHNSON hardware a perfect compliment to your "dream station". The quality is there, yet the price is modest. Included in the JOHNSON Hardware line are couplings, tube caps, plugs and jacks inductor clips, soldering terminals tube locking clamps panel bearings, flexible shafts, fuse clips, handle in dicators and cable connectors.

JOHNSON products can be obtained from radio-electronic parts jobbers, or write directly for further information. You'll be glad you did!

SEND FOR LATEST JOHNSON CATALOG

JOHNSON

MOST ACCURATE HAM BAND FREQ. METER

CHECKS XMTR FREQ. IN ANY HAM BAND FROM 3.5 TO 148 MC. ON FM OR AM

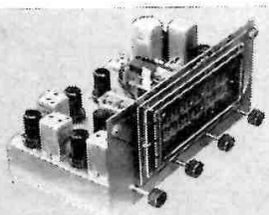
This latest Browning unit designed especially for hams — the Model MJ-9 Frequency Meter — is a high sensitivity job that checks your operating frequencies accurately. If you place it near your xmtr, you may not even need a pickup wire for usable signals! Can be used for measuring frequency of remote transmitters and for calibration of receivers within ham bands or ham band harmonics. Truly a necessity for every modern shack.

MODEL MJ-9 FREQ. METER

- **Direct, frequency-reading dial on seven ham bands.**
- **.05% accuracy at all frequencies.**
- **Audio detection of zero beat.**
- **Low power consumption.**
- **All operating controls on front panel.**

PLUS MANY OTHER FEATURES. WRITE US FOR LITERATURE.

MOST WIDELY USED FM-AM TUNER IN THE WORLD



MODEL RJ-12 FM-AM TUNER

- **Separate RF and IF systems on both bands.**
- **One antenna serves both FM and AM.**
- **Tuning eye shows correct tuning.**
- **2-stage cascade limiting on FM.**
- **Phono position on channel selector switch; phono input connector in back.**
- **Armstrong circuit employed on FM.**

PLUS MANY OTHER FEATURES. WRITE US FOR LITERATURE.

FOR HI-FI RECEPTION IN THE NEW FM BAND AND IN STANDARD BC. BAND

Ask any old-timer about the Browning-Drake tuner, and he'll warm right up with a recitation of how much that unit meant to him. Now put an RJ-12 in your house, and the xyl and all the neighbors will decide that you, after all, are the king pin of radio in your community! For here's a hi-fi, hi-sensitivity unit which provides distortion-free reception. Put it in special cabinet, desk drawer, shelf — wherever it will look best. Or for use with rack-mounted amplifier. Diagram of HI-FI AMPLIFIER included with every unit.

BROWNING LABORATORIES, INC. WINCHESTER, MASS.

CANADIAN REPRESENTATIVES: MEASUREMENT ENGINEERING 61 DUKE STREET. TORONTO. CANADA

REMAX VERTICAL ANTENNAS--ELEMENTS AND MOUNTING ACCESSORIES

Premax Tubular Vertical Antennas are fully collapsing and adjustable, yet give exceptionally efficient, dependable performance under most severe conditions. Will withstand ordinary stresses, but should be supported by guys or standoff insulators against abnormal winds. In 6 to 35-foot heights, in monel, aluminum or steel.

Alum'n Monel

Weather Resistant Steel Antennas

No.	Description	Extended Length	Collapsed Length	Base O.D.	Base I.D.	Weight Each
112-M	2-sec. telescoping	11′8″	6′1″	.656″	.556″	4 lbs.
318-M	3-sec. telescoping	17′3″	6′2″	.875″	.775″	7 lbs.
224-M	4-sec. telescoping	22′9″	6′3″	1.063″	.963″	11 lbs.
130-M	5-sec. telescoping	28′3″	6′4″	1.250″	1.150″	15 lbs.
136-M	6-sec. telescoping	33′9″	6′5″	1.500″	1.400″	20 lbs.

Light-Weight Aluminum Antennas

No.	Description	Extended Length	Collapsed Length	Base O.D.	Base I.D.	Weight Each
AL-106	1-pc. tapered rod	6′3″	6′3″	.313″	...	¼ lb.
AL-312	2-sec. telescoping	12′4″	6′4″	.500″	.334″	1½ lbs.
AL-518	3-sec. telescoping	18′5″	6′4″	.750″	.584″	3 lbs.
AL-324	4-sec. telescoping	24′4″	6′4″	1.000″	.834″	5 lbs.
AL-530	5-sec. telescoping	30′0″	6′5″	1.250″	1.084″	7 lbs.
AL-535	6-sec. telescoping	35′8″	6′5″	1.500″	1.310″	12 lbs.

Heavy-Duty Aluminum Masts

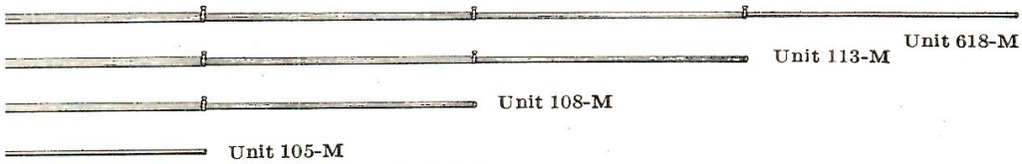
No.	Description	Extended Length	Collapsed Length	Base O.D.	Base I.D.	Weight Each
AM-017	1-pc. tapered tube	17′9″	17′9″	.969″	.689″	5½ lbs.
AM-035	2-sec. tapered	35′0″	17′9″	2.000″	1.732″	19 lbs.

Long-Enduring Monel Antennas

No.	Description	Extended Length	Collapsed Length	Base O.D.	Base I.D.	Weight Each
MM-313	2-sec. telescoping	appx. 13′	6′9″	.615″	.545″	2¾ lbs.
MM-419	3-sec. telescoping	appx. 19′	6′9″	.747″	.667″	5 lbs.
MM-425	4-sec. telescoping	appx. 25′	6′9″	.893″	.799″	8 lbs.
MM-430	5-sec. telescoping	appx. 30′	6′9″	1.065″	.945″	13 lbs
MM-435	5-sec. telescoping	appx. 35′	7′8″	1.065″	.945″	15 lbs.

Ask your Radio Jobber for new Premax Antenna Catalog. He also can supply the Premax Radio Antenna Manual of Vertical and Horizontal installations.

RULITE ELEMENTS for Beam Arrays



max Corulite Elements meet the need for light-weight but sturdy elements for horital arrays and similar applications. Exceptionally light weight yet they provide the ded strength and rigidity so essential in horizontal installations — and at extremely low t. The special steel tubing used in these elements is a Premax development to insure isual stiffness and strength. Heavily electroplated to insure corrosion resistance and high trical conductivity. Fully adjustable to any desired length. A special locking clamp ires rigid joints and positive electrical contact. A "hairpin" tuning bar provides ease of ustment.

No.	Description	Extended Length	Collapsed Length	Base O.D.	Recommended For	Weight Per Pr.
105-M	1-section	5′0″	5′0″	.625″	6-meter	1 lb.
108-M	2-section	8′2″	4′7″	.750″	10-meter	2 lbs.
113-M	3-section	12′4″	4′8″	.875″		3½ lbs.
618-M	4-section	17′0″	5′3″	1.000″	20-meter	5½ lbs.

(Sold only in pairs, complete with Premax "Hairpin" Tuning Bar)

Element Corulite
r 10 or 20 meters,
nounting clamps
etailed drawings
lding wood frame
pport.

Four-Element Corulite Kits for 10 or 20 meters, with mounting clamps and detailed drawings for building wood frame and support.

Rotary Beam Kit RB-6309 for 6, 10 and 20 meters, includes frame, 3 pr. Elements, hardware, T-Match accessories. Weight 30 lbs.

Base Insulator, Type 1: Heavy-duty type with compression rating up to 10,000 lbs. In galvanized malleable iron or bronze to fit ¾″ to 1 9/32″ I.D.


Type 1

Base Insulator Type 2: Light design for masts up to 18′ or higher if guyed or supported by standoff insulators. ¾″ top post is standard but with use of adapters will fit other sizes.


Type 2

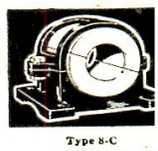
Base Insulator Type 6: For tower platform, rooftops or marine. Lead-thru construction permits antenna connections below roof or deck. Available for ¾″ to 1 9/32″ I.D. tubular masts.


Type 6

Type 3 Standoff Insulator for supporting verticals or for use in pairs as complete antenna or element mountings. Galvanized iron or bronze with porcelain body. Styles to fit ½″ to 1⅝″ O.D. elements.


Type 3

Type 8-C Insulated Mounting Clamp for horizontal arrays, verticals, etc. Galvanized iron with porcelain split bushing. For ⅝″ to 1″ O.D. masts.


Type 8-C

Type 9-C Insulated Mounting Clamp for horizontal elements, verticals, etc. Galvanized iron with porcelain split bushing. Fits ⅝″, ¾″, ⅞″ or 1″ O.D. elements.


Type 9-C

Type 10-C Insulated Mounting Clamp. Electroplated stamped steel with porcelain split bushing; light-weight for rotary and dipole installations. For ⅝″ to 1″ elements.


Type 10-C

Type 10-S Insulated Mounting Clamp. Chrome-plated bronze base and head-caps, porcelain insulator. Fits ⅞″ to 1½″ O.D. elements.

Deck Bushing of brown glazed porcelain with galvanized malleable flange which bolts thru rubber gasket to roof or deck. I.D. ¾″, 1¼″ or 1¾″.


Bushing

Bronze Mounting Clip for horizontal elements, vertical antennas or for feed and transmission connections. For ¾″, ⅞″ or 1″ O.D.


Mounting Clip

Wall Bracket of heavy steel for mounting vertical antennas on side walls, parapets, etc. Drilled to fit Types 1 and 2 Base Insulators.


