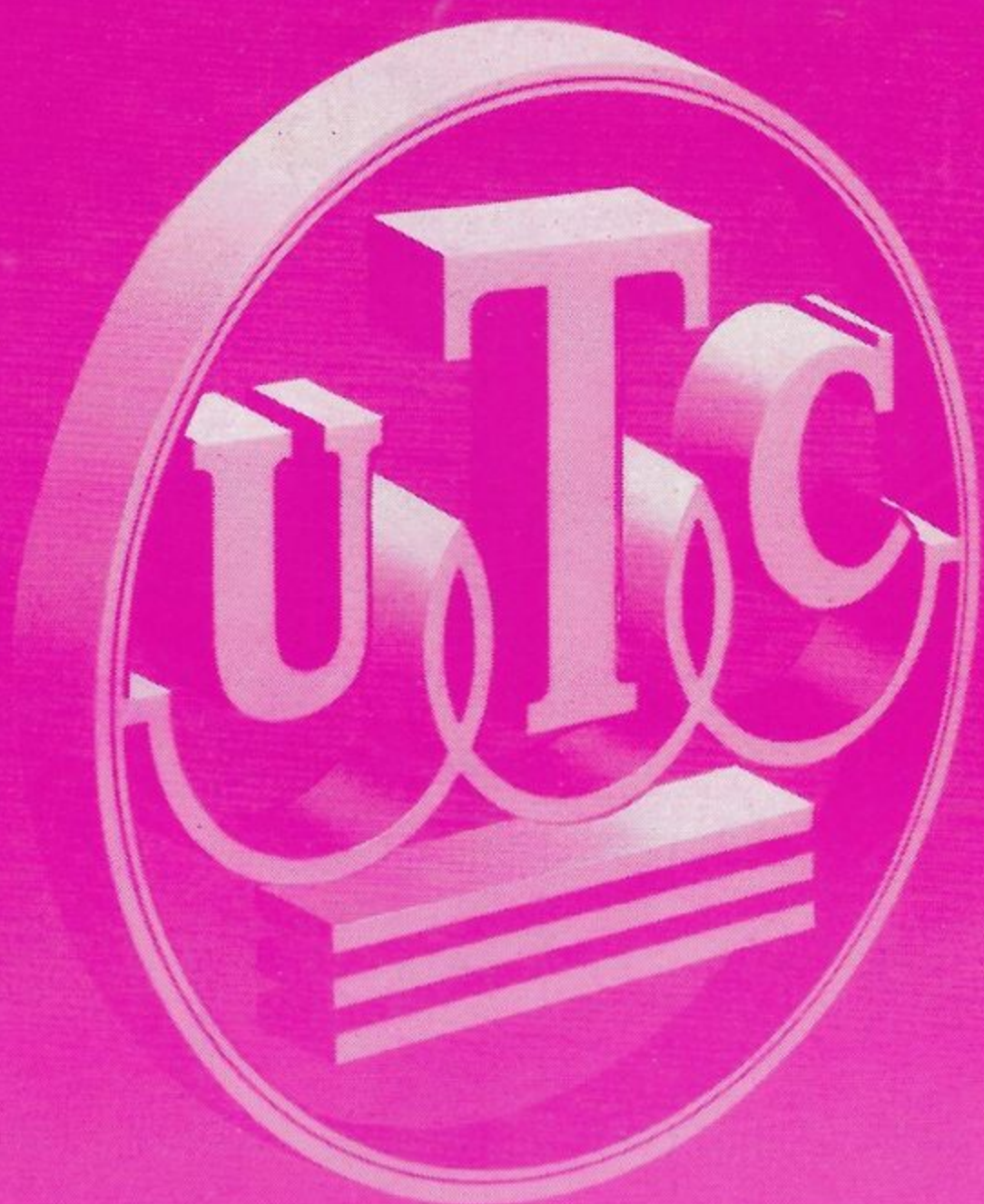




TRANSFORMERS REACTORS FILTERS

UNITED TRANSFORMER COMPANY • 150 VARICK STREET, NEW YORK 13, N. Y.

EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y., CABLES: "ARLAB"

1954 CATALOG B

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	9	\$11.00	CG-512	20	\$18.00	HA-103A	8	\$13.00	HVC-11	16	\$10.00	LS-185	7	\$270.00	O-12	10	\$ 7.50
A-11	9	11.00	CG-710	19	9.00	HA-104	8	13.00	HVC-12	16	11.00	LS-192	7	18.00	O-13	10	5.50
A-12	9	11.00				HA-105	8	13.00				LS-691	6	400.00	O-14	10	7.00
A-14	9	10.00	CGE-1A	19	18.00	HA-106	8	13.00	LS-6L1	5	30.00	LS-692	6	700.00	O-15	10	7.00
A-16	9	9.00				HA-107	8	20.00	LS-6L3	5	20.00	LS-950	7	10.00	O-16	10	9.00
A-17	9	10.00	CVA-1	20	9.00	HA-108	8	14.00	LS-6L4	5	45.00	LS-980	7	35.00			
A-18	9	11.00	CVA-2	20	11.00	HA-108X	8	15.00	LS-5	5	25.00				P-1	10	8.50
A-19	9	11.00	CVA-3	20	14.00	HA-111	8	13.00	LS-6	5	20.00	MAT-1	12	28.00	P-2	10	8.50
A-20	9	11.00	CVA-4	20	18.00	HA-113	8	12.00	LS-7	5	20.00	MAT-2	12	30.00	P-3	10	8.00
A-21	9	11.00	CVA-5	20	27.00	HA-114	8	14.00	LS-10	4	15.00	MAT-3	12	35.00	P-4	10	7.50
A-24	9	11.00				HA-130X	8	15.00	LS-10X	4	19.00	MAT-4	12	40.00	P-5	10	7.50
A-25	9	10.00	CVL-1	19	7.00	HA-133	8	17.00	LS-12	4	17.00	MAT-5	12	10.00	P-6	10	8.00
A-26	9	11.00	CVL-2	19	9.00	HA-134	8	15.00	LS-12X	4	20.00	MAT-6	12	8.00	P-7	10	8.00
A-27	9	11.00	CVL-3	19	12.00	HA-135	8	15.00	LS-14	4	18.00				P-8	10	8.50
A-30	9	8.00	CVL-10	19	8.00	HA-137	8	14.00	LS-14X	4	20.00	MC-1	10	9.00	P-9	10	8.50
A-32	9	5.50							LS-15X	4	20.00	MC-2	10	10.00	P-10	10	9.00
CG-1C	20	45.00	CVM-0	20	8.50	HC-115	8	8.00	LS-18	4	16.00				P-11	10	8.50
CG-1S	20	45.00	CVM-1	20	11.00	HC-116	8	11.00	LS-19	4	16.00	MQA-1	14	6.50	P-12	10	9.00
CG-2L6	19	12.00	CVM-2	20	15.00	HC-117	8	8.00	LS-20	4	17.00	MQA-2	14	6.50	P-13	10	7.00
CG-4L6	19	20.00	CVM-3	20	18.00				LS-21	4	15.00	MQA-3	14	6.50	P-14	10	8.50
CG-15	19	9.00	CVM-4	20	33.00	HP-122	8	9.50	LS-22	4	22.00	MQA-4	14	7.00	P-15	10	8.50
CG-16	19	9.00	CVM-5	20	80.00	HP-123	8	10.00	LS-25	4	19.00	MQA-5	14	7.50	PF-1	26	7.00
CG-19	19	9.00							LS-26	4	18.00	MQA-6	14	7.50	PF-2	26	7.00
CG-33	20	6.00	CVP-1	19	9.50	HQA-1	13	7.00	LS-27	4	18.00	MQA-7	14	8.50	PF-3	26	5.00
CG-34	20	8.00	CVP-2	19	11.00	HQA-2	13	7.00	LS-30	4	16.00	MQA-8	14	9.00	PF-4	26	7.00
CG-34	20	8.00	CVP-3	19	17.00	HQA-3	13	7.50	LS-30X	4	19.00	MQA-9	14	9.50			
CG-40	20	6.50	CVP-4	19	21.00	HQA-4	13	7.50	LS-31	4	18.00	MQA-10	14	9.50	R-14	25	1.30
CG-41	20	6.50	CVP-5	19	36.00	HQA-5	13	8.00	LS-31X	4	22.00	MQA-11	14	9.50	R-15	25	1.30
CG-44	20	6.00				HQA-6	13	8.00	LS-32	4	22.00	MQA-12	14	10.00	R-16	25	1.30
CG-45	20	6.00				HQA-7	13	9.00	LS-33	6	18.00	MQA-13	14	10.00	R-17	25	2.00
CG-48C	20	6.00	DI-1	15	40.00	HQA-8	13	9.00	LS-34	6	27.00	MQA-14	14	11.00	R-18	25	2.00
CG-50	19	9.50	DI-2	15	45.00	HQA-9	13	10.00	LS-38	4	20.00	MQA-15	14	12.00	R-19	25	2.50
CG-51AX	20	8.00	DI-3	15	50.00	HQA-10	13	10.00	LS-39	4	18.00	MQA-16	14	13.00	R-20	25	2.80
CG-53AX	20	9.00	DI-4	15	65.00	HQA-11	13	10.00	LS-40	4	18.00	MQA-17	14	14.00	R-21	25	2.80
CG-59AX	20	10.00	DP-2	15	6.00	HQA-12	13	11.00	LS-47	5	20.00	MQA-18	14	15.00	R-22	25	2.50
CG-100	20	6.50	DP-3	15	7.00	HQA-13	13	11.00	LS-48	5	40.00	MQA-19	14	20.00	R-33	25	1.90
CG-101	20	6.50	DP-4	15	8.00	HQA-14	13	13.00	LS-49	5	40.00				R-34	25	1.90
CG-102	20	9.50				HQA-15	13	14.00	LS-50	4	15.50	MQB-1	14	13.00	R-35	25	2.50
CG-103	20	9.50	FT-1	25	2.25	HQA-16	13	15.00	LS-51	4	19.00	MQB-2	14	13.00	R-38A	25	2.00
CG-104	20	14.00	FT-2	25	2.10	HQA-17	13	16.00	LS-52	5	19.00	MQB-3	14	13.00	R-39	25	2.50
CG-105	20	14.00	FT-3	25	2.70	HQA-18	13	17.00	LS-54	5	15.00	MQB-4	14	14.00	R-40	25	3.80
CG-108	20	25.00	FT-4	25	2.70				LS-55	5	19.00	MQB-5	14	14.00	R-41	26	5.70
CG-109	20	25.00	FT-5	25	3.00	HQB-1	13	16.00	LS-56	6	20.00	MQB-6	14	14.00	R-42	26	6.30
CG-120	20	12.00	FT-6	25	2.85	HQB-2	13	16.00	LS-57	5	15.00	MQB-7	14	15.00	R-43	26	7.00
CG-121	20	15.00	FT-7	25	3.00	HQB-3	13	16.00	LS-58	5	38.00	MQB-8	14	15.00	R-44	26	8.50
CG-122	20	12.00	FT-8	25	3.60	HQB-4	13	17.00	LS-60A	5	24.00	MQB-9	14	16.00	R-45	26	12.50
CG-124	20	13.00	FT-9	25	3.90	HQB-5	13	17.00	LS-61	5	19.00	MQB-10	14	17.00	R-46	26	25.00
CG-125	20	14.00	FT-10	25	4.20	HQB-6	13	18.00	LS-62A	5	20.00	MQB-11	14	18.00	R-47	26	8.50
CG-126	20	20.00				HQB-7	13	19.00	LS-63	5	15.00	MQB-12	14	19.00	R-48	26	9.50
CG-131	19	8.50	H-1	11	9.00	HQB-8	13	20.00	LS-66	6	65.00				R-49	26	9.50
CG-132	19	8.50	H-2	11	9.50	HQB-9	13	21.00	LS-70	7	40.00	MQE-1	14	5.50	R-55	25	1.20
CG-133	19	8.50	H-3	11	7.00	HQB-10	13	22.00	LS-72	7	40.00	MQE-2	14	5.50	R-58	25	2.00
CG-134	19	8.50	H-4	11	7.00	HQB-11	13	23.00	LS-74	7	35.00	MQE-3	14	6.00	R-59	25	2.40
CG-135	19	9.00	H-5	11	8.50	HQB-12	13	24.00	LS-80	7	18.00	MQE-4	14	6.00	R-60	25	3.00
CG-136	19	11.00	H-6	11	9.50				LS-82	7	19.00	MQE-5	14	6.50	R-64	26	42.00
CG-137	19	7.00	H-7	11	8.50	HQC-1	13	13.00	LS-83	7	30.00	MQE-6	14	6.50	R-72	26	5.70
CG-140	19	7.00	H-8	11	8.50	HQC-2	13	13.00	LS-84	7	20.00	MQE-7	14	7.00	R-73	26	8.50
CG-141	19	8.50	H-9	11	8.50	HQC-3	13	13.00	LS-88	7	9.00	MQE-8	14	7.50	R-74	26	15.00
CG-233	19	8.00	H-10	11	7.50	HQC-4	13	13.00	LS-89A	7	70.00	MQE-9	14	8.00	R-75	26	24.00
CG-235	19	11.00	H-11	11	6.50	HQC-5	13	13.00	LS-90	7	10.00	MQE-10	14	8.50	R-76	26	39.00
CG-238AX	20	18.00	H-19	11	13.00				LS-91	7	10.00	MQE-11	14	9.00	R-77	26	65.00
CG-300	20	14.00	H-20	11	12.00	HQD-1	13	15.00	LS-92	7	15.00	MQE-12	14	9.50	R-78	26	14.00
CG-301	20	18.00	H-21	11	14.00	HQD-2	13	15.00	LS-93	7	32.00	MQE-13	14	9.50	R-79	26	16.00
CG-302	20	25.00	H-22	11	12.50	HQD-3	13	15.00	LS-96	7	40.00	MQE-14	14	10.00	R-80	26	20.00
CG-303	20	30.00	H-23	11	12.00	HQD-4	13	15.00	LS-98	7	35.00	MQE-15	14	11.00	R-81	26	35.00
CG-304	20	110.00	H-24	11	9.00	HQD-5	13	15.00	LS-99	7	100.00				R-83	26	17.00
CG-305	20	50.00	H-30	11	8.00				LS-102	6	48.00	MQL-1	15	20.00	R-84	26	18.00
CG-306	20	100.00	H-31	11	8.00	HQE-1	13	6.00	LS-103	6	120.00	MQL-2	15	20.00	R-85	26	20.00
CG-307	20	100.00	H-32	11	8.00	HQE-2	13	6.00	LS-104A	6	550.00	MQL-3	15	21.00	R-86	26	35.00
CG-308	20	120.00	H-33	11	8.00	HQE-3	13	7.00	LS-105	7	100.00	MQL-4	15	22.00	R-87	26	6.00
CG-309	20	260.00	H-34	11	8.00	HQE-4	13	7.50	LS-106	6	200.00				R-88	26	17.50
CG-310	20	210.00	H-35	11	6.50	HQE-5	13	8.00	LS-120	7	40.00	O-1	10	7.00	R-101	25	4.50
CG-311	20	50.00	H-36	11	7.50				LS-121Y	7	45.00	O-2	10	7.00	R-102	25	5.20
CG-312	20	50.00	H-40	12	12.00	HVC-1	16	8.00	LS-140	5	20.00	O-3	10	6.50	R-103	25	5.70
CG-315	20	12.00	H-41	12	12.00	HVC-2	16	8.00	LS-141	5	18.00	O-4	10	6.00	R-104	25	6.30
CG-316	20	18.00	H-42	12	12.00	HVC-3	16	8.00	LS-142	5	18.00	O-5	10	6.00	R-105	25	7.80
CG-333	19	7.00	H-43	12	12.00	HVC-4	16	8.00	LS-143	5	15.00	O-6	10	6.50	R-106	25	4.50
CG-422	20	15.00				HVC-5	16	8.00	LS-150	4	18.00	O-7	10	6.50	R-107	25	5.40
CG-428	20	20.00	HA-100	8	13.00	HVC-6	16	8.00	LS-151	4	16.00	O-8	10	7.00	R-108	25	6.30
CG-429	20	20.00	HA-100X	8	15.00	HVC-7	16	8.50	LS-180	7	12.00	O-9	10	7.00	R-109	25	9.00
CG-431	20	27.00</															

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R-113	25	9.60	S-33	22	8.50	VIC-3	16	6.00
			S-34	22	8.50	VIC-4	16	6.00
SO-1	23	4.00	S-35	22	12.00	VIC-5	16	6.00
SO-2	23	3.60	S-36	22	12.00	VIC-6	16	6.00
SO-3	23	3.60	S-37	22	14.00	VIC-7	16	6.00
SO-4	23	3.60	S-38	22	14.00	VIC-8	16	6.50
SO-5	23	3.00	S-39	22	15.00	VIC-9	16	6.50
SO-6	23	4.00	S-40	22	15.00	VIC-10	16	6.50
			S-41	22	15.00	VIC-11	16	6.50
SSO-1	23	4.20	S-42	22	17.00	VIC-12	16	6.50
SSO-2	23	4.50	S-43	22	25.00	VIC-13	16	6.50
SSO-3	23	3.70	S-44	22	22.00	VIC-14	16	6.50
SSO-4	23	3.70	S-45	22	17.00	VIC-15	16	7.00
SSO-5	23	3.70	S-46	22	21.00	VIC-16	16	7.00
SSO-6	23	3.70	S-47	22	27.00	VIC-17	16	7.00
SSO-7	23	3.00	S-48	22	34.00	VIC-18	16	7.50
			S-49	22	33.00	VIC-19	16	7.50
S-1	21	4.00	S-50	22	50.00	VIC-20	16	7.50
S-2	21	5.00	S-51	22	11.00	VIC-21	16	8.00
S-3	21	3.70	S-52	22	14.00	VIC-22	16	11.00
S-4	21	5.70	S-53	22	4.70			
S-5	21	4.00	S-54	22	4.70			
S-6	21	3.70	S-55	22	4.70			
S-7	21	5.50	S-56	22	4.70			
S-8	21	5.50	S-57	22	7.50			
S-9	21	6.50	S-58	22	8.00			
S-10	21	5.50	S-59	22	7.50			
S-11	21	4.50	S-60	22	11.00			
S-12	21	5.00	S-61	22	8.00			
S-13	21	7.00	S-62	22	7.50			
S-14	21	6.00	S-63	22	12.50			
S-15	21	5.50	S-64	22	8.50			
S-16	21	7.00	S-65	22	8.50			
S-17	21	9.00	S-66	22	8.50			
S-18	21	6.00	S-67	22	8.50			
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S-22	21	28.00	S-71	22	12.00			
S-23	22	3.80	S-72	22	9.00			
S-24	22	4.50						
S-25	22	3.50	SC-3	26	6.00			
S-26	22	3.50	SC-4	26	8.00			
S-27	22	4.50	SC-5	26	13.00			
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S-29	22	4.50	V-1	26	20.00			
S-30	22	4.50	V-1-M	26	35.00			

FILTERS AND EQUALIZERS

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4C	17	200.00
BMI*	17	25/35.00
BML*	17	25/35.00
HMI*	17	25/35.00
HML*	17	25/35.00
LMI*	17	25/35.00
LML*	17	25/35.00

* Stock frequencies (Pg. 17) are 25.00 net.

Special frequencies are 35.00 net.

AMPLIFIER KIT

Type	Page	Net
MLF	18	108.00

INDEX BY APPLICATION											
	SO	S	R	P	O	LS	HA	H	CG	A	← TYPE PREFIX
SPECIAL APPLICATION	SUB-OUNCER	SUB-SUBOUNCER	SPECIAL SERIES	REPLACEMENT	PLUG-IN	OUNCER	LINEAR STANDARD	HIPERMALLOY	HERMETIC	COMMERCIAL	ULTRA COMPACT
				26						20	
		22								20	
			26							20	
		22	25			7				20	
	23	21	25	10	10	4,5	8	11	19	9	
	23	21	25	10	10	4,5	8	11	19, 20	9	
			26								
		21	25	10	10	4,5, 6	8	11	19	9	
10											
		21				6				20	
	23	21	25	10	10	5	8	11	19	9	
		22	25, 26			7	8			20	
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This catalog presents the complete line of UTC transformers for broadcast, amateur, laboratory and replacement purposes. Each of the UTC lines described is distinguished by individual characteristics ideally suiting the items to the specific application intended. Each group of items is uniform and commercial in appearance.

It is surprising to many people to find that by far the bulk of UTC production is on special units not normally catalogued. Illustrated are a few of the thousands of special UTC transformers, reactors, filters, and magnetic amplifiers for military equipment. These are manufactured in hermetic and Fosterized designs to MIL-T-27, AN-E-19, 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.

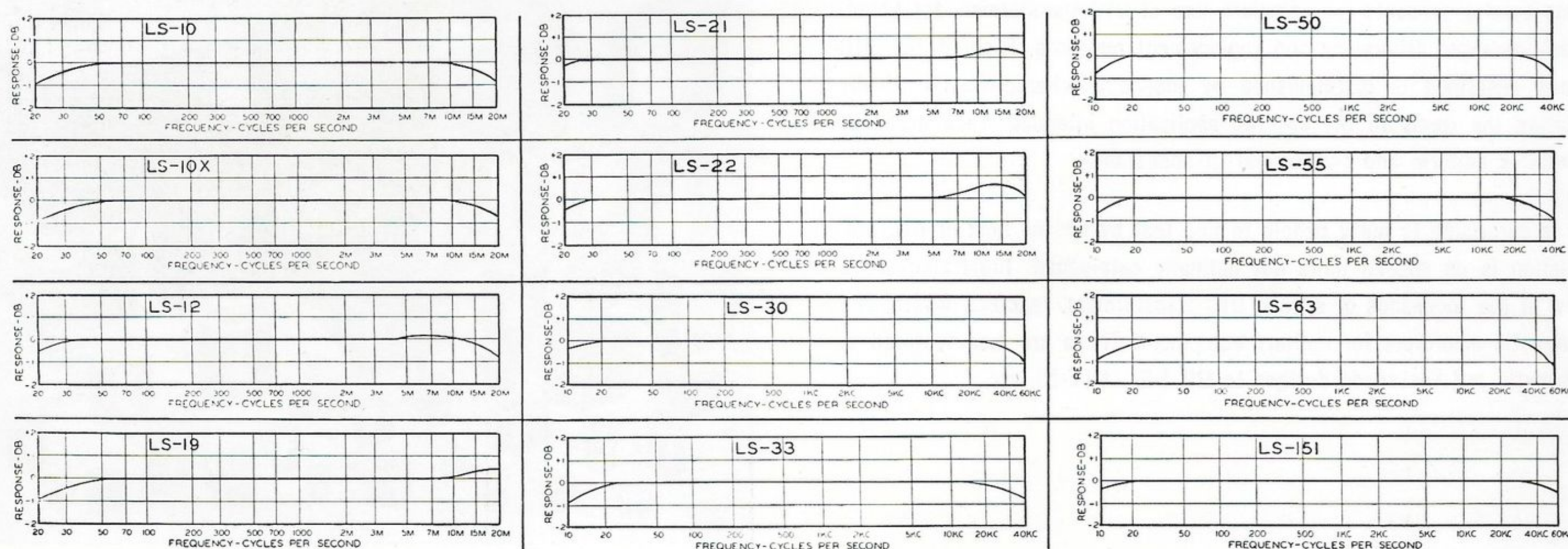
UTC LINEAR STANDARD transformers are the **ONLY** audio units with a **GUARANTEED** response . . . ± 1 DB from 20 to 20,000 cycles.

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.

NEGLECTIBLE WAVE FORM DISTORTION . . . is a function of proper impedance matching, minimum phase shift, and low flux density. These elements have been given great attention in the design of Linear Standard units. It is interesting to note that an output transformer reasonably flat from 20 to 20,000 cycles may show serious distortions at 30 to 10,000 cycles. For this reason, UTC high level units have a frequency range better than guaranteed value, generally 7 cycles to 50,000 cycles (see page 6).

