

INDEX AND NET PRICE LIST

Type	Page	Net	Type	Page	Net	Type	Page	Net	Type	Page	Net	Type	Page	Net	Type	Page	Net
A-10	28	\$13.20	CG-431	30	\$36.00	H-1	17	\$9.00	H-101	11	\$14.10	HQB-6	7	\$18.00	MAT-4	15	\$39.00
A-11	28	12.00	CG-433	29	9.90	H-2	17	9.90	H-102	11	15.00	HQB-7	7	18.90	MAT-5	15	10.80
A-12	28	12.00	CG-710	29	12.00	H-3	17	7.80	H-103	11	17.40	HQB-8	7	19.80	MAT-6	15	9.00
A-14	28	10.80	CGU-1	29	15.00	H-4	17	7.80	H-104	11	19.50	HQB-9	7	21.00	MC-1	19	10.20
A-15	28	9.90	CGU-2	29	17.40	H-5	17	8.40	H-110	14	27.00	HQB-10	7	21.90	MC-2	19	12.00
A-16	28	9.90	CGU-3	29	22.50	H-6	17	10.20	H-111	14	33.00	HQB-11	7	22.80	MLF-AMP		99.00
A-17	28	12.00	CGU-4	29	25.50	H-7	17	9.60	H-112	14	36.00	HQB-12	7	24.00	MQA-1	8	7.50
A-18	28	12.00	CGU-5	29	26.10	H-8	17	9.00	H-113	14	54.00	HQC-1	7	15.60	MQA-2	8	7.80
A-19	28	12.00	CGU-6	29	39.00	H-9	17	9.00	H-114	14	81.00	HQC-2	7	16.80	MQA-3	8	8.10
A-20	28	14.40	CGU-7	29	39.90	H-10	17	8.40	H-115	14	81.00	HQC-3	7	18.00	MQA-4	8	8.40
A-21	28	12.00	CGU-8	29	72.00	H-11	17	7.50	H-116	14	180.00	HQC-4	7	19.80	MQA-5	8	8.70
A-22	28	9.90	CGU-9	29	135.00	H-12	17	9.60	H-117	14	291.00	HQC-5	7	24.00	MQA-6	8	9.00
A-23	28	9.90	CVA-1	30	12.00	H-13	17	9.00	H-120	13	13.80	HQD-1	7	15.60	MQA-7	8	9.30
A-24	28	12.90	CVA-2	30	14.10	H-14	17	9.00	H-121	13	18.00	HQD-2	7	16.80	MQA-8	8	9.60
A-25	28	12.00	CVA-3	30	18.00	H-15	17	9.00	H-122	13	21.00	HQD-3	7	18.00	MQA-9	8	9.90
A-26	28	13.20	CVA-4	30	21.00	H-16	17	9.00	H-123	13	36.00	HQD-4	7	19.80	MQA-10	8	10.20
A-27	28	12.00	CVA-5	30	36.00	H-19A	17	16.50	H-124	13	12.00	HQD-5	7	24.00	MQA-11	8	10.50
A-30	28	10.20	CVL-1	29	9.00	H-20	17	15.00	H-125	13	21.00	HQE-1	7	7.80	MQA-12	8	10.80
A-32	28	6.60	CVL-2	29	10.50	H-21	17	18.00	H-126	13	27.00	HQE-2	7	7.80	MQA-13	8	11.10
A-33	28	2.70	CVL-3	29	15.00	H-22	17	15.90	H-127	13	45.00	HQE-3	7	8.10	MQA-14	8	11.40
			CVM-0	30	10.50	H-23	17	16.20	H-128	13	81.00	HQE-4	7	8.40	MQA-15	8	12.00
CG-1C	30	54.00	CVM-1	30	13.80	H-24	17	10.80	H-129	13	81.00	HQE-5	7	8.70	MQA-16	8	12.90
CG-1S	30	54.00	CVM-2	30	18.00	H-25	17	15.00	H-130	13	9.00	HVC-1	9	9.00	MQA-17	8	13.80
CG-2L6	29	13.80	CVM-3	30	21.00	H-26	17	15.00	H-131	13	12.00	HVC-2	9	9.00	MQA-18	8	15.00
CG-15	29	12.00	CVM-4	30	39.00	H-27	17	15.00	H-132	13	19.20	HVC-3	9	9.00	MQA-19	8	18.00
CG-16	29	12.00	CVM-5	30	105.00	H-30	17	9.00	H-133	13	15.00	HVC-4	9	9.00	MQB-1	8	12.90
CG-19	29	12.00	CVP-1	29	13.20	H-31	17	9.00	H-134	13	16.80	HVC-5	9	9.00	MQB-2	8	13.20
CG-20	29	15.00	CVP-2	29	14.40	H-32	17	9.00	H-135	13	21.00	HVC-6	9	9.00	MQB-3	8	13.50
CG-21	29	24.00	CVP-3	29	21.00	H-33	17	9.00	H-136	13	27.00	HVC-7	9	9.60	MQB-4	8	13.80
CG-33	30	9.00	CvP-4	29	24.00	H-35	17	7.80	H-280	17	14.40	HVC-8	9	9.60	MQB-5	8	14.10
CG-34	30	10.20	CvP-5	29	39.00	H-36	17	9.00	H-281	17	15.60	HVC-9	9	9.60	MQB-6	8	14.40
CG-40	30	8.10	DI-1	10	42.00	H-37A	17	9.00	H-282	17	16.80	HVC-10	9	9.90	MQB-7	8	14.70
CG-44	30	6.90	DI-2	10	45.00	H-38	17	9.60	H-290	17	19.80	HVC-11	9	10.80	MQB-8	8	15.00
CG-45	30	6.00	DI-3	10	51.00	H-39	17	9.60	H-291	17	36.00	HVC-12	9	12.00	MQB-9	8	15.90
CG-48C	30	7.50	DI-4	10	66.00	H-40A	17	9.60	HA-100	27	17.40	LS-6L1	24	36.00	MQB-10	8	16.80
CG-51AX	30	9.00	DI-T2	18	6.30	H-41A	17	9.60	HA-100X	27	17.40	LS-6L4	24	54.00	MQB-11	8	18.00
CG-53AX	30	10.50	DI-T3	18	6.30	H-45	16	6.90	HA-101	27	22.20	LS-6	23	24.00	MQB-12	8	19.20
CG-59AX	30	10.80	DI-T8	18	5.70	H-46	16	6.90	HA-101X	27	18.00	LS-10	22	21.00	MQD-1	8	15.00
CG-100	30	9.00	DI-T9	18	7.50	H-47	16	6.90	HA-103A	27	15.00	LS-10X	22	21.00	MQD-2	8	15.60
CG-101	30	9.00	DI-T10	18	7.50	H-48	16	6.90	HA-104	27	15.00	LS-12	22	25.20	MQD-3	8	16.20
CG-102	30	13.20	DI-T11	18	7.50	H-49	16	6.90	HA-105	27	21.00	LS-12X	22	24.00	MQD-4	8	16.80
CG-103	30	13.20	DI-T19	18	6.90	H-50	16	6.90	HA-106	27	18.90	LS-14X	22	24.00	MQD-5	8	18.00
CG-104	30	15.00	DI-T20	18	6.90	H-51	16	7.20	HA-107	27	27.00	LS-15X	22	24.00	MQD-6	8	21.00
CG-105	30	15.00	DI-T22	18	6.90	H-52	16	7.20	HA-108	27	19.80	LS-18	22	18.00	MQE-1	8	7.20
CG-108	30	27.00	DI-T23	18	7.80	H-53	16	7.20	HA-108X	27	19.80	LS-19	23	18.00	MQE-2	8	7.50
CG-109	30	27.00	DO-T1	18	6.00	H-54	16	7.50	HA-111	27	21.00	LS-21	23	18.00	MQE-3	8	7.80
CG-120	30	15.00	DO-T2	18	5.40	H-55	16	7.50	HA-113	27	18.00	LS-25	23	27.00	MQE-4	8	7.80
CG-121	30	18.00	DO-T3	18	5.40	H-56	16	8.40	HA-114	27	21.00	LS-26	22	24.00	MQE-5	8	8.10
CG-122	30	15.00	DO-T4	18	5.40	H-57	16	8.40	HA-130X	27	21.00	LS-27	23	24.00	MQE-6	8	8.40
CG-124	30	15.00	DO-T5	18	5.40	H-58	16	90.00	HA-133	27	21.00	LS-30	22	22.50	MQE-7	8	8.40
CG-125	30	18.00	DO-T6	18	6.00	H-70	13	7.20	HA-134	27	16.80	LS-30X	22	24.00	MQE-8	8	8.70
CG-126	30	24.00	DO-T7	18	6.60	H-71	13	8.40	HA-135	27	16.80	LS-31	22	21.00	MQE-9	8	8.70
CG-131	29	9.90	DO-T8	18	4.80	H-72	13	9.00	HA-136	27	18.00	LS-32	22	30.00	MQE-10	8	9.00
CG-132	29	9.90	DO-T9	18	6.60	H-73	13	11.40	HA-137	27	16.80	LS-33	23	21.00	MQE-11	8	9.00
CG-133	29	10.50	DO-T10	18	6.60	H-74	13	12.90	HC-115	27	9.00	LS-34	23	30.00	MQE-12	8	9.30
CG-134	29	9.00	DO-T11	18	6.60	H-75	13	15.00	HC-116	27	12.00	LS-35	24	24.00	MQE-13	8	9.90
CG-135	29	9.90	DO-T12	18	5.70	H-76	13	24.00	HC-117	27	9.00	LS-40	23	30.00	MQE-14	8	10.80
CG-136	29	13.20	DO-T13	18	5.70	H-77	13	27.00	HP-122	27	12.00	LS-47	23	24.00	MQE-15	8	12.00
CG-137	29	8.40	DO-T14	18	6.00	H-78	13	34.50	HP-123	27	12.00	LS-48	23	54.00	MQL-0	10	21.00
CG-140	29	7.80	DO-T15	18	6.00	H-79	13	90.00	HQA-1	7	7.50	LS-50	23	21.00	MQL-1	10	21.00
CG-141	29	9.00	DO-T16	18	6.00	H-80	12	12.90	HQA-2	7	7.80	LS-51	23	27.00	MQL-2	10	21.00
CG-233	29	9.00	DO-T17	18	6.00	H-81	12	18.00	HQA-3	7	8.10	LS-52	24	21.00	MQL-3	10	21.00
CG-235	29	12.00	DO-T18	18	6.30	H-82	12	20.40	HQA-4	7	8.40	LS-54	24	18.00	MQL-4	10	22.80
CG-300	30	16.20	DO-T19	18	6.00	H-83	12	21.00	HQA-5	7	8.70	LS-55	24	24.00	MQL-5	10	24.00
CG-301	30	24.00	DO-T20	18	6.00	H-84	12	26.40	HQA-6	7	9.00	LS-56	24	24.00	O-1	19	7.80
CG-302	30	30.00	DO-T21	18	6.00	H-85	12	30.00	HQA-7	7	9.00	LS-57	24	18.00	O-2	19	7.80
CG-303	30	36.00	DO-T22	18	6.00	H-86	12	30.90	HQA-8	7	9.60	LS-58	24	51.00	O-3	19	7.50
CG-304	30	141.00	DO-T23	18	6.90	H-87	12	36.00	HQA-9	7	9.60	LS-61	24	24.00	O-4	19	6.60
CG-305	30	63.00	DO-T24	18	7.50	H-88	12	45.00	HQA-10	7	9.90	LS-63	24	18.00	O-5	19	6.60
CG-306	30	150.00	DO-T25	18	7.20	H-89	12	49.50	HQA-11	7	9.90	LS-65	24	42.00	O-6	19	7.50
CG-307	30	138.00	DO-T26	18	5.70	H-90	12	21.00	HQA-12	7	10.80	LS-103	24	180.00	O-7	19	7.50
CG-308	30	162.00	DO-T27	18	4.80	H-91	12	27.00	HQA-13	7	11.40	LS-106	24	300.00	O-8	19	7.80
CG-309	30	360.00	DO-T-SH	18	.90	H-92	12	33.00	HQA-14	7	12.90	LS-140	23	24.00	O-9	19	7.80
CG-310	30	309.00	FT-1	33	2.58	H-93	12	49.50	HQA-15	7	13.80	LS-150	23	21.00	O-10	19	8.40
CG-311	30	66.00	FT-2	33	2.70	H-94	11	18.00	HQA-16	7	15.00	LS-151	23	21.00	O-11	19	7.80
CG-312	30	66.00	FT-3	33	3.00	H-95	11	28.80	HQA-17	7	15.90	LS-691	24	570.00	O-12	19	7.80
CG-315	30	14.40	FT-4	33	3.00	H-96	11	48.00	HQA-18	7	16.80	LS-692	24	900.00	O-13	19	6.30
CG-316	30	21.00	FT-5	33	3.60	H-97	11	15.00	HQB-1	7	15.00	MAT-1	15	27.00	O-14	19	7.50
CG-333	29	9.00															

INDEX AND NET PRICE LIST

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O-17	19	\$ 1.50	R-41	34	\$ 5.70	R-105	33	\$11.40	SSO-15	20	\$ 4.80	S-34	32	\$ 9.60	S-68	32	\$10.20
O-18	19	8.40	R-42	34	6.00	R-106	33	6.60	S-1	31	4.80	S-35	32	12.00	S-70	32	10.20
O-19	19	8.40	R-43	34	6.90	R-107	33	7.20	S-2	31	6.00	S-36	32	12.00	S-71	32	15.00
O-20	19	8.40	R-44	34	8.40	R-110	33	6.60	S-3	31	4.20	S-37	32	15.00	S-72	32	10.80
O-21	19	7.80	R-45	34	12.00	R-111	33	7.20	S-5	31	4.80	S-38	32	15.00	SC-3	34	7.50
P-1	19	9.00	R-46	34	24.00	R-112	33	9.00	S-6	31	4.50	S-39	32	16.50	SC-4	34	9.00
P-2	19	9.00	R-47	34	9.60	R-113	33	13.20	S-8	31	6.60	S-40	32	18.00	SC-5	34	14.40
P-3	19	8.40	R-48	34	10.50				S-9	31	8.40	S-41	32	18.00			
P-6	19	8.40	R-49	34	10.80	SO-1	20	3.00	S-10	31	6.60	S-42	32	19.50	V-1	34	20.00
P-7	19	8.40	R-55	33	1.65	SO-2	20	3.00	S-11	31	5.10	S-43	32	30.00	V-1-M	34	35.00
P-8	19	9.00	R-58	33	2.70	SO-3	20	3.00	S-12	31	5.40	S-44	32	24.00	VIC-1	9	6.60
P-9	19	9.00	R-59	33	3.30	SO-4	20	3.00	S-13	31	7.80	S-45	32	21.00	VIC-2	9	6.60
P-10	19	9.00	R-60	33	3.90	SO-5	20	3.00	S-14	31	6.60	S-46	32	24.00	VIC-3	9	6.60
P-11	19	9.00	R-64	34	45.00	SO-6	20	3.90	S-15	31	7.20	S-47	32	33.00	VIC-4	9	6.60
P-12	19	9.00	R-72	34	6.60	SO-7	20	3.00	S-16	31	8.40	S-48	32	39.00	VIC-5	9	6.60
P-15	19	9.00	R-73	34	9.00	SO-8	20	3.60	S-17	31	9.90	S-49	32	36.00	VIC-6	9	6.60
P-16	19	11.40	R-74	34	15.00	SO-9	20	3.60	S-18	31	7.20	S-50	32	60.00	VIC-7	9	6.60
PF-1	34	8.40	R-75	34	24.00	SO-10	20	3.60	S-19	31	9.30	S-51	32	12.00	VIC-8	9	6.90
PF-2	34	8.40	R-76	34	42.00				S-21	31	21.00	S-52	32	15.60	VIC-9	9	6.90
PF-3	34	6.00	R-77	34	75.00	SSO-1	20	4.50	S-22	31	33.00	S-53	32	6.00	VIC-10	9	6.90
R-14	33	1.95	R-78	34	15.60	SSO-2	20	4.80	S-20	31	15.00	S-54	32	5.70	VIC-11	9	6.90
R-15	33	1.95	R-79	34	18.00	SSO-3	20	3.90	S-23	32	4.50	S-55	32	5.40	VIC-12	9	7.20
R-16	33	1.95	R-80	34	21.00	SSO-4	20	3.90	S-24	32	5.10	S-57	32	9.00	VIC-13	9	7.20
R-17	33	2.25	R-81	34	33.00	SSO-5	20	3.90	S-25	32	3.90	S-58	32	9.60	VIC-14	9	7.20
R-18	33	2.52	R-86	34	33.00	SSO-6	20	3.90	S-26	32	3.90	S-59	32	9.00	VIC-15	9	7.50
R-19	33	3.00	R-87	34	6.00	SSO-7	20	3.00	S-27	32	5.10	S-60	32	13.20	VIC-16	9	7.50
R-20	33	3.60	R-88	34	17.40	SSO-8	20	3.90	S-28	32	6.00	S-61	32	10.20	VIC-17	9	7.50
R-21	33	3.60	R-97	34	15.00	SSO-9	20	3.00	S-29	32	5.10	S-62	32	9.30	VIC-18	9	7.80
R-34	33	3.00	R-101	33	6.30	SSO-10	20	3.00	S-30	32	5.10	S-63	32	13.20	VIC-19	9	7.80
R-35	33	2.70	R-102	33	7.20	SSO-11	20	3.00	S-31	32	6.90	S-64	32	10.20	VIC-20	9	8.40
R-38A	33	3.30	R-103	33	7.80	SSO-12	20	3.00	S-32	32	6.90	S-65	32	9.90	VIC-21	9	9.00
R-39	33	2.70	R-104	33	9.00	SSO-13	20	4.50	S-33	32	9.30	S-67	32	9.90	VIC-22	9	12.00
						SSO-14	20	4.80									

EQUALIZERS and SOUND EFFECTS FILTER

3A	25	180.00
3AX	25	270.00
4C	25	240.00

INTERSTAGE and LINE FILTERS

BMI — 60, 100, 120, 400, 500, 750, 1000, 1500, 2000, 3000, 4000, 5000, 10000	Pg. 5	\$27.00
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HMI—200, 400, 500, 800, 1000, 2000, 3000

Pg. 5	\$30.00
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LMI—200, 400, 500, 800, 1000, 1500, 2000, 2500, 3000, 4000, 5000, 10000

Pg. 5	\$30.00
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BML — 400, 1000 Pg. 5 \$27.00

HML—200, 300, 500, 1000	Pg. 5	\$33.00
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LML — 1000, 1500, 2000, 2500, 4000, 8000, 10000, 12000

Pg. 5	\$30.00
Special Frequ. Filters	\$48.00

TELEGRAPH RECEIVING FILTERS

TGR—425, 595, 765, 935	Pg. 4	\$66.00
TGR — 1105, 1275, 1445, 1615	Pg. 4	\$63.00
TGR — 1785, 1955, 2125, 2295	Pg. 4	\$60.00
TGR — 2465, 2635, 2805, 2975	Pg. 4	\$57.00

TELEGRAPH TRANSMITTING FILTERS

TGT—425, 595, 765, 935	Pg. 4	\$39.00
TGT — 1105, 1275, 1445, 1615	Pg. 4	\$36.00
TGT — 1785, 1955, 2125, 2295	Pg. 4	\$33.00
TGT — 2465, 2635, 2805, 2975	Pg. 4	\$30.00

TELEMETERING FILTERS

TMN — .4, .56, .73, .96, 1.3, 1.7, 2.3, 3.0, 3.9, 5.4, 7.35	Pg. 4	\$39.00
TMN—10.5, 14.5, 22, 30, 40, 52.5, 70	Pg. 4	\$36.00
TMW — 22, 30, 40, 52.5, 70	Pg. 4	\$36.00

This catalogue covers the most complete line of transformers, filters, and high Q coils for military, industrial, broadcast, amateur, laboratory, and replacement purposes. It is surprising to many people to find that the bulk of UTC production is on special units not normally catalogued. We would be pleased to advise and quote to your special production requirements.



Audio development laboratory



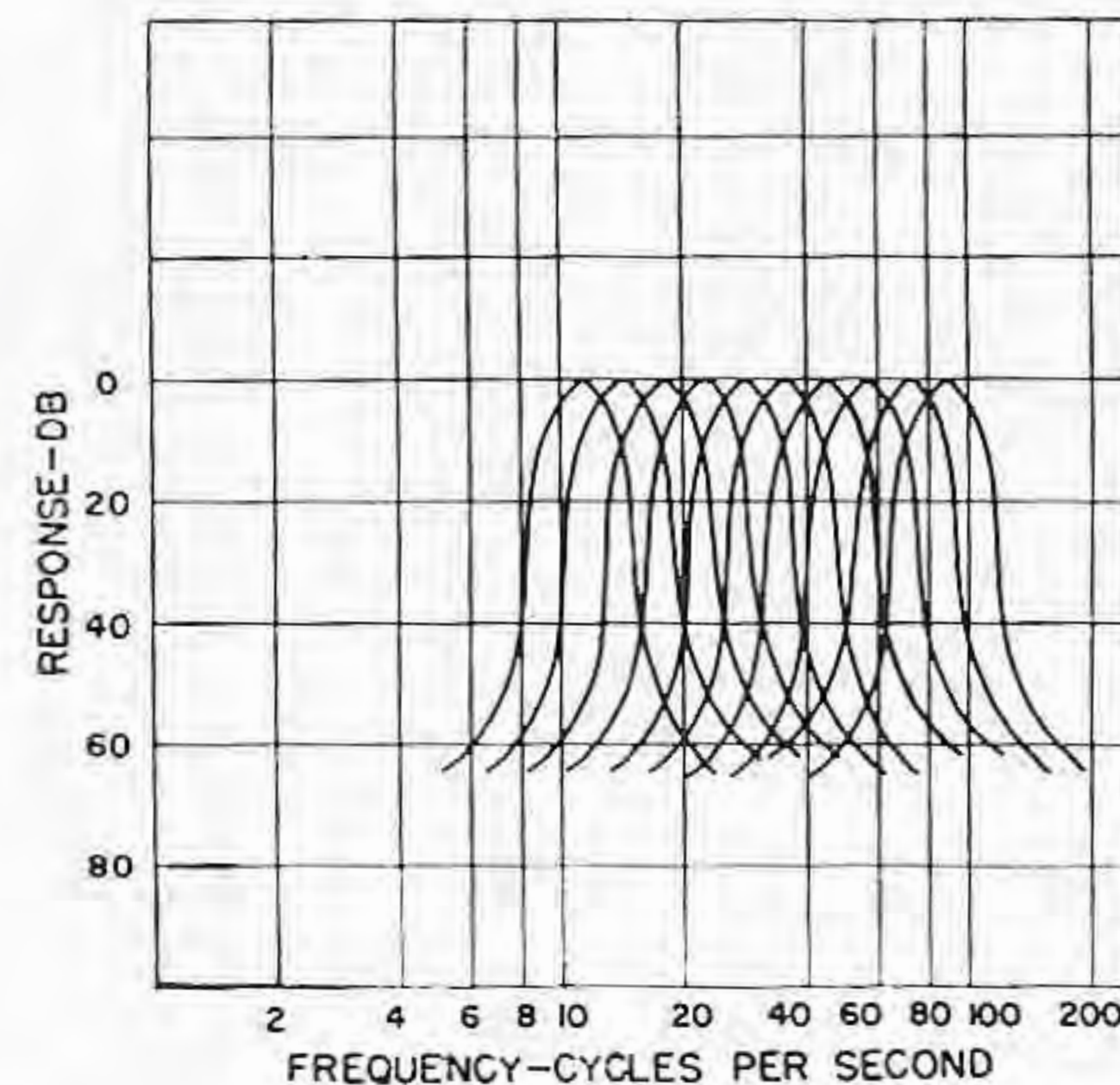
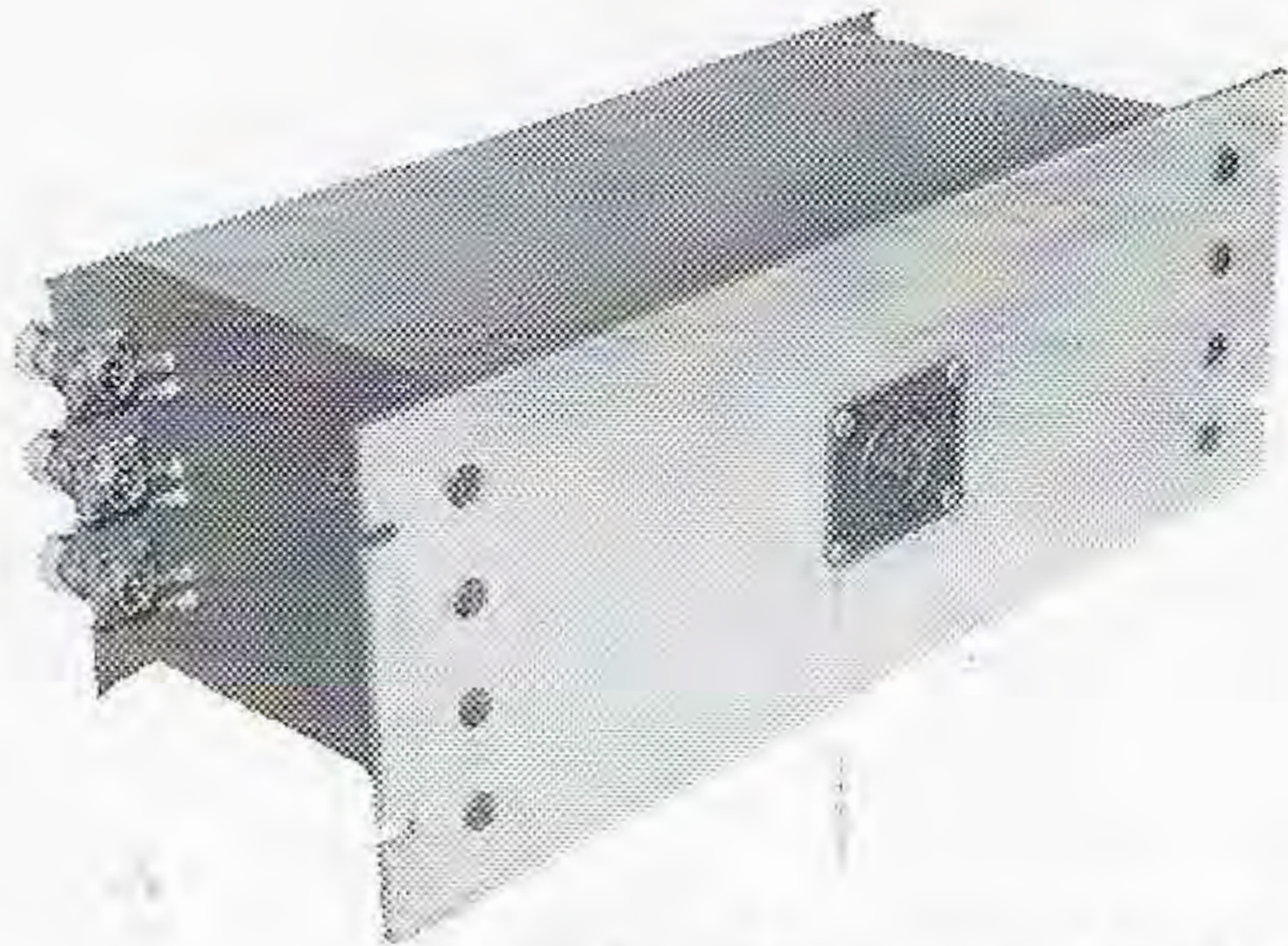
Precision Q meter measurements



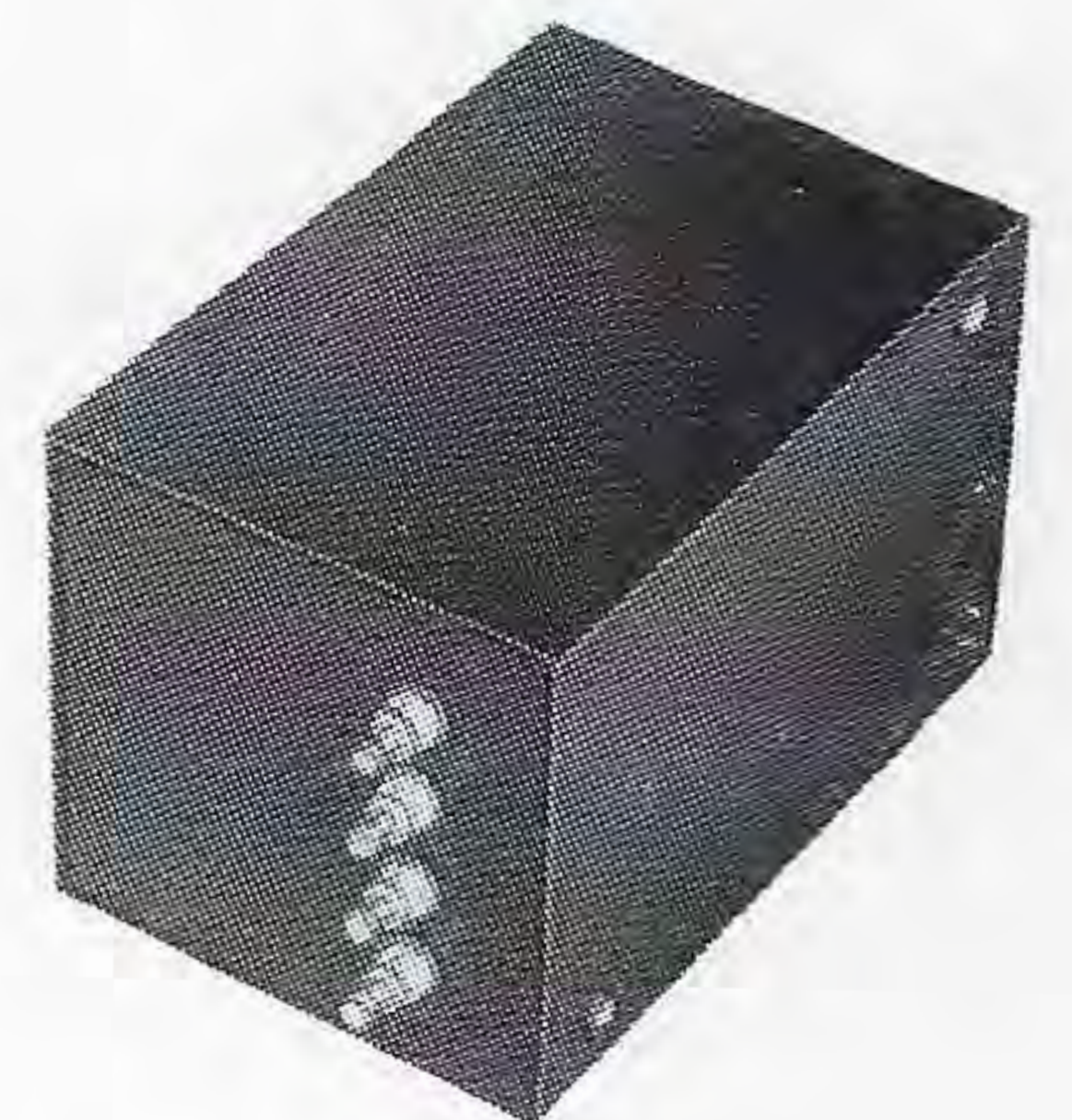
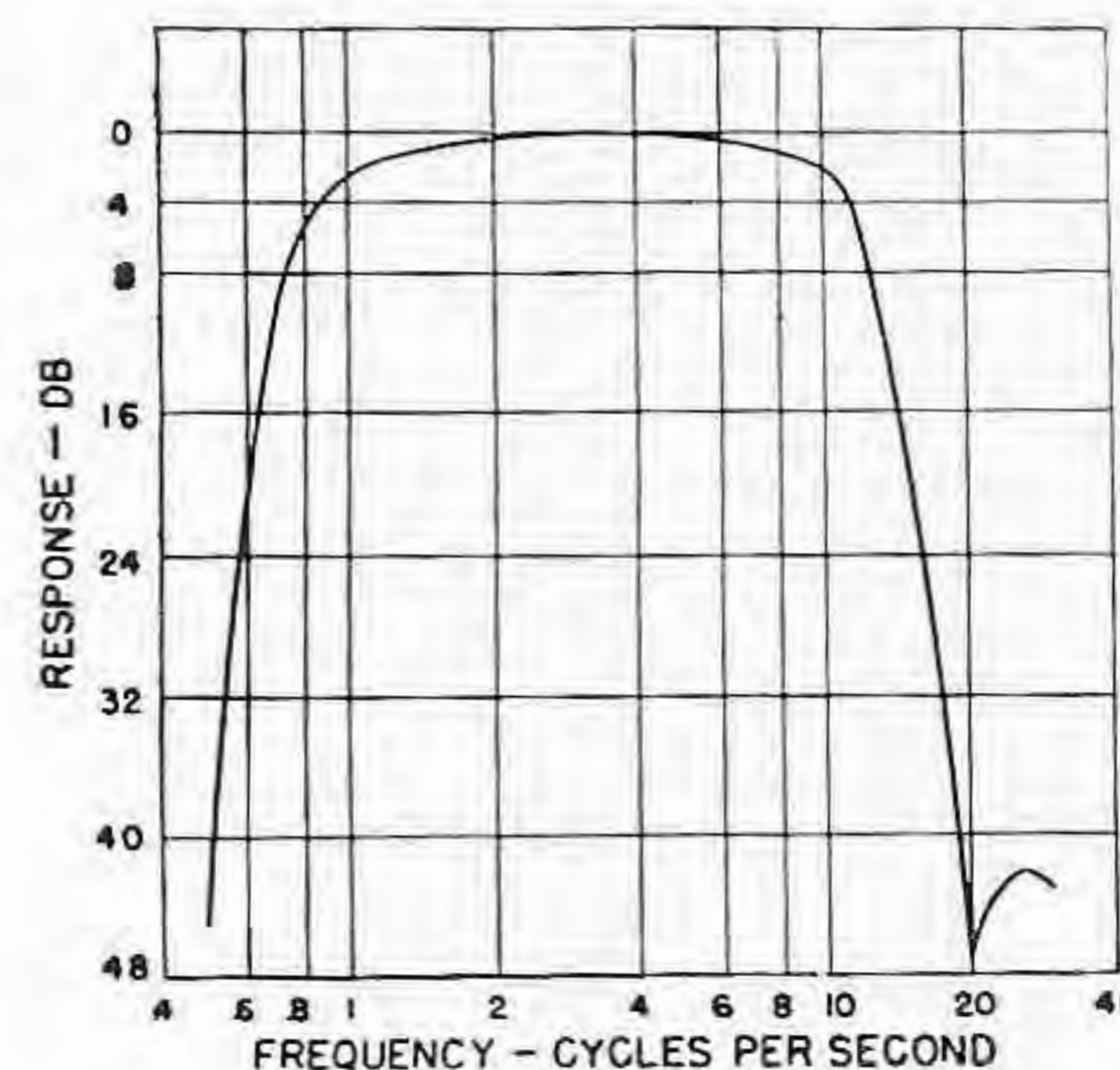
Filter development laboratory

UTC FOR SPECIAL FILTERS

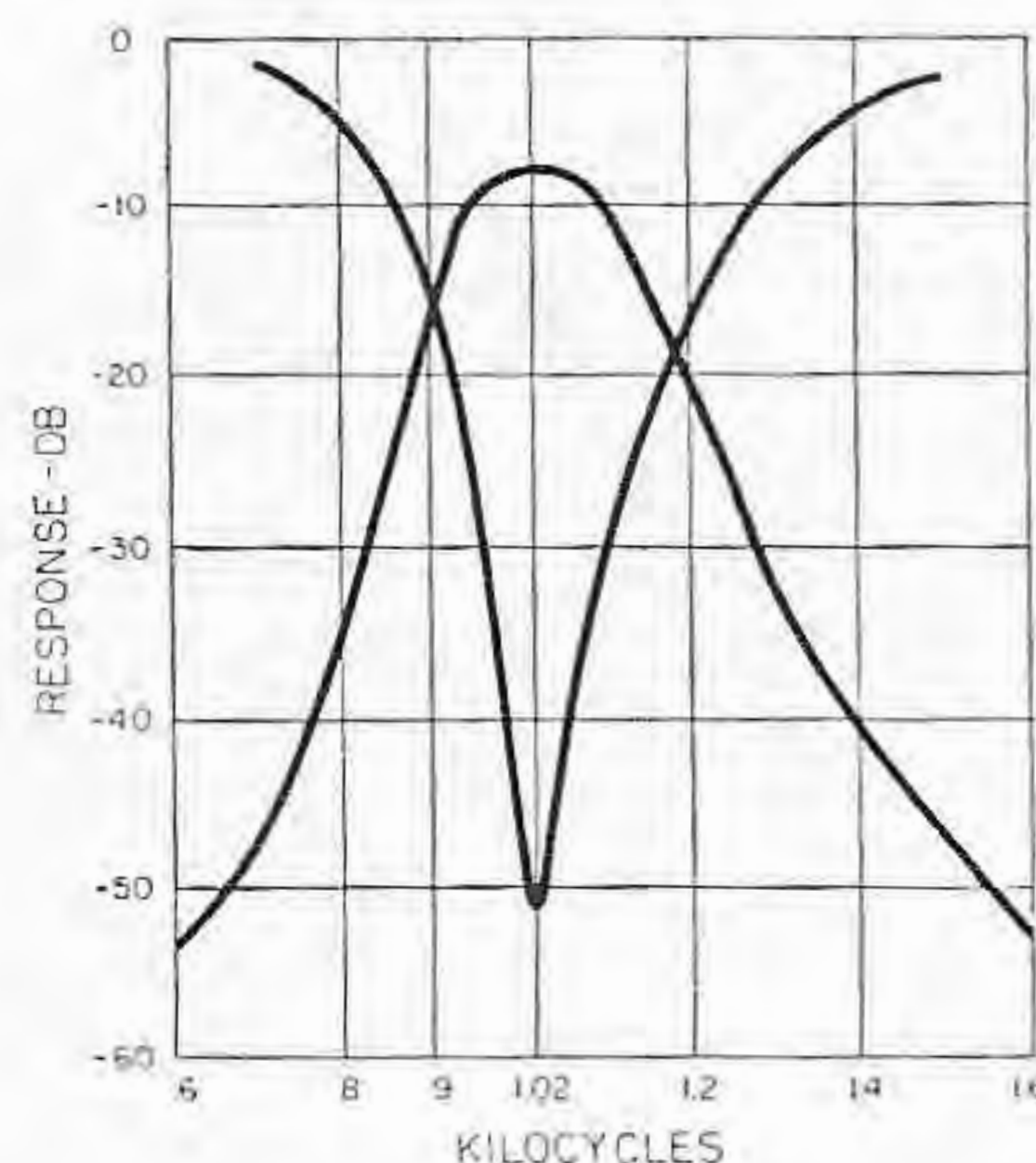
Twenty-five years of experience in the design and production of specialized filters have resulted in UTC being a first source for difficult filters. Twenty years ago UTC was already the largest user of permalloy dust toroids in the world (exclusive of the telephone system). Present designs include a wide variety of core materials, structures, and winding methods to provide maximum performance in electrical requirements and stability. The bulk of UTC filter production is in the form of special units to customers needs, with applications ranging from 1/10th cycle to 400 megacycles. The illustrations on this page cover a few of the thousands of unusual filters produced at UTC.



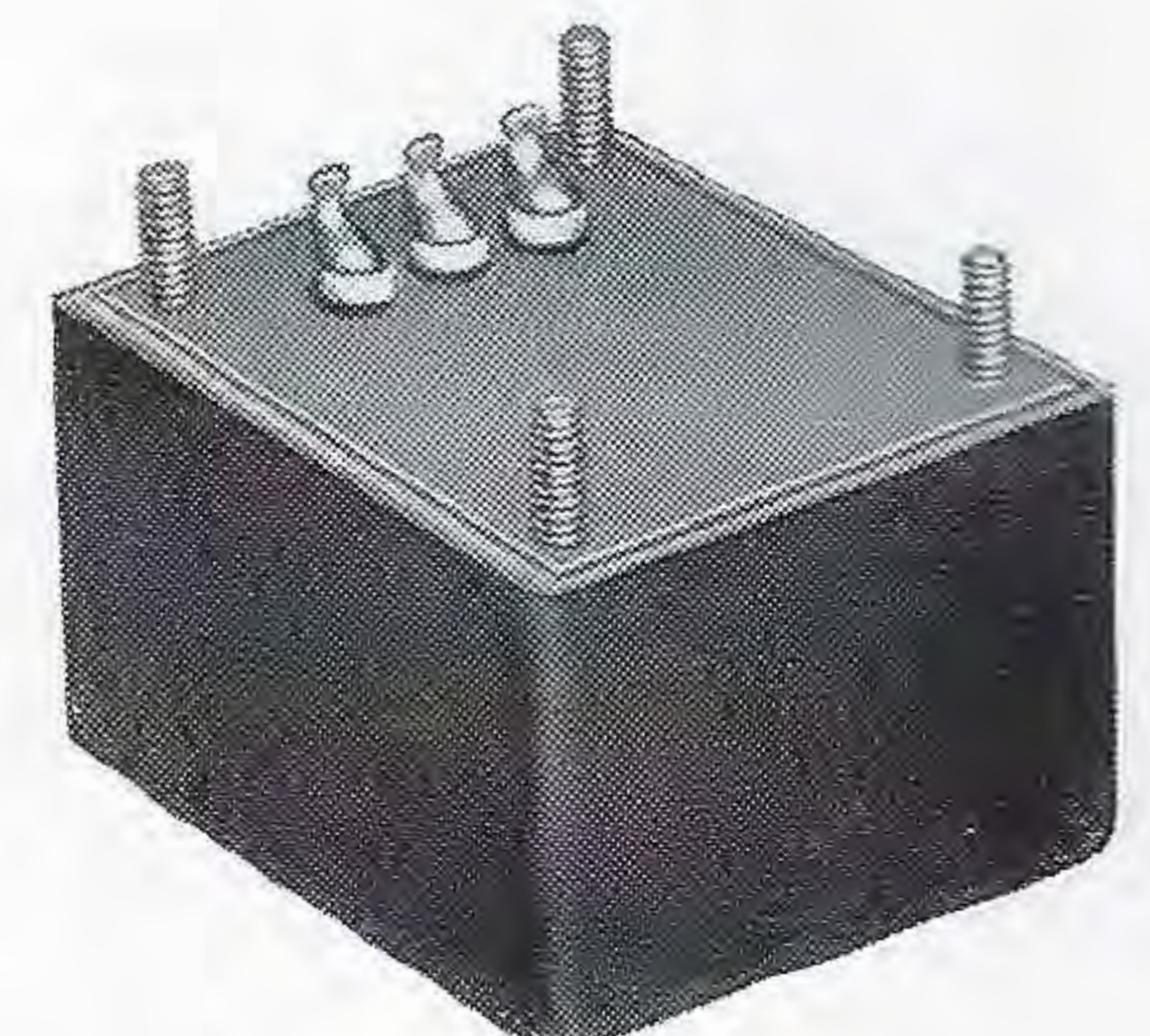
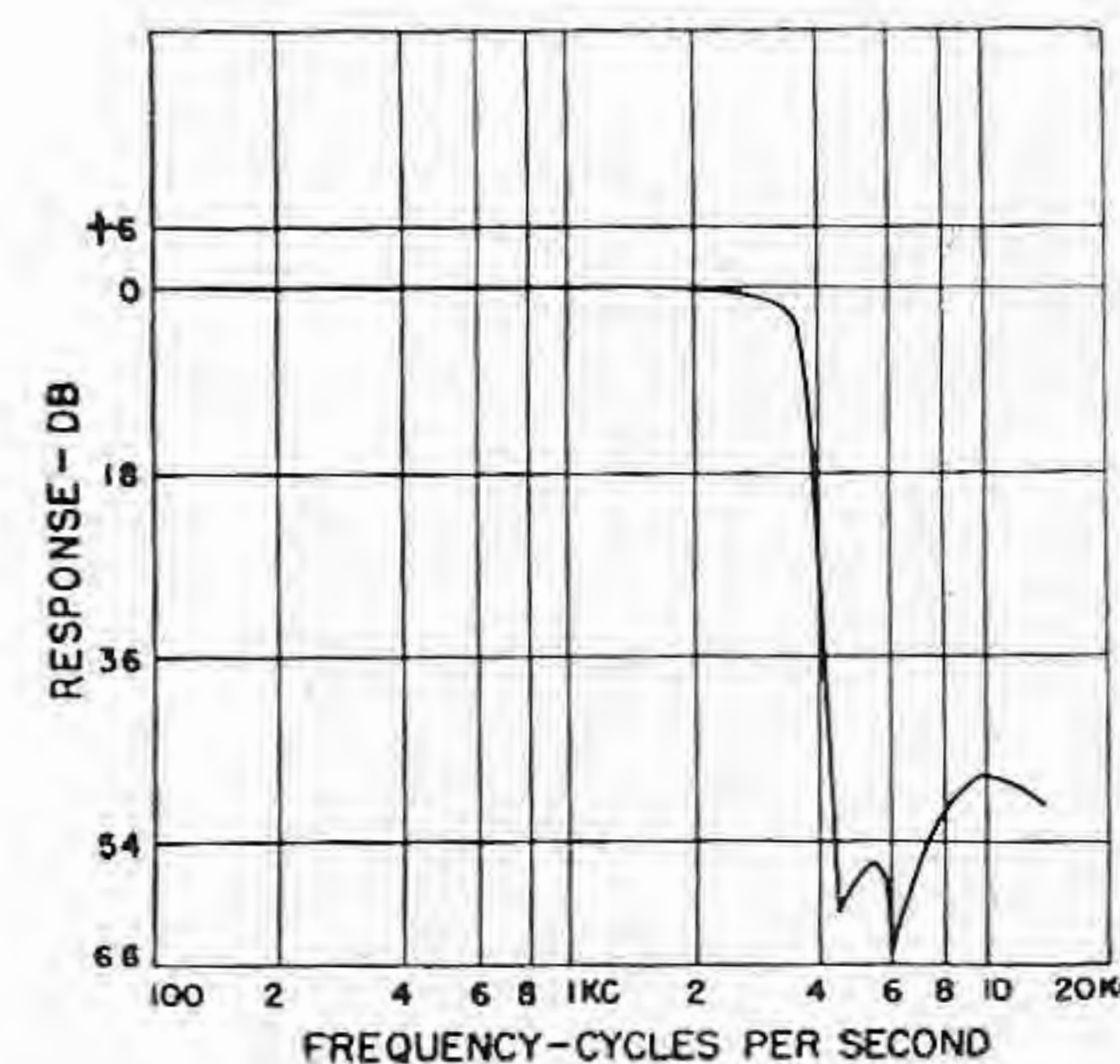
These low frequency band pass filters are held to 1 DB tolerance at the 3 DB crossover...600 ohm...4 filters per 7½" rack panel.



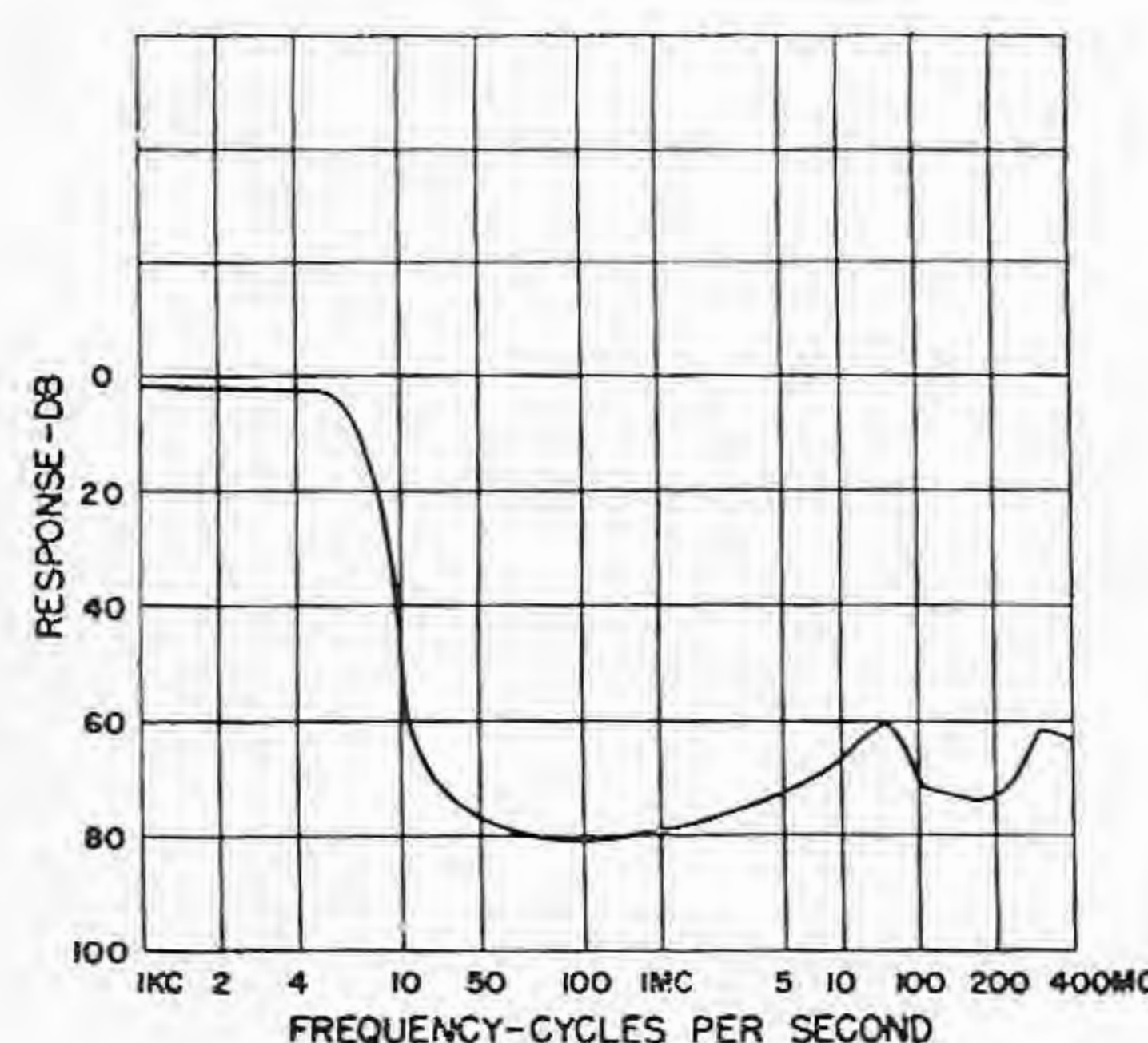
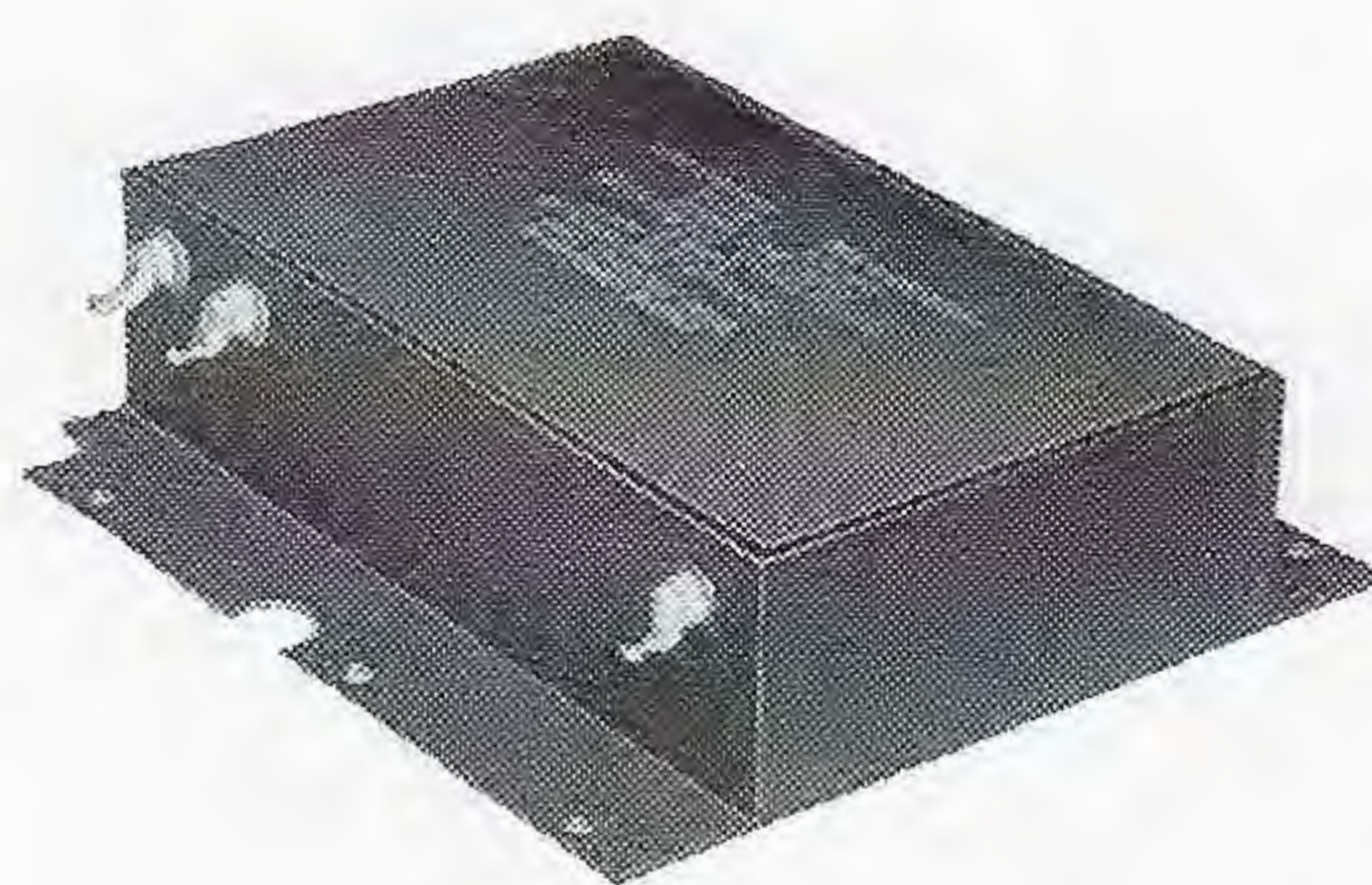
This ultra low frequency filter has a band pass range of one cycle to 10 cycles...50,000 ohms...700 cubic inches.



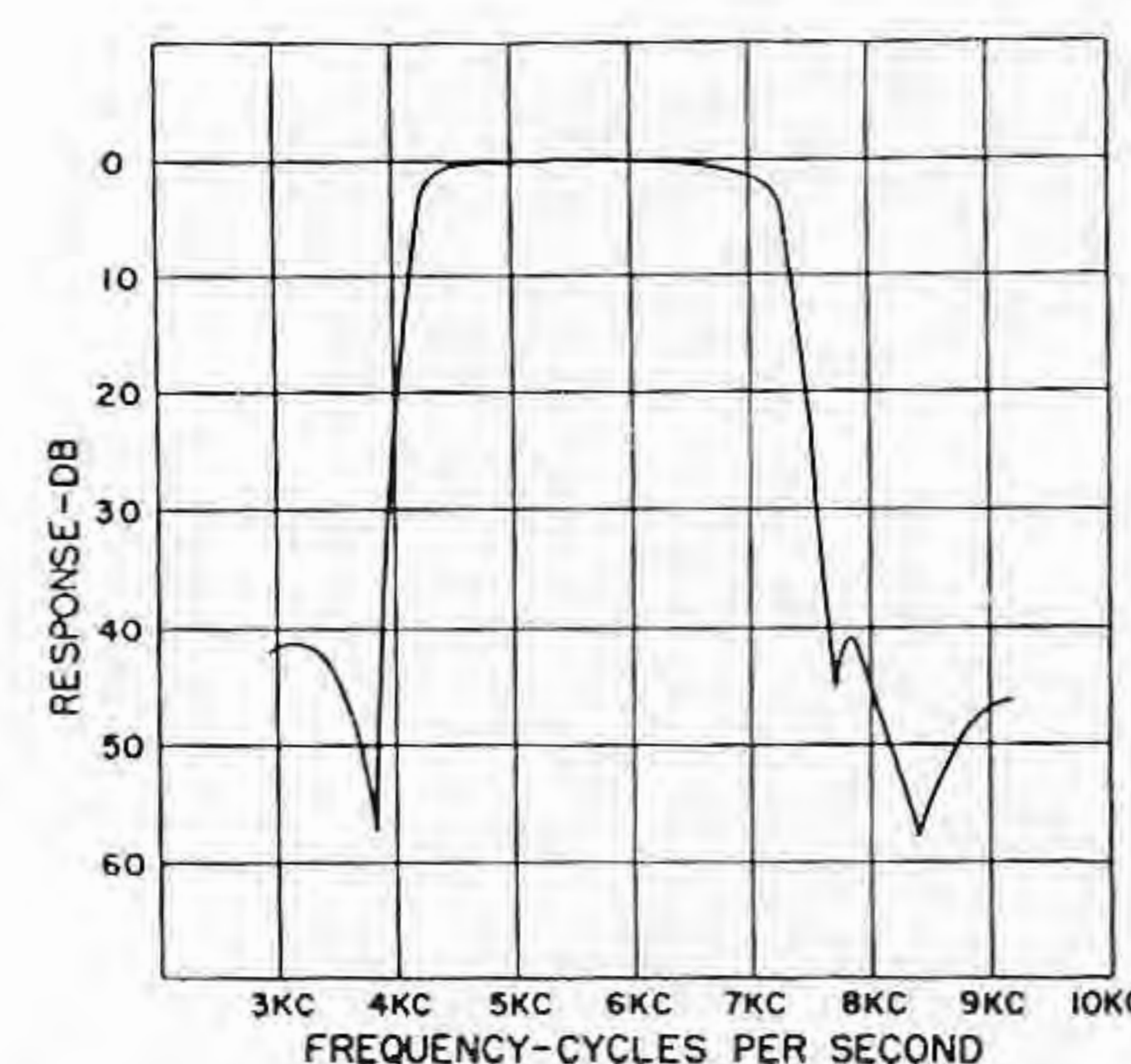
CAA approved RRF-5 aircraft filter serves to separate radio range signals from aural communication.



This 600 ohm miniaturized low pass filter is housed in a case only 1" x 1¾" x 2½".



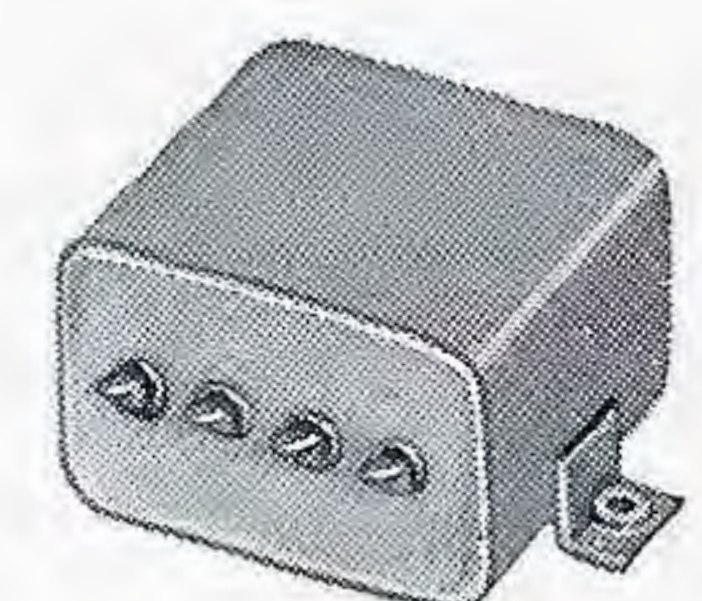
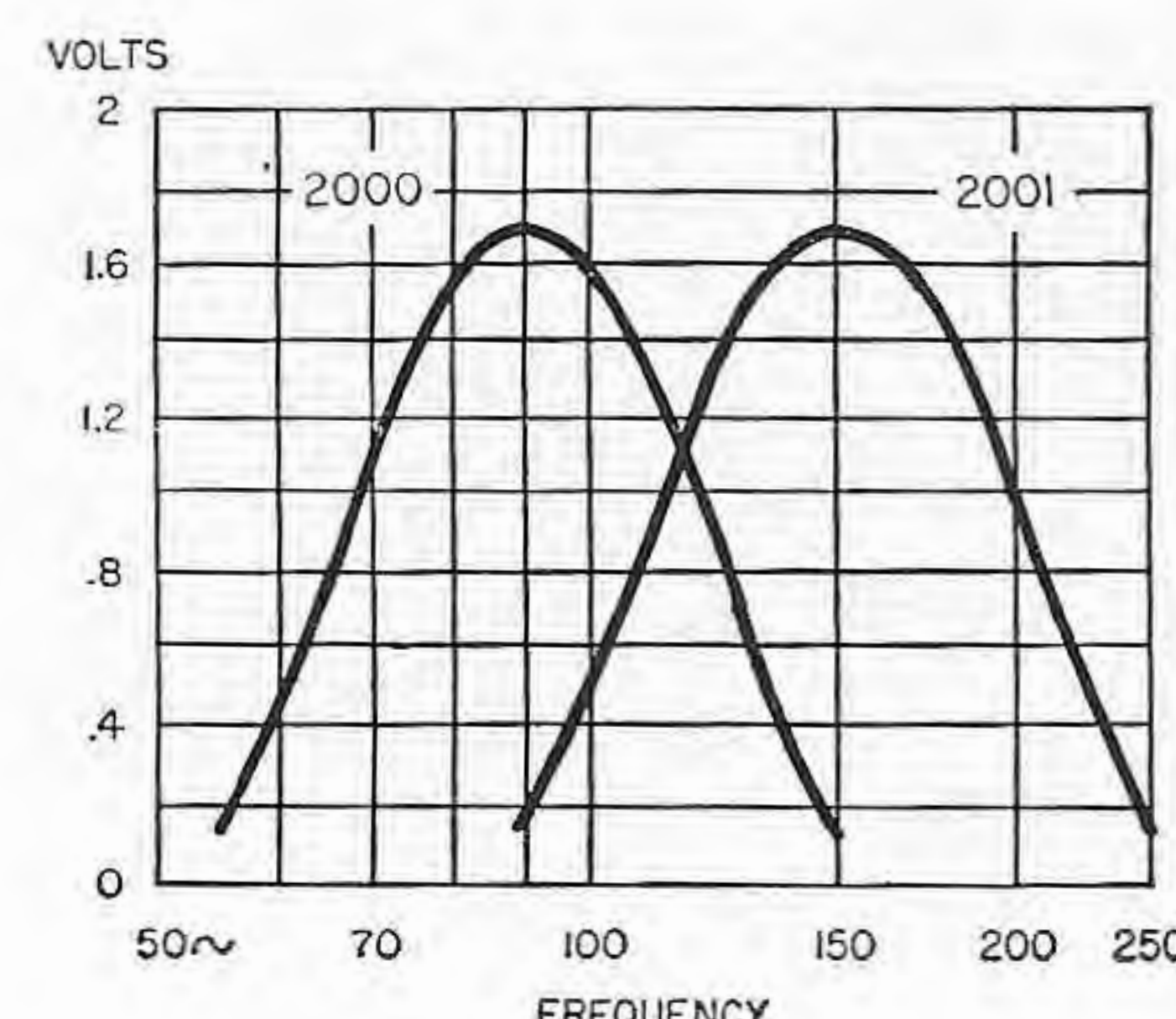
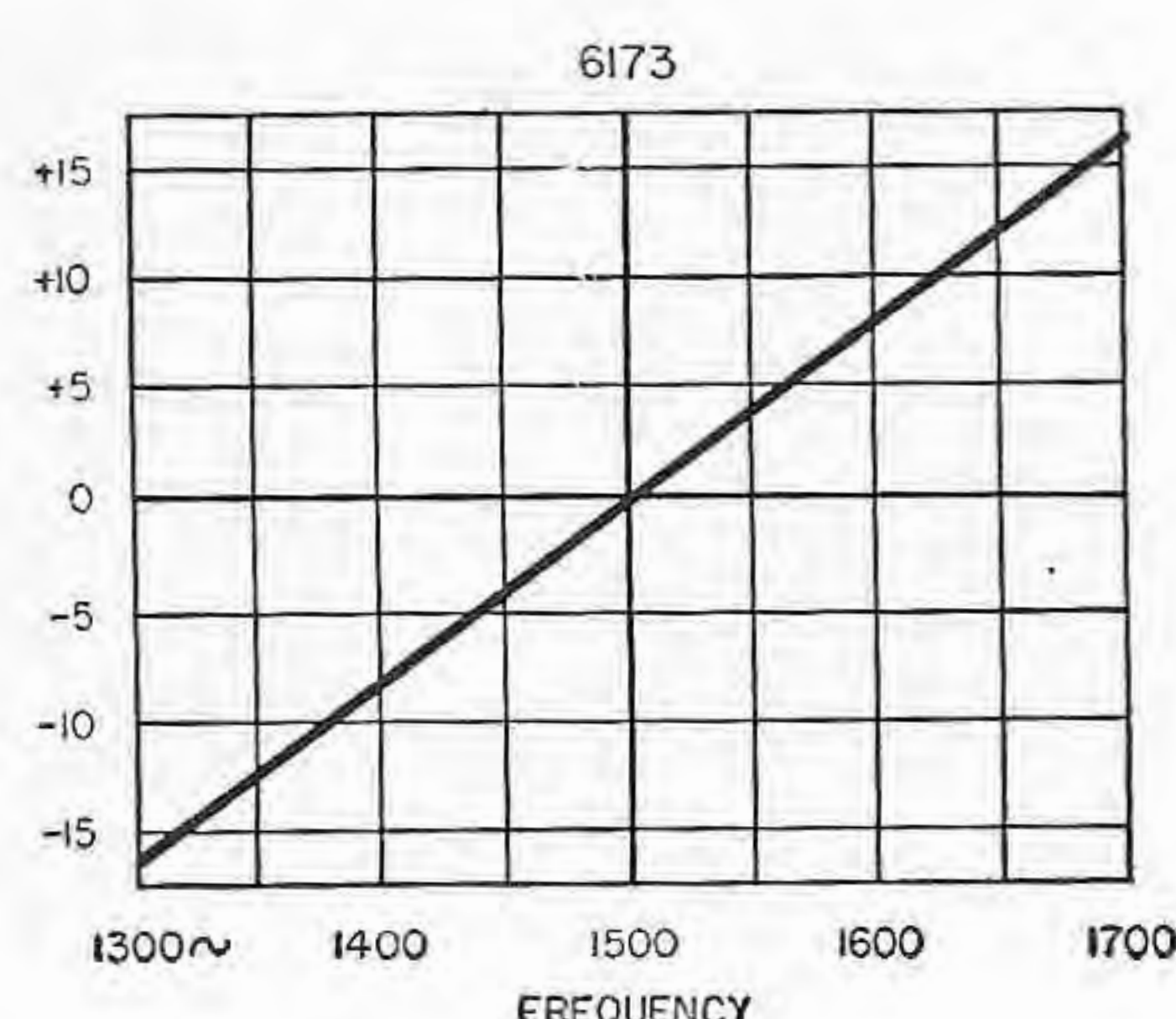
Power line filter from sources of 50 to 400 cycles...noise attenuation is from 14 KC to 400 MC...29 cubic inches.



This band pass filter is designed for sharp cut-off at both ends of the range...10,000 ohms...case dimensions 1⅝"x2½"x3¼".



UTC high Q discriminators provide exceptional amplification and linearity. Typical characteristics available are illustrated. Y axis values are volts. 1⅞ x 1⅝ x 3.



UTC has produced the bulk of filters used in aircraft equipment. Curves of our miniaturized 90 and 150 cycle filters for glide path systems. 1¼ x 1¾ x 1⅝.

UTC TELEMETERING BAND PASS FILTERS

Hermetically sealed to MIL-T-27A Specs., see back cover.

UTC manufactures a wide variety of special filters for channel separation. One special group of noise analysis filters, for example, provides 50 channels between 4 KC and 100 KC in a total volume of 200 cubic inches. The standard group of UTC telemetering filters described below incorporates extreme miniaturization with maximum stability, a complete set of 18 filters taking a volume of approximately 19 cubic inches. Both TMN and TMW types are designed for 100K input and output impedance and have an insertion loss of less than 6 db. Four pin hermetic header matches small Winchester socket.

TMN filters are down less than 3 db at $\pm 7.5\%$ of center frequency. They are down more than 18 db at $\pm 25\%$ of center frequency. Attenuation is greater than 40 db beyond $1.75 F_c$ and $.58 F_c$.

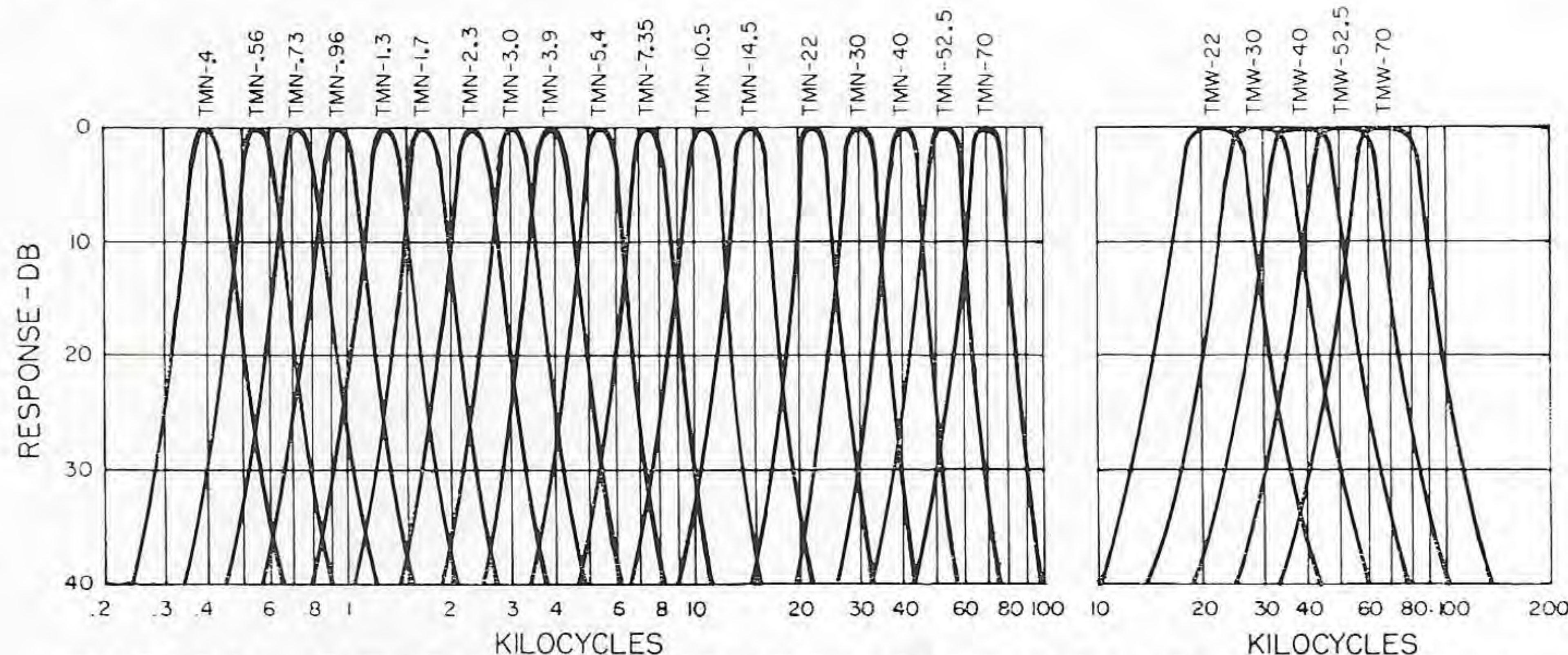
TMW filters are down less than 3 db at $\pm 15\%$ of center frequency. They are down more than 20 db at $\pm 50\%$ of center frequency. Attenuation is greater than 40 db beyond $2.5 F_c$ and $.4 F_c$.



TMN-4 thru TMN-1.7
1 1/16 x 1 1/32 x 2 inches
Weight3.5 oz.



TMN-2.3 thru TMW-70
2 3/32 x 2 3/32 x 1 3/8 inches
Weight1.2 oz.



Type No.	Center Frequency KC	Band Width $\pm$	Type No.	Center Frequency KC	Band Width $\pm$
TMN-4	.4	7 1/2 %	TMN-14.5	14.5	7 1/2 %
TMN-56	.56	7 1/2 %	TMN-22	22	7 1/2 %
TMN-73	.73	7 1/2 %	TMN-30	30	7 1/2 %
TMN-96	.96	7 1/2 %	TMN-40	40	7 1/2 %
TMN-1.3	1.3	7 1/2 %	TMN-52.5	52.5	7 1/2 %
TMN-1.7	1.7	7 1/2 %	TMN-70	70	7 1/2 %
TMN-2.3	2.3	7 1/2 %	TMW-22	22	15 %
TMN-3.0	3.0	7 1/2 %	TMW-30	30	15 %
TMN-3.9	3.9	7 1/2 %	TMW-40	40	15 %
TMN-5.4	5.4	7 1/2 %	TMW-52.5	52.5	15 %
TMN-7.35	7.35	7 1/2 %	TMW-70	70	15 %
TMN-10.5	10.5	7 1/2 %			

TYPICAL RESPONSE CURVES OF STANDARD TM FILTERS

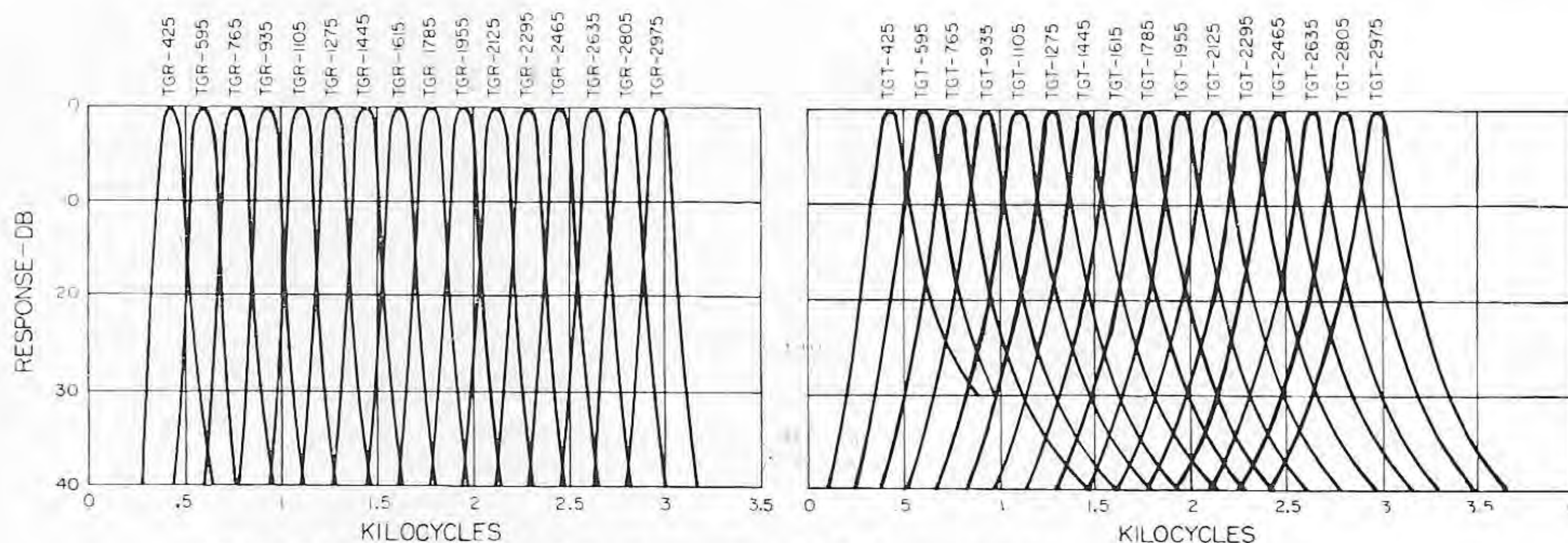
UTC TELEGRAPH TONE CHANNEL FILTERS

Hermetically sealed to MIL-T-27A Spec., see back cover.

UTC band pass filters for multiplex transmitting and receiving provide maximum stability in miniature sizes. Stock filters cover all standard transmit and receive bands. All units employ 7 terminal header matching subminiature 7 pin socket.

TGR (receiving) filters are 600 ohms in and out. They are down less than 3 db at ± 42.5 cycles from center frequency and down more than 30 db at ± 170 cycles. Attenuation is greater than 15 db at adjacent channel crossover.

TGT (transmitting) filters are 600 ohms in and out. They are down less than 3 db at ± 42.5 cycles from center frequency and down more than 16 db at ± 170 cycles. Attenuation is greater than 7.5 db at adjacent channel crossover.



TYPICAL RESPONSE CURVES OF STANDARD TG FILTERS



TGR CASE
1 1/2 x 1 1/2 x 4 1/4 in.
Mtg.1 1/16 x 1 1/16
Screws6-32
Weight15 oz.



TGT CASE
1 1/2 x 1 1/2 x 2 1/2 in.
Mtg.1 1/16 x 1 1/16
Screws6-32
Weight8 oz.

RECEIVING FILTERS

Type No.	Center Frequency (Cyc.)	Type No.	Center Frequency (Cyc.)
TGR-425	425	TGR-1785	1785
TGR-595	595	TGR-1955	1955
TGR-765	765	TGR-2125	2125
TGR-935	935	TGR-2465	2465
TGR-1105	1105	TGR-2635	2635
TGR-1275	1275	TGR-2805	2805
TGR-1445	1445	TGR-2975	2975
TGR-1615	1615		

TRANSMITTING FILTERS

Type No.	Center Frequency (Cyc.)	Type No.	Center Frequency (Cyc.)
TGT-425	425	TGT-1785	1785
TGT-595	595	TGT-1955	1955
TGT-765	765	TGT-2125	2125
TGT-935	935	TGT-2465	2465
TGT-1105	1105	TGT-2635	2635
TGT-1275	1275	TGT-2805	2805
TGT-1445	1445	TGT-2975	2975
TGT-1615	1615		

UTC INTERSTAGE AND LINE FILTERS

Hermetically sealed to MIL-T-27A Specs.

UTC makes a wide range of specialized filters covering bands ranging from .1 cycle to 400 megacycles. A group of standardized filters have been developed covering the more common mid-range frequencies, which take care of many filter requirements with stock units. All of these standard filters are in compact drawn hermetically sealed cases shielded to reduce hum pick-up. They are divided into six basic types.

The **BMI filters** are band pass interstage units designed to operate between a vacuum tube plate (or 10,000 ohms) and a grid. They provide a gain of 2 at center frequency.

BML band pass filters, similarly, work into a grid, but have an input impedance of 500/600 ohms. They provide a gain of 9.

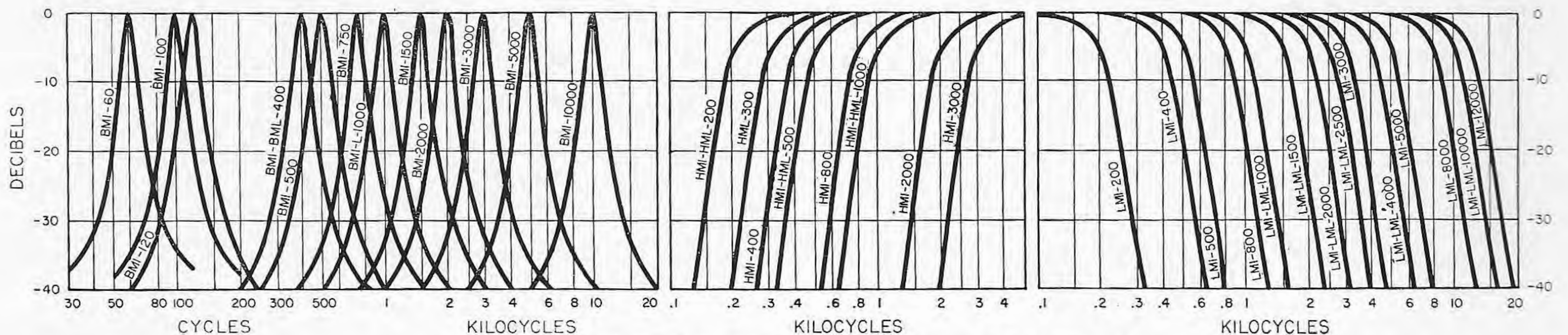
HMI filters are high pass interstage units.

LMI filters are low pass interstage units.

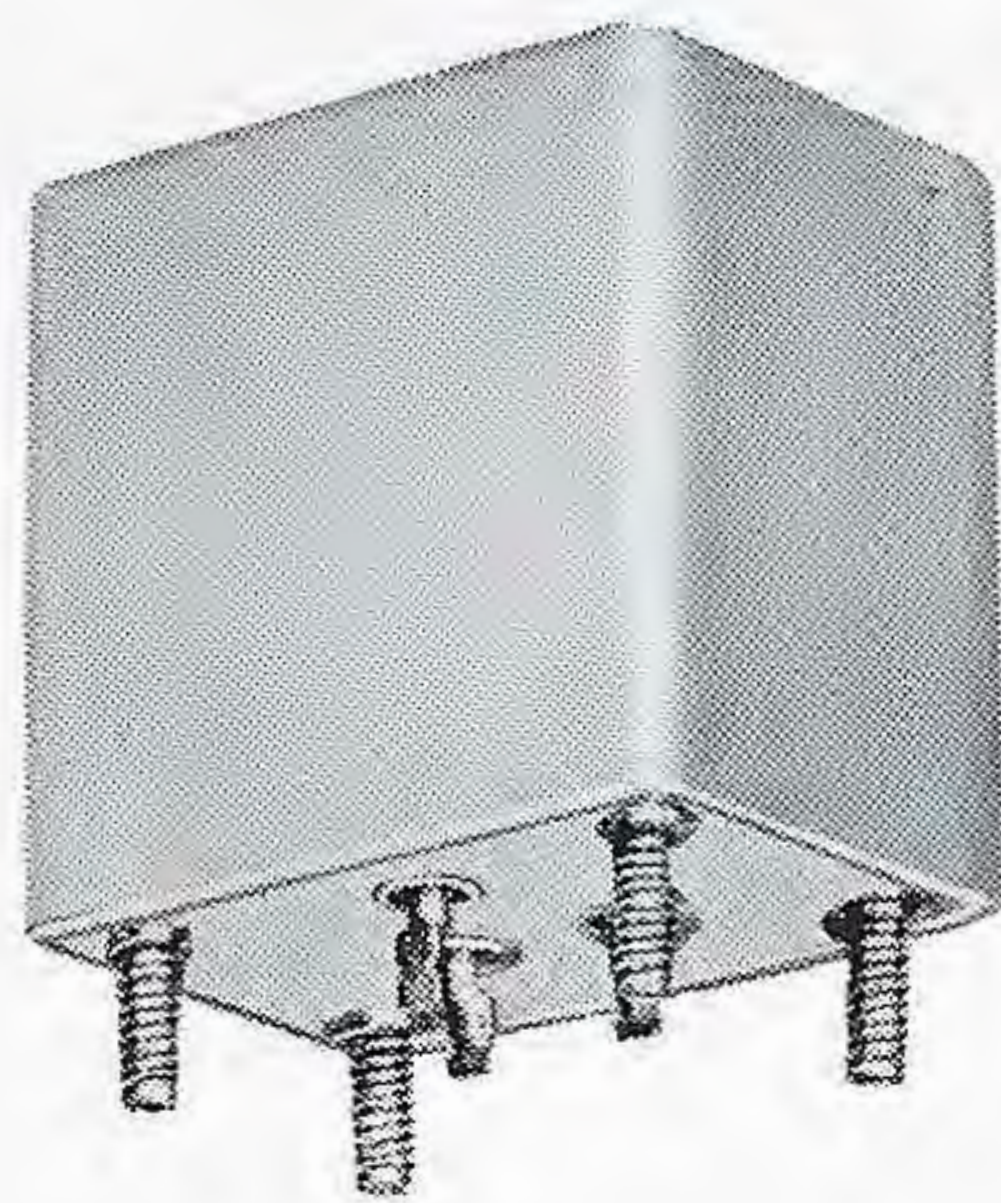
HML filters are high pass with input and output impedance of 500/600 ohms.