Wall Bracket

PREMAX PRODUCTS

A DIVISION OF CHISHOLM-RYDER CO., INC. • 4821 HIGHLAND AVE. • NIAGARA FALLS, N. Y

BRACH FM & TV ANTENNAS

for the

PEAK OF RECEPTION

ANTENNA SYSTEMS
manufactured under

PRIVATE LABELS and TRADE MARKS
for
AUTOMOBILES
and
RESIDENTIAL
AM • FM • TV

)ur engineers will coop-
rate in designing collap-
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ntennas for every pur-
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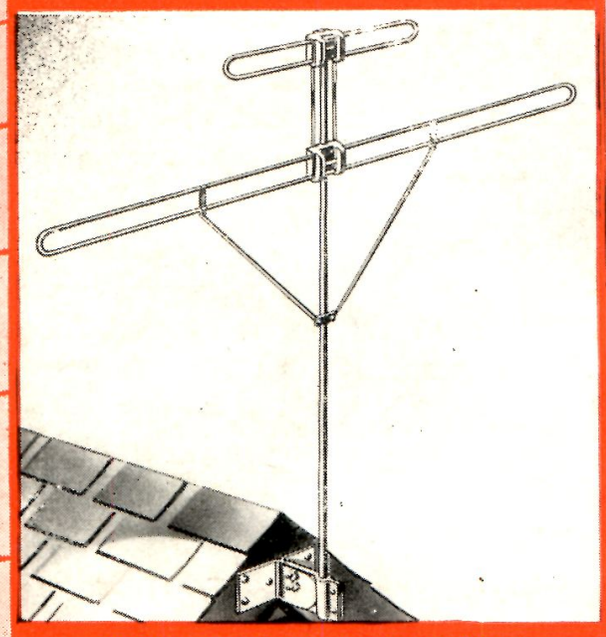
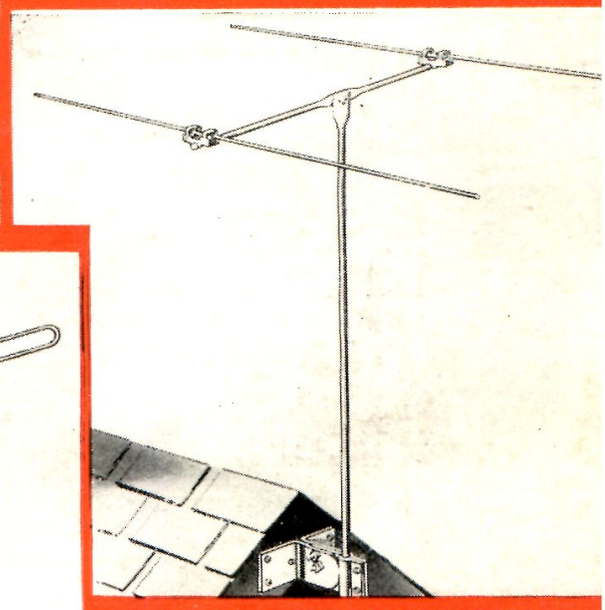


BROAD - BAND FM & TV ANTENNA
No. 338



STRAIGHT DIPOLE & REFLECTOR
FM ANTENNA No. 339

WRITE FOR
SPECIFICATION SHEETS

OME OF THE OTHER **BRACH** PRODUCTS

uratone Signal Booster for noise-free store demonstra-
ons—carries AM, FM and Television Antennas all on the
ame mast • Lightning Protective Devices • Junction Boxes •
ot Heads • Gas Relays • Arrester Housings • Protective
anels • Solderall • Ter-
inals and Housings •
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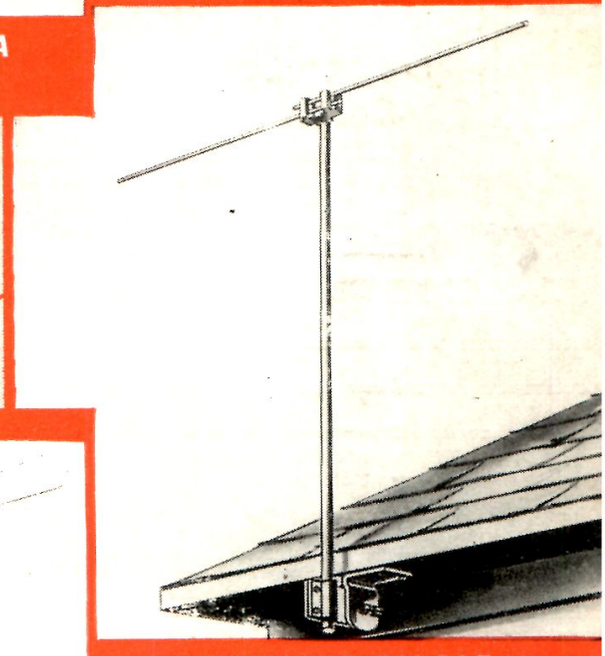
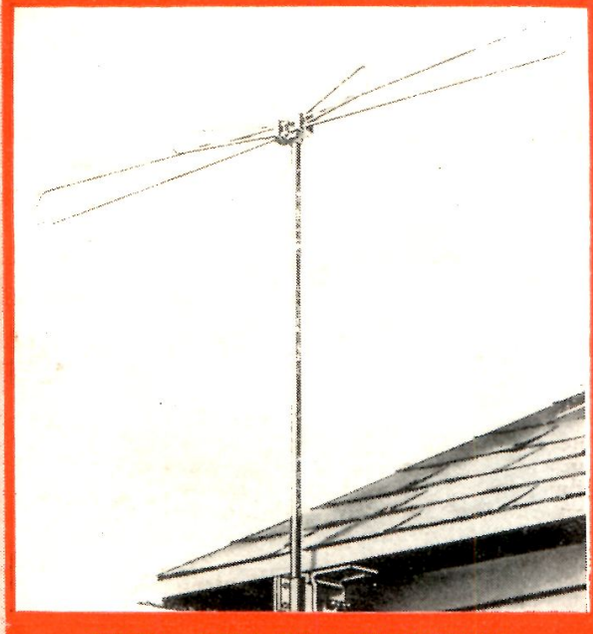
est-O-Lite for Circuits
00-550 AC or DC.

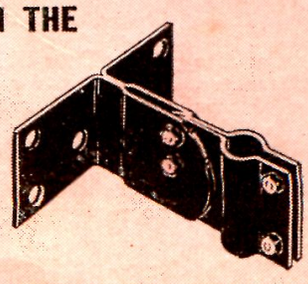


STRAIGHT DIPOLE
FM ANTENNA No. 334



MULTI - BAND FM & TV ANTENNA

EASILY AND QUICKLY INSTALLED
WITH THE



BRACH UNIVERSAL BASE MOUNT

.S.BRACH
FG. CORP.

ESTABLISHED 1906

0 CENTRAL AVENUE
NEWARK 4, N. J.

)RLD'S OLDEST AND LARGEST
NUFACTURERS OF RADIO ANTENNAS
AND ACCESSORIES.

6 NEW SHURE PRODUCTS FOR AMATEURS

Model "718A"

The "VERSATEX," versatile Crystal microphone, features high-output, maximum speech response, moisture proof Crystal, shock proof Plastic case, R-F Filter. Eliminates mechanical noise pickup. Ideal for Ham communications. Also fine for recording and low cost P. A. systems.

The "MONOPLEX," the only super-cardioid crystal microphone. Has high-output, wide-range frequency response. Perfect for Hams who want the extra "push" that insures a "strong" voice. Features high-quality performance at low cost.

Model "737A"

Model "51"

The "SONODYNE," high-output dynamic microphone with wide-range frequency response. Has moving coil unit. Features a Multi - Impedance switch. A rugged unit with high sensitivity, yet perfect for Hams in high temperature and high humidity locations.

The "ECONODYNE," an economical high-output dynamic microphone with wide-range frequency response. Ideal for Hams who require good performance at low cost. An outstanding buy for any Ham.

Model "52"

Model "55"

Multi - Impedance "UNIDYNE." A high quality super-cardioid dynamic microphone for Hams whose rigs are rigged for dependable performance, even under difficult conditions. Has same mechanical properties as Model 556, except for vibration isolation unit.

Multi - Impedance "BROADCAST" dynamic microphone. The perfect microphone for the veteran, experienced topflight Ham who wants only the best in communications equipment. Features a vibration-isolation unit. Eliminates feedback. Random noise reduced 73%.

Model "556"

Other SHURE Microphones and Phonograph Pickups are illustrated in the new SHURE Catalogs. Write for catalogs No. 157 and 158.

Patented by Shure Brothers and licensed under the Patents of the Brush Development Company

SHURE BROTHERS, INC.