MULTIPLE TAP WINDINGS . . . make possible a wide combination of impedance terminations without impairing fidelity or efficiency. Precision winding methods result in winding accuracy of .1% . . . perfect balance of inductance and capacity . . . exact impedance reflection.

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	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	+10 DB	-74 DB	.5 MA	LS-1
LS-10X	As above	As above	50,000 ohms	20-20,000	+10 DB	-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	+10 DB	-74 DB	.5 MA	LS-1
LS-12X	As above	As above	80,000 ohms overall, split	20-20,000	+10 DB	-92 DB-Q	.5 MA	LS-1
LS-14	Low impedance mike, pickup, or parallel mixer to grid	2.5, 5.5, 10, 15, 22, 30, 38, 60 ohms	60,000 ohms in two sections	20-20,000	+10 DB	-74 DB	.5 MA	LS-1
LS-14X	As above	As above	50,000 ohms	20-20,000	+10 DB	-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	+10 DB	-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	+20 DB	-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	+15 DB	-74 DB	0 MA	LS-1

MIXING TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max.† Level	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	+15 DB	-74 DB	.5 MA	LS-1
LS-30X	As above	As above	As above	20-20,000	+15 DB	-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	+15 DB	-74 DB	.5 MA	LS-1
LS-31X	As above	As above	As above	20-20,000	+14 DB	-92 DB-Q	.3 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	+15 DB	-74 DB	.5 MA	LS-1

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max.† Level	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	+12 DB	-50 DB	0 MA	LS-1
LS-20	Single plate to single grid	15,000 ohms	60,000 ohms; 2:1 turn ratio	20-20,000	+10 DB	-74 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	+10 DB	-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	30-20,000	+12 DB	-74 DB	8 MA	LS-1
LS-22	Push pull plates to push pull grids. Split primary and secondary	30,000 ohms plate to plate	80,000 ohms; turn ratio 1.6:1 overall	20-20,000	+18 DB	-50 DB	.25 MA	LS-2
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	+15 DB	-74 DB	1 MA	LS-1
LS-26	Bridging line to 1 or 2 grids	5000 ohms	60,000 in two sections	15-20,000	+15 DB	-74 DB	0 MA	LS-1

PLATE, CRYSTAL, PHOTOCCELL, AND BRIDGING TO LINE TRANSFORMERS

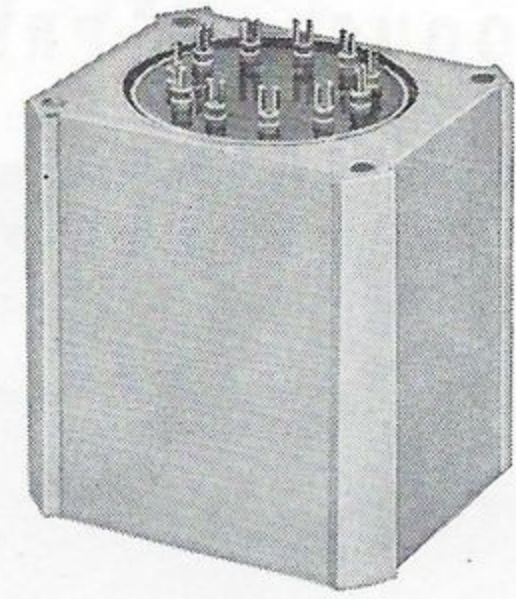
Type No.	Application	Primary Impedance	Secondary Impedance	± 1 db from	Max.† Level	Relative * hum	Unbal. DC in prim'y	Case No.
LS-27	Single plate to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600 cycles	30-15,000	+15 DB	-74 DB	8 MA	LS-1
LS-50	Single plate to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	10-40,000	+15 DB	-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	+16 DB	-74 DB	1 MA	LS-1
LS-38	Crystal microphone or pickup to multiple line, with internal equalizer	100,000 ohms	50, 125/150, 200, 250, 333, 500/600	Equalized for crystal	+10 DB	-74 DB	0 MA	LS-1
LS-39	Photocell, high-mu triode, diode or overbiased detector to multiple line	100,000 ohms	50, 125/150, 200, 250, 333, 500/600	20-20,000	+10 DB	-74 DB	0 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	+15 DB	-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	+18 DB	-74 DB	1 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.

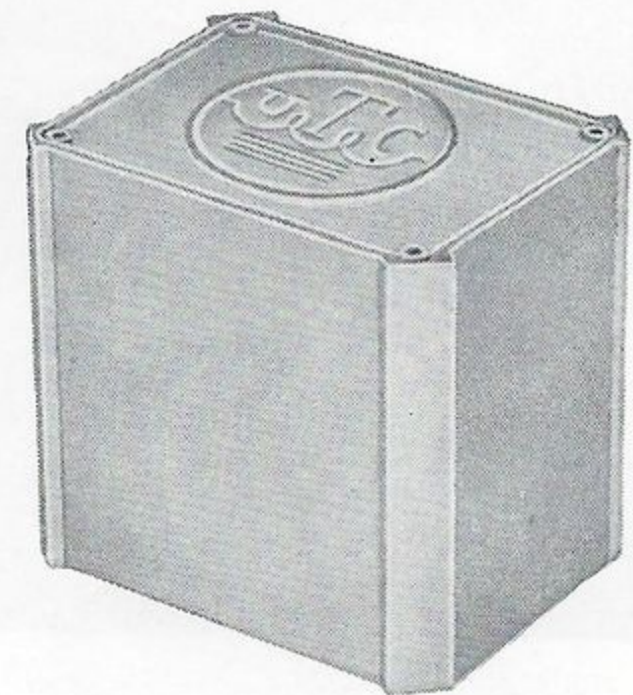
Q Multiple alloy magnetic shield.

† 6 MW as ODB reference.



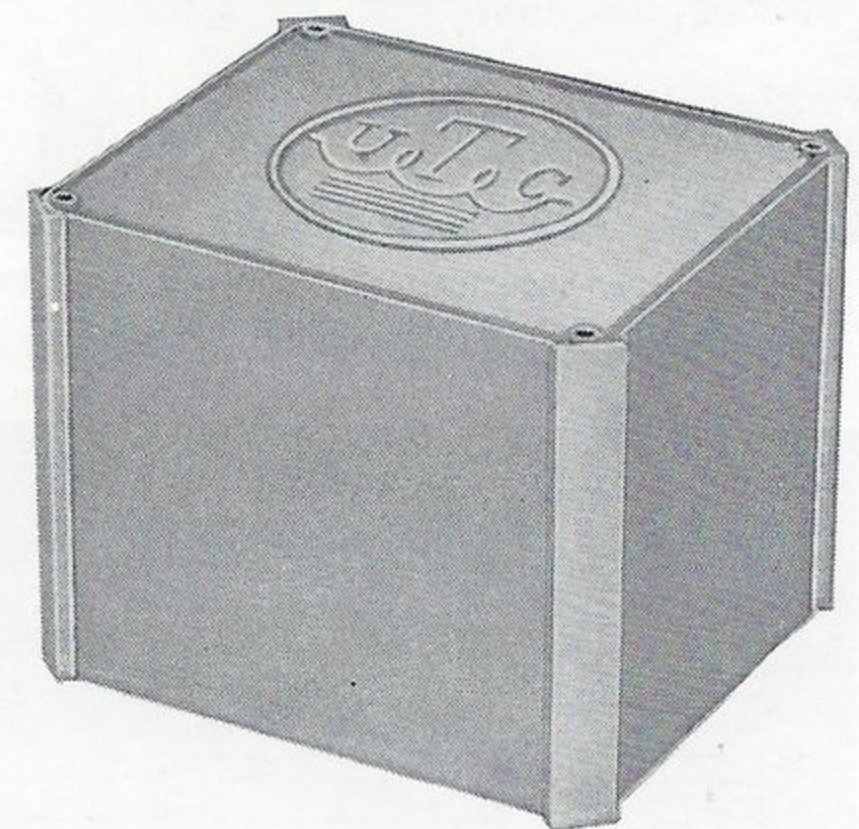
LS-1 CASE

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 3/16"
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.

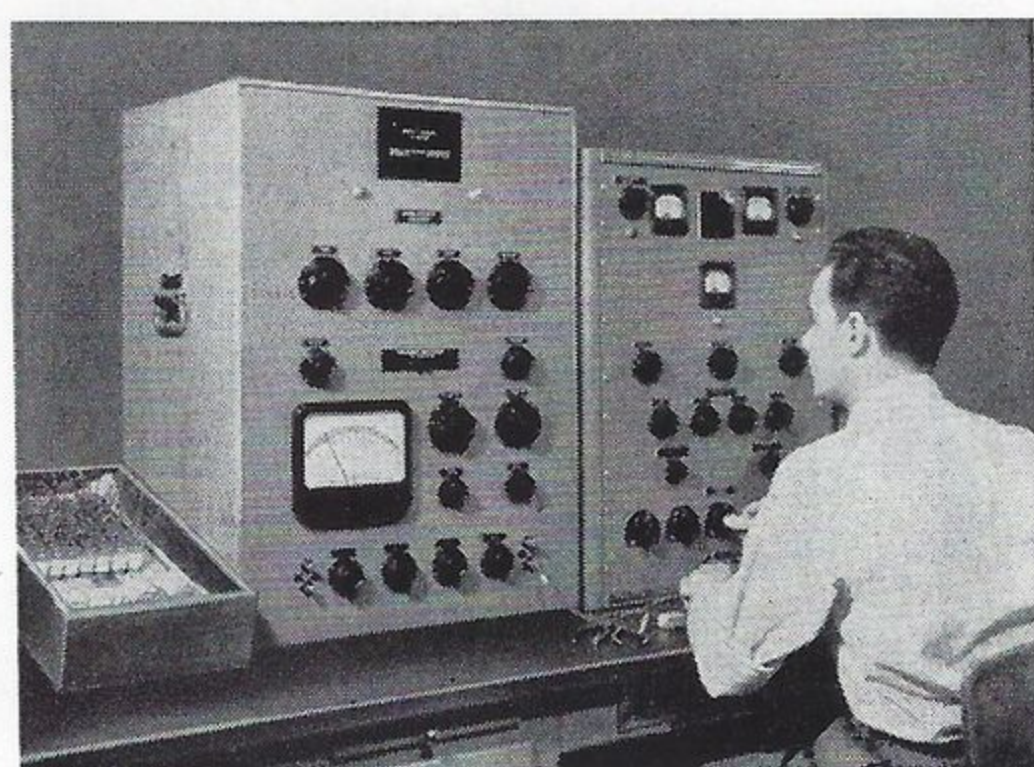
PRODUCTION PRECISION



Magnetic Amplifier Testing. Five check points with DC controlled to .5%, inductance measured to .5%.



Phase angle and inductance checked to .05 degrees. Deviation cannot exceed .02 degrees from -40°C. to $+85^{\circ}\text{C.}$



This precision inductor test is for a .3% reactor requiring precise high Q and accurate orientation in case.



To assure dependability of hermetically sealed units, samples of production are run through controlled temperature and humidity cycling.

HYBRID AND REPEAT COILS

Type No.	Application	Pri. and Sec. Impedances	± 1 db from	Max. Level	Hum Reduction	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	+10 DB	-92 DB Quadruple alloy shield	0 MA	LS-1
LS-141	Three sets of balanced windings for hybrid service, centertapped	500/600 ohms 500/600 ohms	30-15,000	+10 DB	-74 DB	0 MA	LS-1
LS-142	Line to line and to push pull grids for hybrid service	500/600 ohms 500/600 ohms 60,000 ohms	30-15,000	+10 DB	-74 DB	0 MA	LS-1
LS-143	High efficiency ring and talk repeat coil, for low frequency ringing	500/600 ohms 500/600 ohms	Efficient 15/12,000 cycles	+25 DB	-74 DB	5 MA	LS-2

DRIVER TRANSFORMERS

Type No.	Application	Primary Impedance	Refl. Sec. Impedance	± 1 db from	Max. Level	Max. Unbal. DC in Pri.	Case No.
LS-5	Driver, multiple line to class B 838's, 805's, ZB-120's, 203A's and similar tubes	50, 125, 200, 250, 333, 500/600 ohms	2,000 ohms; 1:2 overall turns ratio	20-20,000	+32 DB	5 MA	LS-2
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	+32 DB	5 MA	LS-2
LS-7	Push pull 6C5, 6SN7, or similar plates to A 2A3's, 6L6's, 5881's	30,000 ohms plate to plate	.45 primary impedance turn ratio 1.5:1 Pri to Sec.	20-20,000	+25 DB	1 MA	LS-2
LS-47	Driver from push pull 2A3's, or similar to class B 838's, 203A's, 805's, or ZB120's	5,000 ohms plate to plate	.1 pri. impedance turns ratio, Pri./ $\frac{1}{2}$ Sec. 3.2:1	20-20,000	+32 DB	5 MA	LS-2
LS-48	Driver transformer push pull 845's to 204 or 849 grids in class B	12,000 ohms plate to plate	.038 pri. impedance turns ratio, Pri./ $\frac{1}{2}$ Sec. 5.1:1	20-20,000	+37 DB	15 MA	LS-3
LS-49	Push pull parallel 2A3, or similar tubes to four 838, 203A, 805, or ZB120 tubes	2,500 ohms plate to plate	Ratio Pri./ $\frac{1}{2}$ Sec. 4:1 and 2.5:1	20-20,000	+37 DB	10 MA	LS-3

OUTPUT TRANSFORMERS TO LINE AND VOICE COIL

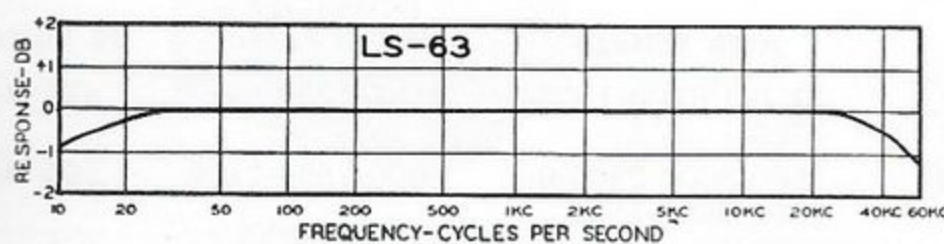
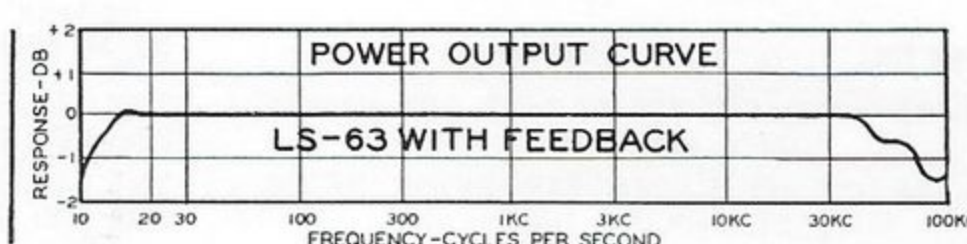
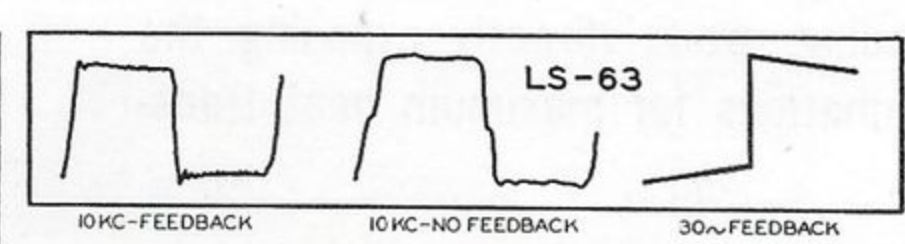
Type No.	Primary will match following typical tubes	Primary Impedance	Secondary Impedance	± 1 db from	Max. Level	Case No.
LS-52	Push pull 6AQ5, 6V6, 6L6, 5881	8,000 ohms	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	20 watts	LS-2
LS-54	Same as above	8,000 ohms	30, 20, 15, 10, 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, 6B4G, 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-60A	Push pull 2A3's, 6B4G's fixed bias, cathode follower drive, push pull parallel triode: 1614, 1625, 807, 5881, KT-66	4,600 ohms plate to plate	15, 10, 7.5, 5, 3.75, 2.5, 1.2	7-50,000	30 watts	LS-3
LS-62A	Same as above	As above	500, 125	7-50,000	30 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, 6149 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-6L3	Same as above	9,000 ohms plate to plate and 3,800 ohms plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	7-50,000	30 watts	LS-3
LS-6L4	Push pull 6146, 6149, 6L6's fixed bias or push pull parallel 6L6's self bias	4,500 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 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. In addition, if the transformers are to be used in circuits employing feedback, wider range response is required to assure stability. 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 40 to 60 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 transformer at 8 watts output level.

The square wave is a particularly effective method for checking output transformers, since it gives the response of a transformer in an amplifier to a virtually infinite band of frequencies at one setting. The third figure below illustrates square waves obtained with the LS-63 transformer in a "Williamson" Amplifier Circuit. 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.



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	15 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	30 watts	LS-3

OUTPUT TRANSFORMERS TO HIGH IMPEDANCE (RF) LOAD

(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, 6AS7, 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-66	Class B 203A, 838, ZB120, 805	9,000 ohms plate to plate	5000, 4200, 4100, 3500, 3300, 2650, 2500, 2100, 1250, 600	10-50,000	260 watts	*
LS-691	Class B 849, 833, 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 833'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	Case No.
LS-102	Modulation reactor	50 hy	350 MA	250 ohms	5000	*
LS-103	Modulation reactor	50 hy	500 MA	175 ohms	7500	*
LS-104A	Modulation reactor	50 hy	1.3 amp	75 ohms	20000	LS-7
LS-106	Modulation reactor	50 hy	750 MA	120 ohms	10000	Spec.

*See dimension chart, page 7.



LS-6 CASE

Length15 $\frac{3}{4}$ "
 Width13"
 Height24"
 Mounting Hole $\frac{3}{8}$ " dia.
 Unit Weight350 lbs.

LS-7 CASE

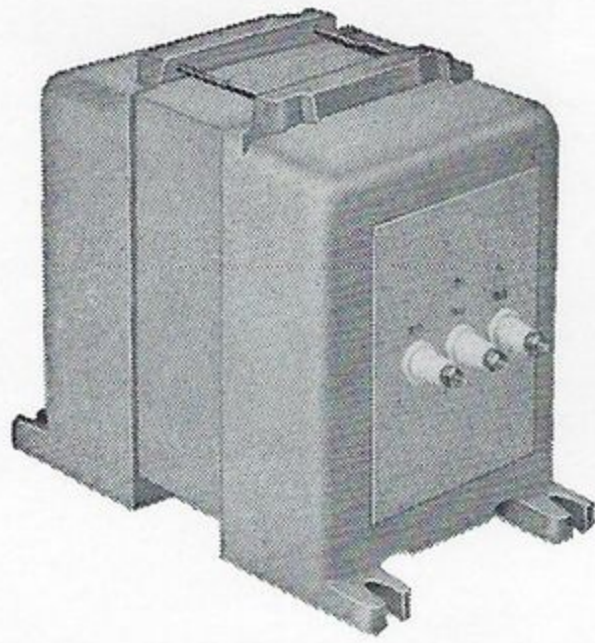
Length20 $\frac{3}{8}$ "
 Mounting7 $\frac{3}{8}$ " x 14 $\frac{5}{16}$ "
 Height18 $\frac{1}{2}$ "
 Mounting11 $\frac{5}{8}$ " x 19 $\frac{3}{8}$ "
 Mounting Hole $\frac{3}{8}$ " dia.
 Unit Weight500 lbs.
 Width17 $\frac{3}{4}$ "

LINEAR STANDARD POWER EQUIPMENT

In choosing power components for broadcast and commercial equipment, the first factor to be considered is dependability. Linear standard power components are very conservatively designed for maximum reliability. Designs provide for low temperature rise, 40°, and high insulation safety factors. Only the finest of materials and workmanship are used throughout.

The low power components of the Linear Standard series are housed in the familiar rectangular LS case with top or bottom mounting facilities. High power components are housed in end castings which completely protect the winding, while directly exposing the laminations for maximum heat transfer.

All units have a deep grey finish to obtain the highest heat radiation coefficient. Large components (up to 250 KVA) are housed in oil tanks.



DIMENSIONS

Type No.	L	W	H	Mtg.	Wt.
LS-66	9 3/4	4 3/4	6 3/4	3/8 x 9 1/8	37
LS-73	9 1/2	4 3/4	6 3/4	3/8 x 8 7/8	34
LS-83	8 3/4	4 3/4	6 3/4	3/8 x 8 1/8	25
LS-89A	9 5/8	7	9	6 x 8 1 3/16	68
LS-96	10 1/4	4 3/4	6 3/4	3/8 x 9 5/8	40
LS-99	14 1/8	8 1/2	10 1/4	7 1/4 x 13 1/8	80
LS-102	9 3/4	4 3/4	6 3/4	3/8 x 9 1/8	37
LS-103	13 1/8	8 1/2	10 1/4	7 1/4 x 12 1/8	58
LS-105	13 1/8	8 1/2	10 1/4	7 1/4 x 12 1/8	58
LS-121Y	8 1/4	3 3/4	5 1/8	3 x 7 1 3/16	23
LS-181	9 3/4	4 3/4	6 3/4	3/8 x 9 1/8	37
LS-182	10 3/4	4 3/4	6 3/4	3/8 x 10 1/8	45
LS-183	15 1/2	10	13 1/4	8 1/2 x 14 1/2	70
LS-184	17 1/4	10	13 1/4	8 1/2 x 16 1/4	102
LS-185	23	10	13 1/4	8 1/2 x 22	230

COMBINED PLATE AND FILAMENT TRANSFORMERS

Type No.	Typical Application	Pri. Volts 50/60 cycles	High Voltage	Filament Windings	Case No.
LS-180	For pre-amplifier service	110	225-0-225 15 MA	6.3 V.C.T.-2A 6.3 V.C.T.-.6A	LS-1
LS-192	Power amplifier service	105, 115, 125	335-0-335 180 MA DC 60-0-60, 20 MA	5 V-3A 6.3 V.C.T.-.75A 6.3 V.C.T.-5.25A	LS-3
LS-70	High power amplifier service	100, 105, 110, 115, 120, 125	425-375-0-375-425 200 MA 70-0-70 50 MA	5 V.C.T.-3A 5 V.C.T.-2A 2.5 V.C.T.-10A 6.3 V.C.T.-1A 6.3 V.C.T.-3A	LS-3
LS-72	For fixed or self bias 6L6's, 300A's	100, 105, 110, 115, 120, 125	525-450-0-450-525 250 MA 70-0-70 50 MA	5 V.C.T.-3A 2.5 V.C.T.-3A 2.5 V.C.T.-3A 6.3 V.C.T.-1A 6.3 V.C.T.-3A tapped at 5 V.C.T.-6A	LS-3
LS-74	For push pull parallel 6L6's, 2A3's, 6B4's	115	415-395-0-395-415 275 MA	5 V.-6A 6.3 V.C.T.-5A	LS-3

PLATE TRANSFORMERS*

Type No.	Application	Primary Voltage 50/60 cycles	High Voltage	Approximate DC-Voltage Out of Filter	DC Current
LS-183	Class B 805 or push pull parallel 203A's, etc.	100, 110, 120, 220, 230, 240	1750-1500-0-1500- 1750	1500-1250	400 MA
LS-184	Class B 204A, 849, HF200, HF300, 250TH, HK354, 100TH, etc.	100, 110, 120, 220, 230, 240	3500-3000-2500-0- 2500-3000-3500	3000-2500-2100	500 MA
LS-185	For combined class B and class C stages as above	100, 110, 120, 220, 230, 240	3500-3000-2500-0- 2500-3000-3500	3000-2500-2100	1.2 amp.