LML filters are low pass filters with input and output impedance of 500/600 ohms.

In addition to the stock filters listed, any of the six types are available as special units. BMI, BML, HMI, and HML special filters can be obtained for any frequency from 60 to 12,000 cycles. LMI specials are available from 140 to 12,000 cycles. LML filters are available from 500 to 12,000 cycles. These items are ordered as type followed by frequency, for example, LMI-2800 would designate a low pass interstage filter with 2800 cycle cut-off frequency. These special units are priced at \$48.00 net.



TYPICAL RESPONSE CURVES OF STANDARD FILTERS



FILTER CASE M

Base $1\frac{3}{16}$ " x $1\frac{1}{16}$ "
 Mtg. $\frac{3}{4}$ " x $1\frac{1}{4}$ "
 Mtg. Studs stainless)..... 6-32
 Cutout $\frac{7}{8}$ " dia.
 Height, BMI, LMI, BML $1\frac{5}{8}$ "
 Height, HMI, HML, LML $2\frac{1}{2}$ "
 Weight 6 oz. and 9 oz.

STANDARD FILTERS . . . STOCK FREQUENCIES

BMI units (Band Pass) have 2:1 gain. They are sharply peaked, having approximately 2 DB attenuation at plus or minus 3% from center frequency and attenuation of 40 DB per octave as shown. Input 10,000 ohms, output to grid.

HMI units (High Pass) have a loss of less than 6 DB at cutoff frequency, and an attenuation of 35 DB at .67 cutoff frequency. Input and output 10,000 ohms.

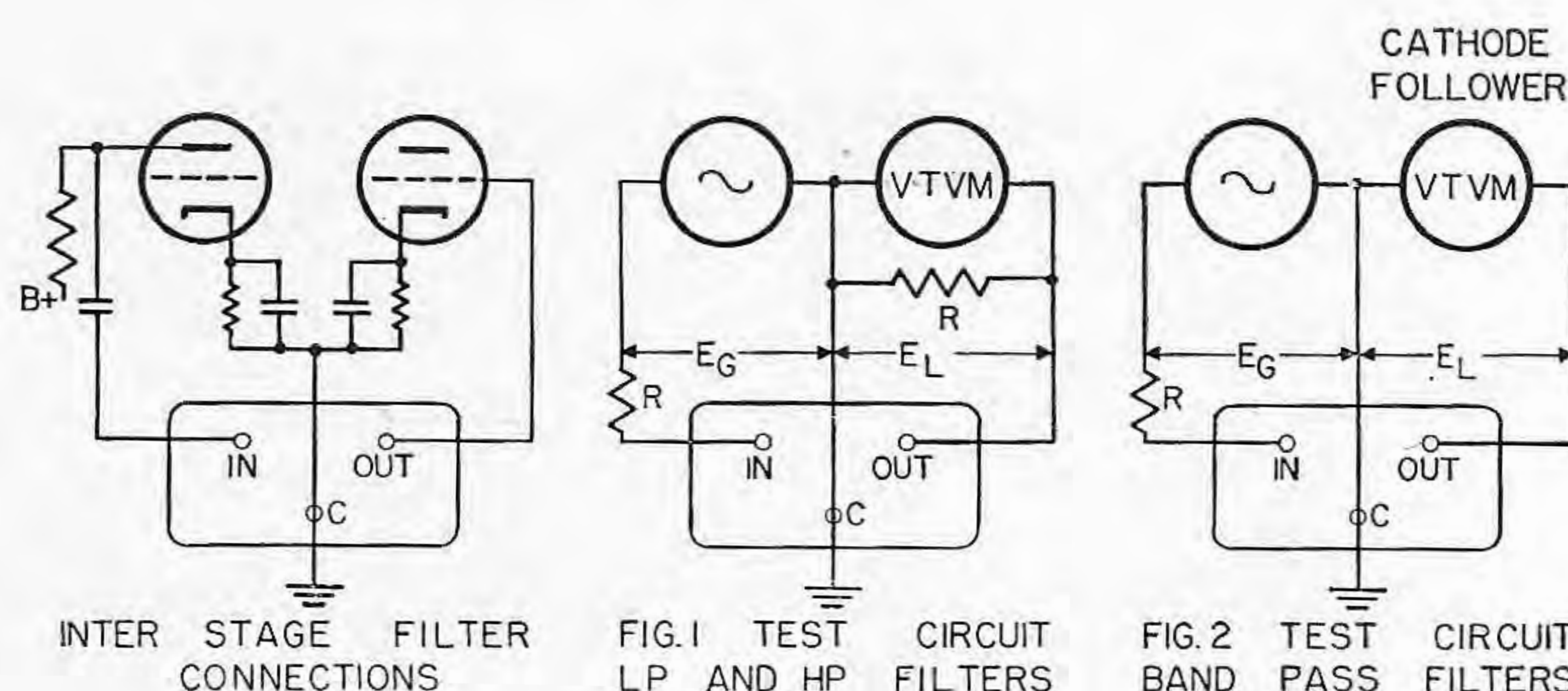
LMI units (Low Pass) have a loss of less than 6 DB at cutoff frequency, and an attenuation of 35 DB at 1.5 cutoff frequency. Input and output 10,000 ohms.

HML (High Pass) and **LML** (Low Pass) filters are similar to the interstage filters, in all characteristics, except that they are intended for an input and output impedance of 500/600 ohms.

BML (Band Pass) have input of 500/600 ohms, output to grid.

BMI-60	HMI-800	LMI-10000
BMI-100	HMI-1000	BML-400
BMI-120	HMI-2000	BML-1000
BMI-400	HMI-3000	HML-200
BMI-500	LMI-200	HML-300
BMI-750	LMI-400	HML-500
BMI-1000	LMI-500	HML-1000
BMI-1500	LMI-800	LML-1000
BMI-2000	LMI-1000	LML-1500
BMI-3000	LMI-1500	LML-2000
BMI-4000	LMI-2000	LML-2500
BMI-5000	LMI-2500	LML-4000
BMI-10000	LMI-3000	LML-8000
HMI-200	LMI-4000	LML-10000
HMI-400	LMI-5000	LML-12000
HMI-500		

FILTER TESTS



LMI and LML Filters are tested as per Fig. 1 with R equal to 10,000 ohms for LMI and 500/600 ohms for LML. E_G is held constant and E_L obtained at 1/5th cut-off frequency is used as zero on curve. E_L at other frequencies is then plotted in db.

HMI and HML Filters are tested as per Fig. 1 with R equal to 10,000 ohms for HMI and 500/600 ohms for HML. E_G is held constant and E_L obtained at five times cut-off frequency is used as zero on curve. E_L at other frequencies is then plotted in db.

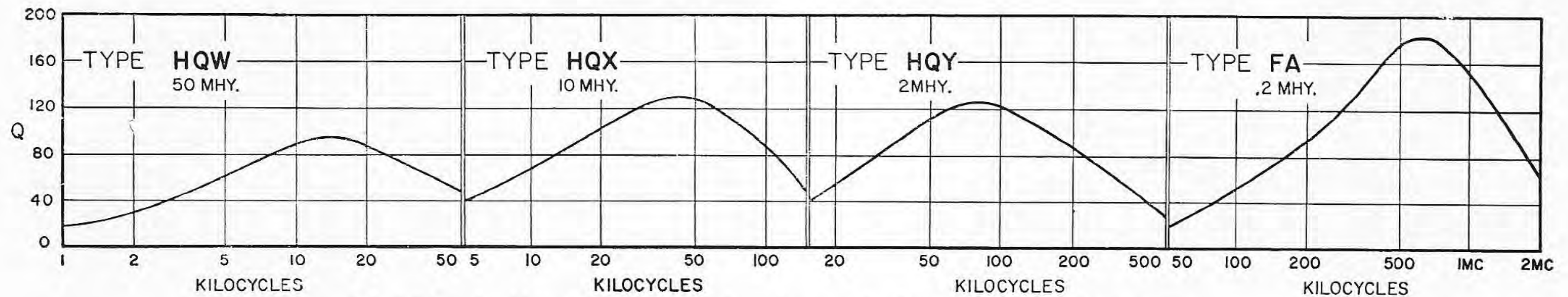
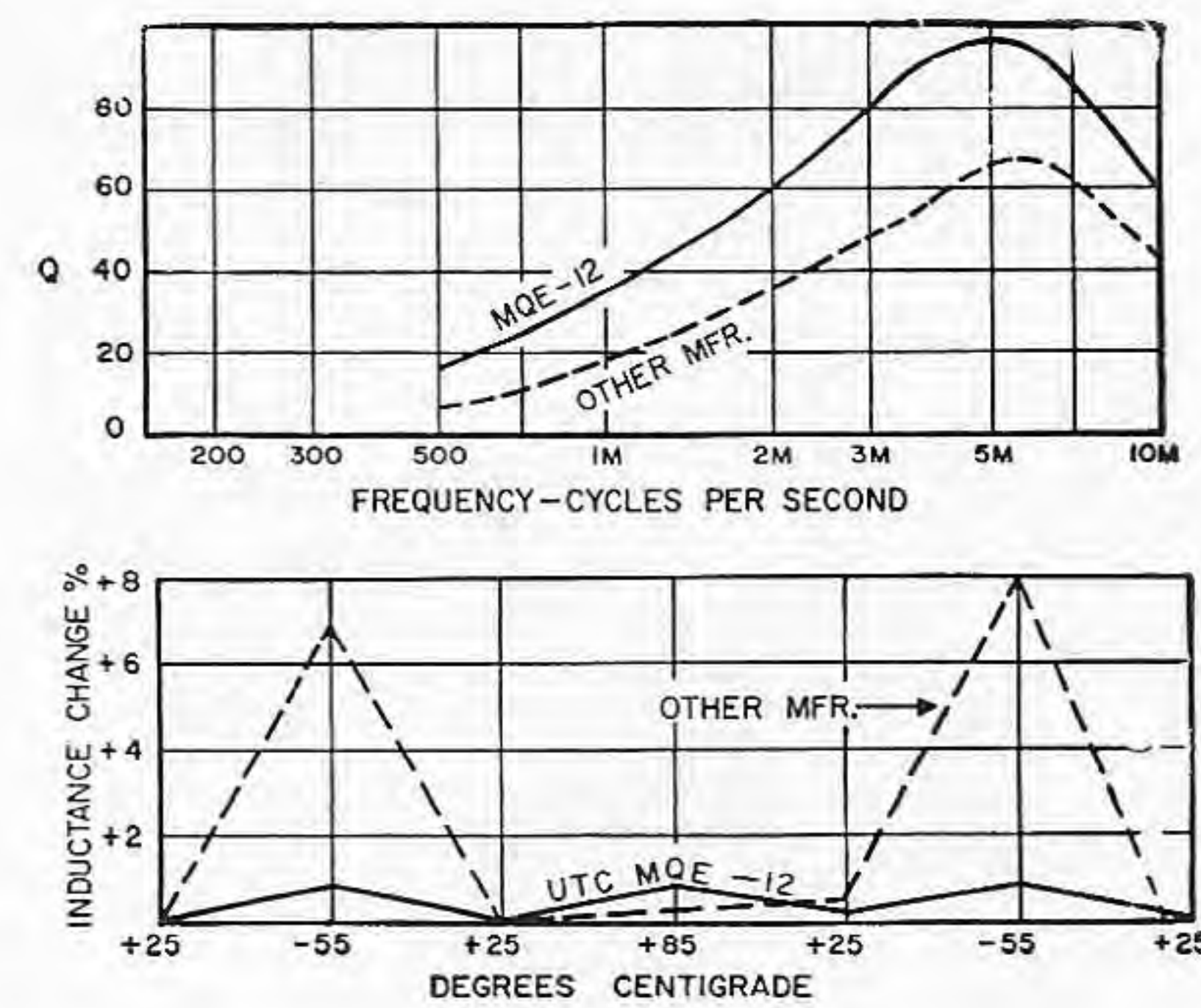
BMI and BML are tested as per Fig. 2 with R equal to 10,000 ohms for BMI and 500/600 ohms for BML. Output is to unloaded grid. E_G is held constant and E_L obtained at center frequency is used as zero on curve (this is twice E_G for BMI's, nine times E_G for BML's). E_L at other frequencies is then plotted in db.

UTC FOR SUPERIOR HIGH Q COILS

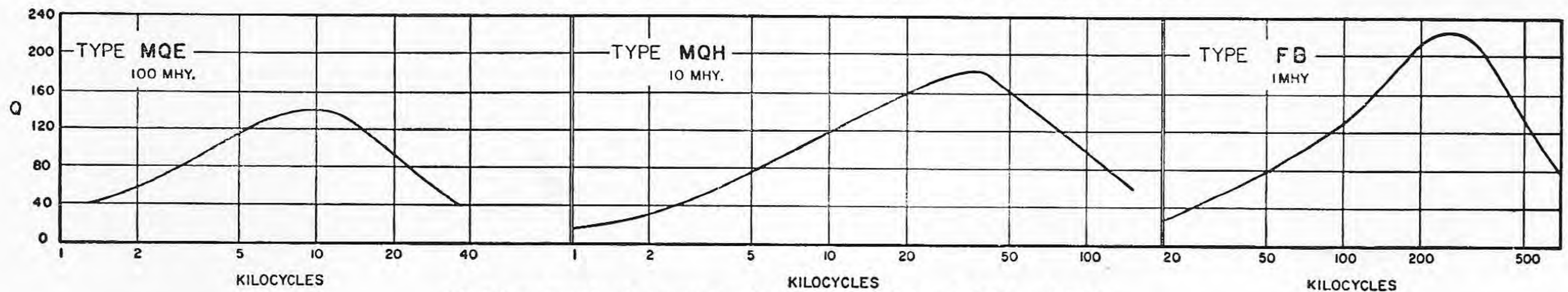
Twenty-five years of specialization in high Q coils are reflected in the permalloy dust toroid, ferrite, and laminated structures produced by UTC today.

Special winding machines and stabilization methods have resulted in coils of superior performance and stability. For example, the curves at the right show the performance of a stock UTC MQE unit compared to an "equivalent" employing same type permalloy dust core.

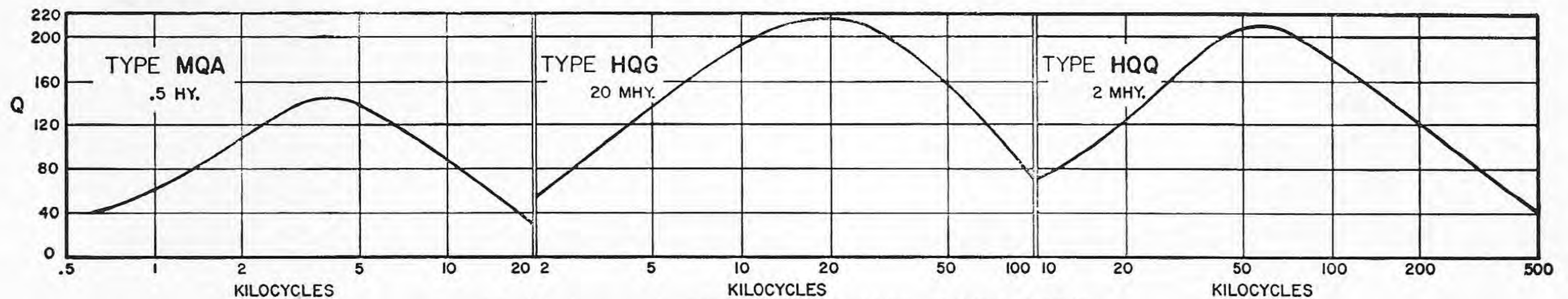
While this catalog lists 125 stock high Q coils, a substantial portion of our production is on special coils to customers requirements. The curves below illustrate the capabilities of a few popular structures among the many varied permalloy dust, ferrite, and laminated types produced by UTC.



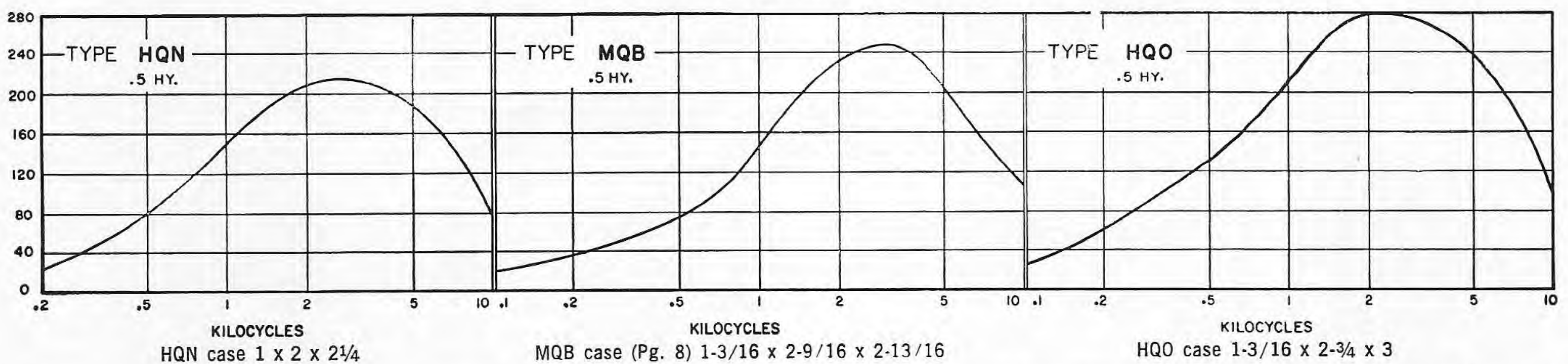
Subminiature toroids and FA ferrite structure above employ hermetic case 11/32 x 3/4 x 3/4.



Miniature toroids above employ MQE case (Pg. 8) 1/2 x 1-1/16 x 1-7/32.



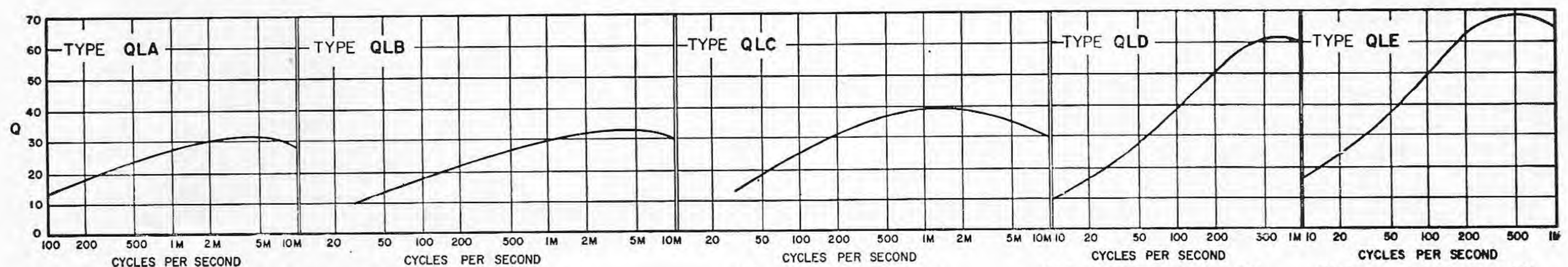
Toroids above employ MQA case (Pg. 8) 11/16 x 1-9/32 x 1-23/32.



HQN case 1 x 2 x 2 1/4

MQB case (Pg. 8) 1-3/16 x 2-9/16 x 2-13/16

HQO case 1-3/16 x 2-3/4 x 3



QLA case SOM 5/8 x 3/4 x 1-1/16

QLB case RC-25 (Pg. 17)

QLC case RC-37 (pg. 29)

QLD case RC-50 (pg. 29)

QLE case RC-75 (pg. 29)

Laminated structures (QL types) above indicate Q obtainable at any specific frequency by designing for that frequency.

ORDER NEW SUPERIOR "M" SERIES WHERE POSSIBLE →

UTC HIGH Q TOROID INDUCTORS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4RX20YY.



HQA, HQC, HQD CASE

Diameter	1 13/16"
Height	1 3/16"
Mounting	1 1/8"
Screws	6-32
Cutout	5/16" x 1 3/16"
Weight	5 oz.



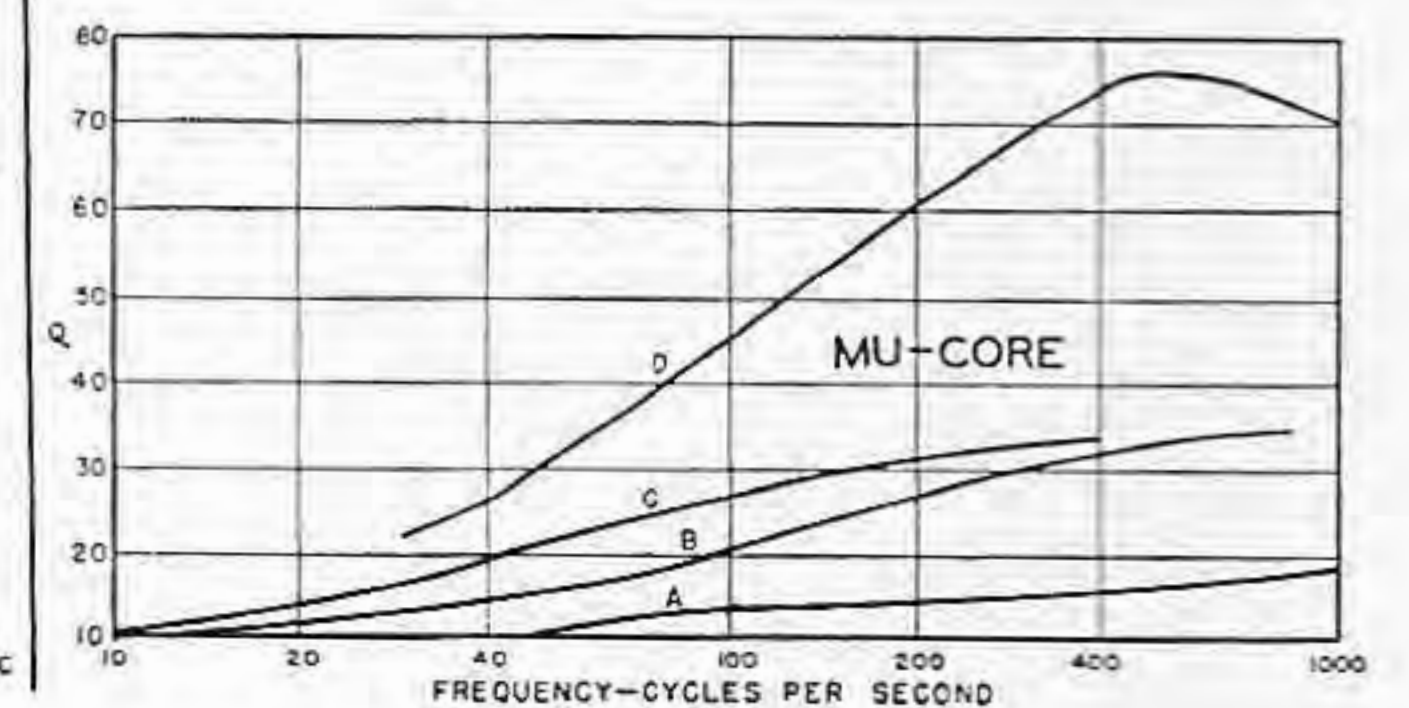
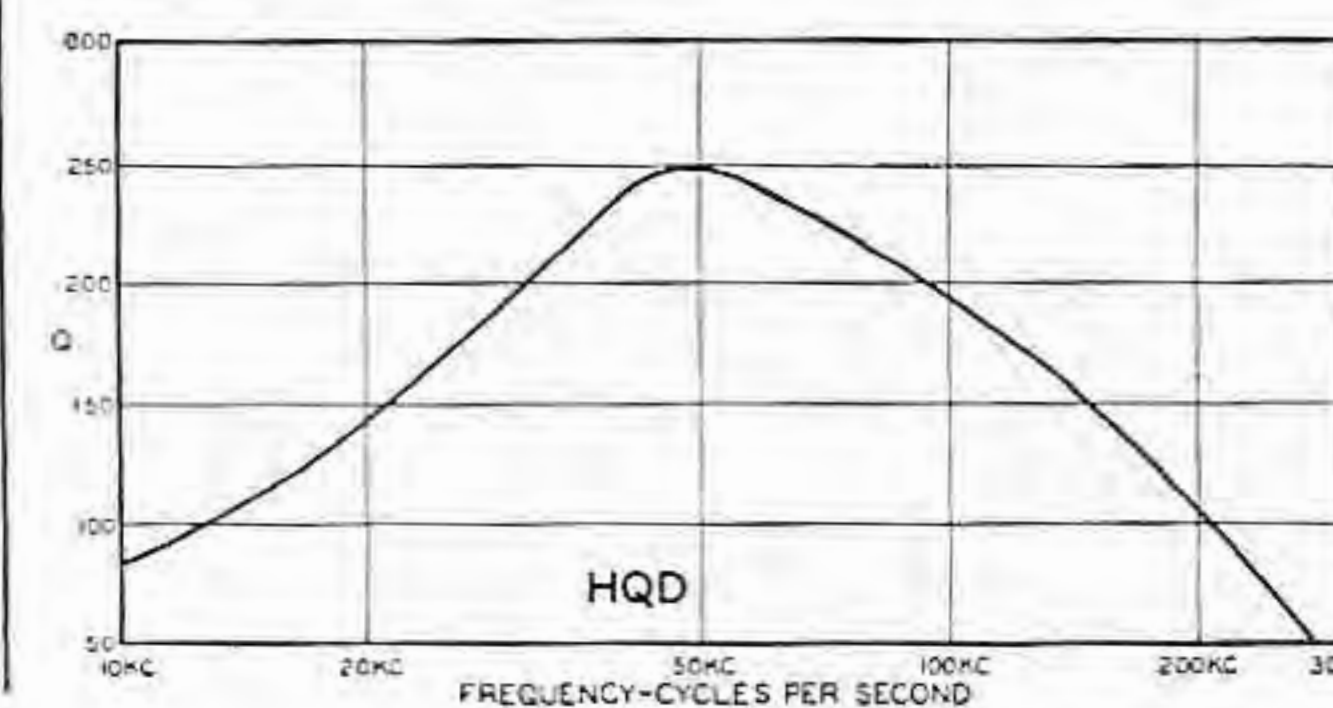
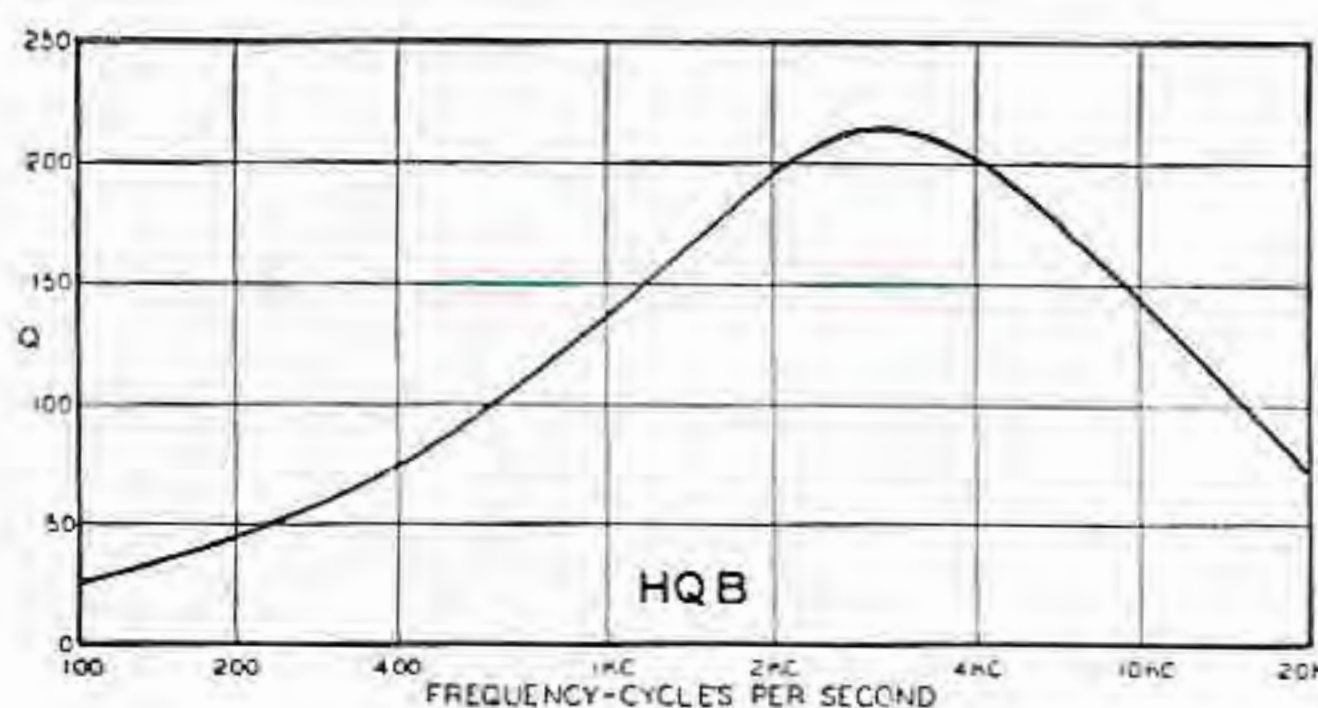
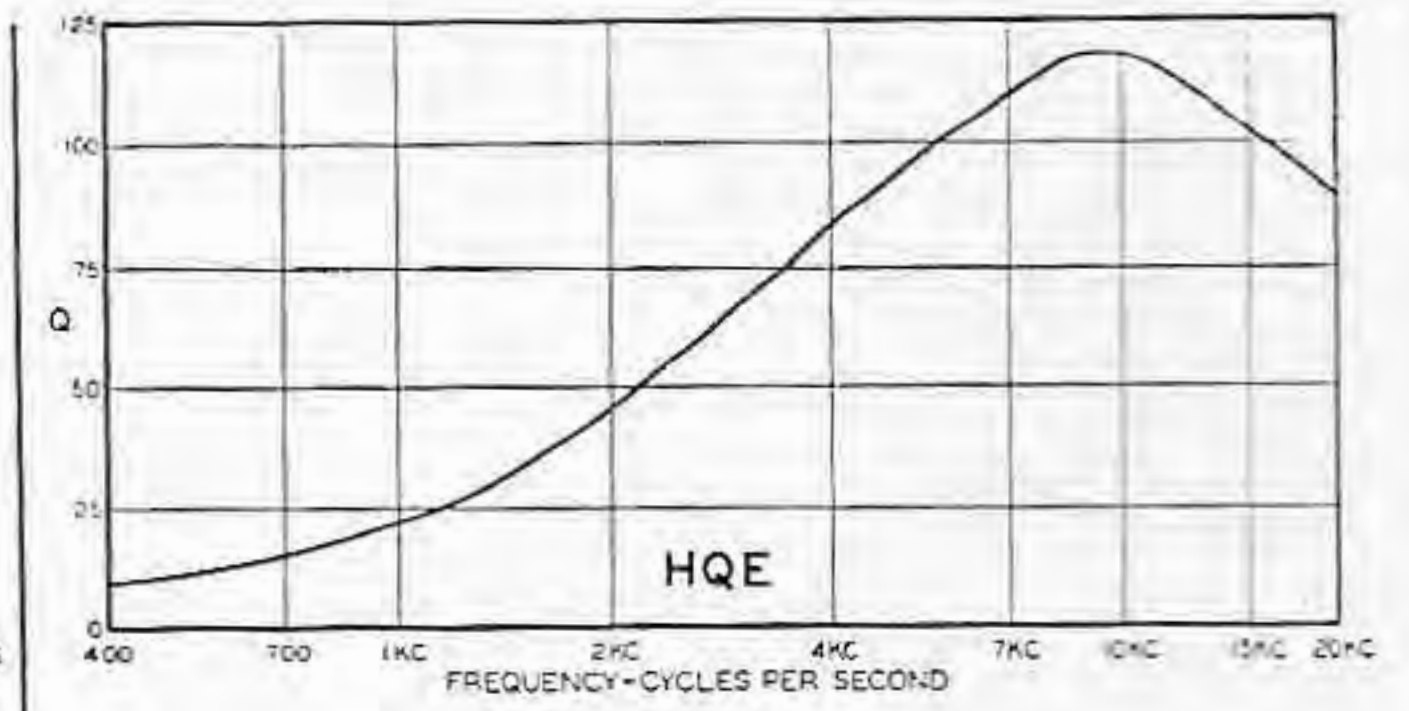
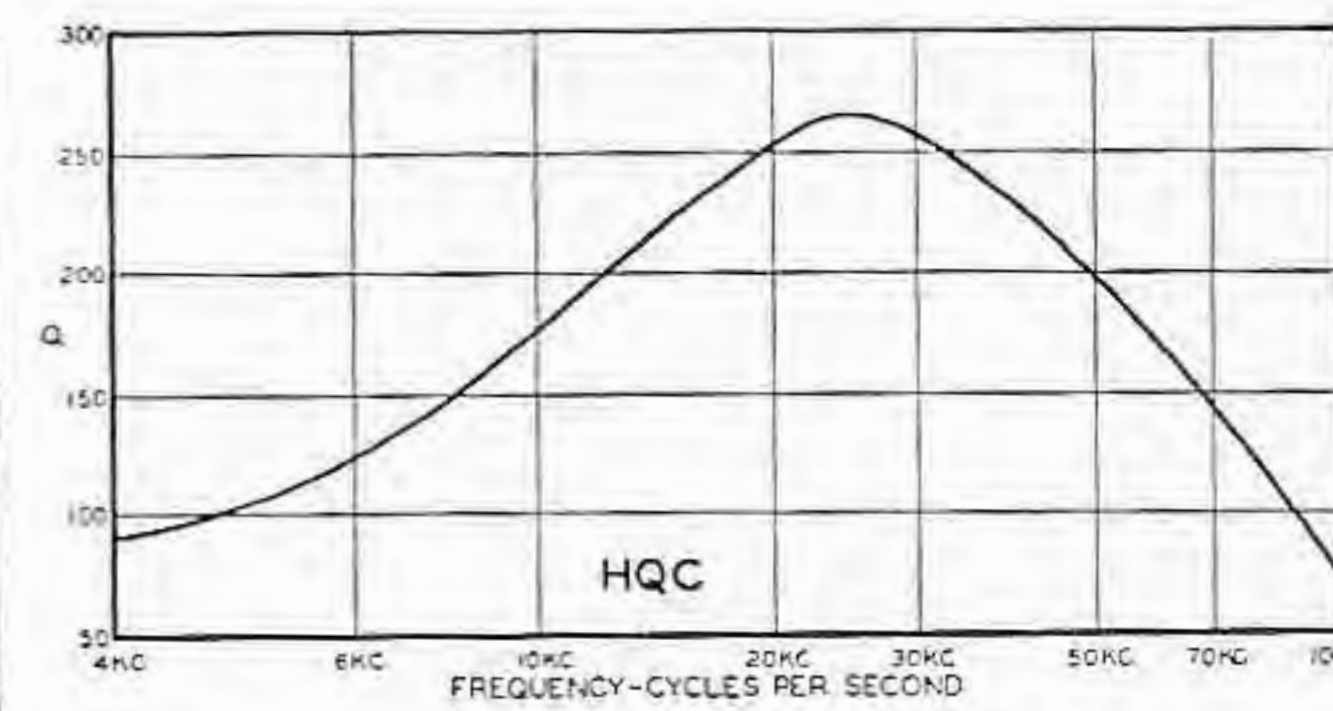
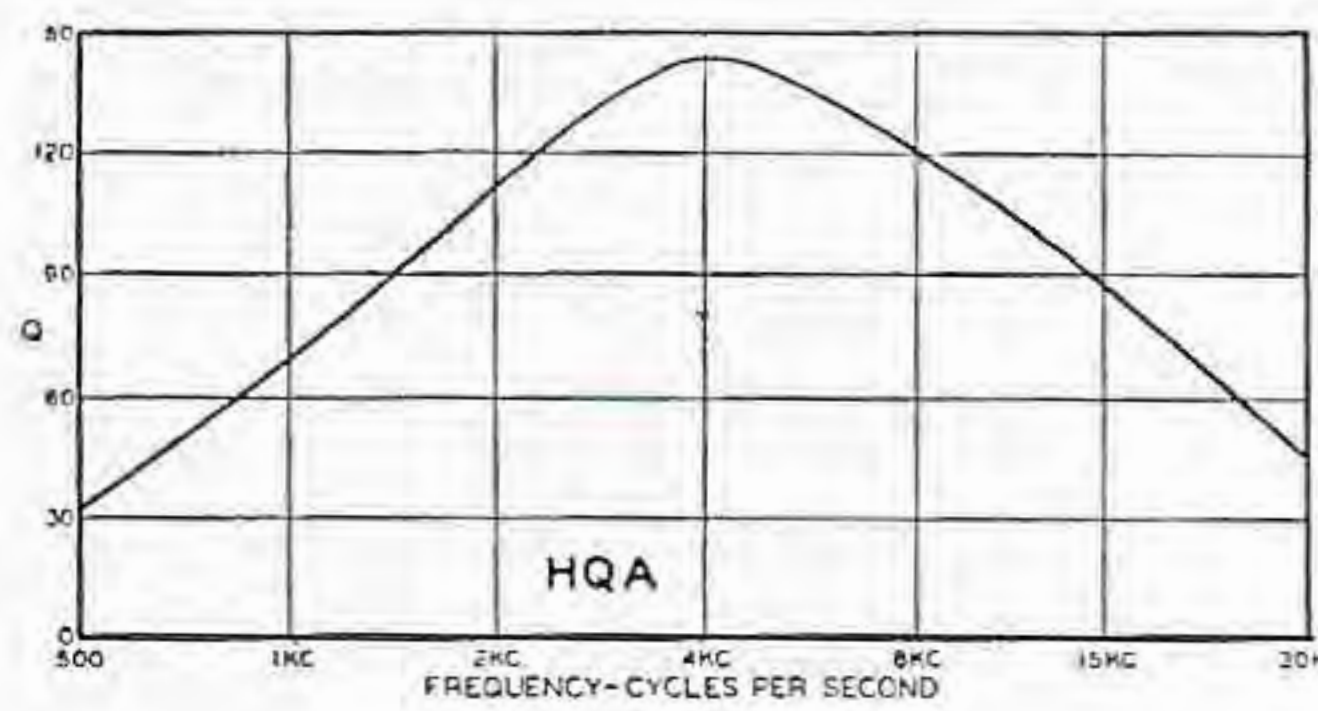
HQB CASE

Length	2 5/8"
Width	1 5/8"
Height	2 5/8"
Mounting	1 1/4" x 2 1/4"
Screws	6-32
Cutout	5/16" x 1 1/8"
Unit Weight	14 oz.



HQE CASE
(sub-miniature)

Length	1 1/16"
Width	1/2"
Height	1 7/32"
Mounting	3/4"
Screws	4/40
Cutout	5/16" x 1/2"
Unit Weight	1.5 oz.



There are many applications in the audio, carrier, and super-sonic fields requiring inductors of high Q and great stability. The HQ series of permalloy dust toroid units developed for these applications have remarkable characteristics.

HQA coils have maximum Q (100) at approximately 5 Kc.

HQB coils have maximum Q (200) at approximately 4 Kc.

HQC coils have maximum Q (200) at approximately 30 Kc. **HQD** coils have maximum Q (200) at approximately 60 Kc. The stability is excellent and types are available for all high Q applications from 300 cycles to 300 Kc.

HQE coils have maximum Q (120) at approximately 10 Kc. These coils are ideal for miniature applications.

Stability is excellent. For the HQA-7 coil illustrated inductance change is less than 1% for applied voltages from .1 to 25 volts. For the HQB-5 coil illustrated the inductance change is less than 1% for applied voltage from .1 to 50 volts. DC is permissible through the coil. Inductance is virtually independent of frequency, temperature, and vibration.

Hum pickup is extremely low due to the toroidal winding structure . . . 70 microvolts per gauss for the HQA, 140 microvolts per gauss for the HQB. The cased toroid structure permits close spacing of units, effecting a coupling attenuation of approximately 80 DB.

All HQ coils are **hermetically sealed**. Units are laboratory adjusted to **1% tolerance** . . . 0 DC.

Mu-Core Coils employ special laminated core structures for good stability and low external field. The curves shown indicate approximate Q obtainable at any specific frequency by designing for that frequency (see page 6).

Type No.	Inductance Value (0 DC)	*DC MA Max.
HQA-1	5 mhy.	*400
HQA-2	12.5 mhy.	*260
HQA-3	20 mhy.	*200
HQA-4	30 mhy.	*160
HQA-5	50 mhy.	*130
HQA-6	80 mhy.	*100
HQA-7	125 mhy.	*85
HQA-8	200 mhy.	*65
HQA-9	300 mhy.	*50
HQA-10	.5 hy.	*40
HQA-11	.75 hy.	*35
HQA-12	1.25 hy.	*26
HQA-13	2. hy.	*20
HQA-14	3. hy.	*16
HQA-15	5. hy.	*13
HQA-16	7.5 hy.	*10
HQA-17	10. hy.	*9
HQA-18	15. hy.	*8
HQB-1	10 mhy.	*410
HQB-2	30 mhy.	*240
HQB-3	70 mhy.	*170
HQB-4	120 mhy.	*120
HQB-5	.5 hy.	*60
HQB-6	1. hy.	*41
HQB-7	2. hy.	*30
HQB-8	3.5 hy.	*22
HQB-9	7.5 hy.	*16
HQB-10	12. hy.	*11
HQB-11	18. hy.	*9
HQB-12	25. hy.	*8
HQC-1	1 mhy.	
HQC-2	2.5 mhy.	
HQC-3	5 mhy.	
HQC-4	10 mhy.	
HQC-5	20 mhy.	
HQD-1	.4 mhy.	
HQD-2	1. mhy.	
HQD-3	2.5 mhy.	
HQD-4	5 mhy.	
HQD-5	15 mhy.	
HQE-1	5 mhy.	
HQE-2	10 mhy.	
HQE-3	50 mhy.	
HQE-4	100 mhy.	
HQE-5	200 mhy.	

*The DC MA Max. shown will drop the coil inductance slightly . . . this drop being proportionately smaller at lower DC currents.

NEW "M" TYPE TOROIDS

MAXIMUM Q
MINIMUM SIZE

Hermetically sealed to MIL-T-27A Specs., . . . all units MIL type TF4RX20YY

UTC Permalloy Dust Toroids have been the standard of the industry for over 15 years. The **MQ series** of coils provide the highest Q factor in their class (see curves below), with miniaturized dimensions. All units are **hermetically sealed** to MIL-T-27 Specifications . . . laboratory adjusted to 1% tolerance—0 DC. Uncased and molded toroids available on production orders.

The **stability** is excellent. For the MQE-7 the inductance change is less than 1% for voltages from .1 to 3 volts. The MQA-13 change is less than 1% for applied voltages from .1 to 20 volts. The MQB-5 change is less than 1% for applied voltages from .1 to 50 volts. DC is permissible through the coil (values listed below). Inductance is virtually independent of frequency, temperature and vibration.

Hum pickup is extremely low due to the toroidal winding structure, with windings uniformly spread over the core. The case is of high permeability, affording additional shielding such that close spacing of units can be effected, the coupling attenuation being approximately 80 DB.



MQE CASE

Length 1 1/16"
Width 1/2"
Height 1 1/32"
Mounting 3/4"
Screws 4/40"
Cutout 5/16" x 1/2"
Unit Weight 1.5 oz.

TYPICAL Q CURVES



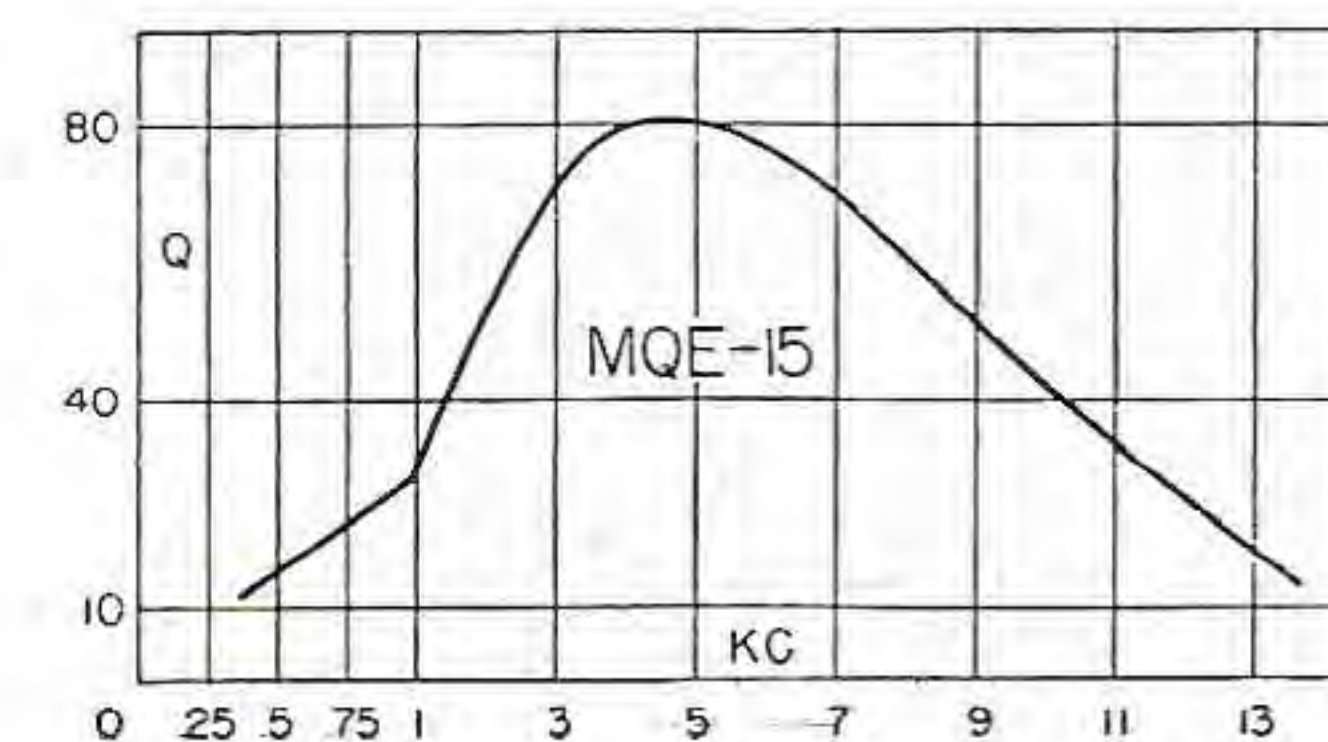
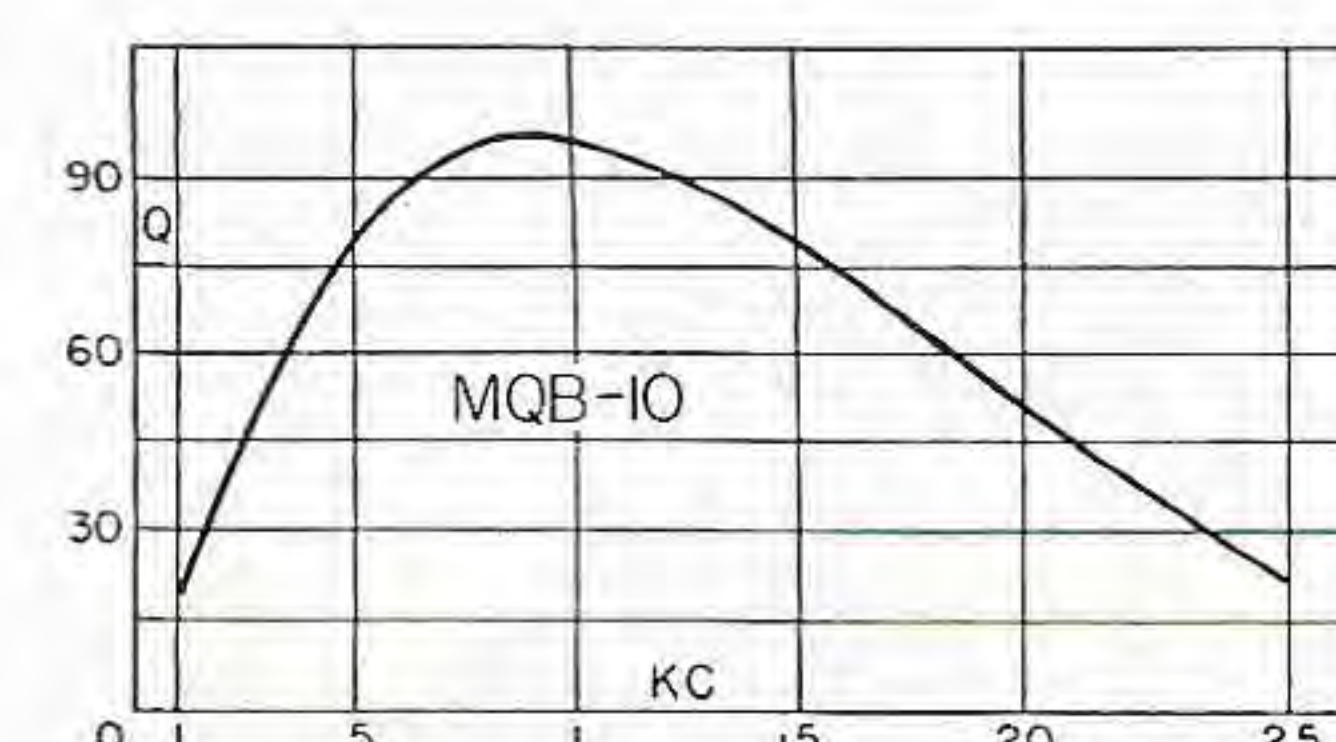
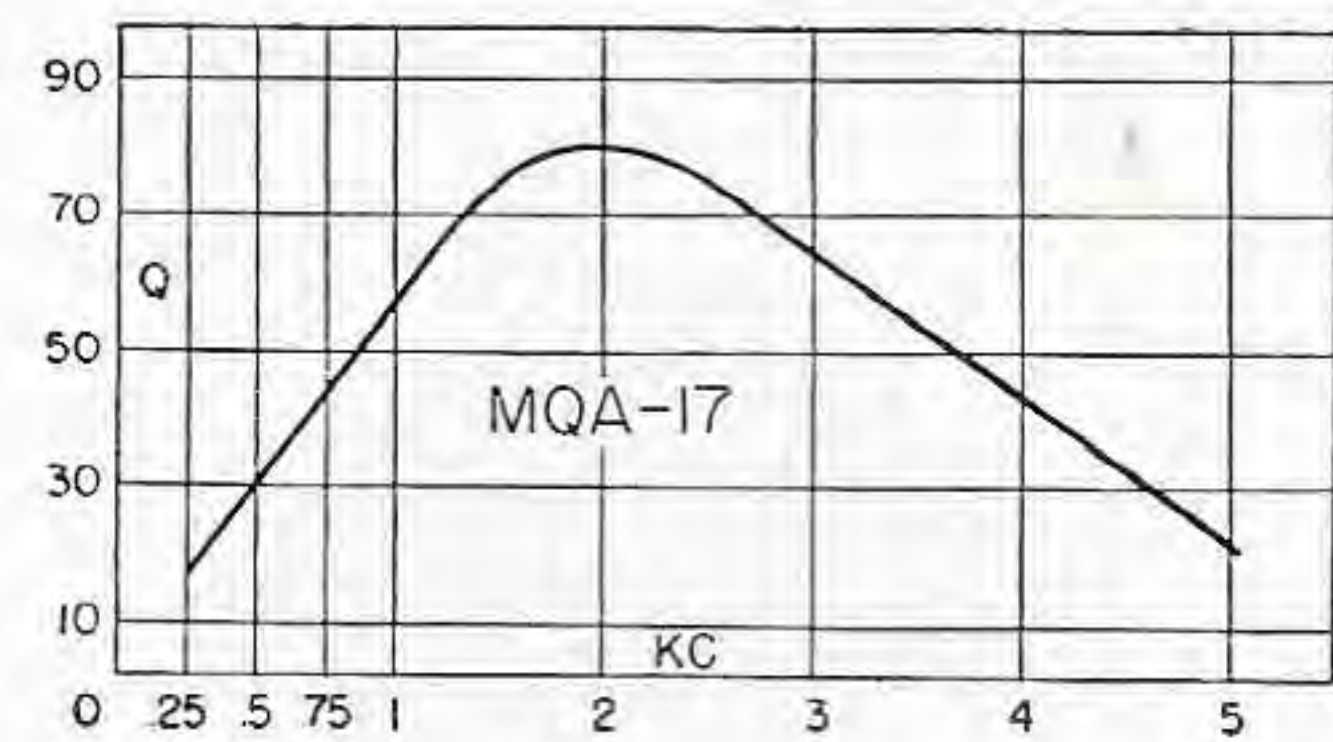
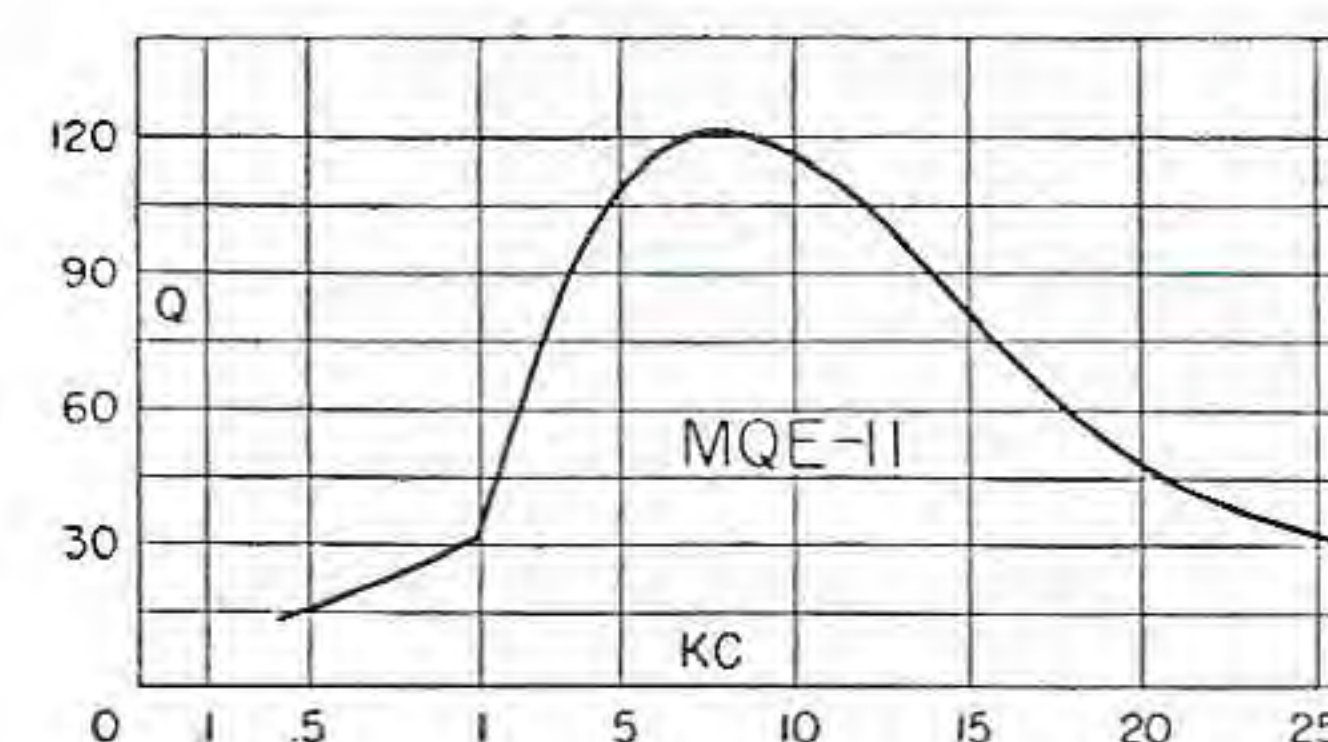
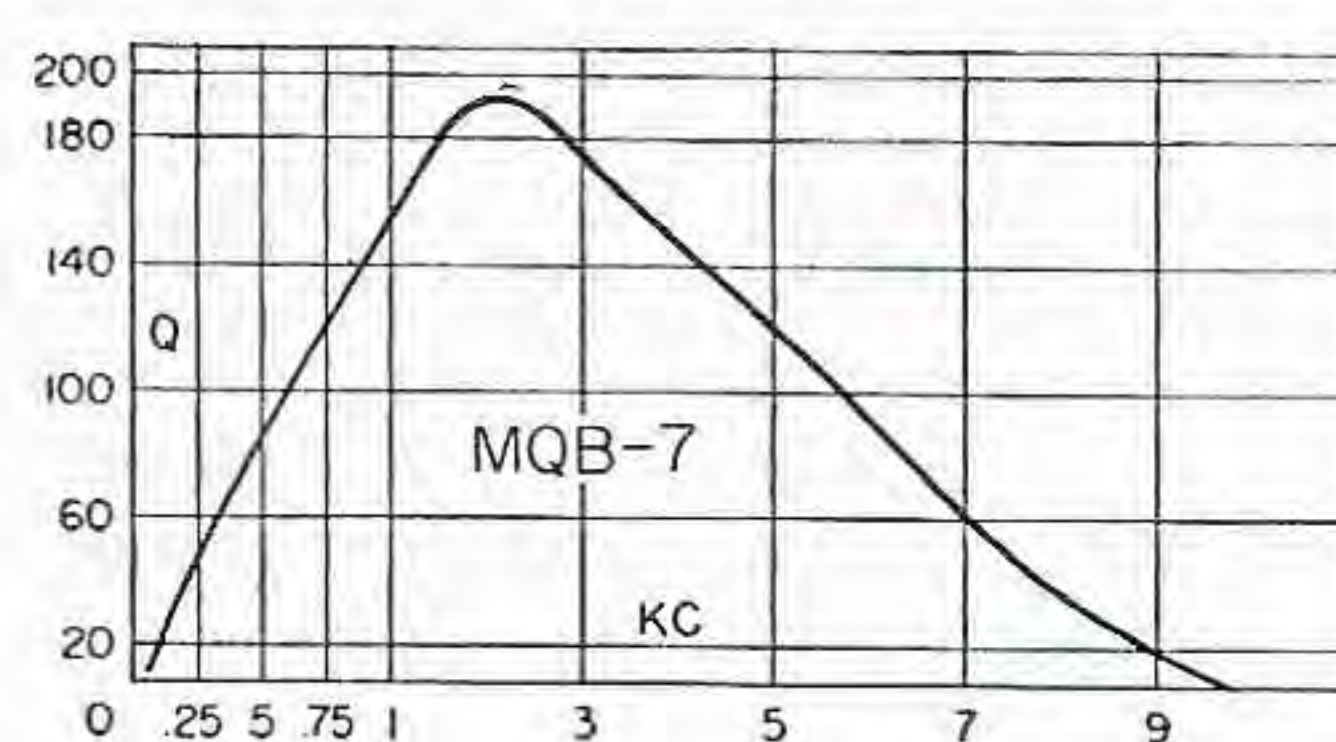
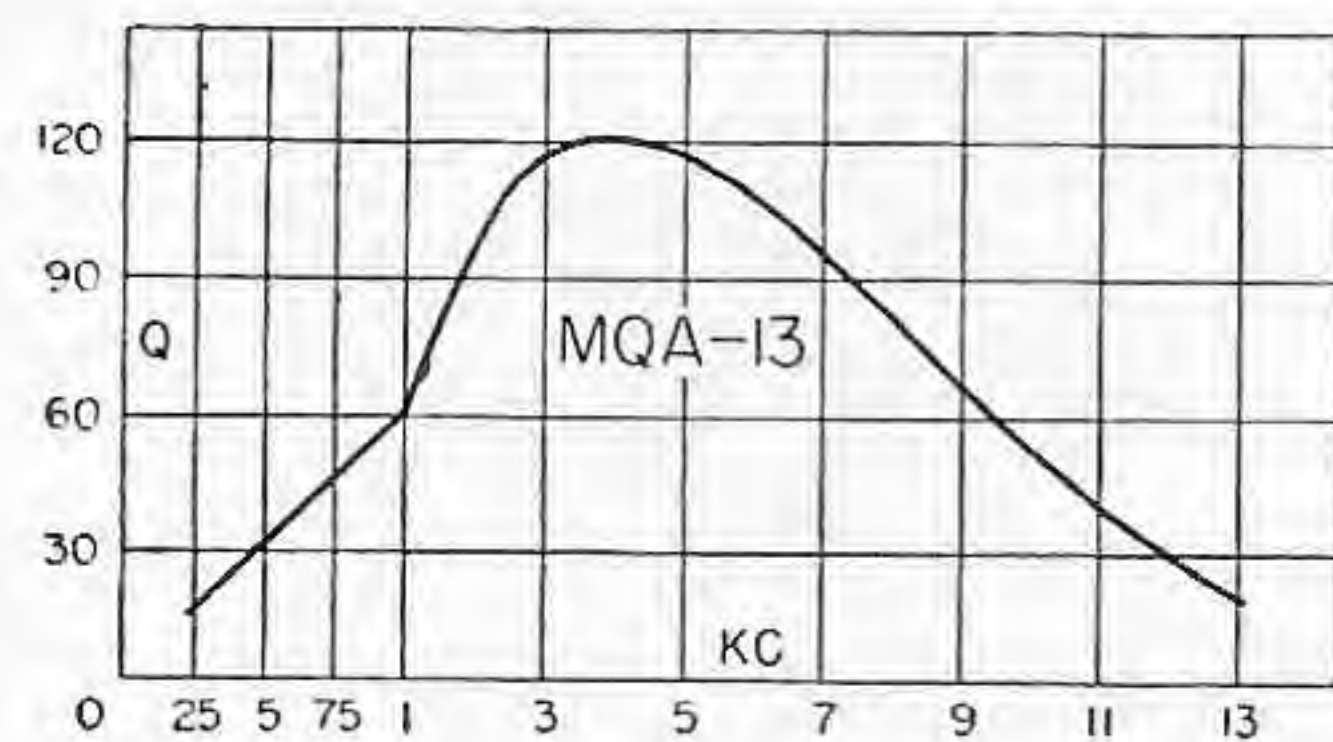
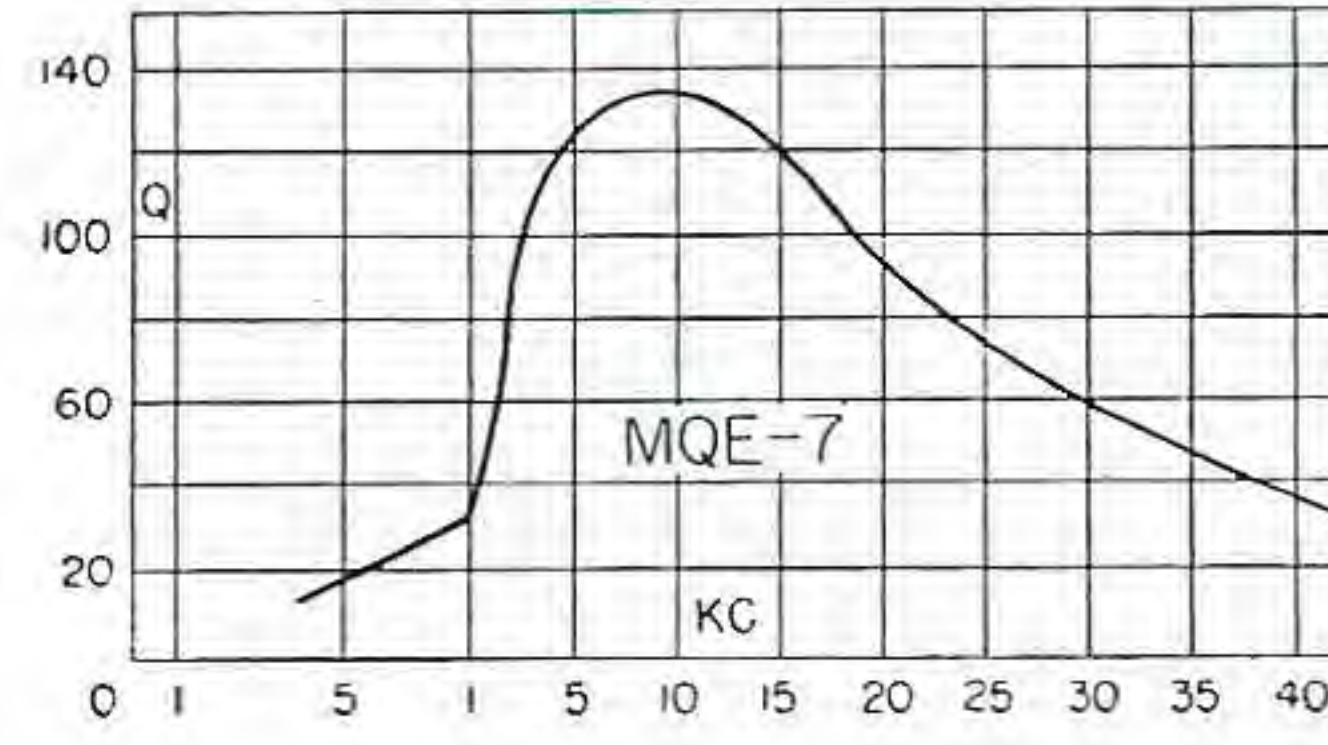
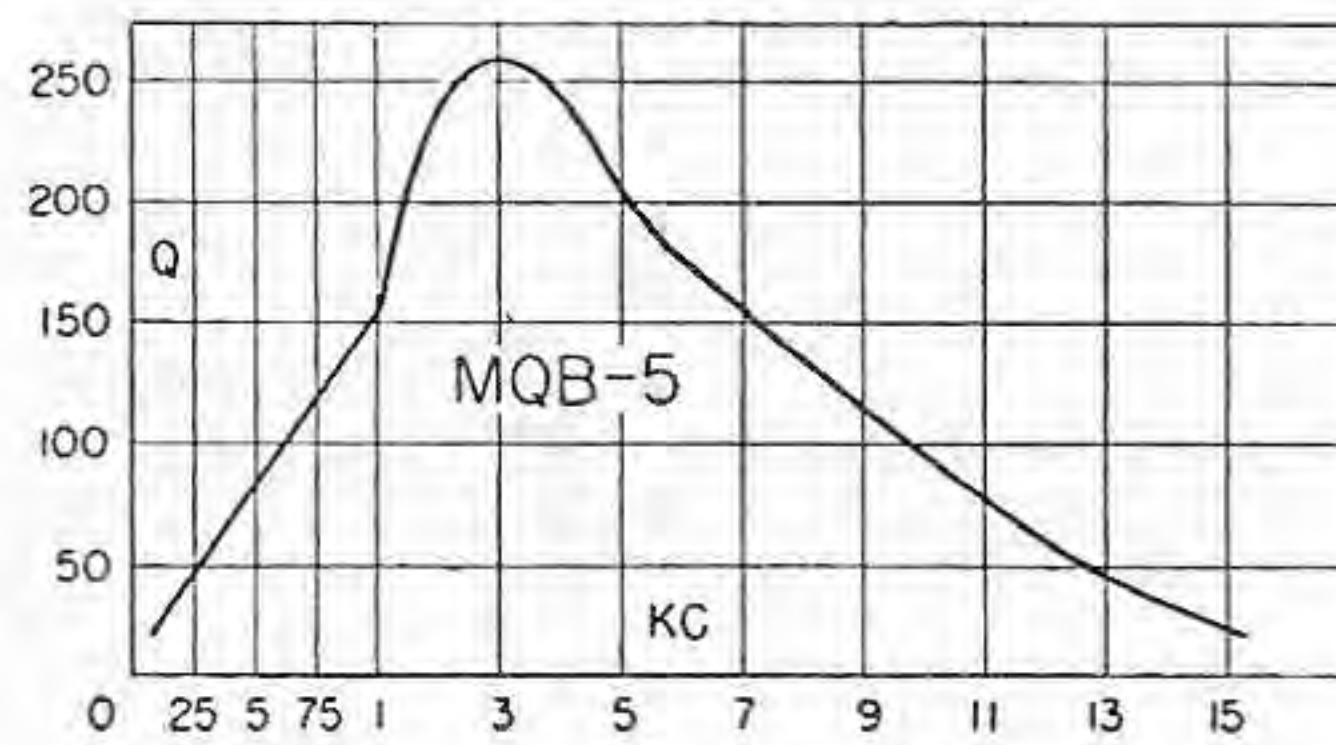
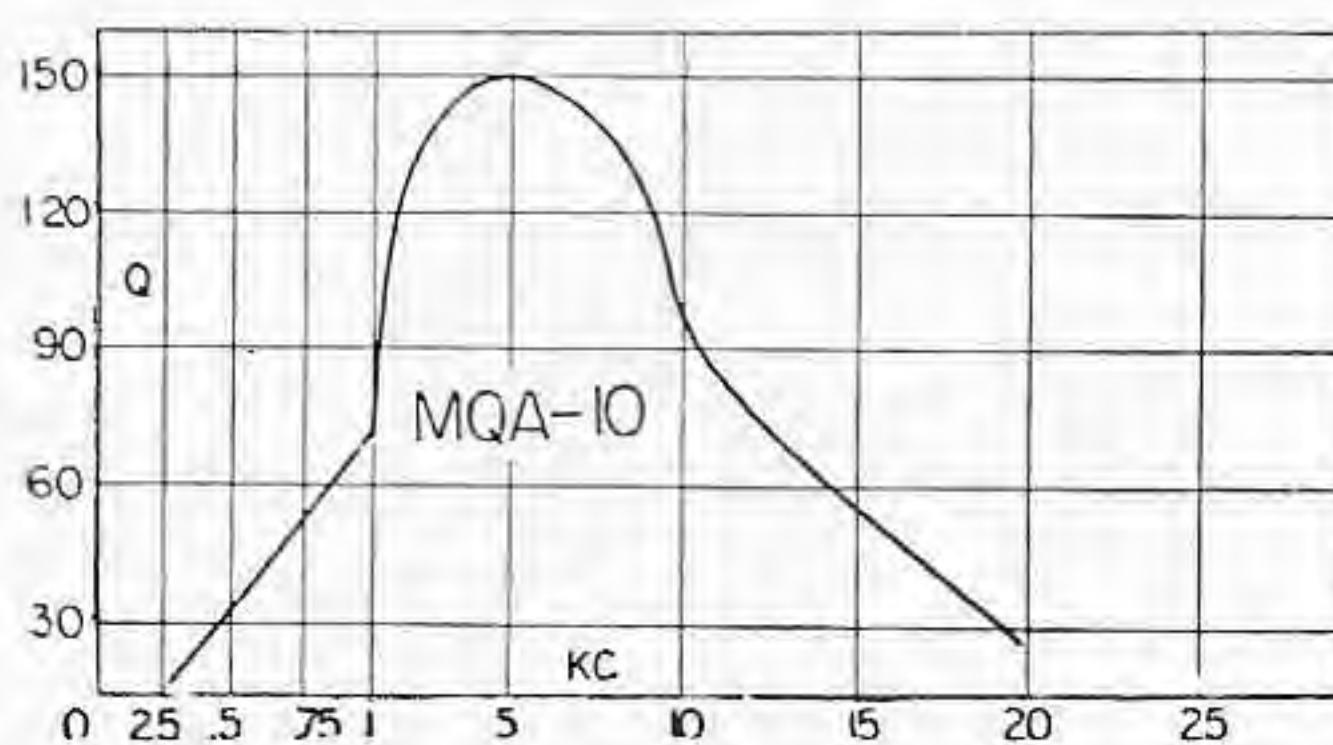
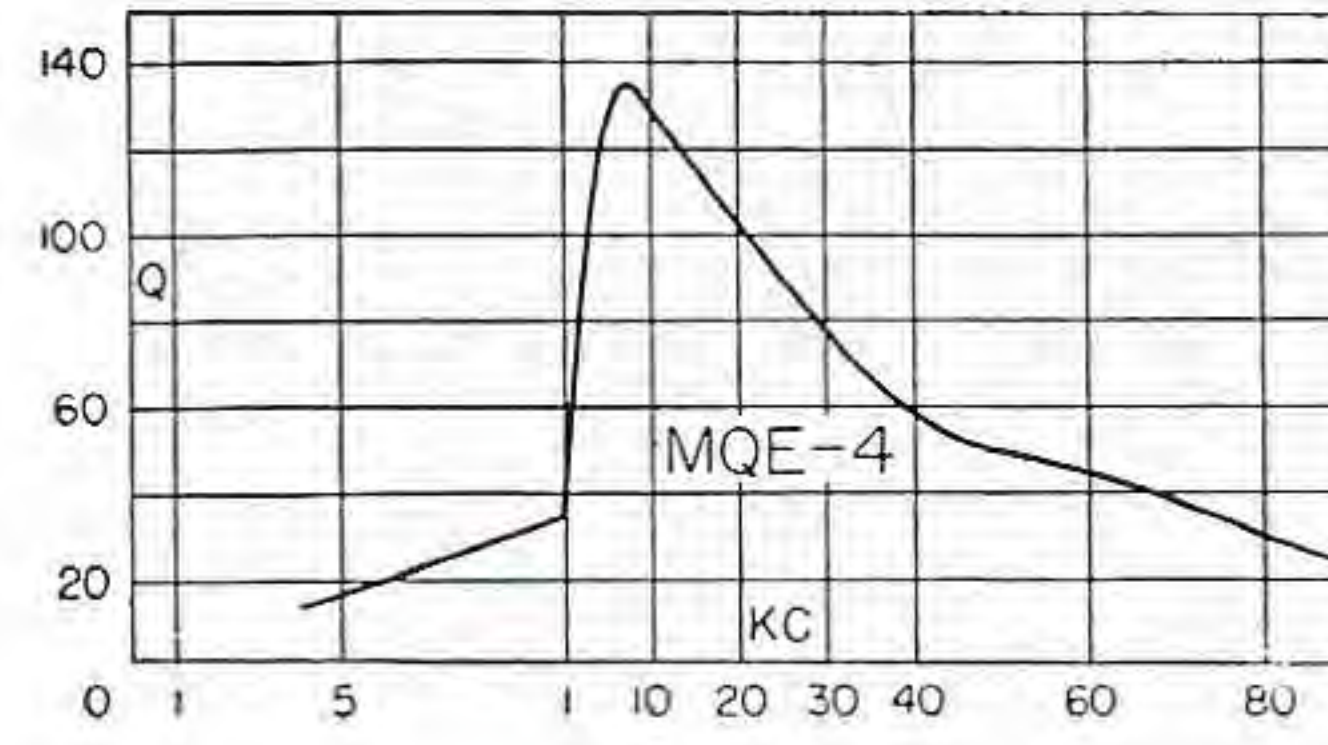
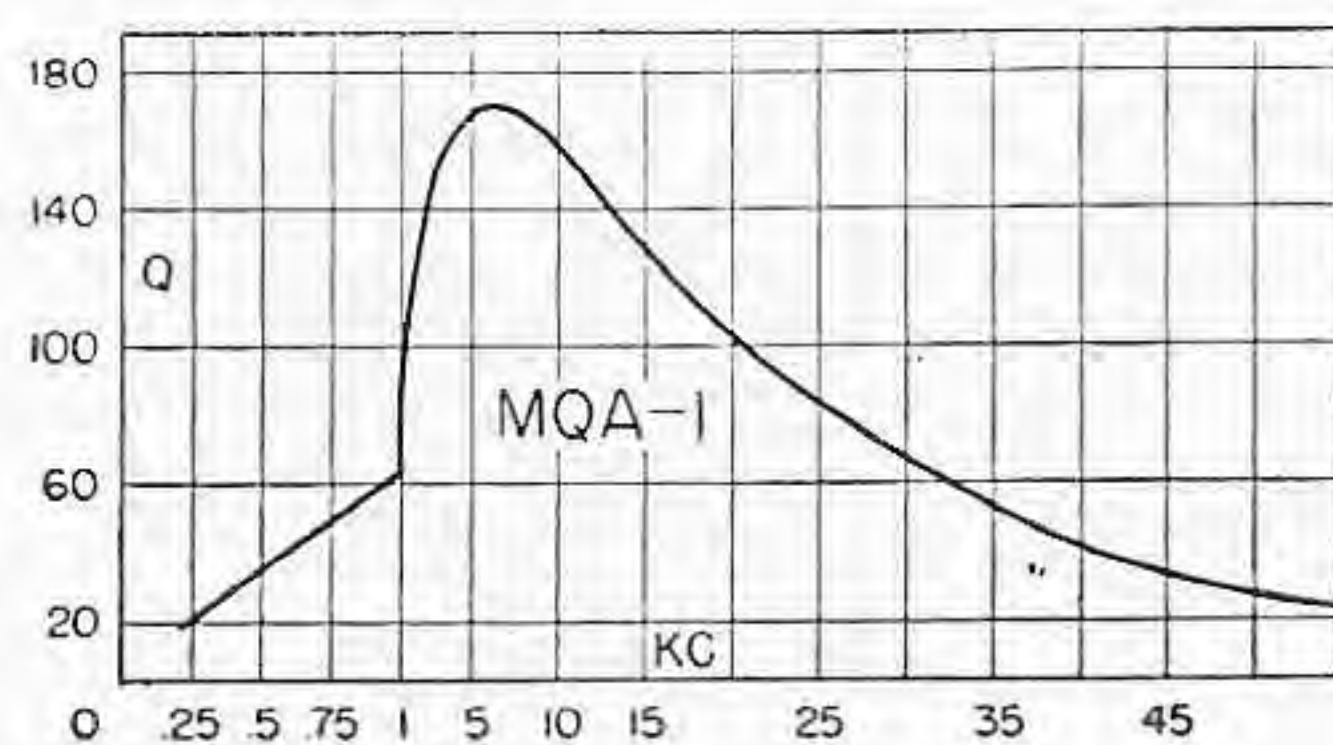
MQA, MQD CASE

Length 1 3/32"
Width 1 1/16"
Height 1 23/32"
Mounting 7/8" x 3/32"
Screws 4/40"
Cutout 5/16" x 1/2"
Unit Weight 4 oz.



MQB CASE

Length 2 1/16"
Width 1 3/16"
Height 2 13/16"
Mounting 2 1/16" x 1 1/16"
Screws 6/32"
Cutout 7/8" x 1/2"
Unit Weight 14 oz.



MQA TYPES		
Type No.	Inductance (0 DC)	DC MA Max.
MQA-1	7 mhy.	250
MQA-2	12 mhy.	200
MQA-3	20 mhy.	150
MQA-4	30 mhy.	125
MQA-5	50 mhy.	100
MQA-6	70 mhy.	80
MQA-7	120 mhy.	60
MQA-8	.2 hy.	50
MQA-9	.3 hy.	40
MQA-10	.5 hy.	30
MQA-11	.7 hy.	25
MQA-12	1 hy.	20
MQA-13	1.5 hy.	17
MQA-14	2.5 hy.	13
MQA-15	4 hy.	10
MQA-16	6 hy.	9
MQA-17	10 hy.	7
MQA-18	15 hy.	5
MQA-19	22 hy.	4

MQB TYPES		
Type No.	Inductance (0 DC)	DC MA Max.
MQB-1	10 mhy.	400
MQB-2	30 mhy.	250
MQB-3	70 mhy.	170
MQB-4	120 mhy.	120
MQB-5	.5 hy.	60
MQB-6	1 hy.	40
MQB-7	2 hy.	30
MQB-8	3.5 hy.	22
MQB-9	7.5 hy.	16
MQB-10	12 hy.	11
MQB-11	18 hy.	9
MQB-12	25 hy.	8

MQE TYPES		
Type No.	Inductance (0 DC)	*DC MA Max.
MQE-1	7 mhy.	135
MQE-2	12 mhy.	100
MQE-3	20 mhy.	80
MQE-4	30 mhy.	65
MQE-5	50 mhy.	50
MQE-6	70 mhy.	40
MQE-7	100 mhy.	35
MQE-8	150 mhy.	30
MQE-9	.25 hy.	22
MQE-10	.4 hy.	17
MQE-11	.6 hy.	14
MQE-12	.9 hy.	12
MQE-13	1.5 hy.	9
MQE-14	2 hy.	8
MQE-15	2.8 hy.	7.2

MQD TYPES
These high frequency coils are extremely stabilized type for temperature range from -40 to +85° C. Q is 170 @ 50 KC ranging down to approx. 80 at 12 and 130 KC (slightly lower for higher inductances).