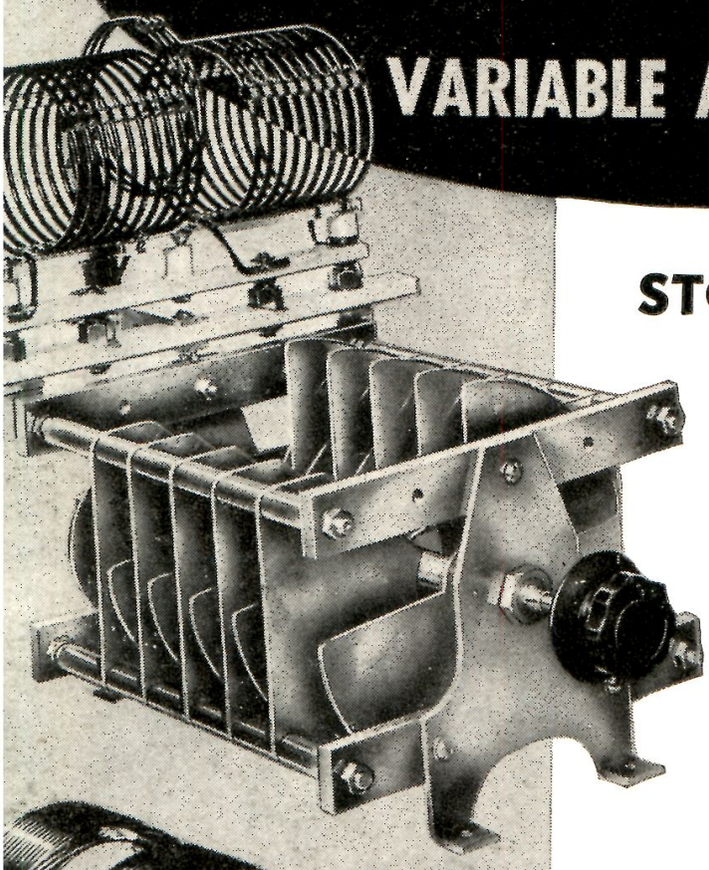
Microphones and Acoustic Devices

225 W. Huron St., Chicago 10, Ill.

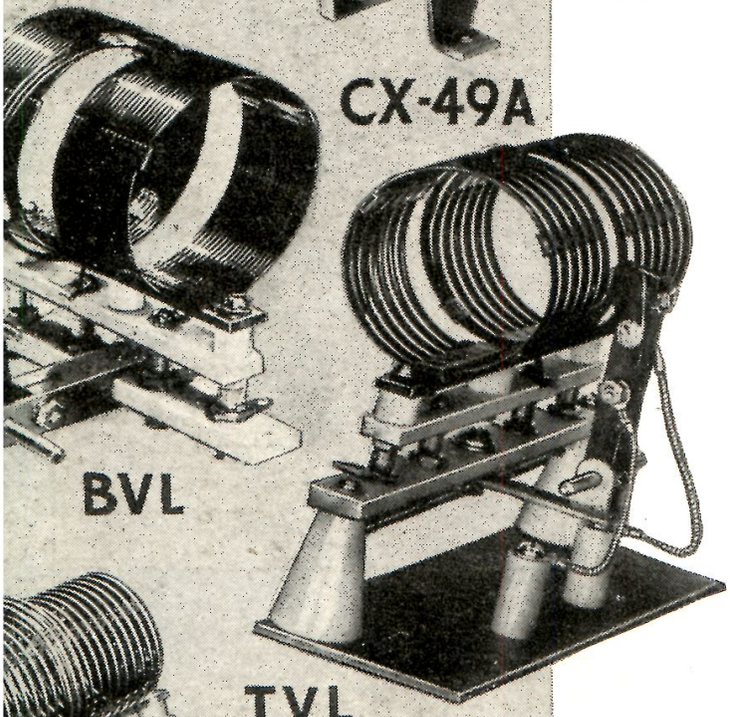
Cable Address: SHUREMICRO

SHURE

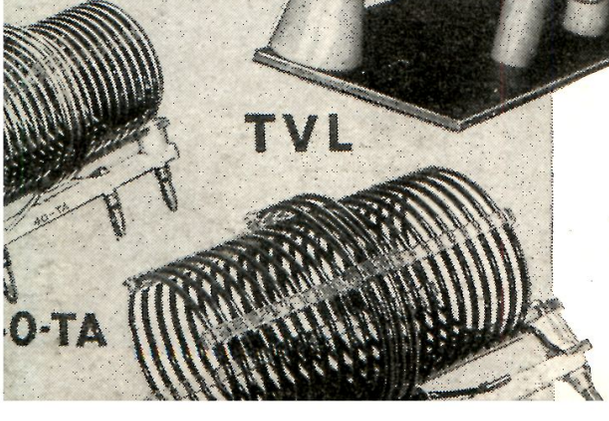
B & W AIR INDUCTORS AND VARIABLE AIR CONDENSERS



CX-49A



BVL



TVL

-TA

STOP TANK CIRCUIT LEAKS

. . . with this complete B & W Coil and Capacitor assembly

B & W Type CX Variable Capacitors provide for direct mounting of B & W Air Inductors. Wiring is eliminated. Circuit lead lengths are reduced to an absolute minimum. Opposed stator sections in the capacitors provide short r-f path. Butterfly rotor construction permits grounding rotor at the center r-f voltage point with respect to stators. Built-in neutralizing capacitors can be mounted on end plate. Standard types rated at 500, 750 and 1,000 watts. Treat your new rig to *real* tank circuit efficiency! Write for catalog.

Neutralizing Plates Available in 4 Types

B & W B, T AND HD INDUCTORS

100-WATT, 500-WATT AND 1 KW TYPES

- MINIMUM DIELECTRIC IN THE FIELD OF THE COIL
- EXTREMELY LOW LOSSES — RUGGED CONSTRUCTION
- EXCELLENT APPEARANCE — LOW COST

Type "B" inductor is for use on oscillator and buffer-doubler stages developing up to 100 watts. Available in center tapped models without link; end link; center link, center tapped; and variable link — center tapped. For 5, 10, 15, 20, 40 and 80 meter bands.

Type "T" is specially suited for high powered neutralized buffer and final tank stages where powers of 500 watts are developed. Available in center tapped models without link; center linked with center tap and variable linked with center tap. Made for 10, 15, 20, 40 and 80 meter bands.

Type "HD" is for maximum power and handles a kilowatt with ease. Available in center tapped models without link; center linked with center tap and variable linked with center tap. Made for 10, 15, 20, 40 and 80 meter bands.

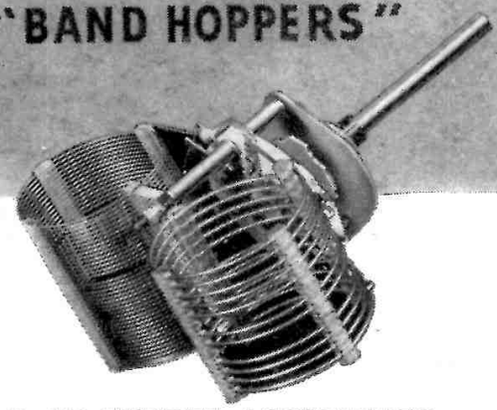
B & W TVH INDUCTORS

for powers up to 500-watts input

Here is a special group of units designed for greater flexibility through use of an eight plug jack bar. With these inductors it is possible to connect automatically, a fixed padding capacitor when using the low frequency coil. Available for 10, 15, 20, 40 and 80 meter bands.

SEE B & W PRODUCTS AT YOUR JOBBER'S

2A "BAND HOPPERS"



B & W TURRET ASSEMBLIES

Fast, positive band switching for your rig! Moderate in cost — easy to install — adaptable to 80, 40, 20, 15 and 10 meter bands. These turrets eliminate absorption effects through use of a unique switching assembly which shorts unused coils.

B & W — 75-Watt 2A "BAND HOPPERS" — A compact and panel controlled unit which may be used for interstage coupling between two beam power tubes or between beam power tubes and triodes.

B & W 75-WATT TURRETS — for link coupling single ended or push-pull low power stages. Mounted on a positive action switch arranged for panel mounting through a single 3/8" hole.

Type JTCL — Center linked, center tapped coils.

Type JTEL — End linked, untapped coils.

B & W 150-WATT TURRETS — for single- and double-ended circuits. These mount the same as 75-watt turrets and are used with tubes operating at voltages up to 1000 volts.

Type BCL — Center linked, center tapped coils.

Type BEL — End linked, untapped coils.

B & W BABY TURRETS — 35-WATTS

Rated at 35 watts, these compact, 5-band switching units cover amateur bands from 10 to 80 meters. They are suitable for all services with any of the 50 mmfd. midget condensers. Sturdy construction and unusual design assures permanent coil alignment and maximum efficiency with the minimum number of tubes. Available in four types: BTM straight untapped; BTCT — center tapped; BTEL — end linked; and BTCL — center linked. All provide vastly improved band switching efficiency in low power transmitters and exciter stages.

ANTENNA INDUCTORS TA AND HDA

These coils are wound with tinned copper wire for ease in tapping feeders and have fixed center links for coupling to either fixed or variable linked final tank circuits through low impedance line. Available for 10, 15, 20, 40 and 80 meter bands. Type TA for power input up to 500 watts and Type HDA for power inputs of one kilowatt.

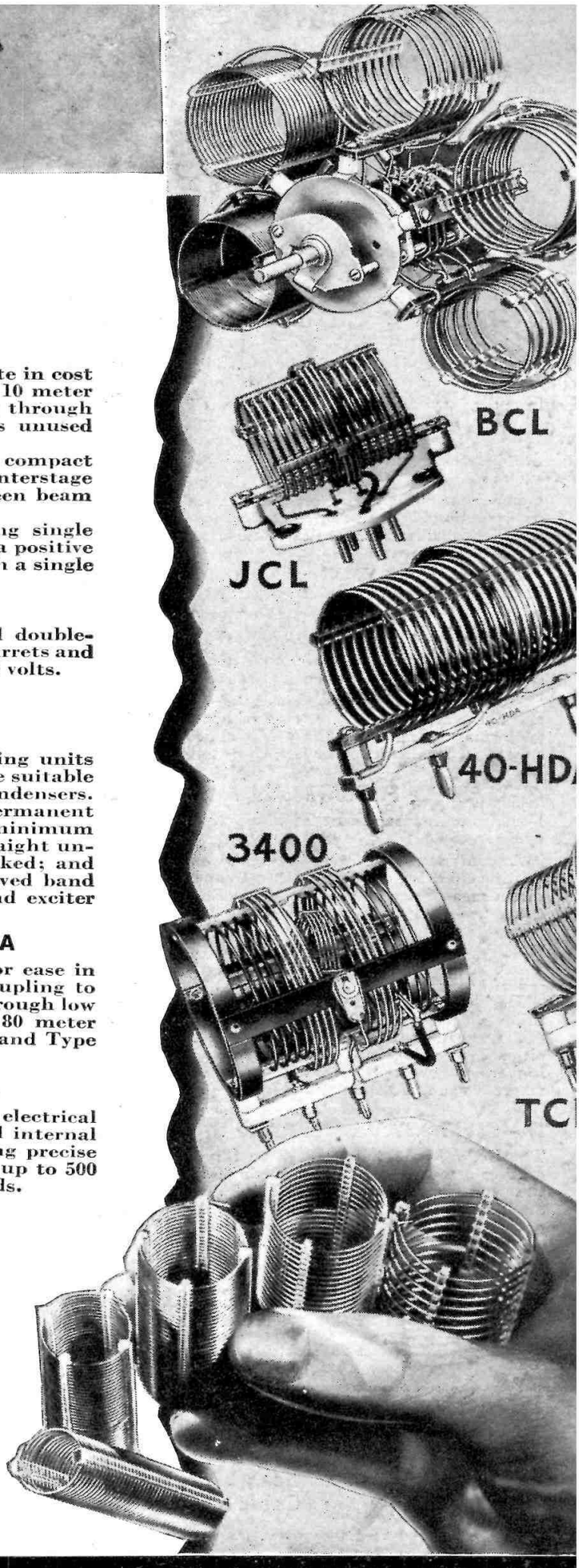
B & W 3400 SERIES INDUCTORS

Presenting the utmost in sturdy construction and electrical flexibility, these coils are built with an individual internal center coupling, adjustable over 360° — permitting precise impedance matching up to 600 ohms. For powers up to 500 watts. Available for 10, 15, 20, 40 and 80 meter bands.