FILAMENT TRANSFORMERS

Type No.	Application	Pri. Volts 50/60 cycles	Secondary Voltage	Insulation Test Voltage	Case No.
LS-80	866 rectifiers	100, 110, 120, 220, 230, 240	2.5 V.C.T.-10A	10,000	LS-3
LS-82	872 Rectifiers	100, 110, 120, 220, 230, 240	5 V.C.T.-20A	10,000	LS-3
LS-84	203A, 845, etc. HF200, HF300	100, 110, 120, 220, 230, 240	10 V.C.T.-8A	2,500	LS-3
LS-88	6.3 volt tubes	105, 115, 125	6.3 V.C.T.-2A	2,500	LS-1
LS-120	866 Bridge rectifier	100, 110, 120, 220, 230, 240	2.5 V.C.T.-10A 2.5 V.C.T.-5A 2.5 V.C.T.-5A	12,000	LS-3
LS-121Y	872 Bridge rectifier	100, 110, 120, 220, 230, 240	5 V.C.T.-20A 5 V.C.T.-10A 5 V.C.T.-10A	12,000	*
LS-83	872A, 575 or 869 rectifiers	100, 110, 120, 220, 230, 240	5 V.C.T.-20A	35,000	*
LS-89A	Three 869 rectifiers	100, 110, 120, 220, 230, 240	5 V.C.T.-60A	35,000	*

LINEAR STANDARD FILTER, SWINGING, AND AUDIO CHOKES

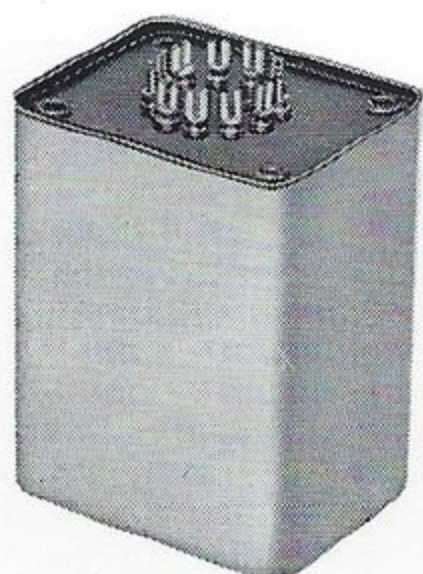
(Inductance values are at D.C. current shown)

Type No.	Application	Inductance	DC Current	DC Resistance	Insulation Test Voltage	Case No.
LS-90	Filter choke with hum bucking tap	Series-50 hy Parallel-12.5 hy	50 MA 100 MA	450 ohms 110 ohms	2000	LS-2
LS-91	Filter choke with hum bucking tap	Series-14 hy Parallel-3.5 hy	125 MA 250 MA	200 ohms 50 ohms	2000	LS-2
LS-92	Filter choke with hum bucking tap	Series-16 hy Parallel-4 hy	175 MA 350 MA	88 ohms 22 ohms	2500	LS-3
LS-93	Filter choke with hum bucking tap	Series-26 hy Parallel-6.5 hy	200 MA 400 MA	120 ohms 30 ohms	3500	LS-3
LS-950	Filter choke with hum bucking tap	Series-100 hy Parallel-25 hy	35 MA 70 MA	1000 ohms 250 ohms	1500	LS-2
LS-96	Filter choke with hum bucking tap	Series-20 hy Parallel-5 hy	500 MA 1 amp	90 ohms 22.5 ohms	7500	*
LS-980	Filter choke with hum bucking tap	Series-14 hy Parallel-3.5 hy	400 MA 800 MA	100 ohms 25 ohms	5000	LS-3
LS-98	Swinging choke	8-40 hy	400 MA	125 ohms	5000	LS-3
LS-99	Filter choke with hum bucking tap	Series-20 hy Parallel-5 hy	1 amp 2 amp	50 ohms 12.5 ohms	10000	*
LS-105	Swinging choke	8-40 hy	1 amp	50 ohms	10000	*

* See dimension chart, this page.

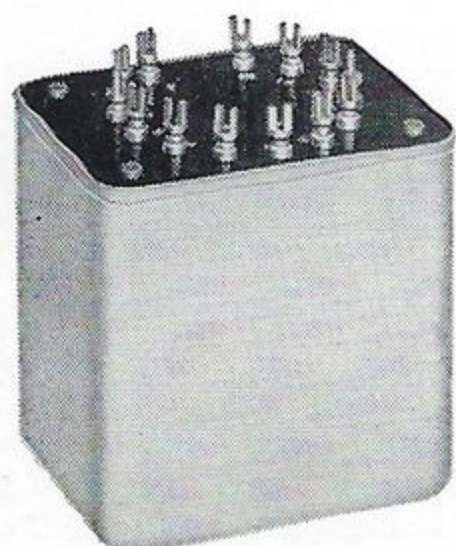
UTC HIPERM ALLOY TRANSFORMERS

The UTC Hiperm alloy 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 Hiperm alloy audio units is uniform from 30 to 20,000 cycles. They incorporate a Hiperm-alloy 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 13/16"
Screws 6-32
Cutout 1 13/16" dia.
Unit Weight 2 lbs.



TYPE H-2 CASE

Length 3 1/16"
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.

LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Type No.	Application	Primary Imp. (ohms)	Secondary Impedance	± 1 db from	Max. Level	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	+10 DB	.5 MA	H-1
HA-100X	Same as above but with multiple alloy shield to effect very low hum pickup						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	+10 DB	.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	+10 DB	.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	+10 DB	.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	+10 DB	.5 MA	H-1
HA-108X	Same as above but with multiple alloy shield to effect very low hum pickup						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	+10 DB	.5 MA	H-1

INTERSTAGE AUDIO TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Impedance	± 1 db from	Max. Level	DC in Prim'y	Case No.
HA-104	Single plate to P.P. grids like 2A3, 6L6 (split secondary)	15,000 ohms	95,000 ohms 1.25:1	30-20,000	+12 DB	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	+12 DB	0	H-1
HA-106	Single plate to push pull grids (split secondary)	15,000 ohms	135,000 ohms 3:1 ratio overall	30-20,000	+12 DB	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	+20 DB	.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	+12 DB	0	H-1

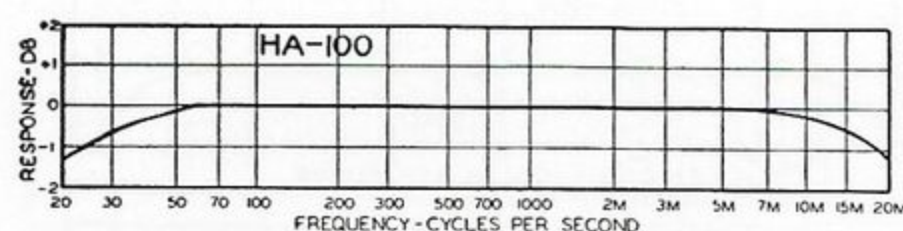
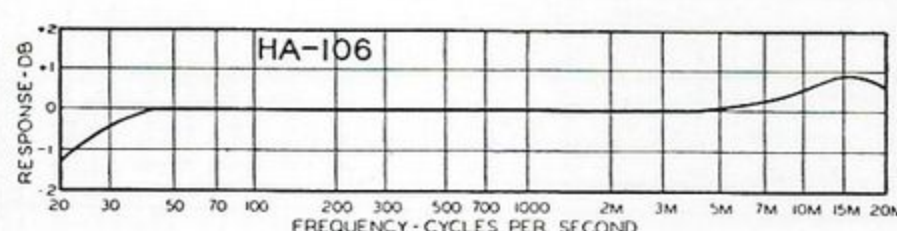
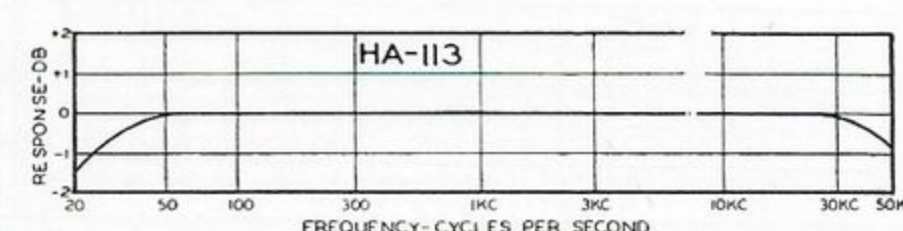
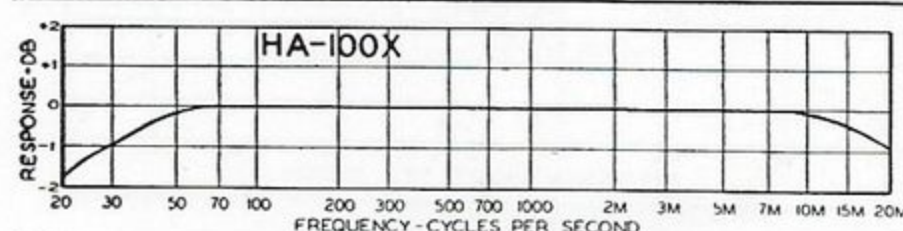
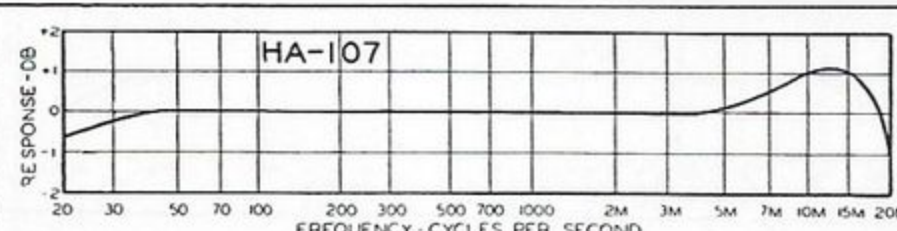
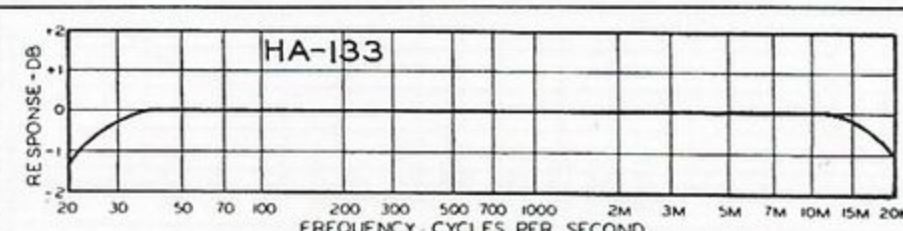
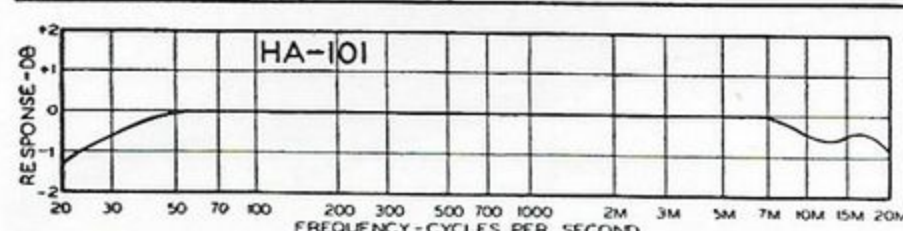
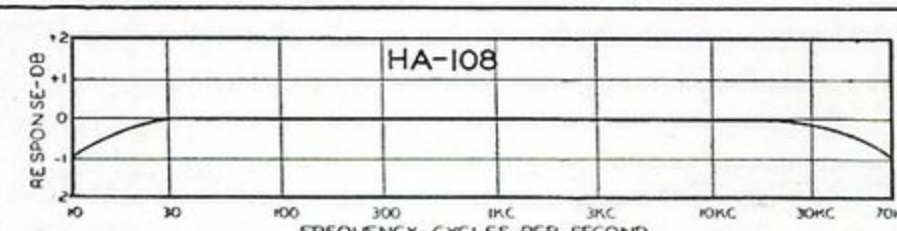
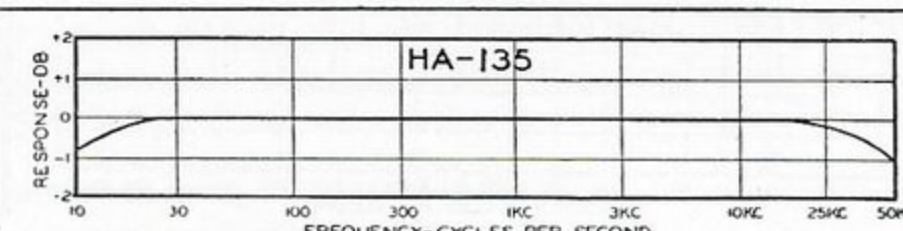
PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type No.	Application	Primary Imp.	Secondary Imp. ohms	± 1 db from	Max. Level	DC in Prim'y	Case No.
HA-111	Crystal microphone or pickup, to multiple line	100,000 ohms	50, 125/150, 200, 250, 333, 500/600	30-20,000 measured with resistive source	+10 DB	0	H-1
HA-113	Single plate to multiple line	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	30-40,000	+12 DB	0 MA	H-1
HA-133	Single plate to multiple line (D.C. in Pri.)	15,000 ohms	50, 125/150, 200, 250, 333, 500/600	30-40,000	+15 DB	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	+16 DB	1 MA	H-1
HA-134	Push pull 6B4's, 6L6, or 2A3's to line	5000/9400 ohms plate to plate	50, 125/150, 200, 250, 333, 500/600	10-50,000	+32 DB	5 MA	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	+34 DB	5 MA	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, 6X5 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, 6X5 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-50 hy	15 MA 30 MA	3200 ohms 800 ohms	1500	H-1



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.

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 $+7$ DB.

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	20-20,000
A-11	Low impedance mike, pickup, or line to 1 or 2 grids	50, 200, 500	50,000 ohms	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-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	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

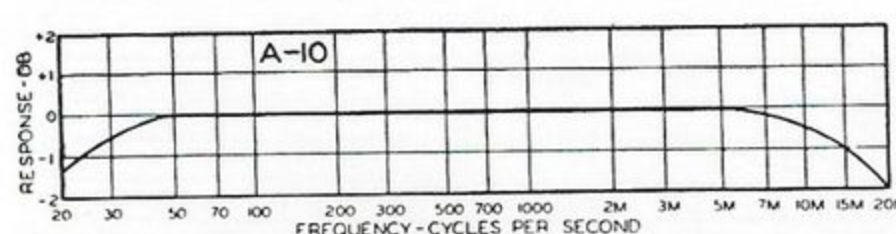
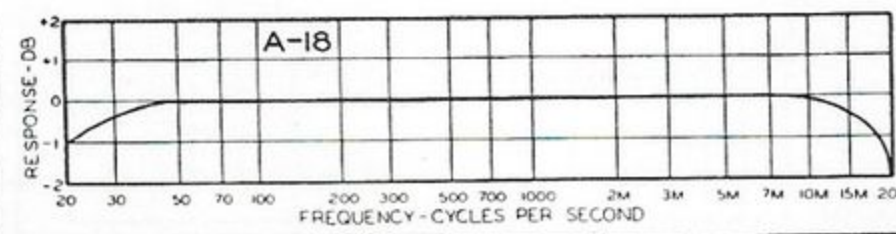
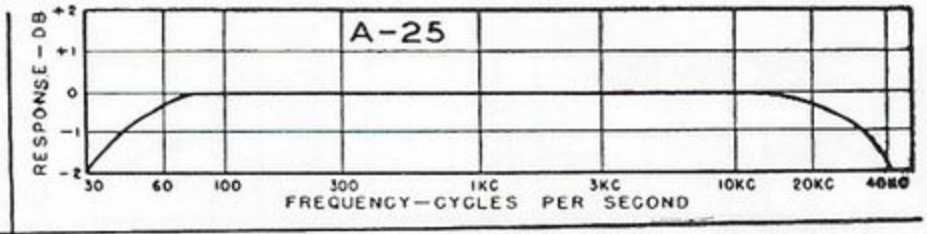
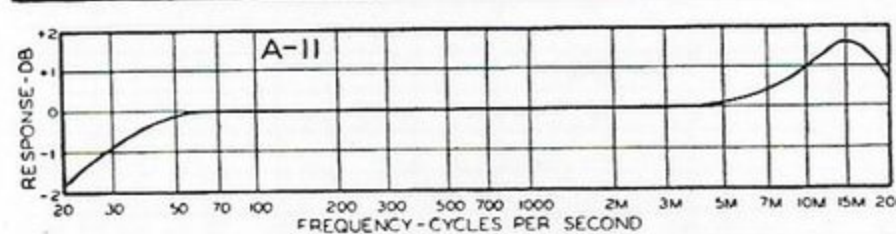
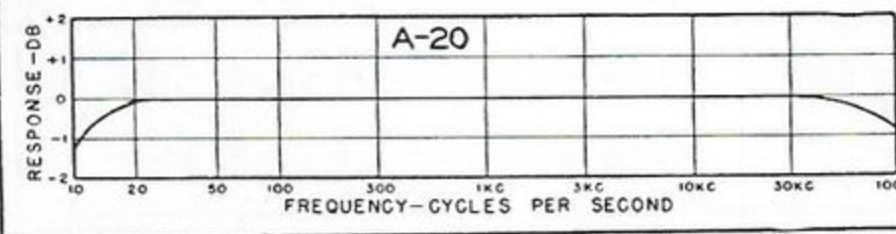
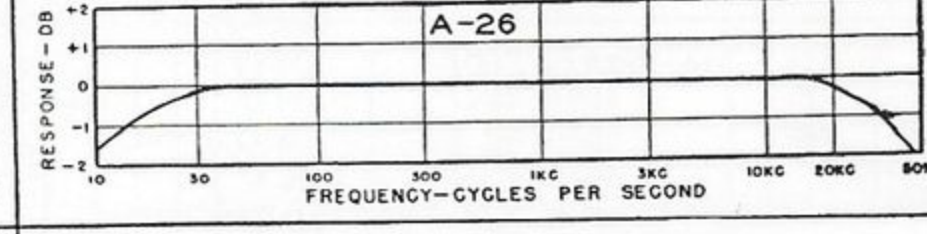
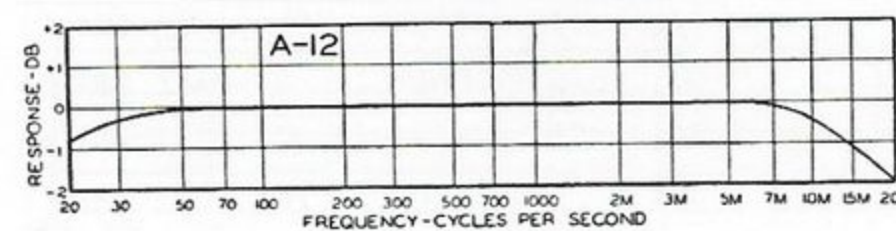
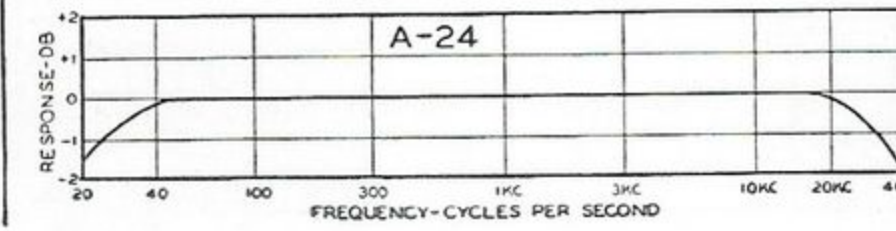
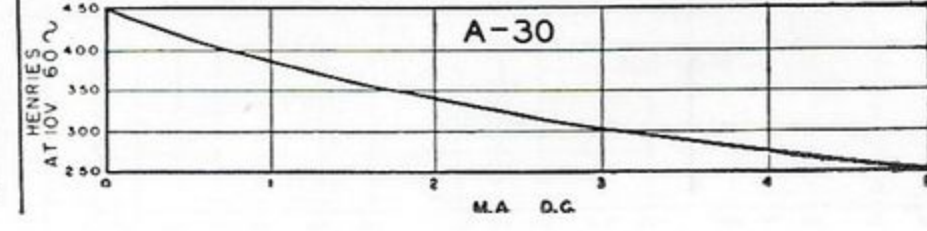
PLATE AND CRYSTAL TO LINE TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Impedance	± 2 db from
A-24	Single plate to multiple line	15,000 ohms	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	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.			



TYPE A CASE

Length1½"
 Width1½"
 Height2"
 Mounting1½" sq.
 Screws4-40
 Cutout1⅜" dia.
 Unit Weight½ lb.



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 0 DB.

"**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.



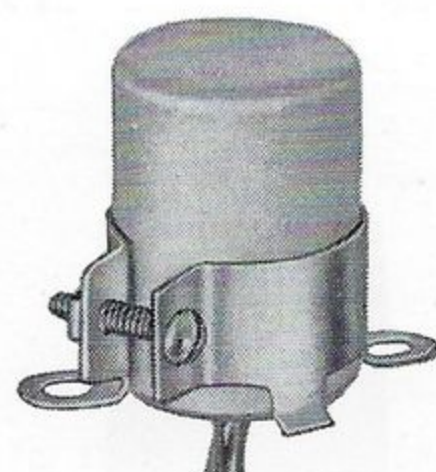
**OUNCER
CASE**

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



**PLUG-IN
CASE**

Dia. $1\frac{3}{32}$ "
Ht. $1\frac{15}{32}$ "
Skt. St. Oct.
Wt. 2 oz.