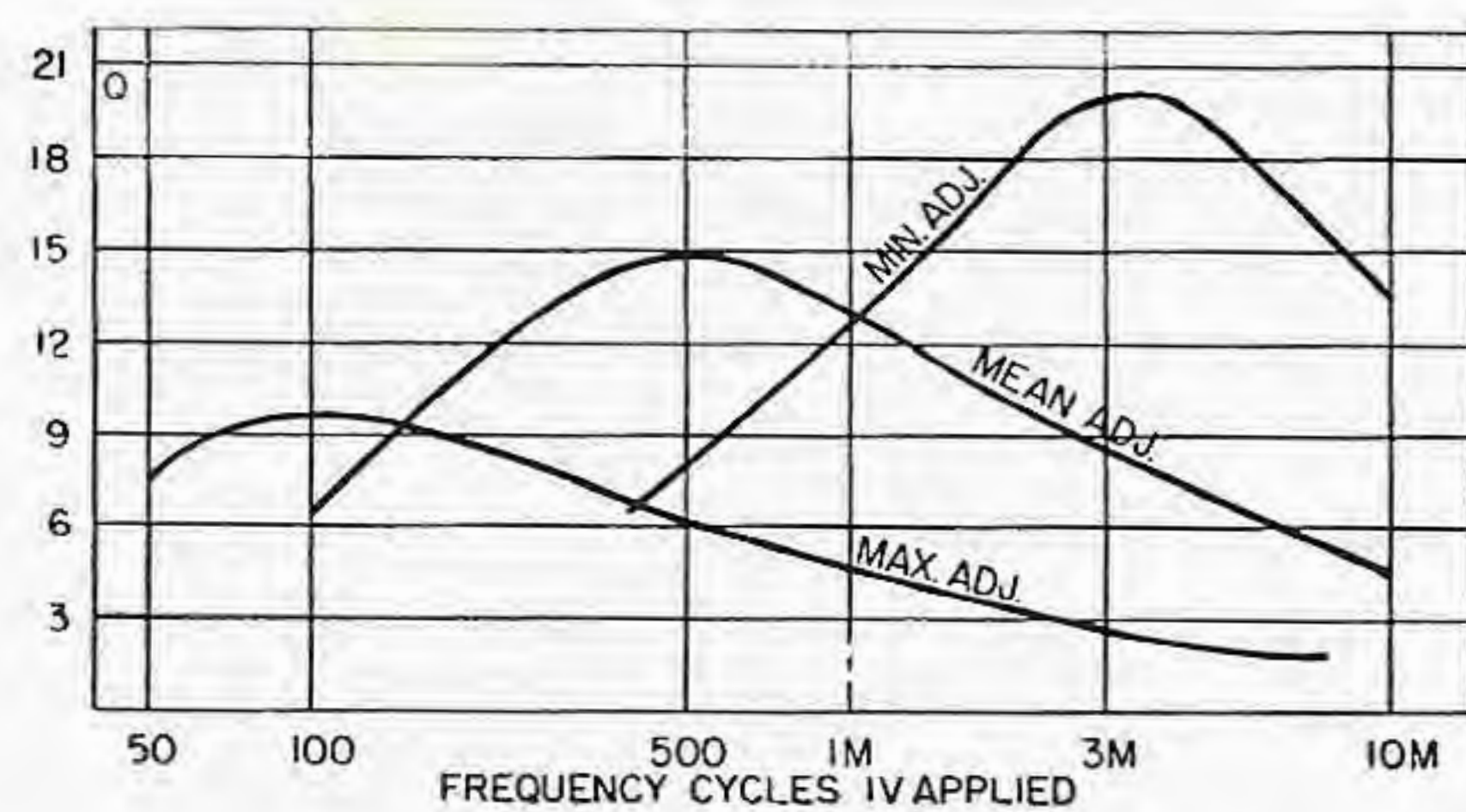
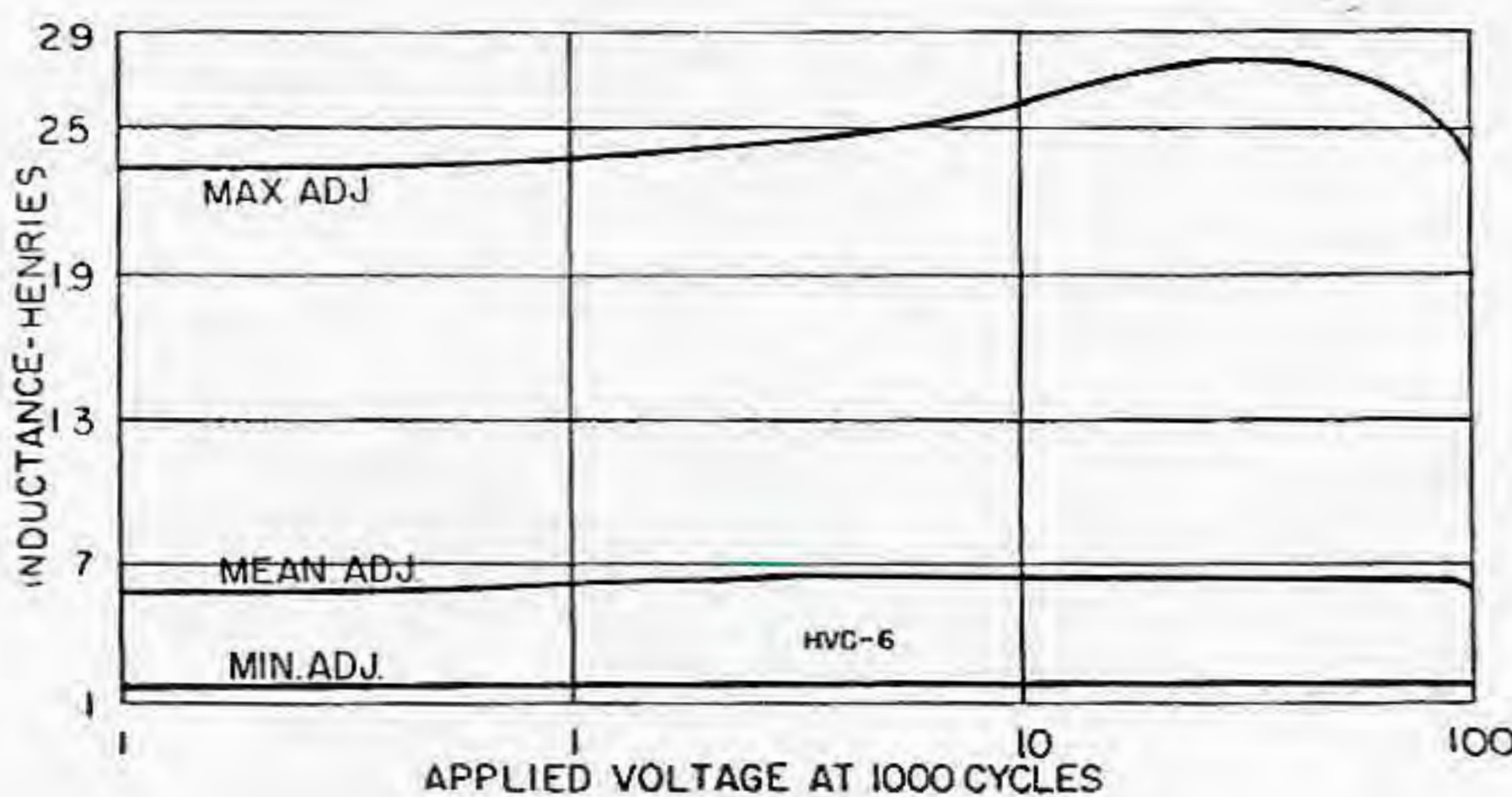
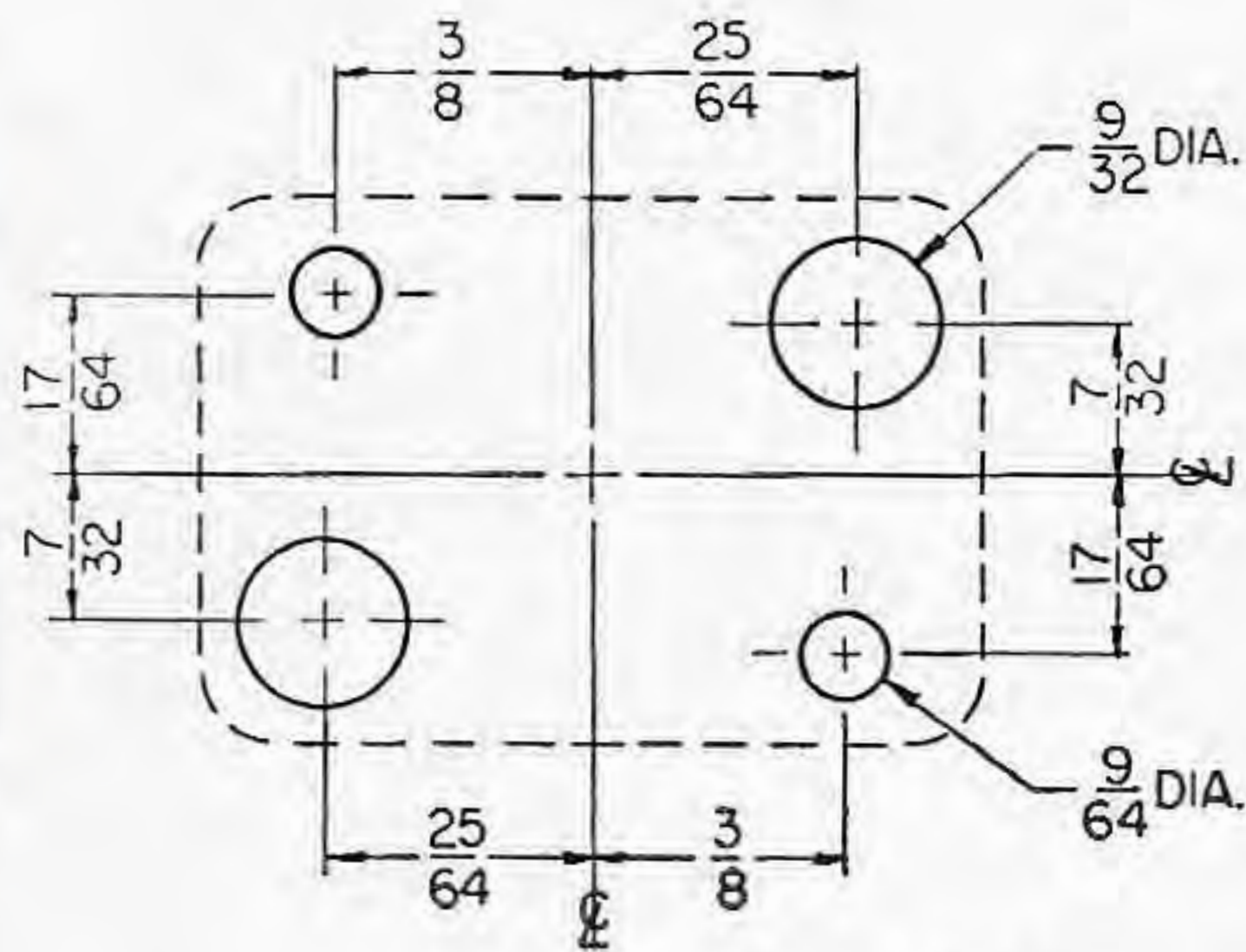
Inductance (0 DC)		
MQD-1	2 mhy.	
MQD-2	3 mhy.	
MQD-3	5 mhy.	
MQD-4	7 mhy.	
MQD-5	12 mhy.	
MQD-6	20 mhy.	

*The DC MA Max. shown will drop the coil inductance slightly . . . this drop being proportionately smaller at lower DC currents.

UTC VARIDUCTORS

UTC HERMETIC VARIDUCTORS

**Variable inductors hermetically sealed to MIL-T-27A Specs., see back cover...all units MIL type TF4RX20YY.



Type No.	Min. Hys.	Mean Hys.	Max. Hys.	DC* Ma
HVC-1	.002	.006	.02	100
HVC-2	.005	.015	.05	60
HVC-3	.011	.040	.11	40
HVC-4	.03	.1	.3	30
HVC-5	.07	.25	.7	20
HVC-6	.2	.6	2	15
HVC-7	.5	1.5	5	10
HVC-8	1.1	4.0	11	7
HVC-9	3.0	10	30	5
HVC-10	7.0	25	70	3.5
HVC-11	20	60	200	2
HVC-12	50	150	500	1.5

Choosing Type No.: If frequency is above 100 cycles, use type providing required inductance between mean and min. values.

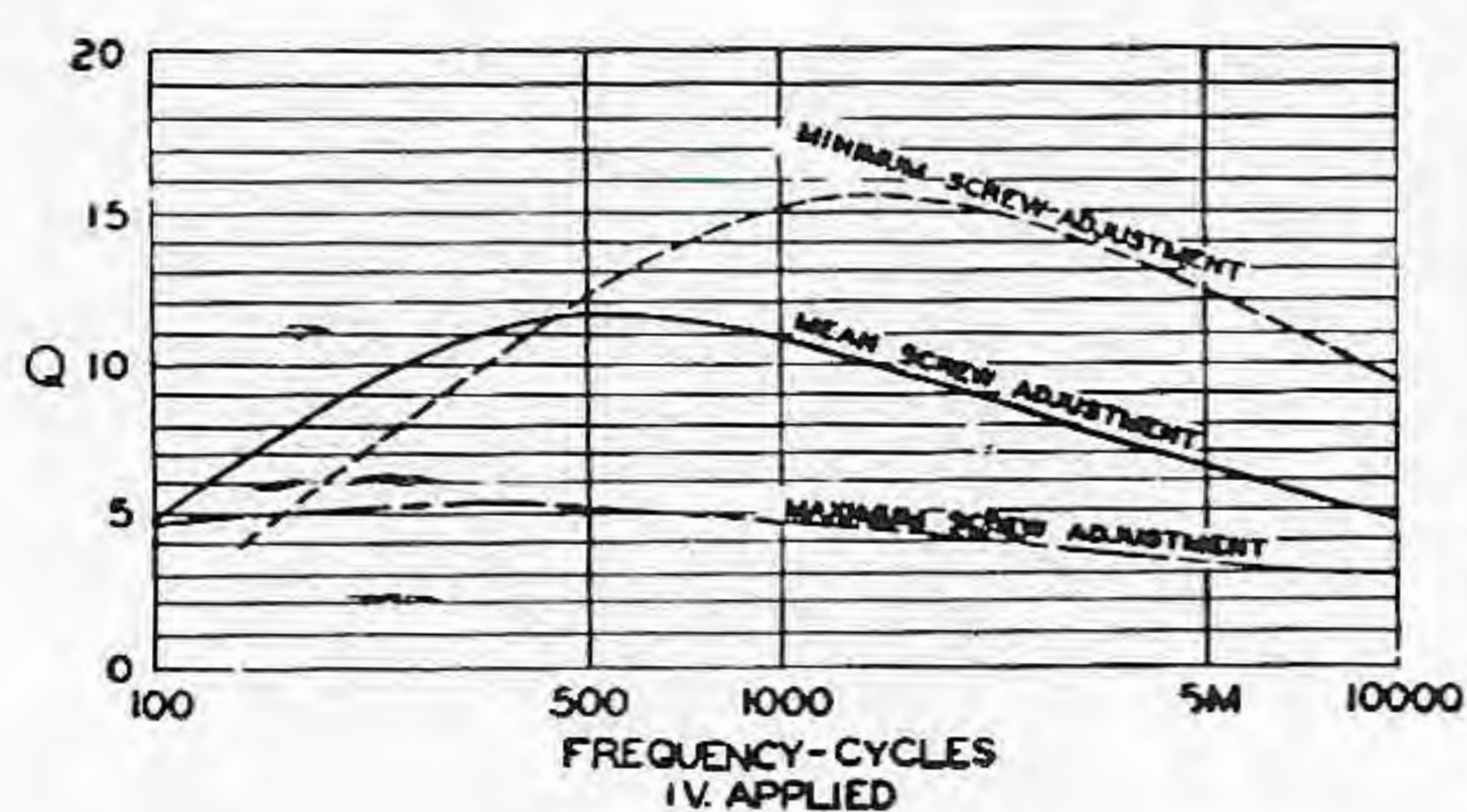
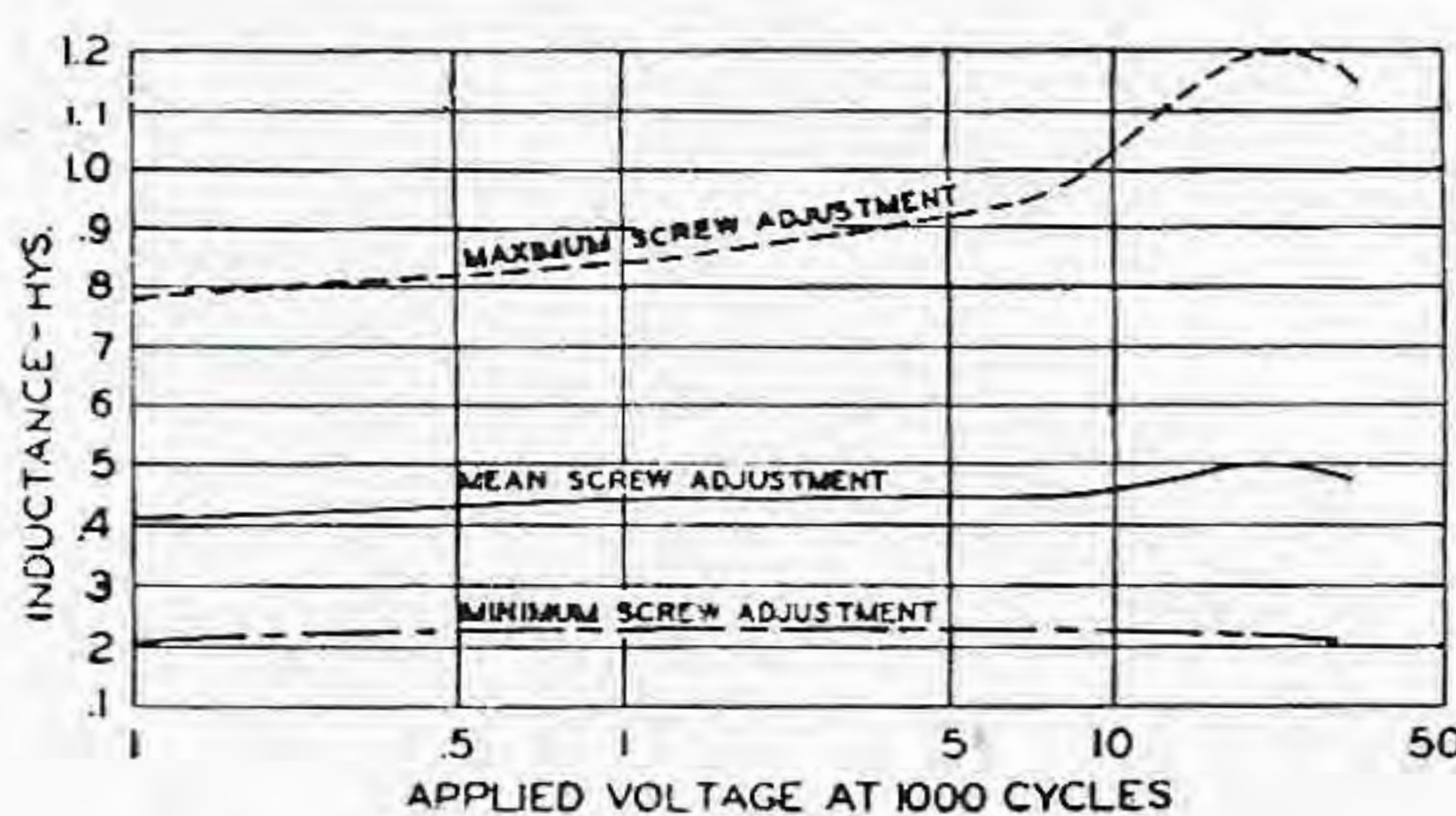
*DC MA shown is maximum recommended...will effect some reduction in inductance and Q.

UTC variable inductors have served as the ideal solution to many filter, oscillator, equalizer, and tuned amplifier problems—for over a decade. Extended development has now made possible the new HVC series of inductors with improved characteristics. They are hermetically sealed to MIL-T-27A specs...extremely compact...wider inductance range...higher Q's...lower and higher frequencies...superior voltage and temperature stability.

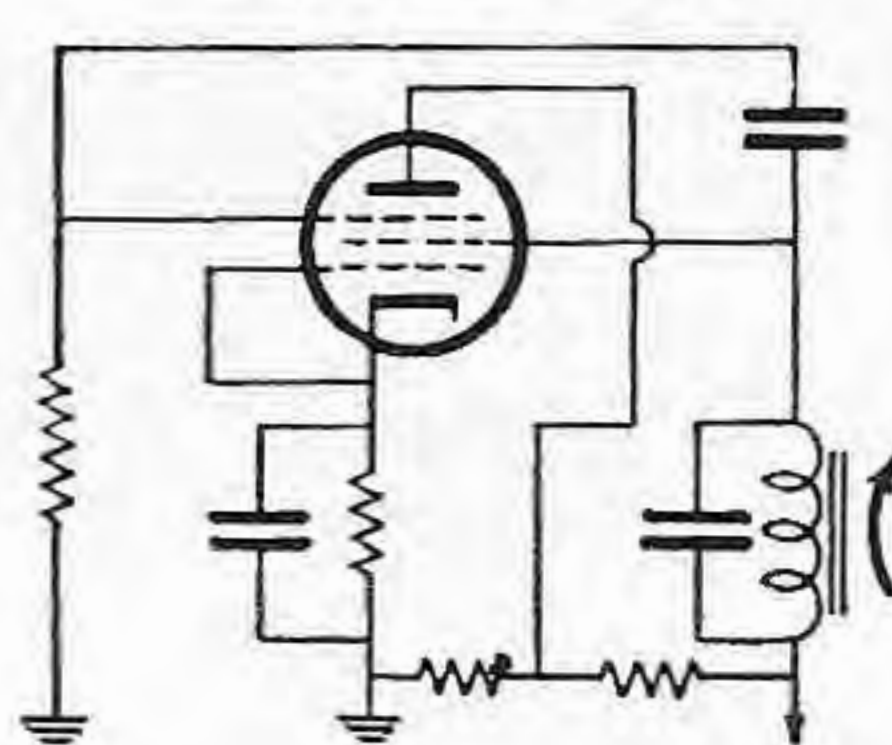
Adjustment of set screw in top of case permits changing inductance + 200%, -70% of nominal value shown. Range is covered in 900° rotation. Setting is positive. Effective Q for a wide frequency range and variation of inductance with applied AC voltage are shown on the illustrated curves, for a typical HVC unit. Case dimensions are 1 1/8" long, 25/32" wide, 17/32" high. The two terminals and two 4/40 mounting studs are per illustration...weight 2 oz.

**Pat. Pending

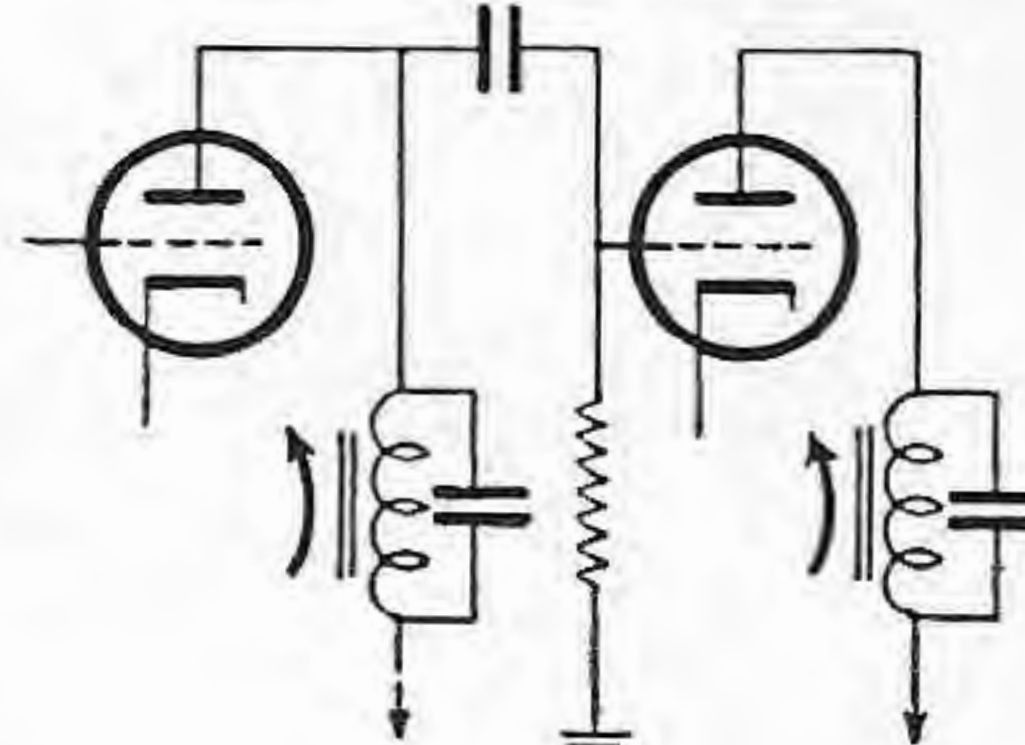
VIC VARIABLE INDUCTORS



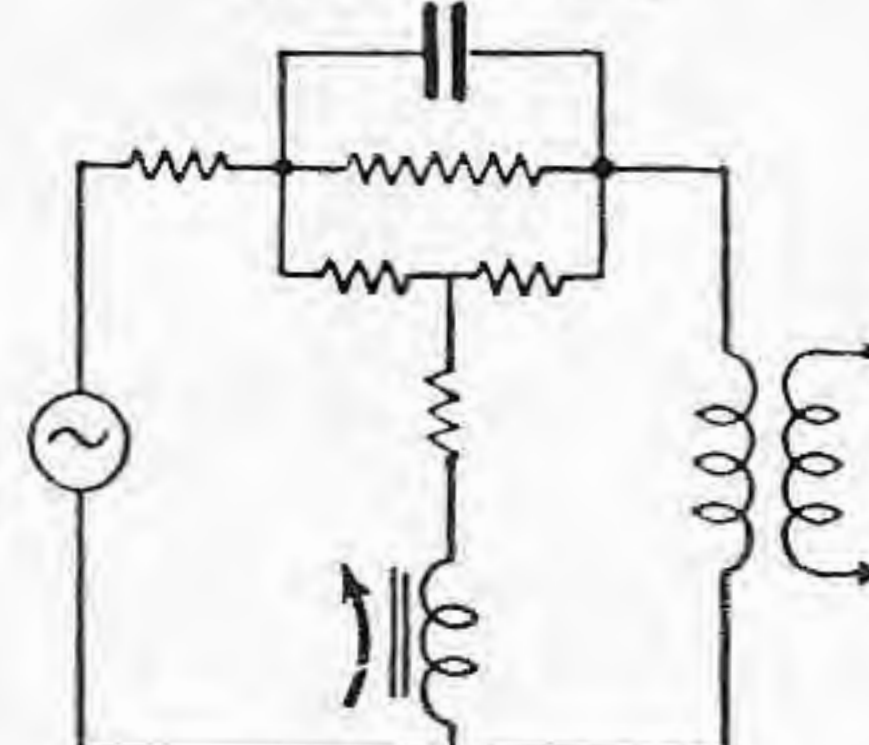
OSCILLATORS



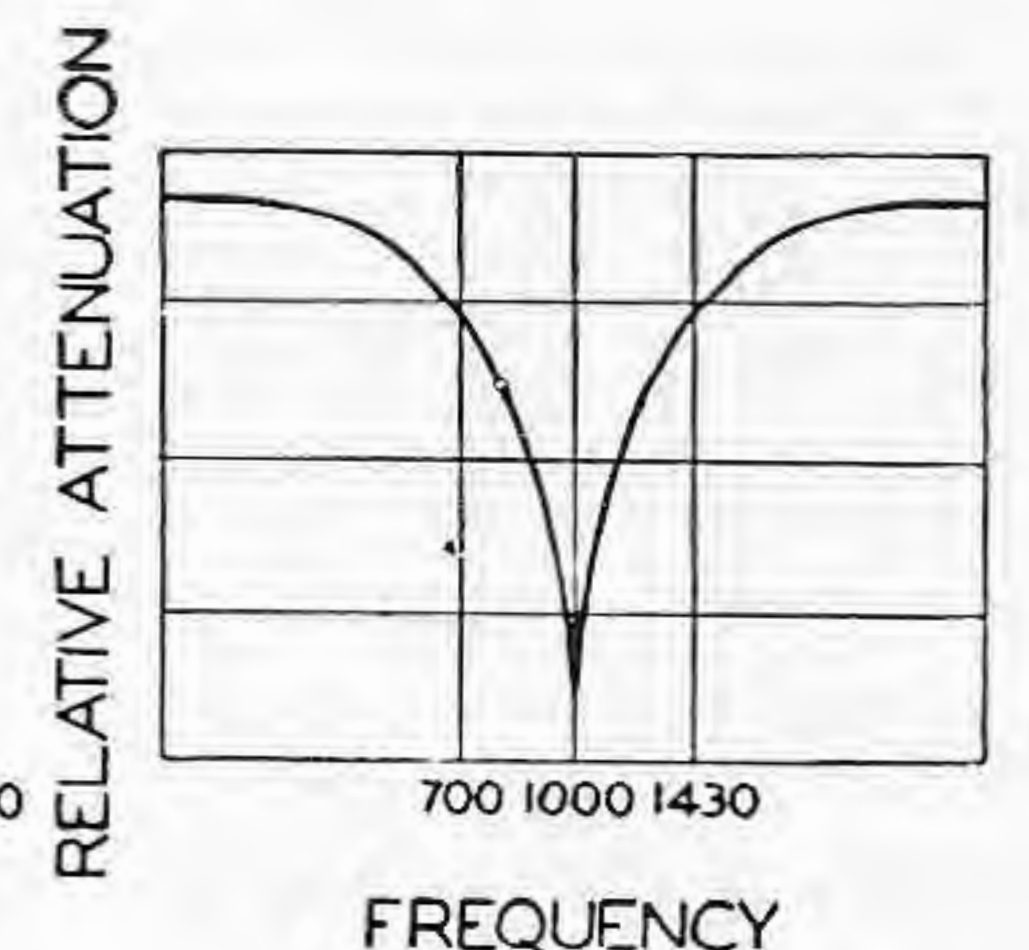
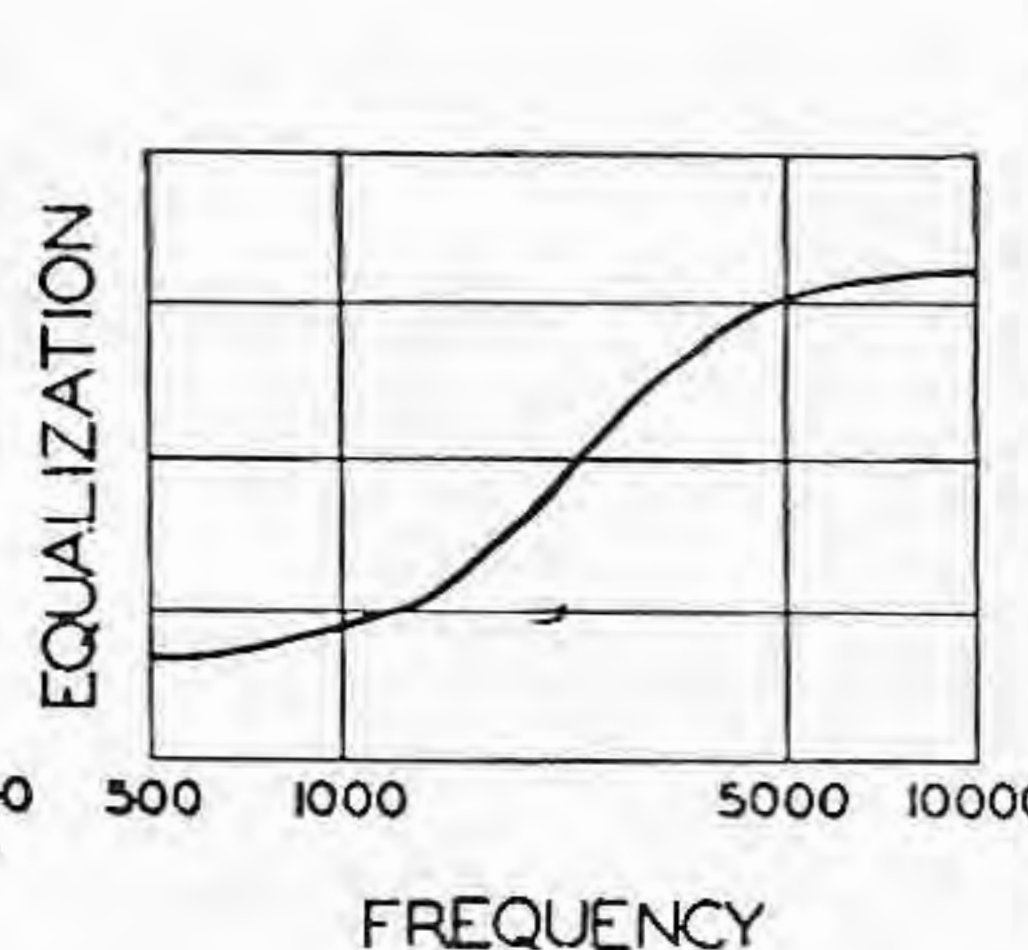
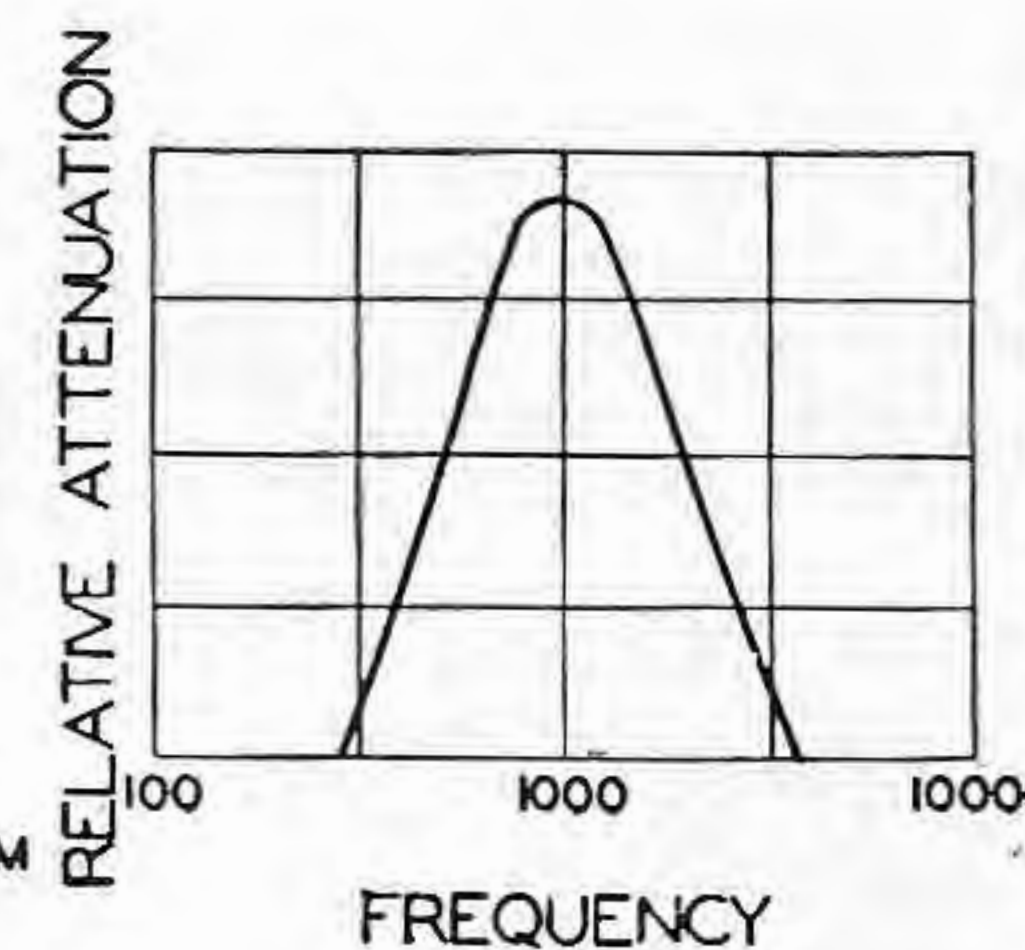
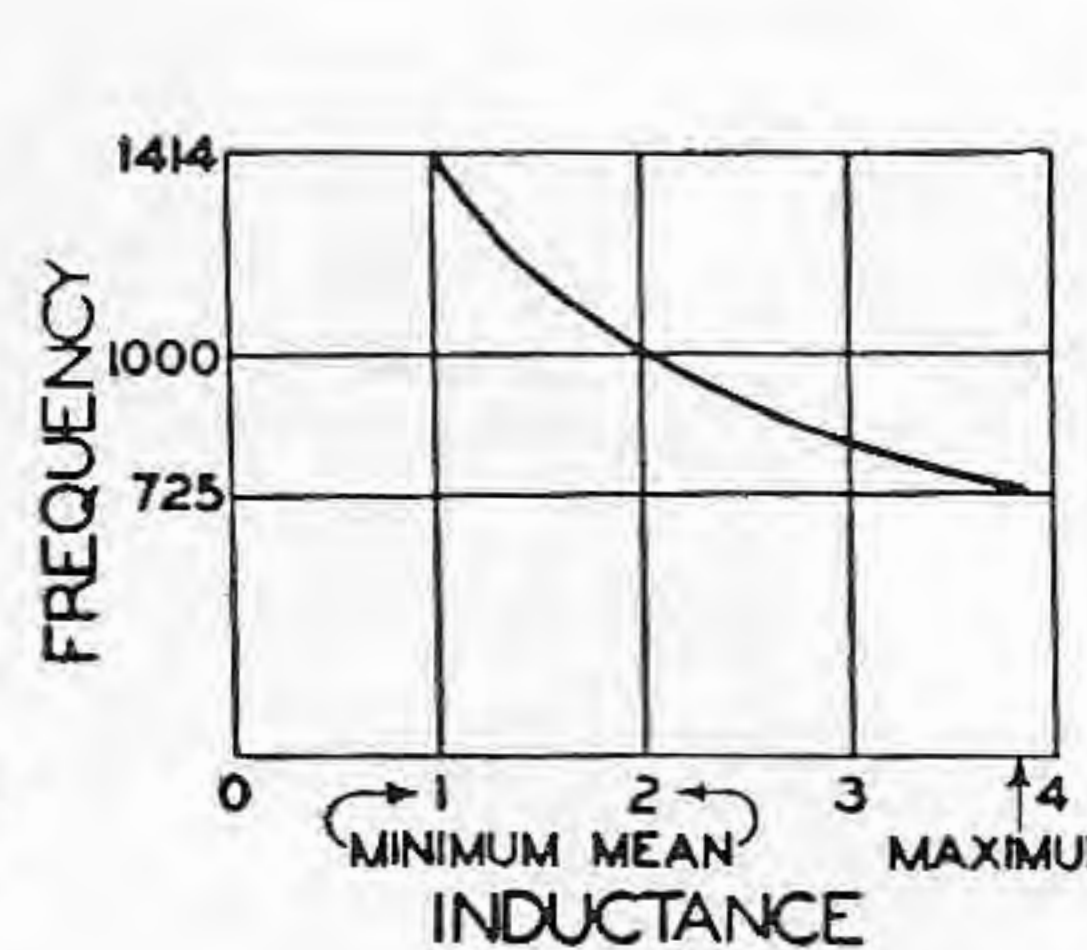
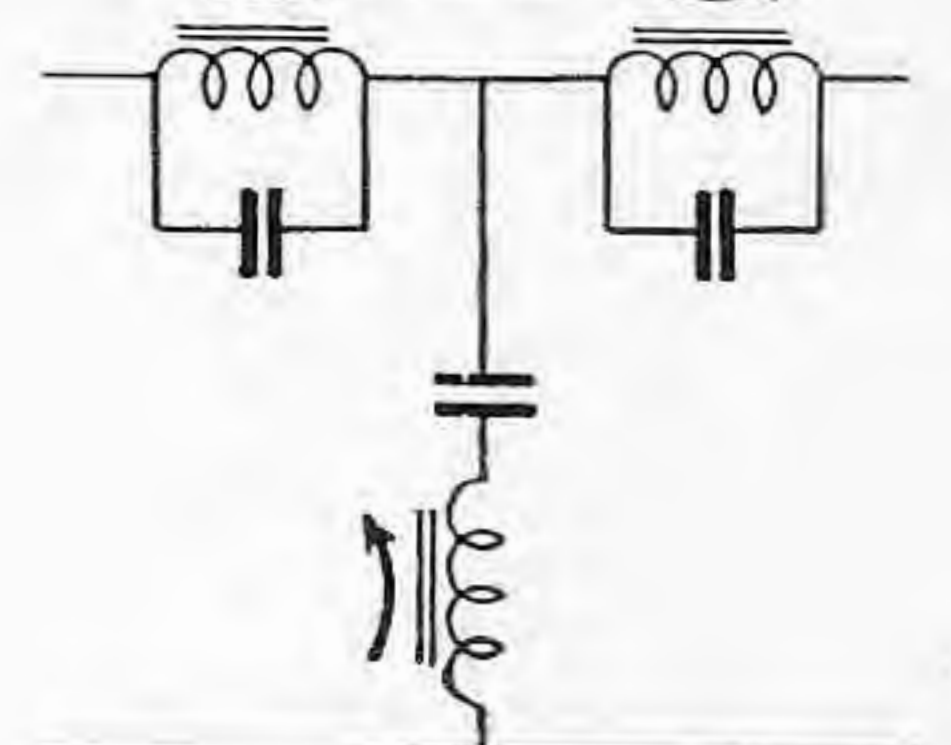
TUNED AMPLIFIERS



EQUALIZERS



FILTERS



Type	Mean Hys.	DC MA*	Type	Mean Hys.	DC MA*
VIC-1	.0085	75	VIC-12	1.3	10
VIC-2	.013	60	VIC-13	2.2	8
VIC-3	.021	50	VIC-14	3.4	7
VIC-4	.034	40	VIC-15	5.4	6
VIC-5	.053	35	VIC-16	8.5	5
VIC-6	.084	30	VIC-17	13.	4
VIC-7	.13	25	VIC-18	21.	3.5
VIC-8	.21	21	VIC-19	33.	3
VIC-9	.34	18	VIC-20	52.	2
VIC-10	.54	15	VIC-21	83.	1.5
VIC-11	.85	12	VIC-22	130.	1

UTC type VIC variable inductors offer a convenient approach to the problem of tuned audio circuits. By adjusting a set screw in the side of the case, an inductance value of +85%, -45% from mean value is obtainable. Range is covered in 600° rotation. Setting is positive. Effective Q for a wide frequency range and variation of inductance with applied AC voltage are shown on the illustrated curves, for a typical VIC unit.

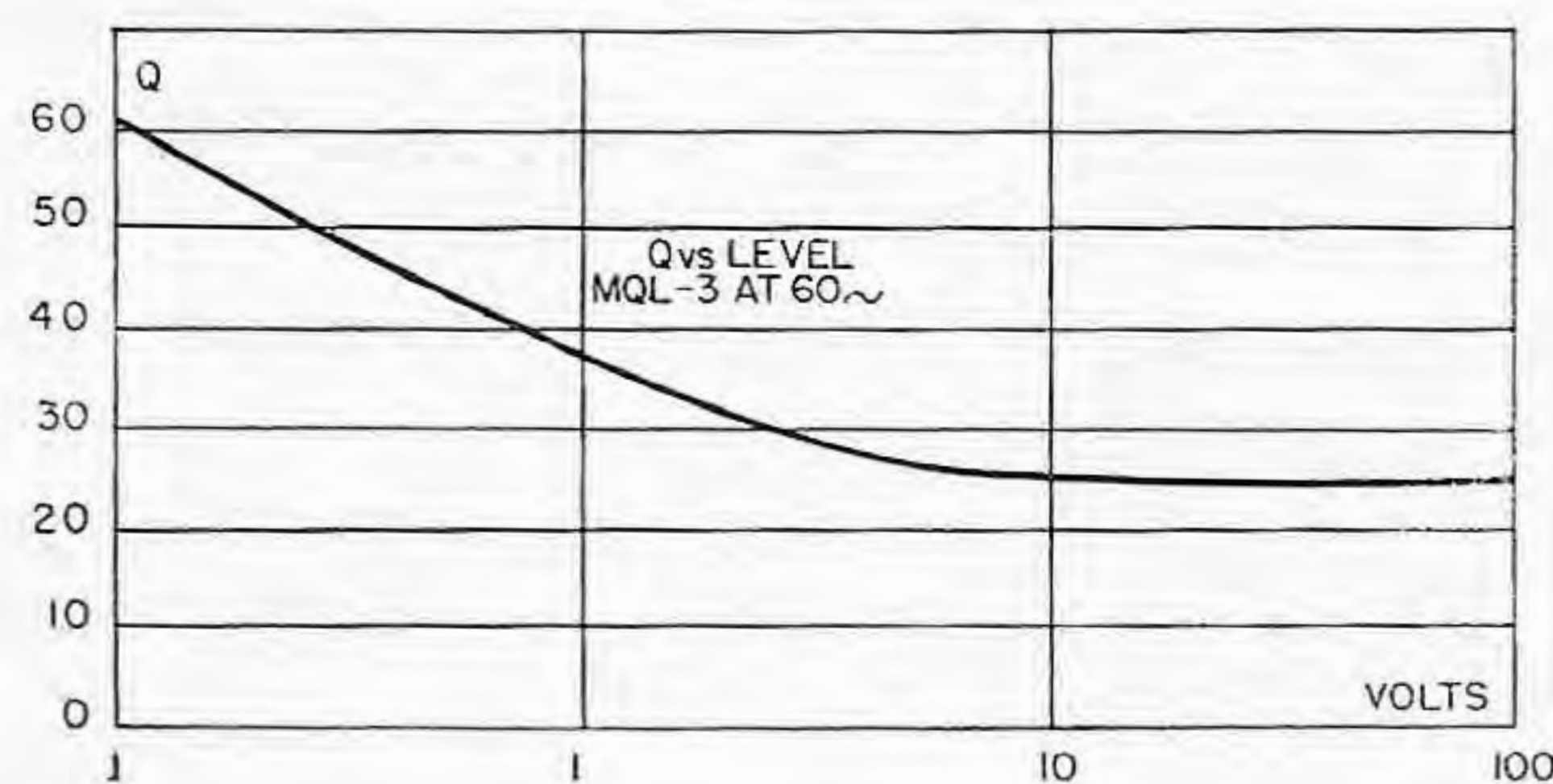
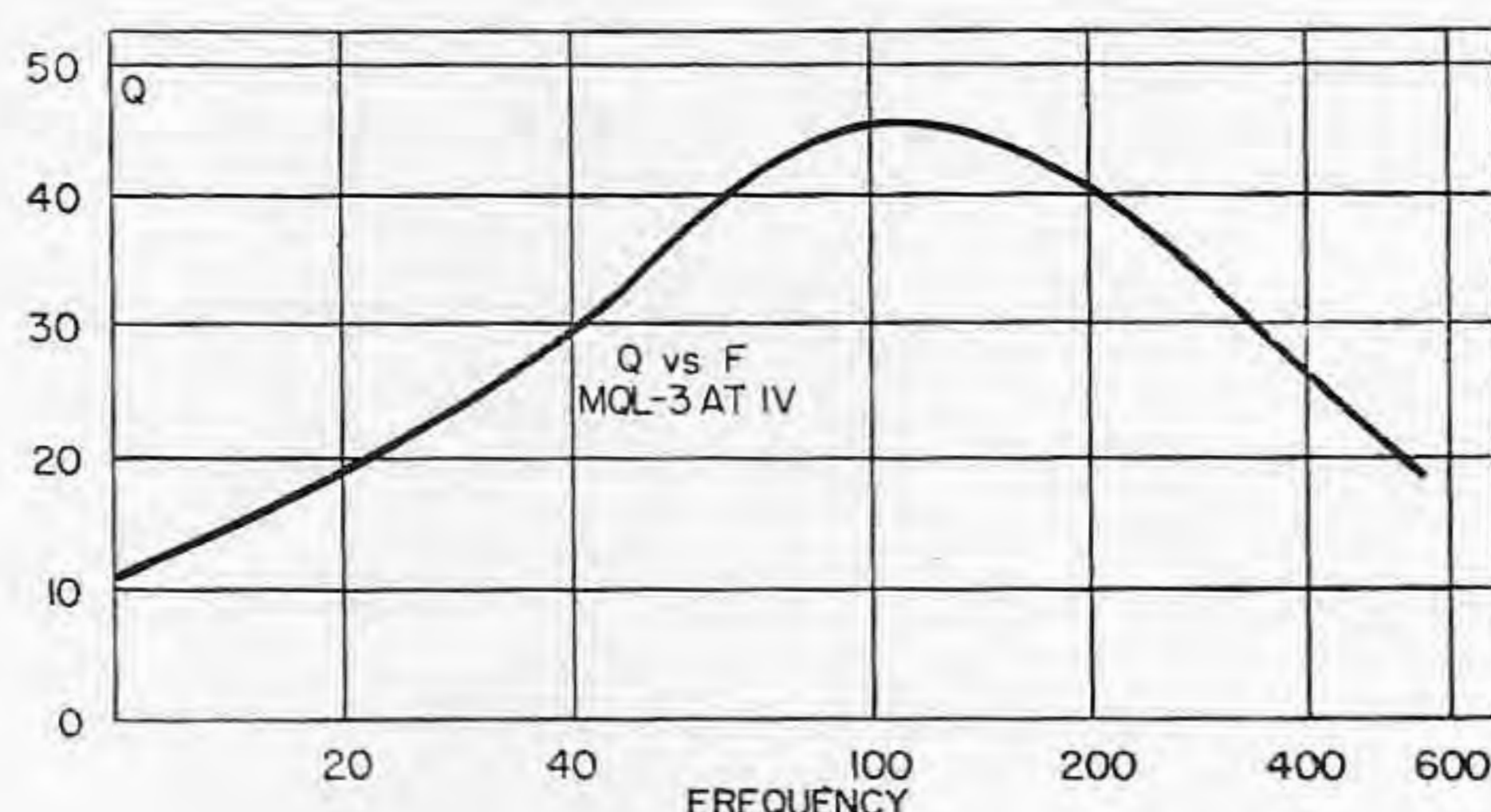
The VIC inductor is housed in a rugged die cast case 1 1/2" long, 1 1/4" wide and 1 1/8" high with mounting centers on terminal board side 13/16" by 25/32", tapped for 4-40 screw. Weight is 5 1/2 oz.

*DC MA shown is maximum recommended...will effect some reduction in inductance and Q.

UTC LOW FREQUENCY HIGH Q COILS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4RX20YY.

Permalloy dust toroids are not suited to providing high Q at low frequencies. The MQL series of laminated Hipermalloy coils were specifically designed for this class of service. The unique structure employed provides exceptional Q and stability. Inductance values are laboratory adjusted to 2% tolerance at 1 volt, 60 cycles. Stability with voltage is excellent, for MQL-3 inductance variation is less than 1% from .1 V. to 1 V. 60 cycles. Temperature stability is exceptional, total inductance swing being less than 3.5% for the wide range of -55°C to $+85^{\circ}\text{C}$. A hum reducing lamination structure plus heavy Hipermalloy shielding provide very low hum pickup . . . 240 microvolts/gauss for MQL-3 series connected. Two identical windings brought out to four terminals permit series, parallel, center tapped, or transformer type connections.



MQL CASE

Diameter $1\frac{3}{16}"$
Height $2\frac{1}{2}"$
Mounting $1\frac{1}{2}" \times 1\frac{1}{2}"$
Screw 6-32
Cutout $1\frac{1}{2}"$ dia.
Weight 1 lb.

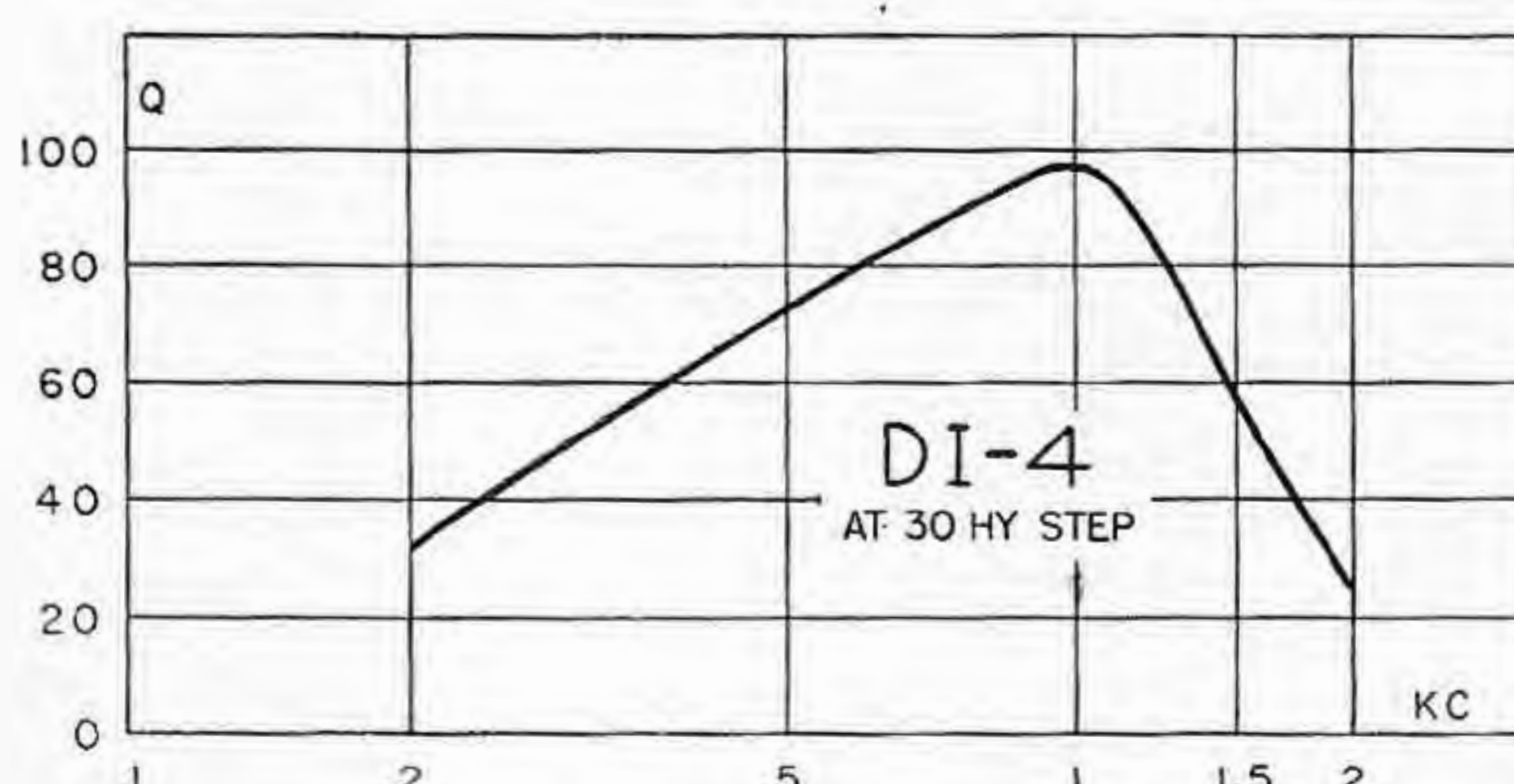
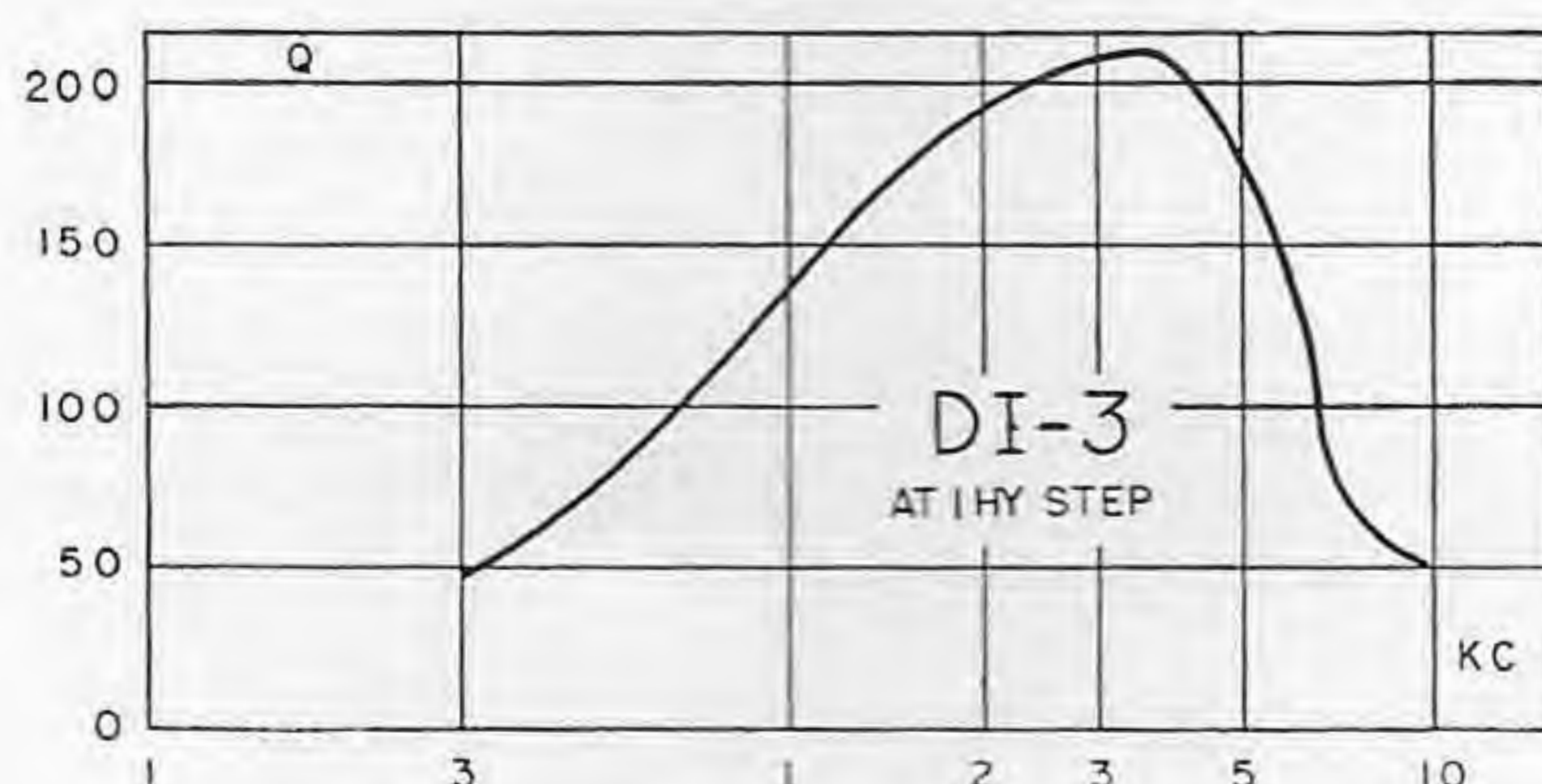
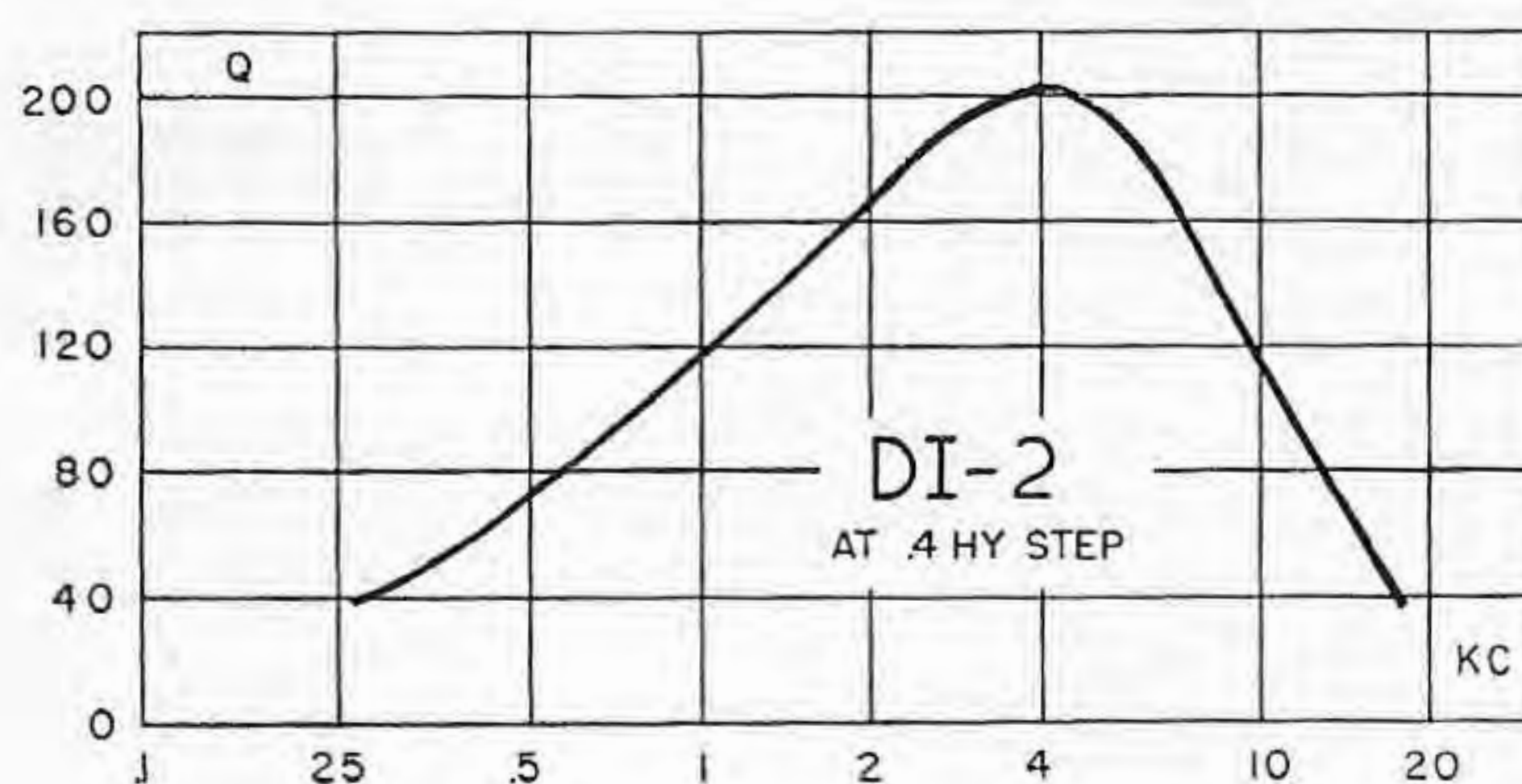
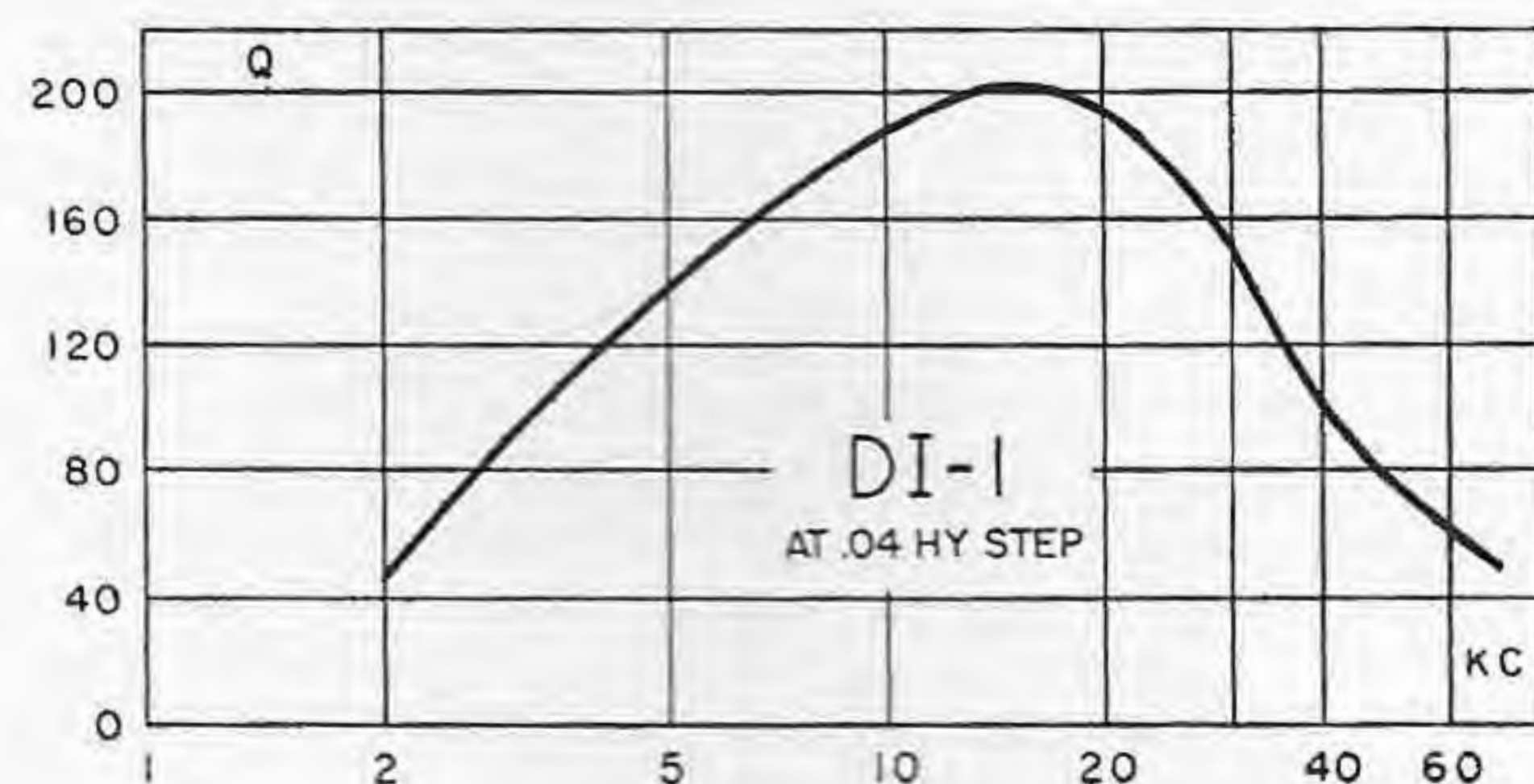
Type No.	Series Henries (0 DC)	Parallel Henries (0 DC)
MQL-0	1	.25
MQL-1	10	2.5
MQL-2	20	5
MQL-3	200	50
MQL-4	400	100
MQL-5	2500	625
(For 60 cycles and lower)		

HIGH Q PRECISION INDUCTANCE DECADES

UTC DI inductance decades are invaluable instruments for design and experimental work with tuned circuits, wave filters, and equalizers. They set new standards of Q, stability, frequency range, and convenience. The low hum pickup toroid coils employ a new permalloy dust core which, combined with special winding methods, provides very high Q, excellent voltage and temperature stability, and high self resonance frequency. The switch employed is a new low capacity type which lab tests have proven for low contact resistance after 100,000 operations. The inductance values are laboratory adjusted to better than 1% precision, with calibration noted on base.

DI inductance decades are housed in a compact, rugged, die cast case with control on a sloping panel, ideally suiting these units to laboratory use.

Type No.	Induct. Henries	Optimum Range	Max. Q	Max. ACMA	Ins. Test Volts RMS
DI-1	$10 \times .01$	2-60 KC	200	500	500
DI-2	$10 \times .1$	.25-20 KC	200	150	500
DI-3	10×1	.25-10 KC	200	50	500
DI-4	10×10	.2-1.5 KC	100	15	500



DI CASE

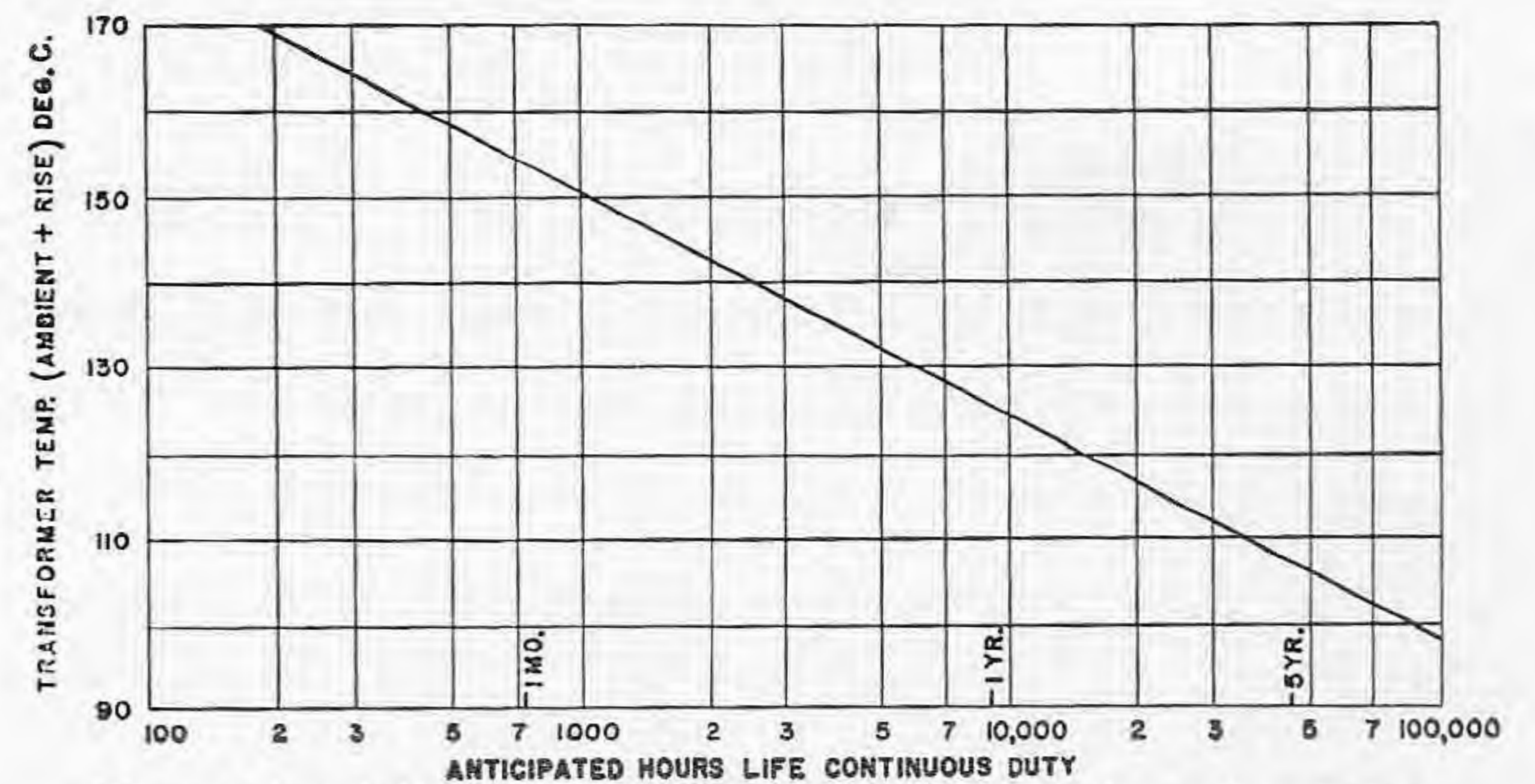
Length $4\frac{1}{2}"$
Width $4\frac{3}{8}"$
Height $2\frac{3}{8}"$
Weight 2 lbs.

UTC HERMETIC POWER COMPONENTS

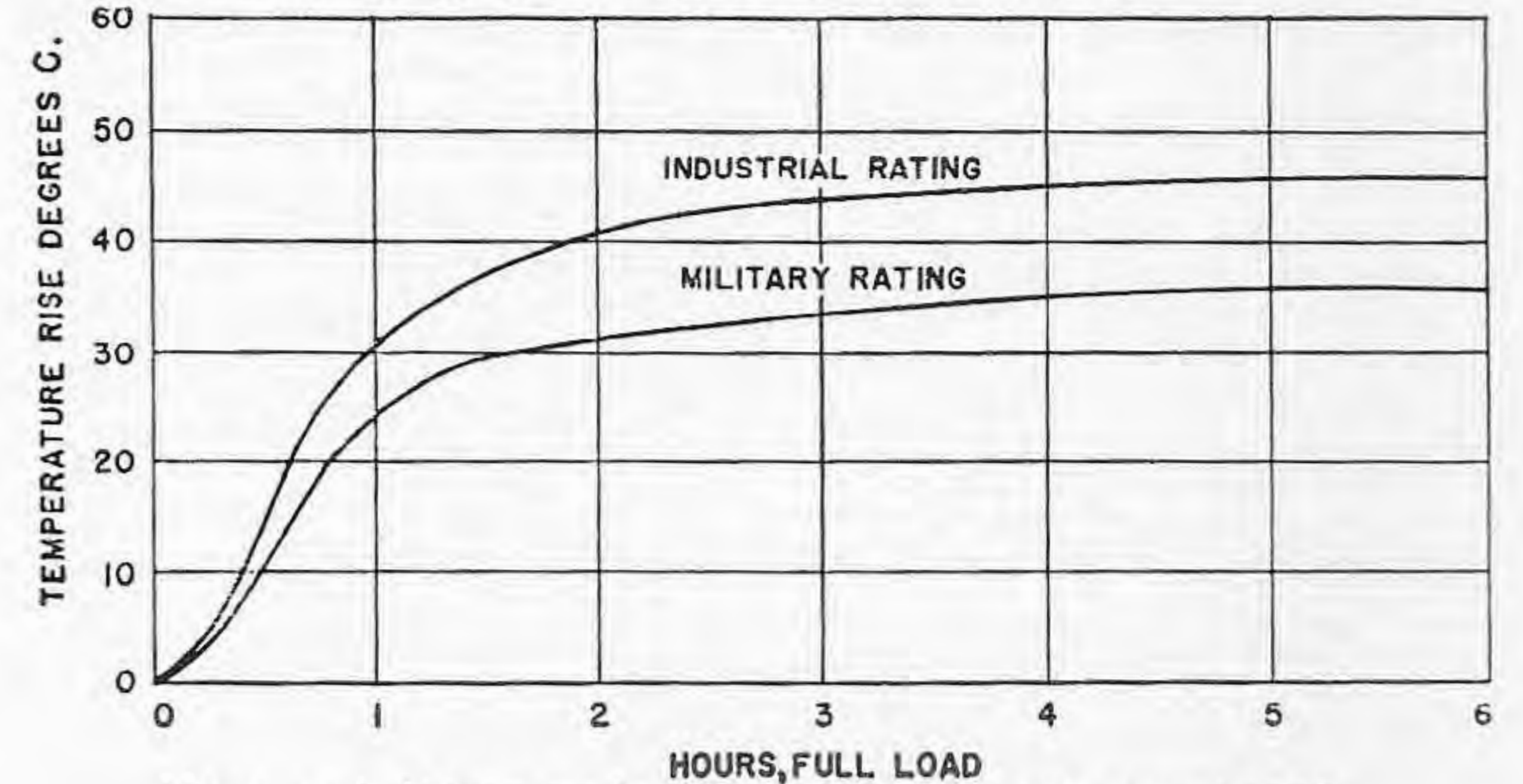
UTC hermetic power components are **ideal military units** which have been fully tested to MIL-T-27A. This means that they can be used in prototypes and production without costs or delays for special MIL-T-27A testing. Safety factors in these rugged units far exceed MIL-T-27A requirements. Units are in standard drawn MIL cases with internal structure directly welded to the stainless steel mounting studs.

Versatility of application has been accomplished through dual high-voltage ratings on plate and power transformers, as well as multiple current ratings for filter reactors (100% tested at maximum military current rating). Transformer regulation has been a fundamental design consideration to provide for varied application. For full understanding of power transformer capabilities, the DC voltage as well as permissible currents have been listed for both choke and condenser input, at both output voltages.

These units are ideally suited to high reliability **industrial applications**. Industrial use involves lower ambients (55° C max.) as compared to military needs (65° C). Because of this, components are suited to higher loads in **industrial applications**, with the same exceptional reliability. To cover this factor, all hermetic power components are rated for both military and **industrial service**, the latter in **bold type**.



Class A insulation life based on continuous duty and ambient.



Measured rise on typical "H" series power component.

UTC TRANSISTOR SUPPLY TRANSFORMERS

Hermetically sealed to MIL-T-27A specs., see back cover. Type TFIRX02.

UTC transistor supply transformers are high reliability units in drawn MIL cases as illustrated on opposite page. The chart below shows the secondary voltages available and the approximate DC voltages which result in typical *silicon rectifier* circuits (at MIL currents shown). Primary taps can modify nom. AC voltages by -6%, +6%, and +12%. Since the capacitor following the rectifier affects the DC voltage, values used (in 1000 mfd) are shown, *in italics*, after each current rating.

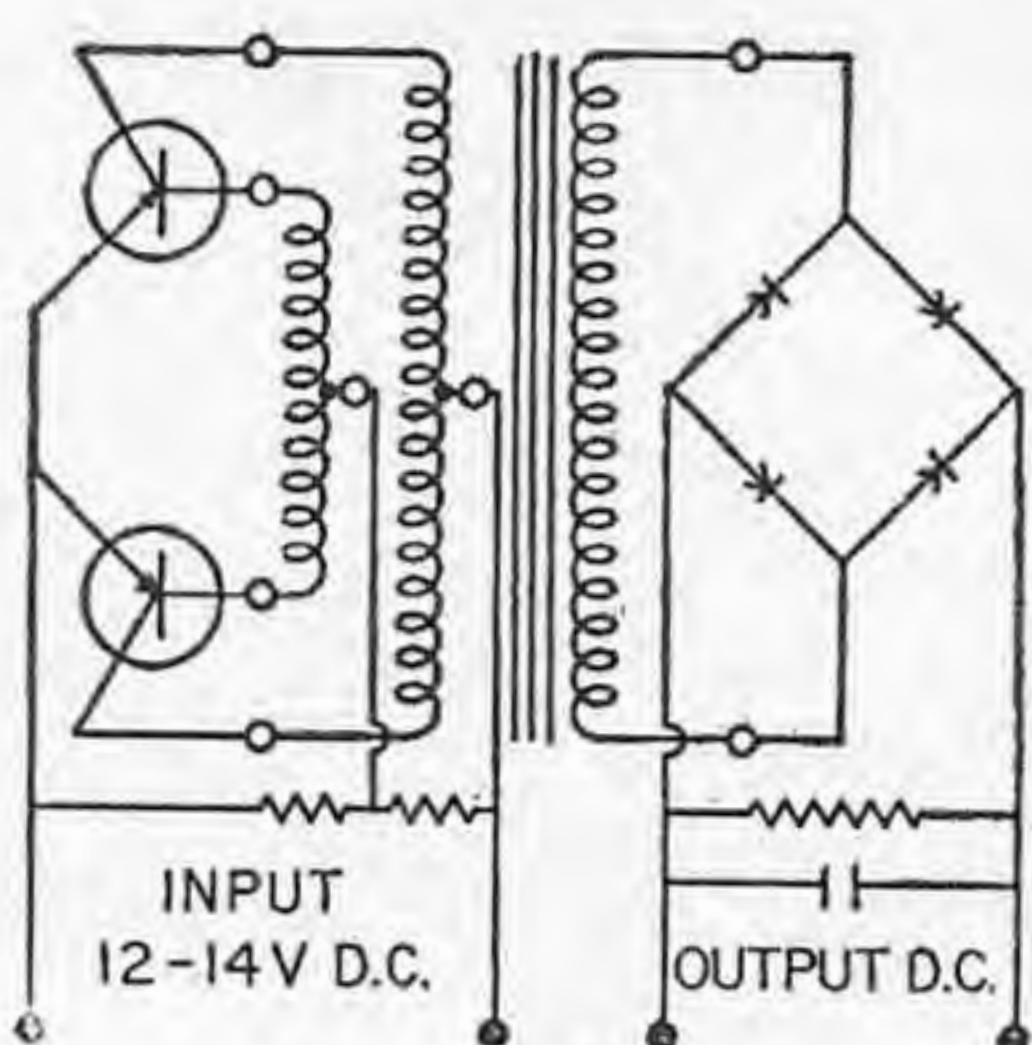
PRIMARY 115 VOLTS, 50/60 CYCLES
NOMINAL SEC. VOLTS, 8.25 to 40.5

Type No.	MIL DC Range	Indust. DC Range	MIL CASE
H-94	6V-3A to 53V-1A	6V-4A to 50V-1.2A	HA
H-95	6V-7.5A to 53V-2.5A	6V-9A to 50V-3A	KA
H-96	6V-18A to 53V-6A	6V-23A to 50V-7.5A	OA

MIL-T-27A RATINGS IN REGULAR TYPE, **INDUSTRIAL RATINGS IN BOLD TYPE**

	FULL WAVE BRIDGE SILICON RECTIFIER								FULL WAVE C.T.		
Nom. AC Volts*	40.5	32.25	28.5	24	20.25	16.5	12	8.25	40.5 CT	24 CT	11.5 CT
Approx. DC Volts*	53	41	34	25	24	18	12	6	24	12	6.6
H-94 DC Amp.	1. (.5)	1.1 (.5)	1.2 (.5)	1.3 (.5)	2. (1)	1.5 (1)	2.5 (2)	3. (2)	1.5 (1)	1.8 (1)	2.3 (2)
H-94 DC Amp.	1.2 (.5)	1.5 (.5)	1.5 (.5)	1.6 (.5)	2.5 (1)	2. (1)	3. (2)	3.8 (2)	2. (1)	2.2 (1)	2.8 (2)
H-95 DC Amp.	2.5 (1)	3. (1)	3. (1)	3.5 (1)	5. (2)	3.7 (2)	6 (4)	7.5 (4)	3.7 (2)	4.5 (2)	5.5 (4)
H-95 DC Amp.	3. (1)	3.5 (1)	3.8 (1)	4. (1)	6. (2)	4.5 (2)	7.5 (4)	9. (4)	4.5 (2)	5.5 (2)	6.7 (4)
H-96 DC Amp.	6. (4)	7. (4)	7.5 (4)	8. (4)	12. (6)	9. (6)	15. (12)	18. (12)	9. (6)	11. (6)	13.5 (12)
H-96 DC Amp.	7.5 (4)	8.5 (4)	9.5 (4)	10. (4)	15. (6)	11. (6)	19. (12)	23. (12)	11. (6)	13.5 (6)	17. (12)

*Nom. AC and DC volts are at 115 volt input . . . primary taps can modify -6%, +6%, and +12%.



UTC TRANSISTOR INVERTER TRANSFORMERS

Hermetically sealed to MIL-T-27A specs., see back cover. Type TFIRX40.

High switching current transistors have made it possible to eliminate vibrators for plate supplies operating from batteries. UTC inverter transformers for this application are high reliability (layer insulated) types providing high efficiency in small size. Units are in drawn MIL cases as illustrated on opposite page. Circuit details supplied with transformer.

FOR 12-14 VOLT BATTERY

Type No.	DC output, when used in circuit shown	MIL Case
H-97	250V.-60MA	AH
H-98	375V.-100MA	AJ
H-99	425V.-175MA	FA
H-100	550V.-200MA	GB

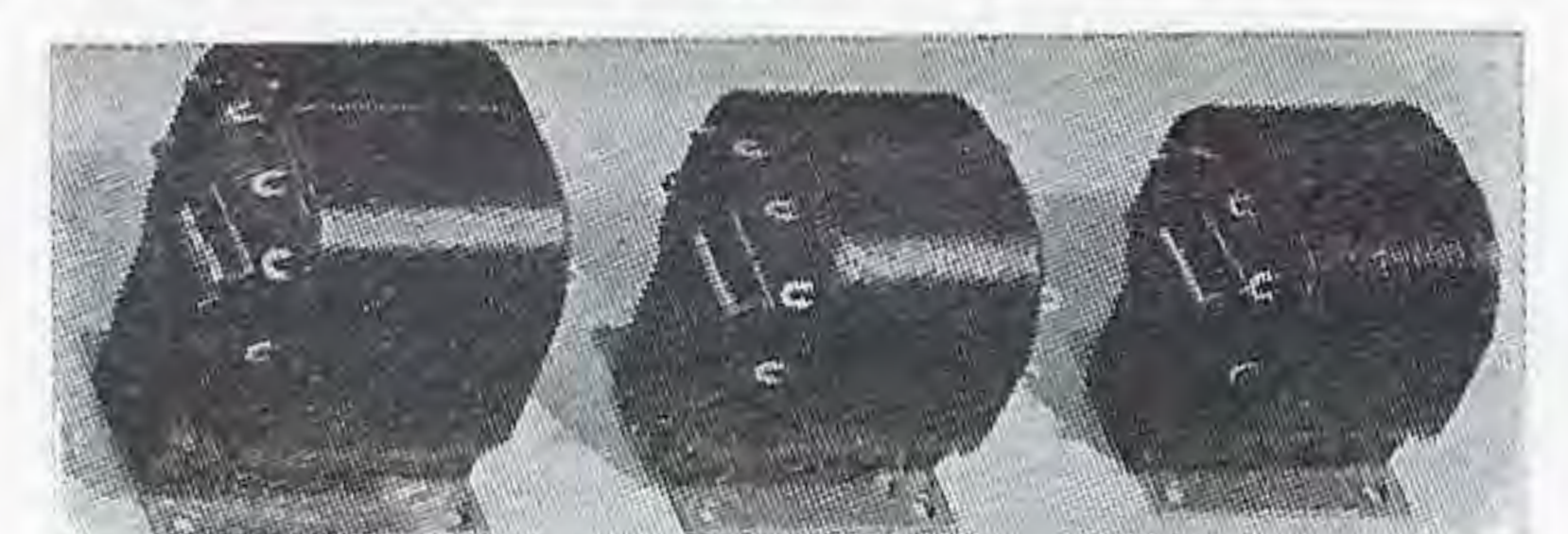
UTC 400 CYCLE FILAMENT TRANSFORMERS

UTC 400 cycle filament transformers are designed to provide maximum reliability with small size and weight. They are suited to ground or airborne applications.