THE MIDGET R-F COILS of dozens of uses

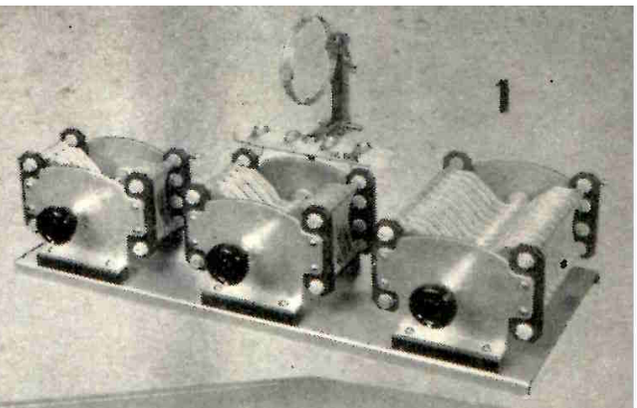
Goodbye to homemade high-frequency coils! B & W Miniductors cost little, are beautifully constructed — and do the job right. Every day, amateurs, experimenters and equipment manufacturers tell us of new applications where Miniductors have replaced homemade coils with a big boost of efficiency. Use them for receivers, transmitters and test equipment — in tank circuits as r-f chokes, high-frequency i-f transformers and loading coils and for dozens of other purposes.

B & W "Air Wound" construction permits small but sturdy supports with the absolute minimum of insulating material in the electrical field. Q factor is amazingly high. Standard Miniductor diameters are 1/2", 5/8", 3/4" and 1", each available in four different winding pitches. Ask your jobber. He can supply these coils, individually packaged, in standard 2" or 3" lengths.



NEW! B & W TEST EQUIPMENT ON FOLLOWING PAGE

6 New B&W Products



1—MIDGET "BUTTERFLY" CAPACITORS

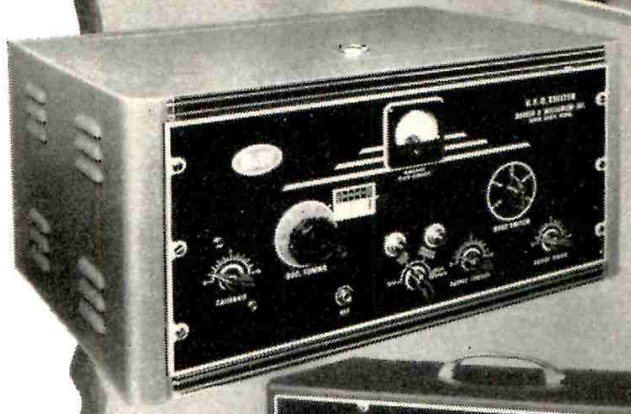
With only 25% frontal area of the heavier CX Variable Capacitors, these new B&W JCX units are ideal for general uses — especially for medium-powered triode or tetrode stage plate circuits. Coils can be mounted directly on the capacitors.

2—VFO EXCITER

Stability of the highest order.

This new Model 500 B&W VFO Exciter is both a low-powered transmitter and a deluxe exciter for the amateur who demands an exceptionally high degree of mechanical and thermal stability. The ideal Exciter for those who want ultimate VFO control at moderate cost.

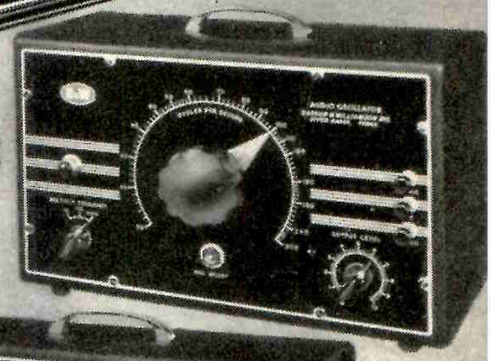
The Model 502 VFO complete with dial assembly and full instructions may be obtained separately.



3—AUDIO OSCILLATOR

For any application where an extremely stable, accurately calibrated source of frequencies between 30 and 30,000 cycles is required.

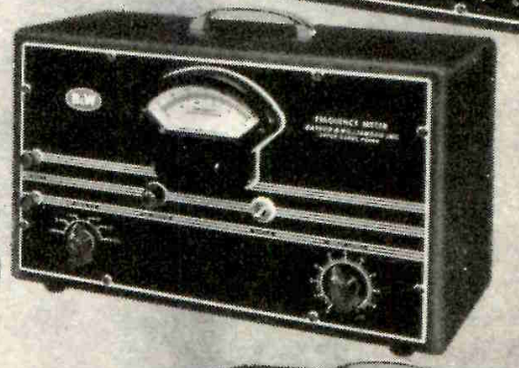
Small size, light weight, ease of operation and outstanding performance make this B&W Model 200 Audio Oscillator unsurpassed for distortion or frequency measurements.



4—AUDIO FREQUENCY METER

For direct measurement of audio frequencies up to 30,000 cycles.

A compact, light weight, highly efficient instrument for routine checking of audio oscillators and tone generators or for direct measurements of unknown audio frequencies. Six ranges cover from 0–100; 300; 1,000; 3,000; 10,000 and 30,000 cycles.



5—DISTORTION METER

An ideal meter for frequency analysis.

Designed for measuring low-level audio voltages and determining their noise and harmonic content, the B&W Model 400 Distortion Meter is a highly satisfactory instrument for either field or laboratory use. It is also well suited for measuring frequency and gain characteristics of audio amplifiers where a vacuum tube voltmeter is required in the audio range.

6—SINE WAVE CLIPPER

The B&W Model 250 Sine Wave Clipper is a device for generating a test signal that is particularly useful for examining the performance characteristics of audio frequency circuits. Small size, 5⅜" x 3¾" x 2⅛". Light weight coupled with low price make this entirely new instrument of great value to the discriminating amateur or technician who wishes peak performance in audio equipment.

B & W COILS — Including Famous "Air Wound" types FOR ALMOST EVERY ELECTRONIC APPLICATION

See Previous Pages

COAXIAL CONNECTOR "CC-50"

For Efficient, Watertight Coaxial Cable Connections

FEATURED BY LEADING DISTRIBUTORS. DATA BULLETIN COVERING ALL TYPES ON REQUEST

PARKER-WILLIAMSON

• **Skillful engineering, latest production techniques and highest quality materials . . . backed by careful workmanship, exacting step-by-step inspection and rigorous final testing . . . are your assurance that SNC Transformers are a quality product—built for outstanding performance.**

A partial list of SNC transformers of particular interest to Hams is outlined below. For full information concerning the entire SNC line, write for FREE catalog . . . your records are not complete without it!

CHOKES

Type Number	Inductance at Rated D.C.	D.C. Mils	D.C. Res.	Mtg.	Volt Insul.	Wt.	Dimensions A	B	C	D	E
2P147	8 HY	200	125	G	2000	5-1/2	3-1/2	2-27/32	3-1/8	2-1/4	2
2P148	3-15 HY.	200-20	125	G	2000	5-1/2	3-1/2	2-27/32	3-1/8	2-1/4	2
2P151	8 HY	300	90	G	3500	10	4-17/32	3-25/32	3-7/8	3	2-13/16
2P152	3-15 HY	300-30	90	G	3500	10	4-17/32	3-25/32	3-7/8	3	2-13/16
2P155	8 HY	500	65	H	3500	25	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8
2P156	3-15 HY	500 50	65	H	3500	25	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8

DRIVER TRANSFORMERS

Type Number	Primary Impedance	Watts	Ratio Pri. to 1/2 Sec. or Sec. Z	Pri. Mils	Wt.	Mtg.	Dimensions A	B	C	D	E
3P323	6,000 to 10,000	15	6, 5.5, 5:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P328	3,000 to 5,000	15	6, 5.5, 5:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P334	6,000 to 10,000	15	4.5, 4, 3.5:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P338	3,000 to 5,000	15	4.5, 4, 3.5:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P342	6,000 to 10,000	15	3, 2, 1:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P347	3,000 to 5,000	15	3, 2, 1:1	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P353	6,000 to 10,000	15	500 Ohms	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P358	3,000 to 5,000	15	500 Ohms	60	3	G	3-1/32	2-17/32	2-5/8	2	1-11/16
3P363	10,000	5	2.4:1	10	3/4	B	1-7/8	2-3/8	1-3/8	2	

FILAMENT TRANSFORMERS

Type Number	Primary Voltage	Secondary Voltage	Secondary Current	Volt Insul	Wt.	Mtg.	Dimensions A	B	C	D	E
4P226	120	2.5 C.T	10 Amps	7,500	2-1/2	B	2-5/8	3-5/16	1-7/8	2-13/16	
4P242	120	5.0 C.T.	20 Amps.	10,000	6-1/2	Bx	4-1/8	3-7/16	2-3/4	2-3/4	2-1/8

UNIVERSAL MODULATION TRANSFORMERS

Type Number	Primary Impedance	Power Watts	Primary Current Mils	Secondary Characteristics Series Sec. Z Ohms	Series Sec. Ma.	Parallel Sec. Z Ohms	Parallel Sec. Ma.	Wt.	Mtg.	Dimensions A	B	C	D	E
5P341	3K-8K	15	60	3K-8K	50	1K-5K	100	2-1/4	D	2-5/8	3-5/16	1-7/8	2-13/16	
5P346	3K-15K	50	80	2K-18K	75	500-4.5K	150	5-1/2	G	3-15/16	3-1/8	3-3/8	2-1/2	2-3/16
5P352	3K-15K	100	120	2K-18K	100	500-4.5K	200	10	G	4-5/8	3-3/4	4-5/8	3	3-9/16
5P354	3K-15K	200	200	2K-18K	150	500-4.5K	300	21	H	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8
5P355								27	J	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8
5P357	3K-15K	300	250	2K-18K	250	500-4.5K	500	27	H	6-1/2	7-1/4	5-3/8	6-1/8	7-1/8
5P358								34	J	6-1/2	7-1/4	5-3/8	6-1/8	7-1/8
5P363	3K-15K	500	300	2K-18K	300	500-4.5K	600	43	H	6-1/2	7-1/4	5-3/8	6-1/8	10-3/4
5P364								51	J	6-1/2	7-1/4	5-3/8	6-1/8	10-3/4