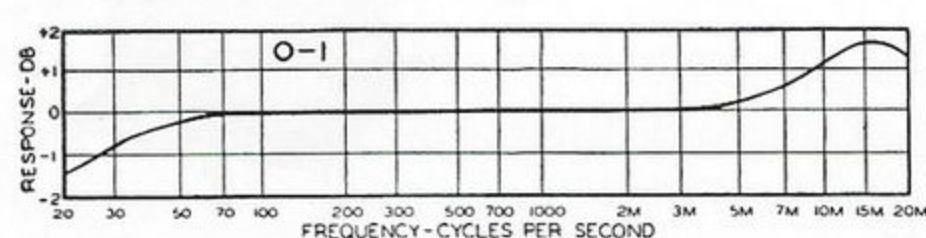
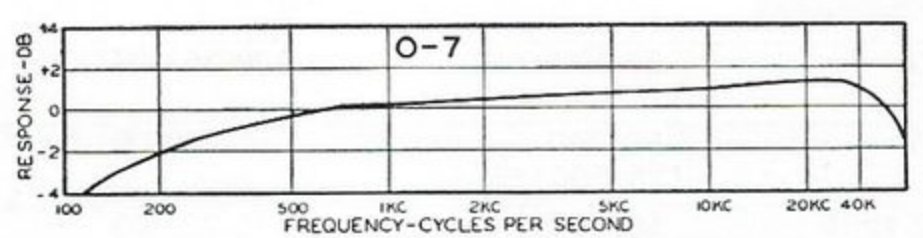
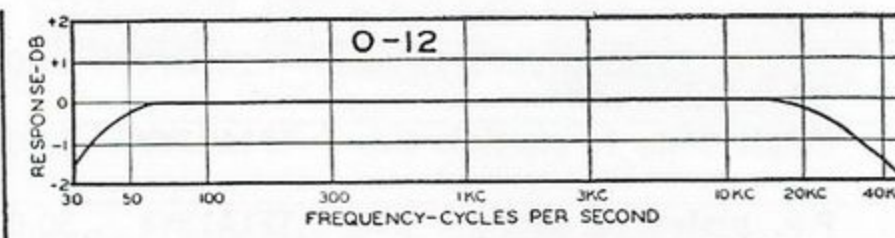
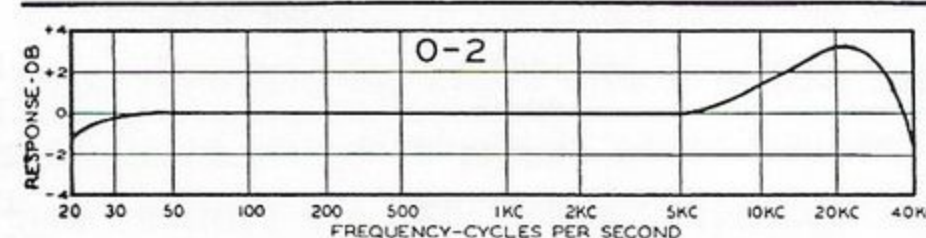
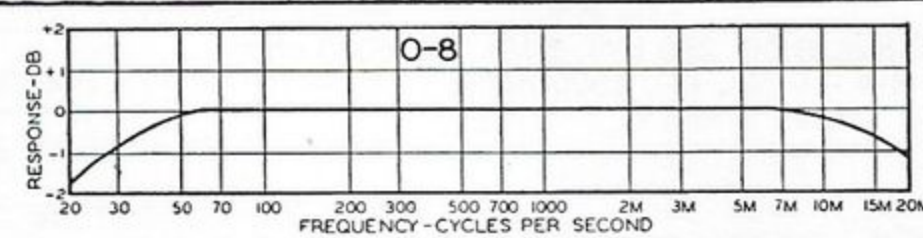
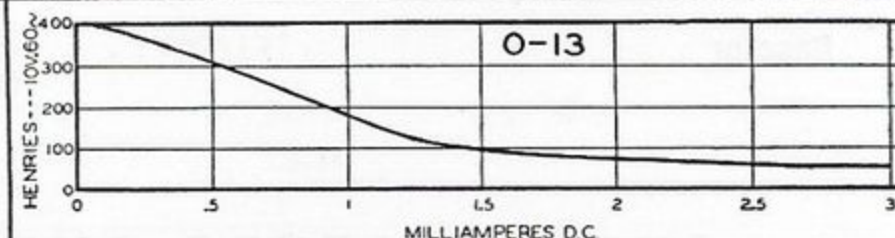
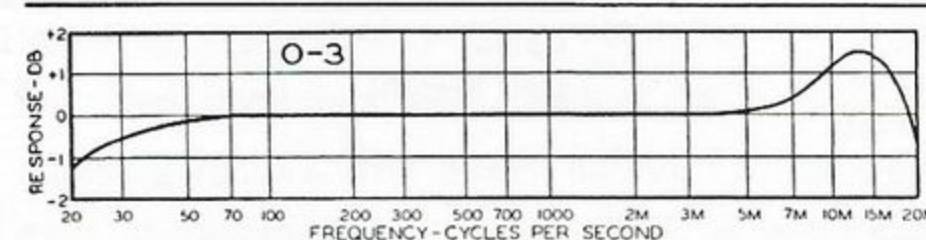
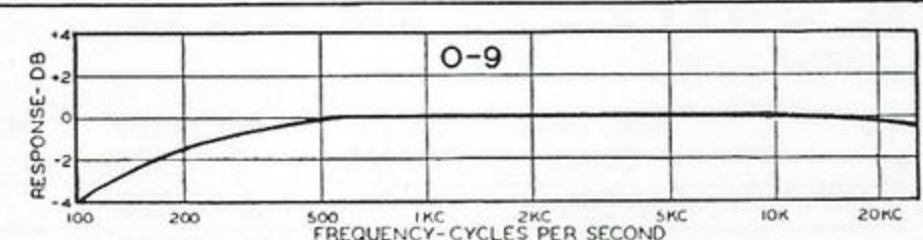
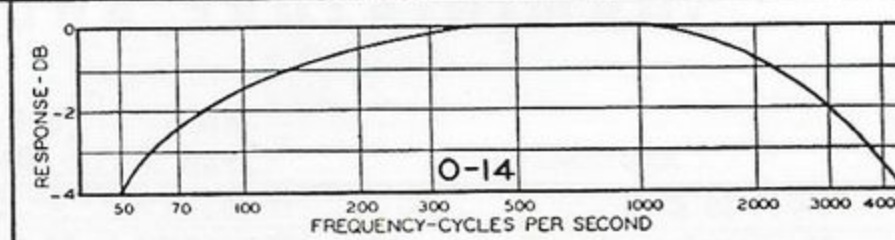
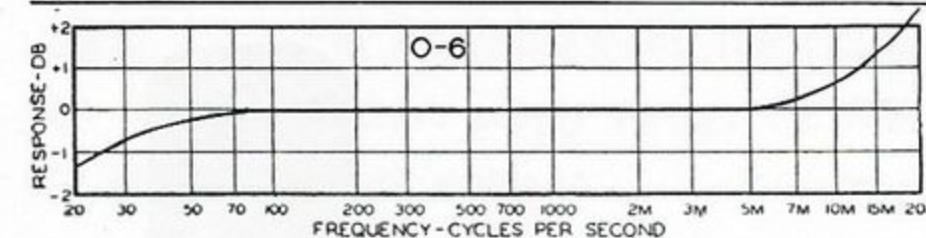
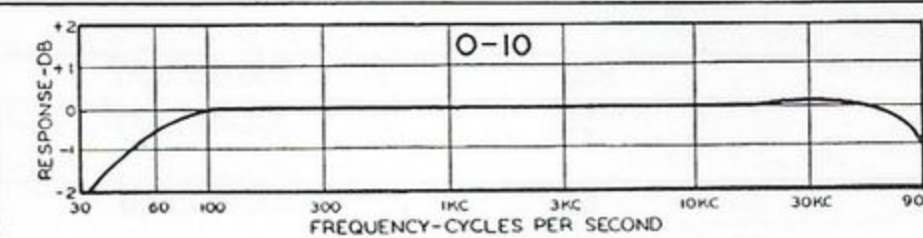
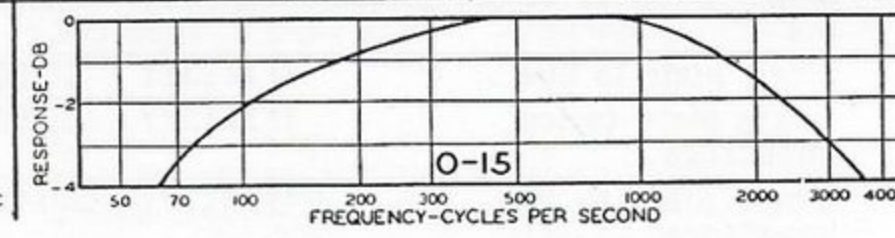


**O-16
CASE**

Dia. $1\frac{1}{16}$ "
Ht. $1\frac{1}{2}$ "
Mtg. $1\frac{1}{2}$ "
Scr. 6-32
Wt. 3 oz.
Clamp $1\frac{5}{16}$ " x $1\frac{7}{8}$ "

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	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	P-4
O-5	Single plate to 1 grid, D.C. in Pri.	15,000	60,000	P-5
O-6	Single plate to 2 grids	15,000	95,000	P-6
O-7	Single plate to 2 grids, D.C. in Pri.	15,000	95,000	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		P-13
O-14	50:1 mike or line to 1 grid	200	$\frac{1}{2}$ megohm	P-14
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	

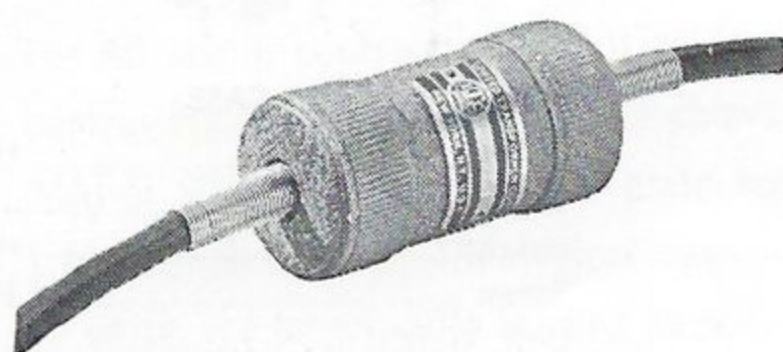
This transformer provides very low hum pickup . . . employs two heavy gauge hypermalloy shields plus orientable mounting. Primary centertap is balanced to 1%. Can be used for 150, 200, 250, 500, or 600 ohm sources . . . 200:1 impedance ratio.



MICROPHONE CABLE TRANSFORMERS

UTC Cable transformers are designed to be inserted in the cable circuit, and are ruggedly constructed to withstand 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.



HERMETICALLY SEALED COMPONENTS

For over fifteen years UTC has been the largest supplier of transformer components for military applications, to customer specifications. Listed below are a number of types, to latest military specifications, which are now catalogued as UTC stock items.

Terminals on items H-20 through H-24 are neoprene-ceramic assemblies. All other units employ glass bead headers, but can be supplied with neoprene-ceramic terminals where required. **For printed circuit use**, wire terminals on glass header units can be straightened out without injury. Straight wire terminals available on production orders.

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.

The **level ratings** are maximum level for reasonable distortion at the lowest frequency specified. For higher frequencies considerably higher levels are permissible.

The **impedance ratings** are listed in standard manner. Obviously, a transformer with a 15,000 ohm primary impedance can operate from a tube representing a source impedance of 7700 ohms, etc. In addition, 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 will reduce frequency range and level rating.

MINIATURE AUDIO UNITS...RC-25 CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-1	Mike, pickup, line to grid	TF1A10YY	50, 200 CT, 500 CT*	50,000	0	50-10,000	+ 5
H-2	Mike to grid	TF1A11YY	82	135,000	50	250-8,000	+21
H-3	Single plate to single grid	TF1A15YY	15,000	60,000	0	50-10,000	+ 6
H-4	Single plate to single grid, DC in Pri.	TF1A15YY	15,000	60,000	4	200-10,000	+14
H-5	Single plate to P.P. grids	TF1A15YY	15,000	95,000 CT	0	50-10,000	+ 5
H-6	Single plate to P.P. grids, DC in Pri.	TF1A15YY	15,000	95,000 split	4	200-10,000	+11
H-7	Single or P.P. plates to line	TF1A13YY	20,000 CT	150/600	4	200-10,000	+21
H-8	Mixing and matching	TF1A16YY	150/600	600 CT	0	50-10,000	+ 8
H-9	82/41:1 input to grid	TF1A10YY	150/600	1 meg.	0	200-3,000 (4 db.)	+10
H-10	10:1 single plate to single grid	TF1A15YY	10,000	1 meg.	0	200-3,000 (4 db.)	+10
H-11	Reactor	TF1A20YY	300 Henries-0 DC, 50 Henries-3 Ma. DC, 6,000 Ohms.				



RC-25 CASE

Length $1\frac{13}{32}$ "
 Width $\frac{61}{64}$ "
 Height $1\frac{9}{16}$ "
 Mounting (slot centers) $1\frac{1}{8}$ to $1\frac{7}{32}$ "
 Screws 4-40 FIL.
 Cutout $\frac{7}{8}$ Dia.
 Unit Weight 1.5 oz.

COMPACT AUDIO UNITS...RC-50 CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-19	Line to grid. Balanced, center tapped primary . . . 1:14 ratio. Multiple hi-permalloy (75 DB) shielding	TF1A10YY	250 CT 500 CT	50,000 100,000	0	30-20,000	+ 6
H-20	Single plate to 2 grids, can also be used for P.P. plates	TF1A15YY	15,000 split	80,000 split	0	30-20,000	+12
H-21	Single plate to P.P. grids, DC in Pri.	TF1A15YY	15,000	80,000 split	8	100-20,000	+23
H-22	Single plate to multiple line	TF1A13YY	15,000	50/200, 125/500**	8	50-20,000	+23
H-23	P.P. plates to multiple line	TF1A13YY	30,000 split	50/200, 125/500** BAL.	8	30-20,000	+19
H-24	Reactor	TF1A20YY	450 Hys.-0 DC, 250 Hys.-5 Ma. DC, 6000 ohms 65 Hys.-10 Ma. DC, 1500 ohms				



RC-50 CASE

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

SUBMINIATURE AUDIO UNITS...SM CASE

Type No.	Application	MIL Type	Pri. Imp. Ohms	Sec. Imp. Ohms	DC in Pri. MA	Response ± 2 db (Cyc.)	Max. level dbm
H-30	Input to grid	TF1A10YY	50***	62,500	0	150-10,000	+13
H-31	Single plate to single grid, 3:1	TF1A15YY	10,000	90,000	0	300-10,000	+13
H-32	Single plate to line	TF1A13YY	10,000****	200	3	300-10,000	+13
H-33	Single plate to low impedance	TF1A13YY	30,000	50	1	300-10,000	+15
H-34	Single plate to low impedance	TF1A13YY	100,000	60	.5	300-10,000	+ 6
H-35	Reactor	TF1A20YY	100 Henries-0 DC, 50 Henries-1 Ma. DC, 4,400 ohms.				
H-36	Transistor Interstage	TF1A15YY	25,000	1,000	.5	300-10,000	+10



SM CASE

Length $1\frac{1}{16}$ "
 Width $\frac{1}{2}$ "
 Height $2\frac{3}{32}$ "
 Screw 4-40 FIL.
 Unit Weight8 oz.

* 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 can be used for 150/600 ohms.

*** can be used with higher source impedances, with corresponding reduction in frequency range. With 200 ohm source, secondary 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.

HERMETICALLY SEALED PULSE TRANSFORMERS

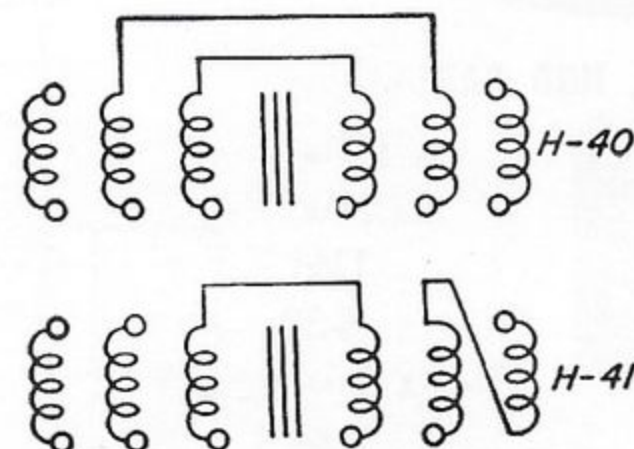
Because of the wide variety of blocking oscillator, interstage, and modulator pulse applications, the bulk of UTC pulse transformers are designed to customer's specifications. Through versatile design, however, the stock pulse transformers listed below take care of most low level applications. The units are hermetically sealed and tested to MIL-T-27 Specifications. Wide ranges of pulse duration, loading, and level are obtainable by variations in the manner of connecting the balanced coil structure windings. An engineering sheet accompanies each unit, providing data for typical applications.

The H-40 and H-41 units employ identical windings suitable for different applications because of the manner in which the windings are brought out to the terminals. These units have two windings for 250 ohm impedance, and two windings for 1,000 ohm impedance. Pulse widths from .1 to 5 microseconds are realized with excellent fidelity. At 5 microsecond operation the maximum working voltages for the H-40 and H-41 are 175 volts peak for 250 ohms . . . 350 volts for 1,000 ohms. These voltages can be increased at lower pulse widths.

H-42 and H-43 are highly miniaturized hermetically sealed . . . MIL-T-27 units. They incorporate three equal windings capable of being inter-connected for wide versatility in blocking oscillator, interstage, and impedance matching service. The wound Hipermalloy core is uncut to effect maximum efficiency. Peak working voltage is 175 volts per winding.

Type No.	Description*	Pulse Width Microsec.	Ins. Test Volts RMS	Case
H-40	Two 250 ohm windings . . . two 1000 ohm windings	.1 to 5	1000	RCOF
H-41	Two 250 ohm windings . . . two 1000 ohm windings	.1 to 5	1000	RCOF
H-42	Three 250 ohm windings	.15 to .75	500	SM**
H-43	Three 500 ohm windings	.5 to 2	500	SM**

* Impedances shown are nominal, subject to wide variation with application.
 **Mtg. screw is centered on large side of case.



MAGNETIC AMPLIFIERS FOR SERVO MOTOR APPLICATIONS

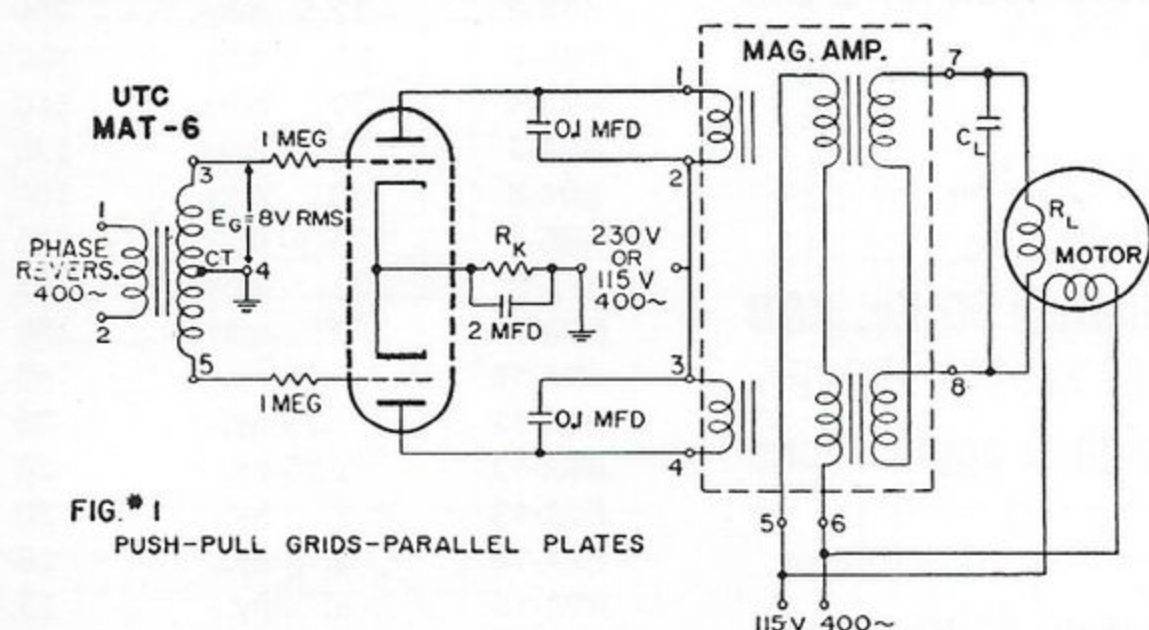


FIG. #1
PUSH-PULL GRIDS-PARALLEL PLATES

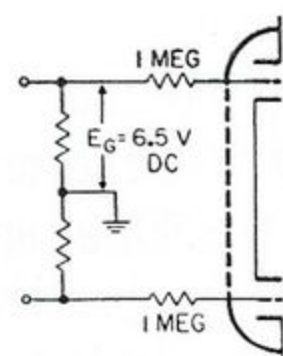


FIG. #2
GRID CIRCUIT MODIFICATION FOR DC INPUT

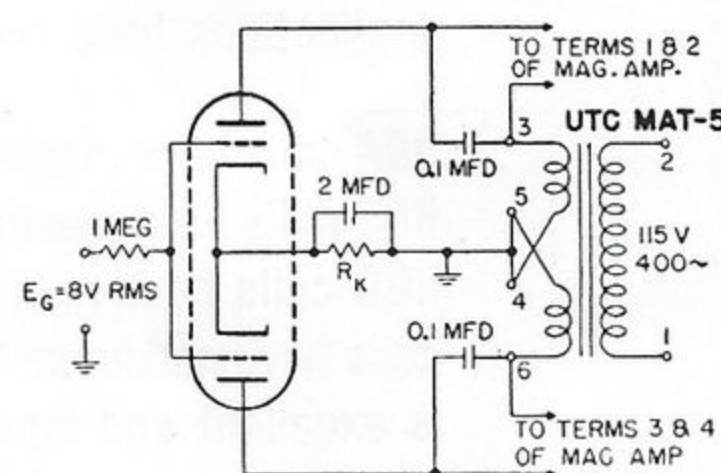


FIG. #3
PARALLEL GRIDS-PUSH-PULL PLATES

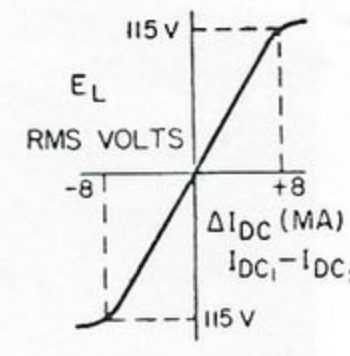
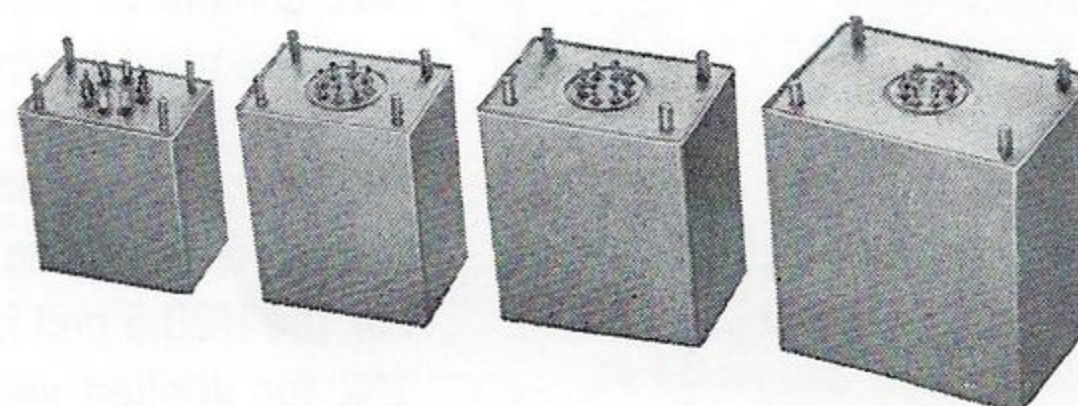


FIG. #4

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 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 5/16	2 1/8	2 1/2	3 1/8
Height, in.	2 5/16	2 3/4	2 15/16	3 3/8
Mtg. Dim., in.	1 3/16 x 1 1/2	1 x 1 5/8	1 1/8 x 1 7/8	1 1/2 x 2 1/2
Screws	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.				
MAT-6 Input . . . 10,000 ohms pri. . . 1:15 C.T. ratio . . . phase shift under 1° . . . RCOF case.				

NEW "M" SERIES SHOULD BE ORDERED WHERE POSSIBLE →

UTC HIGH Q TOROID INDUCTORS

(Hermetically sealed to MIL-T-27 Specs.)



HQA, HQC, HQD CASE

Diameter $1\frac{1}{16}$ "
 Height $1\frac{1}{16}$ "
 Mounting $1\frac{1}{8}$ "
 Screws 6-32
 Cutout $\frac{9}{16}$ " x $1\frac{3}{16}$ "
 Weight 5 oz.