PRIMARY 105/115 VOLTS 380-1000 CYCLES. TYPE TF5SX01ZZ.

Type No.	Sec. Volts	Sec. Amp.	Test Volts RMS	L In.	W In.	H In.	Mtg. In.	Wt. Lbs.
H-101	6.3 CT	3	2500	1 3/4	1 5/8	2	1 1/8 x 1 1/32	.25
H-102	6.3 CT	5.5	2500	1 3/4	2	2 1/4	1 1/8 x 1 1/32	.4
H-103	6.3 CT	10	2500	2 5/16	2 1/8	2 1/2	1 1/16 x 1 1/32	.65
H-104	6.3 CT	20	2500	2 13/16	2 1/2	3	2 3/16 x 1 1/32	1.2

Molded to MIL-T-27A grade 5, see back cover.



UTC HERMETIC SEALED POWER TRANSFORMER

Hermetically sealed to MIL-T-27A Specs., see back cover.

Primary 115 volts, 50/60 cycles . . . suited to 400/1000 cycles service.

MIL-T-27 RATINGS IN REGULAR TYPE, INDUSTRIAL RATINGS IN BOLD TYPE.

"L" ratings are for choke input filter, "C" for condenser input.

Type No.	MIL Type	HV Sec. C. T.	Approx* DC Volts	DC MA	Fil. Wdg.	Approx* DC Volts	MA DC	Fil. Wdg.	Case		
H-80	TF1RX03FA	450	C 235	20	6.3VCT-2A	C 210	30	6.3VCT-2.5A	FA		
H-81	TF1RX03HA	500	L 180	65	6.3VCT-3A 5V-2A	L 170	75	6.3VCT-3A 5V-2A	HA		
			C 265	55		C 240	65				
		550	L 200	60		L 190	70				
			C 300	50		C 280	60				
		H-82	TF1RX03JB	540	L 180	110	6.3VCT-4A 5V-2A	L 140	180	6.3VCT-4A 5V-2A	JB
					C 280	65		C 270	80		
600	L 200			100	L 170	170					
			C 325	60		C 315	75				
H-83	TF1RX03JA	600	L 180	140	6.3V-5A 5V-2A	L 160	190	6.3V-6A 5V-2A	JA		
			C 320	85		C 270	115				
		670	L 210	130		L 190	180				
			C 370	80		C 340	105				
H-84	TF1RX03KA	700	L 255	170	6.3V-5A 6.3V-1A 5V-3A	L 240	210	6.3V-6A 6.3V-1.5A 5V-4A	KA		
			C 400	110		C 360	150				
		750	L 275	160		L 260	200				
			C 420	105		C 380	140				
H-85	TF1RX03LA	700	L 250	220	6.3V-6A 6.3V-1.5A 5V-3A	L 235	260	6.3V-6A 6.3V-1.5A 5V-4A	LA		
			C 400	150		C 355	195				
		750	L 270	210		L 255	250				
			C 410	140		C 375	185				
H-86	TF1RX03MB	720	L 240	260	6.3V-6A 6.3V-2A 5V-3A	L 220	310	6.3V-7.5A 6.3V-2A 5V-4A	MB		
			C 425	170		C 410	210				
		790	L 270	250		L 250	300				
			C 450	160		C 440	200				
H-87	TF1RX03NB	730	L 245	320	6.3V-6A 6.3V-2A 5V-4A	L 210	420	6.3V-6A 6.3V-2A 5V-4A	NB		
			C 390	210		C 350	310				
		800	L 275	300		L 245	400				
			C 440	200		C 400	300				
H-88	TF1RX03NA	800	L 280	300	6.3V-6A 6.3V-2A 5V-4A	L 260	375	6.3V-7.5A 6.3V-2A 5V-4A	NA		
			C 420	190		C 380	235				
		1000	L 370	290		L 350	350				
			C 550	180		C 510	225				
H-89	TF1RX03OA	850	L 320	320	6.3V-8A 6.3V-4A 5V-6A	L 300	400	6.3V-8A 6.3V-4A 5V-6A	OA		
			C 510	280		C 460	320				
		1050	L 400	300		L 380	375				
			C 650	250		C 600	300				
H-90	TF1RX03JA	700	L 230	140	6.3V-5A 5V-2A	L 210	190	6.3V-6A 5V-3A	JA		
		850	L 290	130		L 260	180				
H-91	TF1RX03KA	900	L 320	190	6.3V-5A 6.3V-1A 5V-3A	L 290	270	6.3V-6A 6.3V-1.5A 5V-4A	KA		
		1000	L 360	180		L 320	250				
H-92	TF1RX03MB	900	L 330	230	6.3V-6A 6.3V-2A 5V-4A	L 320	290	6.3V-8A 6.3V-2A 5V-4A	MB		
		1050	L 385	220		L 370	270				
H-93	TF1RX03OA	1000	L 370	280	6.3V-8A 6.3V-4A 5V-6A	L 340	340	6.3V-10A 6.3V-5A 5V-6A	OA		
		1200	L 465	250		L 455	300				

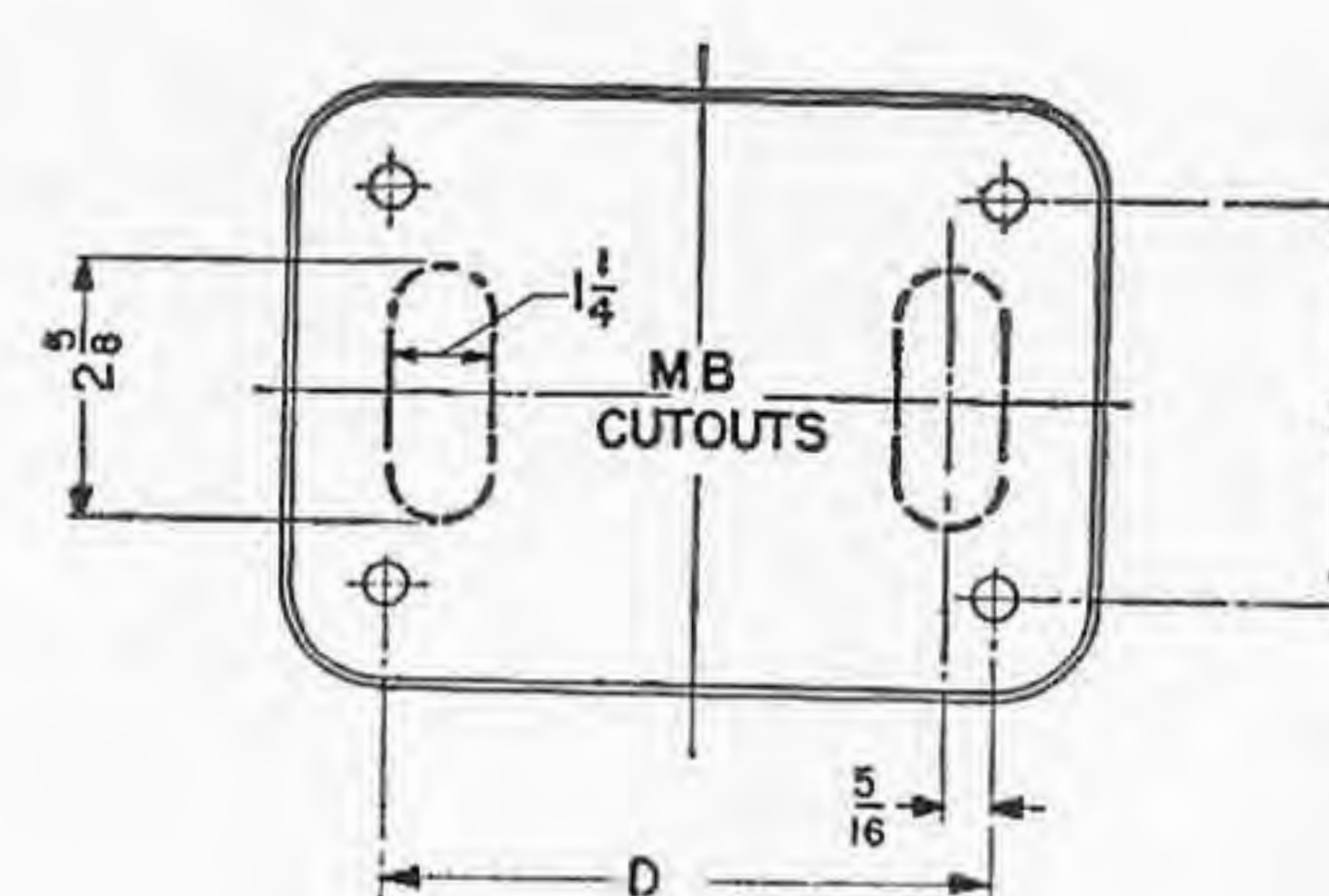
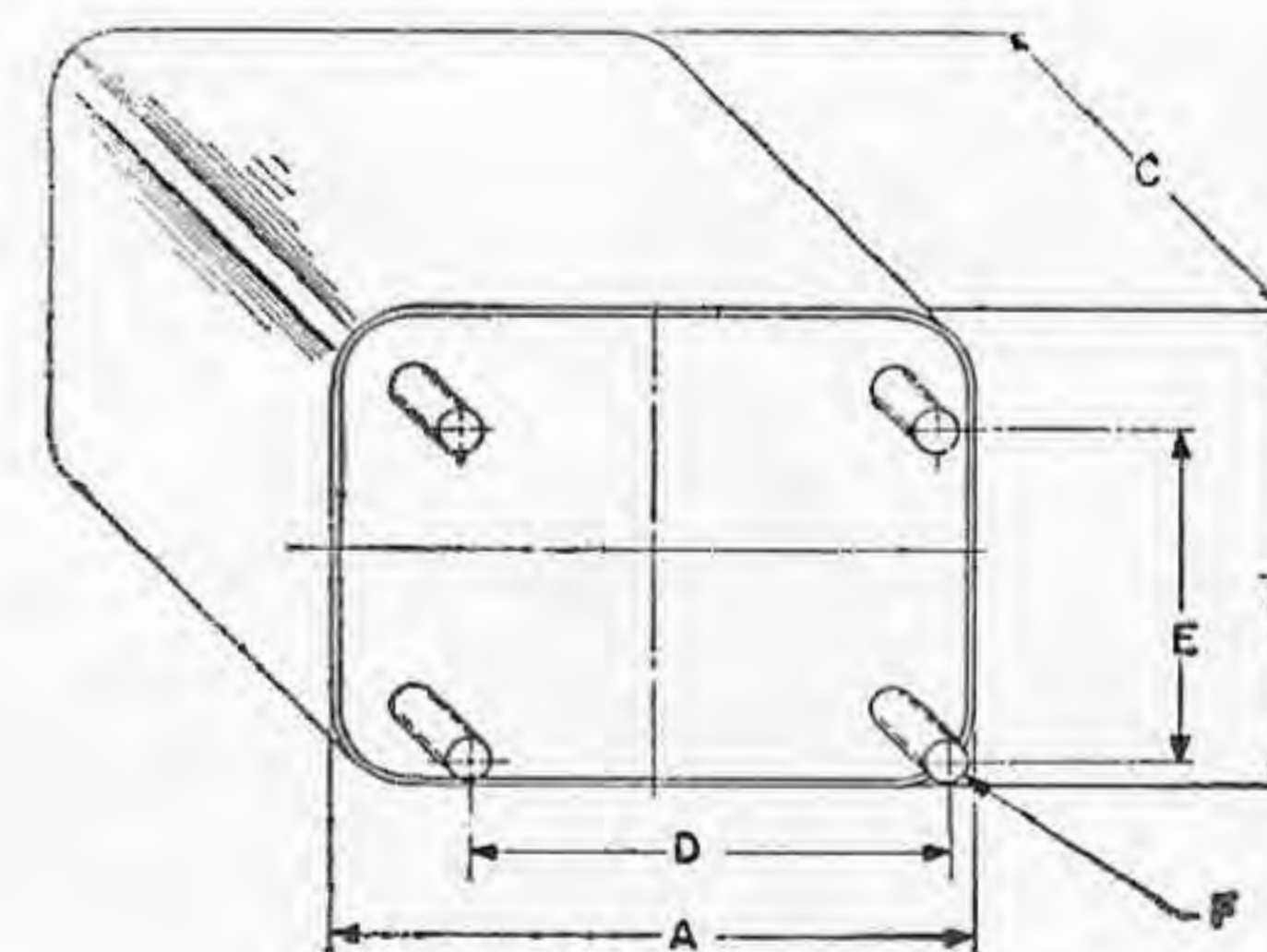
*After appropriate H series choke.

DIMENSIONS, "H" SERIES POWER TRANSFORMERS, INCHES

Case No.	A	B	C	D	E	F	Cutout, Centered	Wt. Lbs.
FA	2 $\frac{5}{16}$	2 $\frac{1}{16}$	3 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{16}$	6-32	1 $\frac{1}{2}$ Dia.	1 $\frac{1}{2}$
HA	3 $\frac{1}{16}$	2 $\frac{5}{8}$	4 $\frac{1}{4}$	2 $\frac{1}{4}$	1 $\frac{5}{16}$	8-32	2 $\frac{1}{4}$ Dia.	4
JA	3 $\frac{9}{16}$	3 $\frac{1}{16}$	4 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	8-32	2 $\frac{5}{8}$ Dia.	6
JB	3 $\frac{9}{16}$	3 $\frac{1}{16}$	3 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	8-32	2 $\frac{1}{4}$ Dia.	5
KA	3 $\frac{1}{2}$	3 $\frac{3}{8}$	5 $\frac{1}{4}$	3	2 $\frac{1}{16}$	10-32	2 $\frac{9}{16}$ Sq.	8 $\frac{1}{2}$
LA	4 $\frac{5}{16}$	3 $\frac{1}{16}$	5 $\frac{9}{16}$	3 $\frac{5}{16}$	2 $\frac{1}{16}$	10-32	2 $\frac{9}{16}$ Sq.	10
MB	4 $\frac{1}{16}$	4	4 $\frac{1}{8}$	3 $\frac{1}{16}$	3	1/4-20	See Cut	12
NA	5 $\frac{1}{16}$	4 $\frac{5}{16}$	6 $\frac{1}{8}$	4 $\frac{1}{16}$	3 $\frac{5}{16}$	1/4-20	2 $\frac{7}{8}$ Dia.	18
NB	5 $\frac{1}{16}$	4 $\frac{5}{16}$	5 $\frac{1}{2}$	4 $\frac{1}{16}$	3 $\frac{5}{16}$	1/4-20	2 $\frac{7}{8}$ Dia.	16
OA	5 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{3}{4}$	3 $\frac{3}{4}$	3	1/4-20		21 $\frac{1}{2}$

The "H" series of hermetic power transformers are suited to a wide variety of electronic applications in both military and industrial service. Conservative design provides maximum reliability through low temperature rise and high insulation safety factors. All units are in MIL cases with rugged internal construction.

The tapped high voltage winding provides either of two secondary voltages for greatest versatility. The listings indicate DC voltages and permissible currents for both choke and condenser input filters, as well as for military and industrial applications (see page 11).



UTC HERMETIC SEALED FILTER CHOKES

Hermetically sealed to MIL-T-27A Specs., see back cover.

MIL-T-27A RATINGS IN REGULAR TYPE, INDUSTRIAL RATINGS IN BOLD TYPE.

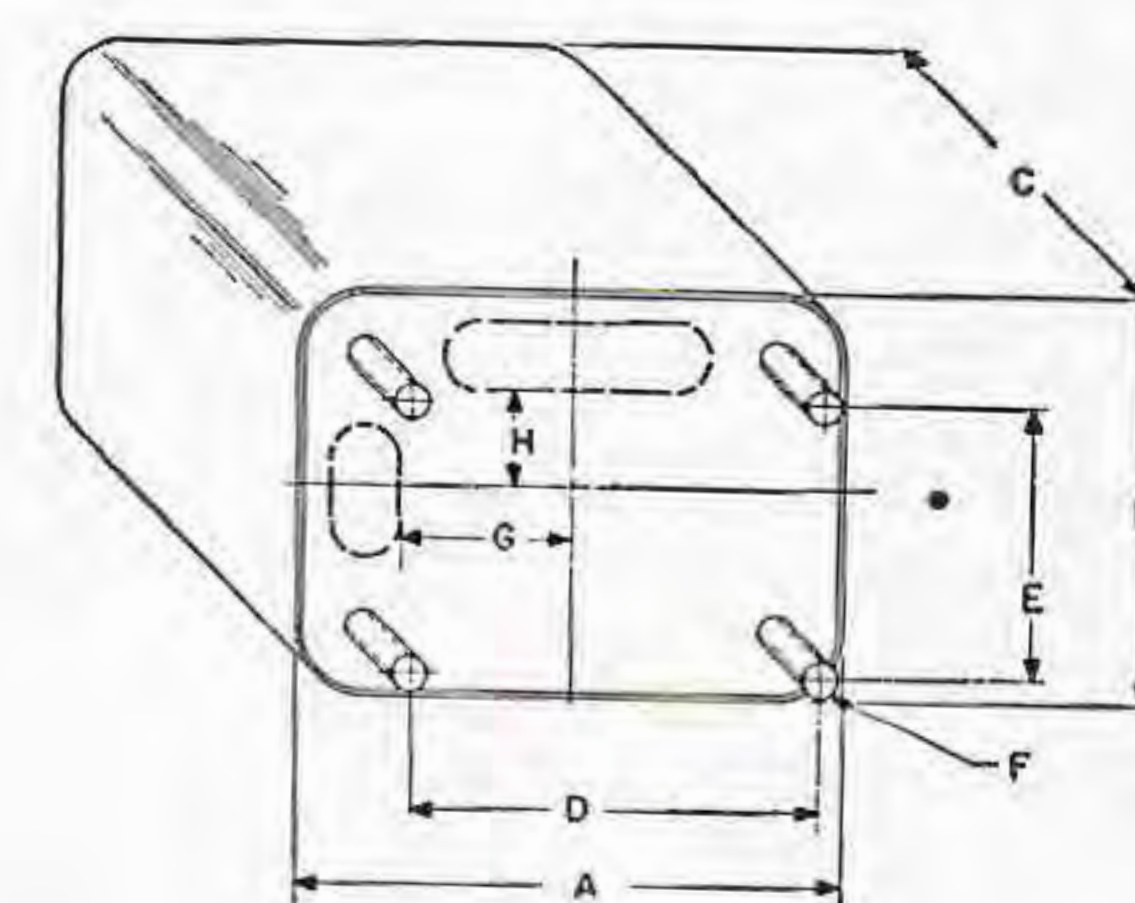
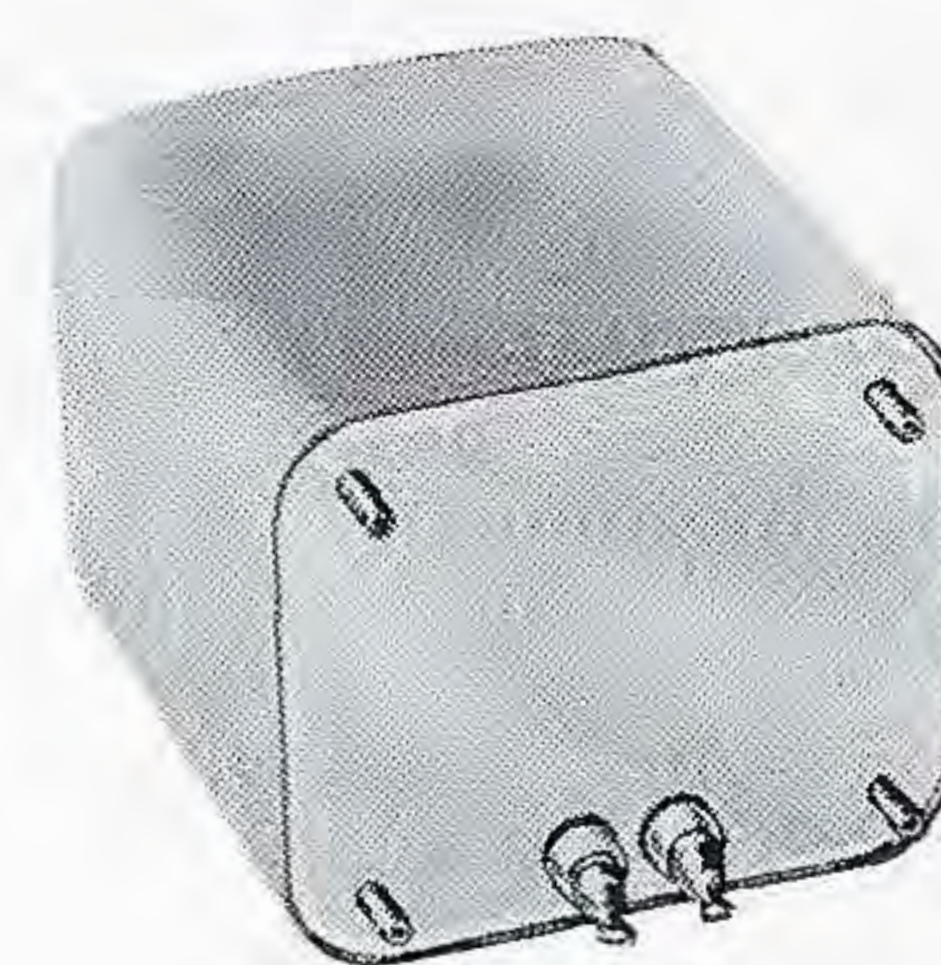
Type No.	MIL Type	Ind. @ Hys.	MA @ DC	Ind. @ Hys.	MA @ DC	Ind. @ Hys.	MA @ DC	Ind. @ Hys.	MA @ DC	Res. Ohms	Max. DCV* Ch. Input	Test V. RMS	Case
H-70	TF1RX04AH	20	20	18	25	14.5	30	10	35	925	350	1000	AH
H-71	TF1RX04FB	20	40	18.5	50	15.5	60	10	70	350	500	2500	FB
H-72	TF1RX04GB	13	70	11.5	85	9.5	105	7	125	215	500	2500	GB
H-73	TF1RX04HB	11	100	9.5	125	7.5	150	5.5	175	150	700	2500	HB
H-74	TF1RX04JB	11	150	10	170	8.5	195	6.5	215	135	700	2500	JB
H-75	TF1RX04KB	11	200	10	230	8.5	250	6.5	300	90	700	2500	KB
H-76	TF1RX04LB	11	200	10	230	8.5	250	6.5	300	85	1500	4500	LB
H-77	TF1RX04MB	10	300	9	350	8	390	6.5	435	60	2000	5500	MB
H-78	TF1RX04OA	7	400	6.5	430	6	465	5.5	500	48	2500	7000	OA
H-79	TF1RX04YY	7	800	6.5	900	6	1000	5.5	1250	20	3000	9000	7x7x8

Inductance test is performed at maximum military current rating.

* Based on maximum ripple voltage across choke in choke input filter circuit, in terms of DC output voltage. Does not apply to condenser input circuits.

DIMENSIONS "H" SERIES FILTER CHOKES, INCHES

Type No.	A	B	C	D	E	F	G	H	Cutout	Wt. Lbs.
H-70	1 $\frac{5}{16}$	1 $\frac{5}{16}$	1 $\frac{3}{4}$	1 $\frac{1}{4}$ diagonal		6-32(2)		$\frac{3}{16}$	$\frac{3}{8} \times \frac{5}{8}$	.4
H-71	2 $\frac{5}{16}$	2 $\frac{1}{8}$	2 $\frac{1}{2}$	1 $\frac{11}{16}$	1 $\frac{7}{16}$	6-32		$\frac{15}{32}$	$\frac{1}{2} \times 1 \frac{1}{4}$	1 $\frac{1}{2}$
H-72	2 $\frac{3}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{1}{8}$	1 $\frac{3}{4}$	6-32		$\frac{17}{32}$	$\frac{1}{2} \times \frac{7}{8}$	2 $\frac{1}{2}$
H-73	3 $\frac{1}{16}$	2 $\frac{5}{8}$	3 $\frac{3}{16}$	2 $\frac{1}{2}$	1 $\frac{5}{8}$	8-32		$\frac{5}{8}$	$\frac{5}{8} \times 1 \frac{1}{8}$	3 $\frac{1}{2}$
H-74	3 $\frac{3}{16}$	3 $\frac{1}{8}$	3 $\frac{7}{8}$	2 $\frac{5}{8}$	2 $\frac{1}{8}$	8-32		$\frac{3}{4}$	$\frac{5}{8} \times 1 \frac{1}{8}$	5
H-75	3 $\frac{1}{2}$	3 $\frac{3}{8}$	4 $\frac{5}{16}$	3	2 $\frac{7}{16}$	10-32	1 $\frac{3}{16}$		$\frac{5}{8} \times 1 \frac{3}{16}$	8
H-76	4 $\frac{5}{16}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{5}{16}$	2 $\frac{1}{16}$	10-32	$\frac{15}{16}$		$\frac{1}{2} \times 1 \frac{5}{16}$	11
H-77	4 $\frac{1}{2}$	4	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3	1 $\frac{1}{4}$ -20	1 $\frac{1}{2}$		$\frac{1}{2} \times 1 \frac{1}{4}$	15
H-78	5 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{1}{4}$	3 $\frac{3}{4}$	3	1 $\frac{1}{4}$ -20			1 x 2	25
H-79	7	7	8	5 $\frac{7}{8}$	5 $\frac{7}{8}$	3 $\frac{1}{8}$ -16(6)			term. opp. mtg.	60



UTC HERMETIC SEALED FILAMENT TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., see back cover.

Primary: 105/115/210/220 volts . . . 50/60 cycles, except H-130 (115 v.) and H-131 (115/220 v.) . . . Suited to 400/1000 cycle service.

MIL-T-27A RATINGS IN REGULAR TYPE, INDUSTRIAL RATINGS IN BOLD TYPE.

Type No.	MIL Type	Sec. Volts	Amps. (MIL)	Amps. (Indust.)	Test Volts RMS	Case
H-120	TF1RX01GB	2.5	10	12	4000	GB
H-121	TF1RX01JB	2.5	10	12	10000	JB
H-122	TF1RX01KB	2.5	20	26	10000	KB
H-123	TF1RX01NB	2.5	5	7.5	10000	NB
		2.5	5	7.5		
		2.5	10	15		
H-124	TF1RX01FB	5	3	3	2000	FB
H-125	TF1RX01KB	5	10	12	10000	KB
H-126	TF1RX01LA	5	20	25	10000	LA
H-127	TF1RX01NA	5	20	30	21000	NA
H-128	TF1RX01YY	5	60	75	21000	5 $\frac{1}{2}$ x 6 $\frac{1}{2}$ x 7 $\frac{3}{4}$
H-129	TF1RX01YY	5	10	12	21000	5 $\frac{1}{2}$ x 6 $\frac{1}{2}$ x 7 $\frac{3}{4}$
		5	10	12		
		5	20	24		
H-130	TF1RX01AJ	6.3CT	.6	.75	1500	AJ
H-131	TF1RX01FB	6.3CT	2	2.5	2500	FB
H-132	TF1RX01JA	6.3CT	6	7	2500	JA
		6.3CT	6	7		
H-133	TF1RX01HB	6.3CT	7	8	2500	HB
H-134	TF1RX01HA	6.3CT	10	12	2500	HA
H-135	TF1RX01JB	10CT	10	13	2500	JB
H-136	TF1RX01LA	14, 12, 11CT	10	14	2500	LA

The wide variety of "H" series filament transformers listed cover virtually every military and industrial need. Conservative design provides maximum reliability through low temperature rise and high insulation safety factor. Except for H-128 and H-129 which have terminals opposite mounting, all units are in MIL cases with rugged internal construction, stainless steel studs. Regulation has been a fundamental design consideration to provide for the diverse applications in which these units may be employed.



UTC HERMETIC SEALED PLATE TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., see back cover.

Primary: 105/115/210/220 Volts . . . 50/60 cycles.

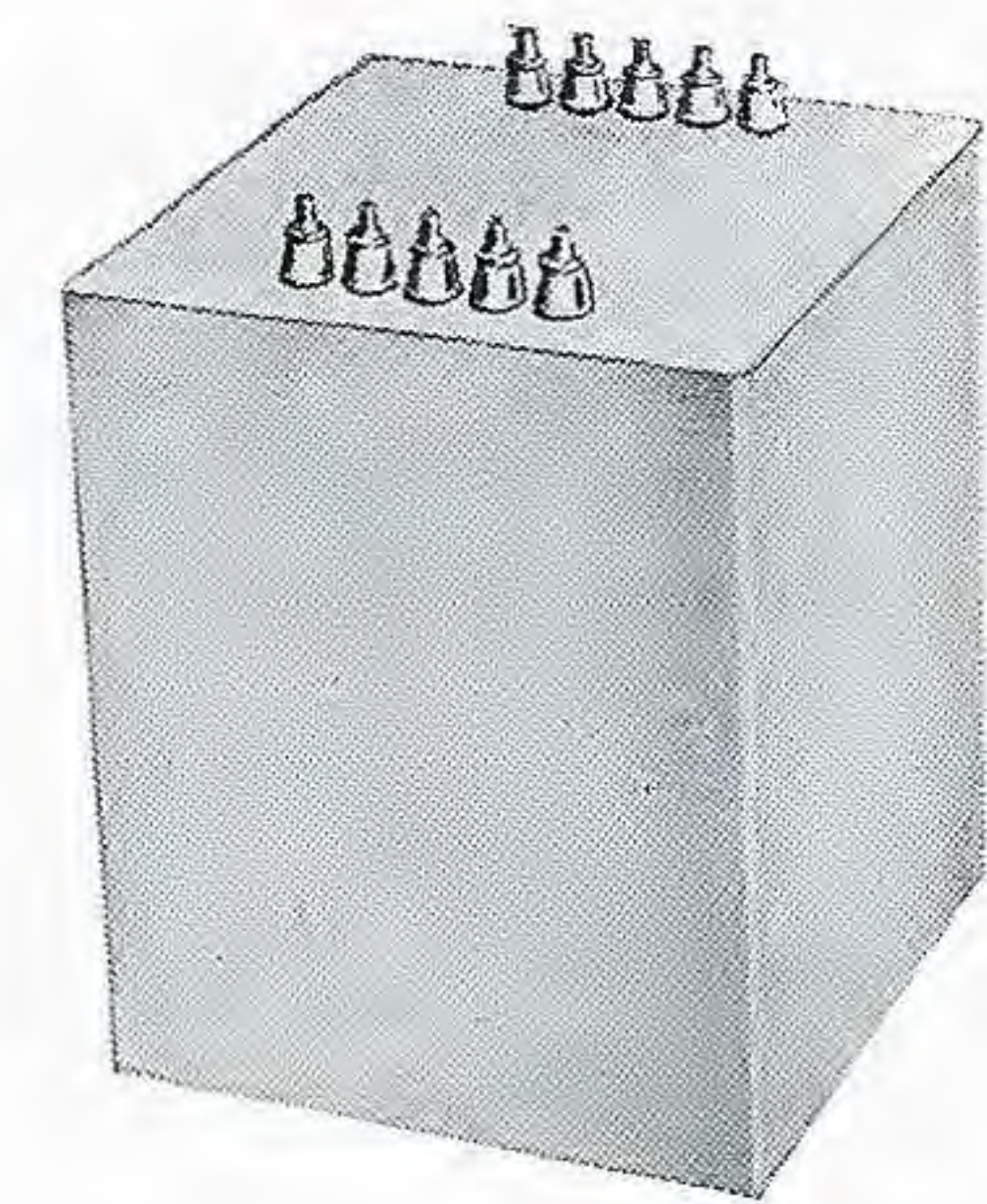
MIL-T-27A RATINGS IN REGULAR TYPE, INDUSTRIAL RATINGS IN BOLD TYPE.

All ratings are for choke input filter.

Type No.	Type MIL	C.T. Sec. V.	DC Volts Approx.*	DC MA	No. Choke	DC MA	No. Choke	Case
H-110	TF1RX02MB	1050 1200	365 430	275 250	H-75 H-75	385 350	H-77 H-77	MB
H-111	TF1RX02NA	1050 1200	415 480	440 400	H-77 H-77	550 500	H-77 H-77	NA
H-112	TF1RX02NA	1500 1900	615 790	290 250	H-77 H-76	350 300	H-77 H-76	NA
H-113	TF1RX02YY	2500 3000	1050 1275	280 250	H-77 H-76	340 300	H-77 H-76	6 x 5 1/8 x 6 3/4
H-114	TF1RX02YY	2500 3000	1050 1265	450 400	H-79 H-78	500 450	H-78 H-78	6 3/4 x 6 1/2 x 8
H-115	TF1RX02YY	3500 4400	1500 1900	265 225	H-77 H-77	350 300	H-77 H-77	6 3/4 x 6 1/2 x 8
H-116	TF1RX02YY	5000 6000	2125 2550	450 400	H-79 H-78	560 500	H-79 H-78	8 1/2 x 9 3/4 x 10 1/4
H-117	TF1RX02YY	5000 6000	2125 2550	900 800	H-79 H-79	1100 1000	H-79 H-79	11 x 11 x 14 3/4

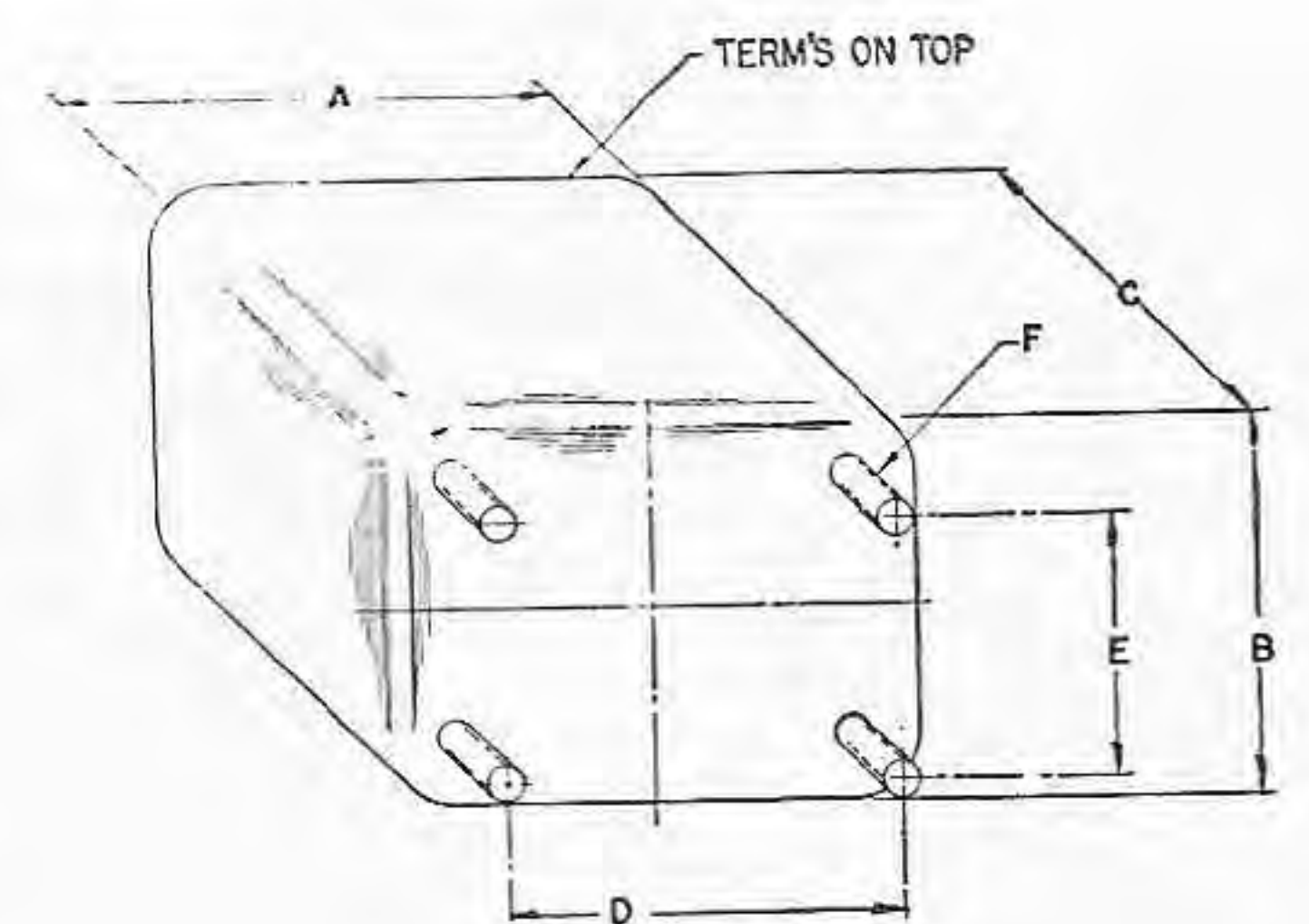
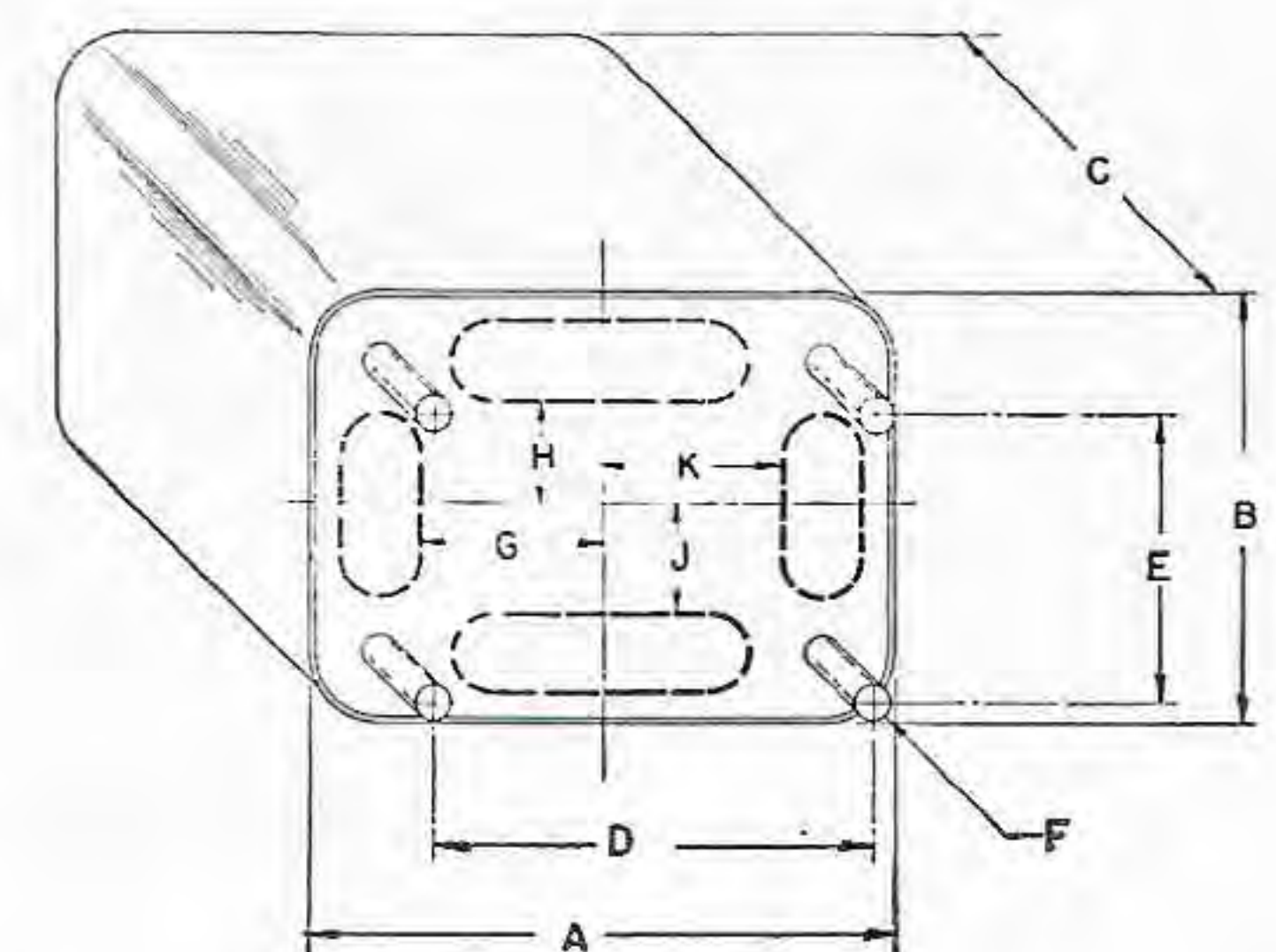
*After filter choke.

The tapped high voltage winding on the "H" series hermetic plate transformers provides either of two secondary voltages for greatest versatility. The listing shows the DC voltage and permissible currents for a wide variety of applications in both military and industrial service. High insulation safety factor and low temperature rise provide a maximum in reliability. The first three types are in MIL cases. The others are in rectangular cases with terminals opposite mounting for greatest convenience in typical power supply application, stainless steel studs.



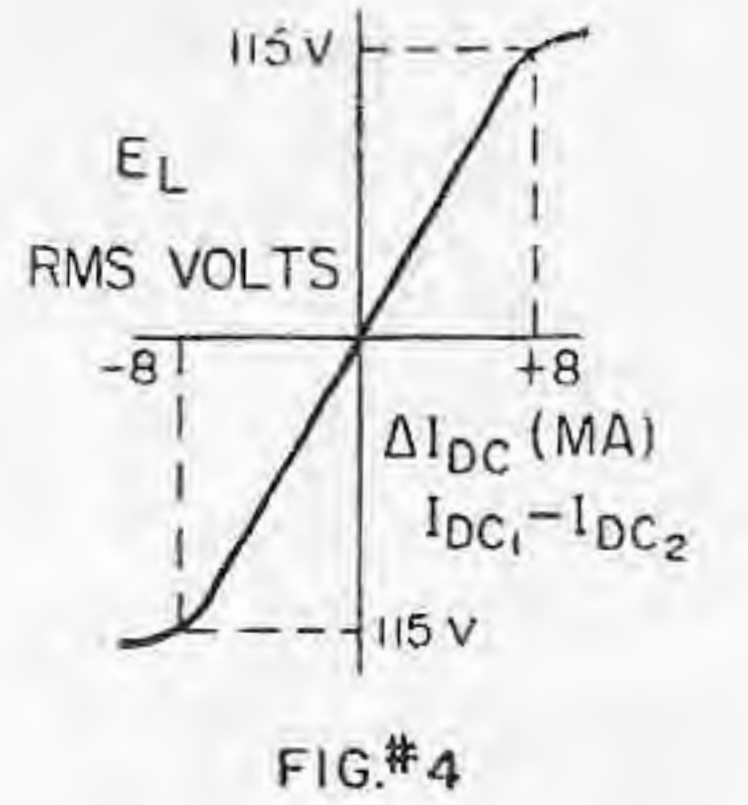
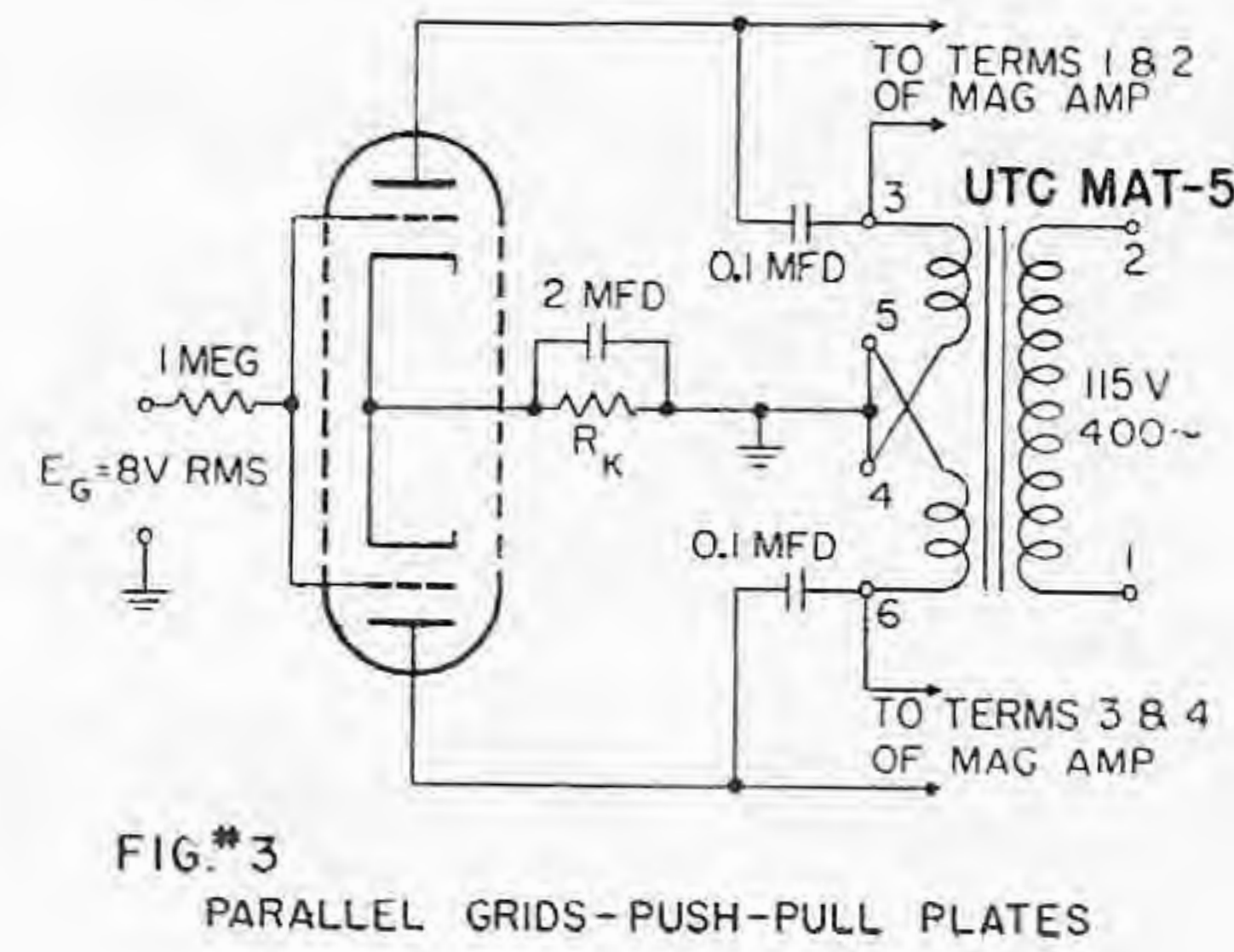
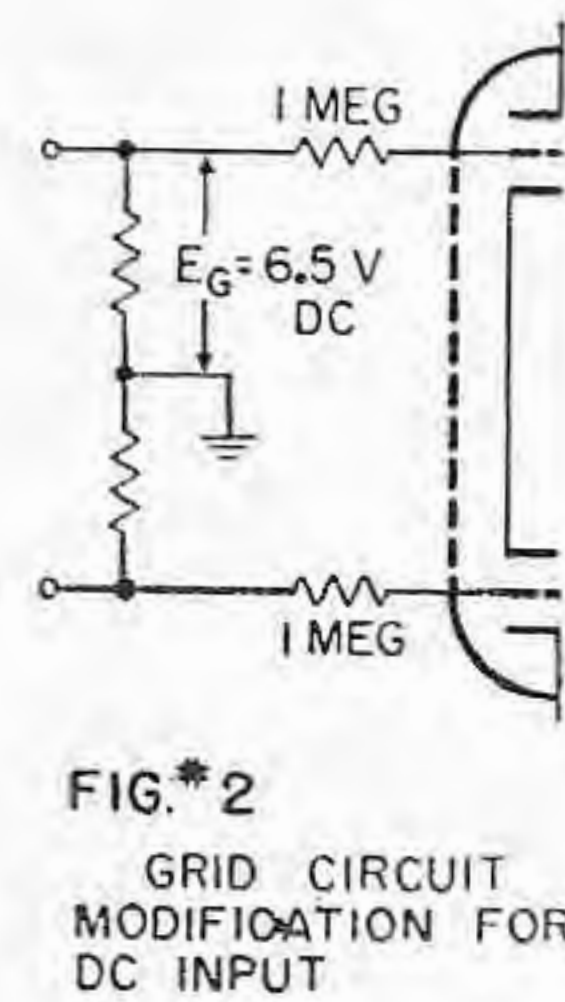
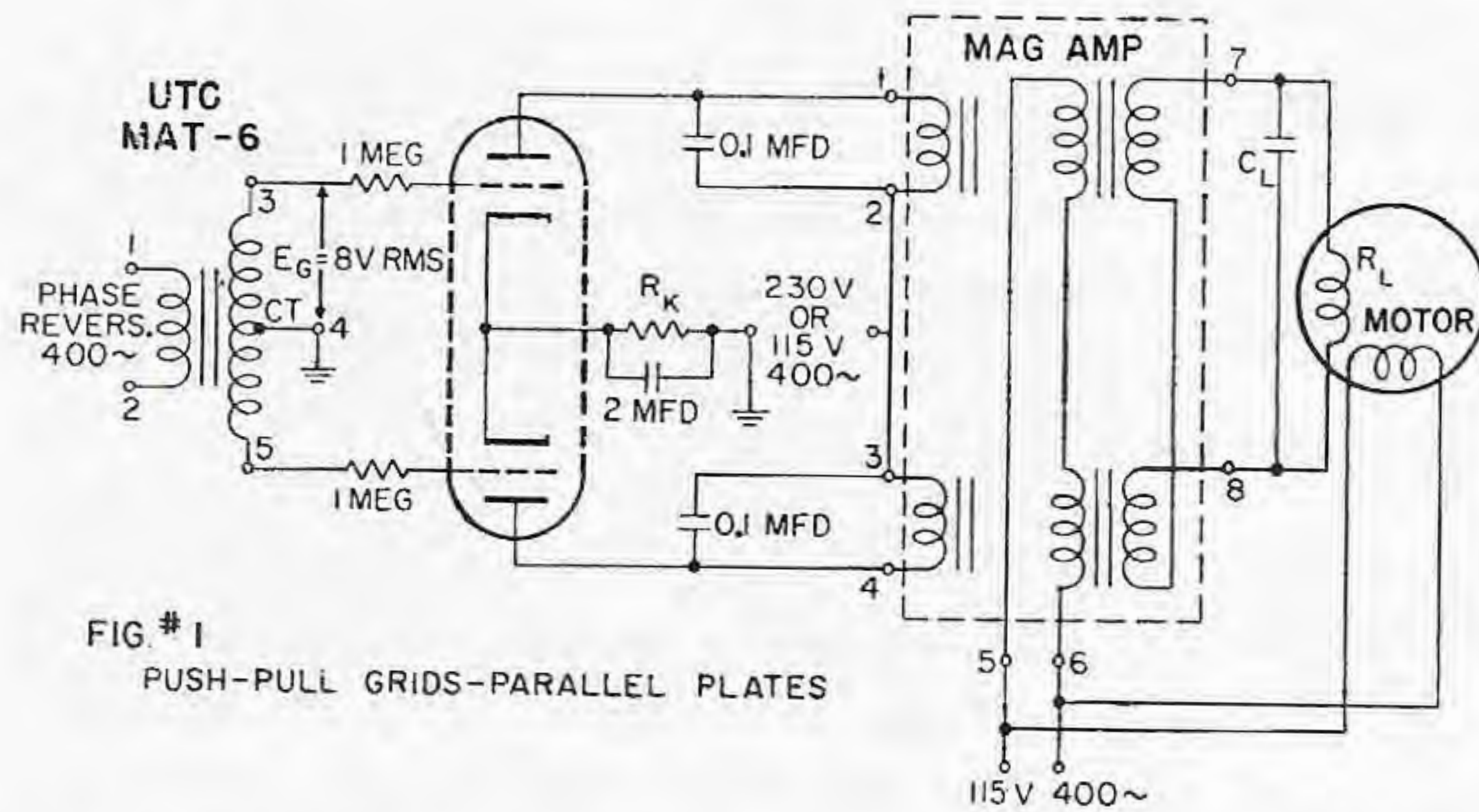
DIMENSIONS "H" SERIES PLATE AND FILAMENT TRANSFORMERS, INCHES

No. Type	A	B	C	D	E	F	G	H	J	K	Cutout	Cutout	Wgt. Lbs.
H-110	4 1/8	4	4 1/8	3 1/8	3	1/4-20	1 3/8			1 3/8	G 1 3/8 x 2 3/8	K 1 3/8 x 2 3/8	14
H-111	5 1/8	4 5/8	6 1/8	4 1/8	3 5/8	1/4-20		1 5/8	1 5/8		H 7/8 x 3 1/4	J 5/8 x 3	19
H-112	5 1/8	4 5/8	6 1/8	4 1/8	3 5/8	1/4-20		1 5/8	1 5/8		H 7/8 x 3 1/4	J 5/8 x 3	19
H-113	6	5 1/8	6 3/4	5	4 3/8	1/4-20	1 1/8			1 1/8	G 3/4 x 2 7/8	K 1 3/8 x 3 1/2	27
H-114	6 3/4	6 1/2	8	5 5/8	5 3/8	3/8-16					top term.		51
H-115	6 3/4	6 1/2	8	5 5/8	5 3/8	3/8-16					top term.		48 1/2
H-116	9 3/4	8 1/2	10 1/4	7 3/4	7 1/4	3/8-16(6)					top term.		95
H-117	11	11	14 3/4	8 3/8	8 3/8	5/8-11					top term.		160
H-120	2 3/4	2 3/8	2 1/8	2 1/8	1 3/4	6-32		5/16	3/8		H 3/4 x 1 1/8	J 9/16 x 2	2 1/2
H-121	3 9/16	3 1/8	3 7/8	2 5/8	2 1/8	8-32	5/8			1/8	G 5/8 x 2	K 1 3/8 x 2 1/8	4 1/2
H-122	3 1/8	3 3/8	4 5/8	3	2 7/8	10-32	1			3/16	G 5/8 x 2	K 1 3/8 x 2 1/8	6
H-123	5 1/8	4 5/8	5 1/2	4 1/8	3 5/8	1/4-20					3 1/4 x 4 3/8	centered	13
H-124	2 5/16	2 1/8	2 1/2	1 1/8	1 7/8	6-32		3/8	7/16		H 9/16 x 1 1/4	J 1/2 x 1 3/8	2
H-125	3 1/8	3 3/8	4 5/8	3	2 7/8	10-32	1			3/16	G 5/8 x 2	K 1 3/8 x 2 1/8	6
H-126	4 5/8	3 1/8	5 9/16	3 5/8	2 1/8	10-32		7/8	5/16		H 1 3/8 x 2 5/8	J 1 3/8 x 2 3/8	10
H-127	5 1/8	4 5/8	5 1/2	4 1/8	3 5/8	1/4-20					top term.		17
H-128	6 1/2	5 1/2	7 3/4	5 3/8	4 3/8	3/8-16					top term.		34
H-129	6 1/2	5 1/2	7 3/4	5 3/8	4 3/8	3/8-16					top term.		28
H-130	1 5/8	1 5/8	2 3/8	1 3/16	1 3/16	6-32					1 1/4 Dia.	centered	.65
H-131	2 5/16	2 1/8	2 1/2	1 1/8	1 7/8	6-32		3/8	3/8		H 9/16 x 1 1/4	J 9/16 x 1 1/4	1 1/2
H-132	3 9/16	3 1/8	4 7/8	2 5/8	2 1/8	8-32					2 3/8 x 2 1/8	centered	6
H-133	3 1/8	2 5/8	3 3/16	2 19/64	1 55/64	8-32		5/8	5/8		H 5/8 x 1 5/8	J 5/8 x 2	3 1/2
H-134	3 1/8	2 5/8	4 1/4	2 19/64	1 55/64	8-32		3/8	3/8		H 3/4 x 1 5/8	J 5/8 x 2	4 1/2
H-135	3 9/16	3 1/8	3 7/8	2 5/8	2 1/8	8-32	1 5/8			3/4	G 3/4 x 1 3/4	K 7/8 x 1 5/8	6
H-136	4 5/8	3 1/8	5 9/16	3 5/8	2 1/8	10-32					2 7/8 Dia.	centered	11



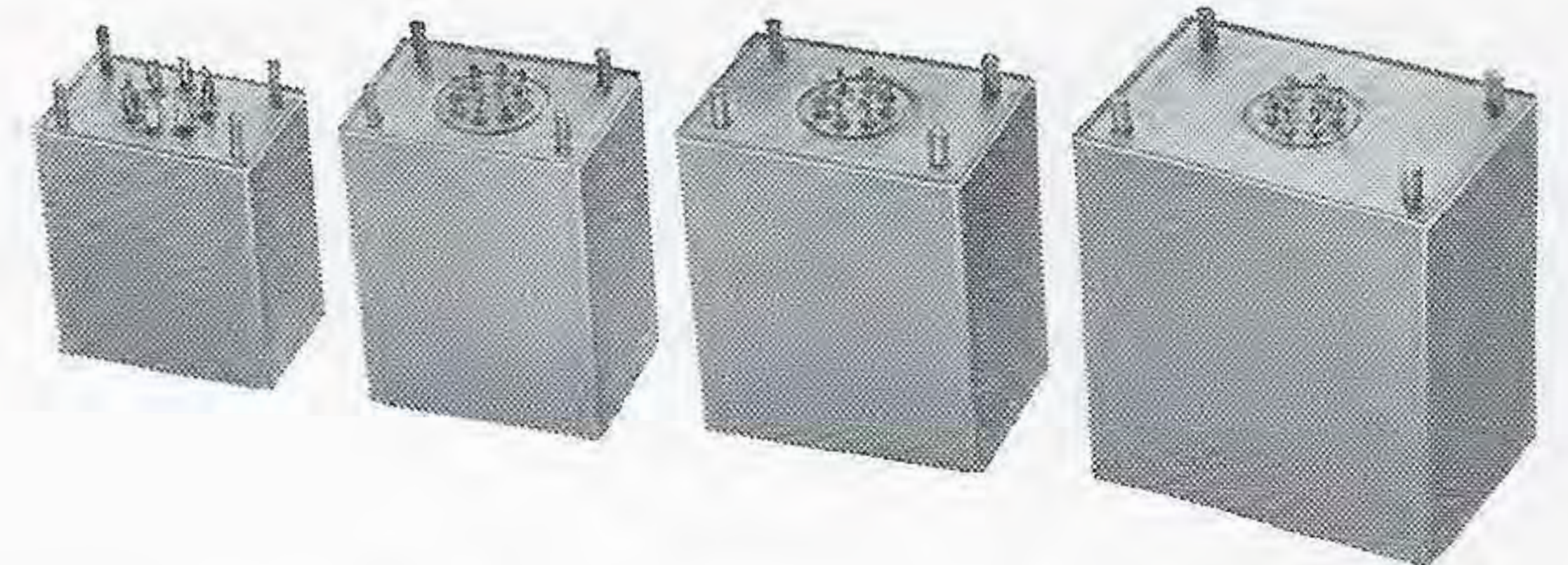
MAGNETIC AMPLIFIERS FOR SERVO MOTOR APPLICATIONS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF4SY40YY



The MAT 1-4 Magnetic Amplifiers are exceptionally stable units designed for the control of 2 phase, 115V., 400 cycle servo motors. They are compact . . . hermetically sealed . . . magnetically shielded . . . and meet MIL-T-27 and MIL-E-5400 Specifications. The output is sinusoidal, amplitude variable, and phase reversible. Control is provided by a dual triode such as 12AU7 operating with a plate voltage of 115 volts, 400 cycles, or higher. The signal to the triode grids can be polarity reversible DC or phase reversible 400 cycles with or without suppressed carrier modulation. These units eliminate DC power requirements as well as temperature sensitive dry disc rectifiers. The high input impedance provides minimum loading on sensing elements and high power gain. Ringing at low load level has been reduced to a minimum through high internal damping factors. The power output figures are conservative . . . power gain of the MAGNETIC STRUCTURE is approximately 40 . . . response time approximately 7.5 milliseconds. The maximum null voltage is 3 volts RMS. For single phase supply voltage the load capacitor should effect 90° phase shift with motor load . . . for 3 phase, 30° phase shift. (The chart values shown are approximate.)

For AC signal control the circuit of Figure 1 is employed. For DC signal control Figure 2 applies. Figure 3 shows the use of a power transformer (MAT-5) which provides higher plate voltages (230 volt supply data of chart) and eliminates the input transformer (MAT-6). The typical response curve of Figure 4 applies to all units, the larger units feeding heavier loads.



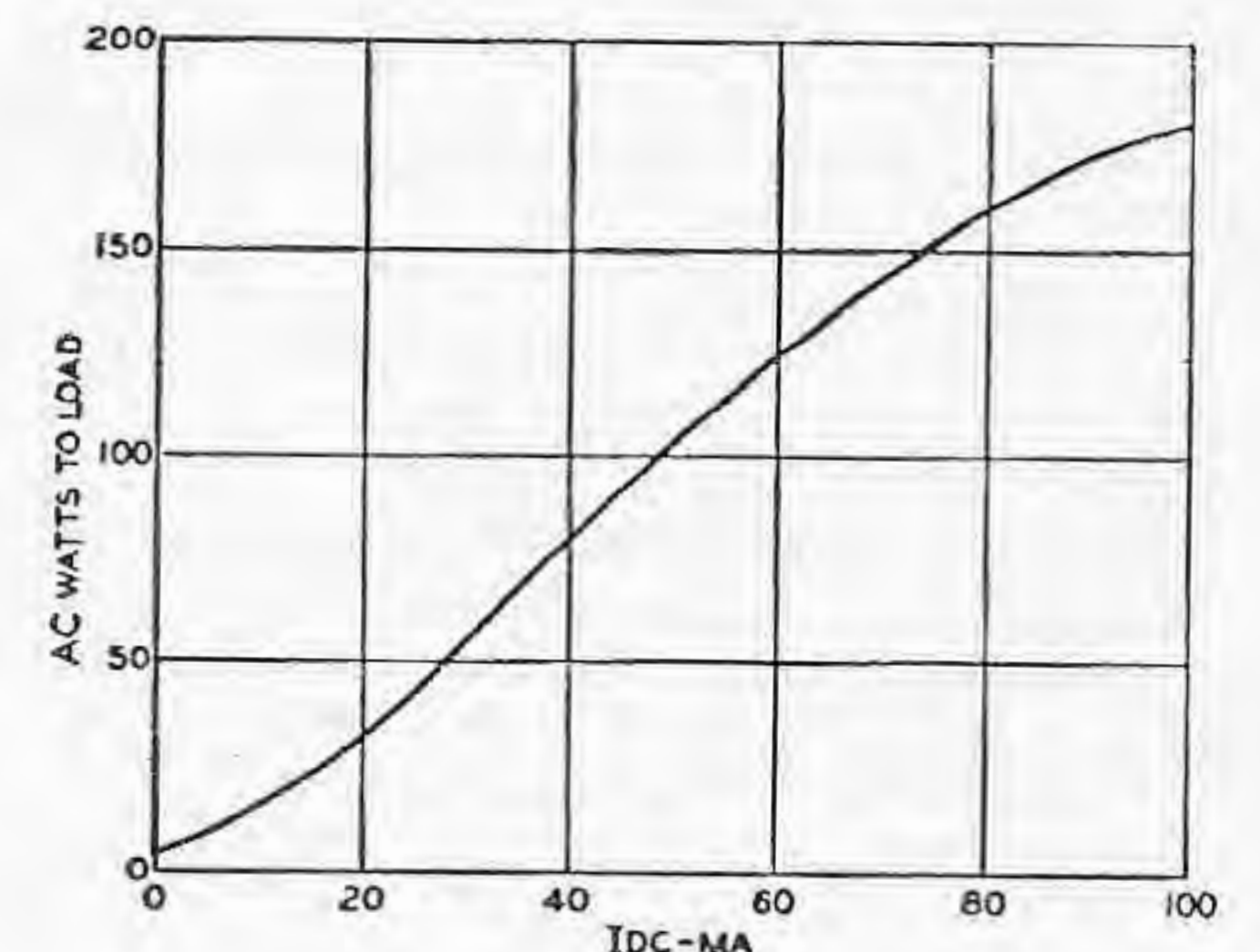
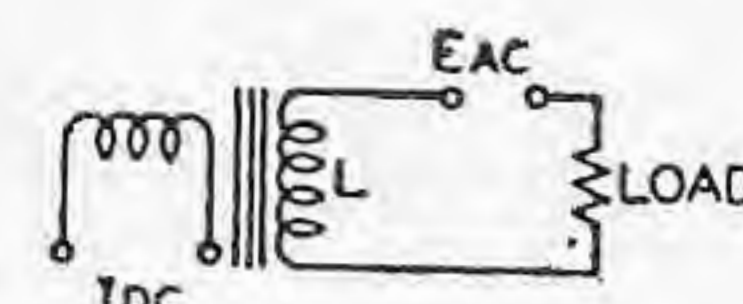
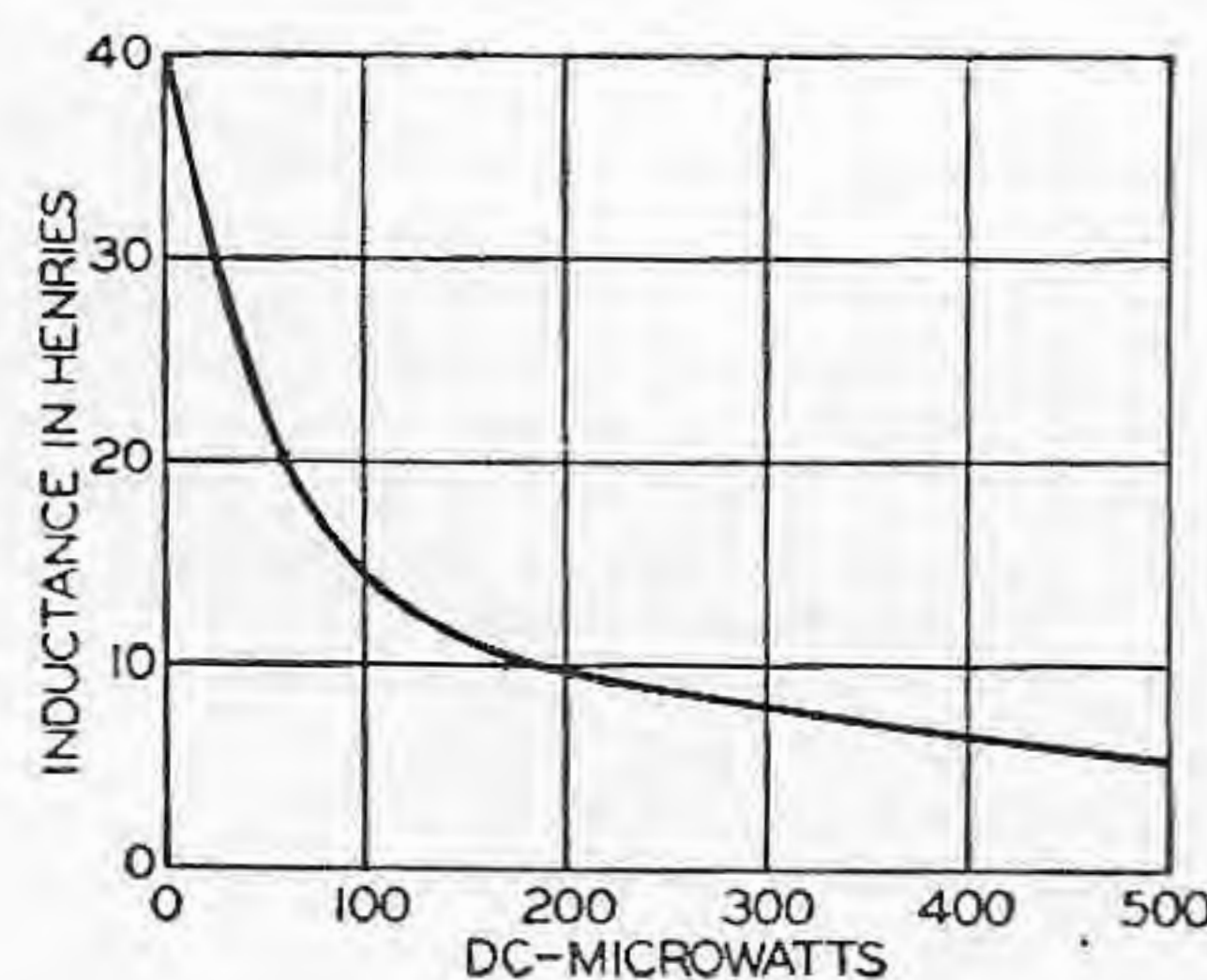
Type No.	MAT-1	MAT-2	MAT-3	MAT-4
230 Volt Supply				
Power output	4 W.	8 W.	11 W.	18 W.
RL, ohms	3300	1600	1200	720
CL, mfd.	.2	.3	.5	.7
115 Volt Supply				
Power output	2 W.	4 W.	6 W.	9 W.
RL, ohms	6500	3300	2200	1450
CL, mfd.	.13	.2	.3	.45
Reson. Freq.	40 cyc.	35 cyc.	35 cyc.	20 cyc.
Log-Decr.	.18	.23	.03	.65
Cont. Wdg. Res.	6200 ohms	8450 ohms	4750 ohms	5650 ohms
Case				
Length, in.	1 1/4	1 1/2	1 3/4	2 1/8
Width, in.	1 1/8	2 1/8	2 1/2	3 1/8
Height, in.	2 3/8	2 3/4	2 1/2	3 3/8
Mtg. Dim., in.	1 1/8 x 1 1/2	1 x 1 5/8	1 1/8 x 1 7/8	1 1/2 x 2 1/2
Studs, stainless	4-40	6-32	8-32	8-32
Cutout, in.	1	1	1	1
Unit Weight, lbs.	.67	1.1	1.7	2.75
MAT-5 115V.-400 cyc. to 460 VCT; provides 230V. 48 MA DC or 460V. 24 MA DC. RC-37 Case . . . 1 3/8 x 1 3/8 x 1 5/8 . . . 1/8 mtg. holes 1 1/8 x 1 1/8 . . . 6 oz. MIL type TF4SY02YY.				
MAT-6 Input . . . 10,000 ohms pri. . . 1:15 C.T. ratio . . . phase shift under 1° . . . RC-25 case. MIL type TF4RX10YY.				

SPECIAL MAGNETIC AMPLIFIERS AND SATURABLE REACTORS

UTC manufactures a wide variety of saturable reactors, magnetic amplifiers, and other saturable devices, to customers specifications. Power frequency ranges run from microwatts to 5KVA. High frequency units range from kilocycles to 100 MC. The curves below illustrate a few of the special units available.

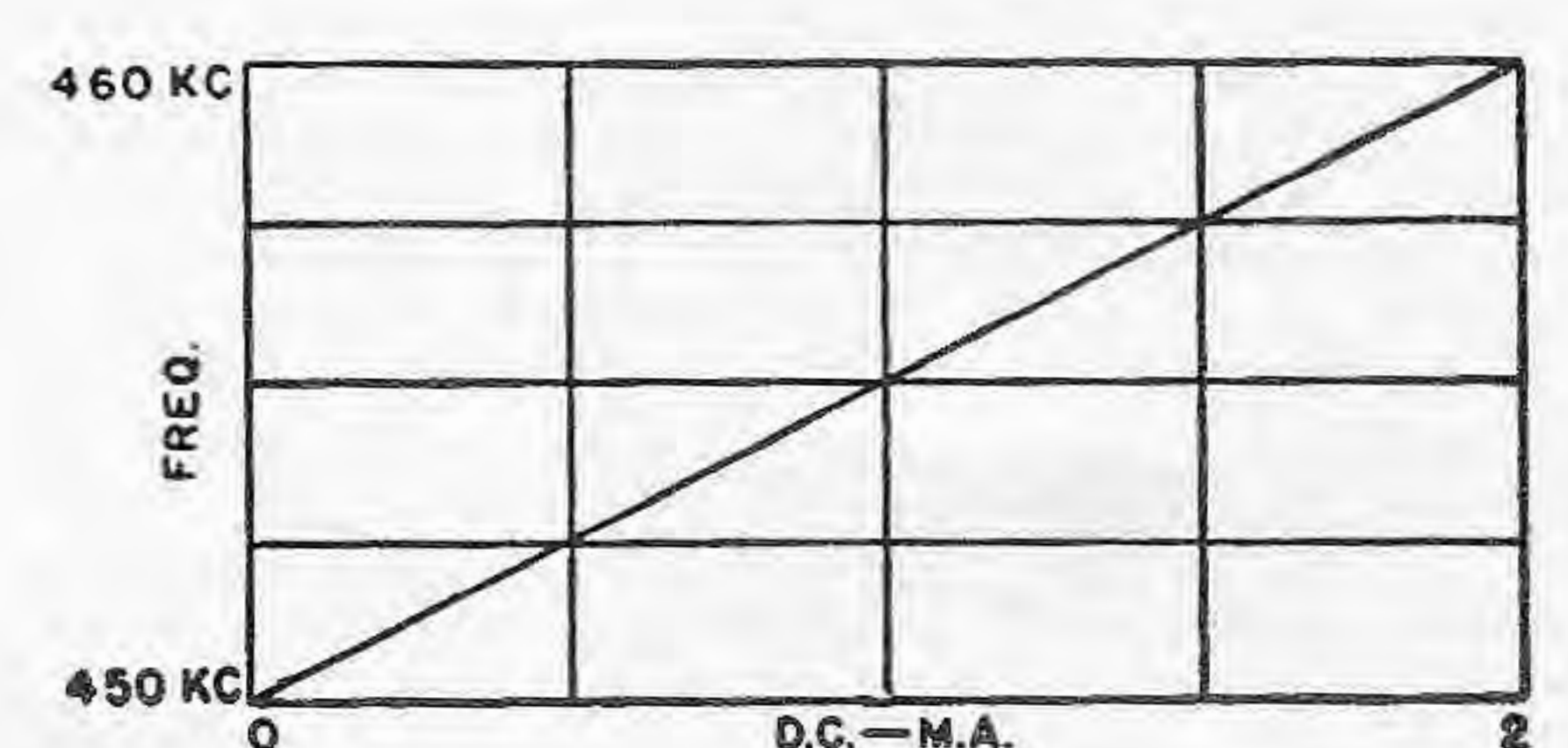
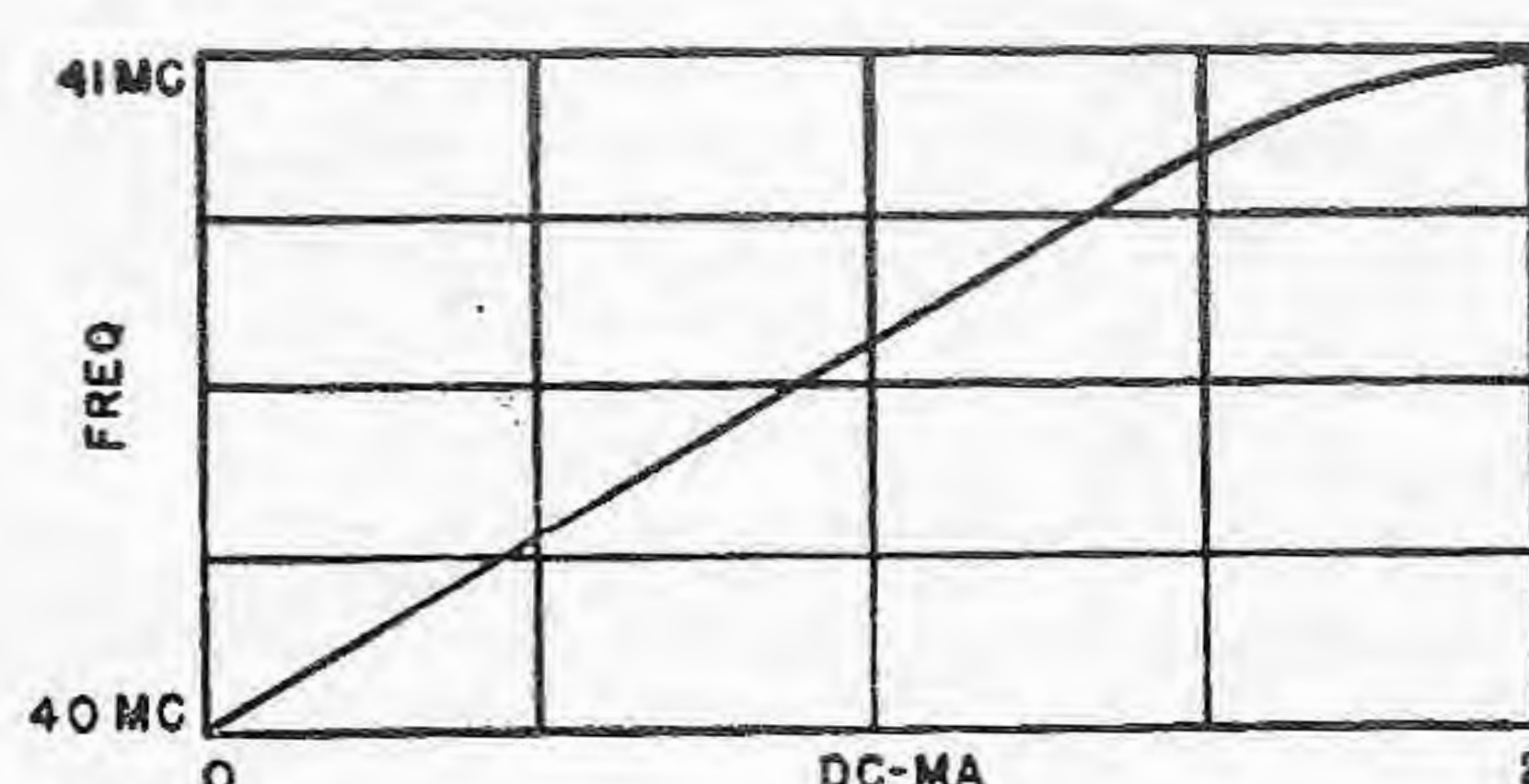
MAGNETIC AMPLIFIERS

Magnetic amplifiers are used extensively for both power control and phase control. The left curve shown is that of a sensitive saturable reactor structure controllable with powers below .5 milliwatt. The right curve is that of a moderate size power control reactor indicating power to the load with saturating DC.



SATURABLE RF INDUCTORS

The curves at right illustrate oscillator frequency variation using two types of RF inductors varied by the amount of DC through the controlled windings. These units are available in Ouncer size and smaller.