PLATE TRANSFORMERS

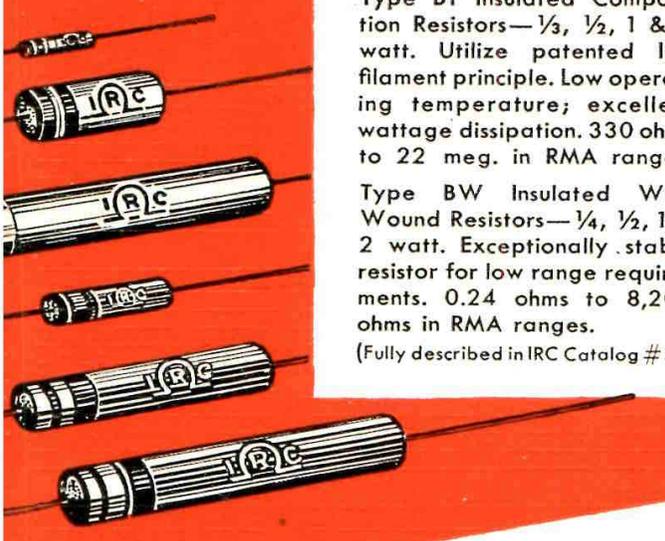
Type Number	Primary Voltage	Pri. V.A.	Secondary Voltage	D.C. Voltage	D.C. Current	Wt.	Mtg.	Dimensions A	B	C	D	E
7P530	115-230	220	920-0-920	750	200MA	12	G	4-21/32	3-25/32	5-1/8	3	4-1/16
			740-0-740	600								
7P535	115-230	300	940-0-940	750	300	17-1/2	H	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8
7P536			760-0-760	600		23	J					
7P542	115-230	500	1430-0-1430	1250	300	28	H	6-1/2	7-1/4	5-3/8	6-1/8	7-1/8
7P543			1180-0-1180	1000		36	J					
7P551	115-230	750	2100-0-2100	1750	300	35	H	6-1/2	7-1/4	5-3/8	6-1/8	7-1/8
7P552			1830-0-1830	1500		47	J					
7P557	115-230	1100	2950-0-2950	2500	300	50	H	6-1/2	7-1/4	5-3/8	6-1/8	10-3/4
7P558			2350-0-2350	2000		62	J					
7P563	115-230	1900	2950-0-2950	2500	500	77	H	7-3/4	7-1/4	6-5/8	6-1/8	10-3/4
7P564			2350-0-2350	2000		95	J					

POWER TRANSFORMERS

Type Number	Pri. Volts	R.M.S. Rect. Plate Sec.	D.C. Ma.	R.M.S. Rect. Fil. Volts	R.M.S. Heater Volts	Wt.	Mtg.	Dimensions A	B	C	D	E
*8P202	120	450-0-450	200	5V. @ 3A.	6.3V. CT @ 5 A.	7	F	4-17/32	3-25/32	4-3/4	3-3/4	3
8P205	120	450-0-450	325	5V. @ 6A.	6.3V. CT @ 8 A.	15	H	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8
8P208	120	550-0-550	275	5V. @ 6A.	6.3V. CT @ 6 A.	15	H	5-1/2	5-15/16	4-3/8	4-13/16	7-1/8

*Available in G mounting on order at same price.

WHEREVER THE CIRCUIT SAYS

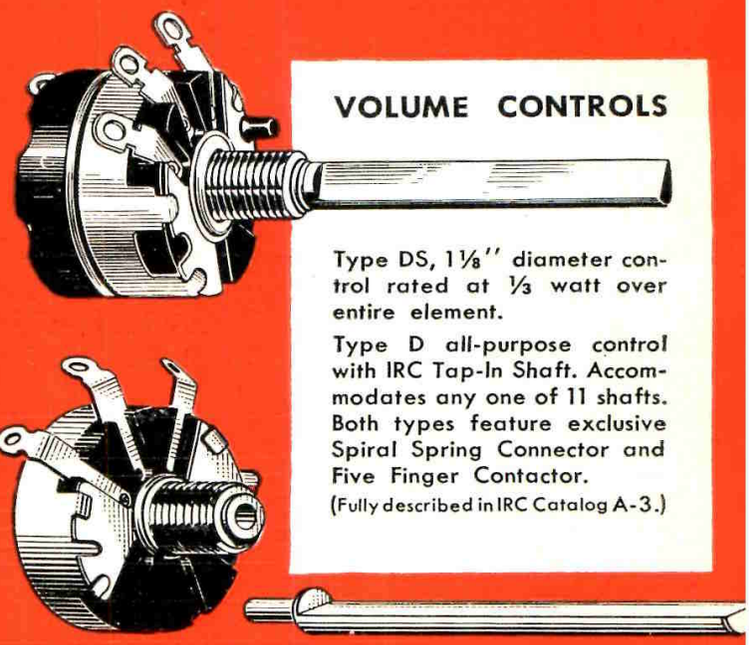


INSULATED COMPOSITION AND WIRE WOUND RESISTORS

Type BT Insulated Composition Resistors—⅓, ½, 1 & 2 watt. Utilize patented IRC filament principle. Low operating temperature; excellent wattage dissipation. 330 ohms to 22 meg. in RMA ranges.

Type BW Insulated Wire Wound Resistors—¼, ½, 1 & 2 watt. Exceptionally stable resistor for low range requirements. 0.24 ohms to 8,200 ohms in RMA ranges.

(Fully described in IRC Catalog #3.)

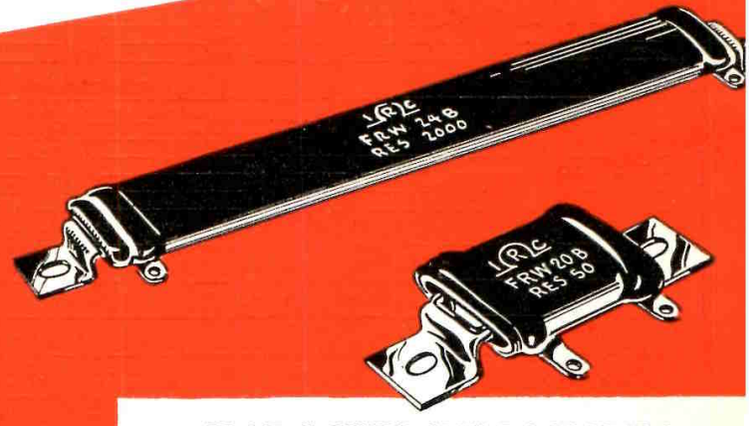


VOLUME CONTROLS

Type DS, 1⅛" diameter control rated at ⅓ watt over entire element.

Type D all-purpose control with IRC Tap-In Shaft. Accommodates any one of 11 shafts. Both types feature exclusive Spiral Spring Connector and Five Finger Contactor.

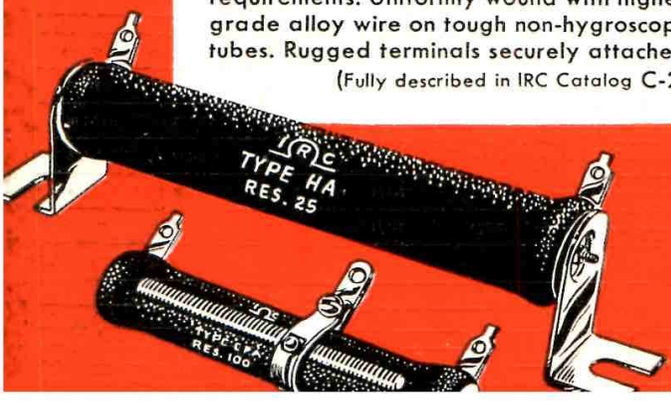
(Fully described in IRC Catalog A-3.)



POWER WIRE WOUNDS

Available in full range of sizes, types and terminals. Two types of special cement coating to meet varied types of service requirements. Uniformly wound with highest grade alloy wire on tough non-hygroscopic tubes. Rugged terminals securely attached.

(Fully described in IRC Catalog C-2.)



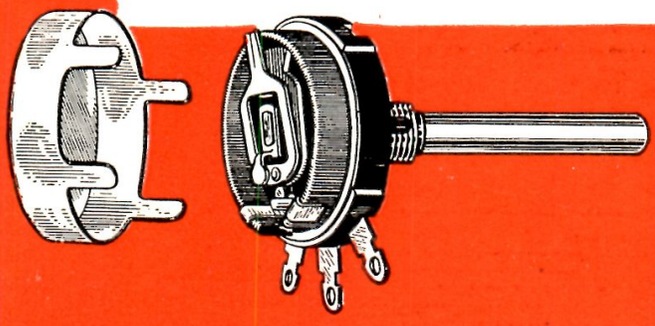
FLAT POWER WIRE WOUNDS

Designed for vertical or horizontal mounting, singly or in stacks. Higher space-power ratio than standard tubular wire wounds. Lightweight construction with extreme mechanical strength. Fixed and adjustable types.

(Fully described in IRC Catalog C-1.)

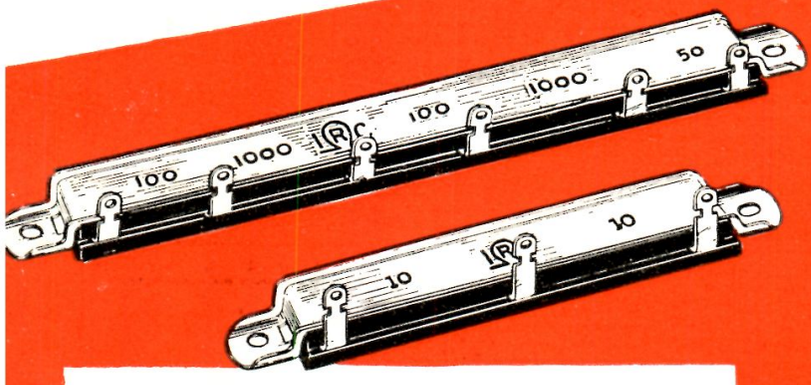
2 WATT WIRE WOUND POTENTIOMETER

A fully dependable wire wound control providing maximum adaptability to most rheostat and potentiometer applications within its power rating. 1¼" diameter featuring IRC Spiral Spring Connector, long wearing alloy contactor and welded terminals between resistance element and terminals.
(Fully described in IRC Catalog A-2.)



FINGER-TIP CONTROL AND SWITCH

Compact, wafer-thin control, no bigger 'round than a nickel. "Molded-In" element and simplified construction enable Type H Control to fill many important applications where small size must combine with dependable performance. Type SH Switch, similar in construction to the Fingertip Control, is a four point switch utilizing the rotating cover principle.
(Fully described in IRC Catalog A-1.)