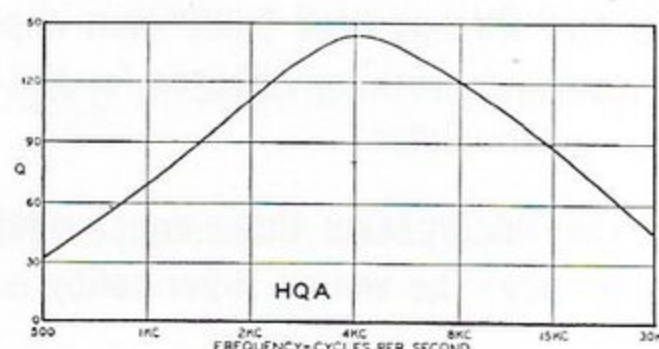
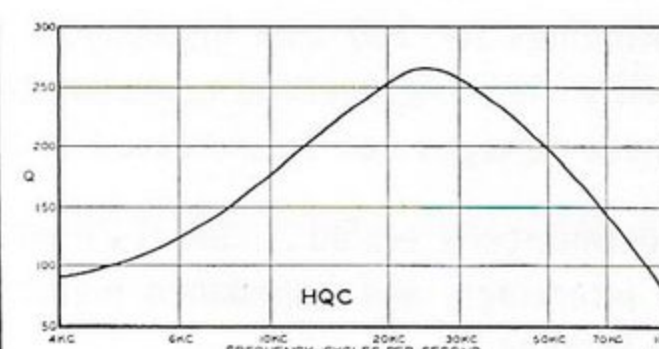
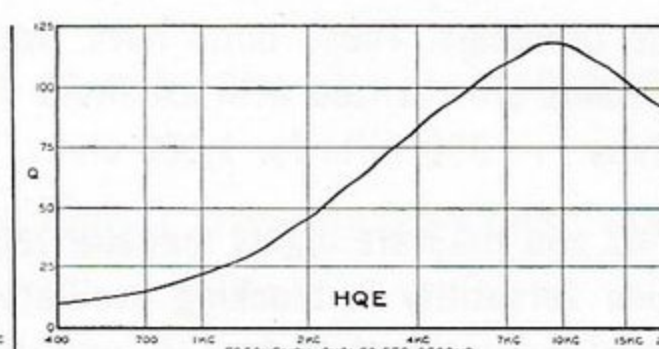
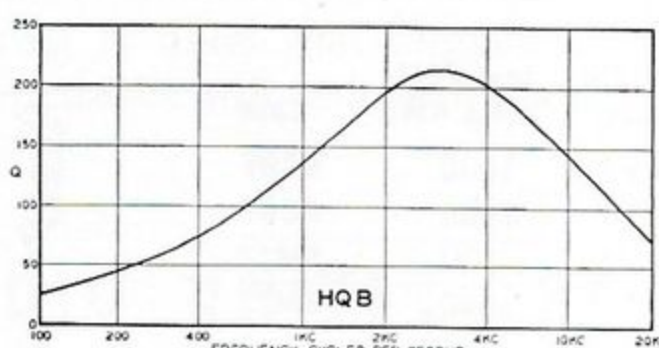
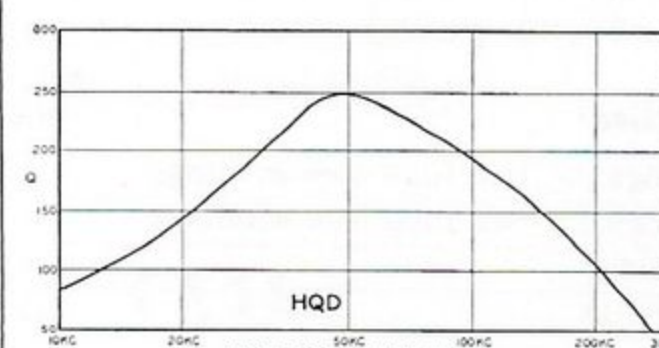
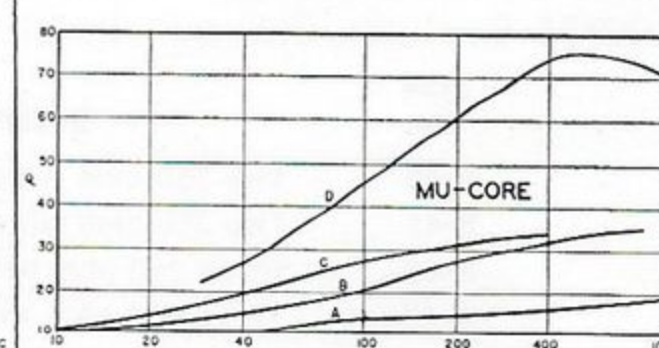
HQB CASE

Length $2\frac{5}{8}$ "
 Width $1\frac{5}{8}$ "
 Height $2\frac{5}{8}$ "
 Mounting $1\frac{1}{4}$ " x $2\frac{1}{4}$ "
 Screws 6-32
 Cutout $\frac{9}{16}$ " x $1\frac{1}{8}$ "
 Unit Weight 14 oz.



HQE CASE
(sub-miniature)

Length $1\frac{1}{16}$ "
 Width $\frac{1}{2}$ "
 Height $1\frac{1}{32}$ "
 Mounting $\frac{3}{4}$ "
 Screws 4/40
 Cutout $\frac{5}{16}$ " x $\frac{1}{2}$ "
 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**.

Other Values of Inductance than those listed available on special order at price of next higher listed value.

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.

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.	

*This value of D.C. will drop the coil inductance 5%. Values of D.C. below this will show proportionately (linear) less inductance drop. For example HQA-8 will drop $\frac{1}{2}\%$ in L with 6.5 MA.

NEW "M" TYPE TOROIDS

MAXIMUM Q
MINIMUM SIZE

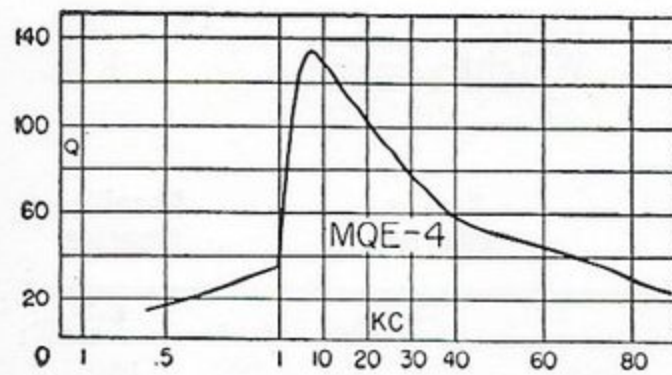
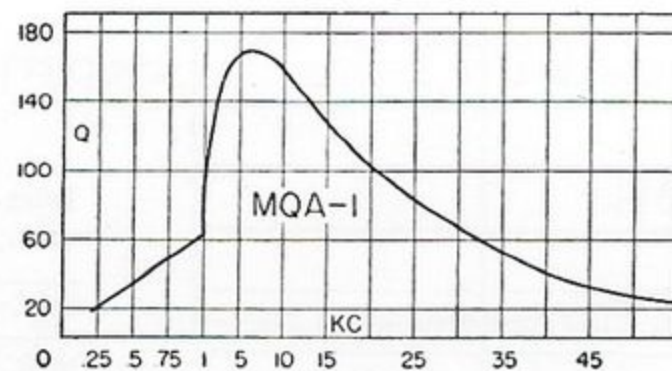
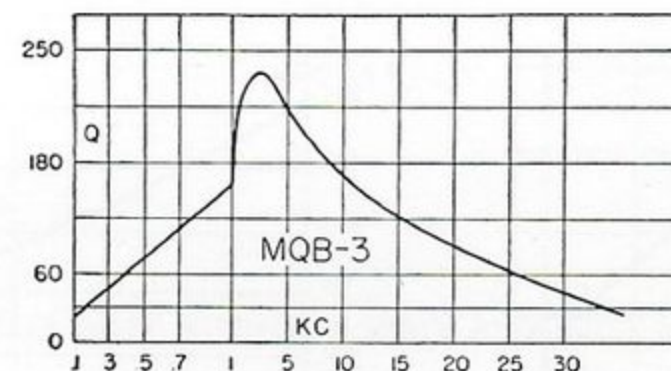
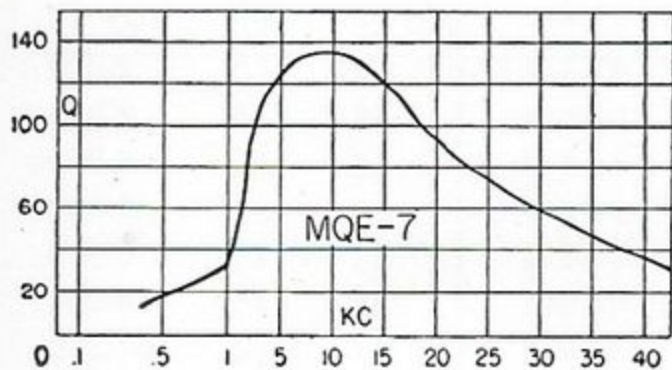
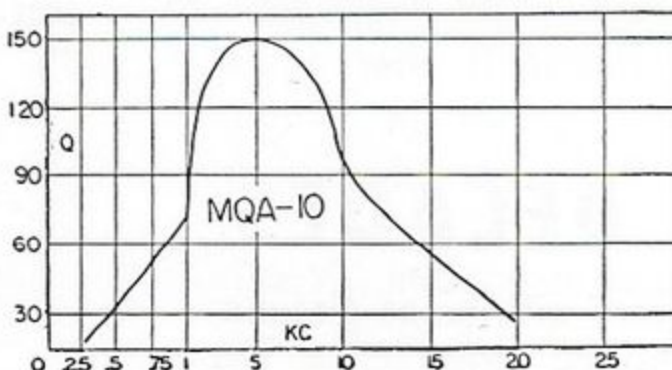
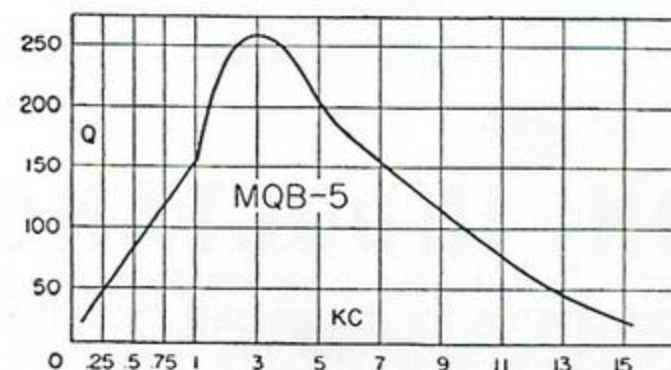
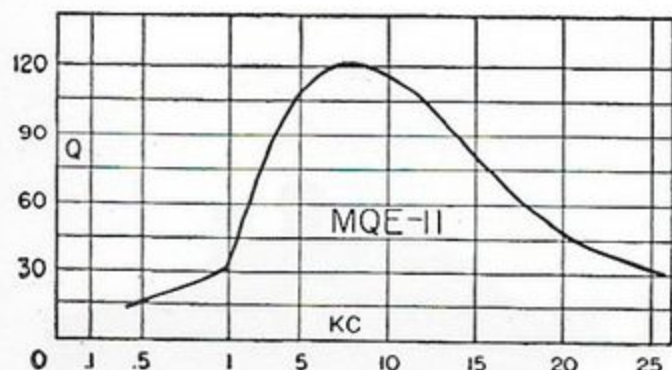
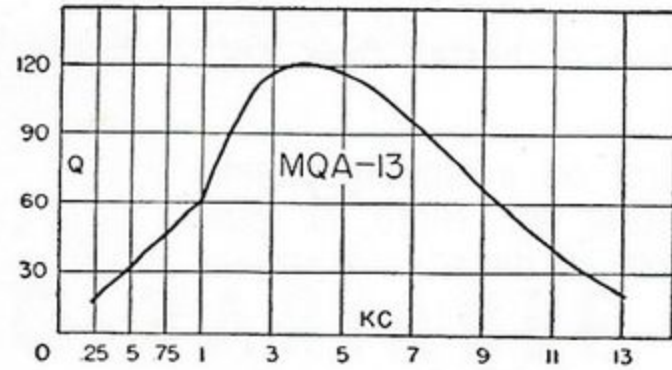
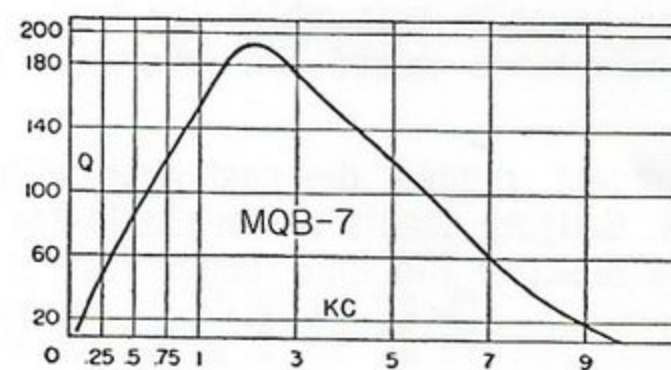
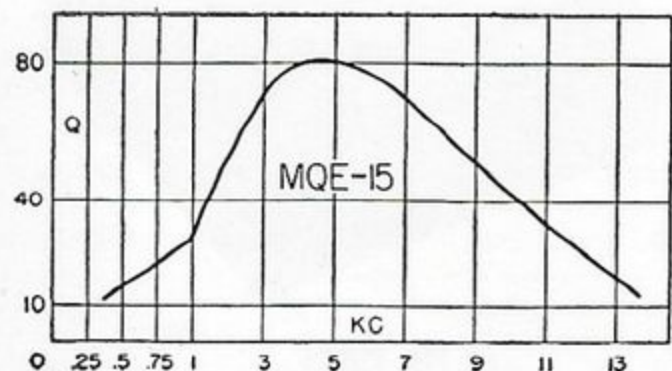
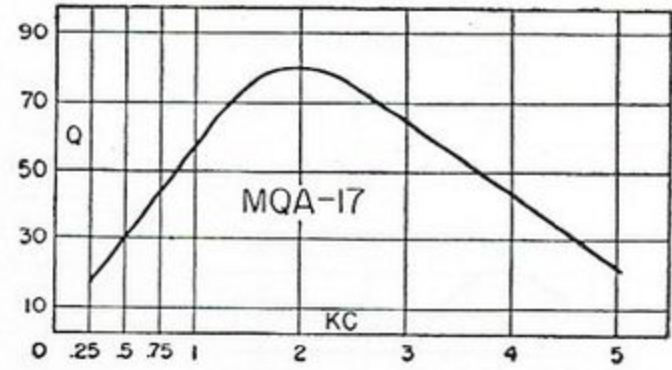
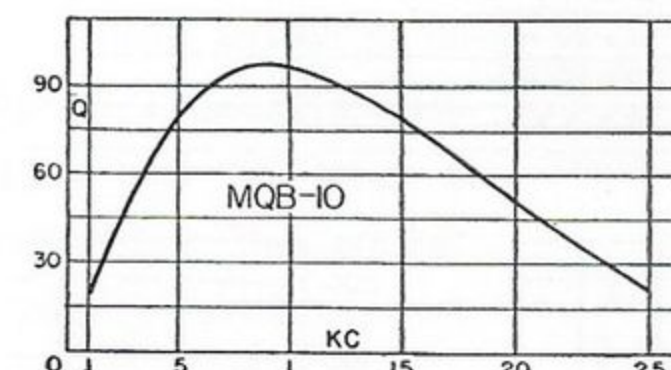
UTC Permalloy Dust Toroids have been the standard of the industry for over 15 years. The MQ series of coils provide the highest Q factor in their class (see curves below), with miniaturized dimensions. All units are hermetically sealed to MIL-T-27 Specifications.

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.

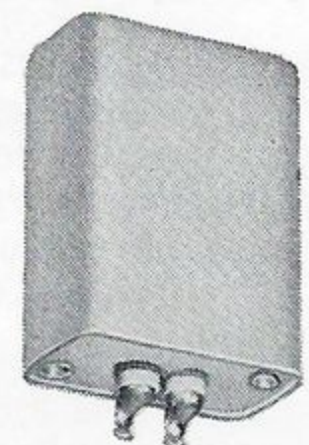
Other values of inductance than those listed are available on special order at the price of the next higher listed value.

TYPICAL Q CURVES



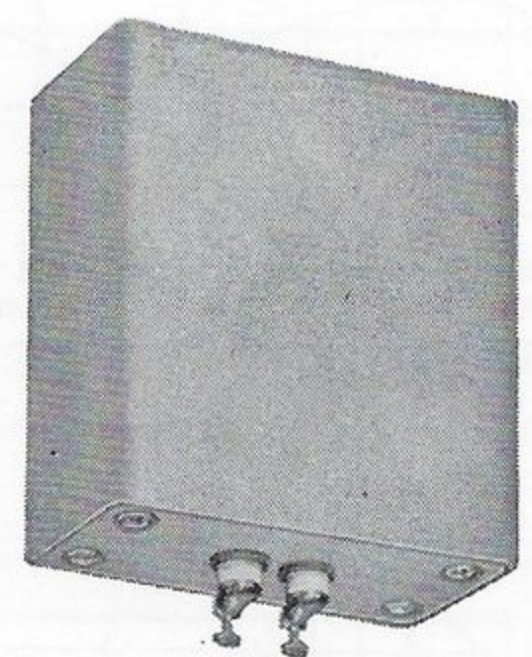
MQE CASE

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



MQA 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 5/16"
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.

MQE TYPES		
Type No.	Inductance (0 DC)	*DC 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

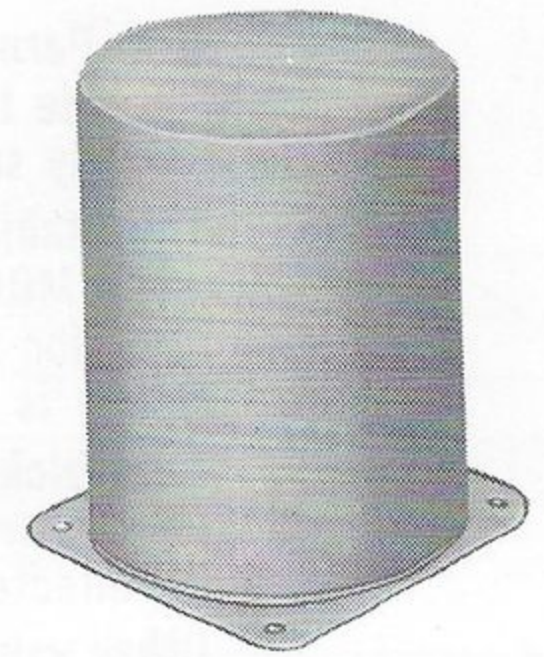
MQA TYPES		
Type No.	Inductance (0 DC)	*DC Max.
MQA-1	7 mhy.	250
MQA-2	12 mhy.	200
MQA-3	20 mhy.	150
MQA-4	30 mhy.	125
MQA-5	50 mhy.	100
MQA-6	70 mhy.	80
MQA-7	120 mhy.	60
MQA-8	.2 hy.	50
MQA-9	.3 hy.	40
MQA-10	.5 hy.	30
MQA-11	.7 hy.	25
MQA-12	1 hy.	20
MQA-13	1.5 hy.	17
MQA-14	2.5 hy.	13
MQA-15	4 hy.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

*This value of D.C. (MA) will drop the coil inductance 5%. Values of D.C. below this will show proportionately (linear) less inductance drop. For example, MQE-1 will drop 1/2% in L with 13.5 MA.

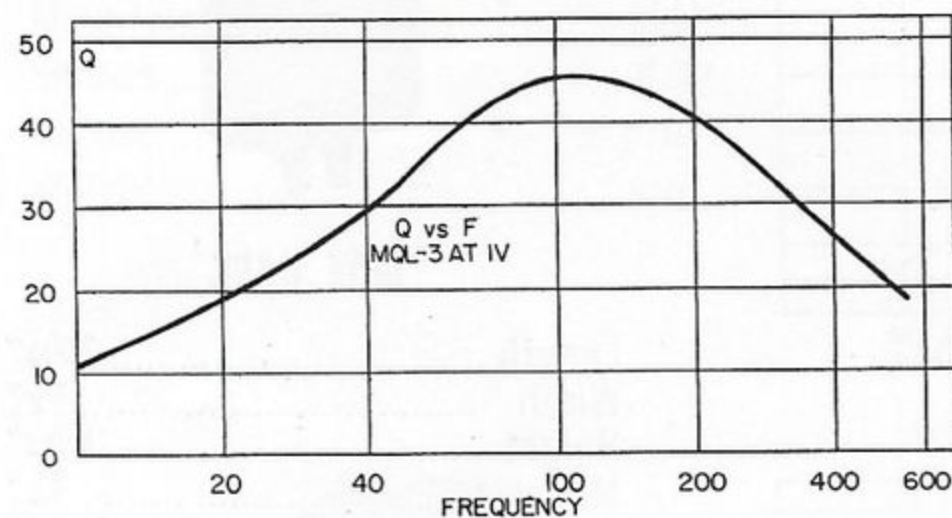
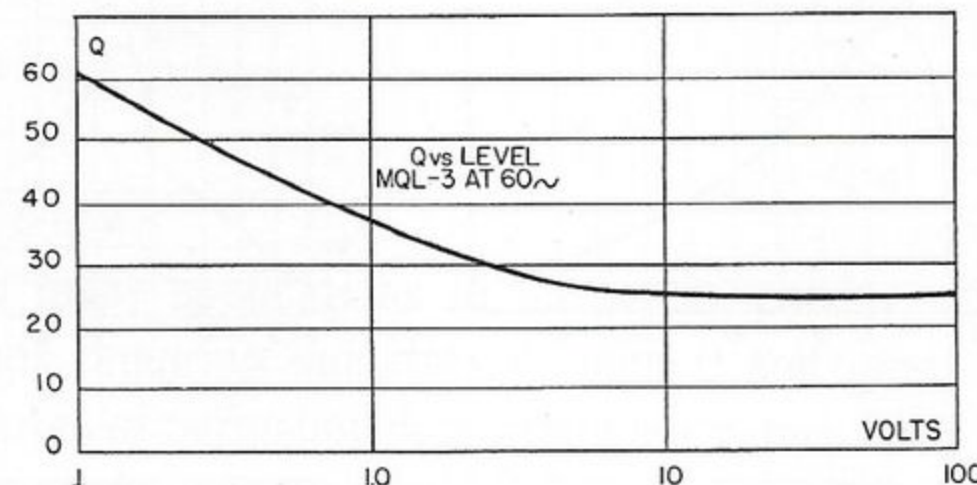
UTC LOW FREQUENCY HIGH Q COILS

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 $1\frac{1}{2}" \times 1\frac{1}{2}"$
 Cutout $1\frac{1}{2}"$ dia.
 Weight 1 lb.