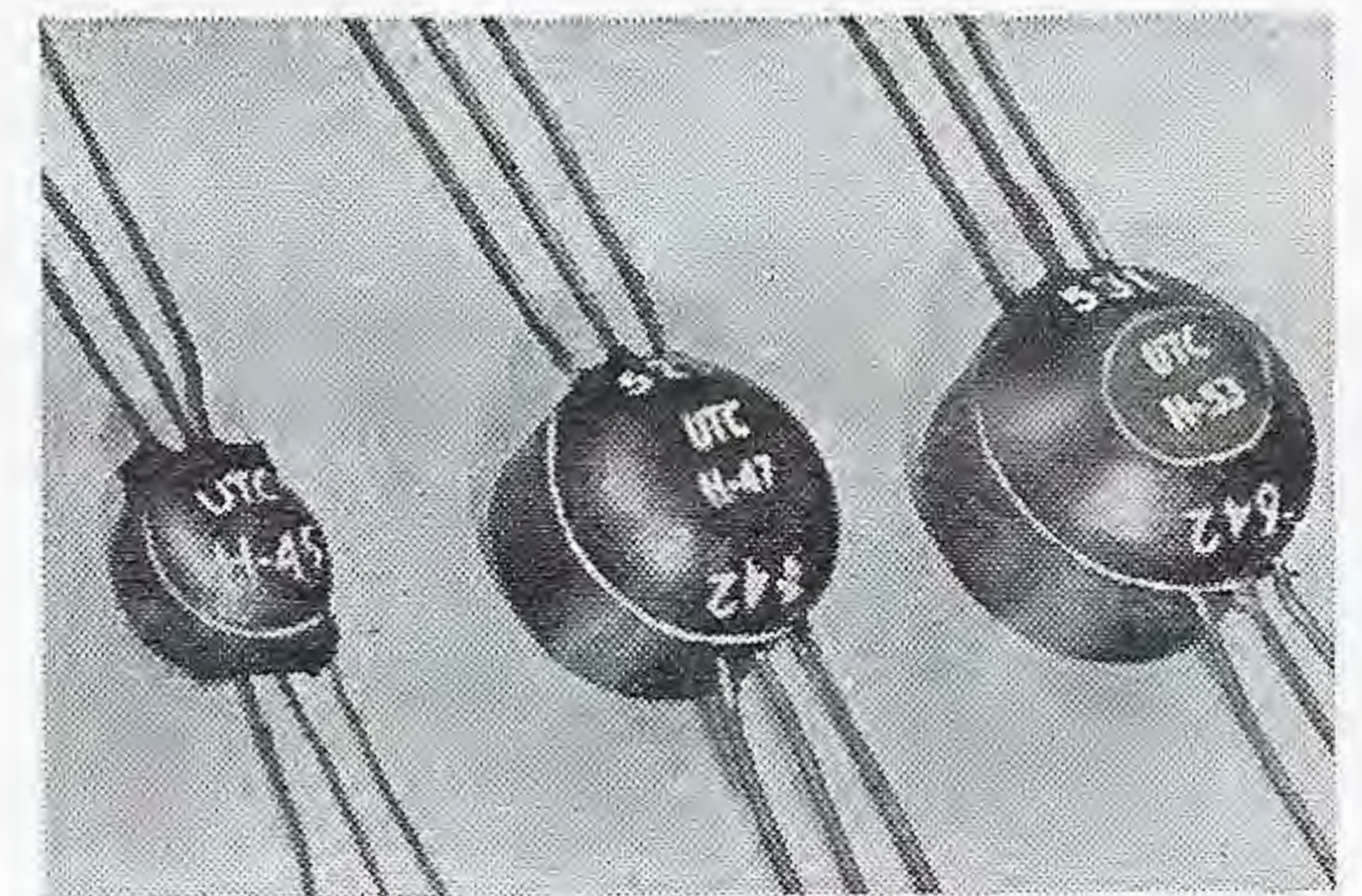
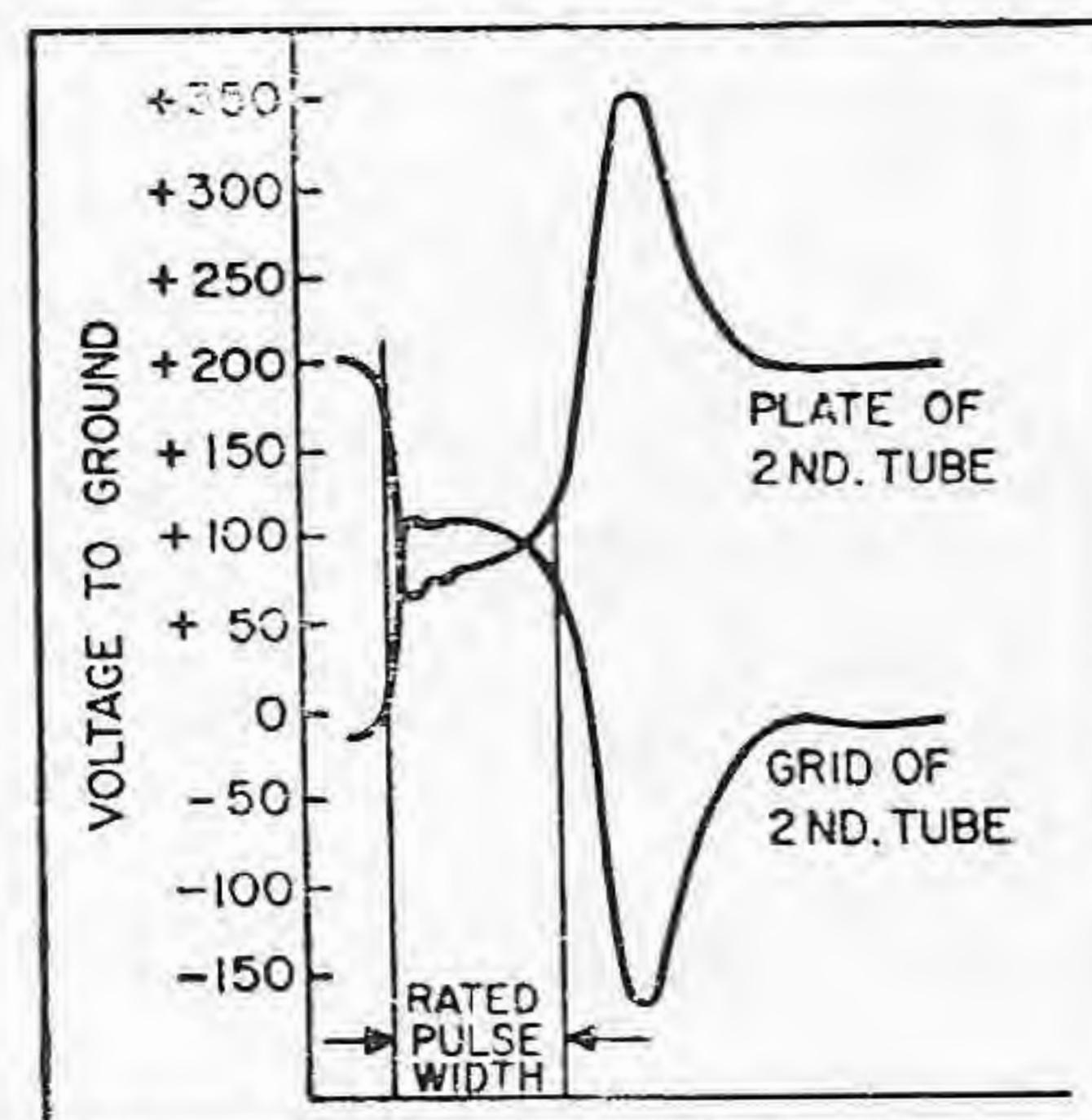
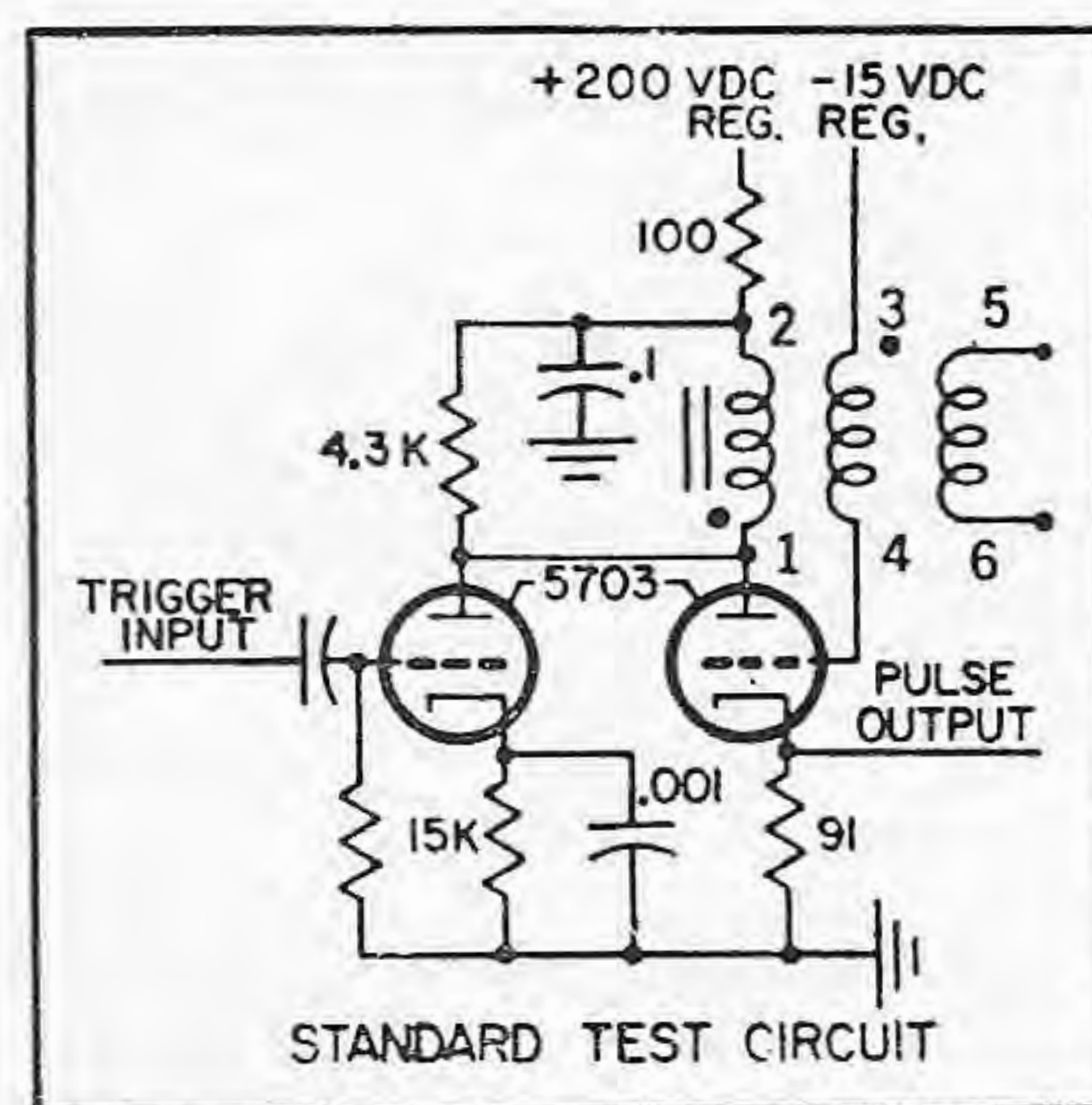
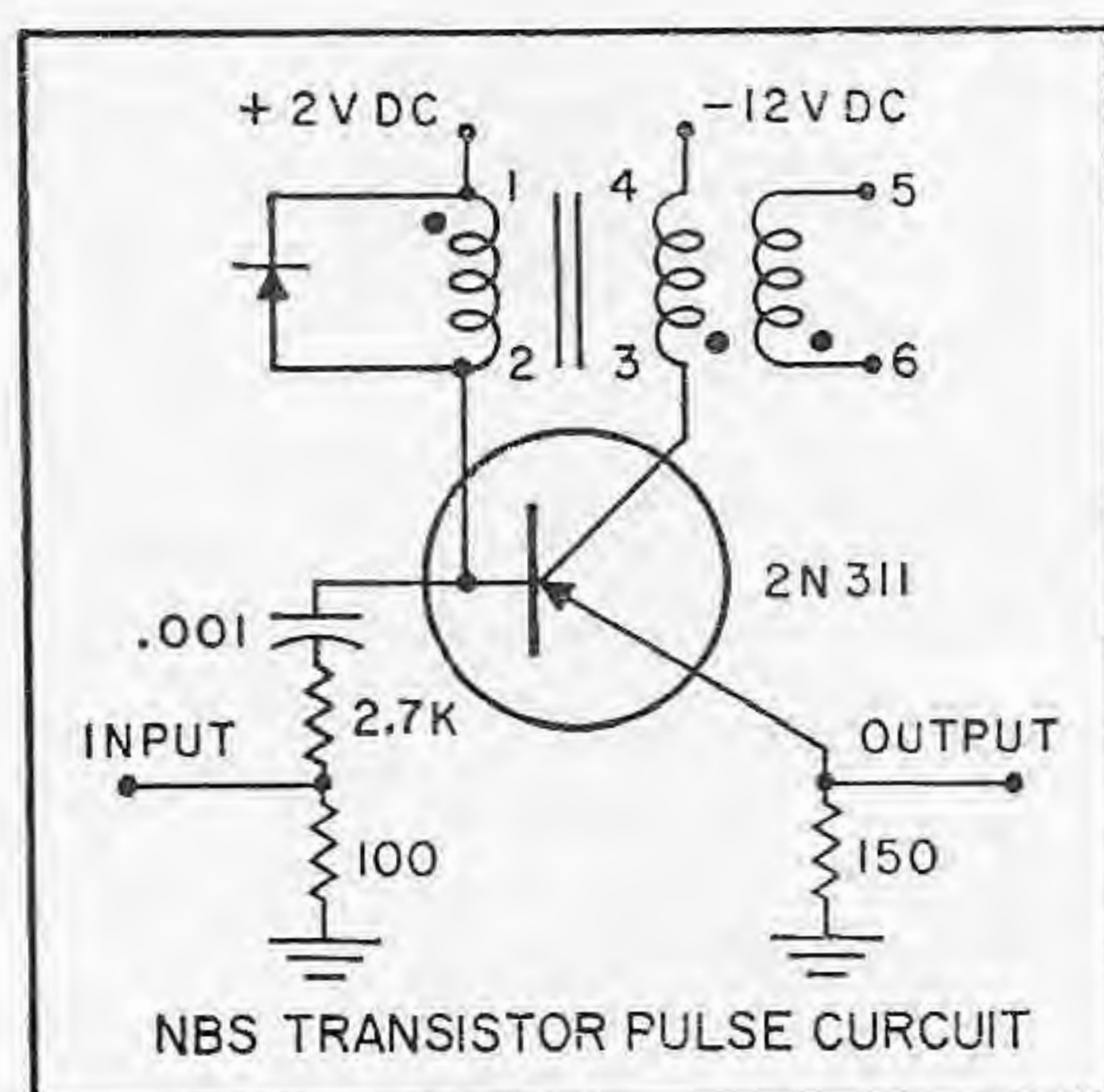


MINIATURE WIDE APPLICATION PULSE TRANSFORMERS

Hermetically sealed to MIL-T-27A Specs., see back cover . . . all units MIL type TF5SX36ZZ

UTC miniature, wound core, pulse transformers are precision, high reliability units, hermetically sealed by vacuum molding and suited for service from -70°C. to $+130^{\circ}\text{C.}$ Wound core structure provides excellent temperature stability (unlike ferrite). Designs are **high inductance type** to provide **minimum of droop** and assure **true pulse width**, as indicated on chart below. If used for coupling circuit where **minimum rise time** is important, use next lowest type number. Rise time will be that listed for this lower type number . . . droop will be that listed multiplied by ratio of actual pulse width to value listed for this type number. Blocking oscillator data listed is obtained in **standard test circuit** shown. Coupling data was obtained with H. P. 212A generator (correlated for H-55,56,57) and source/load impedances shown.

	APPROX. DCR, OHMS			BLOCKING OSCILLATOR PULSE					COUPLING CIRCUIT CHARACTERISTICS						DIMENSIONS			
Type No.	1-2	3-4	4-5	Width μ Sec.	Rise Time	% Over Shoot	Droop %	% Back Swing	P. Width μ Sec.	Volts Out	Rise Time	% Over Shoot	Droop %	% Back Swing	Imp. in, out, ohms	L In.	W In.	Wt. Grams
H-45	3	3.5	4	.05	.022	0	20	10	.05	17	.01	20	0	35	250	3⁄8	3⁄8	1
H-46	5.5	6.5	7	.10	.024	0	25	10	.10	19	.01	30	10	50	250	3⁄8	3⁄8	1
H-47	3.7	4.0	4	.20	.026	0	25	8	.20	18	.01	30	15	65	500	1⁄16	5⁄8	4
H-48	5.5	5.8	6	.50	.03	0	20	5	.50	20	.01	30	20	65	500	1⁄16	5⁄8	4
H-49	8	8.5	9	1	.04	0	20	10	1	24	.02	15	15	65	500	1⁄16	5⁄8	4
H-50	20	21	22	2	.05	0	20	10	2	27	.05	10	15	35	500	1⁄16	5⁄8	4
H-51	28	31	33	3	.10	1	20	8	3	26	.07	10	10	35	500	1⁄16	5⁄8	4
H-52	36	41	44	5	.13	1	25	8	5	23	.15	10	10	45	1000	1⁄16	5⁄8	4
H-53	37	44	49	7	.28	0	25	8	7	24	.20	10	10	50	1000	5⁄8	5⁄8	6
H-54	50	58	67	10	.30	0	20	8	10	24	.25	10	10	50	1000	5⁄8	5⁄8	6
H-55	78	96	112	16	.75	0	20	10	16	23	.40	5	15	20	1000	5⁄8	5⁄8	6
H-56	93	116	138	20	1.25	0	25	10	20	23	.6	5	10	10	1000	5⁄8	5⁄8	6
H-57	104	135	165	25	2.0	0	30	10	25	24	1.5	5	10	10	1000	5⁄8	5⁄8	6
H-58	Pulse transformer kit. Consists of one of each of the above units in a partitioned plastic case. Ideal for the laboratory.																	

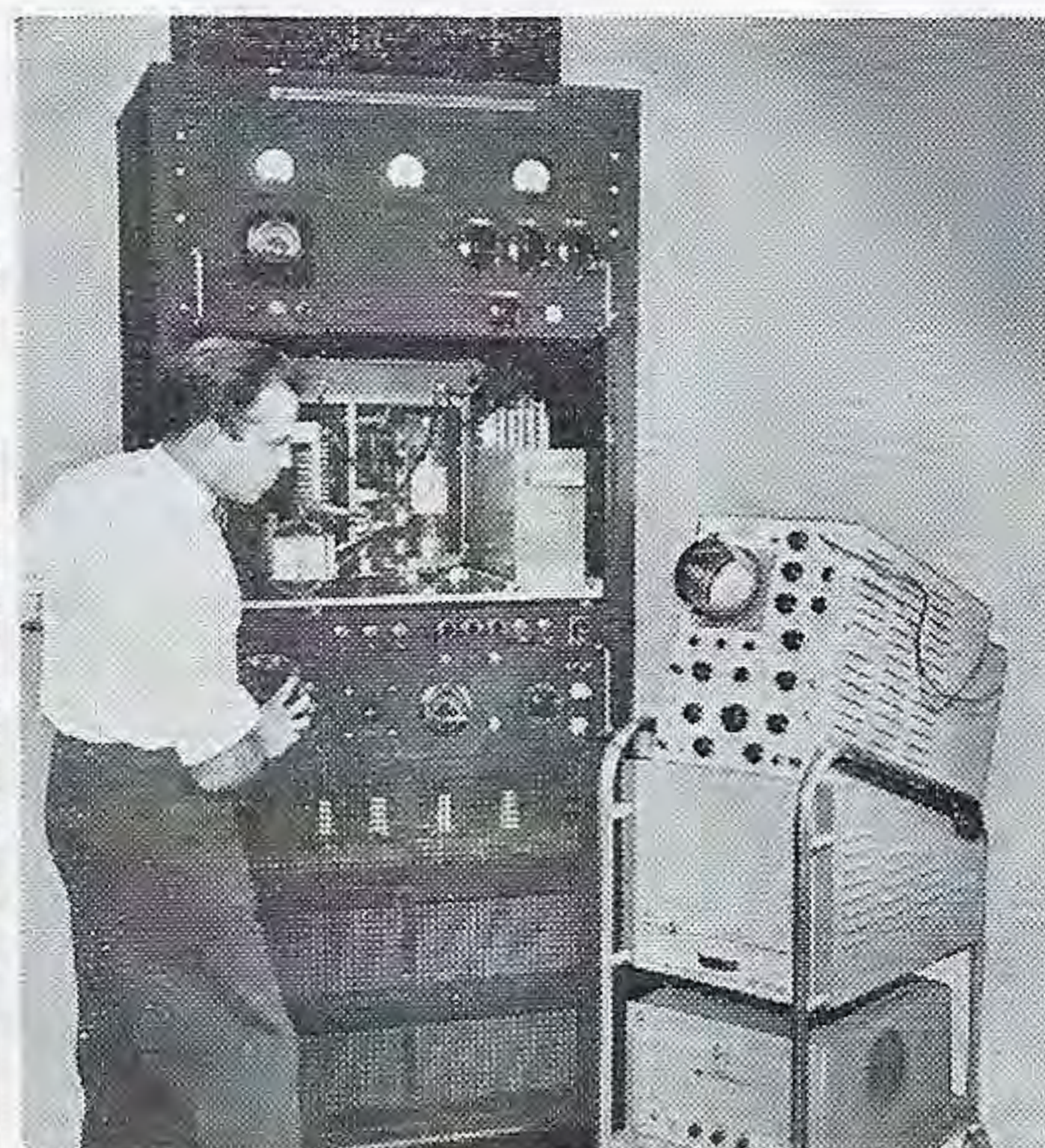


SPECIAL PULSE TRANSFORMERS

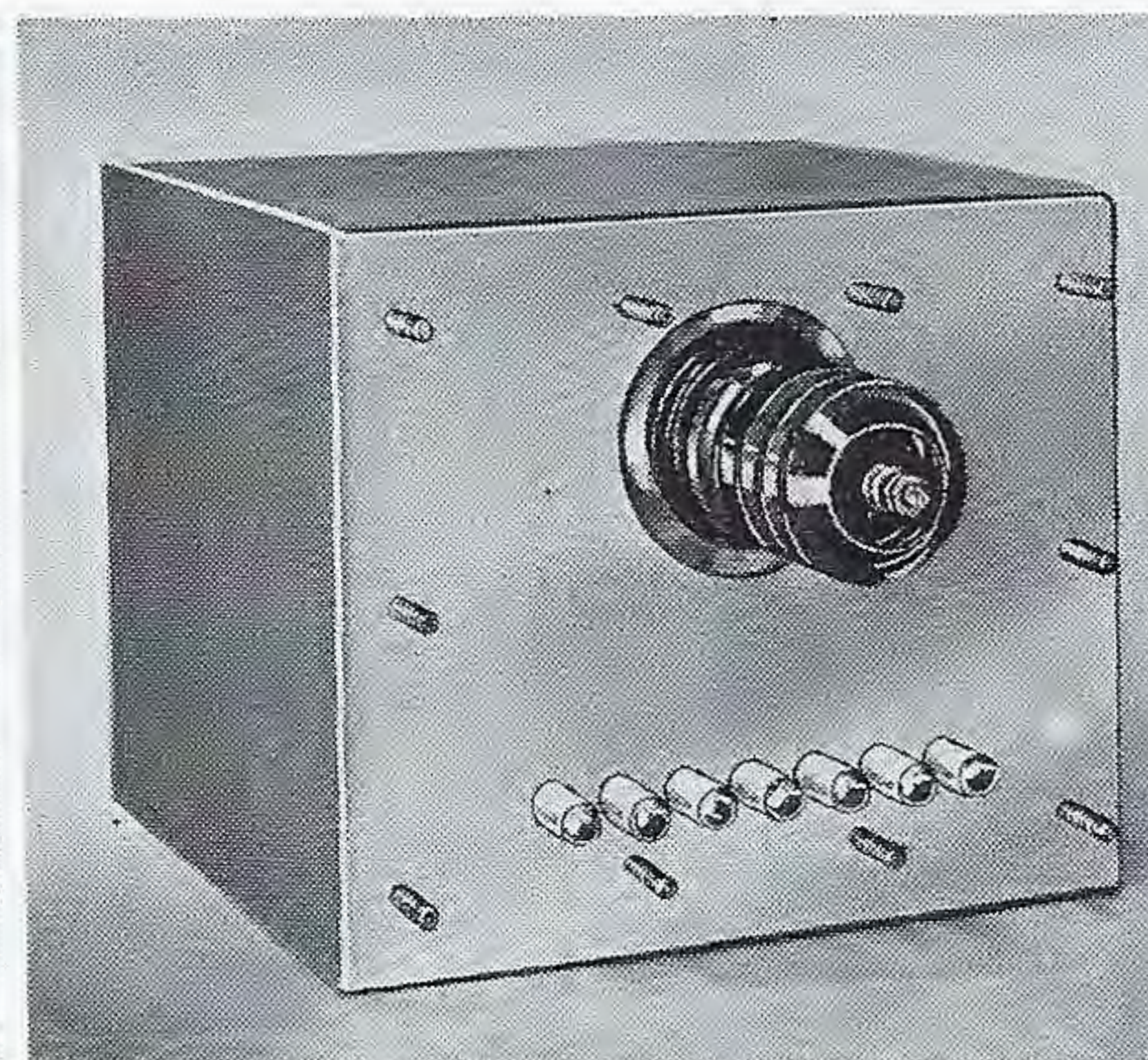
UTC supplies to manufacturers a complete range of pulse transformers from 1/10th ounce blocking oscillator units to resonant charging inductors and pulse transformers up to 10 megawatts peak power . . . pulse lengths from .1 to 100 microseconds. Units are designed to MIL-T-27A or special airborne requirements. Each unit is 100% tested in a setup simulating actual use and fully proved to meet all requirements. All inquiries for special pulse units should include the full circuit details as well as the desired performance characteristics.



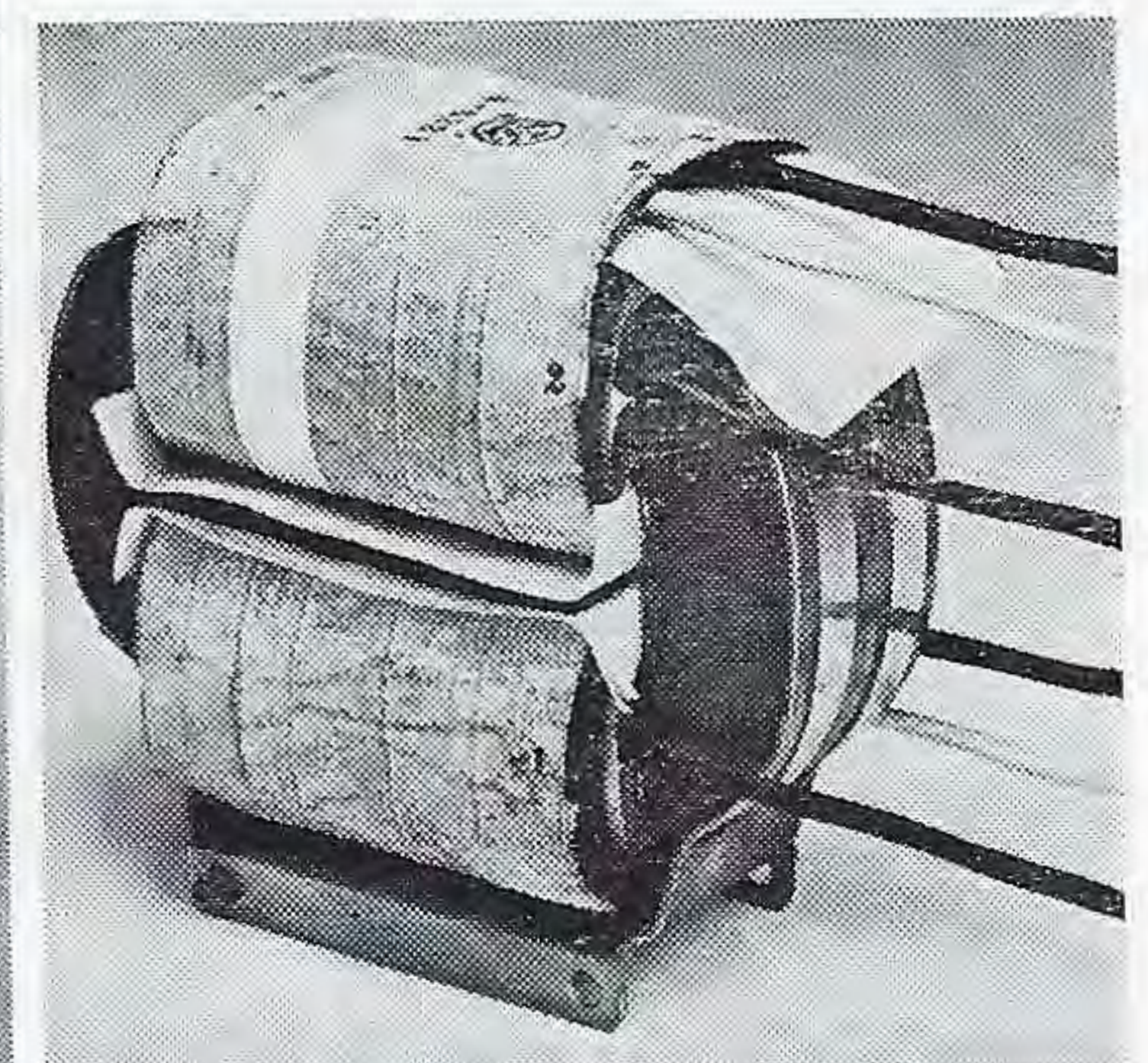
Testing small pulse transformers.



Testing large pulse transformers.



Output transformers for positioning servo-motor of radar antenna.



High power pulse transformer ready for oil filled housing.

HERMETIC AUDIO COMPONENTS

Hermetically sealed to MIL-T-27A Specs., see back cover.

For twenty-five years UTC has been the largest supplier of transformer components for military applications, to customer specifications. Listed below are a number of types, to MIL-T-27A specifications, which are now catalogued as UTC stock items. All units employ glass bead headers or terminals. For printed circuit use, wire terminals on glass header units can be straightened out without injury. Straight wire terminals available on production orders as well as flat ($\frac{7}{8} \times \frac{23}{32} \times \frac{5}{16}$) case for SM units.

The frequency response ratings are based on military requirements. Actually, most of the units that do not carry DC are appreciably better in response than the range shown. For example, H-1, H-3, H-5, H-8 are within 2db from 30 to 20,000 cycles.

The level ratings are maximum level for reasonable distortion at the lowest frequency specified. For higher frequencies considerably higher levels are permissible. For example, the H-3 will handle +21dbm at 400 cycles.

The Impedance ratings are listed in standard manner. Transformers can be used for applications differing considerably from those shown, keeping in mind that impedance ratio is constant. Lower source impedance will improve response and level ratings . . . higher source impedance reduces them. Units may also be used reversed, input to secondary.

MINIATURE AUDIO UNITS...RC-25 CASE



RC-25 CASE

Length $1\frac{13}{32}$ "
Width $\frac{61}{64}$ "
Height $1\frac{1}{16}$ "
Mounting (slot centers) $1\frac{1}{8}$ to $1\frac{1}{32}$ "
Screws 4-40 Fil.
Cutout $\frac{7}{8}$ Dia.
Unit Weight 1.5 oz.

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Unbal. DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-1	Mike, pickup. line to grid	TF4RX10YY	50, 200 CT, 500 CT*	50,000	0	50-10,000	+ 5
H-2	Mike to grid	TF4RX11YY	82	135,000	50	250-8,000	+18
H-3	Single plate to single grid,	TF4RX15YY	15,000	60,000	0	50-10,000	+ 6
H-4	Single plate to single grid, DC in Pri.	TF4RX15YY	15,000	60,000	4	200-10,000	+14
H-5	Single plate to P.P. grids	TF4RX15YY	15,000	95,000 CT	0	50-10,000	+ 5
H-6	Single plate to P.P. grids, DC in Pri.	TF4RX15YY	15,000	95,000 split	4	200-10,000	+11
H-7	Single or P.P. plates to line	TF4RX13YY	20,000 CT	150/600	4	200-10,000	+21
H-8	Mixing and matching	TF4RX16YY	150/600	600 CT	0	50-10,000	+ 8
H-9	82/41:1 input to grid	TF4RX10YY	150/600	1 meg.	0	200-3,000 (4 db.)	+10
H-10	10:1 single plate to 1 grid.	TF4RX15YY	10,000	1 meg.	0	200-3,000 (4 db.)	+10
H-11	Reactor	TF4RX20YY	300 Henries-0 DC, 50 Henries-3 Ma. DC, 6,000 Ohms.				
H-12	Mike, line to PP grids	TF4RX10YY	50,200 CT, 500 CT*	50,000 CT	0	50-10,000	+ 5
H-13	Trasistor Interstage	TF4RX13YY	10K/2.5K, Split	2K/.5K split	4	100-10,000	+20
H-14	Transistor Interstage	TF4RX13YY	10K/2.5K, Split	4K/1K split	4	100-10,000	+20
H-15	Transistor to line	TF4RX13YY	1,500 CT	500/125 split	8	100-10,000	+20
H-16	Transistor to V.C.	TF4RX13YY	2,000 CT 4,000 CT	8 16	4	100-10,000	+20

COMPACT AUDIO UNITS...RC-50 CASE



RC-50 CASE

Length $1\frac{5}{8}$ "
Width $1\frac{5}{8}$ "
Height $2\frac{5}{16}$ "
Mounting $1\frac{1}{16}$ "
Screws #6-32
Cutout $1\frac{1}{2}$ Dia.
Unit Weight 8 oz.

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Unbal. DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-19A	Line to grid, Balanced, 1:14 ratio. Multiple hi-permalloy (75 DB) shielding	IF4RX10YY	250 CT 500 CT	50,000 100,000 CT	0	30-20,000	+ 6
H-20	Single plate to 2 grids, can also be used for P.P. plates	TF4RX15YY	15,000 split	80,000 split	0	30-20,000	+12
H-21	Single plate to P.P. grids, DC in Pri.	TF4RX15YY	15,000	80,000 split	8	100-20,000	+23
H-22	Single plate to multiple line	TF4RX13YY	15,000	50/200, 125/500**	8	50-20,000	+23
H-23	P.P. plates to multiple line	TF4RX13YY	30,000 split	50/200, 125/500**	8 BAL.	30-20,000	+19
H-24	Reactor	TF4RX20YY	450 Hys.-0 DC, 250 Hys.-5 Ma. DC, 6000 ohms 65 Hys.-10 Ma. DC, 1500 ohms				
H-25	Mixing of transistors to line	TF4RX17YY	500 CT	500/125 split	20	40-10,000	+30
H-26	Transistor Interstage	IF4RX13YY	10,000/2,500 (split)	2,000/500 split	8	40-10,000	+30
H-27	Transistor to V.C.	TF4RX17YY	500 CT	16/4 split	20	40-10,000	+30
H-280	Transistor driver	TF4RX17YY	200 CT	400 Split	20	40-20,000	+30
H-281	Transistor to V.C.	TF4RX17YY	48 CT	16, 8, 4	750 BAL	40-20,000	5 WATTS
H-282	Transistor to V.C. RC-62 case, Pg. 29.	TF4RX17YY	20 CT	16, 8, 4	1000 BAL	40-20,000	10 WATTS
H-290	Chopper transf., electrost. & triple mag. shld.	TF4RX10YY	2,500 e.s. (1/2 Pri.)	100 K ratio 1:6.4	0	60-400	+ 5
H-291	Chopper transf., higher gain, 20 db better shielding. RC-62 case, Pg. 29.	TF4RX10YY	2,000/500 e.s. (1/2 Pri.)	312K ratio 1:25/12.5	0	60-400	+10

SUBMINIATURE AUDIO UNITS...SM CASE



SM CASE

Length $\frac{11}{16}$ "
Width $\frac{1}{2}$ "
Height $\frac{29}{32}$ "
Screw 4-40 Fil.
Unit Weight8 oz.

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	Unbal. DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-30	Inqut to grid	TF4RX10YY	50***	62,500	0	150-10,000	+13
H-31	Single plate to 1 grid, 3:1	TF4RX15YY	10,000	90,000	0	300-10,000	+13
H-32	Single plate to line	TF4RX13YY	10,000****	200	3	300-10,000	+13
H-33	Single plate to low imp.	TF4RX13YY	30,000	50	1	300-10,000	+15
H-35	Reactor	TF4RX20YY	100 Henries-0 DC, 50 Henries-1 Ma. DC, 4,400 ohms.				
H-36	Transistor Interstage	TF4RX15YY	25,000 (DCR800)	1,000 (DCR110)	.5	300-10,000	+10
H-37A	Transistor output	TF4RX15YY	500 (DCR50) CT	50 (DCR5)	3.5	300-10,000	+15
H-38	Transistor Interstage	TF4RX13YY	10,000 CT (DCR600)	1,200 CT	2	300-10,000	+15
H-39	Transistor Interstage	TF4RX13YY	10,000 CT (DCR600)	2,000 CT	2	300-10,000	+15
H-40A	Transistor output	TF4RX17YY	500 CT (DCR26)	600 CT	10	300-10,000	+15
H-41A	Transistor output	TF4RX13YY	1,500 CT (DCR71)	600 CT	7	300-10,000	+15

* 200 ohm termination can be used for 150 ohms or 250 ohms. 500 ohm termination can be used for 600 ohms

** 200 ohm termination can be used for 150 ohms or 250 ohms, 125/500 ohm termination for 150/600 ohms.

*** Can be used with higher source impedances, with corresponding reduction in frequency range. With 200 ohm source, impedance becomes 250,000 ohms . . . loaded response is -4 db at 300 cycles.

**** Can be used for 500 ohm load . . . 25,000 ohm primary impedance . . . 1.5 Ma. DC.

UTC DO-T and DI-T TRANSFORMERS

REVOLUTIONARY TRANSISTOR* TRANSFORMERS, hermetically sealed to MIL-T-27A Specs., see back cover.

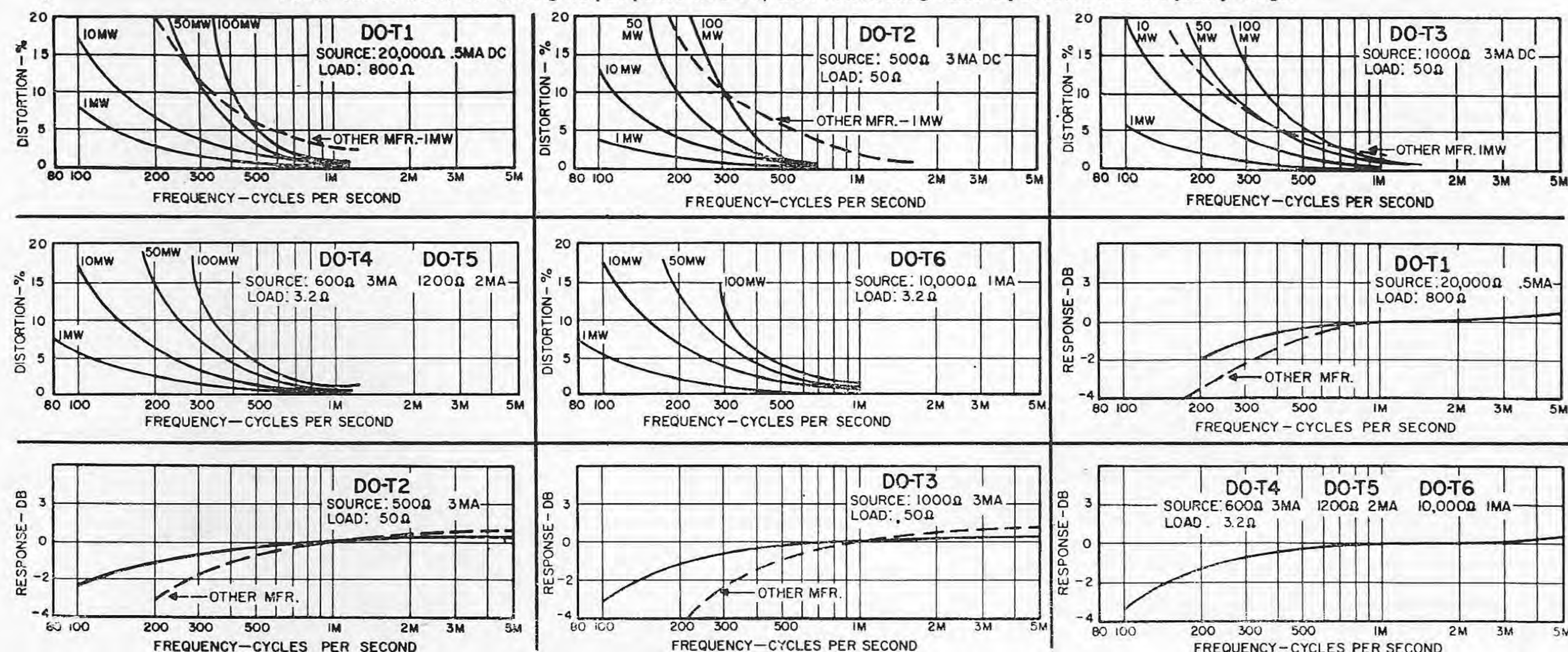
To fully appreciate DO-T transistor transformers, the curves below indicate their performance compared to that of similar size units now on the market. DI-T transformers are still smaller in size. Power rating and other characteristics are identical to DO-T, but low frequency response (3 db down point) is 30% higher in frequency.

Units can be used for different impedances than those shown, keeping in mind that impedance ratio is constant. Lower source impedance will improve response and level ratings . . . higher source will reduce them. Units may be used reversed, input to secondary. Available with leads at both ends on production order. If clip mounted, use Augat #6009-8A clip.

DO-T No.	MIL Type	Application	Pri. Imp.	D.C. Ma.† in Pri.	Sec. Imp.	Pri. Res.	Level Mw.	DI-T No.
DO-T1	TF4RX13YY	Interstage	20,000 30,000	.5 .5	800 1200	850	50	
DO-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	100	DI-T2
DO-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	100	DI-T3
DO-T4	TF4RX17YY	Output	600	3	3.2	60	100	
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	100	
DO-T6	TF4RX13YY	Output	10,000	1	3.2	1000	100	
DO-T7	TF4RX16YY	Input	200,000	0	1000	8500	25	
DO-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC, 1 Hy @ 5 Ma. DC (DI-T8 is 2.5 Hy @ 2 Ma.)				630		DI-T8
DO-T9	TF4RX13YY	Output or driver	10,000 12,500	1 1	500 CT 600 CT	800	100	DI-T9
DO-T10	TF4RX13YY	Driver	10,000 12,500	1 1	1200 CT 1500 CT	800	100	DI-T10
DO-T11	TF4RX13YY	Driver	10,000 12,000	1 1	2000 CT 2500 CT	800	100	DI-T11
DO-T12	TF4RX17YY	Single or PP output	150 CT 200 CT	10 10	12 16	11	500	
DO-T13	TF4RX17YY	Single or PP output	300 CT 400 CT	7 7	12 16	20	500	
DO-T14	TF4RX17YY	Single or PP output	600 CT 800 CT	5 5	12 16	43	500	
DO-T15	TF4RX17YY	Single or PP output	800 CT 1070 CT	4 4	12 16	51	500	
DO-T16	TF4RX13YY	Single or PP output	1000 CT 1330 CT	3.5 3.5	12 16	71	500	
DO-T17	TF4RX13YY	Single or PP output	1500 CT 2000 CT	3 3	12 16	108	500	
DO-T18	TF4RX13YY	Single or PP output	7500 CT 10,000 CT	1 1	12 16	505	500	
DO-T19	TF4RX17YY	Output to line	300 CT	7	600	19	500	DI-T19
DO-T20	TF4RX17YY	Output or matching to line	500 CT	5.5	600	31	500	DI-T20
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	500	
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	500	DI-T22
DO-T23	TF4RX13YY	Interstage	20,000 CT 30,000 CT	.5 .5	800 CT 1200 CT	850	100	DI-T23
DO-T24	TF4RX16YY	Input (usable for chopper service)	200,000 CT	0	1000 CT	8500	25	
DO-T25	TF4RX13YY	Interstage	10,000 CT 12,000 CT	1 1	1500 CT 1800 CT	800	100	
DO-T26	TF4RX20YY	Reactor 6 Hy. @ 2 Ma. DC, 1.5 Hy. @ 5 Ma. DC				2100		
DO-T27	TF4RX20YY	Reactor 1.25 Hy. @ 2 Ma. DC, .5 Hy. @ 11 Ma. DC				100		
DO-TSH		Drawn Hipermalloy shield and cover for DO-T's, provides 25 to 30 db shielding.						

†DCMA shown is for single ended usage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by .5W transistors (under 5% distortion—500MW—1KC)

Power curves based on setting output power at 1 KC, then maintaining same input level over frequency range.



*DO-T and DI-T units have been designed for transistor application only . . . not for vacuum tube service, Pats. Pending

High Power Rating . . . up to 100 times greater.

Excellent Response . . . twice as good at low end.

Low Distortion . . . reduced 80%.

High Efficiency . . . up to 30% better.

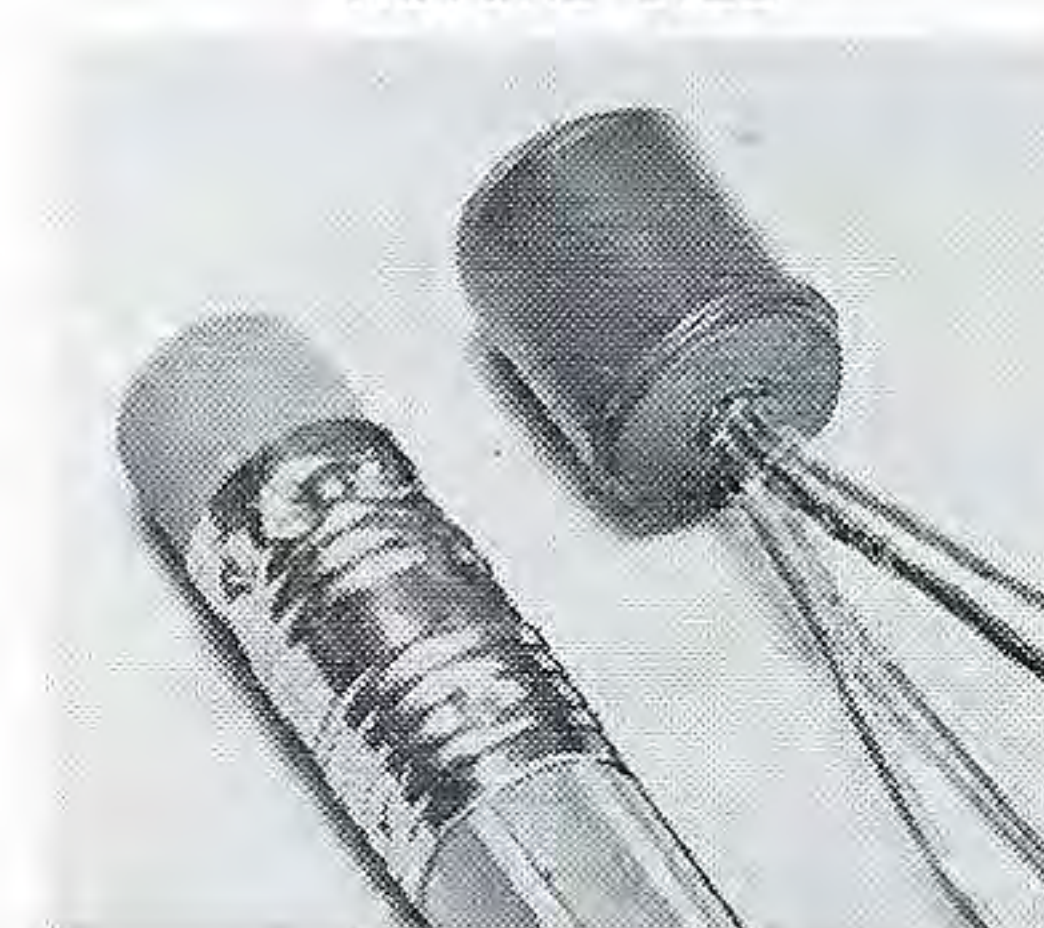
Moisture Proof . . . hermetically sealed to MIL-T-27A.

Rugged . . . completely cased.

Anchored Leads . . . will withstand 10 pound pull test.

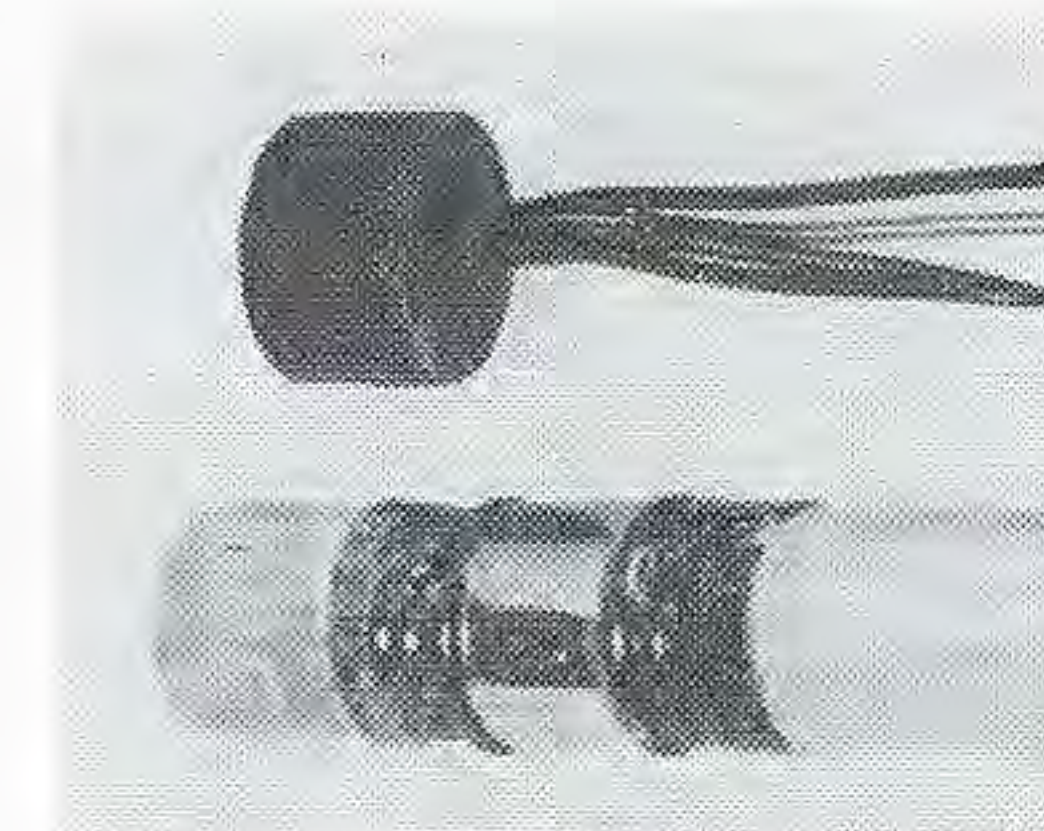
Printed Circuit Use . . . (solder melting) plastic insulated leads.

ACTUAL SIZE



DO-T CASE

Dia. . . . 5/16"
Length . . 13/32"
Weight . . 1/10th oz.



DI-T CASE

Dia. . . . 5/16"
Length . . 1/4"
Weight . . .06 oz.

OUNCER AUDIO UNITS

STANDARD AND PLUG-IN TYPES

UTC OUNCER components represent the acme in compact quality transformers. These units, which weigh one ounce, are fully impregnated and sealed in a drawn aluminum housing $\frac{7}{8}$ " diameter . . . mounting opposite terminal board.

Ouncer items are ideal for portable broadcast, hearing aid, aircraft, concealed service, and similar applications. High fidelity characteristics are provided, uniform within approximately 1 DB from 30 to 20,000 cycles, except for O-14, O-15, and units carrying DC which are intended for voice frequencies. Maximum level $+8$ dbm.

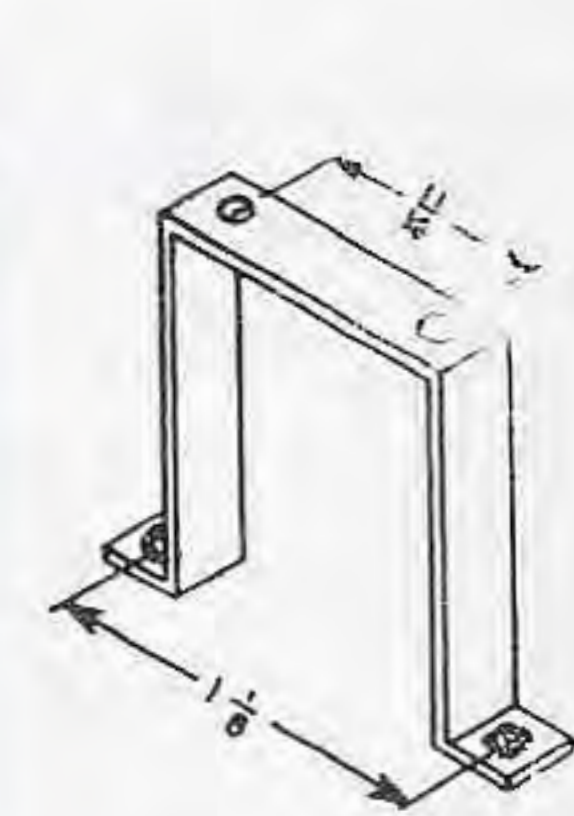
"P" series units are identical to the UTC OUNCER units but are sealed in bakelite housings with plug-in base to fit standard octal socket. While of submersion proof design, these units weigh but two ounces. Oversize pins in the base make it impossible to dislodge these units from their sockets.

OUNCER Type No.	Application	Pri. Imp.	Sec. Imp.	PLUG-IN Type No.
O-1	Mike, pickup or line to 1 grid	50, 200/250, 500/600	50,000	P-1
O-2	Mike, pickup or line to 2 grids	50, 200/250, 500/600	50,000 CT	P-2
O-3	Dynamic mike to 1 grid	7.5/30	50,000	P-3
O-4	Single plate to 1 grid	15,000	60,000	
O-5	Single plate to 1 grid, D.C. in Pri.	15,000	60,000	
O-6	Single plate to 2 grids	15,000	95,000 CT	P-6
O-7	Single plate to 2 grids, D.C. in Pri.	15,000	95,000 CT	P-7
O-8	Single plate to line	15,000	50, 200/250, 500/600	P-8
O-9	Single plate to line, D.C. in Pri.	15,000	50, 200/250, 500/600	P-9
O-10	Push pull plates to line	30,000 ohms plate to plate	50, 200/250, 500/600	P-10
O-11	Crystal mike or pick-up to line	50,000	50, 200/250, 500/600	P-11
O-12	Mixing and matching	50, 200/250	50, 200/250, 500/600	P-12
O-13	Reactor, 300 Hys.—no D.C.; 50 Hys.—3 MA. D.C.,	6000 ohms		
O-14	50:1 mike or line to 1 grid	200	$\frac{1}{2}$ megohm	
O-15	10:1 single plate to 1 grid	15,000	1 megohm	P-15
O-16	Mike or line to grid	250 C.T.	50,000	
This transformer provides very low hum pickup . . . employs two heavy gauge hipermalloy shields plus orientable mounting. Primary centertap is balanced to 1%. Can be used for 150, 200, 250, 500, or 600 ohm sources . . . 200:1 impedance ratio.				
Same as O-16 but with nine pin plug in socket. $1\frac{3}{16}$ " Dia. x $2\frac{3}{4}$ " high, 4 oz.				
O-17	Hipermalloy shield, slip fit over ouncer, 1" O.D., provides 25 db shielding.			P-16
O-18	Transistor Interstage	10,000/2,500 (split)	2,000/500 (split)	
O-19	Transistor Interstage	10,000/2,500 (split)	4,000/1,000 (split)	
O-20	Transistor to line	1,500 CT	500/125 (split)	
O-21	Transistor to voice coil	2,000 CT	8	
	Imp. ratio 250:1	4,000 CT	16	



OUNCER CASE

Dia. $\frac{7}{8}$ "
Ht. $1\frac{3}{16}$ "
Mtg. $1\frac{1}{16}$ "
Scr. 2-56
Wt. 1 oz.



Ouncer chassis mount bracket available on production orders



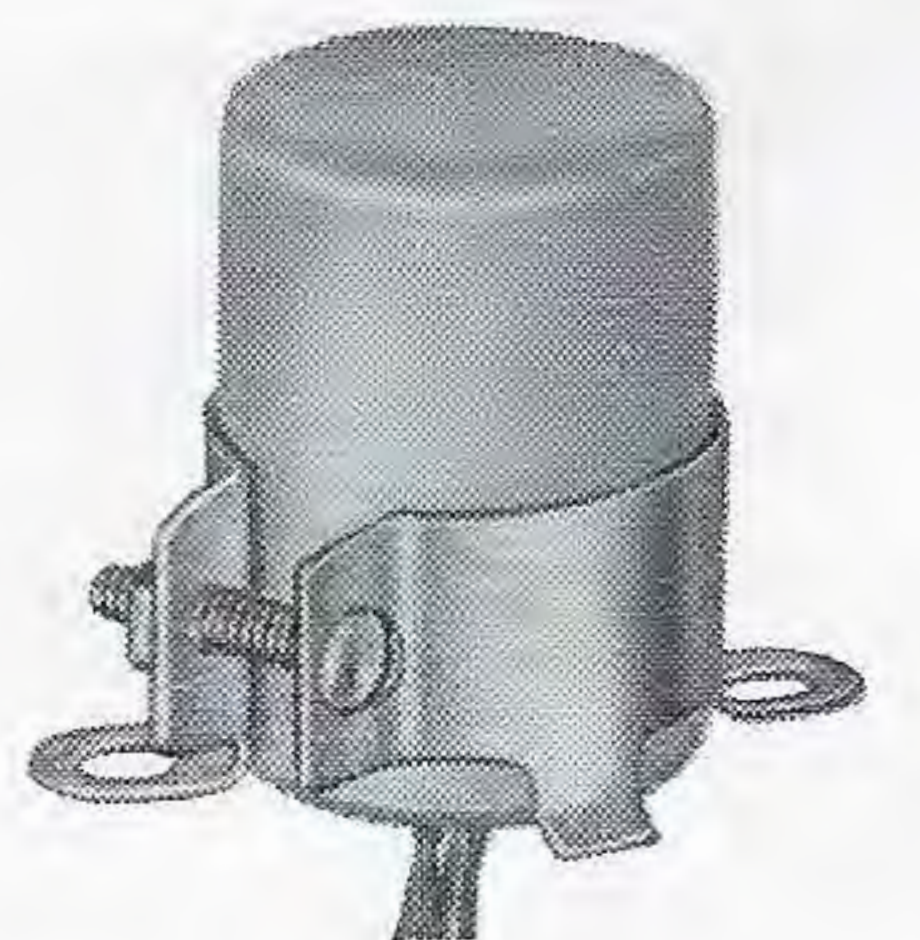
PLUG-IN CASE

Dia. $1\frac{3}{32}$ "
Ht. $1\frac{1}{32}$ "
Skt. St. Oct.
Wt. 2 oz.



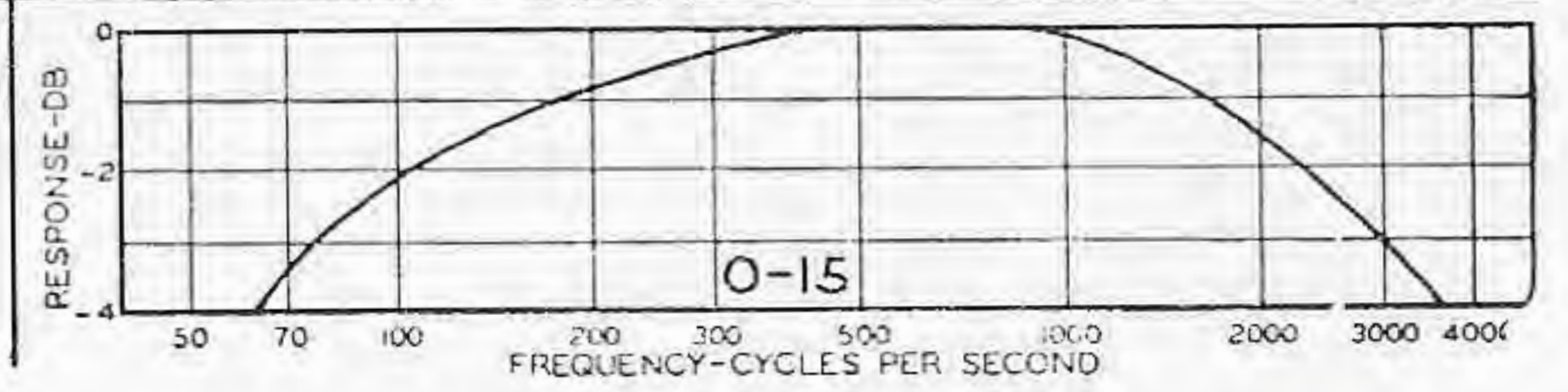
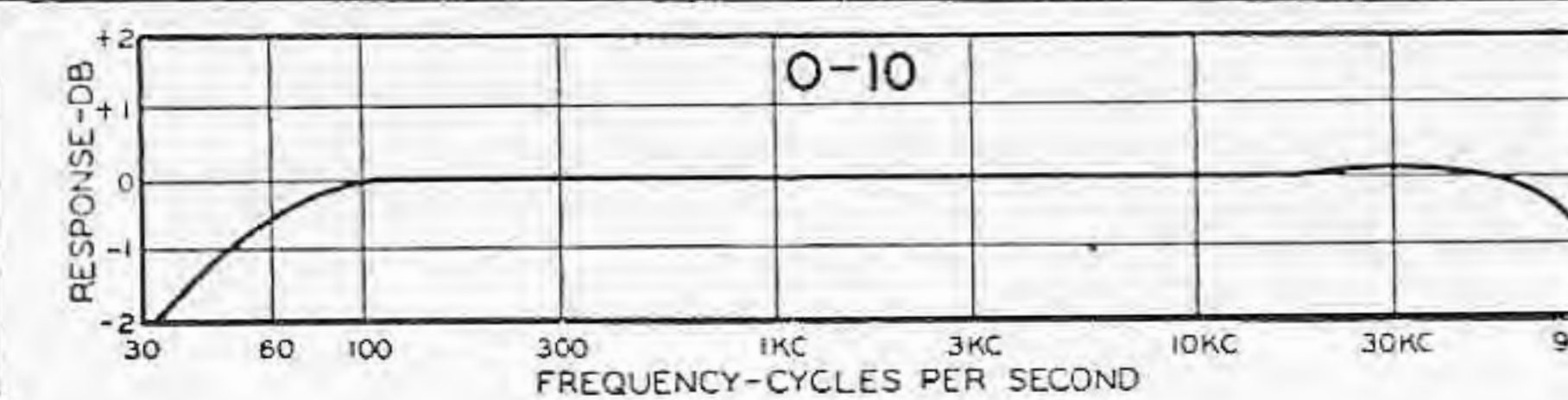
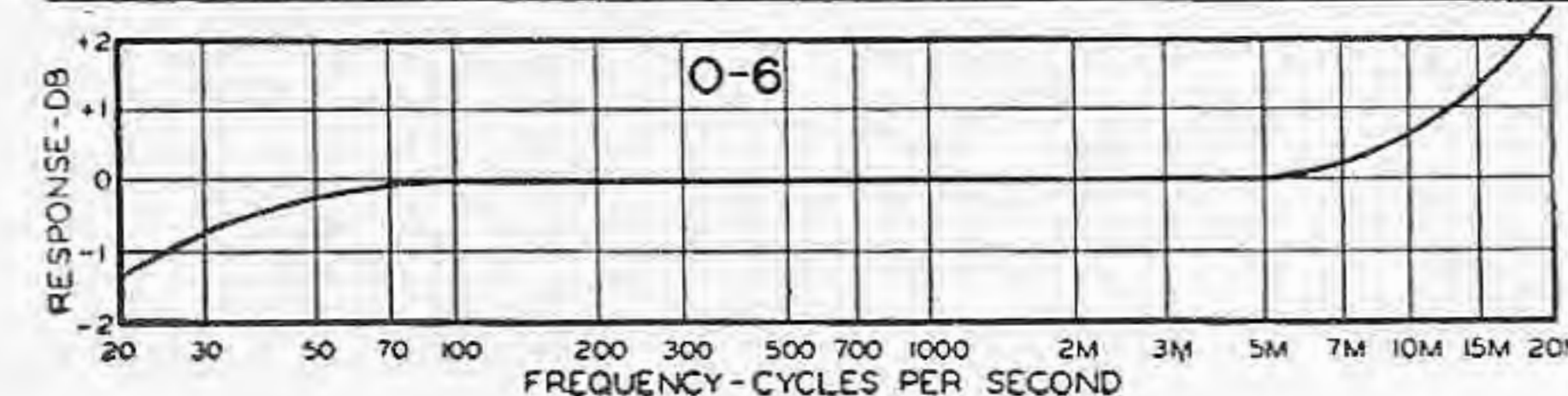
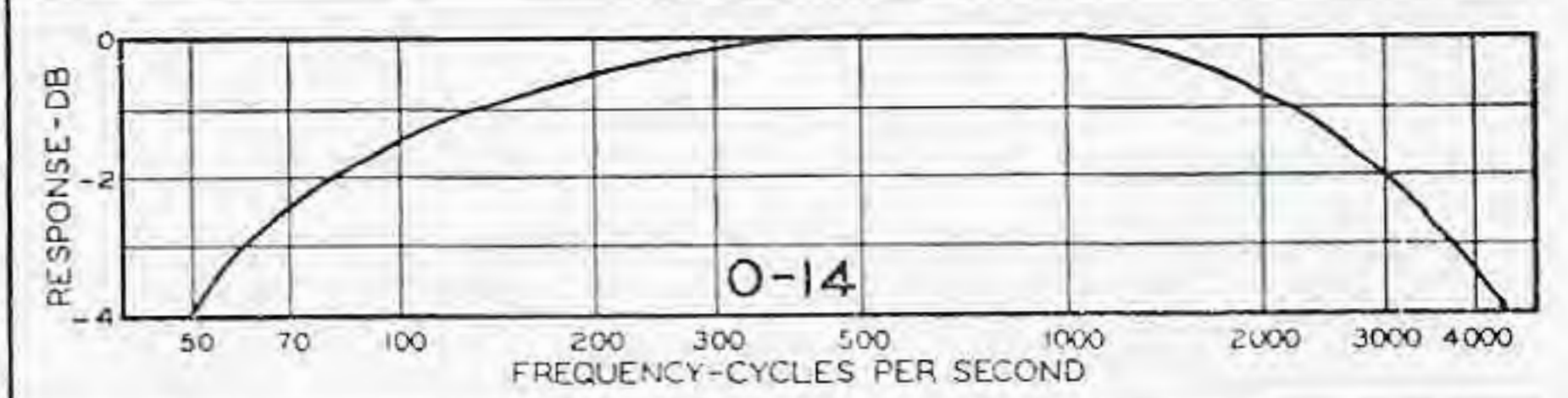
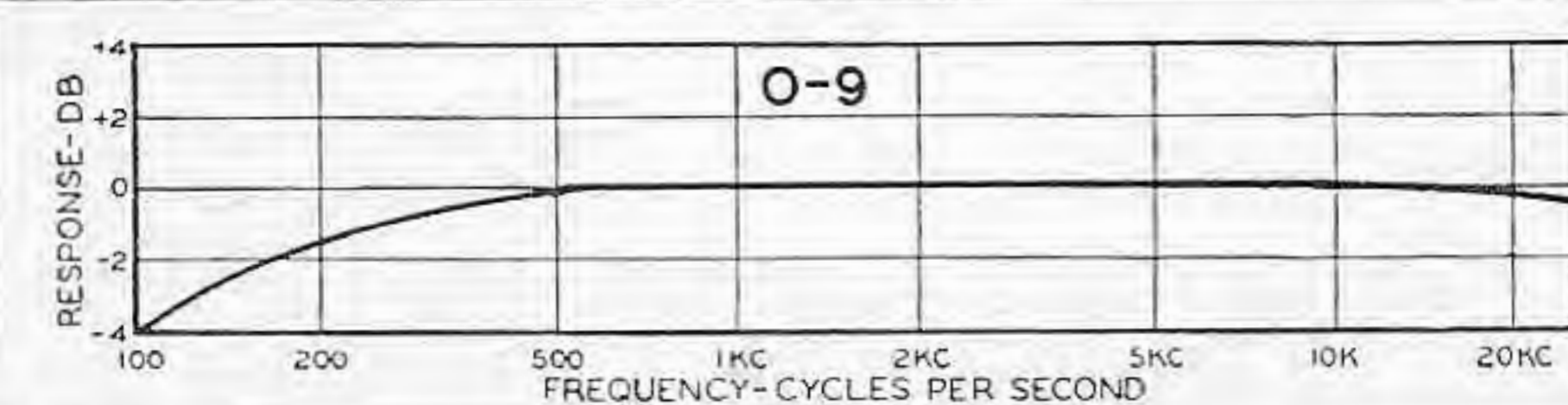
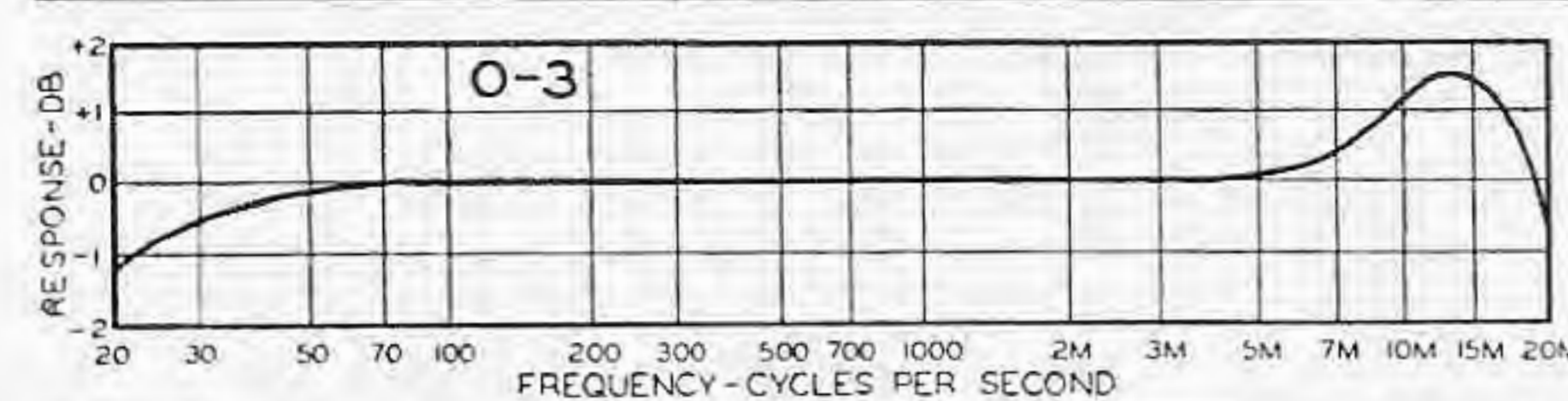
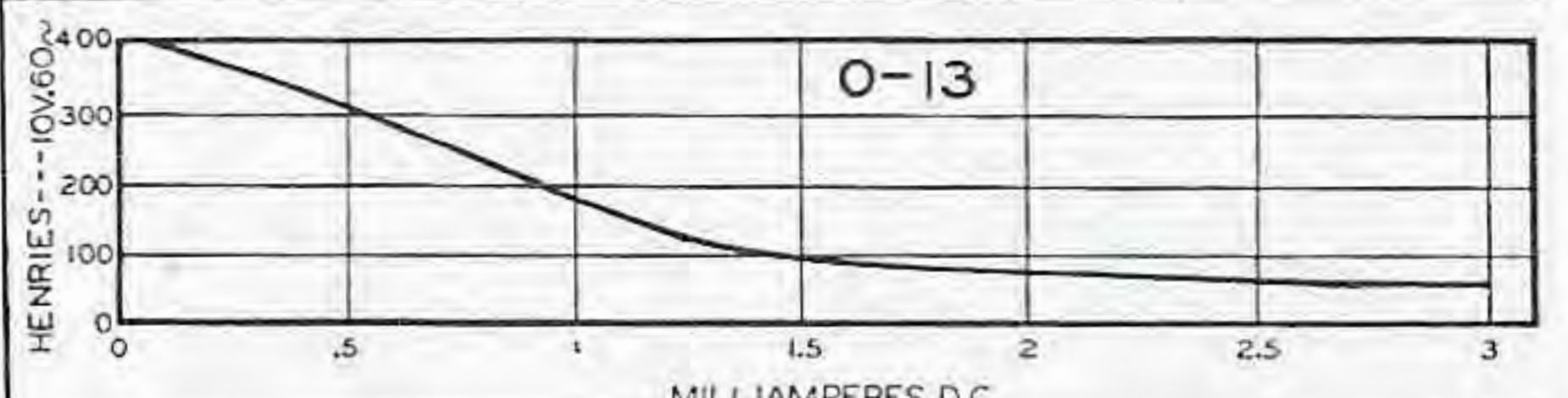
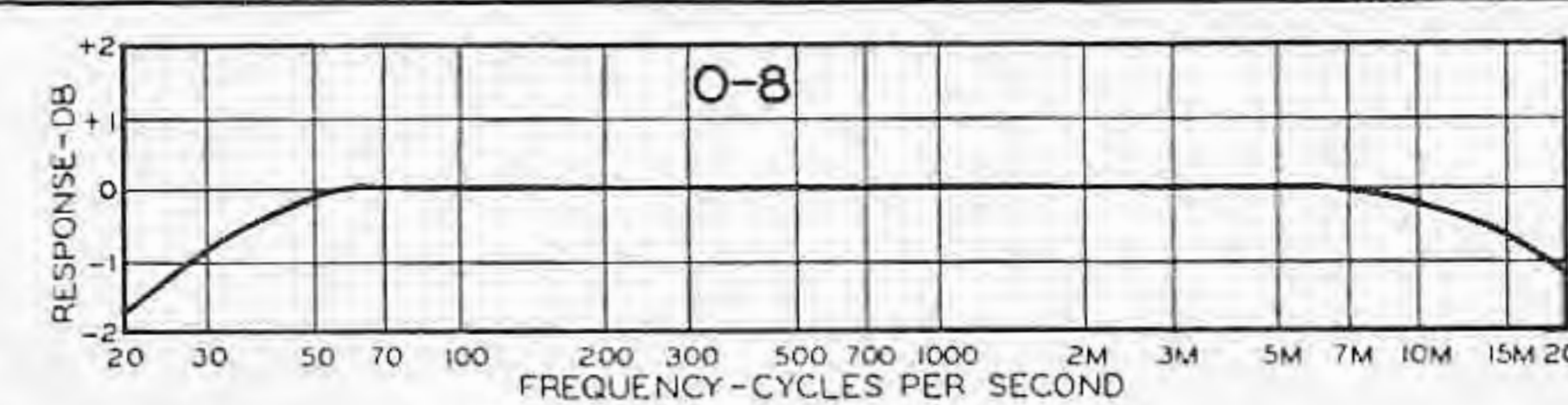
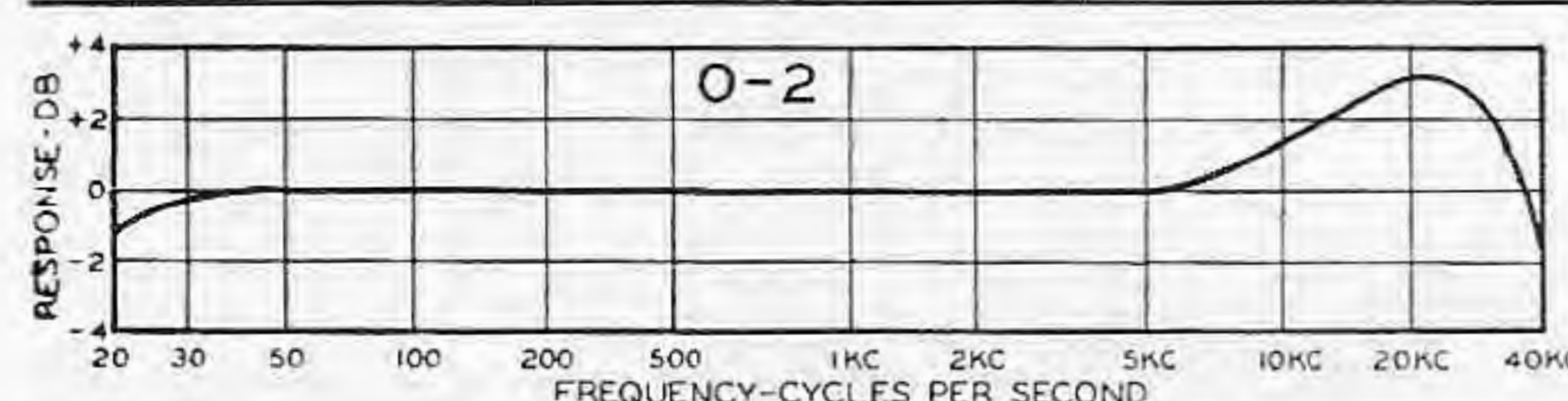
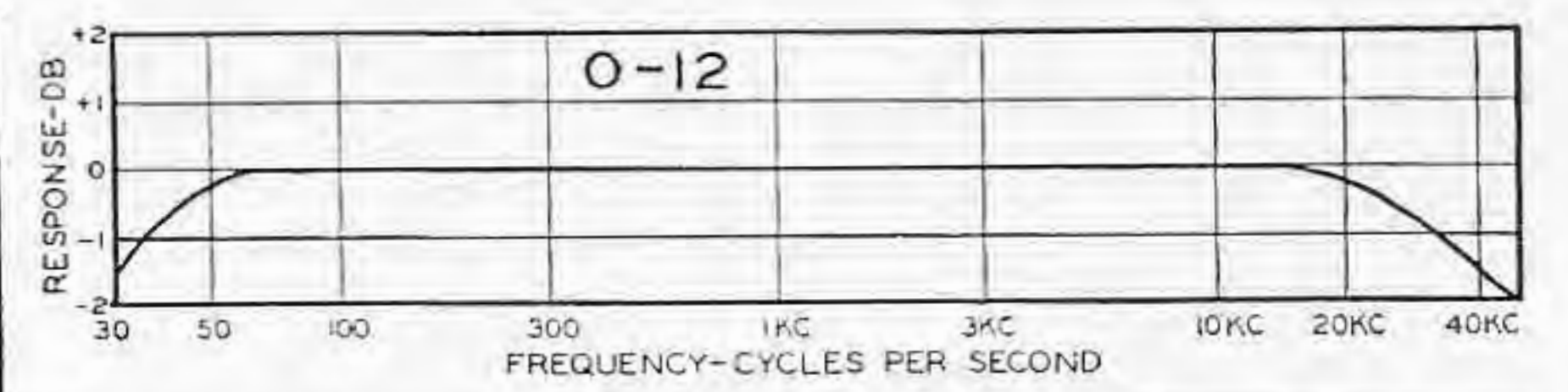
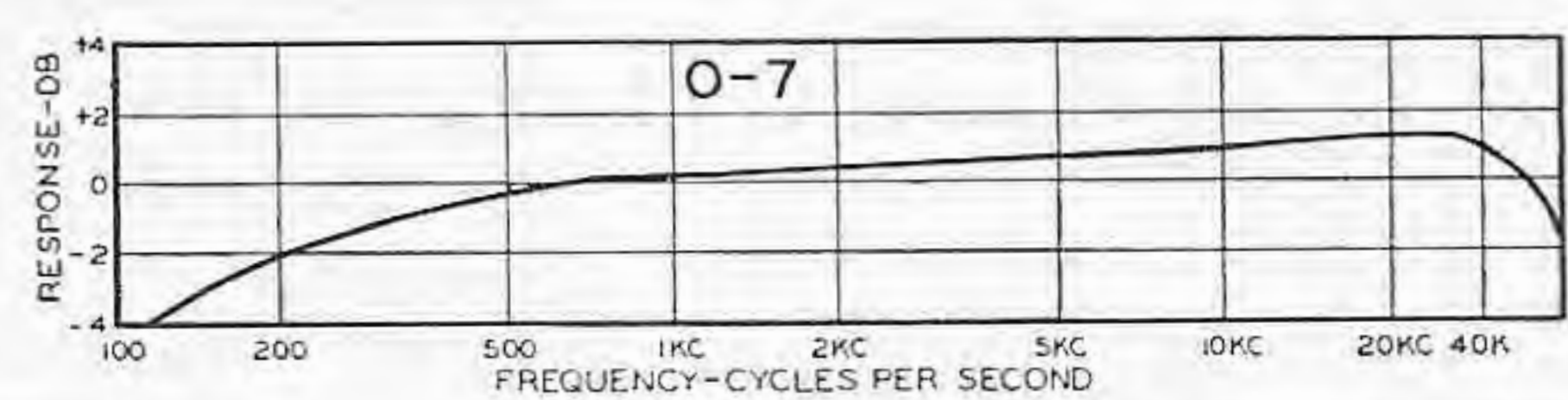
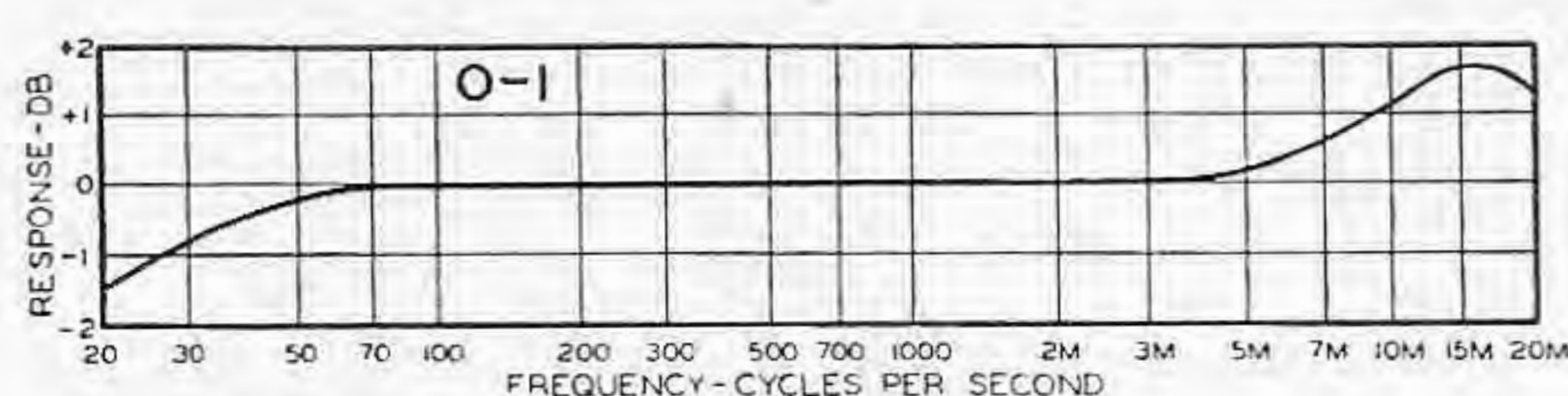
P-16 CASE

Dia. $1\frac{3}{16}$ "
Ht. $2\frac{3}{4}$ "
Wt. 4 oz.



O-16 CASE

Dia. $1\frac{1}{16}$ "
Ht. $1\frac{1}{2}$ "
Mtg. $1\frac{1}{2}$ "
Scr. 6-32
Wt. 3 oz.
Clamp $1\frac{1}{16}$ " x $1\frac{1}{8}$ "



MICROPHONE CABLE TRANSFORMERS

UTC Cable transformers are designed to be inserted in the cable circuit, and are ruggedly constructed to with stand mechanical abuse. The cable connections (supplied less cable) are made through spring strain relief to terminal boards inside the end caps. $1\frac{1}{2}$ " diameter . . . $2\frac{1}{2}$ " long . . . $\frac{1}{2}$ lb.

Type MC-1—primary tapped 30/50 and 200/250 ohms, secondary to grid, standard fidelity.

Type MC-2—primary tapped 30/50 and 200/250 ohms, secondary to grid, high fidelity.

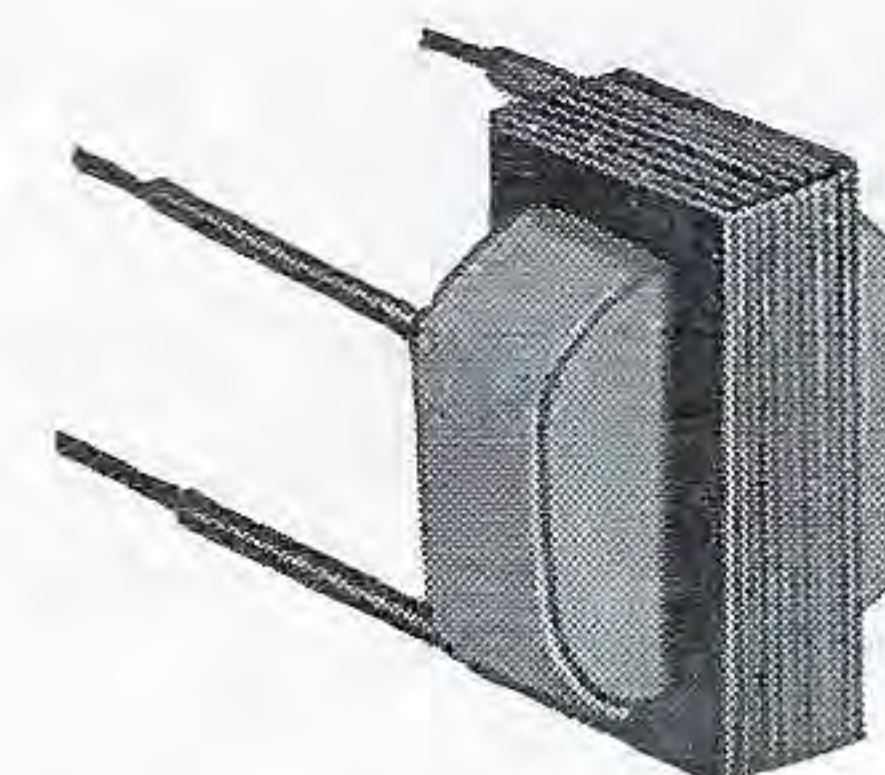


SUB-SUBOUNCER UNITS

UTC-Sub-Sub-Ouncer units are ideal for ultra-miniaturized components having high efficiency and wide frequency response. Through the use of special nickel iron core materials and winding methods, these miniature units have superior performance and dependability characteristics. The coils employ automatic layer windings of double Formex wire . . . in a molded Nylon bobbin. All insulation is of cellulose acetate. Four inch color coded flexible leads are employed, securely anchored mechanically. No mounting facilities are provided, since this would preclude maximum flexibility in location. Units are vacuum processed and double (water proof) sealed. The curves below indicate the excellent frequency response.