PRECISION RESISTORS

A scientifically designed resistor combining highest quality materials with maximum in accuracy and dependability. Used extensively by leading instrument makers. 1% accuracy is standard; closer tolerances available at slightly increased cost.
(Described in IRC Catalog D-1.)

WIRE WOUND RESISTORS

Type MW is a flat wire wound resistor of radically different design. Completely insulated and protected. Offers many opportunities in cost reduction by low initial cost, lower mounting cost, flexibility in providing taps at low cost, and saving in space. Multi-section feature permits exceptional flexibility for voltage dividing applications.
(Fully described in IRC Catalog B-2.)

other products in IRC's complete resistor line are described on the following page

INTERNATIONAL RESISTANCE COMPANY

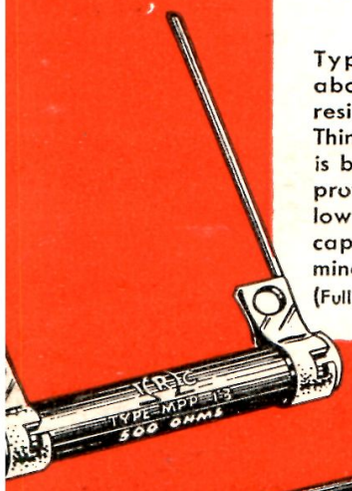
401 N. Broad Street — Philadelphia 8, Pa.

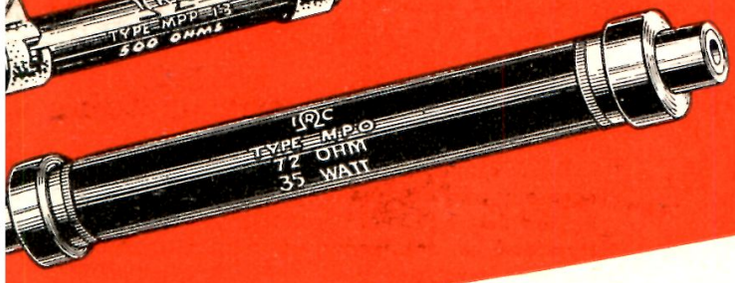
In Canada: International Resistance Co., Ltd., Toronto, Licensee

WHEREVER THE CIRCUIT SAYS

HIGH FREQUENCY RESISTORS

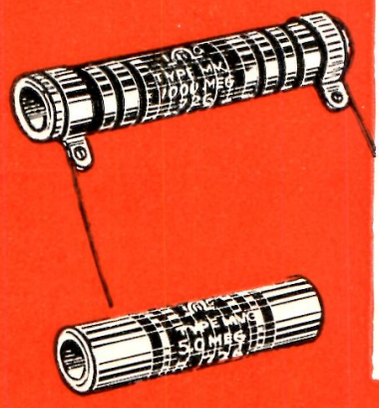
Type MP for frequencies above those of conventional resistors. ¼ watt to 90 watts. Thin film of resistance material is bonded on ceramic form to provide a stable resistor with low inherent inductance and capacity. Broad range of terminal types.
(Fully described in IRC Catalog F-1.)

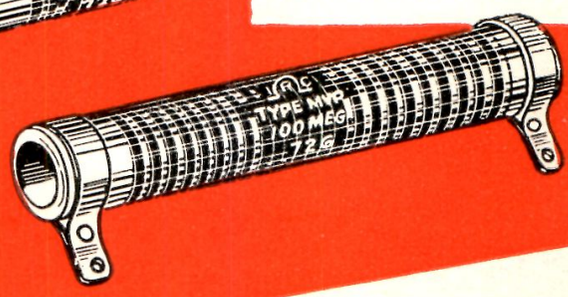




HIGH VOLTAGE RESISTORS

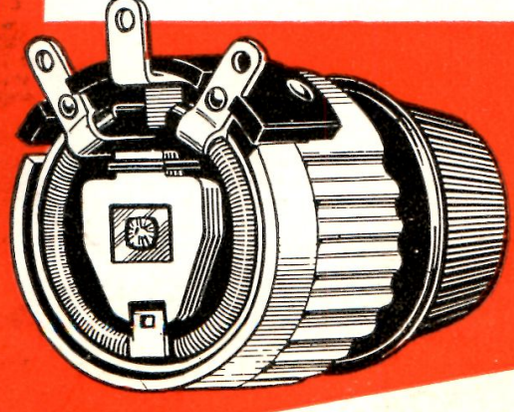
Type MV resistors are designed for high voltage applications where high resistance and power are required. Unique application of filament resistance coating in helical turns on ceramic tube provides conducting path of long effective length. 2 watts to 90 watts. Variety of terminal types.
(Fully described in IRC Catalog G-1.)

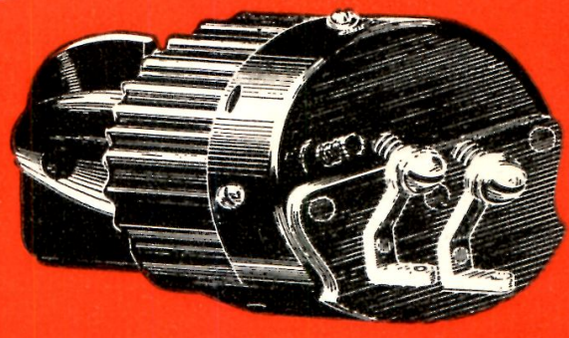




POWER RHEOSTAT

Type PR 25 and 50 watt. All-metal construction. Heat dissipating qualities of aluminum fully utilized. Operate at full rating at approximately half the temperature rise of equivalent units. Can be operated at full power in as low as 25% of rotation without appreciable difference in temperature rise.
(Fully described in IRC Catalog E-2.)





RHEOSTAT AN3155

Type PRT 25 and 50 watt. Developed to meet rigid Army-Navy specifications. Totally enclosed for protection against dirt and damage. All-metal construction. Can be operated down to 25% of full rotation with only minor increase in temperature rise.
(Fully described in IRC Catalog E-1.)

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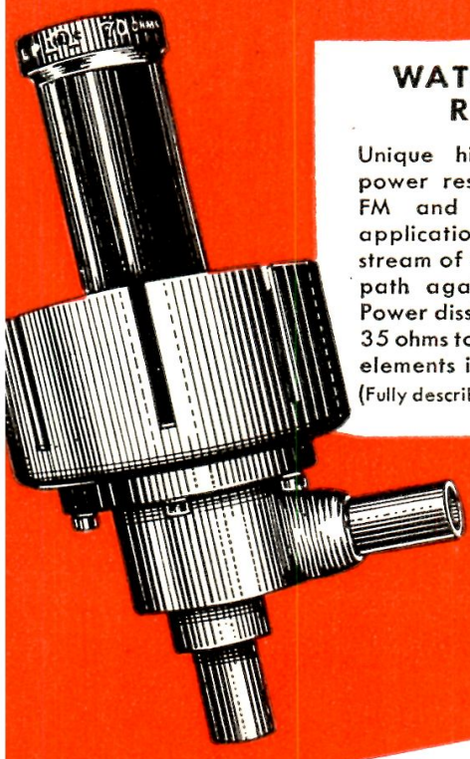
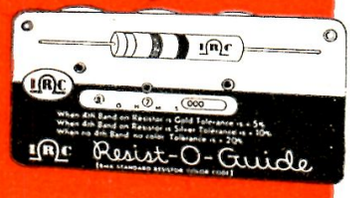


WATER-COOLED RESISTOR

Unique high frequency-high power resistor for television, FM and dielectric heating applications. High velocity stream of water flows in spiral path against resistance film. Power dissipation up to 5 K.W. 35 ohms to 1500 ohms. Resistor elements interchangeable.
(Fully described in IRC Catalog F-2.)

VOLTMETER MULTIPLIERS

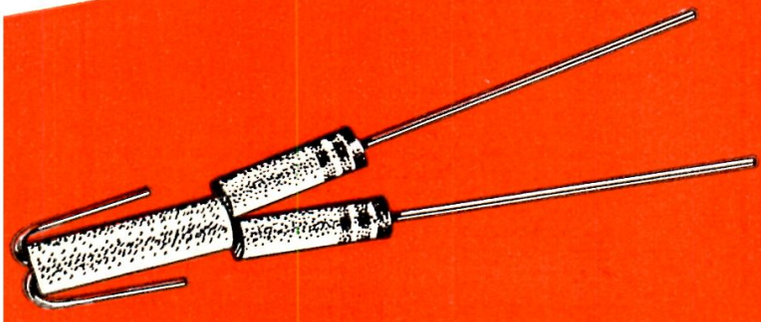
Type MF consists of a number of IRC Precisions interconnected and encased in a glazed ceramic tube. Tube is hermetically sealed. Completely impervious to humidity. Maximum current: 1.0 M.A.; 0.5 megohms to 6 megohms.
(Fully described in IRC Catalog D-2.)



IRC RESIST-O-GUIDE

New aid in resistor range identification. Turn three wheels to correspond with color code and standard RMA Range is automatically indicated. 10¢ at all IRC Distributors. When ordering direct send stamps or coin.

For detailed information on any of IRC's many resistor types write for catalog data bulletins specifying the product in which you are interested.



MATCHED PAIR RESISTORS

Two resistors matched in series or parallel to as close as 1% initial accuracy. Dependable low cost solution to close tolerance requirements. Both IRC Type BT and BW resistors are available in Matched Pairs.
(Fully described in IRC Catalog B-3.)

All standard IRC resistors are readily available in nominal quantities right from distributors' well-stocked shelves. These stock units are listed in Catalog 50 . . . write for your copy and the name of your nearest IRC distributor.