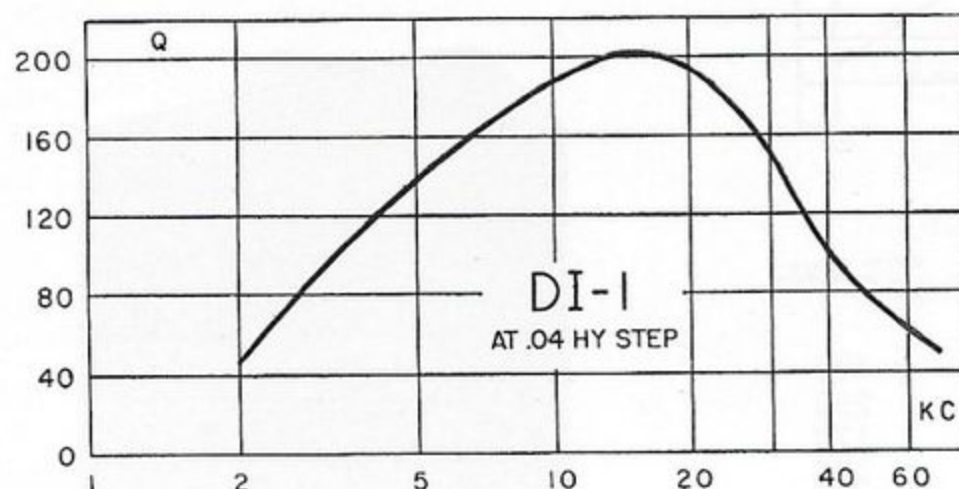
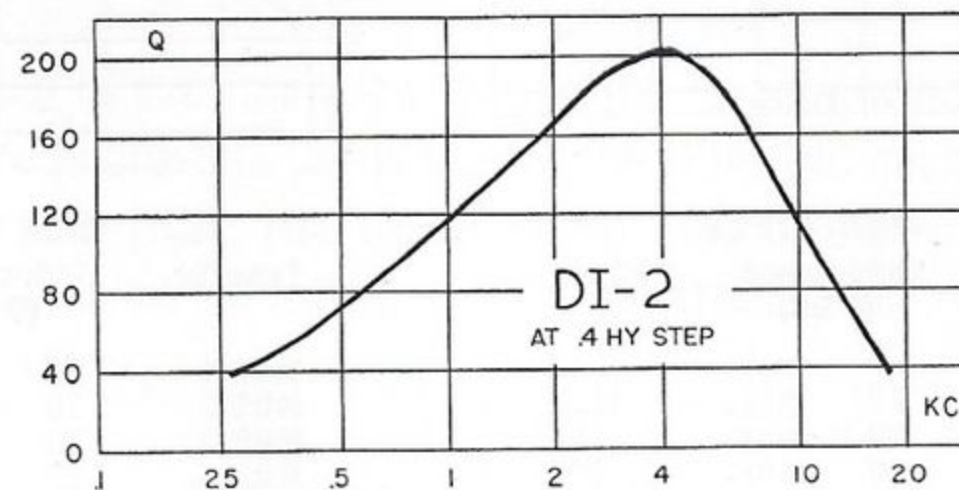
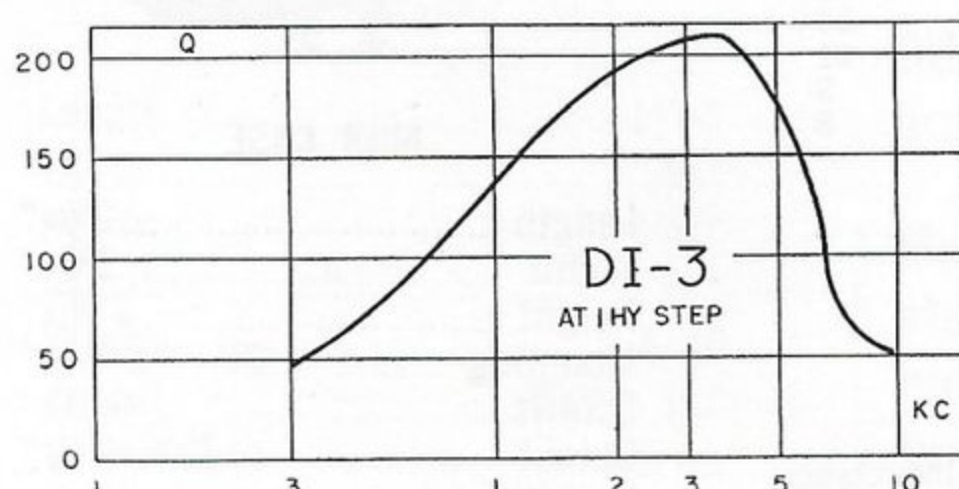
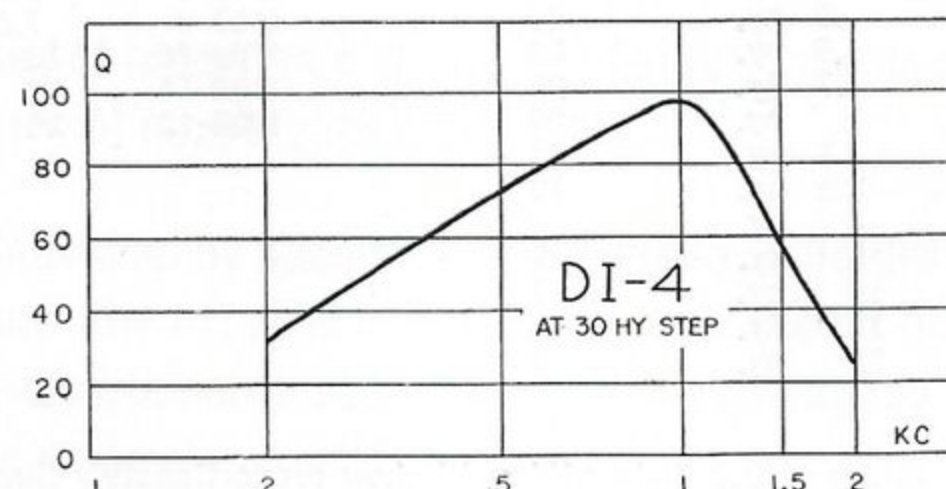
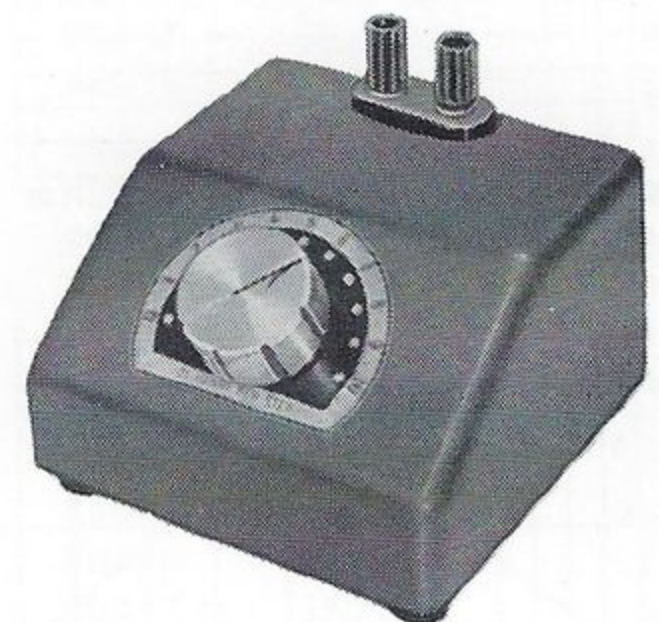
Type No.	Series Henries	Parallel Henries
MQL-1	10	2.5
MQL-2	20	5
MQL-3	200	50
MQL-4	400	100

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.

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. Ganging panels are available for mounting two, three, or four decades together. It is merely necessary to unscrew the four rubber feet at bottom of decade to attach to panel.

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

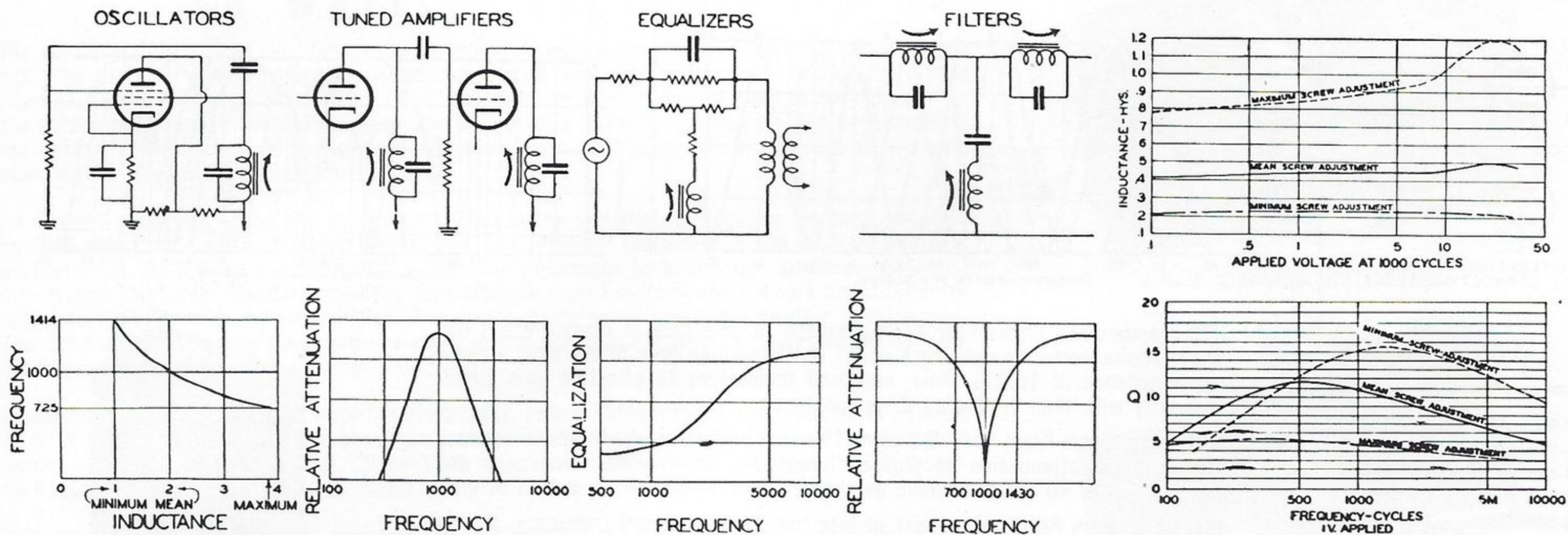


DI CASE

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

DP-2.....Gangs 2 decades
 DP-3.....Gangs 3 decades
 DP-4.....Gangs 4 decades

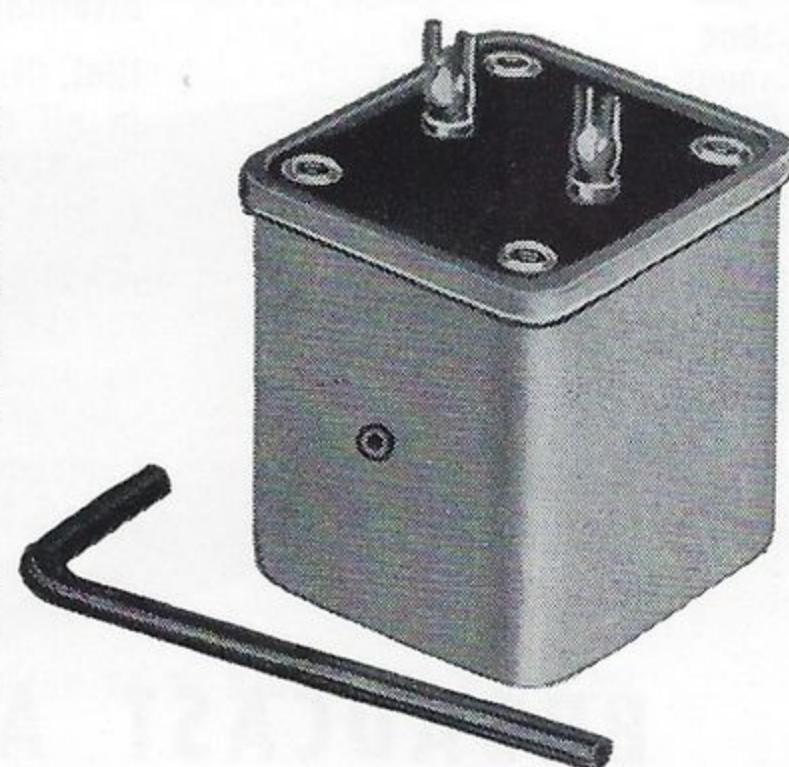
UTC VARIABLE INDUCTORS



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 revolutionary 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. 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 $\frac{1}{2}$ " long, 1 $\frac{1}{4}$ " wide and 1 $\frac{1}{8}$ " high with mounting centers on terminal board side $\frac{1}{16}$ " by $\frac{2}{32}$ ". Weight is 5 $\frac{1}{2}$ oz.



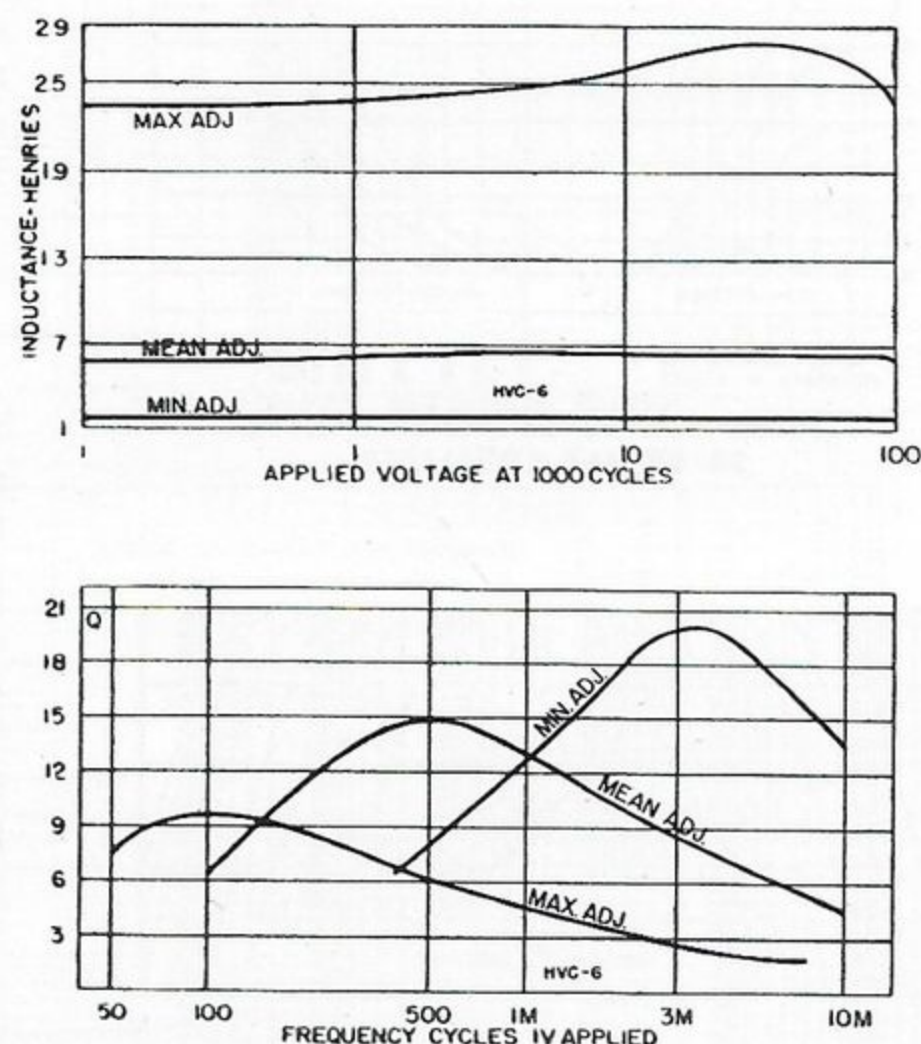
*DC MA shown is maximum recommended . . . will effect some reduction in inductance and Q.

UTC HERMETIC VARIABLE INDUCTORS

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

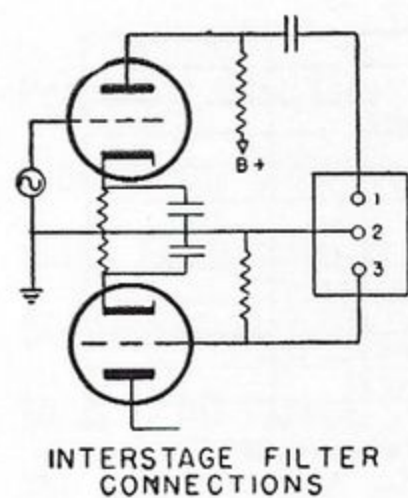
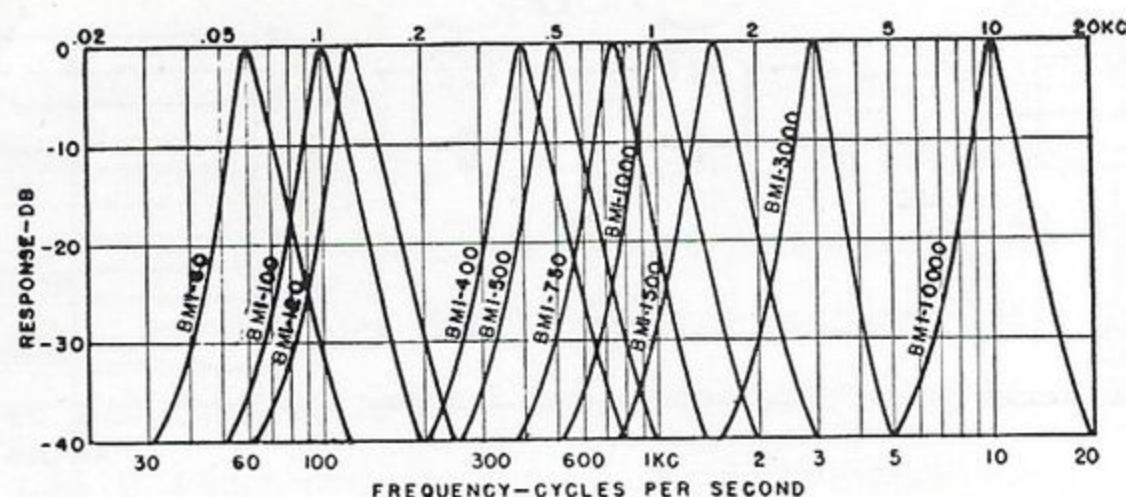
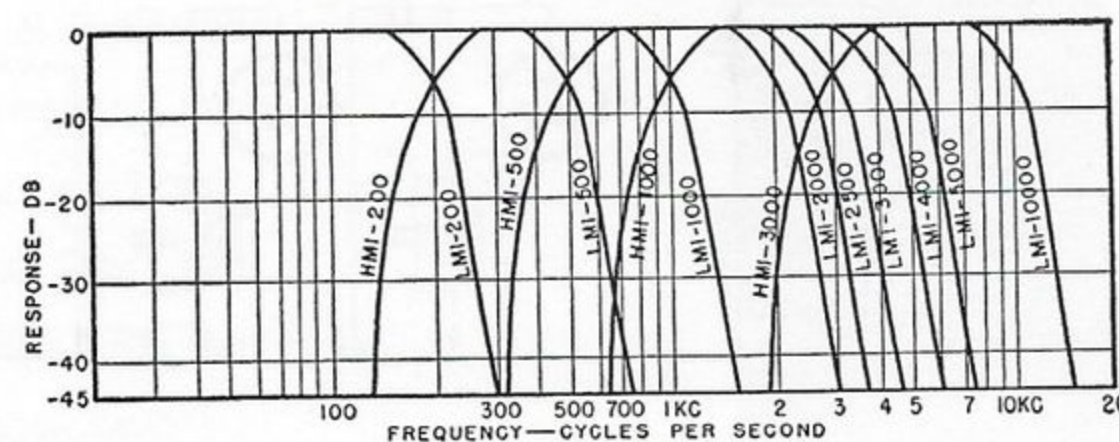
UTC variable inductors have served as the ideal solution to many filter, oscillator, equalizer, and tuned amplifier problems—for over a decade. Extended development has now made possible the new HVC series of inductors with improved characteristics. They are hermetically sealed to MIL-T-27 specs . . . 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% + 0 - 70% of nominal value shown. 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 $\frac{1}{8}$ " long, $\frac{25}{32}$ " wide, 1 $\frac{1}{2}$ " high. The two terminals and two 4/40 mounting studs are on opposite diagonals — $\frac{1}{16}$ " spacing.



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

UTC INTERSTAGE AND LINE FILTERS



STOCK FREQUENCIES

(Number after letters is frequency)

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

UTC standardized filters have been designed to take care of many present day filter requirements through stock units. The interstage type filters have a nominal impedance of 10,000 ohms, and lend themselves to effecting gain simultaneously with their frequency discrimination.

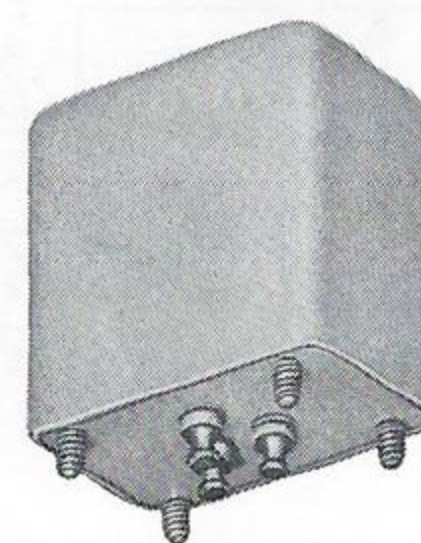
BMI units (Band Pass) have 2:1 gain. They are sharply peaked, having approximately 2 DB attenuation at plus or minus 3% from center frequency and attenuation of 40 DB per octave as shown. Input 10,000 ohms, output to grid.

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.

All of the standard filters are housed in **hermetically sealed** cases, shielded to reduce hum pickup to 150 MV per gauss at 60 cycles.

In addition to the stock filters listed, any of the six types are available as **special units** for any frequency from 100 to 12,000 cycles. Order by type followed by frequency, as LMI-2500, designating low pass interstage filter—2500 cycles cutoff frequency. These special units are priced at \$35.00 net.

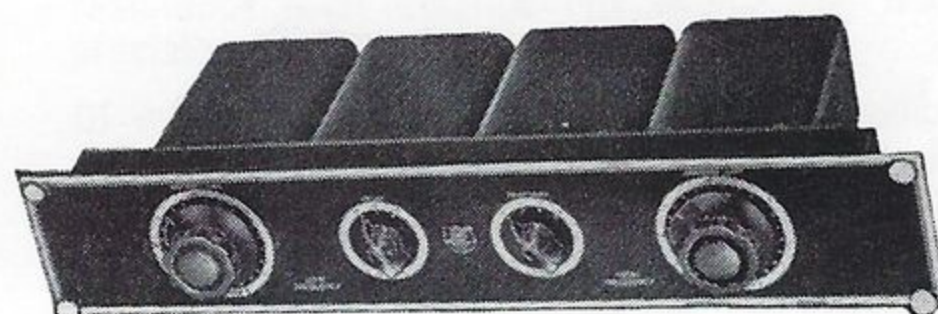


FILTER CASE M

Base	1 3/16" x 1 1/16"
Mtg.	3/4" x 1 1/4"
Mtg. Screws	6-32
Cutout	7/8" dia.
Height, BMI, LMI, BML	1 5/8"
Height, HMI, HML, LML	2 1/2"
Weight	6 oz. and 9 oz.

BROADCAST AND RECORDING EQUALIZERS AND FILTERS

500/600 ohms



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. This permits changes in tone color, with negligible change in volume. Where rapid changeover is required in service from one line to another, or from recording to play back, it is merely necessary to predetermine the required setting. The actual adjustment of the controls can be taken care of almost instantaneously. 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.

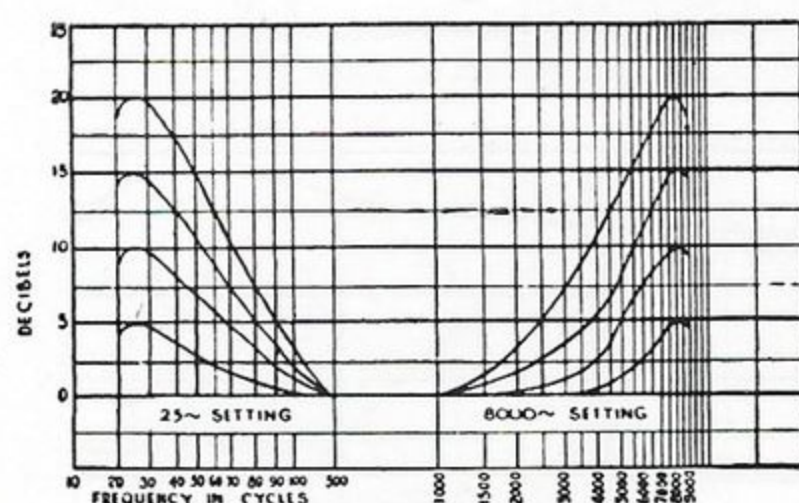
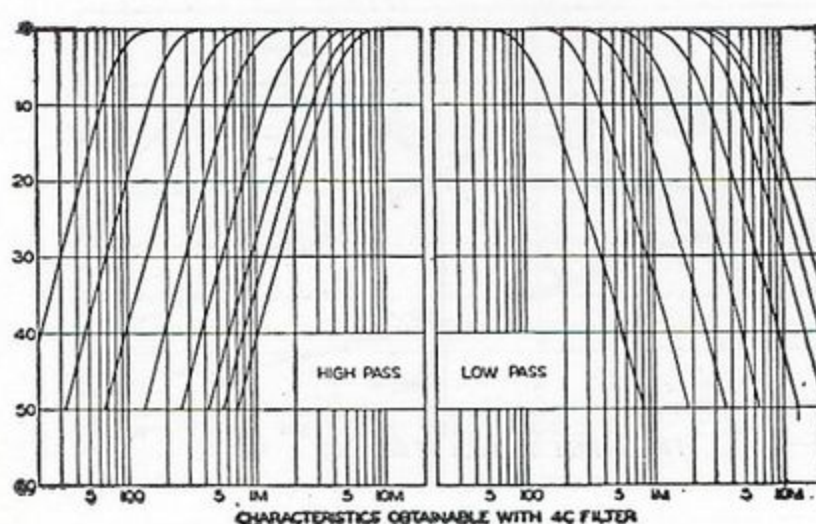
3A UNIVERSAL EQUALIZER

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 is now finding 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 most broadcast stations. Two controls are provided by 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.



REVOLUTIONARY LINEAR STANDARD AMPLIFIER

NEW HEIGHT OF FIDELITY 20 WATTS...KIT FORM

The Linear Standard amplifier climaxes a project assigned to our audio engineering group a year ago. The problem was, why does a Williamson circuit amplifier which tests beautifully in the laboratory seem to have considerable distortion in actual use? It took a year to fully determine the nature and cause of these distortions and the positive corrective measures. This new amplifier not only provides for full frequency response over the audio range but, in addition, sets a new standard for minimum transient distortion.