Type	Application	Max. Level dbm	Pri. Imp. ohms	Unbal. MA D.C. in Pri.	Sec. Imp. ohms	Pri. Res. ohms	Sec. Res. ohms
*SSO-1	Input	+7	200 50	0	250,000 62,500	13.5	3600
SSO-2	Interstage/3:1	+15	10,000	0-.25	90,000	710	3150
*SSO-3	Plate to Line	+20	10,000 25,000	3 1.5	200 500	2500	34
SSO-4	Output	+20	30,000	1.0	50	2875	4.6
SSO-5	Reactor 50 HY at 1 mil. D.C. 4400 ohms D.C. Res.						
SSO-6	Output	+20	100,000	.5	60	3500	3.3
*SSO-7	Transistor Interstage	+20	20,000 30,000	.5 .5	800 1,200	800	110
SSO-8	Transistor to	+20	10,000	1	2,000 ct.	1200	45
PP Sec.							
SSO-9	Transistor to V.C.	+20	10,000	2	16	800	2.7
SSO-10	Transistor to V.C.	+20	10,000	2	3.2	800	.65
*SSO-11	Transistor Output	+20	500 600	3.5 3.5	50 60	50	5
*SSO-12	Transistor Output	+20	1,000 1 200	3 3	50 60	90	5
SSO-13	Crystal to Transistor	+7	200,000	0	1,000	4000	190
*SSO-14	Transistor Interstage	+20	10,000 ct. 25,000 ct.	2 1	200 ct. 500 ct.	650	22
*SSO-15	Transistor Interstage	+20	20,000 ct. 30,000 ct.	1 1	800 ct. 1,200 ct.	800	110

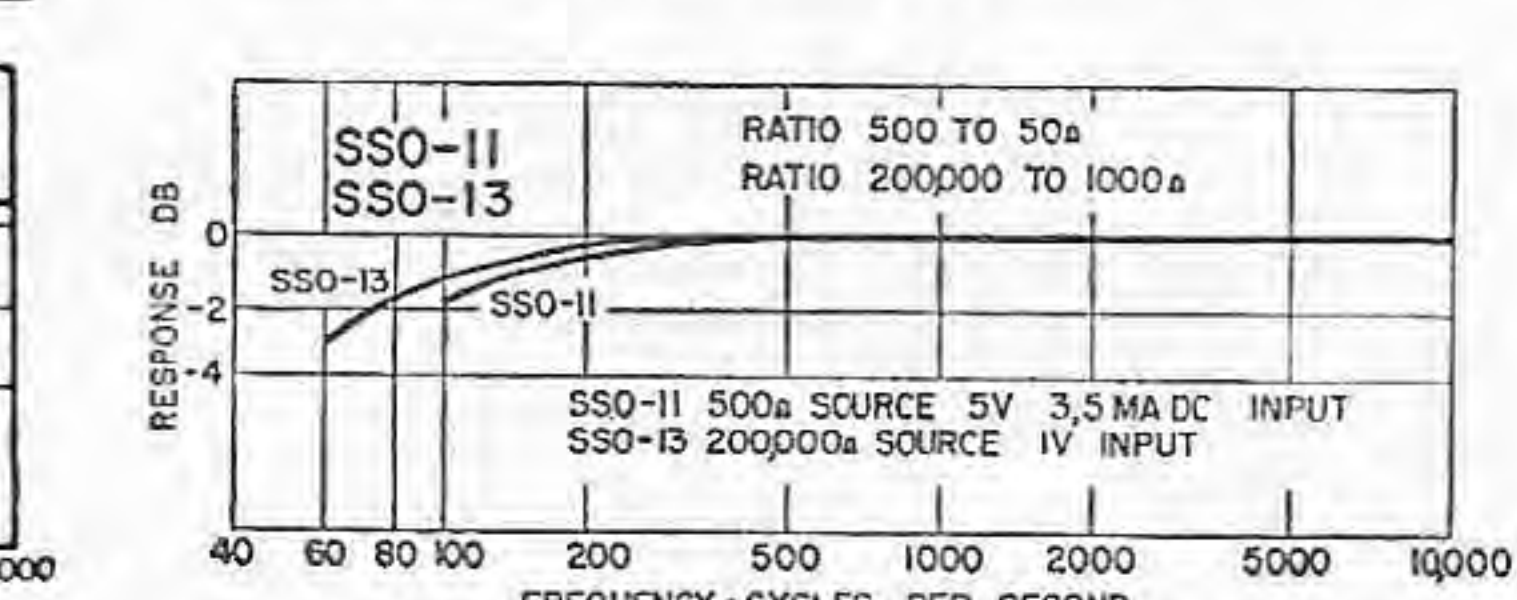
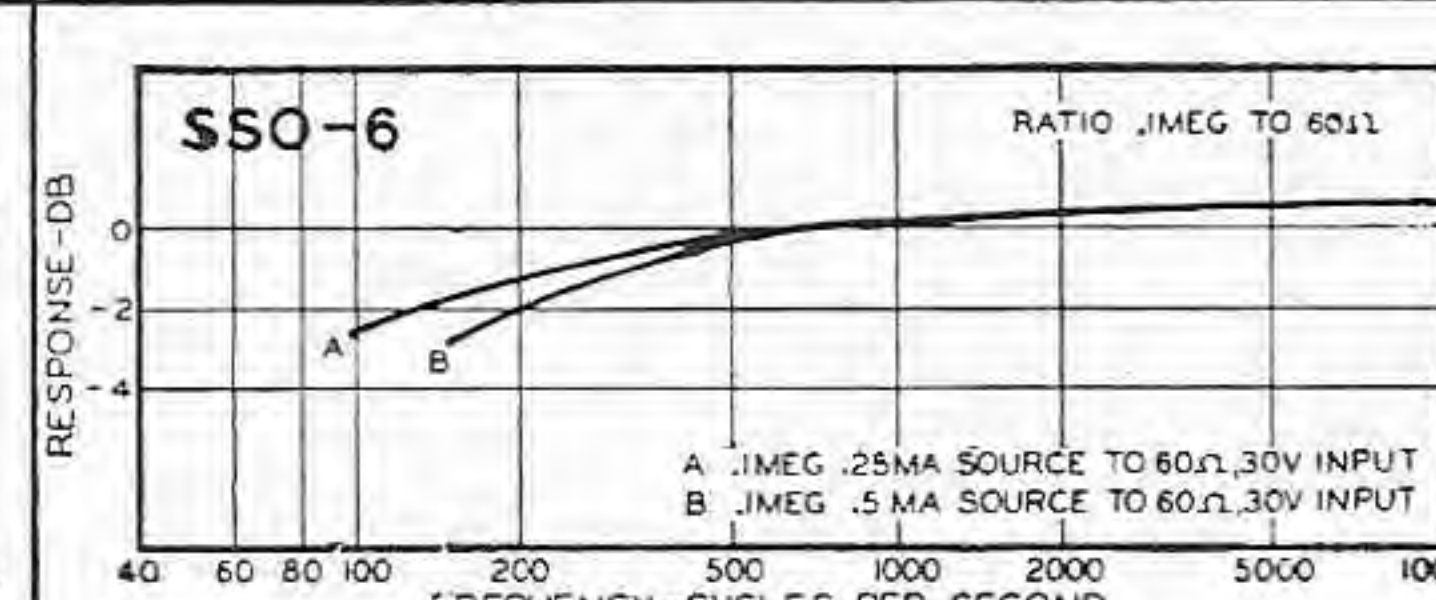
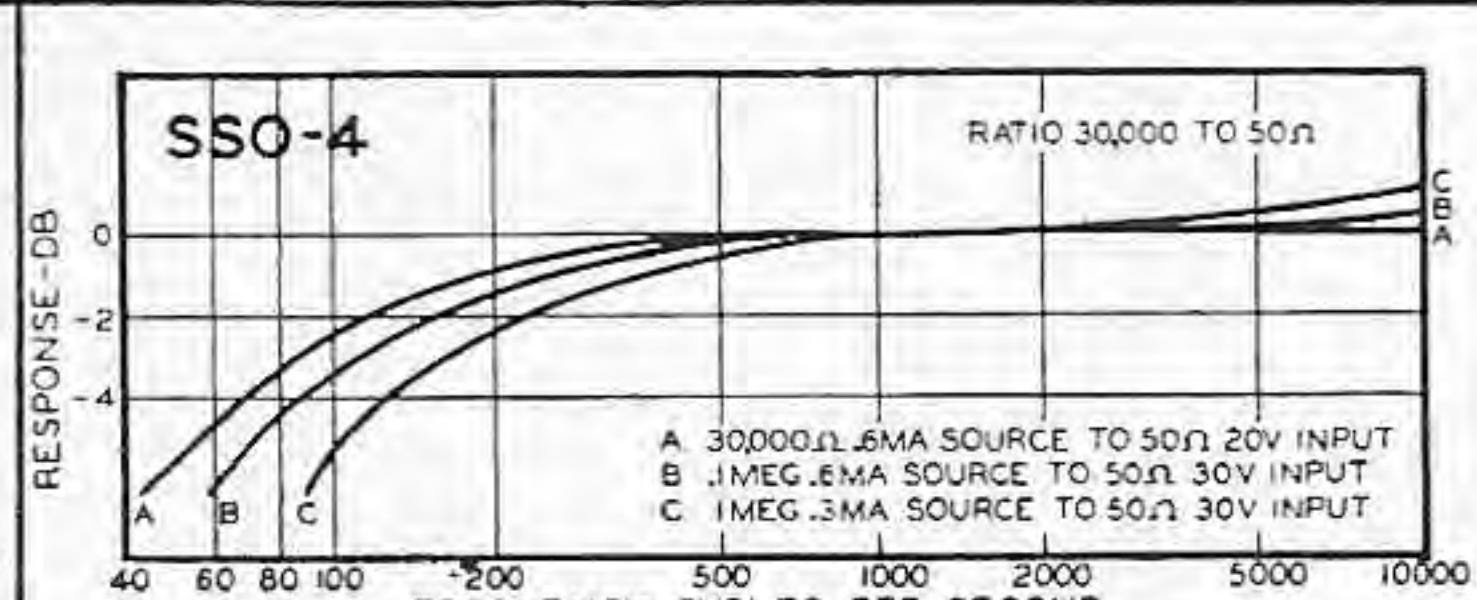
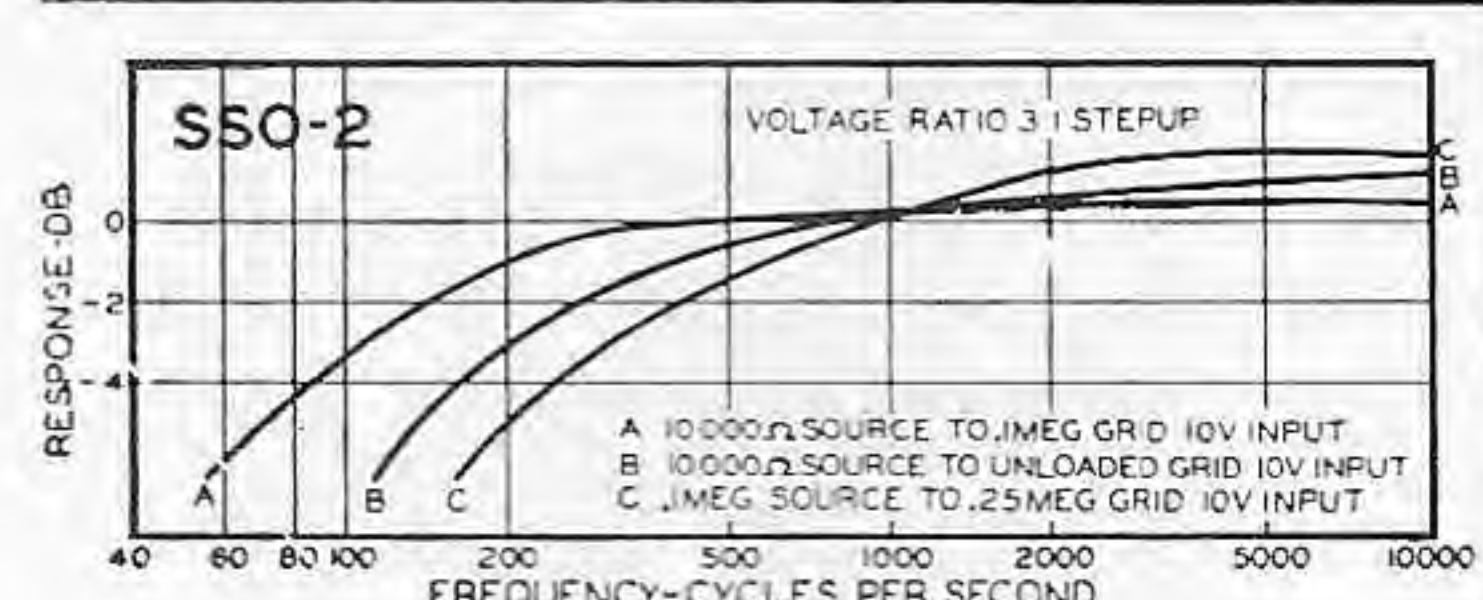
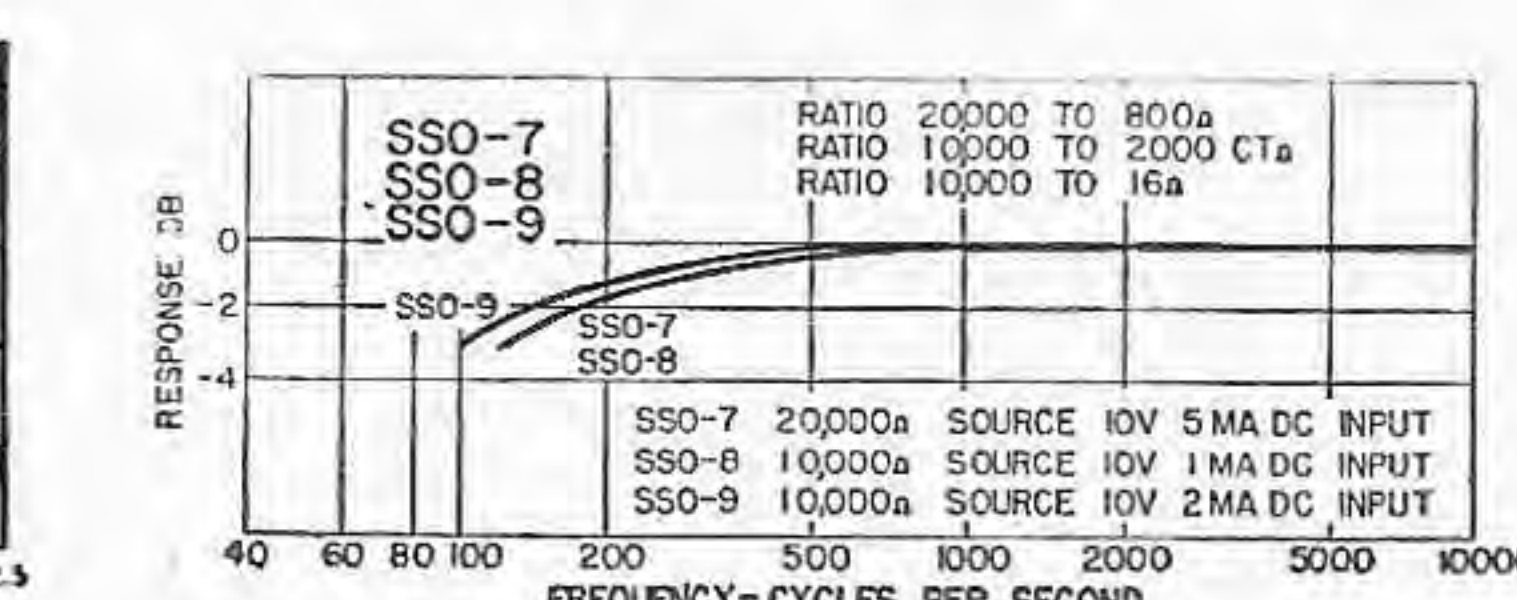
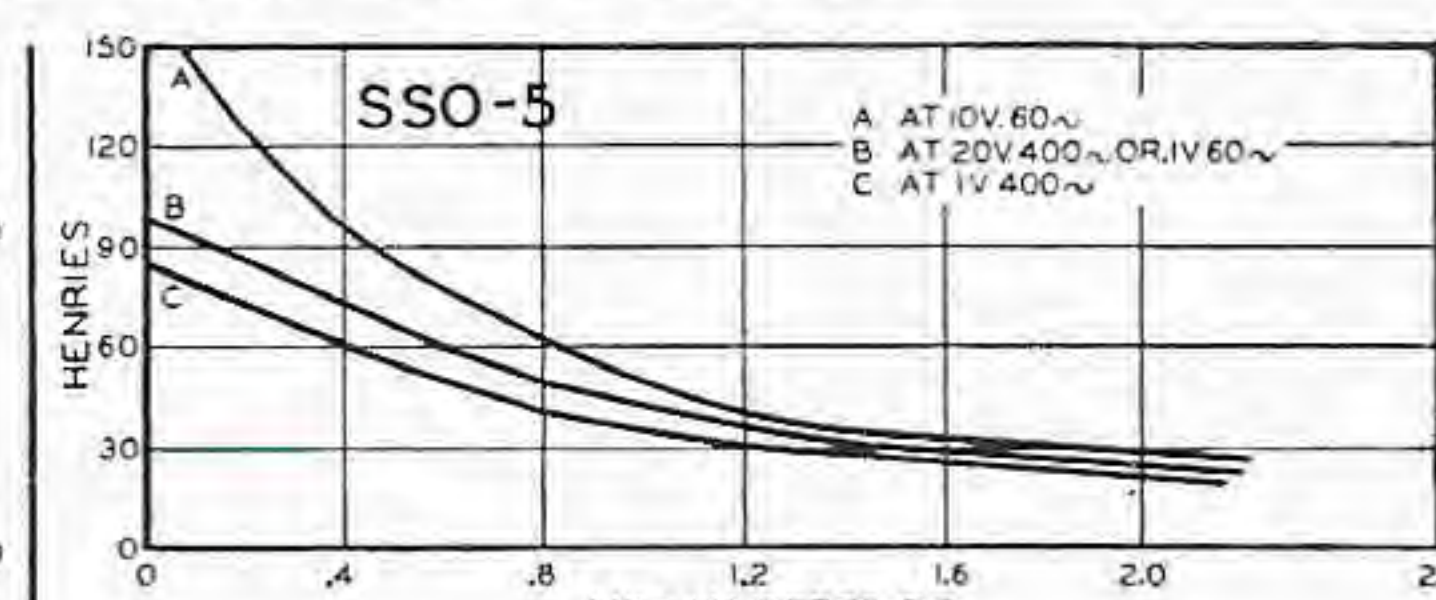
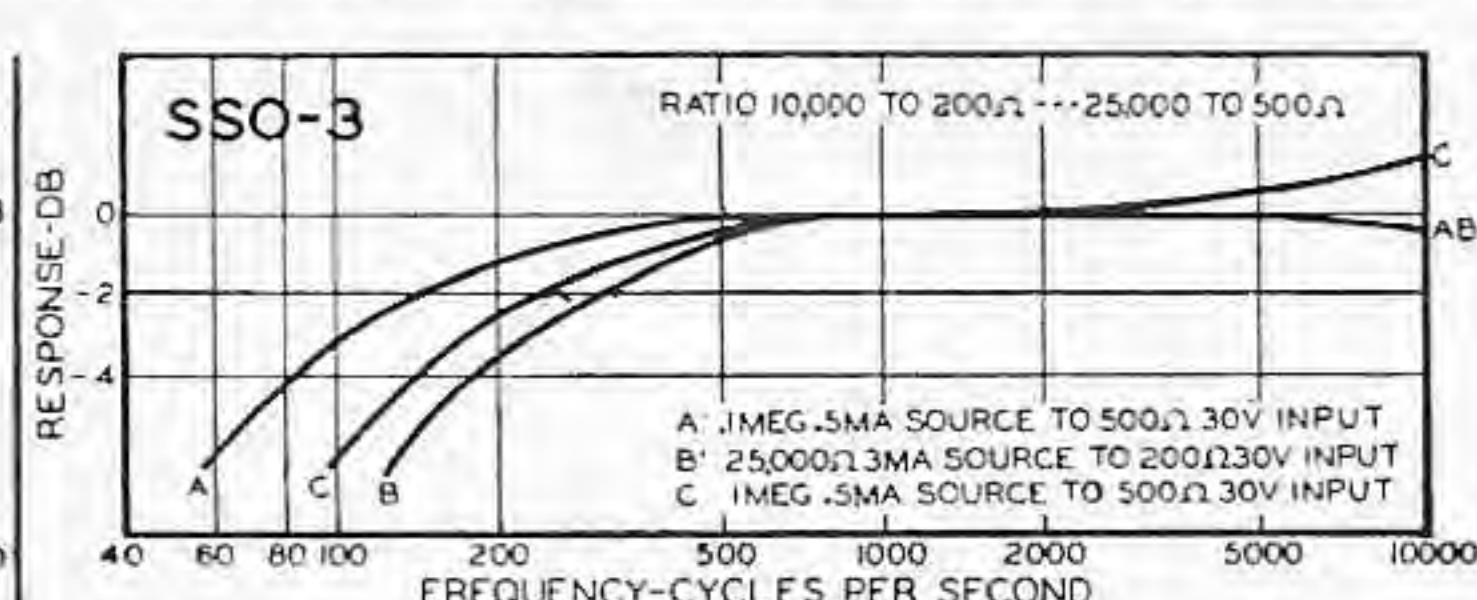
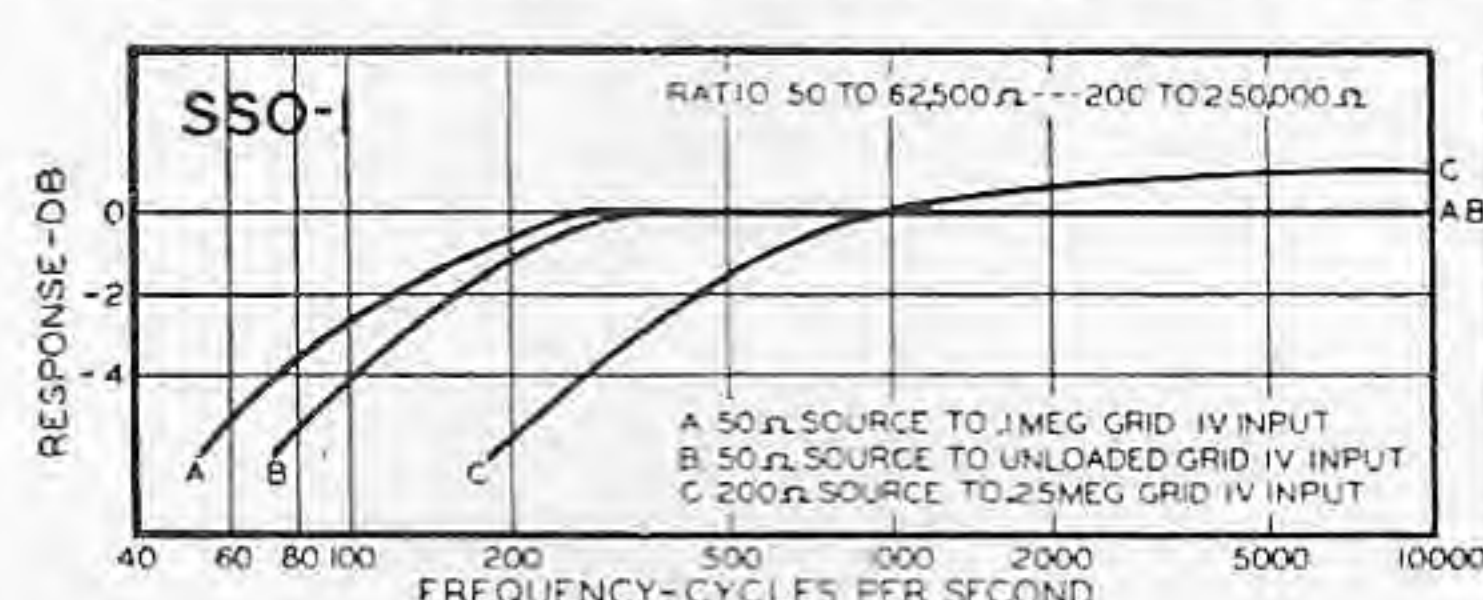
*Impedance ratio is fixed, 1250:1 for SSO-1, etc. Any impedance between the values shown may be employed.



SUB-SUBOUNCER UNIT

Dimensions..... $\frac{1}{16}$ " x $\frac{3}{4}$ " x $\frac{3}{4}$ "

Weight02 lb.

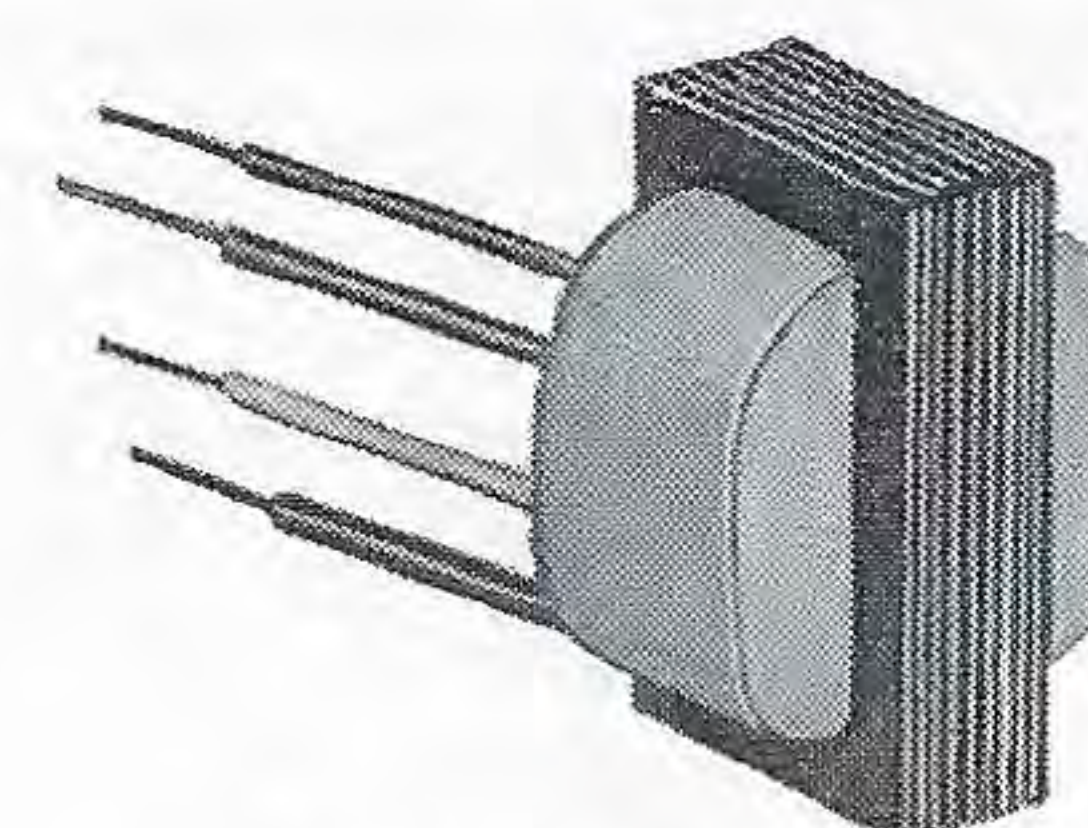


SUBOUNCER UNITS

UTC Sub-Ouncer units have high efficiency and frequency range in miniature size, handle higher level than SSO units above. The constructional details are identical to those of the Sub-Sub-Ouncer units. Available hermetically sealed on production orders (SOM case $\frac{1}{16}$ x $\frac{1}{16}$ x $\frac{1}{8}$).

Type	Application	Max. Level dbm	Pri. Imp. ohms	Unbal. MA D.C. in Pri.	Sec. Imp. ohms	Pri. Res. ohms	Sec. Res. ohms
*SO-1	Input	+10	200 50	0	250,000 62,500	16	2500
SO-2	Interstage/3:1	+20	10,000	0-.25	90,000	215	1850
*SO-3	Plate to Line	+23	10,000 25,000	3 1.5	200 500	1225	30
SO-4	Output	+23	30,000	1.0	50	1850	3.8
SO-5	Reactor 50 HY at 1 mil. D.C. 2675 ohms D.C. Res.						
SO-6	Output	+23	100,000	.5	60	3400	3.7
*SO-7	Transistor Interstage	+23	20,000 30,000	.5 .5	800 1,200	450	32
SO-8	Transistor to PP Sec.	+23	10,000	1	2,000 ct.	1,000	40
SO-9	PP Transistor to V.C.	+24	500 ct.	0	3.2	15	.35
*SO-10	Transistor output to voice coil	+24	2,000 ct. 4,000 ct.	4 2	8 16	290	2

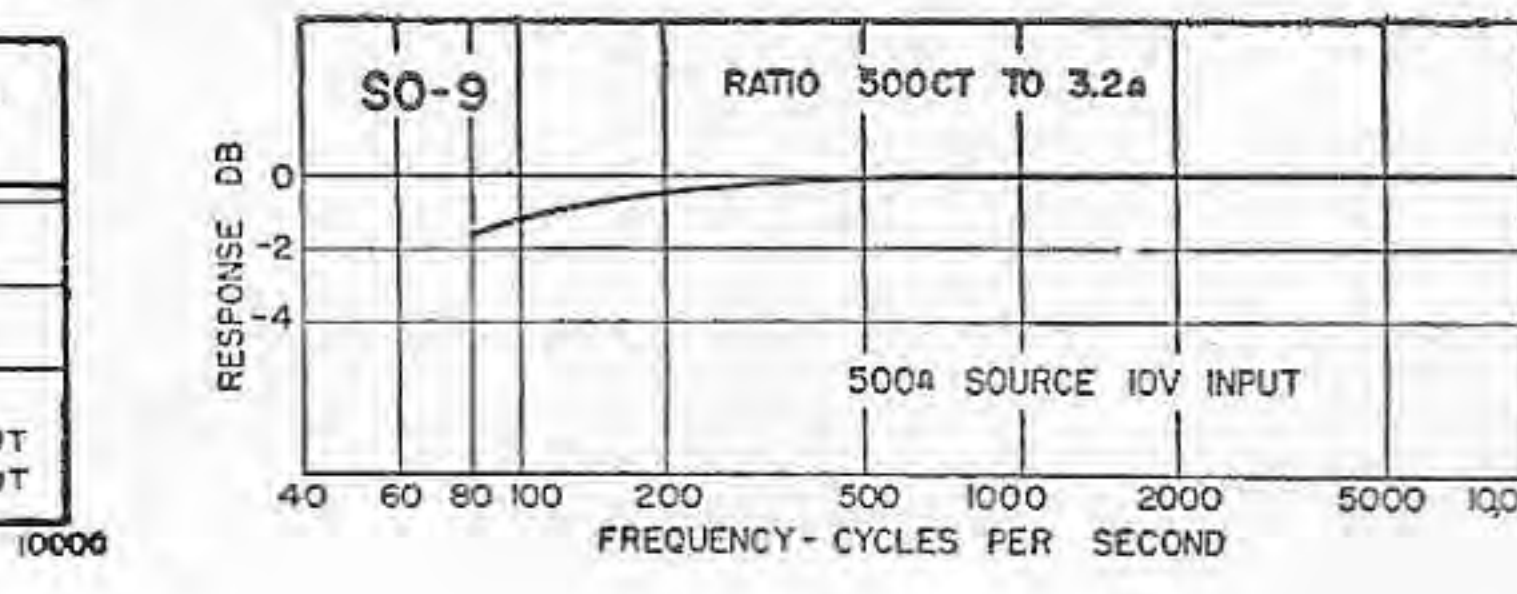
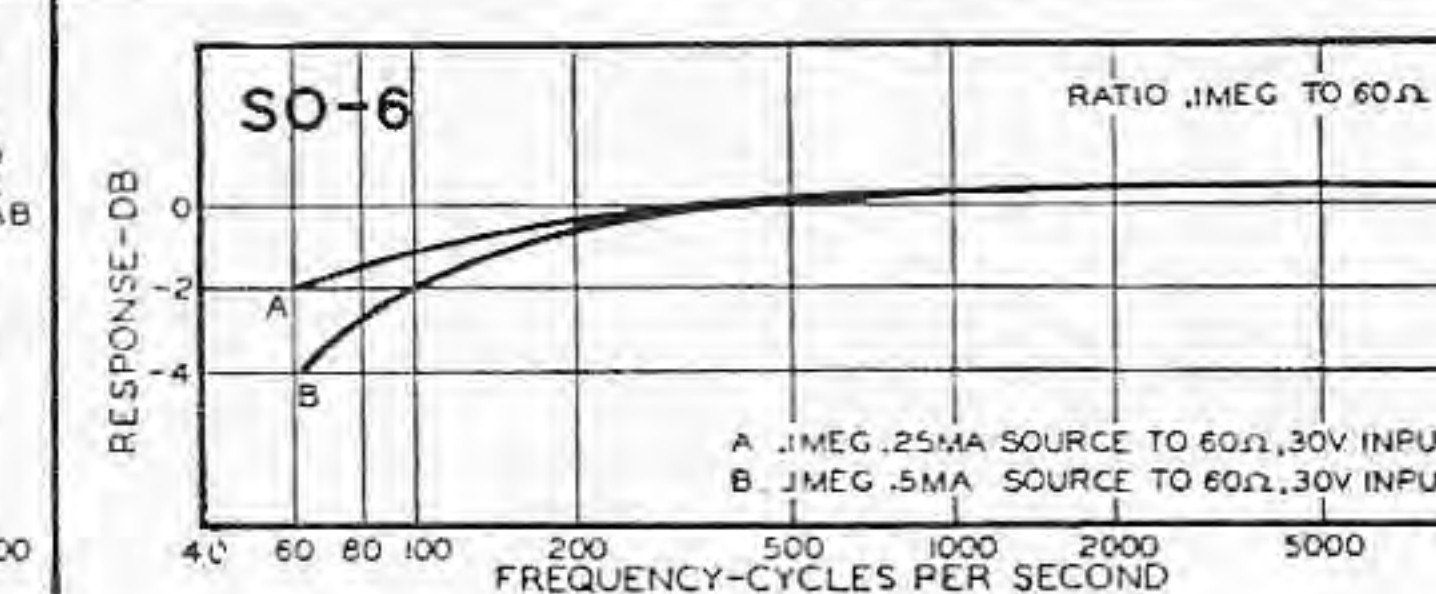
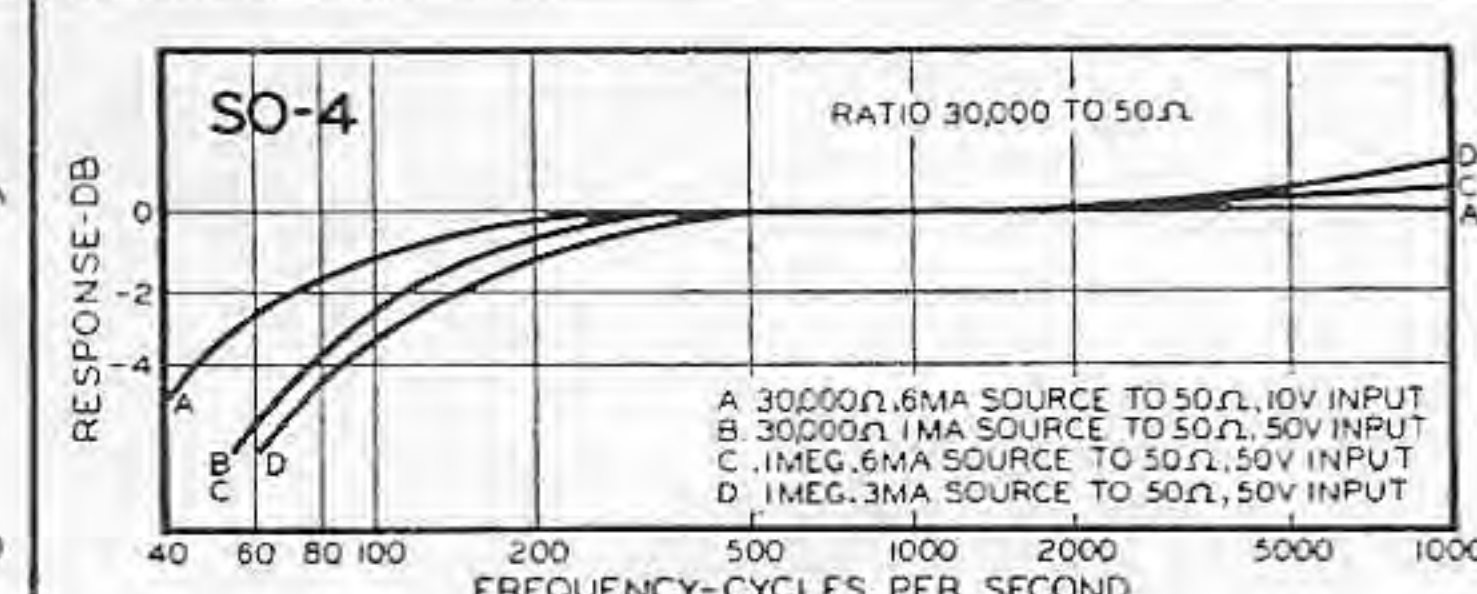
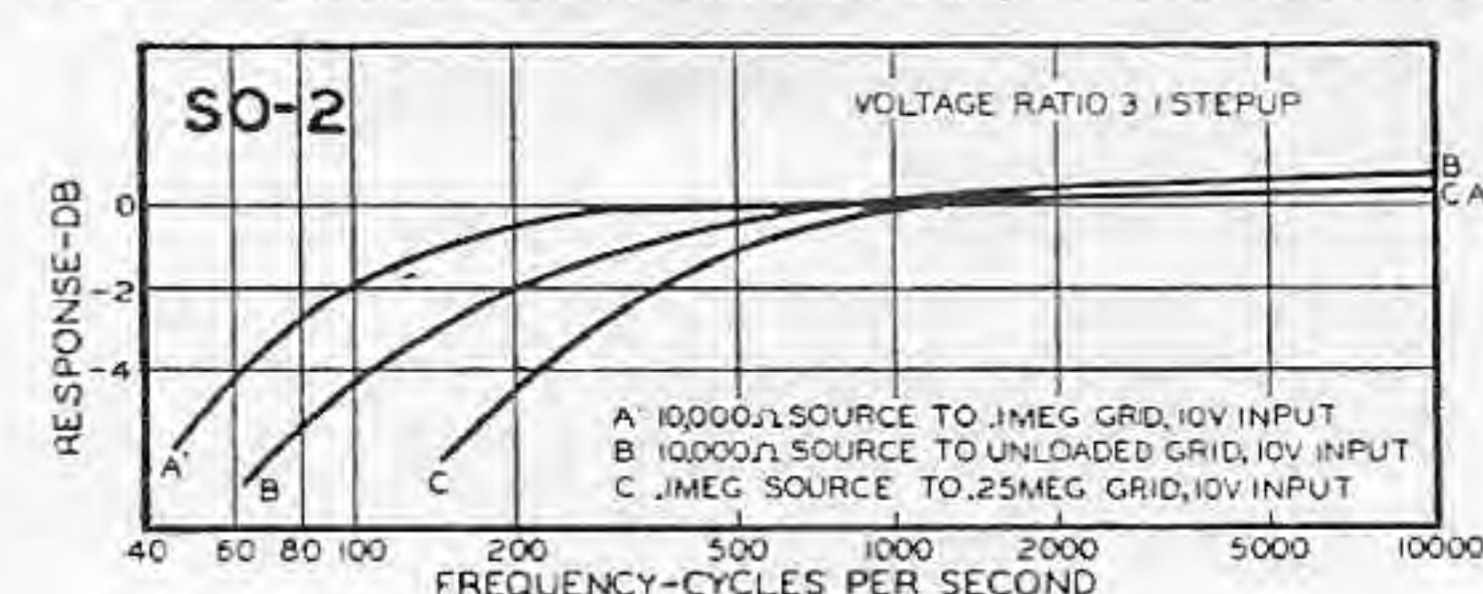
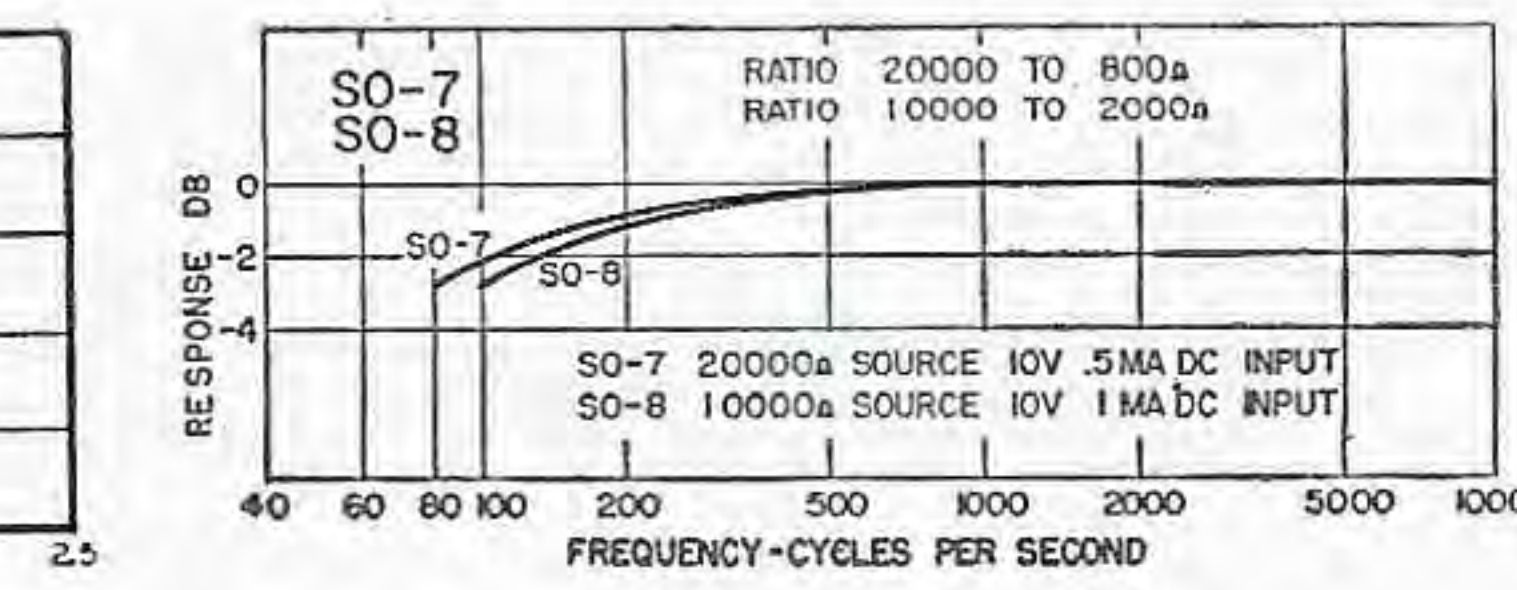
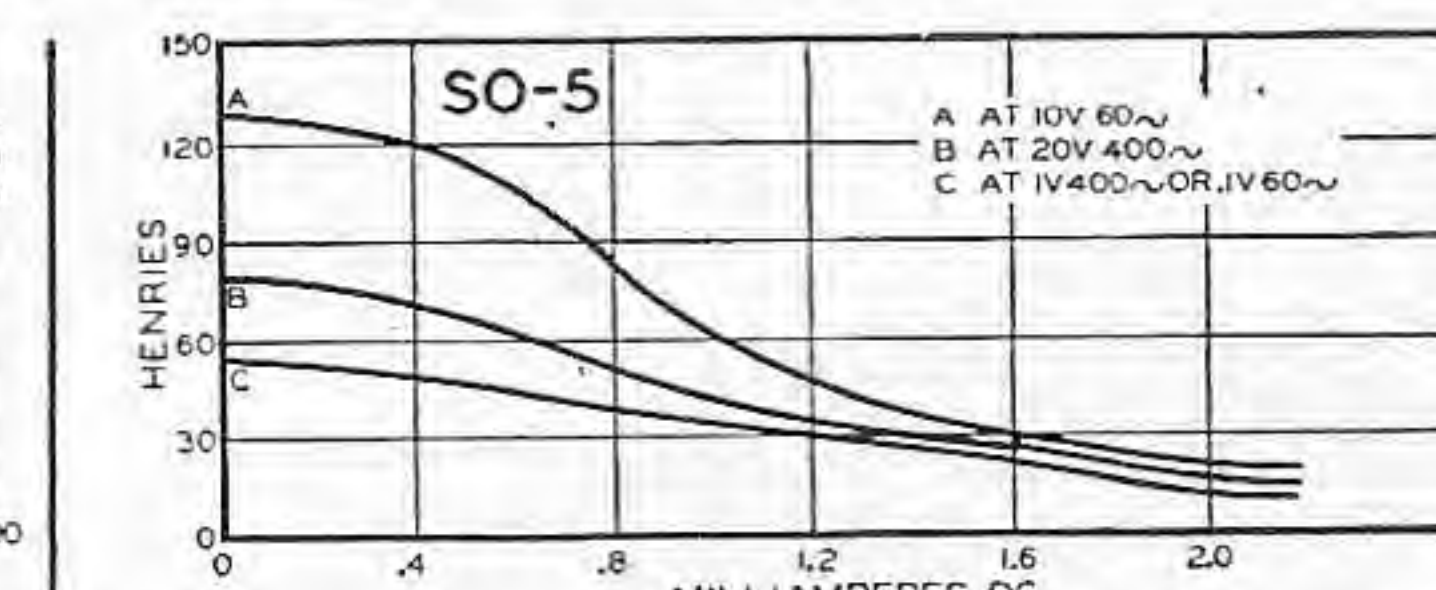
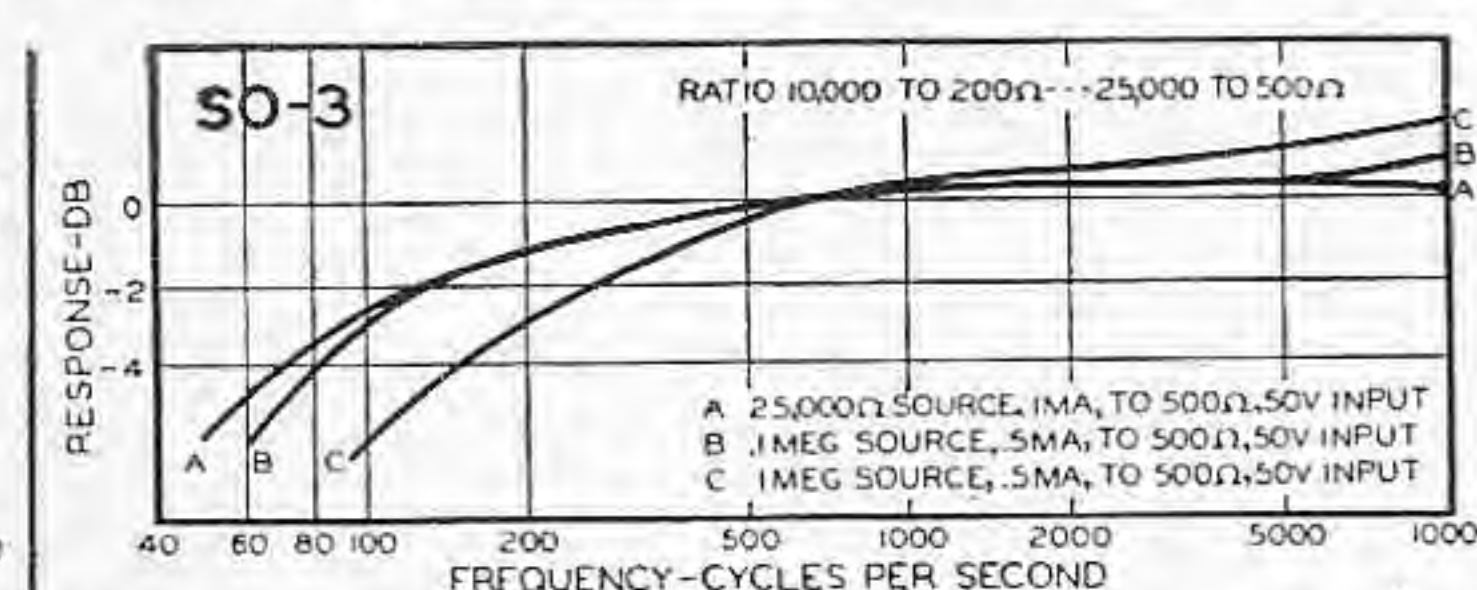
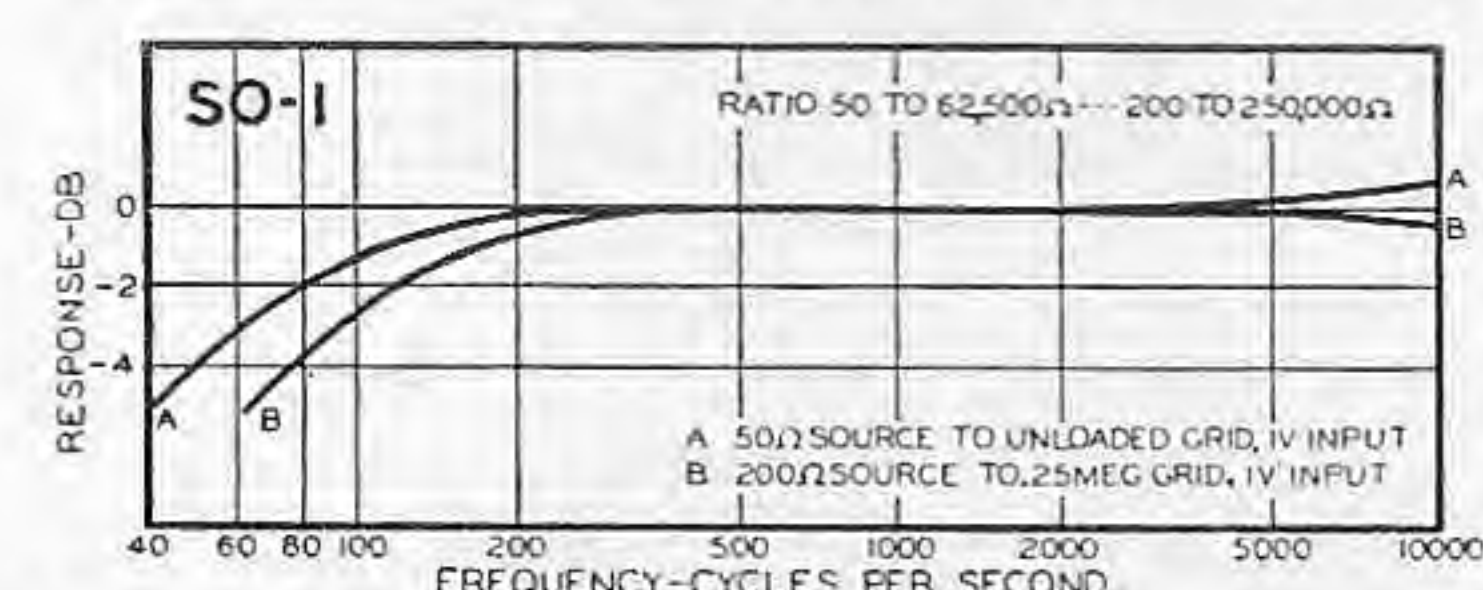
*Impedance ratio is fixed, 1250:1 for SO-1, etc. Any impedance between the values shown may be employed.



SUBOUNCER UNIT

Dimensions..... $\frac{1}{32}$ " x $\frac{3}{4}$ " x $\frac{7}{8}$ "

Weight03 lb.



UTC LEADERSHIP IN HIGH FIDELITY

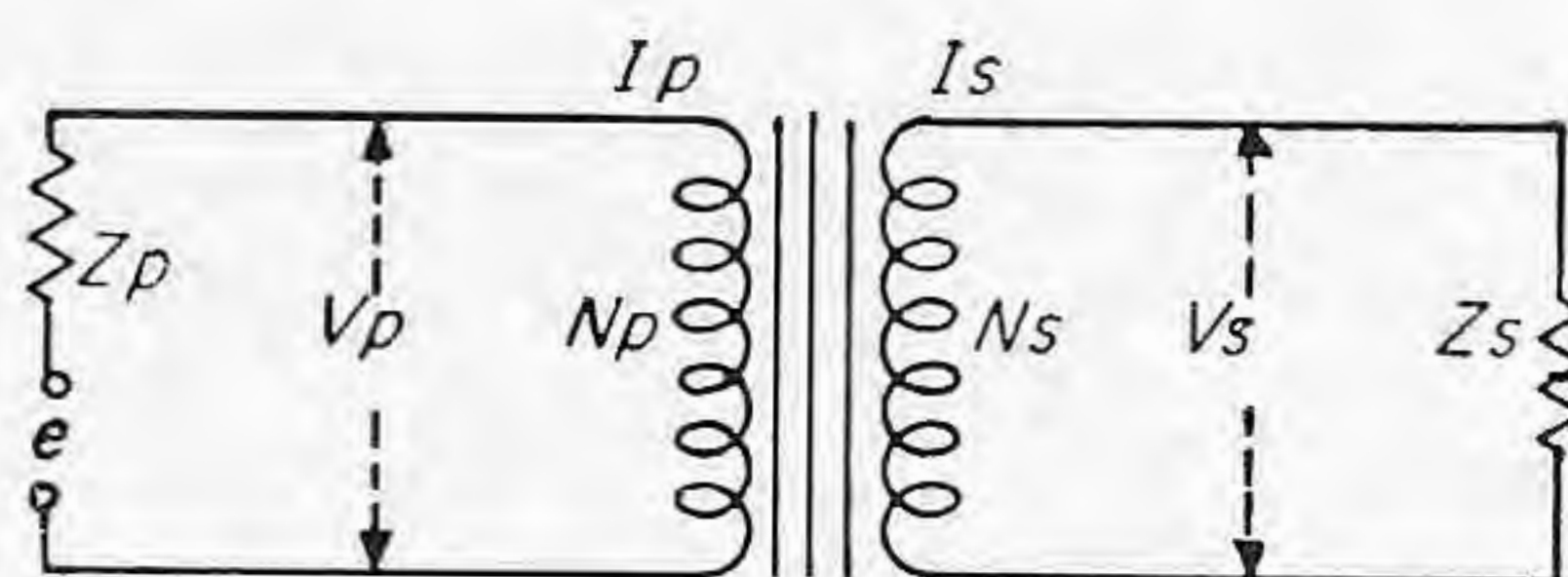


Fig 1
ELECTRICAL CIRCUIT OF AN IDEAL TRANSFORMER WITH 100 PERCENT EFFICIENCY

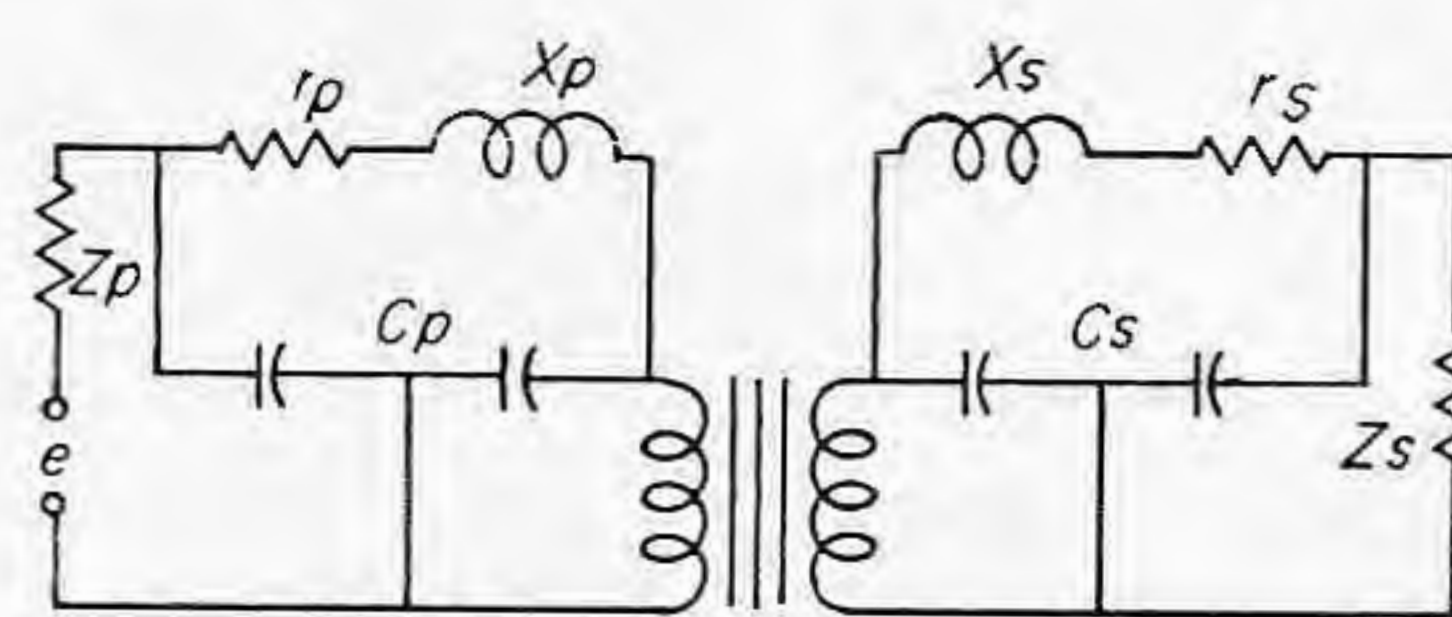


Fig 2
ILLUSTRATING A PHYSICAL TRANSFORMER

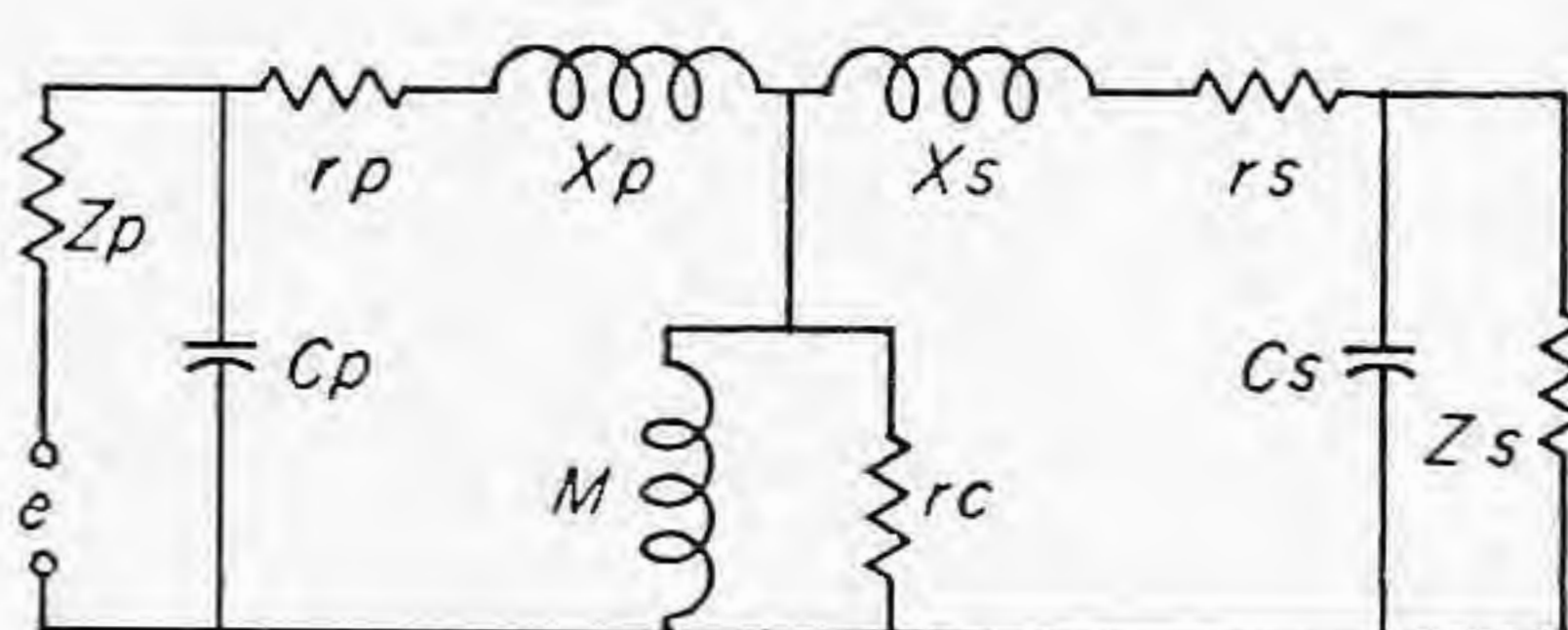


Fig 3
EQUIVALENT T NETWORK OF THE SAME TRANSFORMER IN FIG. 2

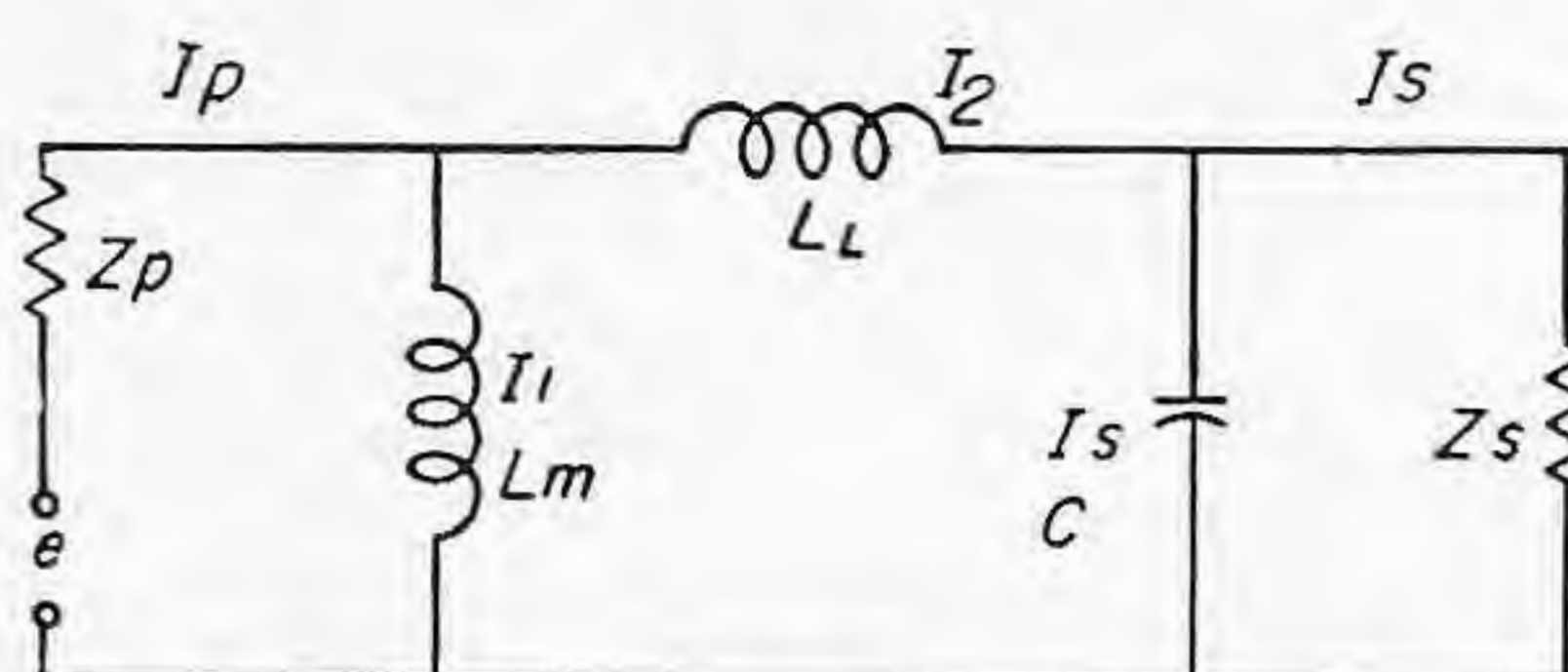


Fig 4
A SIMPLIFICATION OF THE EQUIVALENT TRANSFORMER CIRCUIT SHOWN IN FIG 3

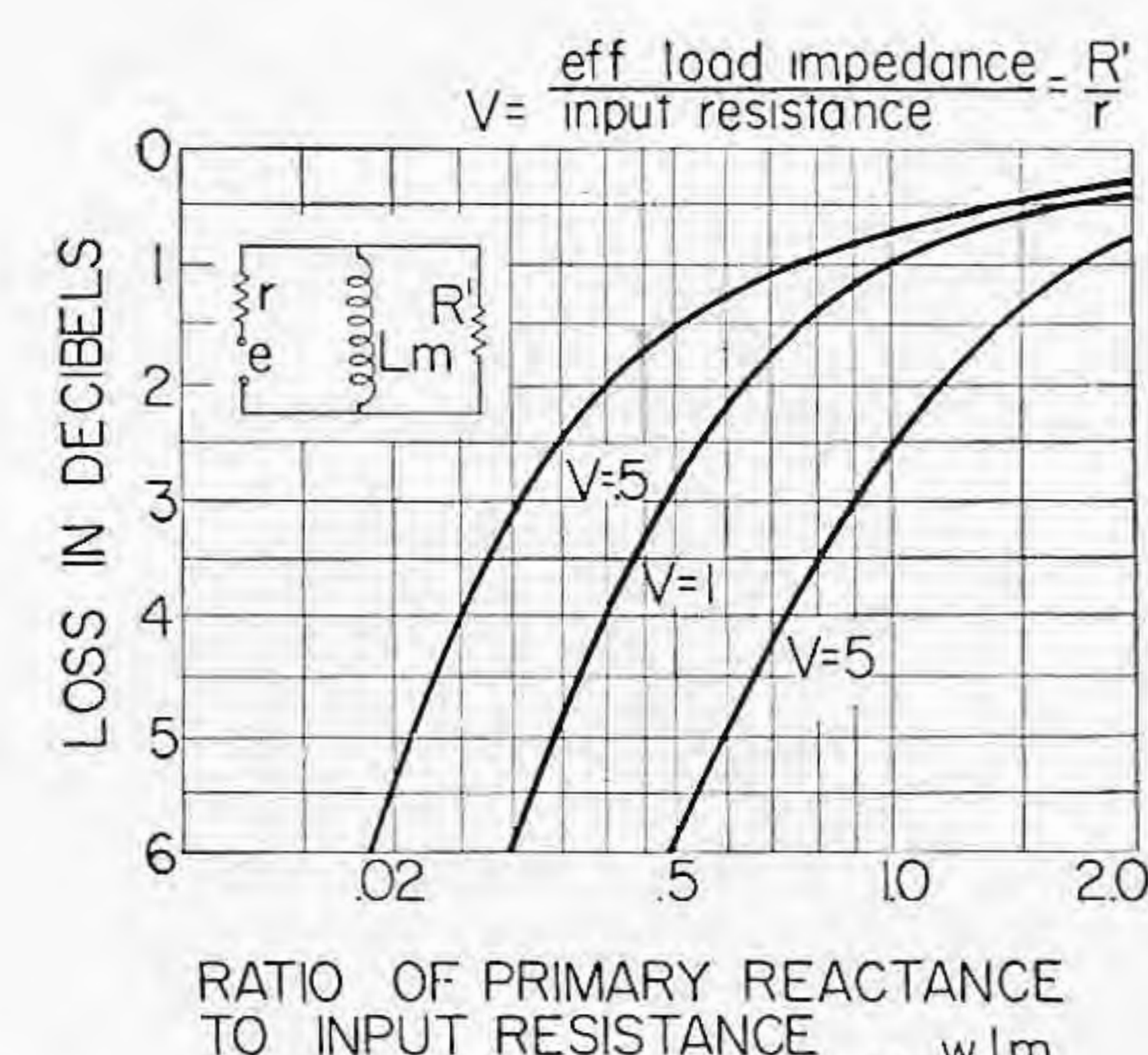


FIG. 5 CURVES SHOWING THE LOSS DUE TO SHUNTING EFFECT OF THE PRIMARY OF A TRANSFORMER

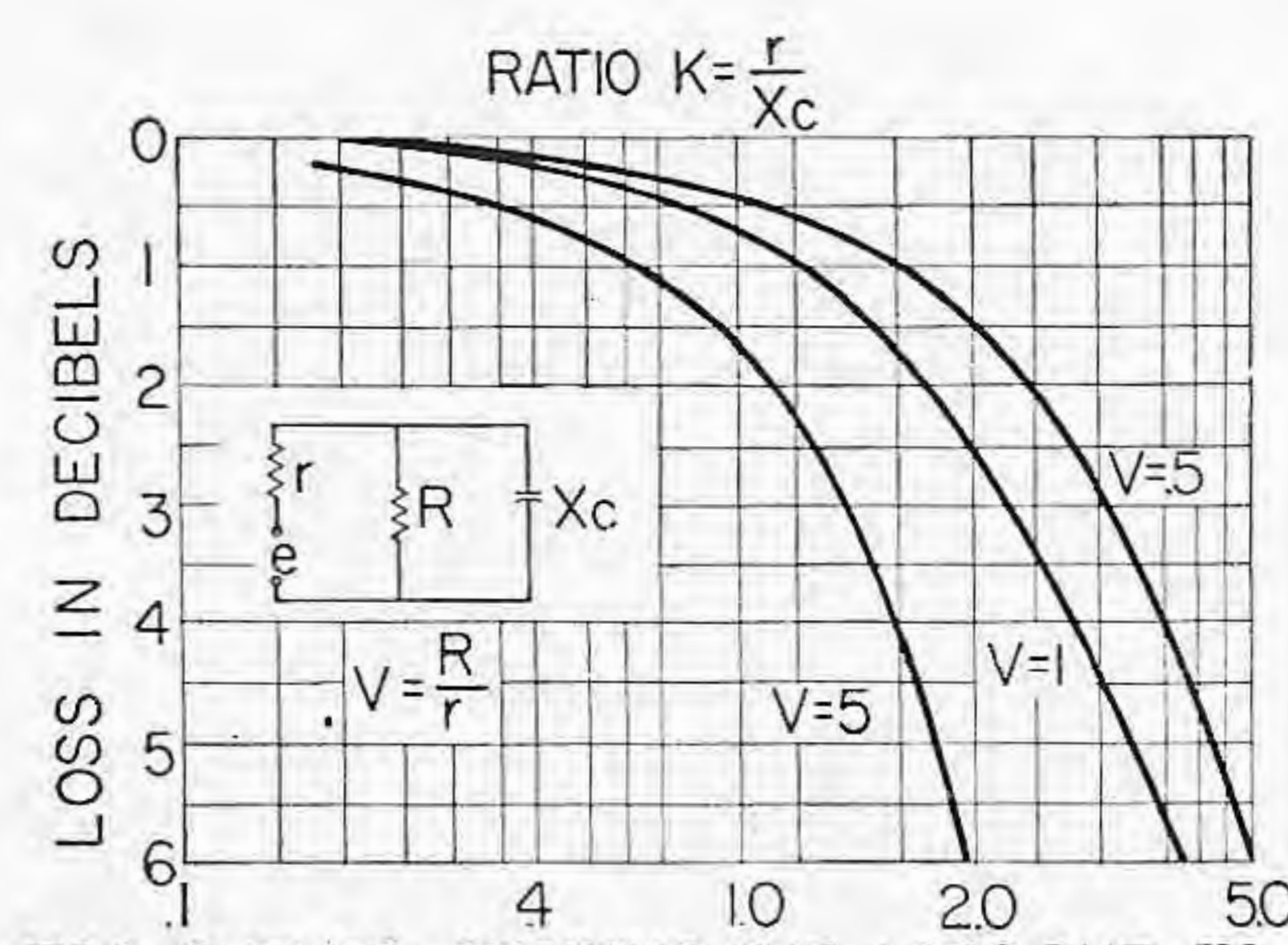


FIG. 6 CURVES SHOWING THE LOSS DUE TO DISTRIBUTED CAPACITY IN AN AUDIO FREQUENCY CIRCUIT

FACTORS CONTROLLING FREQUENCY RESPONSE

The figures at the left indicate the basic story with reference to high fidelity audio transformers. Figure 1 represents an ideal transformer having 100% efficiency. Figure 2 shows the equivalent of a practical transformer with its varied reactances and capacities. Figure 3 is an equivalent "T" network of the same transformer, which can be further simplified to the basic elements illustrated in Figure 4. It is apparent from Figure 4 that L_m (primary inductance) represents a reactance which drops with frequency and, as a consequence, controls the low frequency response. L_L (the leakage reactance) and C (the distributed capacity) similarly control the high frequency response. Figures 5 and 6 respectively show the frequency attenuation curves for given primary inductance and distributed capacity.

UTC FREQUENCY RESPONSE

It is obvious from the above that high primary inductance will provide good low frequency response. For a particular core structure this necessitates the use of a large number of turns in the transformer windings. Unfortunately, as the turns are increased, both leakage reactance and distributed capacitance increase, with a corresponding loss in the higher frequencies. This effect is minimized in UTC transformers by employing transformer core material of exceptional permeability, so that a minimum number of turns are required. In low level transformers we employ Hipermalloy, which is a stable nickel iron alloy selected for maximum characteristics. In high level transformers oriented grain silicon steels provide maximum permeability and minimum distortion. Uniquely low distributed capacity and leakage reactance are obtained through special winding methods. Output transformers will have as many as 16 interleaved windings to provide extremely low leakage reactance. Input transformers employ sectional windings to effect very low distributed capacity.

WAVE FORM DISTORTION

Low wave form distortion requires great care in both design and manufacture. UTC high fidelity products provide a minimum of such distortion through the use of conservative flux densities, symmetrical coupling in pushpull windings, low leakage reactance, and negligible resonance in coil structures. For example, low distortion in high level transformer designs, necessitates excellent response down to 7 cycles to assure negligible distortion at 20 to 30 cycles. For low distortion at high frequencies, in addition to primary and secondary windings being interleaved, excellent coupling is provided between primary halves. As an example, the LS-692 modulation transformer employs 10 sections in each primary half . . . with these sections individually cross-interleaved.

SHIELDING

Inductive pickup in low level transformers is a basic circuit problem. The balanced coil structure, a development of the UTC engineering staff, is employed in the bulk of UTC low level transformers to provide very low pickup. This structure employs two accurately balanced astatic coils . . . virtually neutralizing stray pickup. In addition, the UTC high fidelity lines are housed in heavy high conductivity die castings, plus additional multiple alloy shields for many of the designs. While it is customary to make such shields of 47% nickel alloy, all UTC shields are 78% nickel to provide the greatest hum attenuation possible.

FLEXIBILITY

The multi-tapped winding, a development of the UTC engineering staff, provides a wide range of impedances in high fidelity transformers with excellent coupling and balance. High efficiency and full response are obtained at any of the impedances specified.

RELIABILITY

The designs of UTC high fidelity transformers are inherently centered around ruggedness and reliability. In addition, however, UTC quality control, which is accepted as the highest in the industry, assures the fulfillment of these design requirements in the ultimate manufactured product. The recognition of the dependability of UTC units is illustrated by their usage in the finest broadcast equipment, produced by such organizations as RCA, General Electric, etc.

LINEAR STANDARD AUDIO TRANSFORMERS

The ever increasing use of wide range equipment for broadcast service has reached the point where the major limiting factor is the frequency range of the transformers employed. UTC Linear Standard components represent the closest approach to the ideal transformer from the standpoint of uniform frequency response, low wave form distortion, high efficiency, thorough shielding, and dependability.

LINEAR STANDARD AUDIO UNITS FEATURE:

UNIFORM FREQUENCY RESPONSE . . . at low frequencies, is effected through the use of HIPERM-ALLOY, a STABLE nickel iron alloy of very high initial permeability. Uniform high frequency response is the result of multiple section interleaved windings arranged in a semi-toroidal coil structure. This, plus special winding methods and insulations, assures a minimum of distributed capacity and leakage reactance.

UTC LINEAR STANDARD transformers are the **ONLY** audio units with a **GUARANTEED** response . . . ± 1 DB from 20 to 20,000 cycles.

For low distortion, high level units far exceed this . . . ± 1 DB from 7 to 50,000 cycles.

MINIMUM HUM PICKUP . . . is accomplished through the use of a hum balanced, semi-toroidal, coil structure which affords maximum neutralization of external fields. In addition, all units employ high conductivity outer case for maximum shielding. For very low level applications, units whose code numbers end in X employ multiple alloy shielding, making possible a transformer with extremely low inductive pickup.

DEPENDABILITY . . . is a function of external and internal structure. Linear Standard units are housed in rugged die cast cases of precise dimension with reversible mounting to permit above chassis or subchassis wiring. The solid terminal posts on low absorption bakelite are arranged in a circular layout so that a round chassis hole will clear all terminals. Coils are vacuum baked and impregnated. **Semi-hermetic sealing** is accomplished through the use of a high adhesion compound poured through the large opening opposite the terminal board after controlled preheating of the unit for full compound penetration.

LOW IMPEDANCE TO GRID TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative * hum	Unbal. DC in prim'y	Case No.
LS-10	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200, 250, 333, 500/600 ohms	60,000 ohms in two sections	20-20,000	+19	-74 DB	.5 MA	LS-1
LS-10X	As above	As above	50,000 ohms	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-12	Low impedance mike, pickup or multiple line to push pull grids	50, 125/150, 200, 250, 333, 500/600 ohms	120,000 ohms overall, in two sections	20-20,000	+19	-74 DB	.5 MA	LS-1
LS-12X	As above	As above	80,000 ohms overall, split	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-14X	Low impedance mike, pickup, or parallel mixer to grid	2.5, 5.5, 10, 15, 22, 30, 38, 60 ohms	50,000 ohms	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-15X	Three isolated lines or pads to one or two grids	30, 50, 200, 250 ohms each primary	60,000 ohms overall, in two sections	20-20,000	+17	-92 DB-Q	.5 MA	LS-1
LS-18	High level multiple line to push pull grids	50, 125/150, 200, 250, 333, 500/600 ohms	50,000 ohms overall, in two sections	20-20,000	+28	-50 DB	.5 MA	LS-2
LS-26	Bridging line to single or push pull grids	5,000 ohms	60,000 ohms in two sections	15-20,000	+23	-74 DB	0 MA	LS-1

MIXING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative * hum	Unbal. DC in prim'y	Case No.
LS-30	Mixing, low impedance mike, pickup, or multiple line to multiple line	50, 125/150, 200, 250, 333, 500/600 ohms	50, 125/150, 200, 250, 333, 500/600 ohms	7-50,000	+23	-74 DB	.5 MA	LS-1
LS-30X	As above	As above	As above	20-20,000	+20	-92 DB-Q	.3 MA	LS-1
LS-31	Three isolated lines or pads to multiple line	30, 50, 200, 250 ohms each primary	50, 125/150, 200, 250, 333, 500/600 ohms	20-20,000	+23	-74 DB	.5 MA	LS-1
LS-32	Mixing, low impedance mike, pickup or parallel mixer to multiple line	2.5, 5.5, 10, 15, 22, 30, 38, 60 ohms	50, 125/150, 200, 250, 333, 500/600 ohms	20-20,000	+23	-74 DB	.5 MA	LS-1

The values of unbalanced DC shown will effect approximately 1.5 DB loss at 30 cycles.

* Comparison of hum balanced unit with shielding to normal uncased type.

Q Multiple alloy magnetic shield.



LS-1 CASE

Length 3 1/8"
Width 2 5/8"
Height 3 1/4"
Mounting 1 5/16" x 2 7/16"
Screws 6-32
Cutout 1 7/8" dia.
Unit Weight 3 lbs.



LS-2 CASE

Length 4 7/16"
Width 3 1/2"
Height 4 3/16"
Mounting 2 1/16" x 3 1/16"
Screws 8-32
Cutout 2 3/4" dia.
Unit Weight 7.5 lbs.



LS-3 CASE

Length 5 13/16"
Width 5"
Height 4 1/16"
Mounting 4 3/16" x 5 1/32"
Screws 10-24
Cutout 3 3/4" dia.
Unit Weight 15 lbs.

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative * hum	Unbal. DC in prim'y	Case No.
LS-19	Single plate to push pull grids like 2A3, 6L6, 5881 Split secondary	15,000 ohms	95,000 ohms 1.25:1 each side	20-20,000	+20	-50 DB	0 MA	LS-1
LS-21	Single plate to push pull grids. Split pri. and sec.	15,000 ohms	135,000 ohms; 3:1 overall	10-20,000	+20	-74 DB	0 MA	LS-1
LS-40	Single plate to push pull grids. Split secondary	15,000 ohms	135,000 ohms; 3:1 overall	30-18,000 (± 2 db)	+20	-74 DB	8 MA	LS-1
LS-25	Push pull plates to push pull grids. Medium level. Split primary and sec.	30,000 ohms plate to plate	50,000 ohms; turn ratio 1.3:1 overall	20-20,000	+23	-74 DB	1 MA	LS-1

PLATE, CRYSTAL, PHOTOCELL, AND BRIDGING TO LINE TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level dbm	Relative * hum	Unbal. DC in prim'y	Case No.
LS-27	Single plate to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600 cycles	30-15,000	+23	-74 DB	8 MA	LS-1
LS-50	Single plate to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	10-40,000	+23	-74 DB	0 MA	LS-1
LS-51	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	10-40,000	+24	-74 DB	1 MA	LS-1
LS-150	Bridging from 50 to 500 ohm line to line	4,000 ohms, bridging	50, 125/150, 200, 250, 333, 500/600	7-50,000	+23	-74 DB	1 MA	LS-1
LS-151	Bridging from 50 to 500 ohm line to line	16,000 ohms, bridging	50, 125/150, 200, 250, 333, 500/600	7-50,000	+26	-74 DB	1 MA	LS-1

HYBRID AND REPEAT COILS

Type No.	Application	Pri. and Sec. Impedances	± 1 db from	Max. Level dbm	Relative * hum	Max. Unbal. DC in Pri.	Case No.
LS-140	Line to line for isolating balanced and unbalanced circuits; balanced for maximum reduction cross talk (70 DB)	500/600 ohms split 500/600 ohms split	30-20,000	+18	-92 DB-Q	0 MA	LS-1
LS-141	Three sets of balanced windings for hybrid service, centertapped	500/600 ohms 500/600 ohms	30-15,000	+18	-74 DB	0 MA	LS-1

DRIVER TRANSFORMERS

Type No.	Application	Primary Impedance	Refl. Sec. Impedance	± 1 db from	Max. Level	Max. Unbal. DC in Pri.	Case No.
LS-6	Driver, push pull 2A3's, etc., to push pull 845 or 211D grids	5,000 ohms plate to plate	2:25 primary impedance; turns ratio 1.5:1 overall	20-20,000	15 watts	5 MA	LS-2
LS-47	Driver from push pull 2A3's, or similar to class B 838's, 805's, or ZB120's	5,000 ohms plate to plate	.1 pri. impedance turns ratio, Pri./1/2 Sec. 3.2:1	20-20,000	20 watts	5 MA	LS-2
LS-48	Driver transformer push pull 845's to 805 grids in class B	12,000 ohms plate to plate	.038 pri. impedance turns ratio, Pri./1/2 Sec. 5.1:1	20-20,000	40 watts	15 MA	LS-3

HIGH LEVEL MATCHING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-33	High level line matching	50, 125, 200, 250, 333, 500/600 ohms	1.2, 2.5, 5, 7.5, 10, 15, 20, 30, 50, 125, 200, 250, 333, 500/600	10-40,000	20 watts	LS-2
LS-34	High level line matching	50, 125, 200, 250, 333, 500/600 ohms	1.2, 2.5, 5, 7.5, 10, 15, 20, 30, 50, 125, 200, 250, 333, 500/600	10-40,000	40 watts	LS-3

The values of unbalanced DC shown will effect approximately 1.5 DB loss at 30 cycles.