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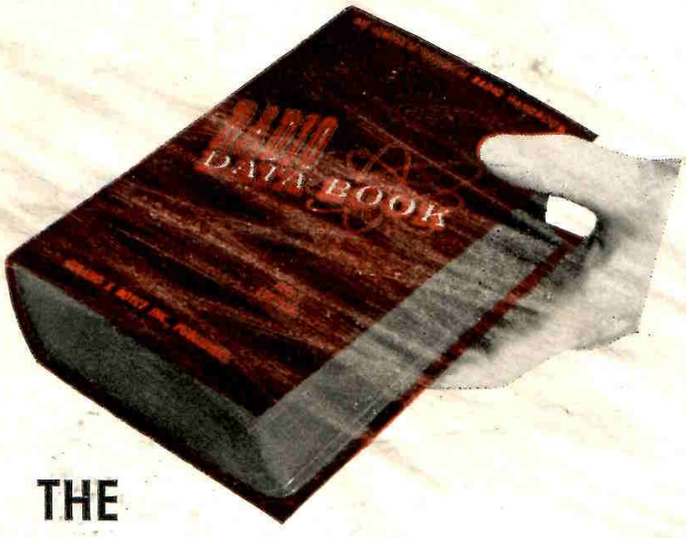

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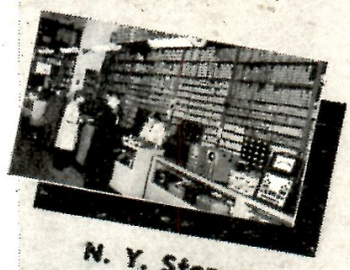

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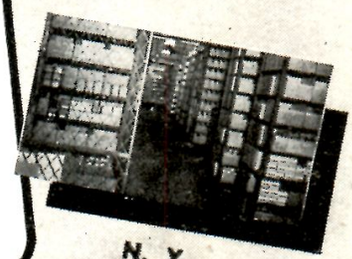

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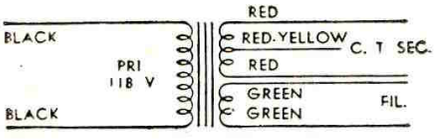
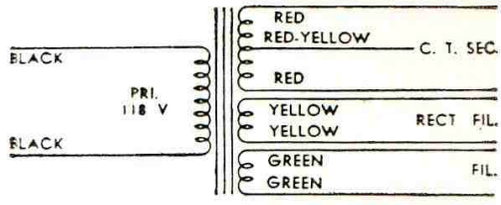
Thermador Transformers Are Guaranteed for One Year

POWER COMPONENTS

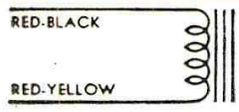


POWER TRANSFORMERS



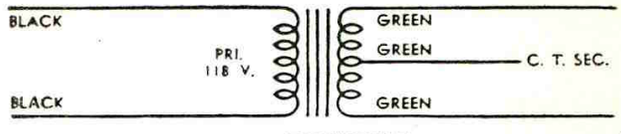
TYPE	CASE	SEC.	SEC. CUR.	RECT. FIL.	FIL.	OUTSIDE DIM. H.	W.	D.	MOUNTING CENTERS W.	D.	WEIGHT	LIST PRICE
5A4056	A	205-0-205	50 Ma.		6.3 @ 2.5A	2¾	2⅜	3⅛	1¾	2-13/16	2# 5 Oz.	$4.80
5A5066	A	270-0-270	60 Ma.	5V 2A	6.3 @ 2A	3¼	2¾	3¼	2	2-7/16	3# 6 Oz.	$5.90
5A6076	A	300-0-300	65 Ma.		6.3 @ 2.7A	3¼	2¾	3¼	2	2-7/16	3#	$5.35
5A6066	A	300-0-300	65 Ma.	5V 2A	6.3 @ 2.1A	3¼	2¾	3¼	2	2-7/16	3# 6 Oz.	$6.50
5A6086	A	300-0-300	75 Ma.	5V 2A	6.3 @ 2.85A	3½	3-3/16	3-7/16	2¼	2-9/16	4# 1 Oz.	$6.80
5A6096	A	275-0-275	90 Ma.	5V 2A	6.3 Ct. 3.15A	3½	3-3/16	3-5/16	2¼	1-15/16	3# 11 Oz.	$7.35
5A6116	A	310-0-310	110 Ma.	5V 3A	6.3 Ct. 5A	4⅛	3⅝	3-5/16	2¾	2	5#	$7.10
5A6146	A	300-0-300	135 Ma.	5V 3A	6.3 Ct. 3.3A	4⅛	3⅝	3¾	2¾	2¼	5# 13 Oz.	$8.10
5A6196	A	320-0-320	185 Ma.	5V 3A	6.3 Ct. 6A	4⅛	3⅝	4	2¾	2-11/16	7# 8 Oz.	$10.25

CHOKES



TYPE	CASE	IND.	CURRENT	RESIS.	OUTSIDE DIM. H.	W.	D.	MOUNTING CENTERS W.	D.	WEIGHT	LIST PRICE
7L1005	L	10 Hy.	50 Ma.	450 Ohms	1⅝	2¾	1⅜	2¼		9 Oz.	$2.45
7L1008	L	10 Hy.	75 Ma.	380 Ohms	2	3⅛	1½	1¾		8 Oz.	$2.90
7A1809	A	18 Hy.	90 Ma.	600 Ohms	2⅞	2⅜	2-13/16	1¾	1-15/16	1# 14 Oz.	$4.85
7A1414	A	14 Hy.	135 Ma.	260 Ohms	3¼	3¾	3	2	2-3/16	2# 12 Oz.	$5.00
7A0819	A	8 Hy. Ct.	185 Ma.	212 Ohms	3-3/16	2-11/16	3⅜	2 x 2½		3# 8 Oz.	$5.15

FILAMENT TRANSFORMERS



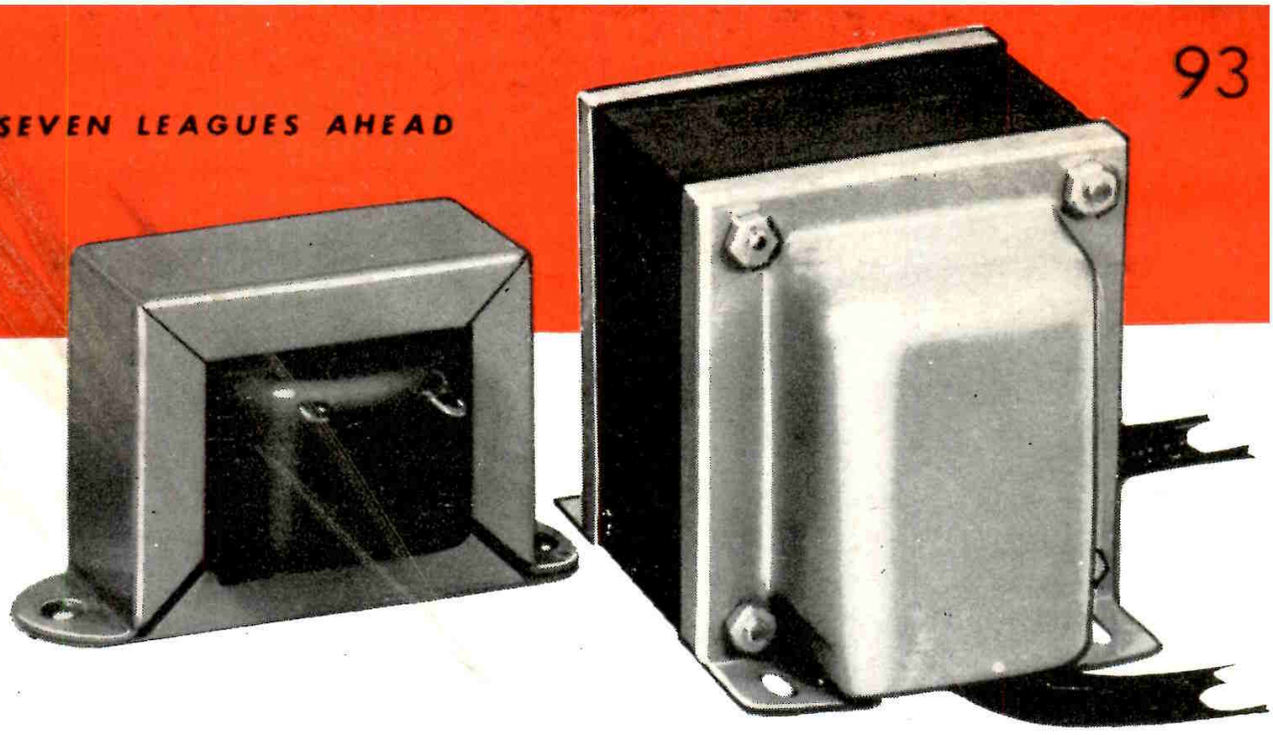
TYPE	CASE	FIL.	CURRENT	TEST	OUTSIDE DIM. H.	W.	D.	MOUNTING CENTERS W.	D.	WEIGHT	LIST PRICE
6L6022	L	6.3 Ct.	2.25 A	2000	2	3⅛	1⅞	2¾		1# 8 Oz.	$3.00
6A6042	A	6.3 Ct.	4.0 A	2000	2¾	2⅜	3-3/16	1¾	2¼	2# 5 Oz.	$4.80

ase "A" is an Enclosed Underwriters' approved case Upright Mounted, leads through bottom of case.
ase "L" is an Open Bracket Strap Mounted type with Leads and Lugs.

All prices subject to change without notice.

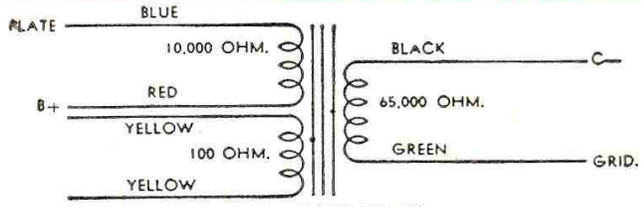
Prices subject to usual trade discounts.