An inherent weakness of the Williamson circuit lies in the fact that its negative feedback becomes positive at subsonic and supersonic frequencies. The resultant instability in use lends to parasitic oscillation at the high end and large subaudio cone excursions both of which produce substantial distortions. The Linear Standard Amplifier uses Multiple Loop Feedback and network stabilization to completely eliminate these instabilities. The oscillograms below show comparative performance. The flat frequency response and extremely low intermodulation distortion provided by 36 db feedback, are self evident from the curves shown.

In addition to providing an ideal amplifier electrically, considerable thought was given to its physical form. A number of points were considered extremely important: (1) Size should be minimum (power and audio on one chassis). (2) Each kit must have identical characteristics to lab model. (3) Rugged, reliable, structure is essential.

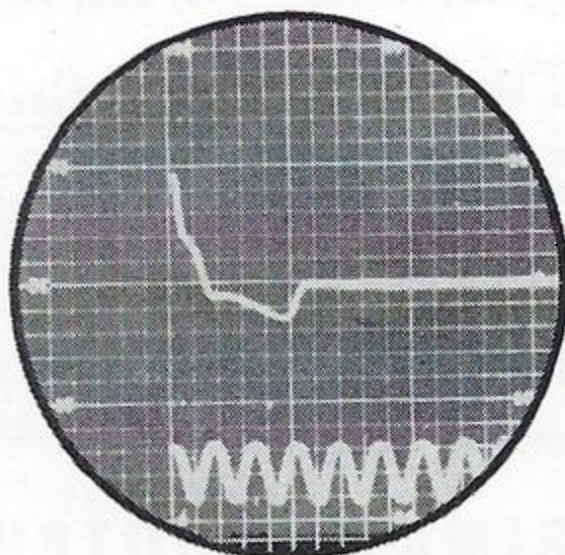
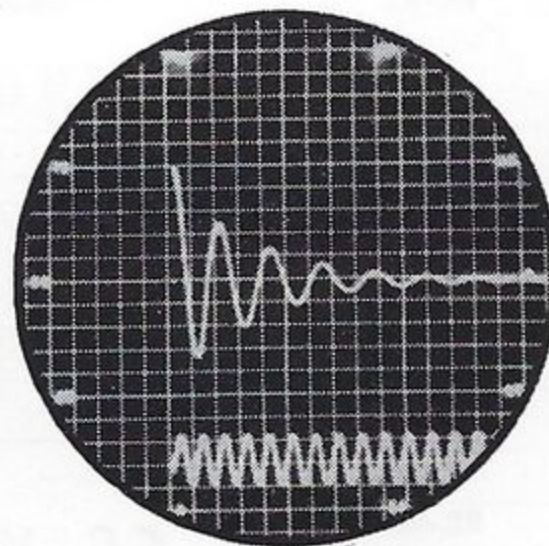
This resulted in a rather unique construction employing a printed circuit panel as large as the chassis with virtually all components pre-assembled and wired. The result is that each kit, which comes complete, including tubes and cover, can be fully pretested before shipment. Additional wiring involves only the connection of 17 leads to screw terminals for completion.

COMPARATIVE PERFORMANCE

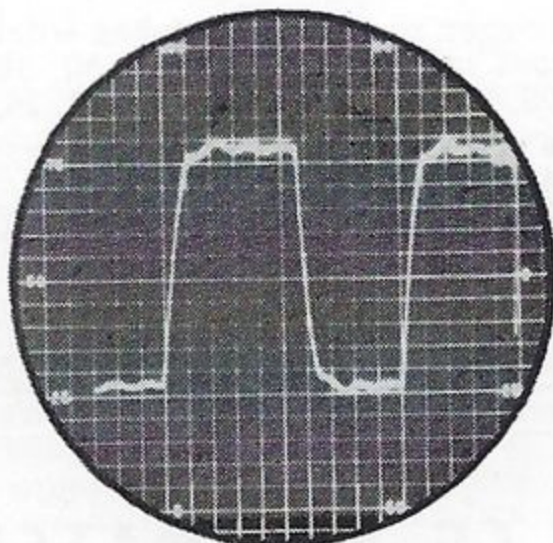
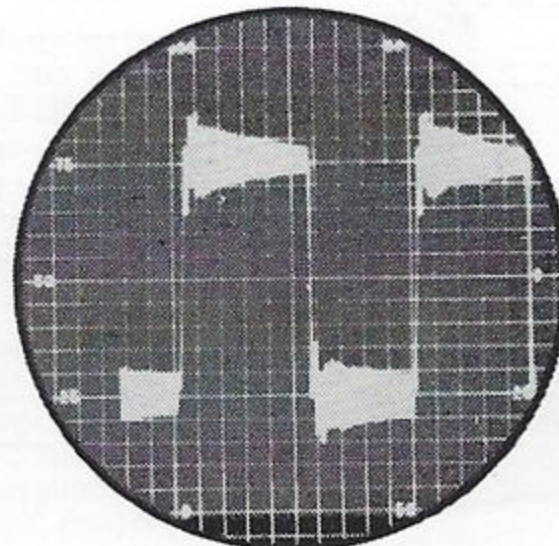
LINEAR STANDARD

WILLIAMSON

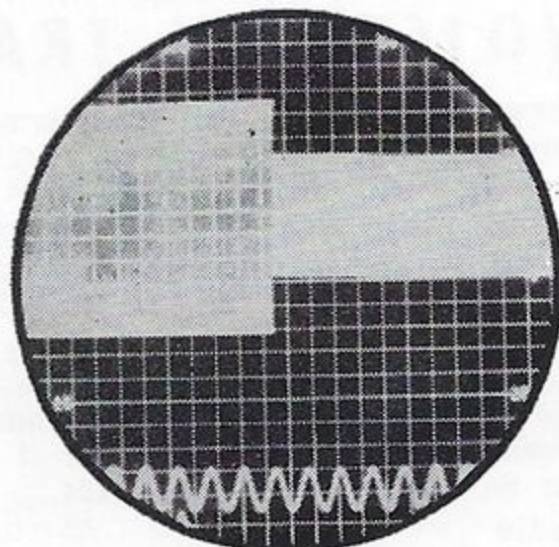
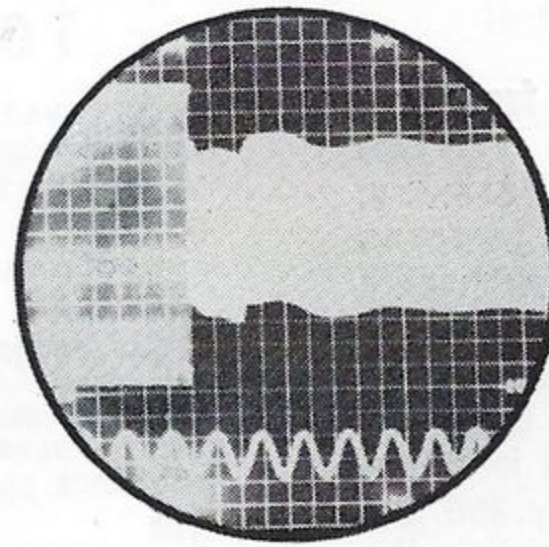
Step function
(low frequency)
transient stability.



High frequency
oscillation stability.
Average speaker wiring
capacity.



Overload recovery
transients.



LINEAR STANDARD TYPE MLF AMPLIFIER SPECIFICATIONS...

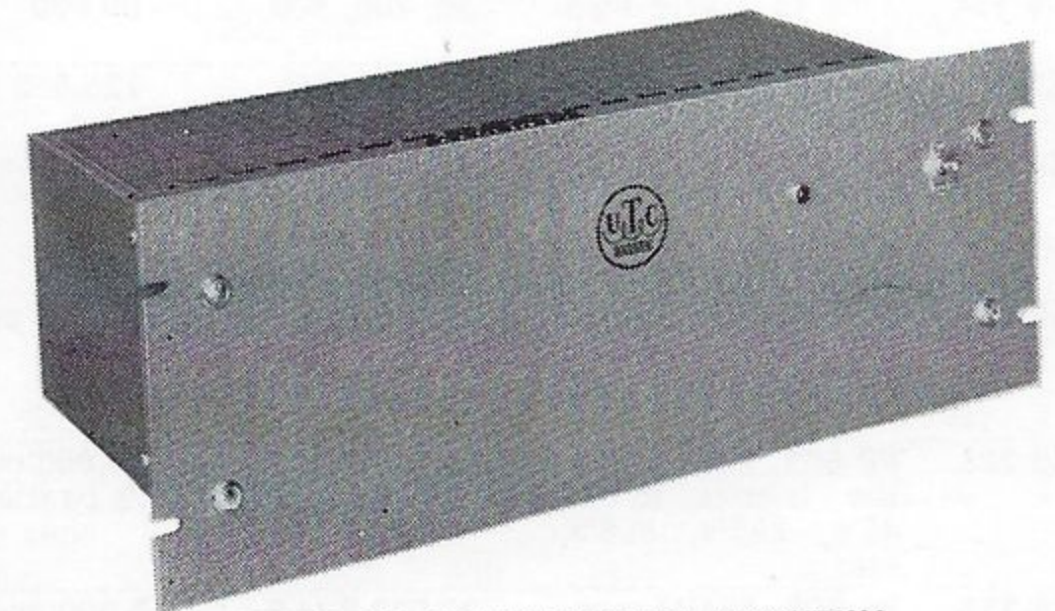
Rated Power Output:	20 Watts
Intermodulation Distortion:	.07% - 1W, 1% - 20W
Frequency Response (controlled):	1 db 20 to 20,000 cycles
Hum & Noise Level:	80 db below rated output
Feedback:	36 db
Output impedances (not critical):	4, 8, 16 ... also 2, 5, 10, 20, 30 ohms
Tubes:	1-12AX7, 2-6AU6, 2-5881, 1-5V4G
Dimensions & Weight:	5 1/4" x 8" x 17 1/8", 24 lbs.
Net Price:	\$108.00



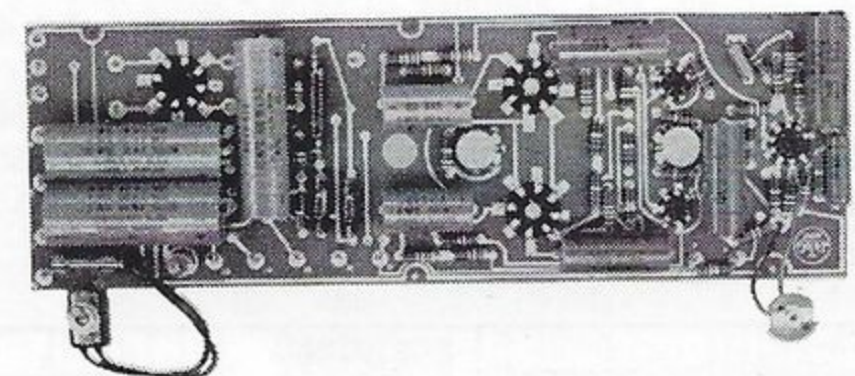
LINEAR STANDARD MLF AMPLIFIER



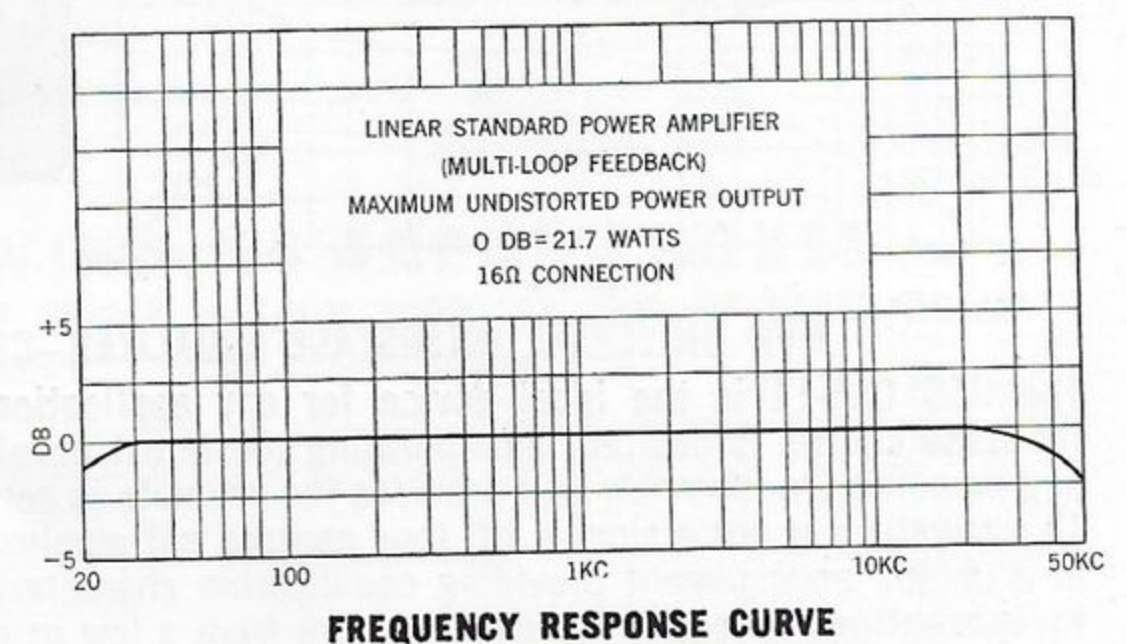
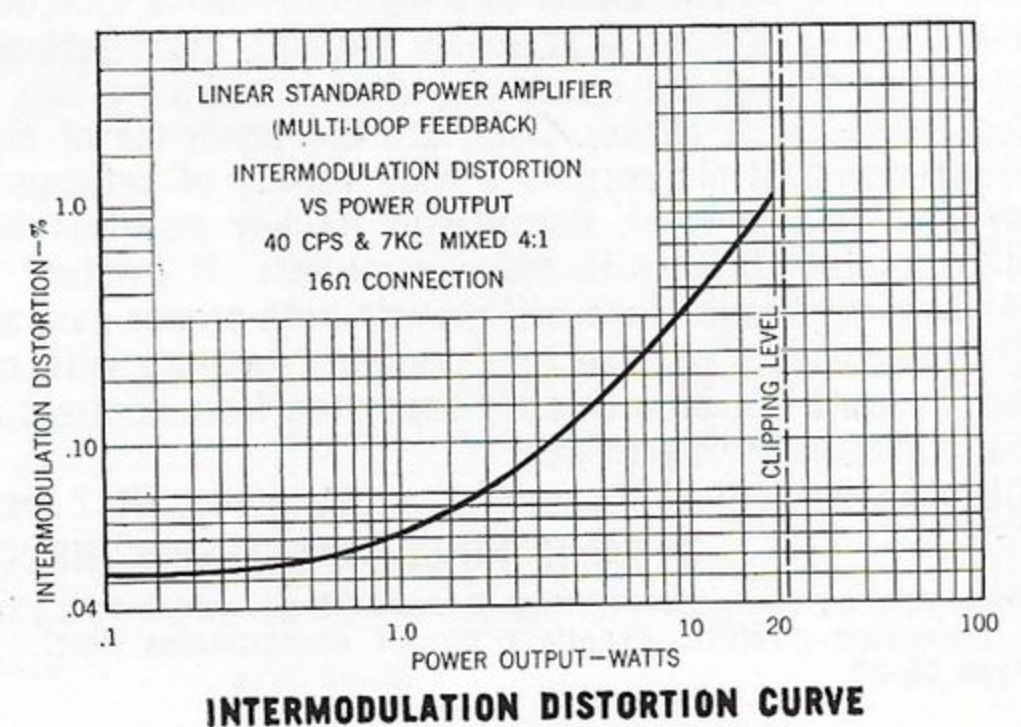
WITH COVER REMOVED



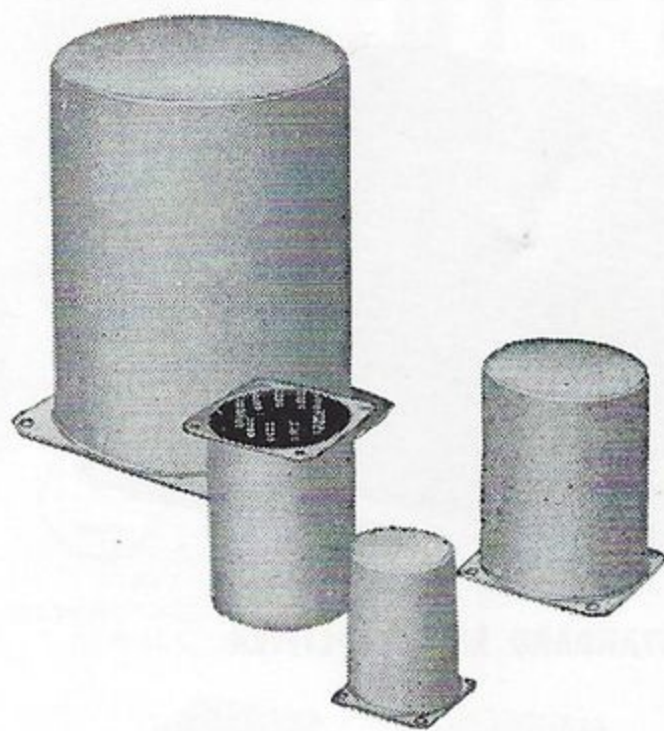
SUITED TO 7" RACK PANEL MOUNTING



PRINTED CIRCUIT CONSTRUCTION

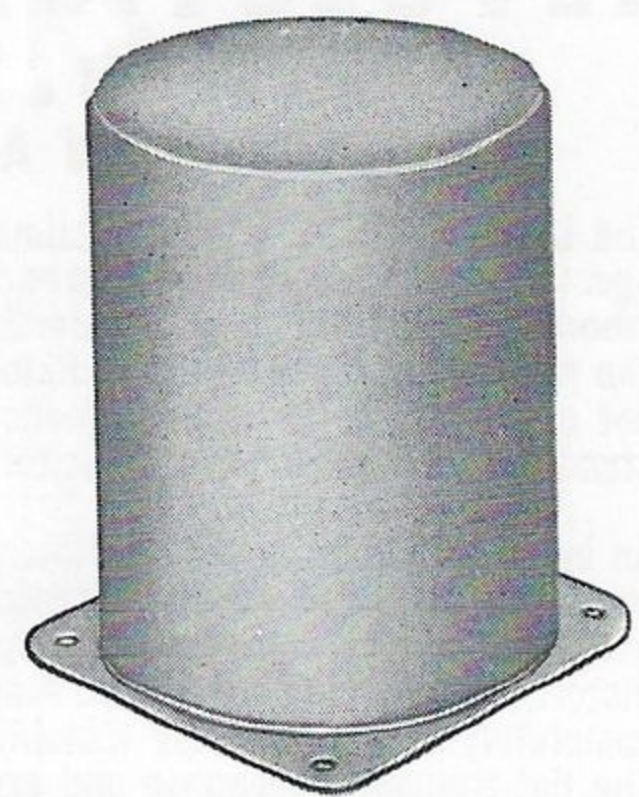


UTC COMMERCIAL GRADE COMPONENTS



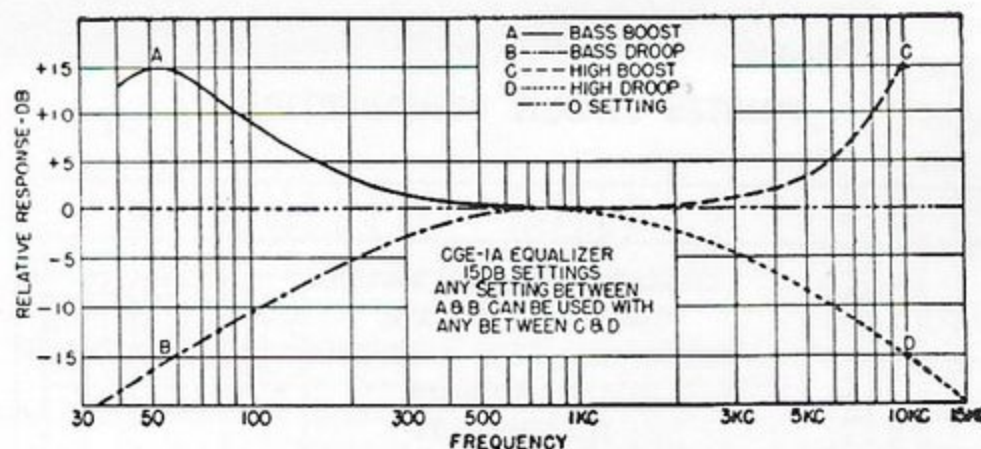
The commercial grade series of transformers incorporate conservative design and rugged construction to assure dependability under continuous service operation in industrial and commercial grade communication equipment. These units are mounted in uniform drawn cases finished in light grey enamel, and 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	Secondary Impedance Ohms	Case No.
CG-131	1 plate to 1 grid	15,000	135,000 3:1 ratio	RC-50
CG-132	1 plate to 2 grids	15,000	135,000 centertapped 3:1 ratio overall	RC-62
CG-133	2 plates to 2 grids	30,000 P to P	80,000 overall 1.6:1 ratio overall	RC-75
CG-134	Line to 1 grid hum-bucking	50, 200, 500	80,000	RC-50
CG-135	Line to 2 grids hum-bucking	50, 200, 500	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	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	80,000 overall	RC-62
CG-233	PP 6C5, 12AU7, similar triodes to AB 45's, 2A3's, 6L6's, etc.	30,000 P to P	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	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	1,250 overall .5:1 ratio overall	RC-100
CG-137	Mixing	50, 200, 500	50, 200, 500	RC-50
CG-140	Triode plate to line	15,000	50, 200, 500	RC-50
CG-141	PP triode plates to line	30,000 P to P	50, 200, 500	RC-50



NEW UNIVERSAL INTERSTAGE EQUALIZER—CGE-1A

The UTC CGE-1A is the ideal device for any application where frequency response control is desired. Incorporating the latest developments in design and manufacture, this new unit provides the ultimate in control and flexibility. This equalizer is not a simple R-C tone control, but employs resonant circuits in a unique arrangement providing equalization characteristics unobtainable by conventional circuits. Designed to work from a low or medium impedance source (0 to 20,000 ohms) to a high impedance (500,000 ohms or open grid), the CGE-1A affords continuously variable equalization over a 30 DB range at either end of the spectrum, while introducing only 18 DB total insertion loss. (See curve above). Complete independence of high frequency and low frequency controls permits a wide variety of settings without affecting the over-all volume level. Because of its low insertion loss, this unit may be incorporated directly in many amplifiers. If existent gain is low, a single medium-mu triode stage will provide both proper gain and source impedance. The mechanical construction permits mounting with case on panel directly behind controls, or with case separated from controls and panel. An etched, calibrated panel is provided.

CGE-1A Panel Dim. $2\frac{3}{8}'' \times 3\frac{1}{2}'' \times 2\frac{1}{2}''$ deep. Wt. 2 lbs.

DYNAMIC NOISE SUPPRESSION INDUCTOR

Incorporates two accurate High Q coils [.8 hy. and 2.4 hy.] for use in dynamic noise suppression circuits. Excellent circuit accompaniment unit.

Type CG-50 RC-62 Case

COMMERCIAL GRADE CASE

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

OUTPUT TRANSFORMERS

Secondary Impedances: 500, 200, 70, 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	20	RC-100
CG-16	3,000/5,000	2A3, 6B4, 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	6K6, 7B5, 6AK6	20	RC-100
CG-2L6	9,000	6L6's, AB1, 5881	30	RC-125
CG-4L6	3,800/4,500	2-6L6's, AB2 or 4-6L6's AB1, 6146, 6149	55	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, 6B4G, 6AQ5	RC-100
CVP-2	30	2A3, 6L6, 6V6, 807, 5881, 6B4G	RC-125
CVP-3	60	300B's, 6L6's, 801, 807, 1614, 5881, 1625	RC-150
CVP-4	125	807's, 4-6L6's, 845's, 4-1614's, 6146, 6149	RC-152
CVP-5	300	211, 242A's, 203A'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

CG VARIMATCH LINE AUTOFORMERS

UTC Varimatch Line Autoformer will match one to ten 500 ohm lines or CVL windings to the 500 ohm output of an audio amplifier. The CVL-10 autoformer has impedances of 500, 250, 167, 125, 100, 83, 71, 62, 50 ohms.