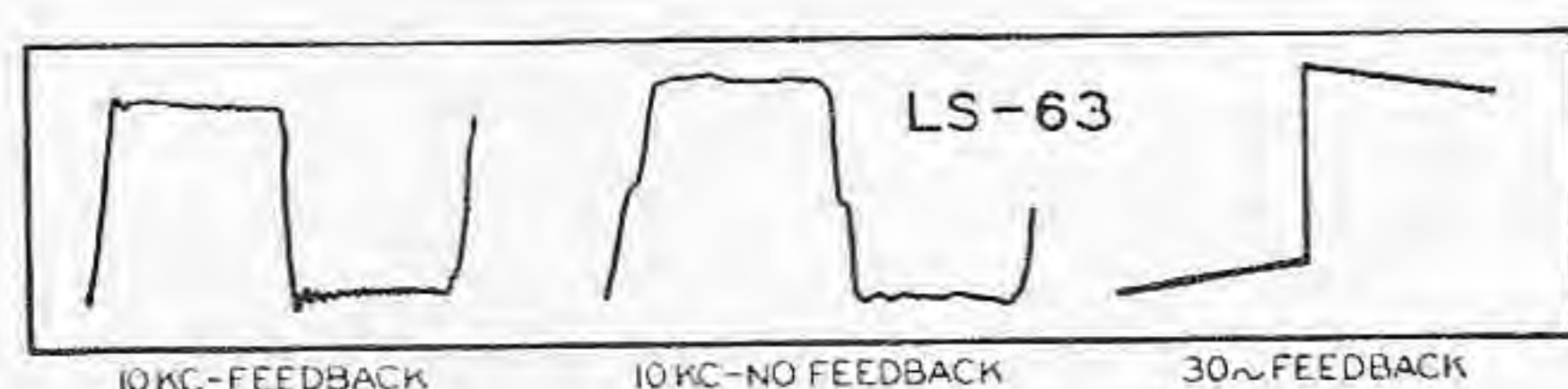
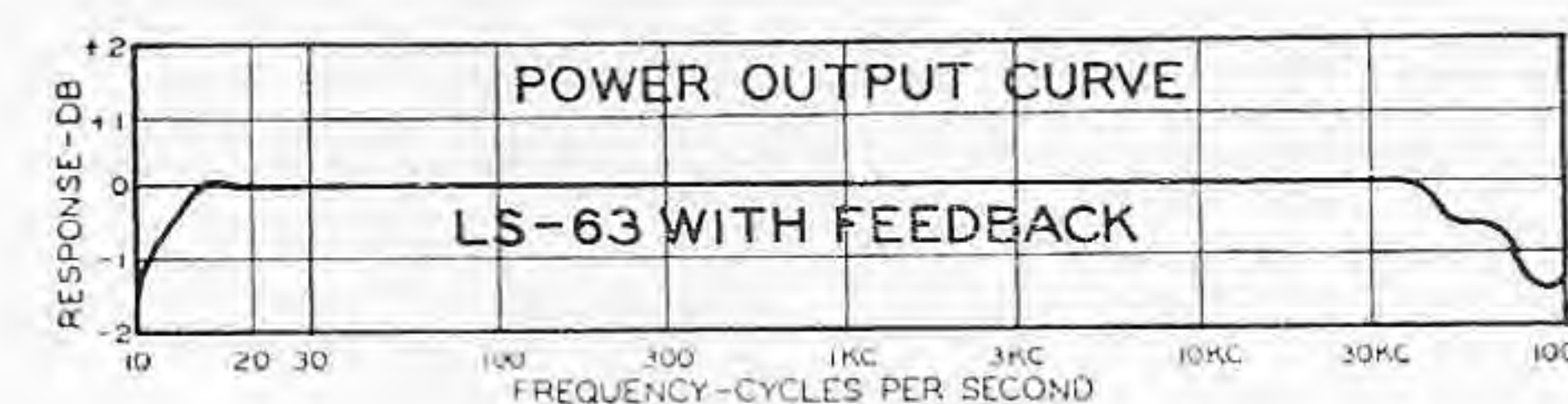
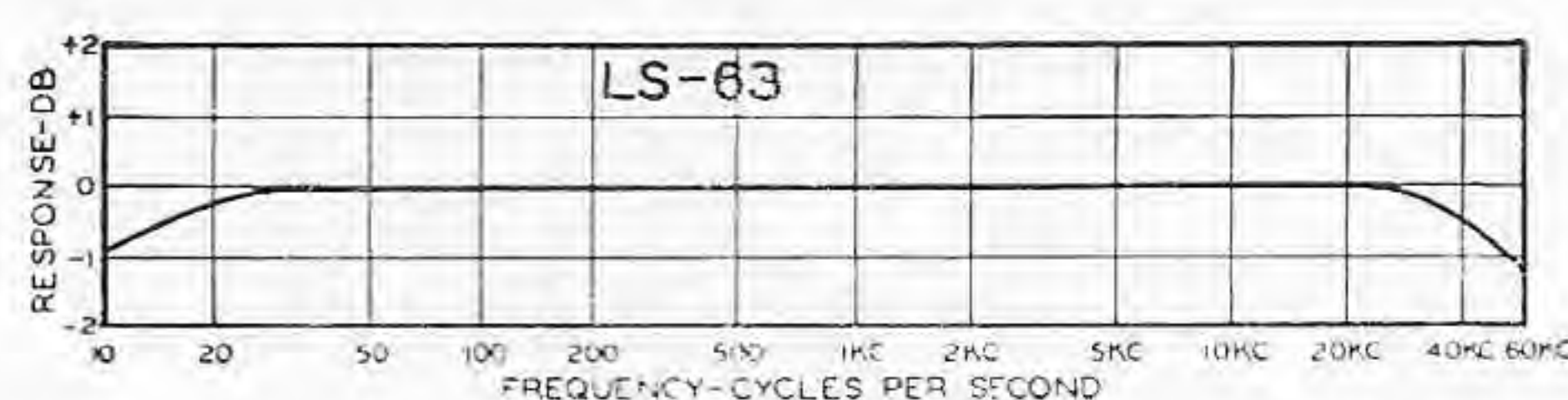
* Comparison of hum balanced unit with shielding to normal uncased type.

Q Multiple alloy magnetic shield.

LS OUTPUT TRANSFORMERS... THE FINEST

While the UTC Linear Standard line is generally designed for a flat response from 20 cycles to 20 Kc., a much wider response is required for output transformers. A transformer that would be down 1 DB at 20 cycles and 20 Kc. would have substantial distortion components at 30 cycles and 10 Kc. As is noted in the left curve below, typical UTC output transformers are down less than 1 DB at 10 cycles and less than 1 DB at 50 Kc. Because of this, a fine power output curve is possible. The center curve below indicates the power output response curve of a "Williamson" Amplifier employing the LS-63. The third figure below illustrates square waves obtained with the LS-63 transformer. Of particular interest is the short rise time, which is far superior for UTC transformers than any standard make which we have measured. The excellent high frequency response is evident both with and without feedback. At the low frequency end the high inductance of these transformers is illustrated by the small angle at the top of the 30 cycle square wave.

The above characteristics are obtained only by maintaining high primary inductance and low leakage reactances. For the LS-63 the primary inductance is 300 Hys. at 50 volts, 60 cycles. The leakage reactance of each half primary to the secondary is approximately 11 Mhy., and the leakage reactance of each half primary to the other half primary is approximately 20 Mhy. For the LS-35, these reactance values are 7 Mhy. and 11 Mhy. respectively . . . for the LS-65, 5 Mhy. and 10 Mhy.



LS-6 CASE

Length15 $\frac{3}{4}$ "
 Width13"
 Height... LS-69124"
 Height... LS-69228"
 Mounting Dimension...7 $\frac{3}{8}$ " x 14 $\frac{1}{8}$ "
 Mounting Hole $\frac{3}{8}$ " dia.
 Unit Weight350 lbs.
 Unit Weight... LS-691370 lbs.
 Unit Weight... LS-692520 lbs.

DIMENSIONS

Type No.	L	W	H	Mtg.	Wt.
LS-103	13 $\frac{1}{8}$	8 $\frac{1}{2}$	10 $\frac{1}{4}$	7 $\frac{1}{4}$ x 12 $\frac{1}{8}$	58
LS-106	17 $\frac{1}{4}$	10	13 $\frac{1}{4}$	8 $\frac{1}{2}$ x 16 $\frac{1}{2}$	

OUTPUT TRANSFORMERS TO LINE AND VOICE COIL

Type No.	Primary will match following typical tubes	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-52	Push pull 6AQ5, 6V6, 6L6, 5881	8,000 ohms	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-54	Same as above	8,000 ohms	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-55	Push pull 2A3's, 300B, 6L6's, 6AS7G, 6080, 350B	5,000 ohms plate to plate and 3,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-57	Same as above	5,000 ohms plate to plate and 3,000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-58	Push pull parallel as above.	2,500 ohms plate to plate and 1,500 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	40 watts	LS-3
LS-61	Push pull triode: 6AS7G, 6080, 6L6, 5881, KT-66, 807, 1614	10,000 ohms plate to plate and 6,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-63	Same as above	10,000 ohms plate to plate and 6,000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-6L1	Self bias push pull 6L6's, 5881, KT-66, 6146 triode, 6159 triode	9,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	30 watts	LS-3
LS-6L4	Push pull 6146, 6159, 6L6's fixed bias or push pull parallel 6L6's self bias	4,500 ohms plate to plate and 3,800 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	12-50,000	55 watts	LS-3
LS-35	EL-34 in AB-feedback (see circuit pg. 25)	5,000 ohms CT 43% screen taps	4, 8, 16	7-50,000	35 watts	LS-3
LS-65	6550's in AB ₁ feedback (see circuit pg. 25)	3,300 ohms CT 40% screen taps	4, 8, 16	7-50,000	60 watts	LS-3

MODULATION TRANSFORMERS

(No DC in Secondary)

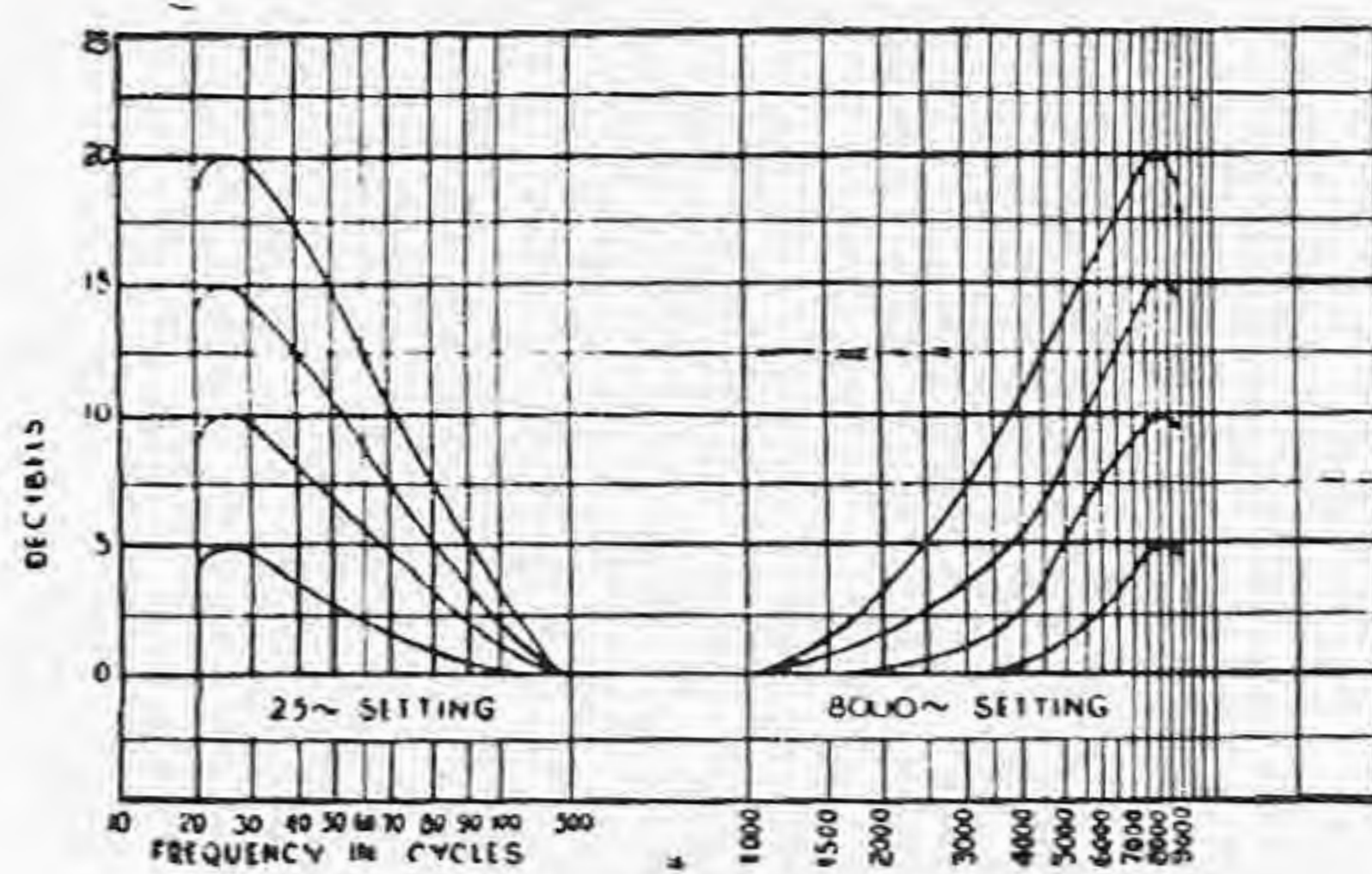
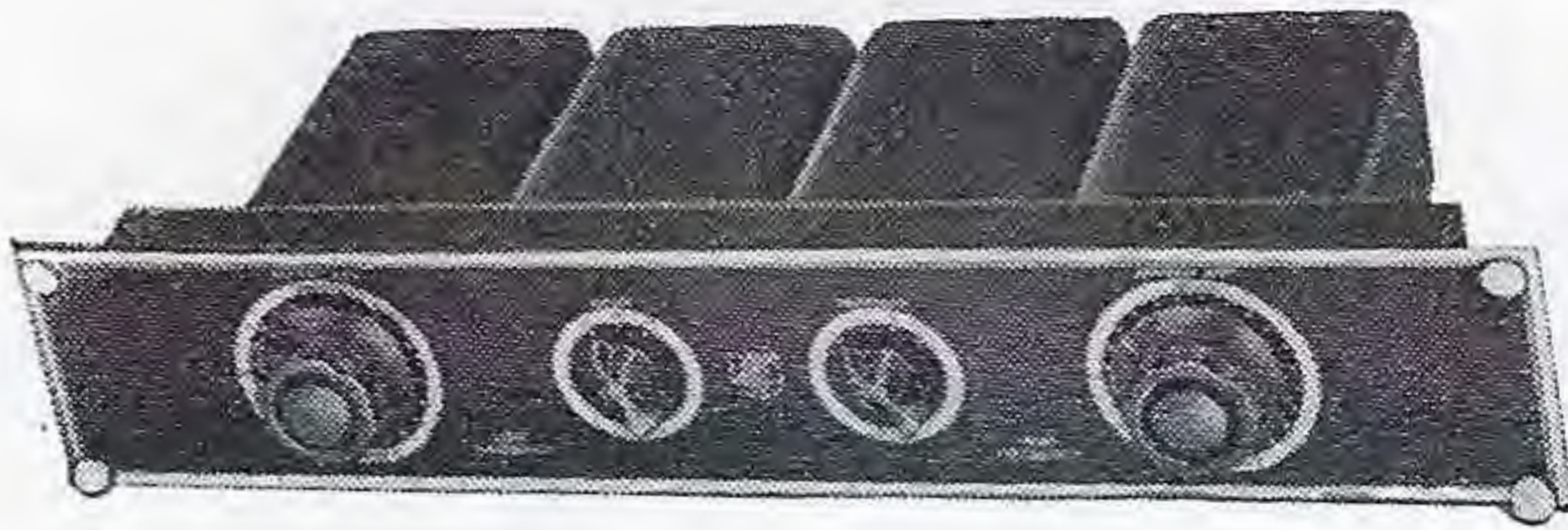
Type No.	Primary will match following typical tubes	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-56	Push pull 2A3's, 6A5G's, 300B's, 6AS7G, 6L6, 6080	5,000 ohms plate to plate and 3,000 ohms plate to plate	6000, 5000, 4000, 1800, 1500, 1000, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	20 watts	LS-2
LS-691	Class B, 833A, 250TH	10,400 ohms plate to plate	4500, 4000, 3500, 2750, 2000	20-40,000	1000 watts	LS-6
LS-692	Class B push pull parallel 833A's	4,750 ohms plate to plate	2500, 2000, 1750, 1500, 1250	20-40,000	2500 watts	LS-6

MODULATION REACTORS

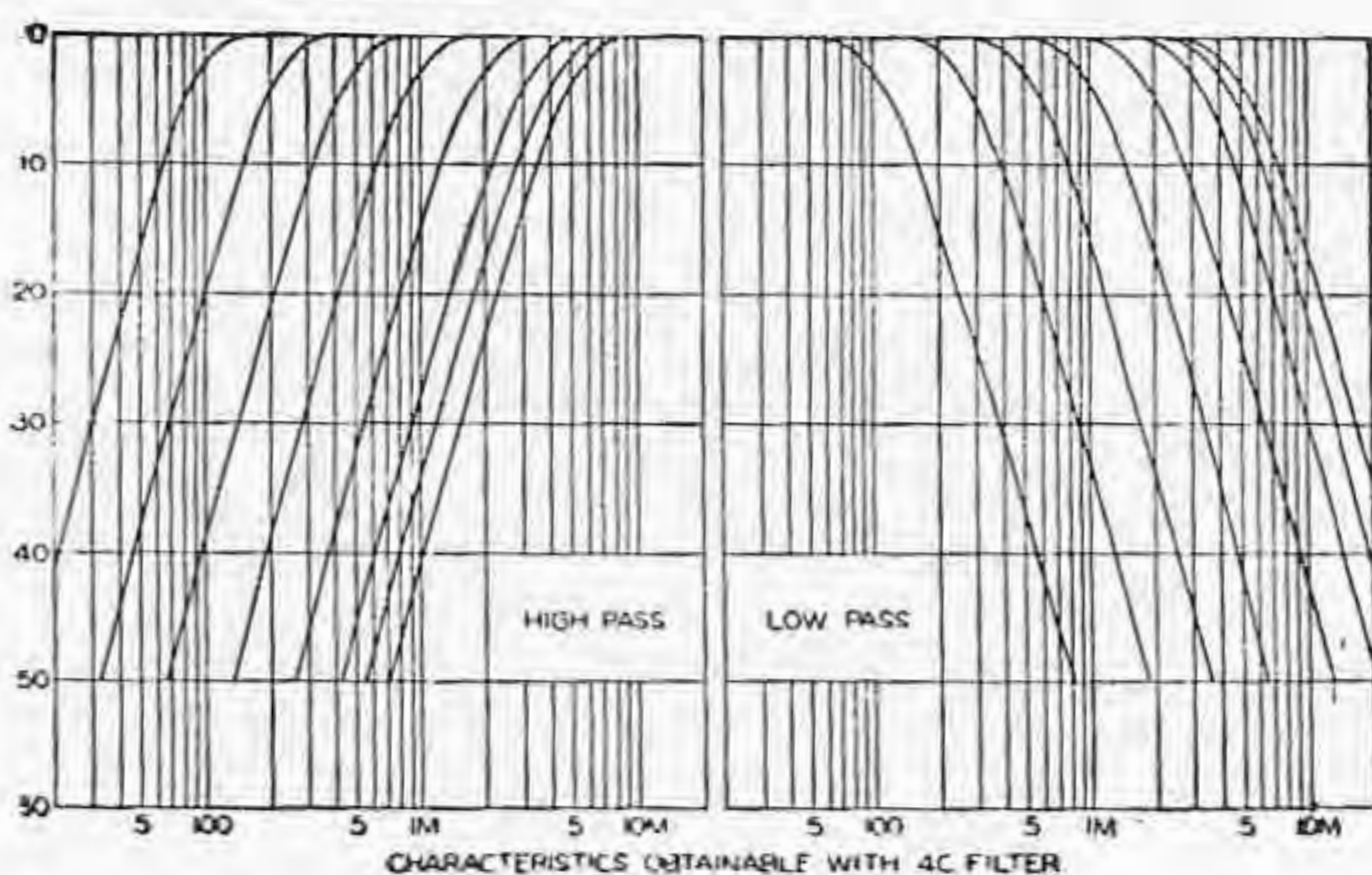
Type No.	Application	Inductance	DC Current	DC Resistance	Insulation Test Voltage
LS-103	Modulation reactor	50 hy	500 MA	175 ohms	7500
LS-106	Modulation reactor	50 hy	750 MA	120 ohms	10000

BROADCAST AND RECORDING EQUALIZERS AND FILTERS

500/600 ohms



TYPICAL CURVES OBTAINABLE WITH 3A OR 3AX EQUALIZER



CHARACTERISTICS OBTAINABLE WITH 4C FILTER

3AX UNIVERSAL EQUALIZER

The universal characteristics of the UTC 3AX equalizer have made it the most popular item for broadcast and recording equalization. This unique unit, with which most communication engineers are already familiar, is an accurately calibrated, quickly adjustable, combined low and high frequency equalizer. The low frequency controls include a switch for adjusting the maximum equalization frequency to 25, 50, or 100 cycles and a calibrated T-pad for exact adjustment of the amount of equalization. The high frequency portion of this unit includes a switch to set maximum equalization point at 4000, 6000, 8000, 10,000 or 15,000 cycles, and a similar calibrated control reading directly in DB. Equalization up to 25 DB available at any frequency selected.

Through a unique arrangement of compensating pads, changes in adjustment of the 3AX equalizer do not affect the apparent aural level. The construction is of the depressed chassis, etched panel, rack mount type. Thoroughly shielded against inductive pickup with UTC Trialloy Shielding. Dimensions of panel 3 1/2" x 19". Depth 7 1/2". Weight 15 lbs.

3A UNIVERSAL EQUALIZER

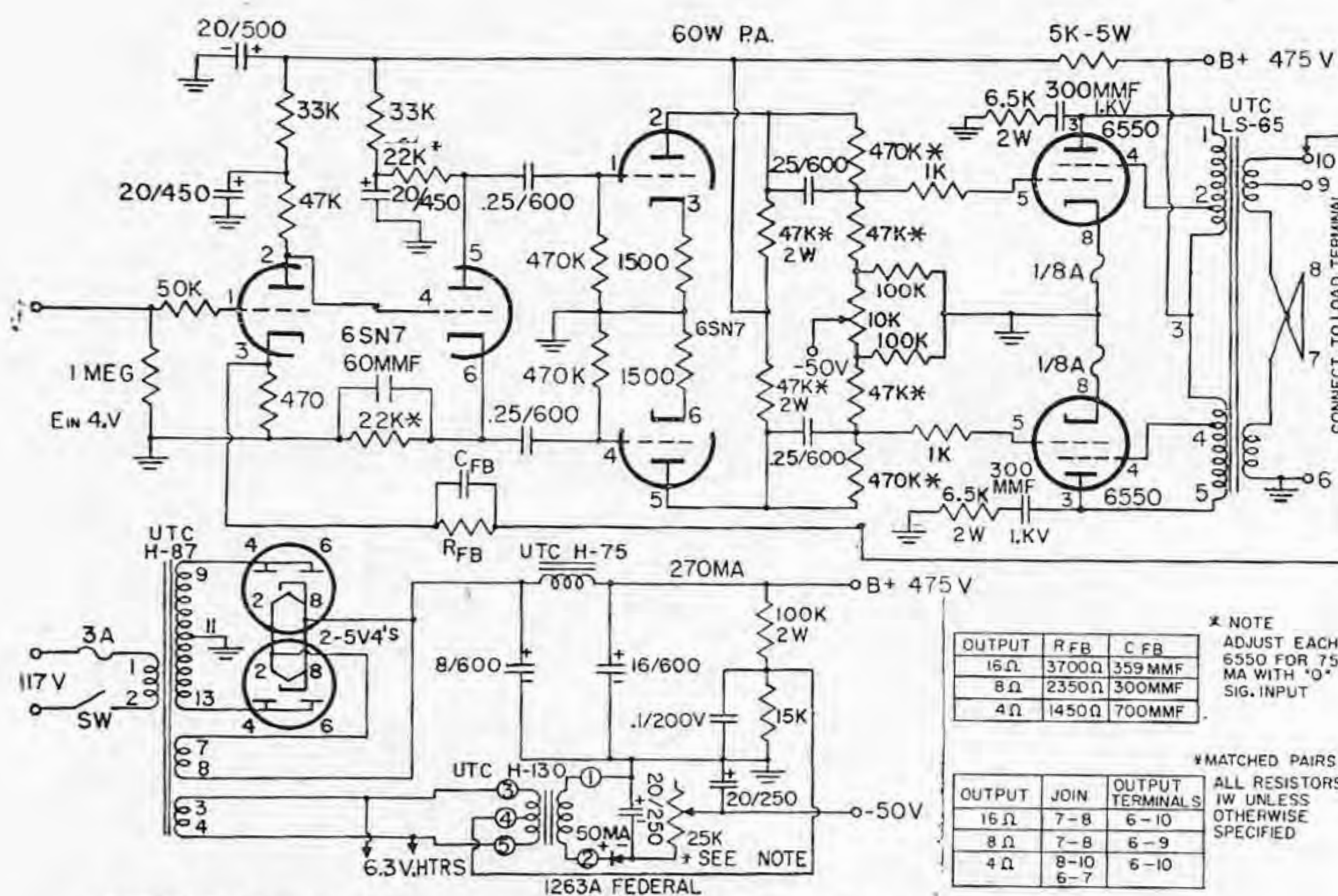
The 3A equalizer is identical to the 3AX described above, except that it does not incorporate the compensating pads for constant insertion loss. The insertion loss is roughly proportional to the amount of equalization employed. All other characteristics identical with the 3AX unit, this item weighs 10 lbs.

4C SOUND EFFECTS FILTER

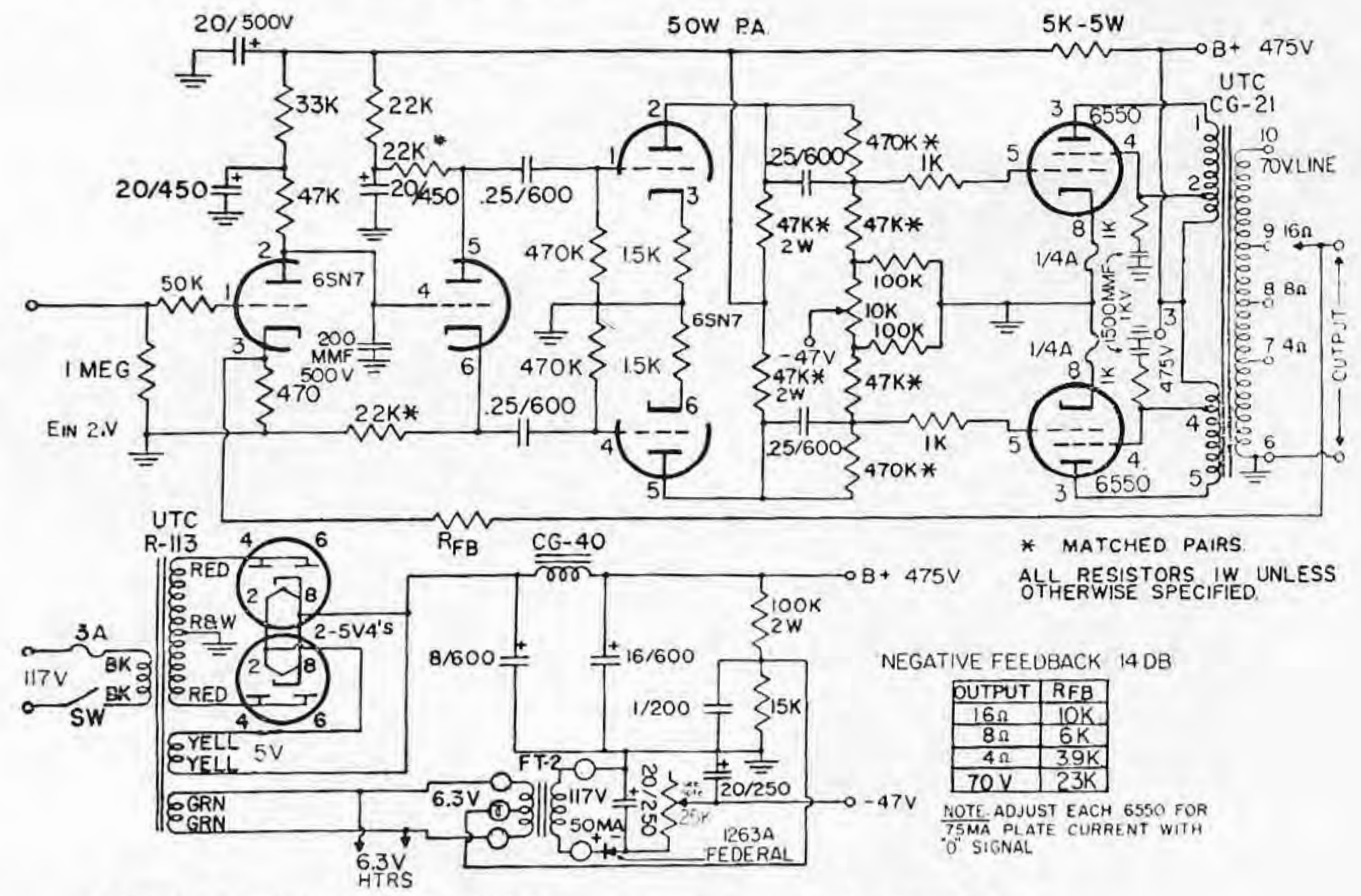
The use of filters to obtain unusual sound effects has found wide application in broadcast technique. The Model 4C Filter was originally developed for one of the large broadcasting chains, and is now used extensively by many broadcast stations. Two controls are provided on the 5 1/4" x 19" panel, which is similar in appearance to the 3AX unit. The weight of the 4C unit is 20 lbs.

The low pass switch can be set for cutoff frequencies of 100, 250, 500, 1000, 2000, 3000, 4000, or 5000 cycles. The high pass switch has identical frequency points. The great number of cutoff frequencies provides for a wide latitude of tone control. If desired, though not normally necessary, external potentiometers may be inserted in the circuit for attenuation control.

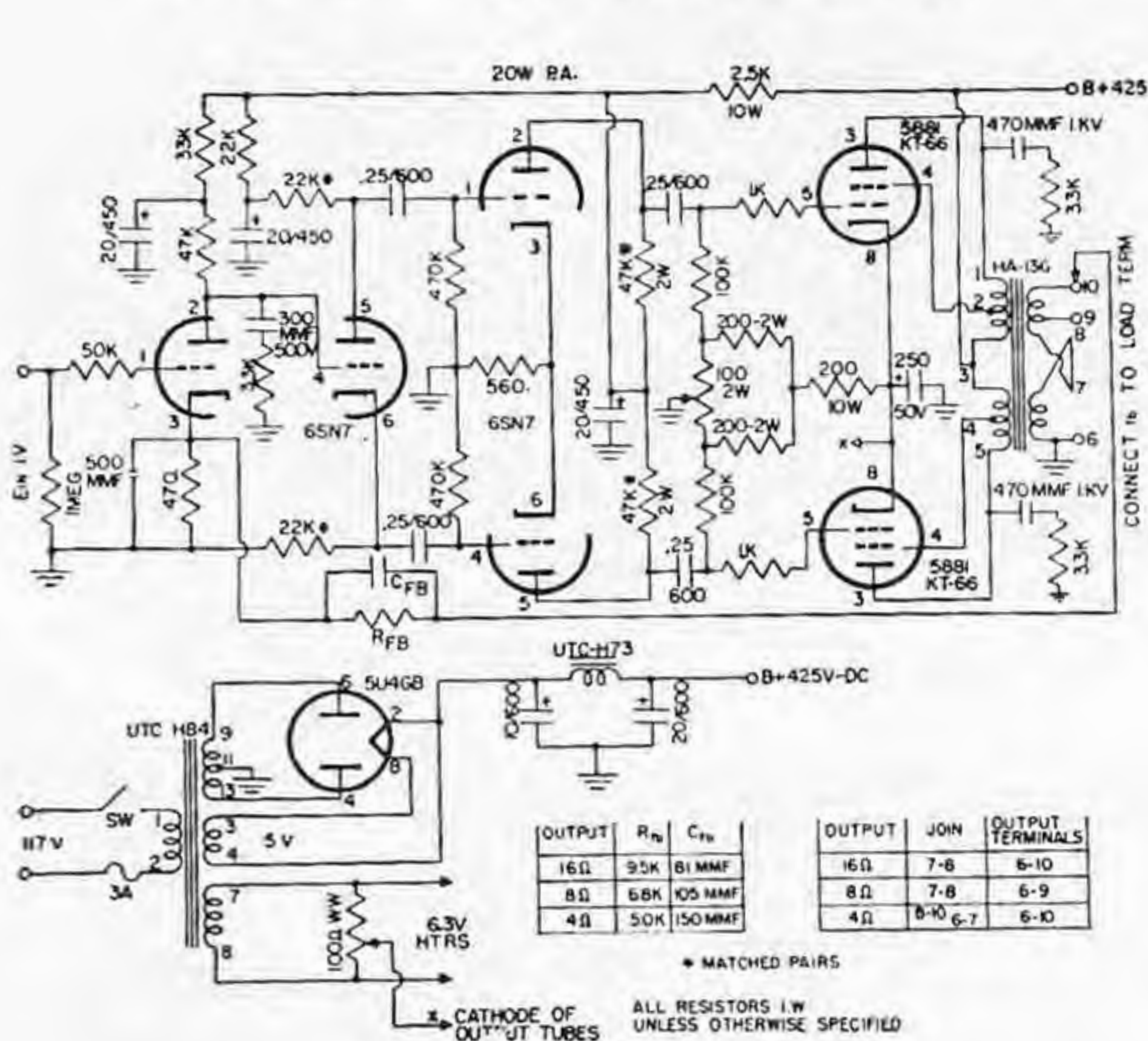
TYPICAL RECOMMENDED CIRCUITS



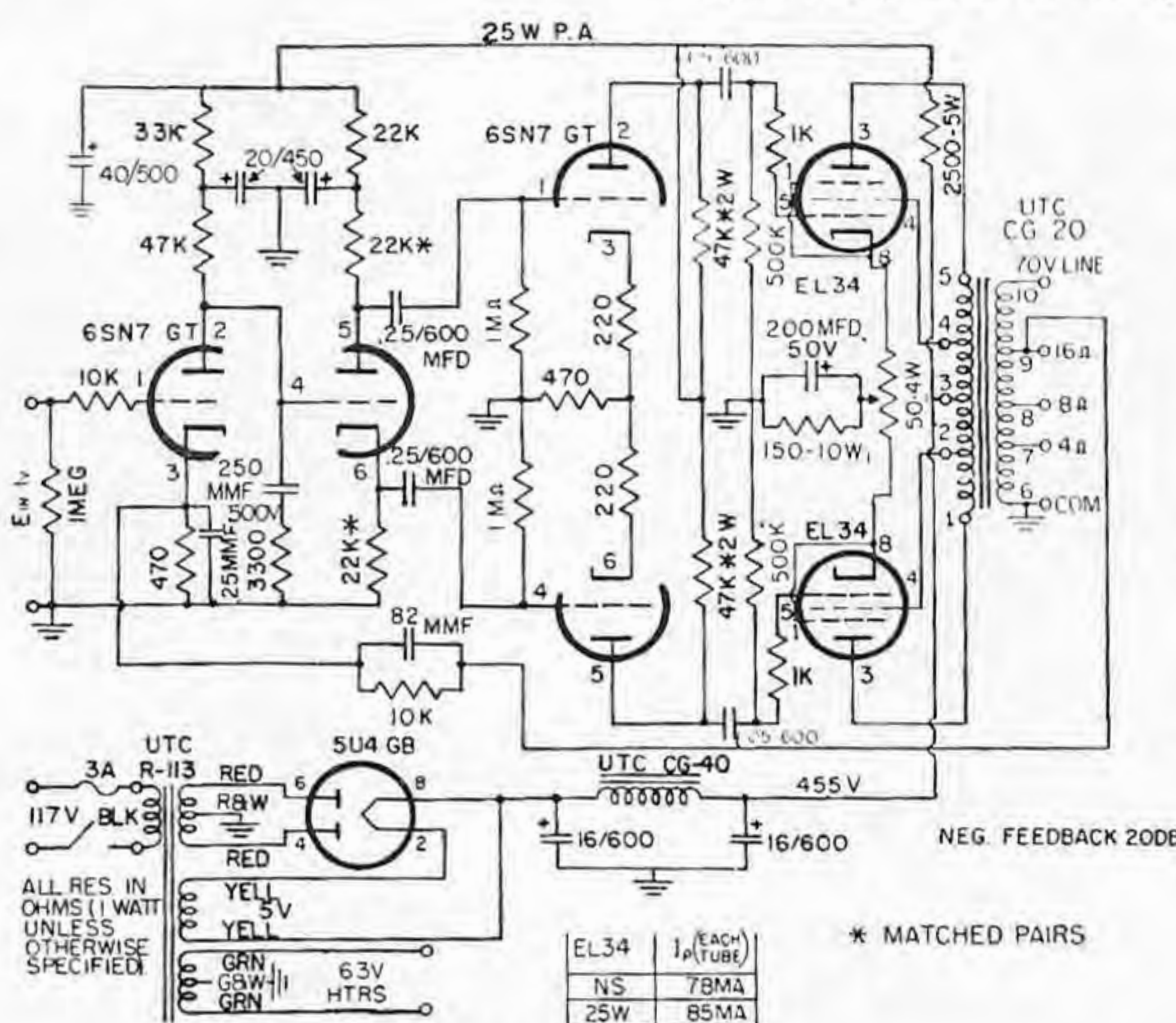
CIRCUIT PROVIDING 60 WATTS, ± 1 db from 15 cycles to 30 KC... At 1 watt, ± 1 db 3 cycles to 80 KC.



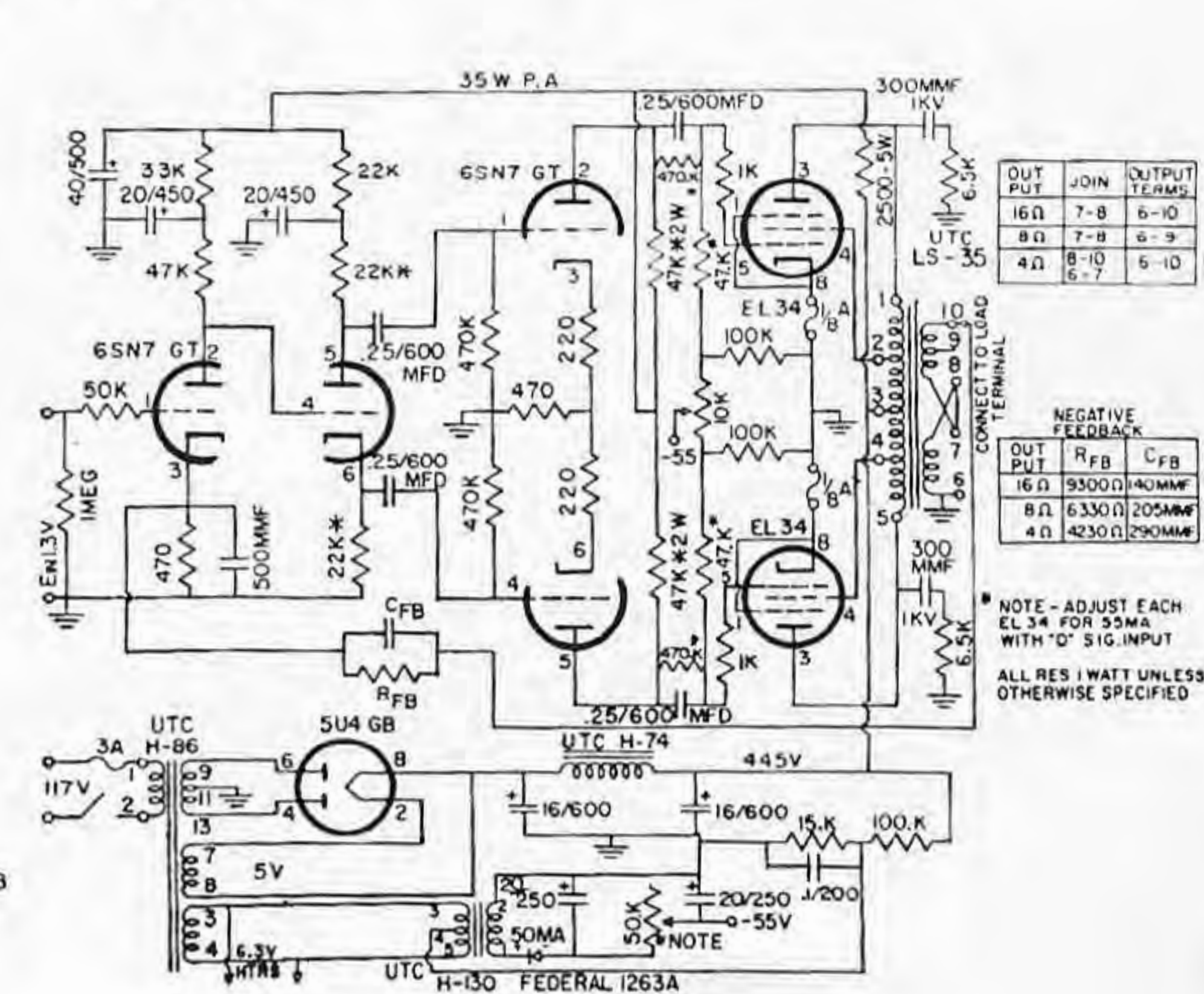
CIRCUIT PROVIDING 50 WATTS, ± 1 db 40 cycles to 10 KC... At 1 watt, ± 1 db 20 cycles to 20 KC.



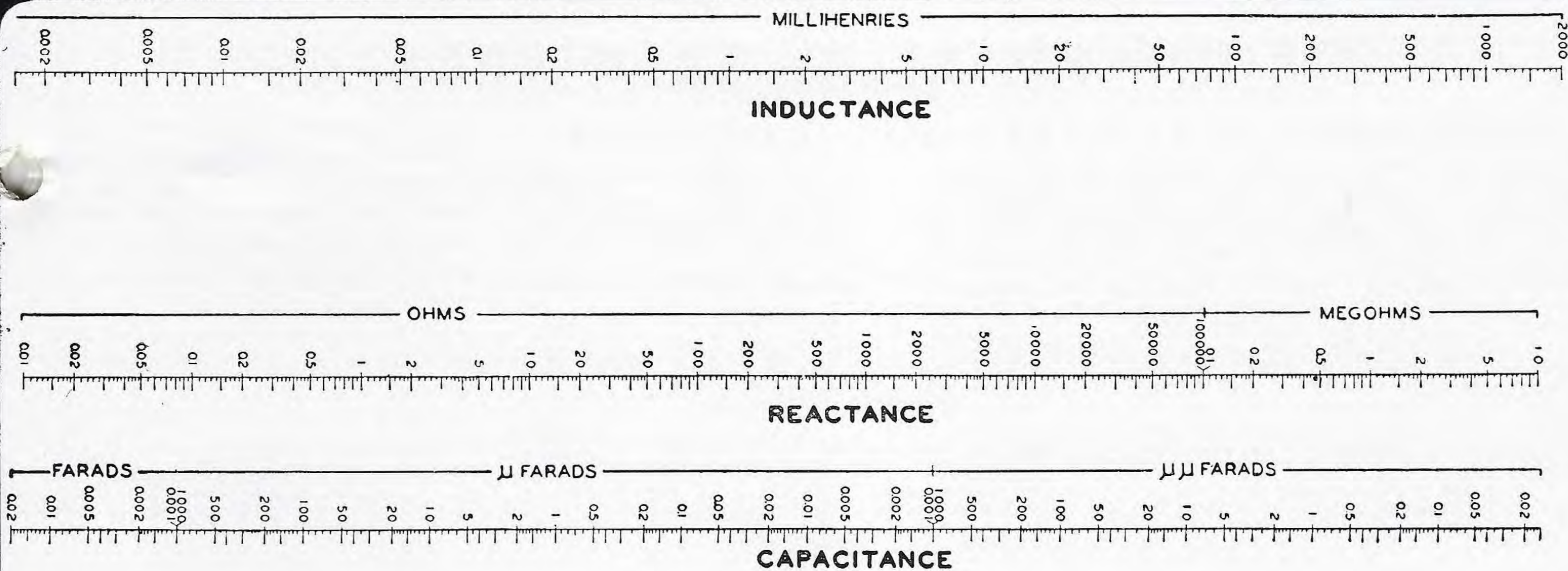
CIRCUIT PROVIDING 20 WATTS, ± 1 db 20 cycles to 30 KC... At 1 watt, ± 1 db 7 cycles to 100 KC.



CIRCUIT PROVIDING 25 WATTS, ± 1 db 40 cycles to 10 KC... At 1 watt, ± 1 db 20 cycles to 20 KC.

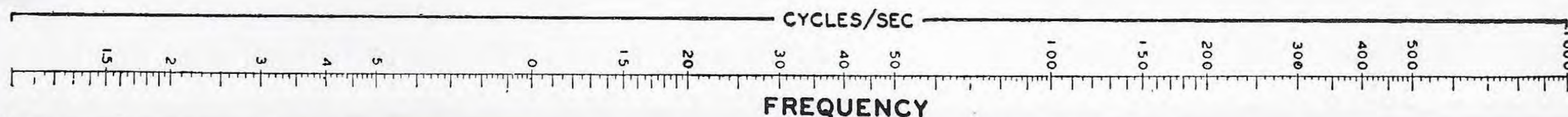
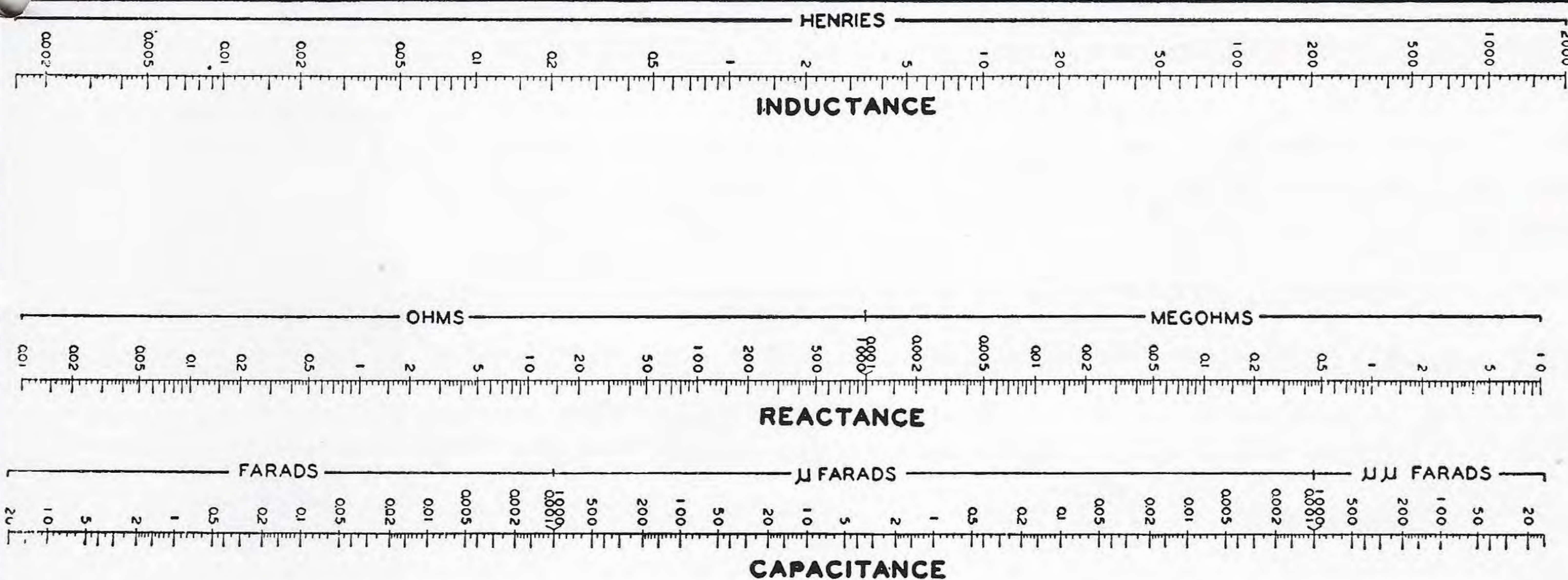
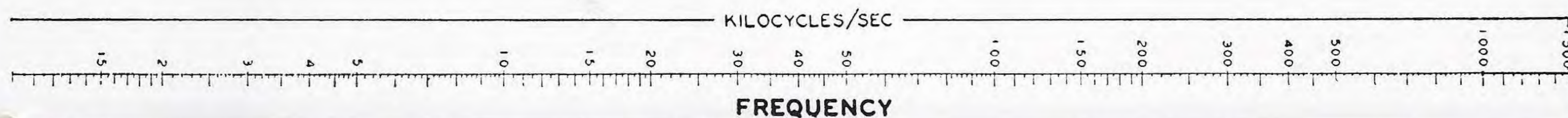


CIRCUIT PROVIDING 35 WATTS, ± 1 db from 15 cycles to 30 KC... At 1 watt, ± 1 db 7 cycles to 100 KC.



REACTANCE—FREQUENCY CHART

A straight edge across known values in any two columns will locate the corresponding values in the other two columns. For example, take an inductance of 1 Henry at 50 cycles. A straight edge across these points will intersect the reactance line at 310 ohms, and the capacity line at 10 mfd. indicating the capacity required for resonance.



UTC HIPERM ALLOY TRANSFORMERS

LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Imp. (ohms)	Secondary Impedance	± 1 db from	Max. Level dbm	Unbal. DC in Prim'y	Case No.
HA-100	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200, 250, 333, 500/600	60,000 ohms in two sections	30-20,000	+18	.5 MA	H-1
HA-100X	Same as above but with multiple alloy shield to effect very low hum pickup				+16		H-1
HA-101	Low impedance mike, pickup, or multiple line to P.P. grids	50, 125/150, 200, 250, 333, 500/600	120,000 ohms overall, split	30-20,000	+18	.5 MA	H-1
HA-101X	As above but with multiple alloy shield to effect very low hum pickup		80,000 ohms overall, split	30-20,000	+16	.5 MA	H-1
HA-103A	Low impedance mike, pickup, or parallel mixer to grid	2.5, 5.5, 10, 15, 22, 30, 38, 60	60,000 ohms in two sections	30-20,000	+18	.5 MA	H-1
HA-108	Mixing, low impedance mike, pickup, or multiple line	50, 125/150, 200, 250, 333, 500/600	50, 125/150, 200, 250, 333, 500/600	20-50,000	+20	.5 MA	H-1
HA-108X	Same as above but with multiple alloy shield to effect very low hum pickup				+18		H-1
HA-130X	Three isolated lines or pads to one or two grids with tri-alloy internal shield	30, 50, 200, 250 each primary	60,000 ohms overall, in two sections	30-20,000	+18	.5 MA	H-1

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Impedance	± 1 db from	Max. Level dbm	Unbal. DC in Prim'y	Case No.
HA-104	Single plate to P.P. grids like 2A3, 6L6 (split secondary)	15,000 ohms (split)	95,000 ohms 2.5:1	30-20,000	+20	0 MA	H-1
HA-105	Single plate to single grid (split secondary)	15,000 ohms	60,000 ohms 2:1 turn ratio	30-20,000	+20	0	H-1
HA-106	Single plate to push pull grids (split secondary)	15,000 ohms (split)	135,000 ohms 3:1 ratio overall	30-20,000	+20	0	H-1
HA-107	Push pull plates to push pull grids (split primary and secondary)	30,000 ohms plate to plate	80,000 ohms 1.6:1 turn ratio overall	30-20,000	+28	.25 MA	H-2
HA-137	Push pull plates to push pull grids (split Pri. and Sec.)	30,000 ohms plate to plate	68,000 ohms 1.5:1 turn ratio	30-20,000	+20	0	H-1

PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Imp. ohms	± 1 db from	Max. Level dbm	Unbal. DC in Prim'y	Case No.
HA-111	Crystal microphone or pickup, to multiple line	100,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-20,000 measured with resistive source	+18	0	H-1
HA-113	Single plate to multiple line	15,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-40,000	+21	0 MA	H-1
HA-133	Single plate to multiple line (D.C. in Pri.)	15,000 ohms (split)	50, 125/150, 200, 250, 333, 500/600	30-40,000	+22	8 MA	H-1
HA-114	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	30-40,000	+23	1 MA	H-1

OUTPUT TRANSFORMERS

HA-134	Push pull, 6L6, or 2A3's to line	5000/9400 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	10-50,000	15 watts		H-2
HA-135	Push pull 2A3's, etc. to voice coil	3000/5000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	10-50,000	18 watts		H-2
HA-136	5881's (KT-66's) in AB-feed back (see pg.25 circuit)	6,600 ohms CT 43% screen taps	4, 8, 16	10-50,000	20 watts		H-2

POWER TRANSFORMERS AND CHOKES

Type No.	Application	Primary Voltage 50/60 cycles	High Voltage	Filament Windings	Case No.
HP-122	Pre-amp. power supply using 6X4, 6X5GT rectifier	115	220-0-220 15 MA	6.3 V.C.T.-.6A 6.3 V.C.T.-1.2A	H-1
HP-123	Pre-amp. or tuner power supply using 6X4, 6X5GT rectifier	115	275-0-275 35 MA	6.3 V.C.T.-.6A 6.3 V.C.T.-2A	H-2

Type No.	Application	Inductance	DC Current	DC Resistance	Test Voltage	Case No.
HC-115	Parallel feed and filter choke	Series-400 hy Parallel-100 hy	2.5 MA 5 MA	6000 ohms 1500 ohms	1500	H-1
HC-116	Parallel feed and filter choke	Series-600 hy Parallel-150 hy	8 MA 16 MA	3400 ohms 850 ohms	1500	H-2
HC-117	Parallel feed and filter choke	Series-200 hy Parallel-40 hy	15 MA 35 MA	3200 ohms 800 ohms	1500	H-1

The UTC Hipermalloy audio and power transformers are specifically designed for portable and compact service. While light in weight, neither dependability nor fidelity has been sacrificed. The frequency characteristic of the Hipermalloy audio units is uniform from 30 to 20,000 cycles. They incorporate a Hipermalloy nickel iron core and hum balanced coil structure. The rugged die cast case is of high conductivity alloy finished in grey, arranged for mounting with the terminals either up or down. DC in Primary shown is maximum unbalanced.



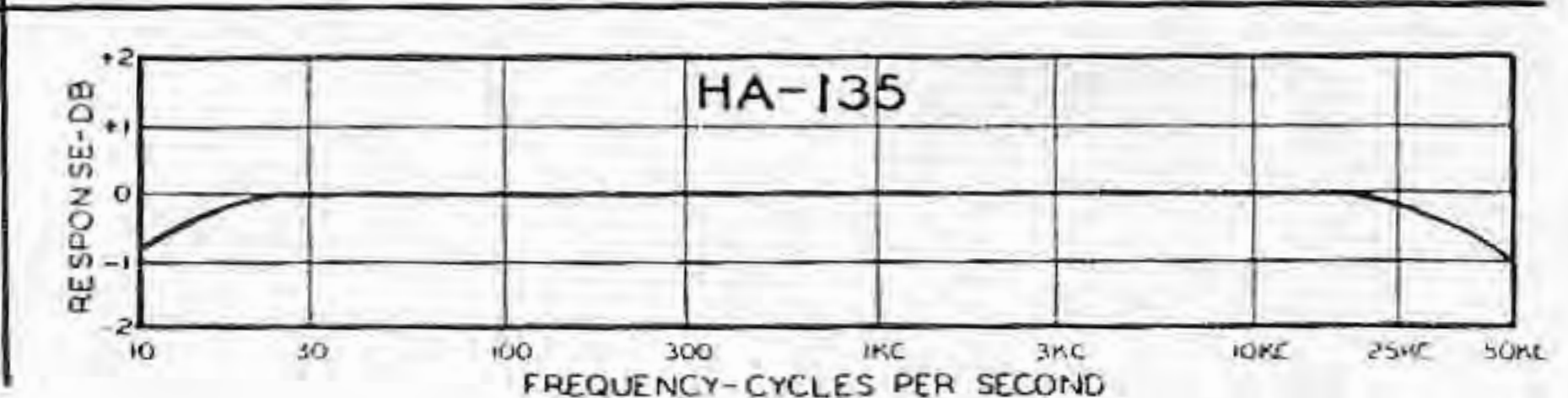
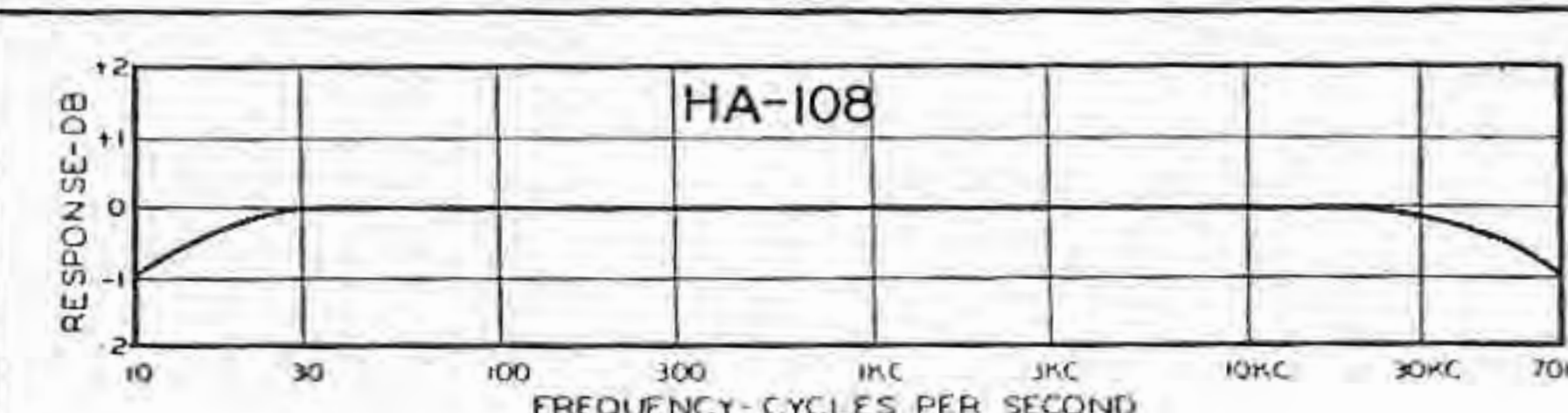
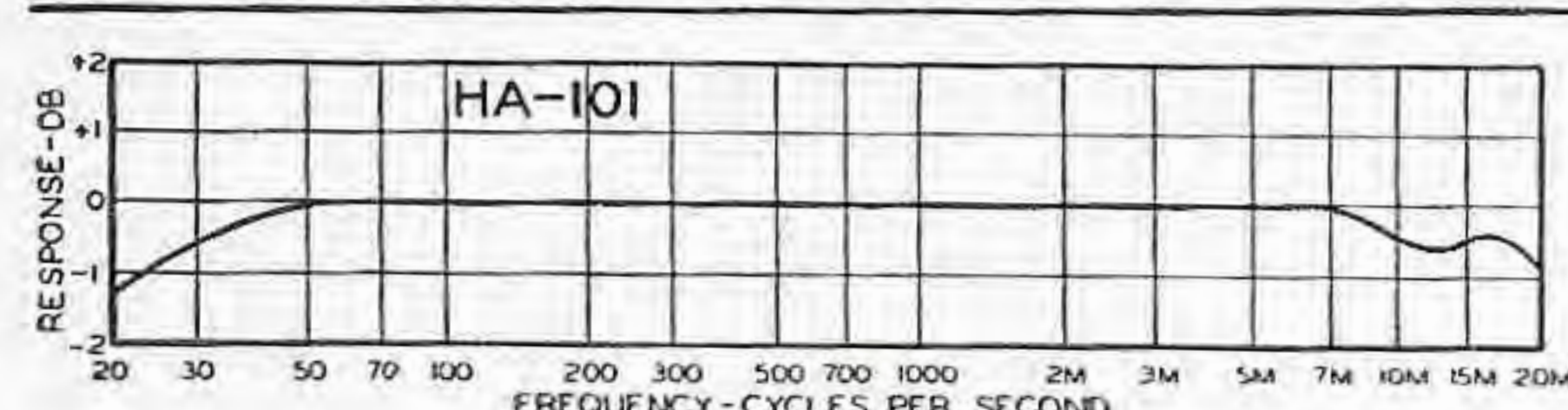
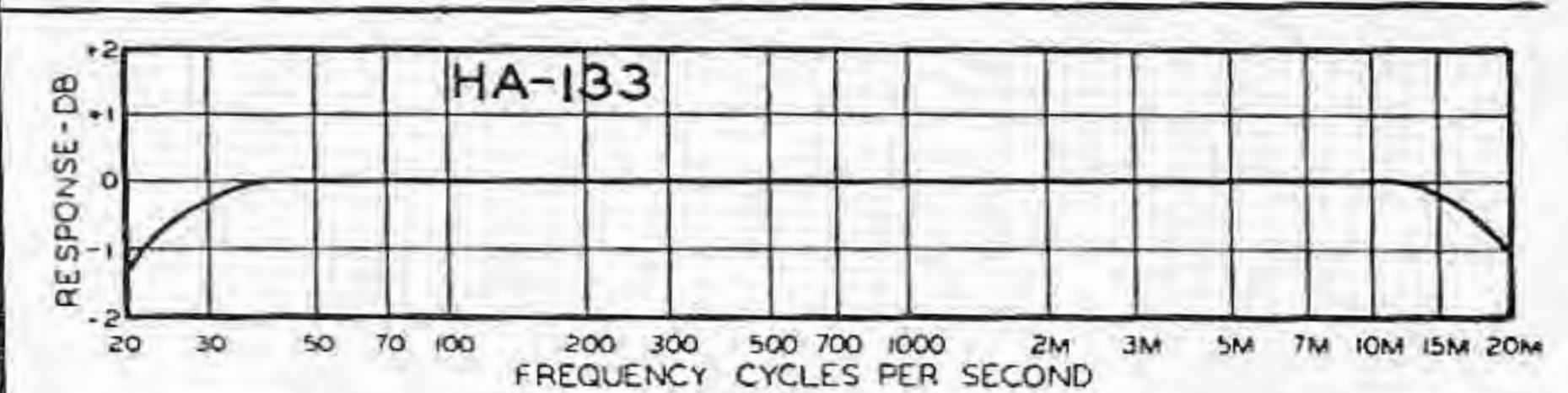
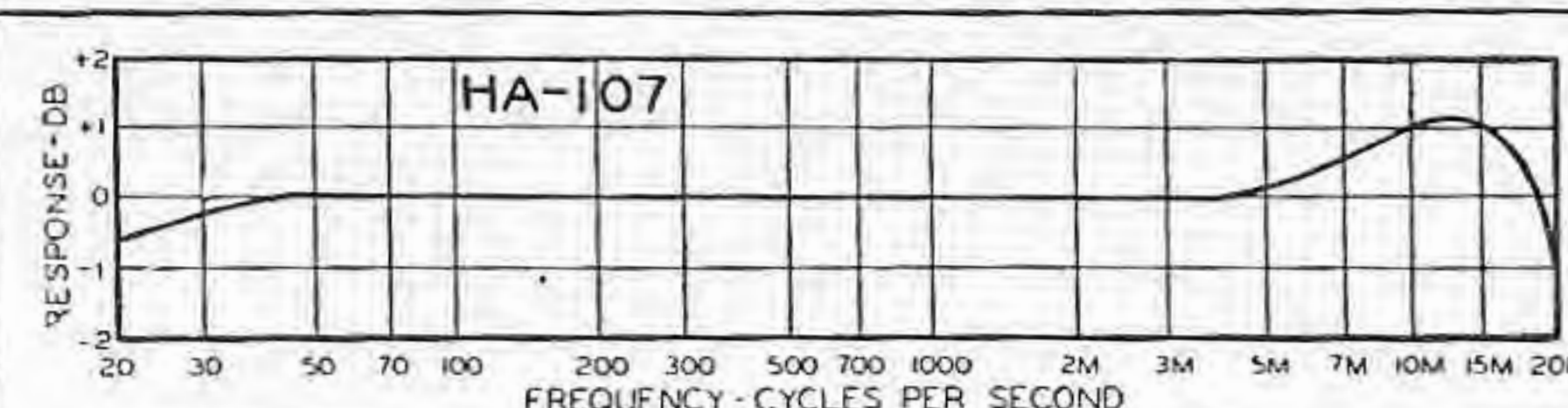
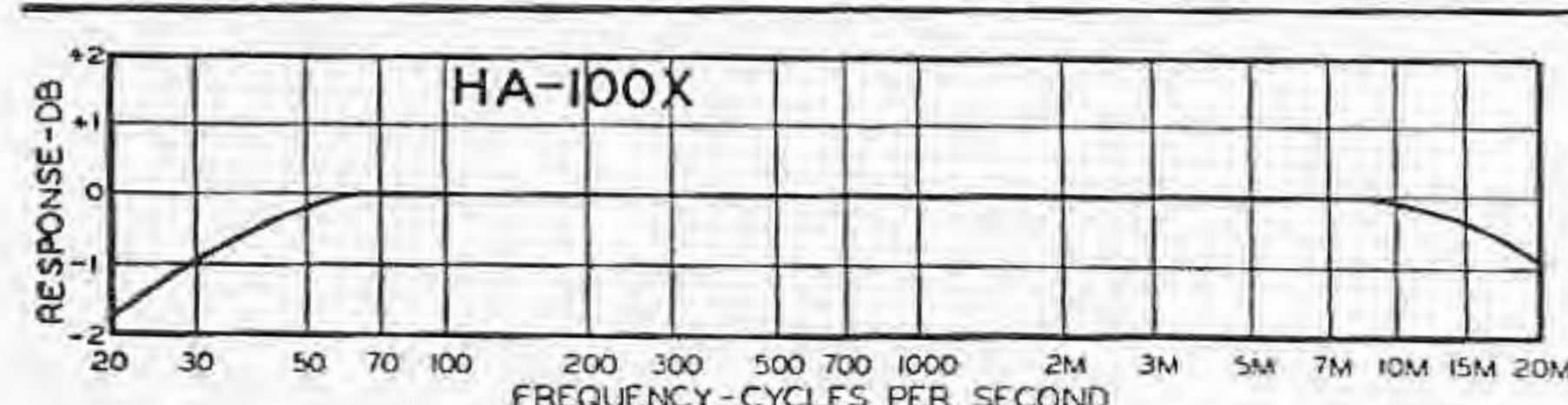
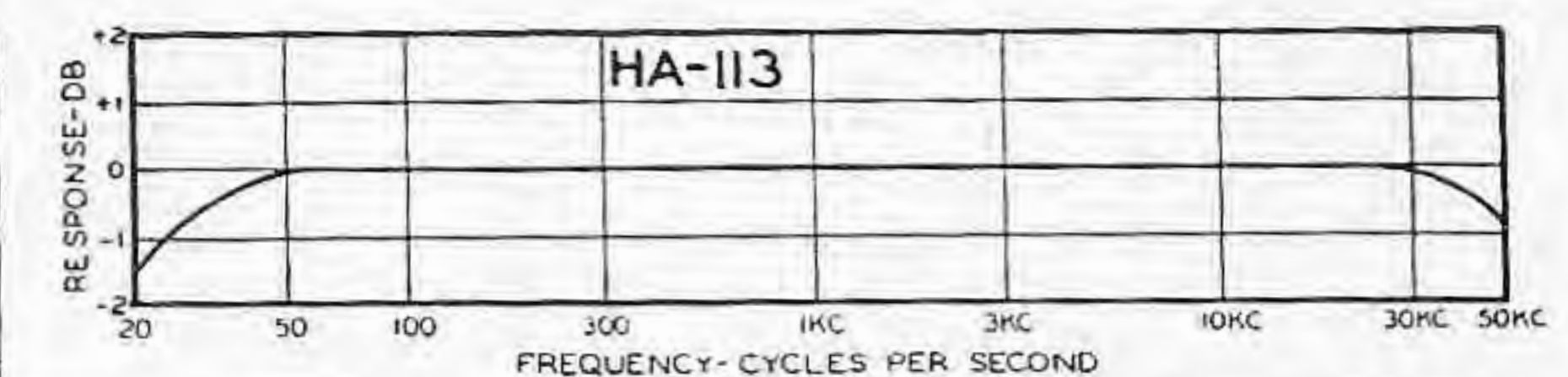
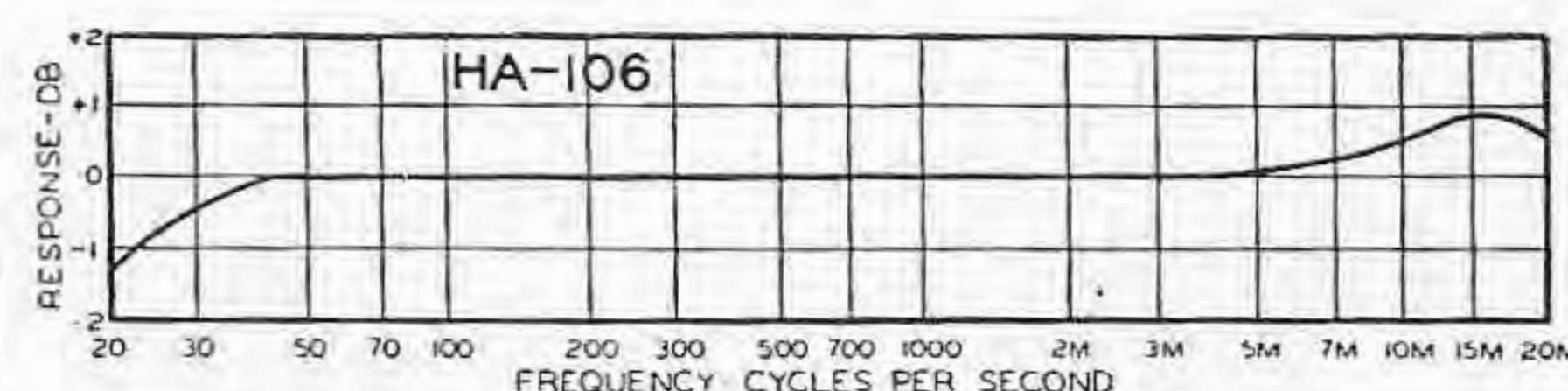
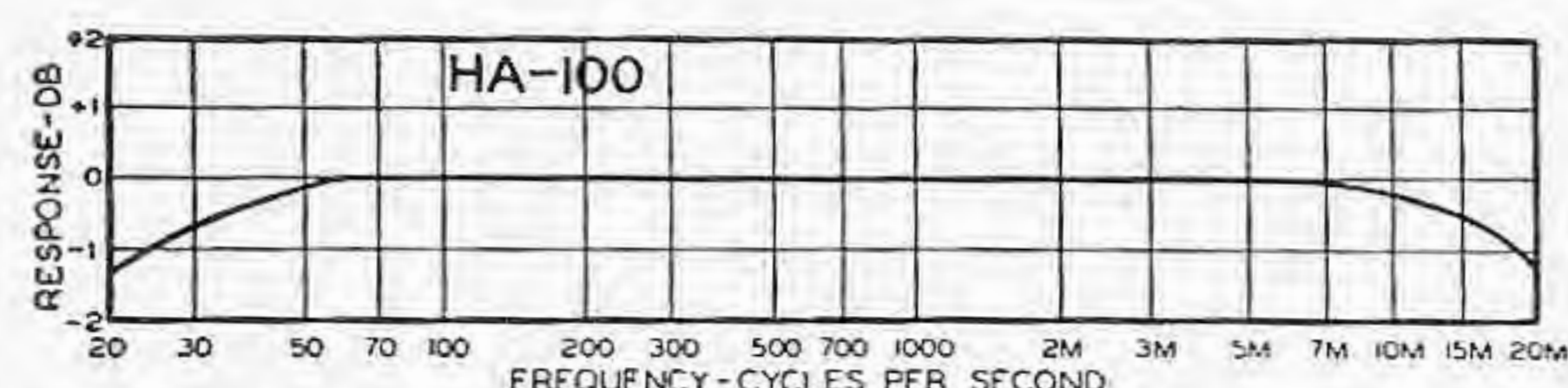
TYPE H-1 CASE

Length 2 3/8"
Width 1 15/16"
Height 3 1/8"
Mounting 1 3/8" x 1 15/16"
Screws 6-32
Cutout 1 13/16" dia.
Unit Weight 2 lbs.



TYPE H-2 CASE

Length 3 1/8"
Width 2 13/16"
Height 3 1/2"
Mounting 2" x 2 3/4"
Screws 6-32
Cutout 2 1/16" dia.
Unit Weight 5 lbs.



ULTRA COMPACT AUDIO UNITS

The **UTC Ultra compact** audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. High fidelity is obtainable in all individual units, the frequency response being ± 2 DB from 30 to 20,000 cycles, except where noted.

All units except those carrying DC in Primary employ a true hum balancing coil structure, which combined with a high conductivity outer case, effects good inductive shielding. The die-cast case provides for top or bottom mounting. Maximum operating level $+ 15$ dbm, except where noted.



TYPE A CASE

Length $1\frac{1}{2}$ "
 Width $1\frac{1}{2}$ "
 Height 2"
 Mounting $1\frac{1}{2}$ " sq.
 Screws 4-40
 Cutout $1\frac{1}{8}$ " dia.
 Unit Weight $\frac{1}{2}$ lb.

LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-10	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200/250, 333, 500/600 ohms	50,000 ohms (split)	20-20,000
A-11	Low impedance mike, pickup, or line to 1 or 2 grids	50, 200, 500	50,000 ohms CT	50-20,000 multiple alloy shield for extremely low hum pickup
A-12	Low impedance mike, pickup, or multiple line to push pull grids	50, 125/150, 200/250, 333, 500/600 ohms	80,000 ohms overall, in two sections	20-20,000
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	20-20,000
A-20	Mixing, low impedance mike, pickup, or multiple line to multiple line	50, 125/150, 200/250, 333, 500/600 ohms	50, 125/150, 200/250, 333, 500/600 ohms	10-50,000
A-21	Mixing, low impedance mike, pickup, or line to line	50, 200/250, 500/600	50, 200/250, 500/600	30-30,000 multiple alloy shield for extremely low hum pickup

INTERSTAGE AUDIO TRANSFORMERS

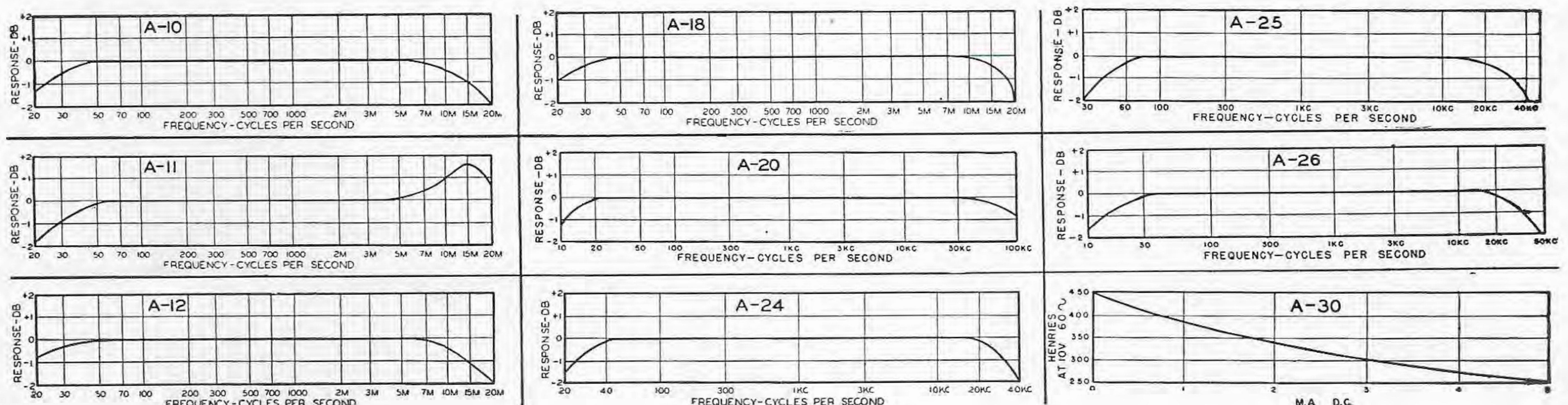
Type No.	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-15	Transistor Interstage Max. level $+30$ dbm	10,000/2,500 (split)	2,000/500 (split)	40-10,000
A-16	Single plate to single grid	15,000 ohms	60,000 ohms, 2:1 turn ratio	20-20,000
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	40-20,000
A-18	Single plate to two grids. Split primary, can also be used for P.P. plates	15,000 ohms (split)	80,000 ohms overall, 2.3:1 turn ratio over-all	20-20,000
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio over-all	40-20,000

PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-22	Transistor to line Max. level $+30$ dbm	500 CT	500/125 (split)	40-10,000
A-23	Transistor to voice coil Max. level $+30$ dbm	500 CT	16/4 (split)	40-10,000
A-24	Single plate to multiple line	15,000 ohms (split)	50, 125/150, 200/250, 333, 500/600 ohms	20-40,000
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	40-20,000
A-26	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200/250, 333, 500/600 ohms	20-40,000
A-27	Crystal microphone to multiple line	100,000 ohms (split)	50, 125/150, 200/250, 333, 500/600 ohms	30-20,000 measured with non-inductive source
A-30	Audio choke, 250 henrys @ 5 MA 6000 ohms D.C., 65 henrys @ 10 MA 1500 ohms D.C. 450 henrys @ 0 MA			
A-32	Filter choke 60 henrys @ 15 MA 2000 ohms D.C., 15 henrys @ 30 MA 500 ohms D.C.			
A-33	Hipermalloy shield, slip fit over A case, provides approximately 20 db shielding . . . $1\frac{1}{32}$ x $\frac{1}{32}$ x $2\frac{1}{32}$.			



A-33 SHIELD

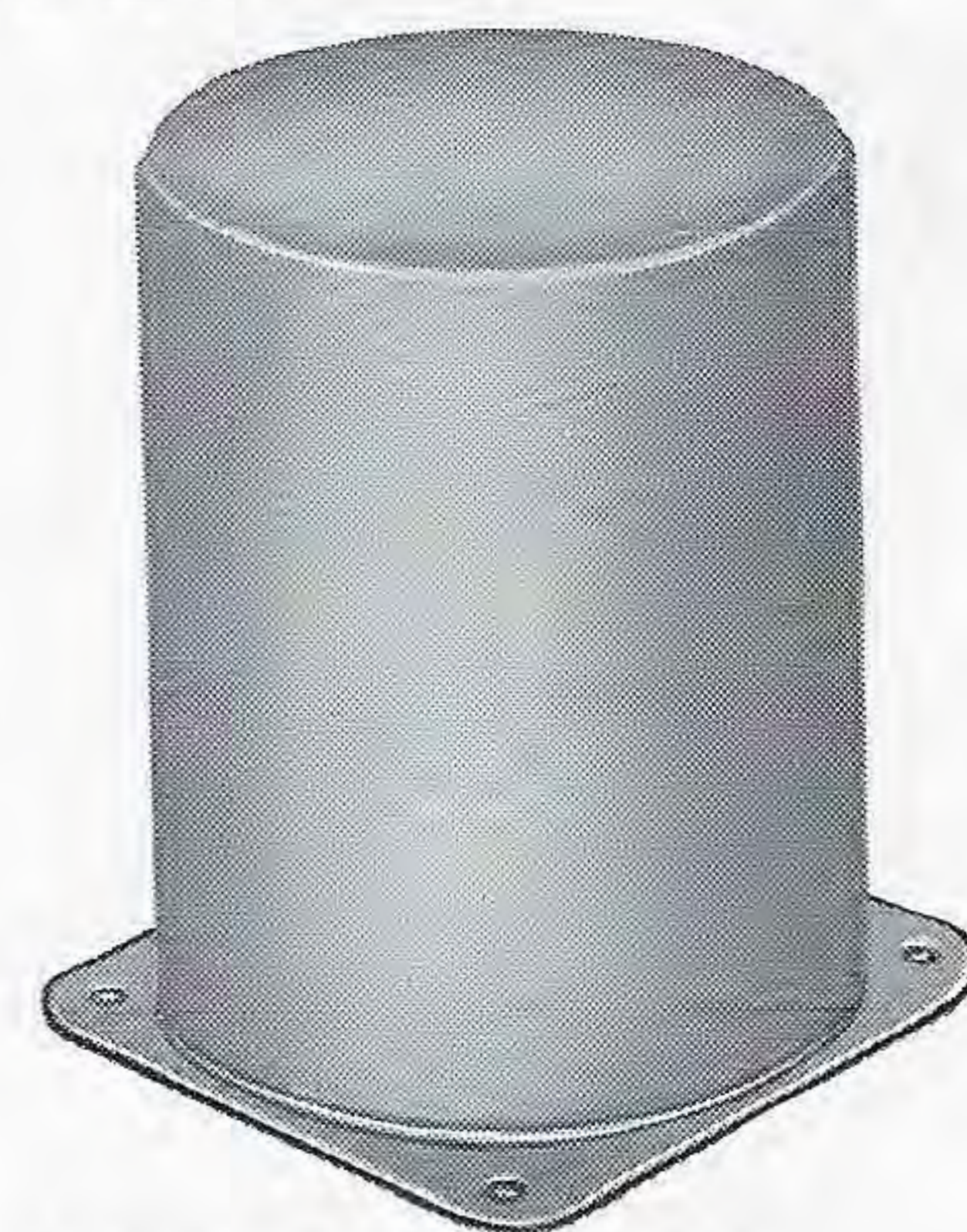


UTC COMMERCIAL GRADE COMPONENTS



The commercial grade series of transformers incorporate conservative design and rugged construction to assure dependability under continuous service operation in industrial and commercial grade communication equipment. These units are mounted in uniform drawn cases finished in light grey enamel, and intended for chassis mounting. All items are poured with special sealing compound in addition to vacuum impregnation of coil structures.

CG-134, 135 and 136 are of the hum-bucking type to assure low hum pick-up. All audio components are linear $\pm 1\frac{1}{2}$ DB from 40 to 10,000 cycles (no unbalanced D.C.), except CVL and CVM units . . . 40 to 6000 cycles. Parallel feed low level interstage units with 50,000 ohms and .25 mfd. 200 ohm windings on input transformers are balanced and may be used for 150 to 250 ohm circuits.