F.O.B. Factory. Freight allowed on shipments in U.S.A. $100.00 net or o



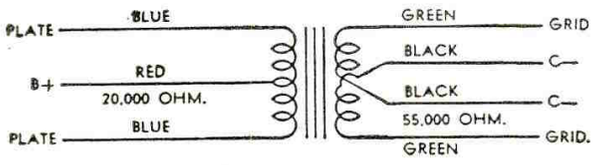
AUDIO COMPONENTS

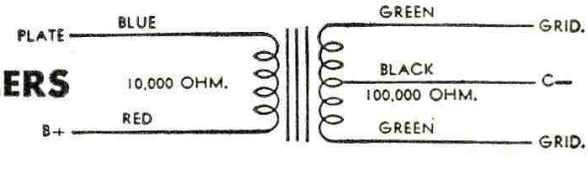
TRANSCEIVER TRANSFORMERS



TYPE NO.	CASE TYPE	PRI.	SEC.	RATIO	OUTSIDE DIM. H.	OUTSIDE DIM. W.	MOUNTING CENTERS D.	MOUNTING CENTERS W.	MOUNTING CENTERS D.	WEIGHT	LIST PRICE
2L1726	L	100-10,000	65,000	1.0:25.5	1-5/16	1-13/16	1	1½		3 Oz.	$3.65

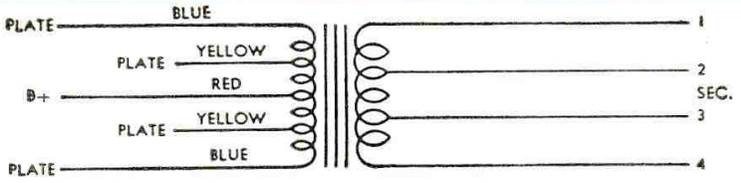
INTERSTAGE TRANSFORMERS





TYPE	CASE	PRI.	SEC	TURN RATIO	OUTSIDE DIM. H.	OUTSIDE DIM. W.	MOUNTING CENTERS D.	MOUNTING CENTERS W.	MOUNTING CENTERS D.	WEIGHT	LIST PRICE
3A2602	A	20,000 P.P.	55,000 P.P.	1:1.73	2⅞	2⅜	2⅜	1¾	2	1# 13 Oz.	$6.10
3L1103	L	10,000 Sngl.	100,000 P.P.	1:3.16	1⅝	2¾	1⅜	2¼		8 Oz.	$2.95

OUTPUT TRANSFORMERS



TYPE	CASE	PRI.	SEC.	WATTS	MA. PRI.	OUTSIDE DIM. H.	OUTSIDE DIM. W.	MOUNTING CENTERS D.	MOUNTING CENTERS W.	MOUNTING CENTERS D.	WEIGHT	LIST PRICE
4L1026	L	5K, 7K, 10K, Sngl.	2-6 Ohms	2	15	1-5/16	1-13/16	1⅛	1½		3 Oz.	$2.70
4L1048	L	3.5K, 5K, 8K, 10K, Sngl. & P.P.	2-8 Ohms	5	40	1-7/16	2-7/16	1½	2		5 Oz.	$3.10
4L4066	L	2K, 2.5K, 3K, 4K, Sngl.	2-6 Ohms	5	55	1½	2⅜	1½	2		5 Oz.	$3.00
4L1051	L	4K, 5K, 8K, 10K, P.P.	2-12 Ohms	10	50	2⅜	3	1⅞	2½		1# 5 Oz.	$3.55
4L1046	L	2K, 2.5K, 3.5K, 5K, 7K, 10K, Sngl.; 3K, 5K, 7K, 10K, P.P.	1-6 Ohms	7.5	45	1-9/16	2¾	1½	2-5/16		8 Oz.	$3.25
4A8105	A	5 & 8K C.T. P.P.	4-8-500 Ohms	15	95	2¾	2⅜	2⅞	1¾ x 1-15/16		1# 12 Oz.	$6.00
4A7145	A	5 & 6.6K C.T. P.P.	3-4-6-8-16-500 Ohms	26	140	3½	2-15/16	3½	2¼ x 2-9/16		4# 8 Oz.	$9.50

INVARIABLY IT'S VALPEY

TYPE	FREQUENCY RANGE	PINS	DESCRIPTION	USE
CBC-O	60-10000KC	Standard 5-Pin Mount	6, 8, 10 Volt Oven Variable Air Gap ±½°C. Accuracy	Broadcast, Fixed Stations and Freq. Standards.
CBC	60-10000KC	Special	Micrometer Adjust. Variable Air Gap	Broadcast, Fixed Stations and Freq. Standards.
VDO	1000-10000KC	Standard 5-Pin Mount	Single or Dual 6 Volt Oven Gasket Sealed ±½°C. Accuracy	Fixed and Mobile for Transceiver Equipment. Railroad Communications.
VS5	1000-4000KC	.125 Dia. Pins ¾" Spacing	Variable Air Gap Horizontal Mount	Police and Fixed Stations.
VS1	1000-4000KC	.125 Dia. Pins ¾" Spacing	Fixed Air Gap Pressure Clamped Horizontal Mount	Police and Fixed Stations.
VD5	1000-6000KC	Special 3-Pin Mount 5/32" Dia.	Single or Dual Crystals Gasket Sealed	Marine, Aircraft or Police.
VD8	1000-6000KC	Octal 1, 8-4, 5 Xtal A—Xtal B	Single or Dual Crystals Gasket Sealed	Marine, Aircraft or Police.
XLS	80-1000KC	.125 Dia. Pins ¾" Spacing	Clamped Crystal Mount. Hermetically Sealed	Radar and Fixed Stations in the Low Frequency Range.
XL-100	100KC	.125 Dia. Pins ¾" Spacing	Clamped Crystal Mount. Hermetically Sealed	Frequency Standards.
VT1	1000-10000KC	Octal 2, 3-7, 8	Vacuum Sealed Metal Tube Type Unit	Frequency Meters, Standards and General Applications.
VM2	1000-4000KC	.125 Dia. Pins ¾" Spacing	Fixed Air Gap Horizontal Mount Gasket Sealed	Fixed and Mobile Applications.
VP3	2000-60000KC	.125 Dia. Pins ¾" Spacing	Fixed Air Gap Horizontal Mount Gasket Sealed	Marine, Police Amateur, Fixed and Mobile Stations.
CM1	1000-4000KC	.125 Dia. Pins and G.R. Pins ¾", 5/8", 7/8", .850 Spacing	Gasket Sealed Fixed Air Gap Vertical Mount	Marine, Police, Aircraft and General Applications.
CM5	2000-60000KC	.094 Dia. Pins .486" Spacing	Gasket Sealed Fixed Air Gap Vertical Mount	Marine, Police, Amateur, Fixed and Mobile Stations.
A1	1000-4000KC	Solder Lugs	Flat Compact Gasket Sealed	Aircraft
VR1	2000-10000KC	.125 Dia. Pins .486" Spacing	Fixed Air Gap Vertical Mount Gasket Sealed	Marine, Police, Aircraft.
CF1	455, 456, 465 KC	Solder Lugs	Small, Flat, Compact	Filter Applications.
VR6	4000-60000KC	.050 Dia. Pins .486" Spacing	Vacuum Sealed Metal Case	Mobile, Fixed Stations, VHF, Experimental.

For every crystal application, VALPEY invariably gives outstanding performance. Select your VALPEY unit from the above chart, or send your specific crystal requirements to VALPEY. In every field where accurate crystal control is the aim — invariably it's VALPEY.

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What you should know about POST WAR CRYSTALS

CRYSTALS

BECAUSE of the lack of accurate information supplied the ham fraternity, more than ordinary trouble is being experienced in getting post-war crystals to operate properly. Regardless of make, many amateurs are having difficulty with frequency drift and with chirps when the oscillator is keyed. Because hams are a curious group, who want the facts, here they are!

Good post-war crystals are definitely superior to pre-war types — in applications for which they were intended.

The new post-war crystals are nearly all AT or BT cuts, with a temperature coefficient of less than *2* parts per million per degree Centigrade, compared to old pre-war X or Y cuts with *23* to *100* parts per million.

About 1940, equipment manufacturers and the Armed Forces wanted better crystals — and realized that to have them, crystals were to be used for frequency control — not for the handling of huge amounts of power. Thus smaller crystals were satisfactory, and with drift but 10% of what it used to be, the use of a huge plate to dissipate heat was no longer necessary. These crystals met the military demands for they also possessed excellent activity.

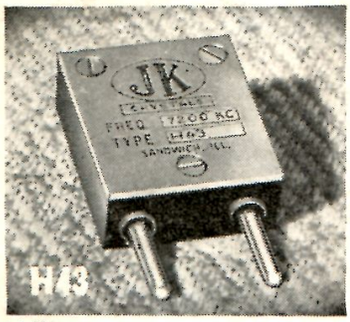
Prior to the war, acid etching was almost unknown. Crystals were finished with abrasive. This led to "aging" — a gradual increase in frequency as small chips broken loose by the abrasive came off the surface of the crystal — and reduced activity. By acid etching as it is done at the James Knights plant, crystals are "stabilized" so these effects were eliminated and increased activity was achieved. Ham equipment was usually designed to use the pre-war, less active, unetched crystals. Unless precautions are taken, the new crystal when plugged into old type equipment frequently results in excessive heat and fracturing due to violent activity.

The solution is simple — reduce crystal current and see what fine performers these new crystals really are!

A word about some of the surplus variety: many are quickly lapped into a ham band without etching.

For the convenience of amateurs, James Knights manufactures a complete line of crystals in both the ½" and ¾" pin spacing.

Crystals for the Critical



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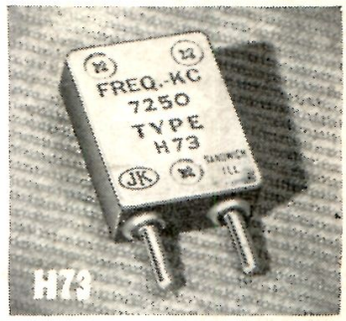

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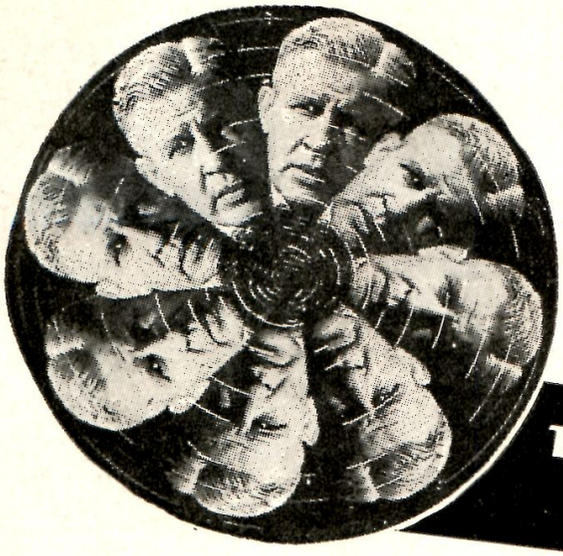

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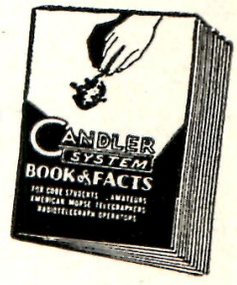

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