INPUT, INTERSTAGE, MIXING AND LOW LEVEL OUTPUT TRANSFORMERS

Type No.	Application	Primary Impedance Ohms	Max. Level dbm	Secondary Impedance Ohms	Case No.
CG-131	1 plate to 1 grid	15,000	+28	135,000 3:1 ratio	RC-50
CG-132	1 plate to 2 grids	15,000	+30	135,000 C.T. 3:1 ratio overall	RC-62
CG-133	2 plates to 2 grids	30,000 P to P	+32	80,000 overall 1.6:1 ratio overall	RC-75
CG-134	Line to 1 grid hum-bucking	50, 200, 500	+30	80,000	RC-50
CG-135	Line to 2 grids hum-bucking	50, 200, 500	+30	120,000 overall	RC-50
CG-235	Line to 1 or 2 grids, hum-bucking; multiple alloy shielded for low hum pickup	50, 200, 500 ohms	+28	80,000 overall	RC-75
CG-136	Single plate and low impedance mike or line to 1 or 2 grids hum-bucking	15,000, 50, 200	+30	80,000 overall	RC-62
CG-137	Mixing	50, 200, 500	+28	50, 200, 500	RC-50
CG-140	Triode plate to line	15,000	+30	50, 200, 500	RC-50
CG-141	PP triode plates to line	30,000 P to P	+32	50, 200, 500	RC-50
CG-233	PP 6C5, 12AU7, similar triodes to AB 45's, 2A3's, 6L6's, etc.	30,000 P to P	+35	25,000 overall .9:1 ratio overall	RC-87
CG-333	PP 6C5, 12AU7, similar triodes to fixed bias 6L6's	30,000 P to P	+35	5,000 overall .4:1 ratio overall	RC-87
CG-433	PP 45, 2A3, similar tubes to fixed bias 2 or 4 6L6's	5,000 P to P	10W.	1,250 overall .5:1 ratio overall	RC-100

ULTRASONIC TRANSFORMERS

Frequency Range 10 KC to 50 KC

Type No.	Application	Pri. Imp. PP Ohms	Max. Watts	Sec. Imp. Ohms	Case No.
CGU-1	Driver, PP 5881's to PP 6156's	7000	25	4150 G-G	RC-62
CGU-2	Driver, PP 6550's to PP 5868's	5000	100	2400 G-G	RC-62
CGU-3	Output, PP 6550's	5000	100	300/170/75/18.75	RC-62
CGU-4	Output, PP 6155's, 4-125's	7200	300	300/170/75/18.75	RC-112 4 $\frac{5}{8}$ high
CGU-5	Output, PP 6155's, 4-125's	7200	300	30/17/7.5/1.88	RC-112 4 $\frac{5}{8}$ high
CGU-6	Output, PP 6156's, 250TH's	4500	600	300/170/75/18.75	RC-135
CGU-7	Output, PP 6156's, 250TH's	4500	600	30/17/7.5/1.88	RC-125
CGU-8	Output, PP 6156's	9200	1000	300/170/75/18.75	RC-175
CGU-9	Output, PP 5868's	10200	2000	300/170/75/18.75	5 $\frac{1}{4}$ x5 $\frac{1}{8}$ x8

COMMERCIAL GRADE CASE

Case No.	Base Dim. (Sq.)	Mounting Dim. (Sq.)	Mounting Screw	Height + $\frac{1}{8}$, - $\frac{1}{16}$	Cutout Dia.	Unit Weight Lbs.
RC-37	1 $\frac{3}{8}$	1 $\frac{1}{8}$	4-40	1 $\frac{5}{8}$	1 $\frac{1}{4}$	.35
RC-50	1 $\frac{5}{8}$	1 $\frac{5}{16}$	6-32	2 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{1}{2}$
RC-62	1 $\frac{3}{16}$	1 $\frac{1}{2}$	6-32	2 $\frac{1}{2}$	1 $\frac{1}{2}$	1
RC-75	2 $\frac{3}{16}$	1 $\frac{3}{16}$	8-32	2 $\frac{7}{8}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$
RC-87	2 $\frac{9}{16}$	2 $\frac{3}{32}$	8-32	3 $\frac{1}{4}$	2	2 $\frac{1}{2}$
RC-100	3	2 $\frac{3}{8}$	8-32	3 $\frac{3}{4}$	2 $\frac{5}{8}$	3 $\frac{1}{2}$
RC-112	3 $\frac{7}{16}$	2 $\frac{1}{16}$	10-32	4 $\frac{1}{8}$	2 $\frac{7}{8}$	5
RC-125	3 $\frac{3}{4}$	3	10-32	4 $\frac{1}{2}$	3	6 $\frac{1}{2}$
RC-150	4 $\frac{1}{2}$	3 $\frac{1}{16}$	12-28	5 $\frac{1}{2}$	3 $\frac{3}{4}$	11
RC-152	5 $\frac{1}{8}$	4 $\frac{1}{8}$	12-28	5 $\frac{1}{2}$	4	15 $\frac{1}{2}$
RC-175	5 $\frac{3}{4}$	4 $\frac{7}{8}$	1 $\frac{1}{4}$ -20	7 $\frac{1}{8}$	4	22

OUTPUT TRANSFORMERS

Secondary Impedances: 500, 200, 16, 8, 5, 3, 1.5 ohms

Type No.	Imped. P. P. Ohms, Overall	Typical Tubes	Max. Watts	Case No.
CG-15	8,000	6F6 triode, 6V6, 6AQ5	20	RC-100
CG-16	3,000/5,000	2A3, 6AS7G, 6L6, 6080	20	RC-100
CG-19	6,000/10,000	6V6, Triode: 6L6, 5881	20	RC-100
CG-710	14,000/20,000	7B5, 6AK6, 6K6GT	20	RC-100
CG-2L6	9,000	6L6's, AB1, 5881	30	RC-125

FEEDBACK OUTPUT TRANSFORMERS

(See page 25 for typical circuit)

Secondary Impedances: 4, 8, 16 ohms and 70 Volt line.

Type No.	Primary Impedance	Typical Tubes	Audio Watts	Case No.
CG-20	5,000 CT, 43% screen taps	EL-34 in AB	25	RC-125
CG-21	3,300 CT, 40% screen taps	6550's in AB ₁	50	RC-150

CG VARIMATCH OUTPUTS FOR P. A.

Universal units designed to match any tubes within the rated output power, to line or voice coil. Output impedance 500, 200, 50, 16, 8, 5, 3, 1.5 ohms. Primary impedance 3000, 5000, 6000, 7000, 8000, 10,000, 14,000 ohms.

Type No.	Audio Watts	Typical Tubes	Case No.
CVP-1	12	2A3, 25L6, 6V6, 6AQ5	RC-100
CVP-2	30	2A3, 6L6, 6V6, 807, 5881	RC-125
CVP-3	60	300B's, 6L6's, 807, 1614, 5881, 1625	RC-150
CVP-4	125	807's, 4-6L6's, 845's, 4-1614's, 6146, 6159	RC-152
CVP-5	300	242A's, 838's, 4-845's, ZB-120's	RC-175

CG VARIMATCH LINE TO VOICE COIL TRANSFORMERS

The UTC VARIMATCH line to voice coil transformers will match any voice coil or group of voice coils to a 500 ohm line. More than 50 voice coil combinations can be obtained, as follows:

.2, .4, .5, .62, 1, 1.25, 1.5, 2, 2.5, 3, 3.3, 3.8, 4, 4.5, 5, 5.5, 6, 6.25, 6.6, 7, 7.5, 8, 9, 10, 11, 12, 14, 15, 16, 18, 20, 25, 28, 30, 31, 40, 47, 50, 63, 69, 75.

Where speakers are to be connected in groups to one transformer, it is preferable that parallel connection be used to eliminate the possibility of multiple resonance. If two speakers of different impedances are connected in parallel, the lower impedance speaker will develop greater power. If connected in series, the higher impedance speaker will develop greater power.

Type No.	Audio Watts	Primary Impedance	Secondary Impedance	Case No.
CVL-1	15	500 ohms	.2 to 75 ohms	RC-87
CVL-2	40	500 ohms	.2 to 75 ohms	RC-125
CVL-3	75	500 ohms	.2 to 75 ohms	RC-150

COMMERCIAL GRADE COMPONENTS

UTC CG power transformers, Varimatch units and chokes are designed to A.I.E.E. commercial standards. Ratings are conservative for continuous duty. Units are tested for breakdown at twice maximum working voltage plus 1000 volts and surge tested at 250% normal voltage. All items are vacuum impregnated and sealed with special insulating compound. The conservative design and manufacturing procedure of these units make them suitable for virtually all types of commercial equipment as well as ideally suited for quality amateur and public address service.

CG VARIMATCH MODULATION UNITS

Will match any modulator tubes to any RF load.

The ever increasing number of vacuum tubes available for audio and RF applications has increased the difficulty of obtaining transformers suitable for matching to the various correct tube loads. If a standard transformer having a limited impedance range is purchased and used for a specific purpose as the "nearest thing" available, comparatively high distortion is inevitable. While a 20% mismatch caused by such an occurrence does not represent a serious loss in power, it greatly reduces the undistorted power available from a class B modulator because optimum plate load is not reflected to the tubes. The UTC Varimatch transformer eliminates this difficulty through the use of a combination of tapped winding affording an extremely wide range in impedance matching. Designs provide that for any load impedance employed, full class C plate current can be carried by secondary winding.

Primary impedances from 500 to 20,000 ohms
Secondary impedances from 30,000 to 300 ohms

Type No.	Max. Audio Watts	Max. Class C Input	Typical Modulator Tubes	Case No.
CVM-0	12	25	2A3	RC-100
CVM-1	30	60	6V6, 2A3, 6L6, 807, 5881	RC-125
CVM-2	60	125	801A, 6L6, 809, T-20, 1608, 6159	RC-150
CVM-3	125	250	800, 807, 845, TZ-20, RK-30, 35-T	RC-152
CVM-4	300	600	50-T, 805, 838, T-55, ZB-120, 4-65A	RC-175
CVM-5	600	1200	805, HF-300, HK-354, 250TH, 810, 4-125A	7x12x9H 60 lbs.

CG VARIMATCH DRIVER TRANSFORMERS

Type No.	Primary	Typical Output Tubes	Max. Level Watts	Case No.
CG-51AX	All single tubes like: 6C5, 6C4, 12AU7, 2A3, 5814A Ratios 2.8:1, 3.1:1	2A3, 6L6	5	RC-87
CG-53AX	P. P. tube like: 2A3, 6L6, Ratios 2:1, 3:1, Pri. to 1/2 sec.	841, 801A, 800, 838, 805, 50T	20	RC-112
CG-59AX	50, 200, 500 ohm line Ratios 1:1, 1.4:1	805, 838, ZB-120, 100TH 800, 55T	20	RC-112

VARIPOWER AUTO-FORMERS

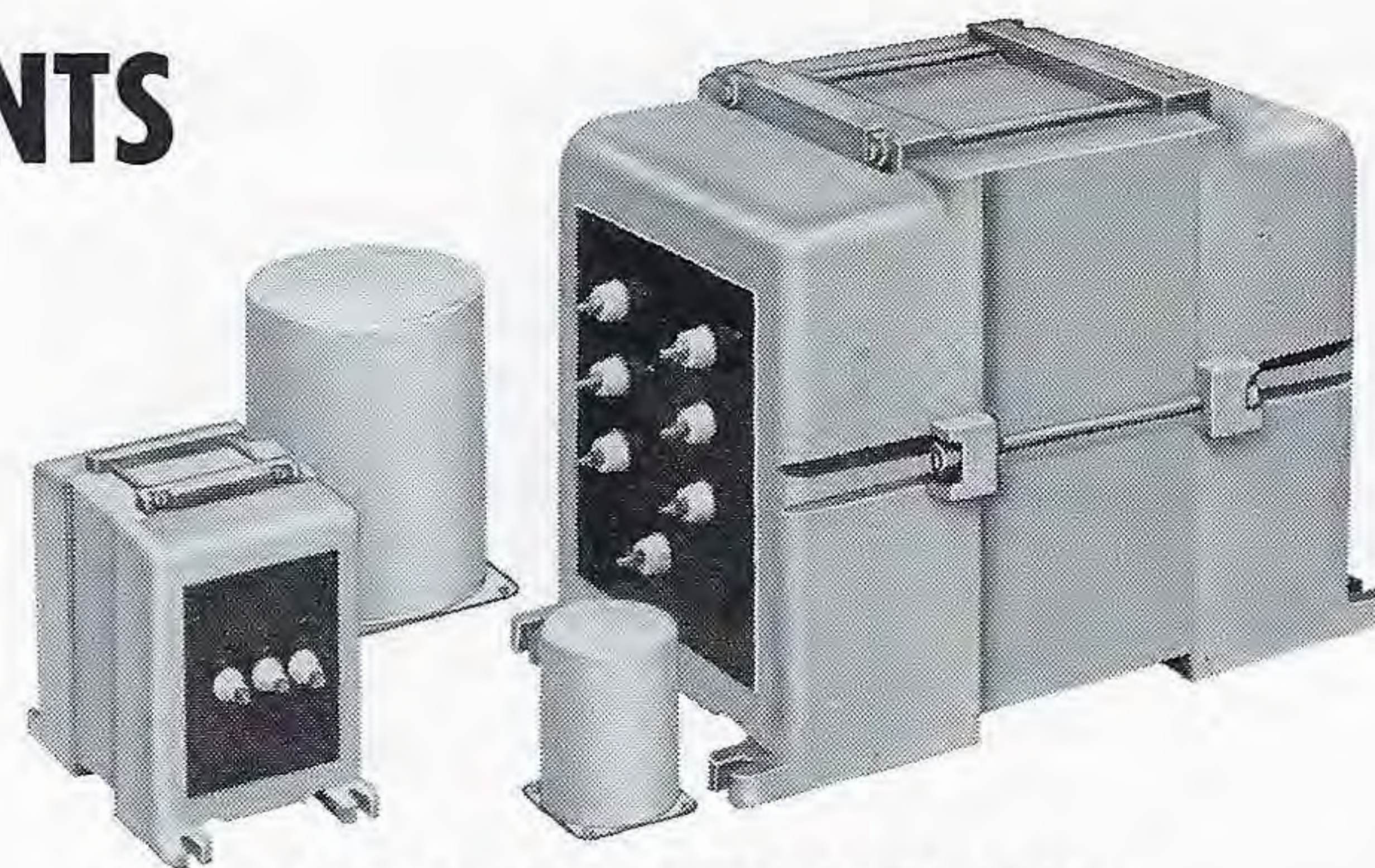
Type No.	Watts Output	Case No.
CVA-1	150	RC-112
CVA-2	250	RC-125
CVA-3	500	RC-150
CVA-4	1000	RC-152
CVA-5	2000	RC-175

Designed for line voltage control, filament control and reduced power operation. Output voltage from 0 to 130 volts, 50/60 cycles. Varipower units permit control of filament voltage at the tube socket to within 2 1/2% of desired value simultaneously with line voltage control and plate voltage control. Can be used to reduce or increase voltages on filament transformers. Taps at 25, 55, 75, 95, 100, 105, 110, 115, 120, 125 and 130 volts permit output voltages from 0 to 130 volts in 5 volt steps.

POWER AND BIAS TRANSFORMERS

Primary 115 volts 50/60 cycles
(DC MA is for choke input. Reduce to 70% for condenser input.)

Type No.	High Voltage	DC MA.	Fil. 1	Fil. 2	Fil. 3	Fil. 4	Case No.
CG-422	435-365-0-365-435 125-0-125	125 25	5V-3A	5V-2A	6.3 VCT-3A	2.5 VCT-5A	RC-150
CG-428	500-0-500 80-0-80	250 100	5V-3A	5V-2A	6.3 VCT-4A	6.3 VCT-3A, tapped 2.5 VCT-3A	RC-152
CG-429	600-525-0-525-600	250	5V-3A	6.3 VCT-3-A	7.5 VCT-3A, tapped 6.3 VCT-4A		RC-152
CG-431	500-400-0-400-500 80-0-80	500 100	5V-6A	5V-2A	6.3 VCT-5A	6.3 VCT-3A	RC-175
CG-315	Tapped for any DC voltage from 15 to 100 volts within 6%—250 MA						RC-125
CG-316	Tapped for any DC voltage from 75 to 400 volts within 6%—250 MA						RC-152



CG PLATE TRANSFORMERS

Primaries for 105, 115, 220, 230 volts, 50/60 cycles. For reduced power, secondary voltages can be reduced to half by using 220V. Pri. on 110 volts. These transformers may be used on 25 to 43 cycles if 220V. Pri. is used on 110 volts. Secondary voltage is simultaneously halved.

Type No.	High Voltage	DC Voltage	DC MA	Case No.
CG-300	625-515-0-515-625	500/400	200	RC-150
CG-301	580-530-0-530-580	475/425/250	420	RC-152
CG-302	950-750-0-750-950	760/610	360	RC-175
CG-303	1500-1235-400-0-400-1235-1500	1250/1000 300	260* 175	RC-175

* 300MA, if used without load on low voltage winding.

TYPE EC CASE UNITS

Type No.	High Voltage	DC Voltage	DC MA	L	W	H	Mtg. Dim.	Wt. Lbs.
CG-304	1500-1235-0-1235-1500	1250/1000	800	15	8 1/2	10 3/8	7 1/4 x 13 5/8	100
CG-305	2400-1750-0-1750-2400	2000/1500	300	10 1/2	4 3/4	6 7/8	3 7/8 x 9 1/8	50
CG-306	2400-1750-0-1750-2400	2000/1500	500	15	8 1/2	10 3/8	7 1/4 x 13 3/8	100
CG-307	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	300	14 1/2	8 1/2	10 3/8	7 1/4 x 12 3/8	90
CG-308	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	500	16 1/2	8 1/2	10 3/8	7 1/4 x 14 1/8	125
CG-309	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	1000	21	10	13 1/4	8 1/2 x 19	185
CG-310	4600-4050-3500-0-3500-4050-4600	4000/3500 3000	600	19	10	13 1/4	8 1/2 x 16 1/4	150
CG-311	1500-1235-0-1235-1500	1250/1000	500	10 1/2	4 3/4	6 7/8	3 7/8 x 9 1/8	50
CG-312	1800-1500-0-1500-1800	1500/1250	400	10 1/2	4 3/4	6 7/8	3 7/8 x 9 1/8	50

FILTER CHOKES

INDUCTANCE SHOWN IS AT RATED DC MA

Type No.	Inductance Henrys	DC MA	DC Res. Ohms	Test Volts RMS	Case No.
CG-40	10	200	110	1750	RC-112
CG-44	30	100	400	1750	RC-100
CG-45	250	15	5000	1750	RC-87
CG-48C	75	50	2200	1750	RC-87
CG-100	12	150	110	2500	RC-125
CG-102	12	250	100	3000	RC-150
CG-104	10	350	90	5000	RC-152
CG-108	10	500	52	7000	RC-175
CG-1S	10	1000	40	9000	11 1/2 x 4 3/4 x 6 7/8 H, 40 lb.

SWINGING INPUT CHOKES

INDUCTANCE SHOWN IS FROM 100% TO 10% OF RATED DC MA

Type No.	Inductance Henrys	DC MA	DC Res. Ohms	Test Volts RMS	Case No.
CG-101	5-25	150	110	2500	RC-125
CG-103	5-25	250	100	3000	RC-150
CG-105	5-25	350	90	5000	RC-152
CG-109	5-25	500	52	7000	RC-175
CG-1C	5-25	1000	40	9000	11 1/2 x 4 3/4 x 6 7/8 H, 40 lb.

FILAMENT TRANSFORMERS

Primary 105, 115, 210, 220, 230 volts, 50/60 cycles, except CG-34 . . . 105, 115, 220, 230. These transformers may be used on 25 to 43 cycles if 220 volt primary is used on 110 volts. Secondary voltage is simultaneously reduced to half.

Type No.	Sec. Volts C. T.	Sec. Amps.	Working Voltage	Test Volts RMS	Case No.
CG-33	6.3	4	500	2000	RC-75
CG-34	2 1/2	10	2500	6000	RC-112
CG-120	2 1/2	10	5000	11000	RC-125
CG-121	5	25	5000	11000	RC-150
CG-122	7.5/6.3	10	1500	4000	RC-125
CG-124	10	10	1500	4000	RC-150
CG-125	14/12/11	10	1500	4000	RC-150
CG-126	14/11/10 14/11/10	10 10	1500	4000	RC-152

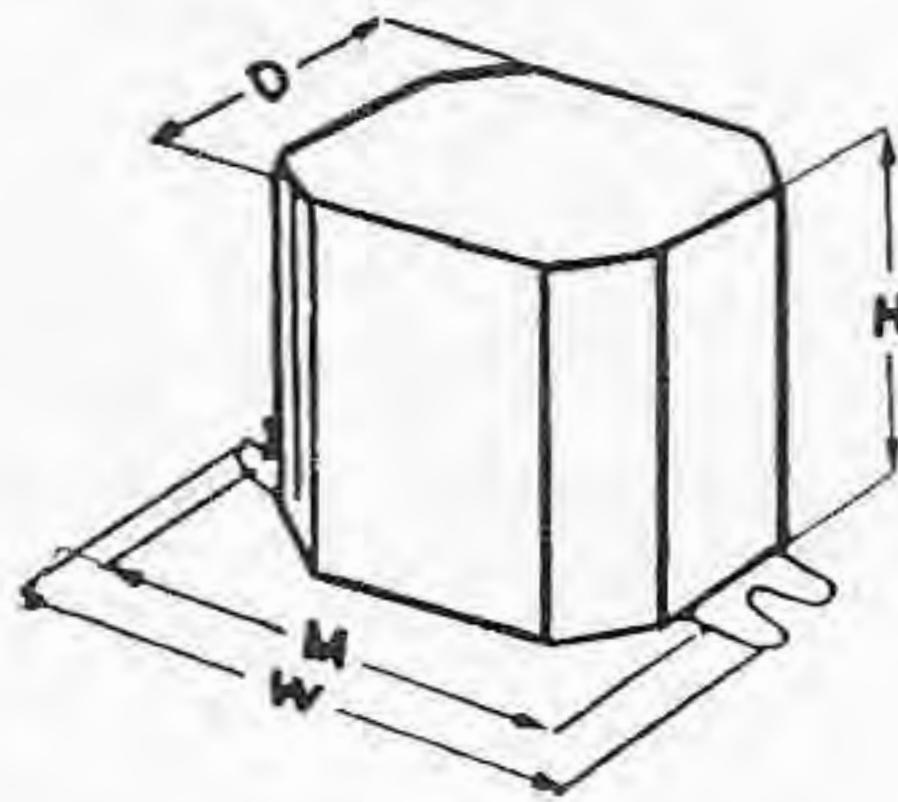
Two Windings.

SPECIAL SERIES AUDIO TRANSFORMERS



CASE SIZES

Type No.	H	W	D	M	Wt. Lbs.
G-1	1 7/8	2 13/16	1 3/4	2 3/8	1
G-2	2 5/16	3 3/8	1 5/16	2 7/8	1 1/2
G-3	2 1/2	3 3/4	2 5/32	3 1/4	2
G-4	2 15/16	4 1/8	2 5/16	3 5/8	3



CLASS A INPUT TRANSFORMERS

Type No.	Application	Ratio	Case
S-1	1 plate* to 1 grid	3 1/2:1	G-2
S-2	1 plate* to 2 grids	2:1	G-2
		4:1	
S-3	1 plate* to 1 or 2 grids compact type	4:1	G-1
S-5	Single or double button mike or line to 1 grid hum-bucking type	16:1	G-2
S-6	Single or double button mike or line to 1 grid, compact type	16:1	G-1

* Will match tubes like 6J5, 6C4, 12AU7, etc. Can be used with high mu triodes with loss in low frequencies.

UNIVERSAL DRIVER TRANSFORMERS

(See Modulator chart for tube types, ratios are Pri. to 1/2 sec.)

Type No.	Application	Max. Watts	Case
S-8	Single driver plate to pushpull grids, 2.66:1, 5:1 ratios	5	G-3
S-9	Pushpull driver plates to grids of class B tubes up to 400 watts output, 2.25:1, 3.6:1, 5:1 ratios	20	G-4
S-10	12AU7 or similar plates to 5881 or 6L6's, self or fixed bias, 2.25:1 ratio	5	G-3

MATCHING TRANSFORMERS

Type No.	Application	Pri. Ohms	Sec. Ohms	Case
S-11	Single 6J5, 6C4, 12AU7 or similar tube to line	15,000	200/500	G-2
S-12	Line to speaker 15 watts	500, 2000, 4000	2, 4, 8, 15	G-2
S-13	Line to speaker 30 watts	500, 2000, 4000	2, 4, 8, 15	G-4

UNIVERSAL OUTPUT TRANSFORMERS TO LINE AND VOICE COIL

(Secondary Impedances: 500, 15, 8, 2 ohms)

Type No.	Max. Watts	Primary Impedance	Typical Tubes	Class	Case
Single Tubes:					
S-14	10 W.	2500 ohms	2A3, 6B4, 6L6, 6Y6, 25L6GT, 35L6GT	A	G-2
		4000 ohms	6V6, 12A6	A	
		7000 ohms	6AC5, 6F6, 7B5, 6K6GT	A	
		10,000 ohms	1G5, 3C5, 6A4, 6N7	A	
P. P. Tubes:					
S-15	12 W.	4000 ohms	6Y6, 25L6GT	AB	G-2
		5000 ohms	2A3, 6AS7G	AB	
		10,000 ohms	6080	B	
S-16	30-W.	3000 ohms	2A3, 25L6GT	AB	G-4
		6000 ohms	6F6 triodes, 6AS7G	AB	
		9000/10000 ohms	2A5, 6F6, 6L6, 6V6, 807-triode	AB	
S-17	55 W.	3800 ohms	6L6's	AB2	G-5
		4500/5000 ohms	4-6L6's	AB1	
			809, 6146	B	

UNIVERSAL MODULATION TRANSFORMERS

Secondary carries class C current
Any modulator tubes to any RF load. (See chart)

Type No.	Audio Power	Case
S-18	12 watts	G-3
S-19	30 watts	G-4
S-20	55 watts	G-5
S-21	110 watts	G-7
S-22	250 watts	G-9

UTC Special Series audio units are specifically designed for amateur and popular-priced PA service. The Special units are finished in a rich, commercial type medium gray enamel. A recessed terminal strip is provided permitting above chassis or breadboard wiring in addition to standard chassis type wiring. The universal windings provided on driver, matching and output transformers assure a maximum of flexibility. Modulator output units will carry the DC current of the class C stage for any of the impedances available and will match practically any audio tubes to any RF load within the power rating of the transformer. Large components are housed in formed cases with top or bottom mounting. All units are vacuum impregnated—compound filled.

TYPICAL MODULATOR COMBINATIONS

S-18—12 WATTS MAX.

Typical driver tubes: 6C4, 12AU7, 6J5, 6J7-TR, 6CG7, 6SN7GT.

DRIVER			MODULATOR STAGE			
Transf.	Sec. Term.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Bias Volts
S-2	G-G	6E6	1.6	14,000	250	27
S-2	G-G	25L6GT	4	4,000	110	7.5
S-2	G-G	6Y6G	7	4,000	135	13.5
S-8	G' -G'	6AC5G	8	10,000	250	0
S-2	G-G	2A3	10	5,000	325	750 ohms
S-2	G-G	6AS7G	10	5,000	250	1,250 ohms
S-1	F-G	6V6, 6AQ5		6,000		
S-1	F-G	6K6		10,000		

S-19—30 WATTS MAX.

Tube or Tubes	DRIVER	Sec. Terms	MODULATOR STAGE	P. P. Load	Plate Volts	Bias Volts
6C4	S-10	G-G	6V6	13	8,000	300
6C4	S-10	G-G	2A3, 6A3,	15	3,000	325
6C4	S-10	G-G	6F6, 6AQ5 Pentode AB	10	10,000	375
6AQ5	S-8	G-G	6F6 triode AB	18	6,000	350
45	S-8	G-G	10, 1602	25	8,000	425
45	S-8	G'-G'	46	25	6,000	425
45	S-8	G'-G'	841	28	7,000	425
6C4	S-10	G-G	6L6 self bias	30	9,000	400

S-20—55 WATTS MAX.

DRIVER					MODULATOR STAGE				
P. P. Tubes	Transf.	Sec. Terms.	P. P. Tubes	Watts O'tp't	P. P. Load	Plate Volts	Plate Tr'sf.	Bias Volts	Bias Tr'sf.
2A3	S-9	1-1	801A	45	10000	600	S-45	75	S-51
2A3	S-9	1-1	T-20	50	8000	600	S-45	30	S-51
12AU7	S-9	2-2	2E26	54	8000	500	S-41	15	S-51
12AU7	S-10	G-G	6L6 AB2	60	3800	400	S-39	25	S-51
12AU7	S-10	G-G	4-6L6	60	4500	400	S-40	23	S-51
2A3	S-9	3-3	809	60	5000	500	S-41	0	

S-21—115 WATTS MAX.

P. P.-2A3 Driver	S-9 Transf. Sec. Term.	P. P. Tubes	Watts Output	MODULATOR STAGE	P. P. Load	Plate Volts	Plate Transf.	Bias Volts	Bias Tr'sf.
2-2	TZ-20		70	12000	800	S-46		0	
1-1	T-20		70	12000	800	S-46		40	S-51
*	845		75	4600	1000	S-47		175	S-52
1-1	807		80	6600	600	S-45		30	S-51
2-2	6146		95	6000	600	S-46		50	S-51
1-1	800, RK-30		100	12000	1000	S-47		55	S-51
3-3	809		100	8400	750	S-45		5	S-51
2-2	825		100	6600	850	S-46		30	S-51
2-2	TZ-40		100	6000	750	S-45		0	
2-2	T-756		100	7000	850	S-46		30	S-51
1-1	50-T		100	8000	1000	S-47		90	S-51
2-2	RK-18		100	12000	1000	S-47		50	S-51
1-1	HK-354		100	15000	1000	S-47		60	S-51
*	845		105	8800	1250	S-47		225	S-52
3-3	RK-31		110	14000	1000	S-47		0	
1-1	4-6L6		110	2000	400	S-44		25	S-51
2-2	35-T		115	11000	1000	S-47		30	S-51

* Reverse S-9 transformer using terminals 1-1 for plates and P. P. for grids.

UTC SPECIAL SERIES POWER EQUIPMENT

UTC Special Series power supply components are designed specifically for amateur and popular-priced PA service. The ratings are based on such applications and recommended for ICAS intermittent use. For commercial application, CG or H grade components should be employed. Tapped coil structures on power and bias supply transformers afford maximum flexibility, permitting a given transformer to be used with many circuits and types of tubes. Stand by service should not be obtained by interrupting high voltage center tap.

S-22-250 WATTS MAX.

P. P.-2A3 Driver		MODULATOR STAGE					
S-9 Transf. Sec. Term.	P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Plate Transf.	Bias Volts	Bias Trsf.
3-3	RK-31	140	17000	1250	S-47	0	
*	50 T	250	20000	2000	S-50	180	S-52
*	50 T	160	17000	1500	S-49	140	S-52
2-2	TZ-40	175	6800	1000	S-47	0	
1-1	T-55	175	6900	1000	S-47	40	S-51
1-1	T-55	225	9400	1250	S-47	50	S-51
2-2	HF-100	250	12000	1500	S-49	52	S-51
2-2	100 TH	250	7200	1250	S-47	0	
¶	100 TL	230	7200	1250	S-47	112	S-52
2-2	ZB-120	150	4800	750	S-45	0	
2-2	ZB-120	245	9000	1250	S-47	0	
*	HK-154	225	11400	1250	S-47	210	S-52
1-1	203 A	250	9000	1250	S-47	45	S-51
3-3	203 Z	200	6900	1000	S-47	0	
1-1	211	200	6900	1000	S-47	77	S-51
1-1	211	250	9000	1250	S-47	100	S-51
1-1	HK-354	220	15000	1500	S-49	100	S-51
2-2	808	190	12700	1250	S-47	15	S-51
2-2	830 B	175	7600	1000	S-47	35	S-51
2-2	838	250	9000	1250	S-47	0	

* Reverse S-9, using 2-2 for plates and P-P for grids.
¶ Reverse S-9, using 1-1 for plates and P-P for grids.

FILTER, SWINGING, AND AUDIO CHOKES

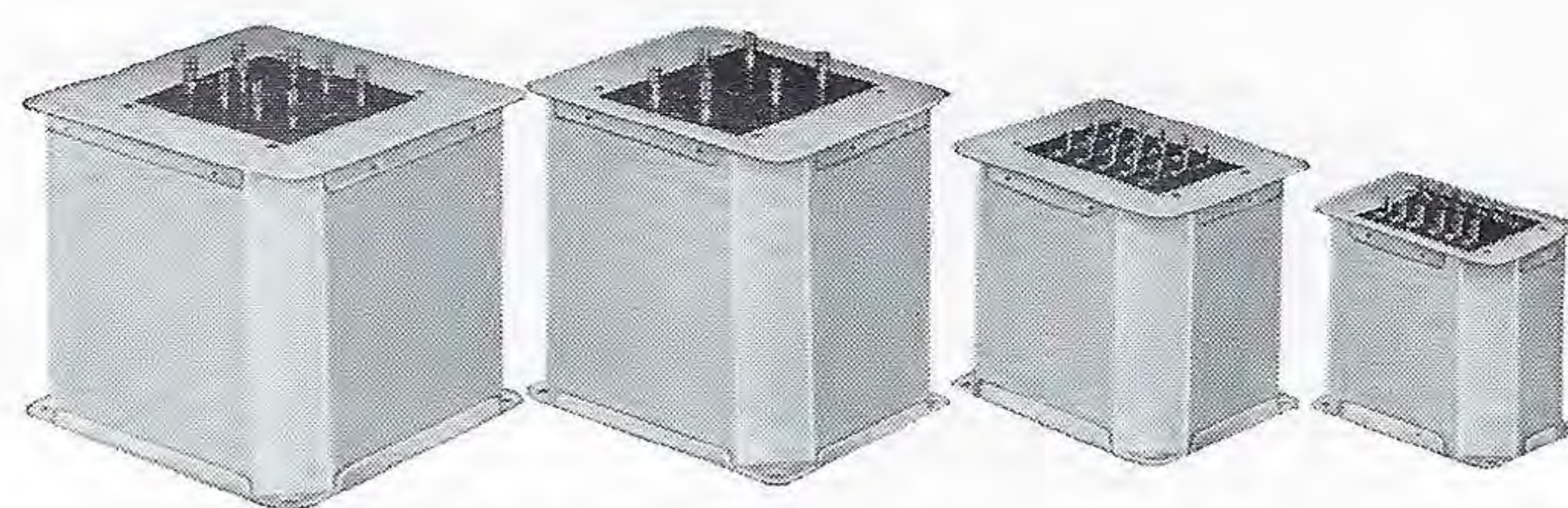
Type No.	Service	Inductance	Current	Resistance	Test Volts Rms	Case No.
S-23	Audio	300 Hy.	5 Ma.	5000 ohms	1500 V.	G-2
S-24	P. P. Choke	500 Hy. C. T.	3 Ma.	6000 ohms	1500 V.	G-2
S-25	Filter	30 Hy.	30 Ma.	800 ohms	1500 V.	G-2
S-26	Filter	12 Hy.	60 Ma.	250 ohms	1500 V.	G-2
S-27	Filter	25 Hy.	75 Ma.	350 ohms	1500 V.	G-4
S-28	Filter	20 Hy.	100 Ma.	350 ohms	1500 V.	G-4
S-29	Filter	6 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-30	Swinging	4/20 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-31	Filter	6 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-32	Swinging	4/20 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-33	Filter	8 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-34	Swinging	4/20 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-35	Filter	8 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-36	Swinging	4/20 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-37	Filter	8 hy.	550 Ma.	60 ohms	6000 V.	G-8
S-38	Swinging	4/20 Hy.	550 Ma.	60 ohms	6000 V.	G-8

COMBINED PLATE AND FILAMENT UNITS

Primary 115 V.—50/60 Cycles

Type No.	Voltage	D. C. Voltages*	Rectifier Fil.	Fil. No. 1	Fil. No. 2	Case No.
S-39	490-400-0-400-490 175 Ma.	400/310	5 V.-3A	2.5 V.C.T. -6A	6.3 V.C.T. 4A	G-7
S-40	525-425-0-425-525 250 Ma.	400/310	5 V.-3A	6.3 V.C.T. -3A	6.3 V.C.T. 3A	G-7
S-41	600-0-600 200 Ma.	475	5 V.-3A	7.5 V. tapped 6.3 V.-3A	6.3 V.C.T. 2A	G-7
S-42	600-525-0-525-600 300 Ma.	480/400	5 V.-6A	7.5 V. tapped 6.3 V.-3A	6.3 V.C.T. 3A	G-8
S-43	525-0-525 450 Ma. 40-0-40 200 Ma.	400	5 V.-3A 5 V.-6A	6.3 V.-2A	6.3 V.C.T. 5A	G-9

* Based on two section filter, choke input.



CASE SIZES

(Will take 12-28 Mtg. Screw)

Type No.	H	W	D	M	N	Wt. Lbs.
G-5	3 3/4	3 1/8	4 1/2	3 7/8	2 7/16	4 1/2
G-7	4 5/8	4 5/8	5 1/2	4 27/32	3 25/32	8
G-8	4 5/8	5 3/8	5 3/8	4 25/32	4 3/4	12
G-9	5 7/8	5 3/8	6 3/4	6 3/32	4 19/32	21
G-10	5 7/8	6 1/8	6 5/8	5 15/16	5 13/32	24
G-11	5 7/8	6 1/2	7 3/8	6 21/32	5 29/32	31
G-12	10 1/4	7 3/8	9 1/4	8 1/2	6 5/8	52

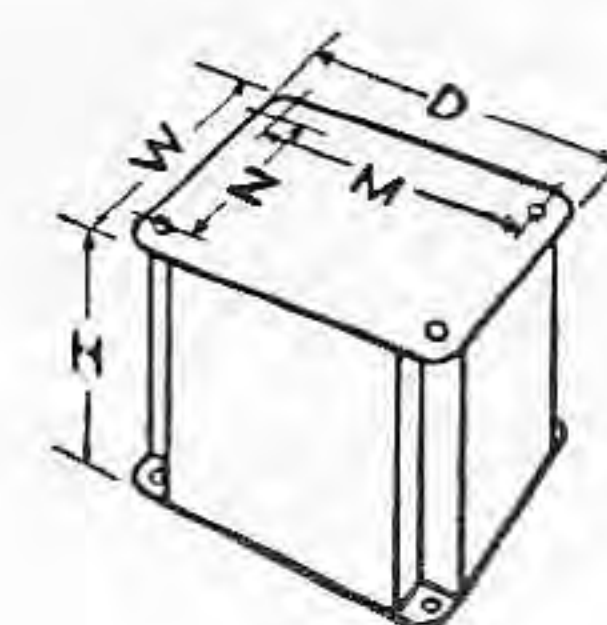


PLATE TRANSFORMERS — BIAS TRANSFORMERS

Primary 115 V.—50/60 Cycles

Type No.	High Voltage	DC Voltages*	DC Current	Case No.
S-44	575-525-0-525-575	470/430	500 Ma.	G-9
S-45	900-750-0-750-900	750/620	200 Ma.	G-8
S-46	1000-750-0-750-1000	825/600	300 Ma.	G-9
S-47	1500-1250-1000-0-1000-1250-1500	1275/1050/825	300 Ma.	G-10
S-48	1500-1250-1000-0-1000-1250-1500	1300/1075/850	500 Ma.	G-11
S-49	2100-1800-1500-0-1500-1800-2100	1815/1540/1275	300 Ma.	G-11
S-50	3000-2500-0-2500-3000	2625/2175	300 Ma.	G-12
S-51	Will supply any bias voltage from 15 to 100 volts DC within approximately 6% of desired value.		200 Ma.	G-5
S-52	Will supply any bias voltage from 75 to 400 volts DC within approximately 6% of desired value.		200 Ma.	G-7

* Based on two section filter for 200 Ma. and 300 Ma. units, single section filter for 500 Ma. units, both choke input.
† 200 Ma. if used alone. ‡ 300 Ma. if used alone.

FILAMENT TRANSFORMERS

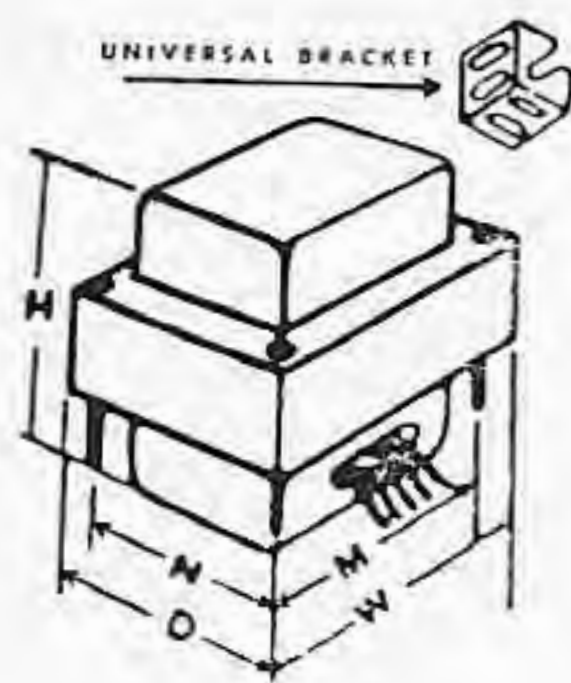
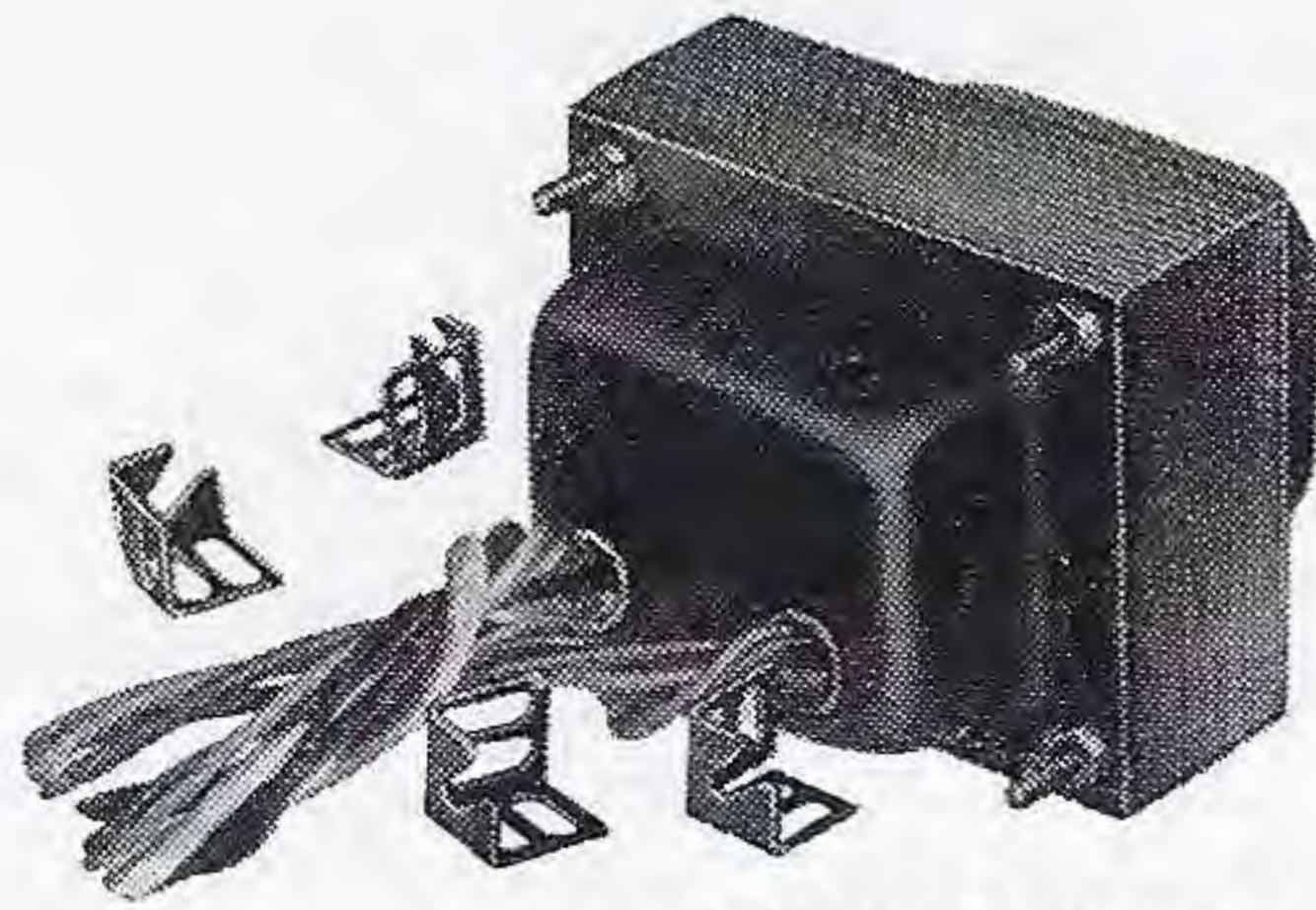
Primary Tapped 105, 115 Volts—50/60 Cycles

Type No.	Secondary Volts	Secondary Current	Test Volts Rms	Case No.
S-53	2.5 VCT	10 A.	1500 V.	G-3
S-54	5 VCT	4 A.	2500 V.	G-3
S-55	6.3 VCT	3 A.	1500 V.	G-3
S-57	2.5 VCT	10 A.	10,000 V.	G-5
S-58	2.5 VCT	20 A.	10,000 V.	G-5
S-59	5 to 5.25 VCT	13 A.	5000 V.	G-5
S-60	5 to 5.25 VCT	22 A.	10,000 V.	G-7
S-61	7.5 VCT tapped 6.3 VCT	10 A.	3000 V.	G-5
S-62	10 VCT	10 A.	3000 V.	G-5
S-63	14 VCT tapped 12 VCT and 11 VCT	10 A.	5000 V.	G-7

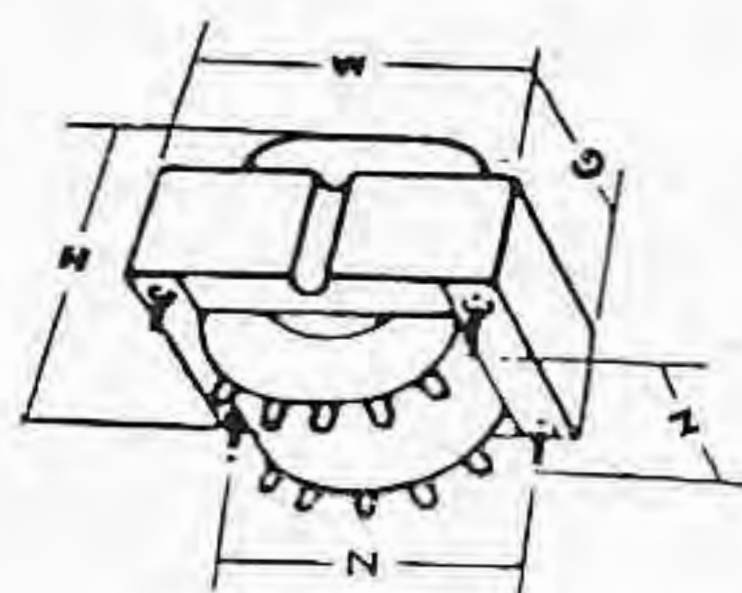
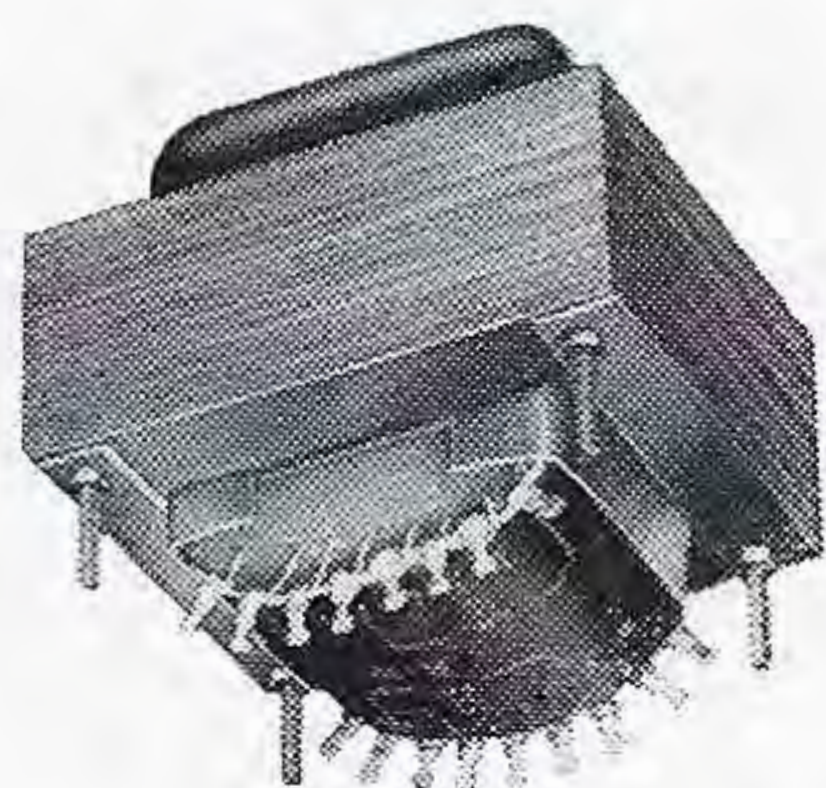
Type No.	Fil. 1	Fil. 2	Fil. 3	Test Volts	Case No.
S-64	2.5 VCT-5A	2.5 VCT-5A	5 VCT-6A	3000 V.	G-5
S-65	2.5 VCT-5A	5 VCT-4A	6.3 VCT-3A	3000 V.	G-5
S-67	5 VCT-6A	6.3 VCT-5A		3000 V.	G-5
S-68	5 VCT-3A	6.3 VCT-4A	7.5 VCT-5A	3000 V.	G-5
S-70	6.3 VCT-5A	6.3 VCT-5A		3000 V.	G-5
S-71	2.5 VCT-6A	2.5 VCT-6A	2.5 VCT-12A	10000 V.	G-7
S-72	5 VCT-3A	5 VCT-3A	5 VCT-6A	5000 V.	G-5

UTC REPLACEMENT TYPE COMPONENTS

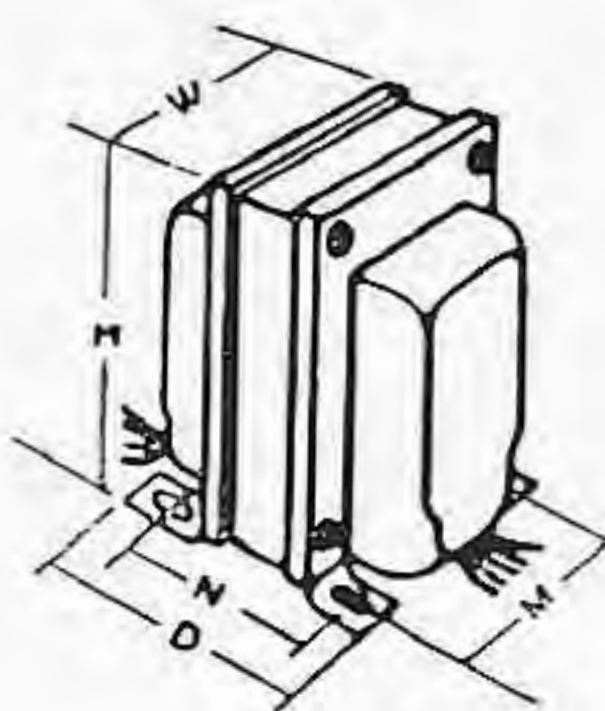
UTC replacement type transformers (Pri. 117 V. 50/60 cycles) represent the culmination of years of development in this field. All units are low temperature rise, vacuum sealed against humidity with special impregnating materials to prevent corrosion and electrolysis. Shells are finished in attractive high lustre black enamel.



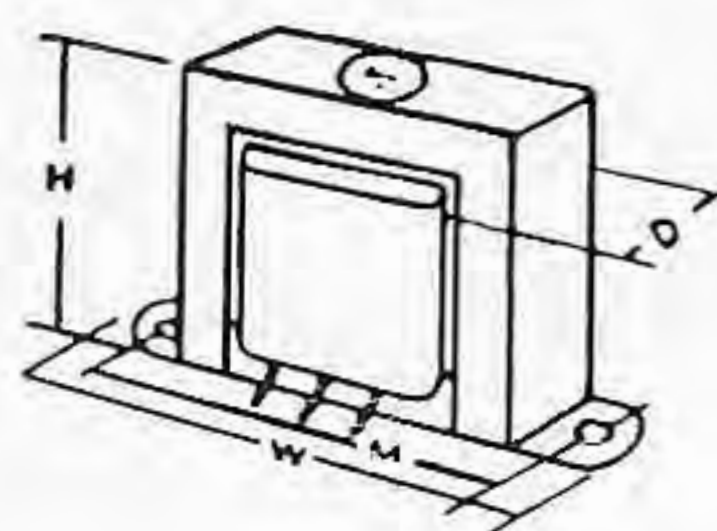
DOUBLE SHELL TYPE



SINGLE SHELL TYPE



VERTICAL SHELL TYPE



CHANNEL FRAME TYPE

CHANNEL FRAME AUDIO TRANSFORMERS

Type No.	Application	Description	W	D	Dimen., Ins. H	M	Lbs.
R-34	1 plate to 2 grids	2:1 ratio	2 7/8	1 3/8	1 11/16	2 3/8	3/4
R-35	Mike to 1 grid	17:1 ratio to Pri. C.T.	2 7/8	1 3/8	1 11/16	2 3/8	3/4
R-58	5 watt Universal output	Any single tube to any voice coil, .1 to 30 ohms	2 1/2	1 3/8	1 3/8	2 1/8	1/2
R-38A	6 watt Universal	Any tubes up to 6 watts to any voice coil, .1 to 30 ohms	2 1/2	1 3/8	1 3/8	2 1/8	1/2
R-59	10 watt Universal	Any tubes up to 10 watts to any voice coil, .1 to 30 ohms	2 7/8	1 1/8	1 11/16	2 3/8	1/2
R-60	15 watt Universal	Any tubes up to 15 watts to any voice coil, .1 to 30 ohms	3 1/8	1 3/4	2	2 13/16	1
R-39	10 watt line Matching Transformer	250, 500, 1,500 ohms to 2, 8, 15 ohms	2 7/8	1 1/8	1 11/16	2 3/8	3/4

DOUBLE SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lb.
R-101	275-0-275	50	5V-2A.	6.3V CT-2.7A	3	2 1/2	3	2 1/2	2 1/8	2 1/2
R-102	350-0-350	70	5V-3A.	6.3V CT-3A	3	2 1/2	3 5/8	2 1/2	2 1/8	3 1/2
R-103	350-0-350	90	5V-3A.	6.3V CT-3.5A	3 3/8	2 7/8	3 15/16	2 13/16	2 1/4	4 1/2
R-104	350-0-350	120	5V-3A.	6.3V CT-5A	3 3/4	3 1/8	3 7/8	3 1/8	2 1/2	5 1/2
R-105	385-0-385	160	5V-3A.	6.3V CT-5A	3 3/4	3 1/8	4 5/16	3 1/8	2 1/2	7

SINGLE SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	G	H	M	N	Wt. Lb.
R-106	300-0-300	50	5V-2A.	6.3V CT-2.7A	3	2 1/2	3 1/4	2 1/2	2 1/8	2 1/2
R-107	350-0-350	70	5V-3A.	6.3V CT-3A	3	2 1/2	3 7/8	2 1/2	2 1/8	3 1/2

VERTICAL SHELL POWER TRANSFORMERS

Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lb.
R-110	300-0-300	50	5V-2A.	6.3V CT-2.7A	2 1/2	2 13/16	3 1/4	2	1 3/4	2 1/2
R-111	350-0-350	70	5V-3A.	6.3V CT-3A	2 1/2	3 1/16	3 1/4	2	2 3/8	3 1/2
R-112	350-0-350	120	5V-3A.	6.3V CT-5A	3 1/4	3 11/16	4	2 1/2	2 5/8	5 1/2
R-113	400-0-400	200	5V-3A.	6.3V CT-6A	3 7/8	4 5/16	4 5/8	3	3 1/8	8

CHANNEL FRAME FILTER CHOKES

Inductance Shown Is at Rated D.C.M.A.—Test Volts RMS: 1500

Type No.	Induct. Hys.	Current	Resistance Ohms	W	D	H	M	Lbs.
R-55	6	40MA	300	2 3/8	1 3/8	1 3/8	2	1/2
R-14	8	40MA	250	2 7/8	1 1/2	1 11/16	2 3/8	3/4
R-15	12	30MA	450	2 7/8	1 1/2	1 11/16	2 3/8	3/4
R-16	15	30MA	630	2 7/8	1 1/2	1 11/16	2 3/8	3/4
R-17	20	40MA	850	3 5/16	1 5/8	2	2 13/16	1
R-18	8	80MA	250	3 5/16	1 5/8	2	2 13/16	1
R-19	14	100MA	450	3 3/4	1 7/8	2 5/8	3 1/8	1 1/2
R-20	5	200MA	90	4 1/8	2 1/4	2 5/8	3 1/8	2 1/2
R-21	3/15	200MA	90	4 1/8	2 1/4	2 5/8	3 1/8	2 1/2

FILAMENT TRANSFORMERS

CHANNEL FRAME TYPE

Pri. 115 V. 50/60 Cycles—Test Volts RMS: 1500

Type No.	Secondary	Dimensions, Inches W	D	H	M	Wt. Lbs.
FT-1	2.5 V.C.T.-3A	2 7/8	1 1/2	1 11/16	2 3/8	3/4
FT-2	6.3 V.C.T.-1.2A	2 7/8	1 1/2	1 11/16	2 3/8	3/4
FT-3	2.5 V.C.T.-6A	3 5/16	1 7/8	2	2 13/16	1
FT-4	6.3 V.C.T.-3A	3 5/16	1 7/8	2	2 13/16	1
FT-5	2.5 V.C.T.-10A	3 3/4	2 1/8	2 5/8	3 1/8	1 1/2
FT-6	5 V.C.T.-3A	3 3/4	2 1/8	2 5/8	3 1/8	1 1/2
FT-7	7.5 V.C.T.-3A	3 3/4	2 1/8	2 5/8	3 1/8	1 1/2
FT-8	6.3 V.C.T.-8A	4 1/8	2 1/2	2 5/8	3 1/8	2 1/2
FT-10	24V CT-2A or 12V-4A	4 1/8	2 5/8	2 5/8	3 1/8	2 1/2

STEP DOWN AUTO-TRANSFORMERS

220/240 Volt to 110/120 Volts, 50/60 Cycles.
All units have 6 foot cord and female receptacle, except R-64.

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-41	85	3 1/8	2 5/8	3 1/8	2 x 1 7/8	4
R-42	125	3 1/2	3	3 1/2	2 1/4 x 2 1/4	5
R-43	175	3 3/4	3 1/4	3 3/8	2 1/2 x 2 1/4	5 1/2
R-44	250	4 3/8	3 1/4	3 7/8	2 1/2 x 2 7/8	6 1/2
R-45	500	4 5/8	3 7/8	4 5/8	3 x 3 1/4	12
R-46	1200	6 7/8	3 7/8	4 5/8	3 x 5 1/2	18
R-64	2500	10 1/2	4 3/4	6 3/4	3 7/8 x 9 7/8	30



EXPORT VOLTAGE ADAPTER

Complete with cord and plug and special locking switch providing for line voltages of 105, 115, 125, 135, 150, 210, 230, 250 volts; 42 to 60 cycles. Output voltage 115

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-47	85	4 5/8	3	3 1/2	2 1/4 x 2 1/4	4 1/2
R-48	150	4 5/8	3 1/4	4	2 1/2 x 2 1/4	5 1/2



TV VOLTAGE REGULATOR

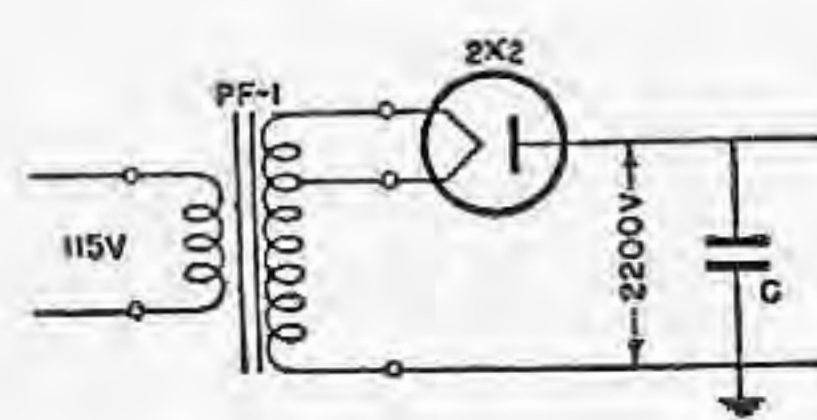
Complete with cord, plug, and special locking switch. Permits operation of 115 volt 50/60 cycle TV sets on line voltages of 85, 90, 95, 100, 105, 110, 120, 125 V.

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-49	350	5	3 1/4	4	2 1/2 x 2 3/4	5

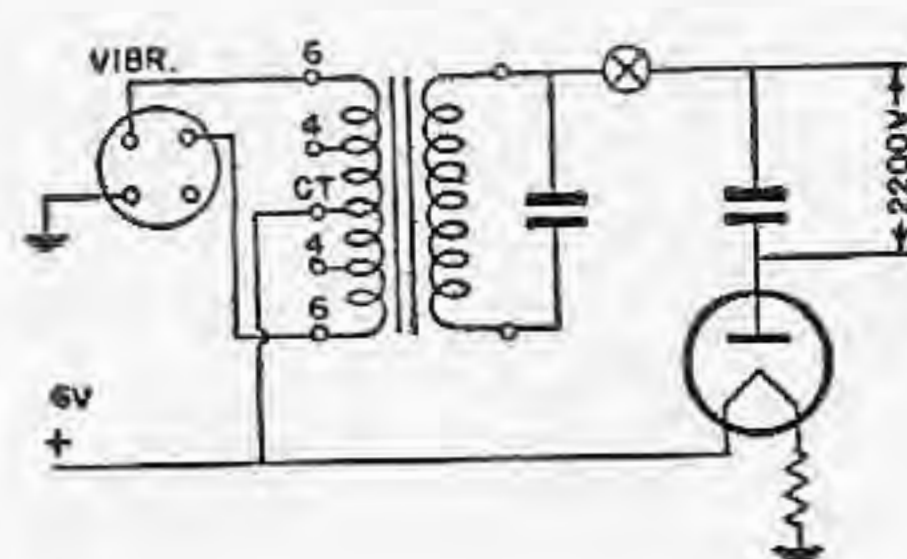
PHOTO FLASH TRANSFORMERS

Can be used for either standard (Amglo type) or trigger (Sylvania type) multiple flash bulbs. Circuit details included with transformer.

PF-1 Primary for 115 volts, 50/60 cycles. Secondaries for power supply delivering 2200 volts DC to condenser up to 100 Mfd. Compound sealed in G-3* case 2 1/8 x 2 3/4 (3 3/4 including flanges) x 2 1/2 inches high. Weight 2 lbs.



PF-2 For portable service. Primary tapped for 4 volt or 6 volt battery (full wave vibrator). Secondary for power supply delivering 2200 volts DC to condenser up to 60 Mfd. Compound sealed in G-3* case. Weight 2 lbs.



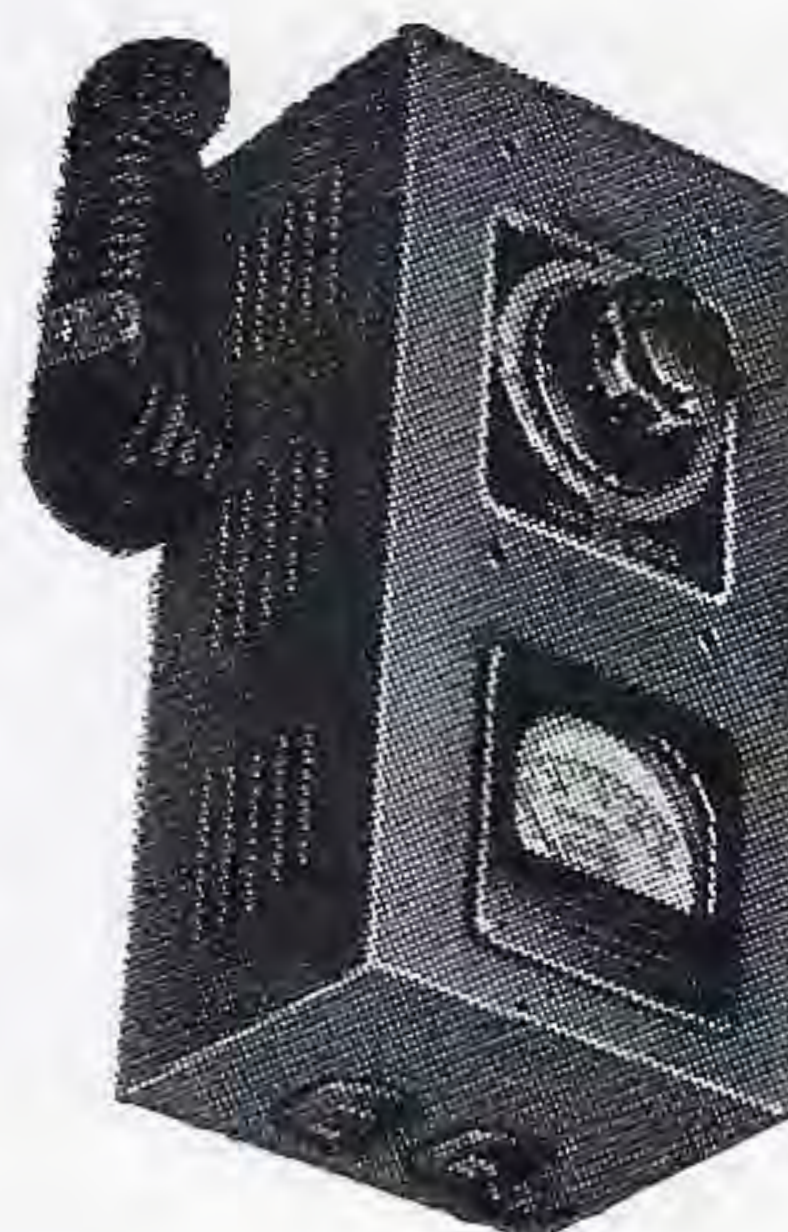
PF-3 Trigger Transformer 15 KV peak. 7/8 O.D. x 3" long. Weight 2 Oz.

* See page 31.

VARITRAN VOLTAGE ADJUSTERS

Input 115 volts 50/60 cycles. Output continually adjustable from 0-130 Volts through roller contact on exposed autotransformer winding. Regulation and efficiency are excellent, no wave form distortion. Output voltage is independent of load. Complete with line cord, switch, and receptacle . . . for loads up to 570 Watts . . . 5 A.

Type		L	W	H	Wt. Lbs.
V-1-M	with meter	4 $\frac{7}{8}$ x	9 $\frac{7}{8}$ x	3 $\frac{5}{8}$	14
V-1	without meter	4 $\frac{7}{8}$ x	8	x 3 $\frac{5}{8}$	12



ISOLATION TRANSFORMERS

Ideal for isolating line noise, AC-DC sets, etc. Excellent electrostatic shielding. 1500 volt breakdown test. Six foot cord and female receptacle, except R-77.

Primary 110-120 volts, 50/60 cycles—Secondary 110-120 volts
Except R-97 220 volt Primary—120 volt Sec.

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-72	40	3 1/8	2 5/8	3 1/8	2 x 1 7/8	4
R-73	100	3 3/4	3 1/4	3 7/8	2 1/2 x 2 3/8	6
R-74	250	4 7/8	3 7/8	4 5/8	3 x 3 1/2	12
R-75	600	7 3/8	3 7/8	4 5/8	3 x 6	20
R-76	1200	8 1/2	4 1/2	5 7/8	3 5/8 x 6 5/8	30
R-77	2500	12	7	9	6 x 11	70
R-97	250	4 7/8	3 7/8	4 5/8	3 x 3 1/2	12



LINE VOLTAGE ADJUSTERS WITH METER

The perfect answer to abnormal or fluctuating line voltage. Adjust switch so that meter reads at red line and you know that your equipment is working at correct voltage.

These units combine a tapped auto-transformer with a switch and meter in a compact, rugged assembly.

The nine tap switch provides for line voltage of 60 to 140 volts on 115 volt output models and 160 to 240 volts on 230 volt output model.

All units are designed for 50/60 cycle service and come complete with 6 foot input cord and plug and outlet receptacle.



Type No.	Primary Voltages	Sec. Volts	Rating Watts	L	W	H	Wgt. Lbs.
R-78	60, 70, 80, 90, 100, 110, 120, 130, 140	115	150	7	4	4 3/4	6
R-79	60, 70, 80, 90, 100, 110, 120, 130, 140	115	300	7	4	4 3/4	9
R-80	60, 70, 80, 90, 100, 110, 120, 130, 140	115	600	10 1/4	4	4 3/4	13
R-81	60, 70, 80, 90, 100, 110, 120, 130, 140	115	1200	10 1/4	4	4 3/4	21
R-86	160, 170, 180, 190, 200, 210, 220, 230, 240	230	1200	10 1/4	4	4 3/4	21

VOLTAGE BOOSTERS

The constantly increasing appliance load in home and office presents a serious low line voltage problem to which the UTC voltage booster is a perfect answer. These autotransformers are designed to operate from a 95 to 110 V. 50/60 cycle line. They boost the voltage 10%. The two ratings shown are ideal for TV sets and air conditioners. Complete with line cord and receptacle.



Type No.	Rating Amp.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
R-87	3	350	3 3/8	2	2 3/4	2 7/8	2
R-88	18	2000	3 7/8	4 3/8	4 5/8	3 x 3	12

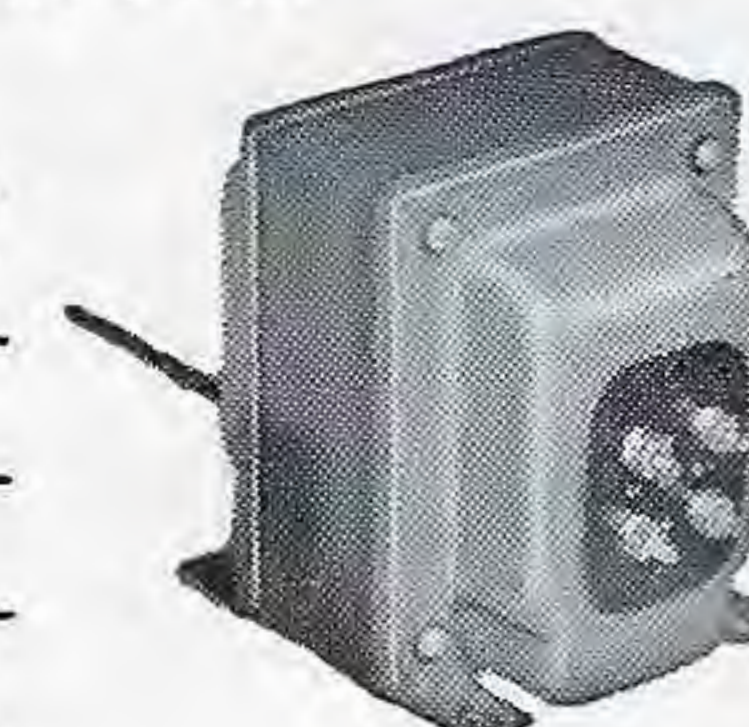


SIGNALLING AND CONTROL TRANSFORMERS

Primary 110-120 volts, 50/60 cycles—Secondary 4/8/12/16/20/24 volts

High power transformers suitable for operating relays, sirens, horns, gongs, etc. from 115 V. 50/60 cycle line. These units have four secondary terminals providing 4, 8, 12, 16, 20 and 24 volt output. The volt ampere rating is based on the 24 volt secondary tap with corresponding reduction at the lower voltages. Underwriters' approved primary leads are employed, and screw-type binding posts.

Type No.	Rating Watts	L	W	H	Mtg. Dim.	Wgt. Lbs.
SC-3	50	3	x 3½	x 3⅞	1⅞ x 2¼	3
SC-4	100	3¼	x 4	x 4	2⅛ x 2½	5
SC-5	250	4	x 5	x 4¾	3¼ x 3	10

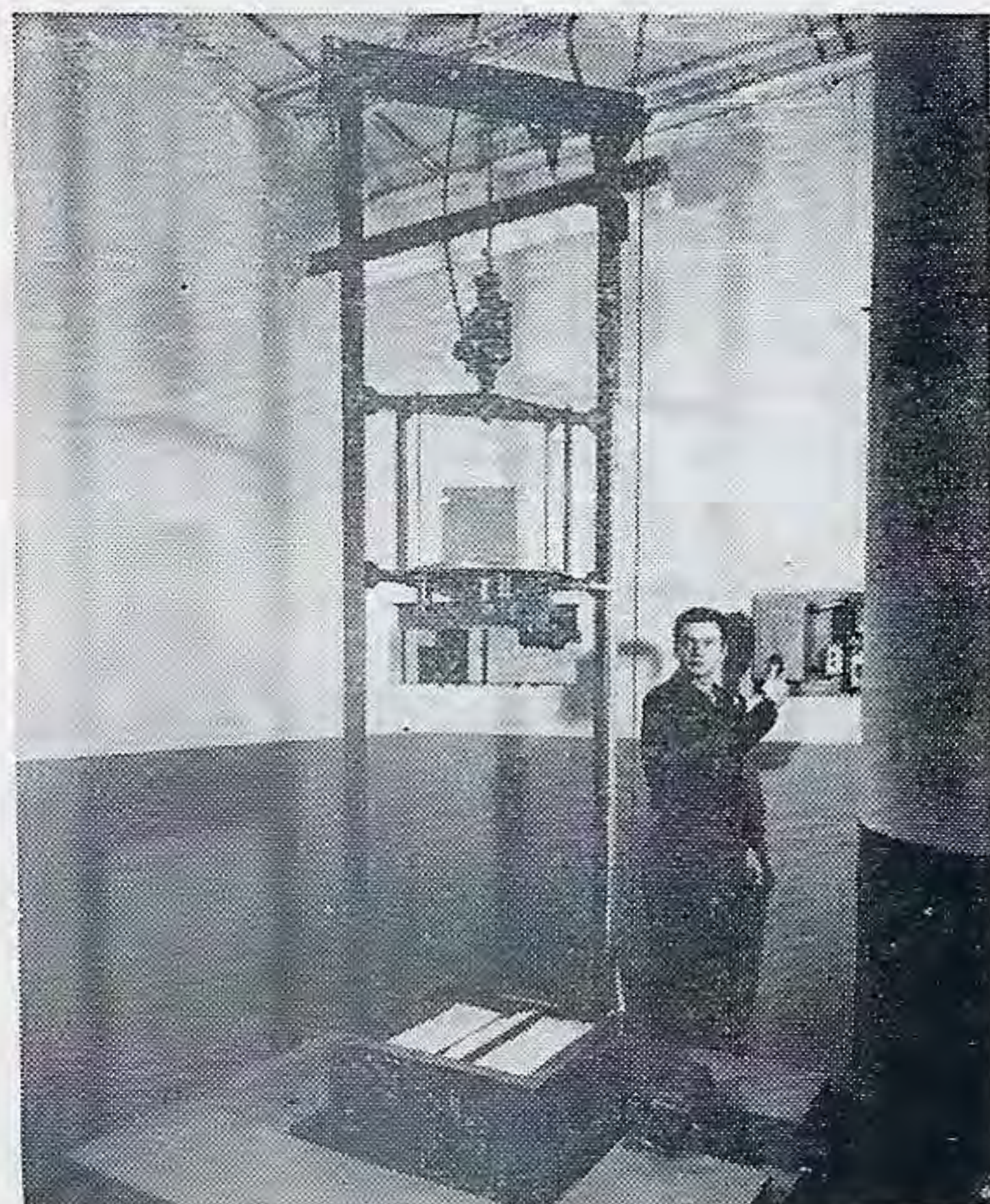




for MILITARY COMPONENTS

OUR 12 MILLIONTH MILITARY UNIT SHIPPED THIS YEAR

The UTC Laboratories include complete facilities for testing to MIL-T-27A. These facilities are employed for continuous quality control of production as well as for proving new items. Virtually all hermetic items in this catalog have been proved to meet MIL-T-27A or are in process of proving tests. By using a catalog UTC item both costs and delays of initial testing to MIL-T-27A are consequently eliminated.



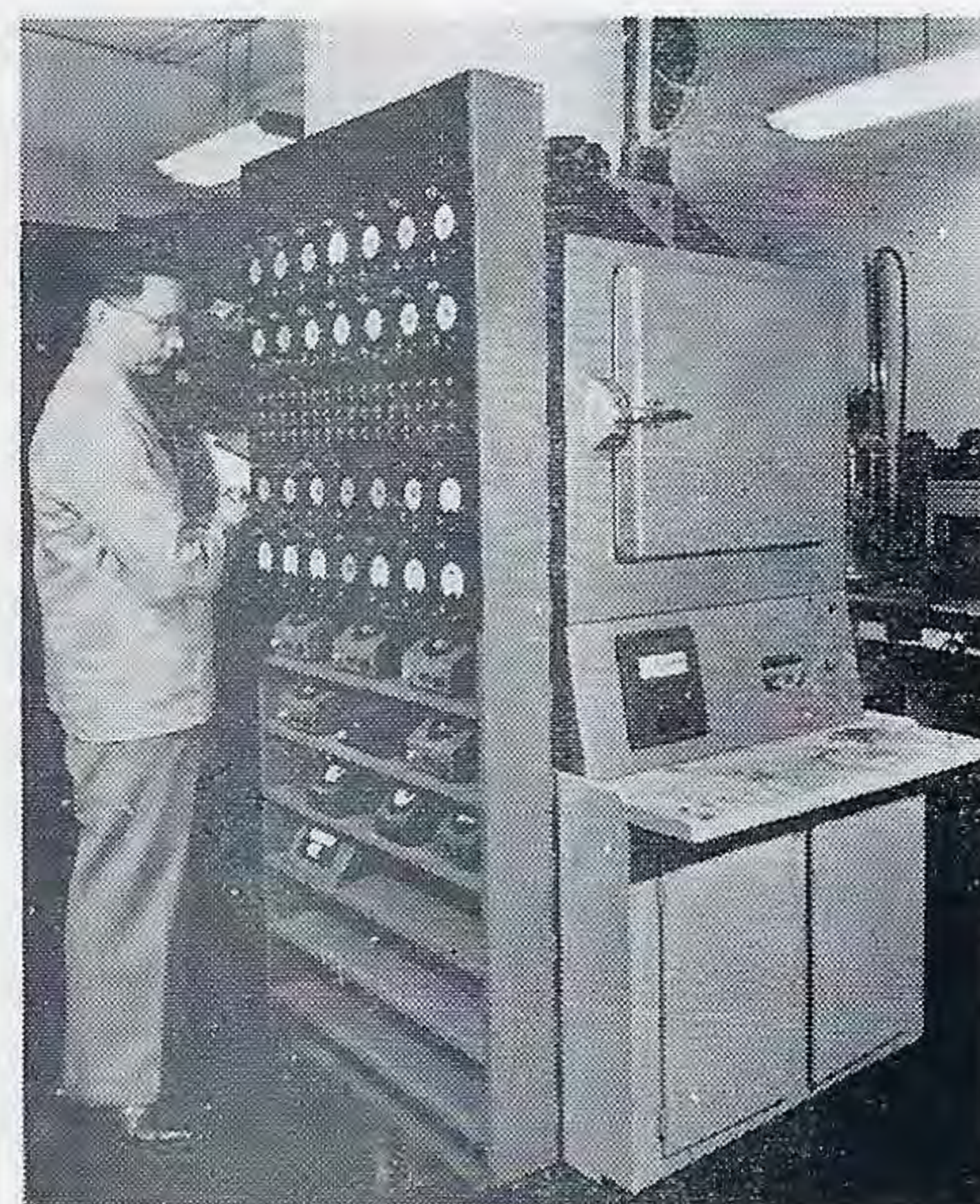
Shock Testing



Automatic Programmed
MIL-T-27A Vibration Test



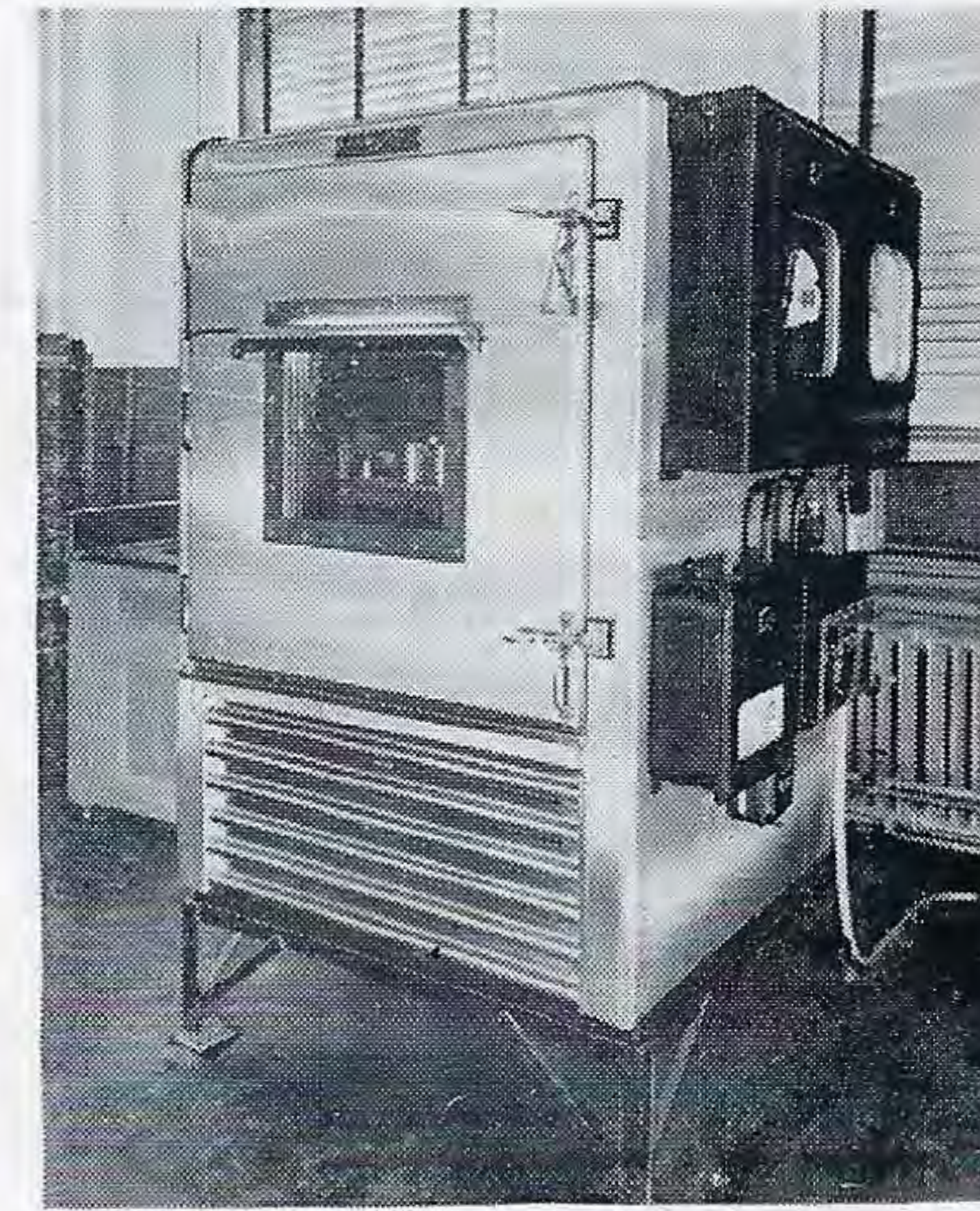
Altitude Test and High Frequency
Vibration for Airborne Units



Accelerated Life Testing for
Insulation Systems and Processes



Primary Standard
Instrument Calibration



Automatic Programmed
Humidity Testing

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