Type No.	Audio Watts	Case No.
CVL-10	15	RC-87

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. Designs provide temperature rise less than 55 degrees C. Units are tested for breakdown at twice maximum working voltage plus 1000 volts. Plate transformers are given a surge test of 250% normal voltage at 200 cycles. 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, 6B5G	RC-100
CVM-1	30	60	6V6, 2A3, 6L6, 807, 5881	RC-125
CVM-2	60	125	801, 6L6, 809, 4-46, T-20, 1608, 6146, 6149	RC-150
CVM-3	125	250	800, 807, 845, TZ-20, RK-30, 35-T	RC-152
CVM-4	300	600	50-T, 203A, 805, 838, T-55, ZB-120	RC-175
CVM-5	600	1200	805, HF-300, 204A, HK-354, 250TH	7x12x9H 60 lbs.

CG VARIMATCH DRIVER TRANSFORMERS

Type No.	Primary	Typical Output Tubes	Case No.
CG-51AX	All single tubes like: 6C5, 6C4, 12AU7, 2A3, 5814	2A3, 45, 6L6	RC-87
CG-53AX	P. P. tube like: 2A3, 6L6, 6B4G	46, 4-46, 841, 210, 801, RK-18, 800, 203A, 838, 805, 50T, 830B	RC-112
CG-59AX	50, 200, 500 ohm line	805, 838, 203A, ZB-120, 100TH, 800, 55T, RK-18	RC-112
CG-238AX	4-2A3, 4-45, 4-50, 2-211A, 2-845	4-805's, 4-838's, 4-203A's, 2-204's, 2-849's, 2-HF300's, 2-HF200's, 2-250TH's, 2-450TH's	RC-150
CG-512	50, 200, 500 ohm line	2-250TH, 2-450TH, 2-HF200, 2-HF300, 2-204A, 2-849	RC-150

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

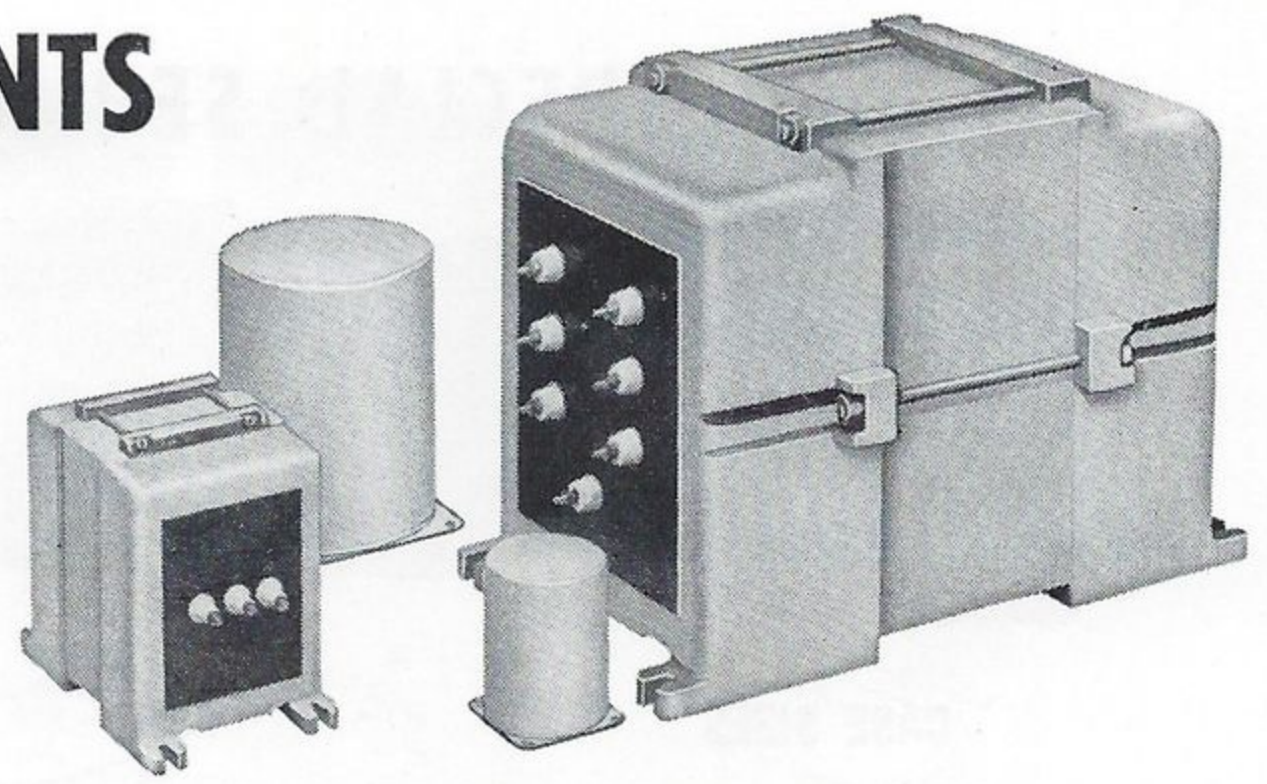
Designed for line voltage control, filament control and reduced power operation. Output voltage from 0 to 130 volts, 50/60 cycles. Varipower units permit control of filament voltage at the tube socket to within 2 1/2% of desired value simultaneously with line voltage control and plate voltage control. 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-3A	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	580-530-300-0-300-530-580	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	Wt. Lbs.
CG-304	1500-1235-0-1235-1500	1250/1000	800	15	8 1/2	10 3/8	100
CG-305	2400-1750-0-1750-2400	2000/1500	300	10 1/2	4 3/4	6 7/8	50
CG-306	2400-1750-0-1750-2400	2000/1500	500	15	8 1/2	10 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	90
CG-308	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	500	16 1/2	8 1/2	10 3/8	125
CG-309	3500-3000-2400-0-2400-3000-3500	3000/2500 2000	1000	21	10	13 1/4	185
CG-310	4600-4050-3500-0-3500-4050-4600	4000/3500 3000	600	19	10	13 1/4	150
CG-311	1500-1235-0-1235-1500	1250/1000	500	10 1/2	4 3/4	6 7/8	50
CG-312	1800-1500-0-1500-1800	1500/1250	400	10 1/2	4 3/4	6 7/8	50

FILTER CHOKES

INDUCTANCE SHOWN IS AT RATED DC MA

Type No.	Inductance Henrys	DC MA	DC Res. Ohms	Test Volts	Case No.
CG-40	10	200	110	1750	RC-112
CG-41	4-20	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, 60 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	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, 60 lb.

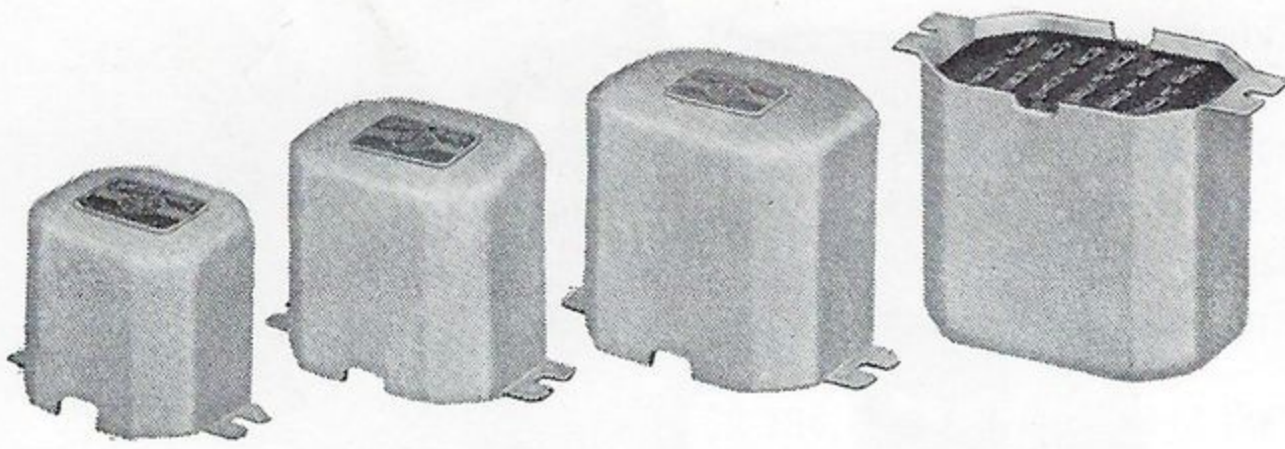
FILAMENT TRANSFORMERS

Primary for 105, 115, 220, 230 volts, 50/60 cycles. 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.

* Two Windings.

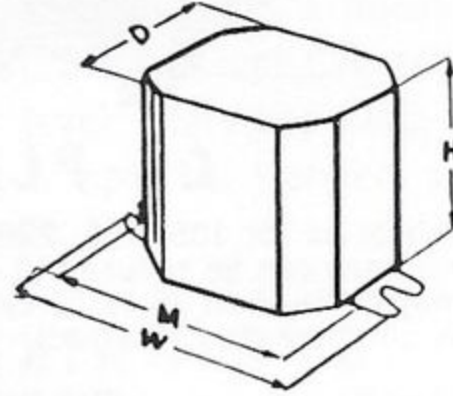
Type No.	Sec. Volts C. T.	Sec. Amps.	Working Voltage	Test Voltage	Case No.
CG-33	6.3	4	500	2000	RC-75
CG-34	2 1/2	10	2500	6000	RC-112
CG-120	2 1/2	10	5000	11000	RC-125
CG-121	5	25	5000	11000	RC-150
CG-122	7.5/6.3	10	1500	4000	RC-125
CG-124	10	10	1500	4000	RC-150
CG-125	14/12/11	10	1500	4000	RC-150
CG-126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

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 15/16	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 4:1	G-2
S-3	1 plate* to 1 or 2 grids compact type	2:1	G-1
S-4	1 plate* to 2 grids wide range response	1:1	G-3
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
S-7	Single plate* and carbon mike to one or two grids	3:1 16:1	G-2

* 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)

Type No.	Application	Case
S-8	Single driver plate to pushpull grids	G-3
S-9	Pushpull driver plates to grids of class B tubes up to 400 watts output	G-4
S-10	Pushpull 56, 6C6 triode, 6C5, or similar plates to 45's, 2A3's or 6L6's, self or fixed bias	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, 25L6, 35L6	A	G-2
	4000 ohms	6V6, 12A6	A	
	7000 ohms	6AC5, 6F6, 6K6, 7B5	A	
	10,000 ohms	1G5, 3C5, 6A4, 6N7	A	
P. P. Tubes:				
S-15 12 W.	4000 ohms	6Y6, 25L6	AB	G-2
	5000 ohms	2A3, 6B4, 6AS7	AB	
	10,000 ohms	1H4, 6AC5G, 6B5, 6A6, 6Y7	AB B	
S-16 30-W.	3000 ohms	2A3, 6B4, 25L6	AB	G-4
	6000 ohms	2A5, 6F6 triodes, 6AS7, 6A6, 6N7	AB B	
	9000/10000 ohms	2A5, 6AC5, 6B5, 6F6, 6L6, 6V6, 807-triode	AB	
S-17 55 W.	3800 ohms	6L6's	AB2	G-5
	4500/5000 ohms	4-6L6's 46, 1608, 809	AB1 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 transformers 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.

DRIVER TUBES: In the combinations shown below, typical suitable driver tubes are: 6C5, 6E6, 6N7, 6J5, 6C4, 12AU7, 6P5, 6J7-TR, 6SJ7-TR.

DRIVER Transf.	Sec. Term.	P. P. Tubes	MODULATOR STAGE			
			Watts Output	P. P. Load	Plate Volts	Bias Volts
S-2	G-G	6E6	1.6	14,000	250	27
S-8	G-G	19, 1J6G	2.1	10,000	135	0
S-8	G-G	49	3.5	12,000	180	0
S-2	G-G	25L6	4	4,000	110	7.5
S-8	G'-G'	6Z7G	4.2	12,000	180	0
S-2	G-G	6Y6G	7	4,000	135	13.5
S-8	G-G	6Y7G	8	14,000	250	0
S-8	G'-G'	6AC5G	8	10,000	250	0
S-8	G'-G'	6A6, 6N6, 6N7	10	10,000	300	0
S-2	G-G	2A3, 6A3, 6A5G, 6B4G	10	5,000	325	750 ohms
S-8	G-G	45	10	5,000	275	770 ohms
S-2	G-G	6AS7G	10	5,000	250	1,250 ohms

SINGLE TUBES

S-1	F-G	Pri. Load	
		43, 45, 71A, 25A6, 25A7 46, 6V6 42, 46, 47, 49, 2A5, 6F6, 6B5 10, 41, 32, 6G6, 6K6 38, 12A7	4,000 ohms 6,000 ohms 7,000 ohms 10,000 ohms 14,000 ohms

S-19—30 WATTS MAX.

(6J5, 6C4, 12AU7, etc. may be substituted for 6C5 tubes)

Tube or Tubes	DRIVER Transf.	Sec. Terms	MODULATOR STAGE P. P. Tubes	Watts Output	P. P. Load	Plate Volts	Bias Volts
6C5	S-10	G-G	6V6	13	8,000	300	20
6C5	S-10	G-G	2A3, 6A3, 45, 6A5G, 6B4G	15	3,000	325	68
6C5	S-10	G-G	2A5, 6F6 Pentode AB	10	10,000	375	340 ohms
2A5	S-8	G-G	2A5, 6F6, triode AB	18	6,000	350	38
89	S-8	G'-G'	6A6, 6N6, 6N7	19	5,000	300	0
45	S-8	G-G	10, 1602	25	8,000	425	50
45	S-8	G'-G'	46	25	6,000	425	0
45	S-8	G'-G'	841	28	7,000	425	5
6C5	S-10	G-G	6L6 self bias	30	9,000	400	23

S-20—55 WATTS MAX.

P. P. Tubes	DRIVER Transf.	Sec. Terms	P. P. Tubes	Watts O'tp't	MODULATOR STAGE				
					P. P. Load	Plate Volts	Plate Tr'sf.	Bias Volts	Bias Tr'sf.
2A3	S-9	1-1	801	45	10000	600	S-45	75	S-51
2A3	S-9	3-3	1608	50	5000	425	S-44	15	S-51
2A3	S-9	1-1	T-20	50	8000	600	S-45	30	S-51
Single 45	S-8	G'-G'	4-46, 59	56	3000	425	S-44	0	
6C5	S-10	G-G	6L6, AB2	60	3800	400	S-39	25	S-51
6C5	S-10	G-G	4-6L6	60	4500	400	S-40	23	
2A3	S-9	3-3	809	60	5000	500	S-41	0	

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 LS 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-21—115 WATTS MAX.							
P. P.-2A3 Driver	P. P. Tubes	Watts Output	MODULATOR STAGE	Plate Transf.	Bias Volts	Bias Trsf.	
S-9 Transf. Sec. Term.			P. P. Load	Plate Volts			
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
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.

S-22—250 WATTS MAX.							
P. P.-2A3 Driver	P. P. Tubes	Watts Output	MODULATOR STAGE	Plate Transf.	Bias Volts	Bias Trsf.	
S-9 Transf. Sec. Term.			P. P. Load	Plate Volts			
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	

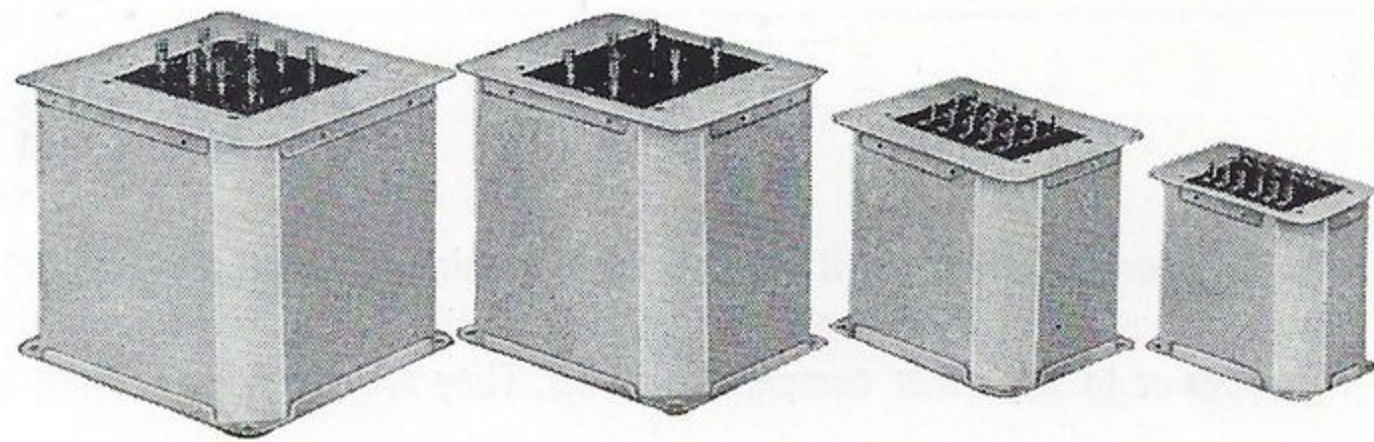
* Reverse S-9, using 2-2 for plates and P-P for grids.

† Reverse S-9, using 1-1 for plates and P-P for grids.

FILAMENT TRANSFORMERS

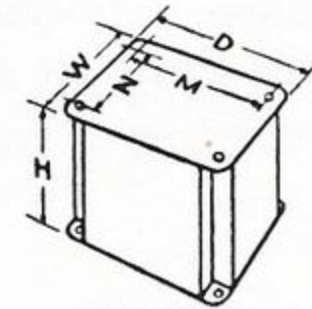
Primary Tapped 105, 115 Volts—50/60 Cycles				
Type No.	Secondary Volts	Secondary Current	Insulation	Case No.
S-53	2.5 VCT	10 A.	1500 V.	G-3
S-54	5 VCT	4 A.	2500 V.	G-3
S-55	6.3 VCT	3 A.	1500 V.	G-3
S-56	7.5 VCT	3 A.	1500 V.	G-3
S-57	2.5 VCT	10 A.	10,000 V.	G-5
S-58	2.5 VCT	20 A.	10,000 V.	G-5
S-59	5 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	Insulation	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-66	2.5 VCT-10A	7.5 VCT-6.5A		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-69	6.3 VCT-3A	7.5 VCT-6.5A		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



CASE SIZES

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 2 7/32	3 2 5/32	8
G-8	4 5/8	5 3/8	5 3/8	4 2 5/32	4 3/4	12
G-9	5 7/8	5 3/8	6 3/4	6 3/32	4 1 9/32	21
G-10	5 7/8	6 1/8	6 5/8	5 1 5/16	5 1 3/32	24
G-11	5 7/8	6 1/2	7 3/8	6 2 1/32	5 2 3/32	31
G-12	10 1/4	7 3/8	9 1/4	8 1/2	6 5/8	52



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.

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.

FILTER, SWINGING, AND AUDIO CHOKES

Type No.	Service	Inductance	Current	Resistance	Insulation	Case No.
S-23	Audio	450 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	15 Hy.	60 Ma.	250 ohms	1500 V.	G-2
S-27	Filter	30 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	10 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-30	Swinging	5/25 Hy.	175 Ma.	90 ohms	1500 V.	G-4
S-31	Filter	20 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-32	Swinging	5/25 Hy.	225 Ma.	100 ohms	2700 V.	G-5
S-33	Filter	20 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-34	Swinging	5/25 Hy.	300 Ma.	100 ohms	4000 V.	G-7
S-35	Filter	20 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-36	Swinging	5/25 Hy.	400 Ma.	60 ohms	5000 V.	G-8
S-37	Filter	20 Hy.	550 Ma.	60 ohms	6000 V.	G-8
S-38	Swinging	5/25 Hy.	550 Ma.	60 ohms	6000 V.	G-8

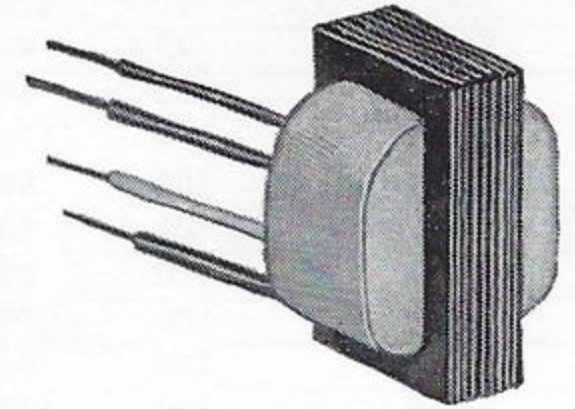
SUBOUNCER UNITS

UTC Sub-Ouncer units fulfill an essential requirement for miniaturized components having relatively high efficiency and wide frequency response. Through the use of special nickel iron core materials and winding methods, these miniature units have performance and dependability characteristics far superior to any other comparable items. They are ideal for hearing aids, miniature radios, and other types of miniature electronic equipment.

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 impregnated and double (water proof) sealed. The curves below indicate the excellent frequency response available. Alternate curves are shown to indicate operating characteristics in various typical applications.

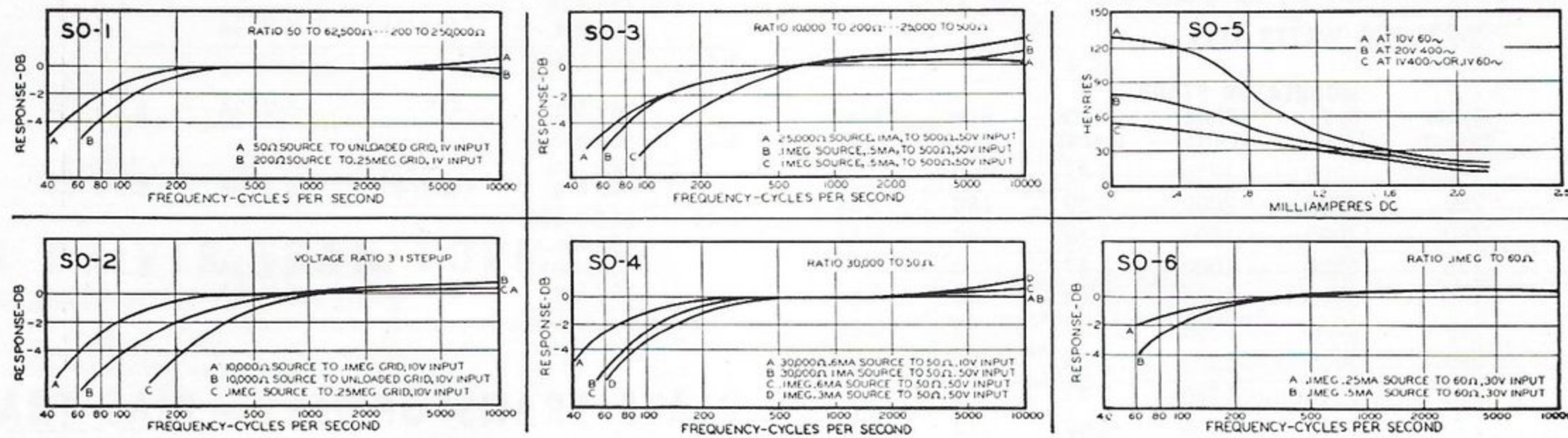
Type	Application	Level	Pri. Imp.	MA D.C. in Pri.	Sec. Imp.	Pri. Res.	Sec. Res.
*S0-1	Input	+ 4 V.U.	200 50	0	250,000 62,500	16	2500
S0-2	Interstage/3:1	+ 4 V.U.	10,000	0-.25	90,000	215	1850
*S0-3	Plate to Line	+20 V.U.	10,000 25,000	3 1.5	200 500	1225	30
S0-4	Output	+20 V.U.	30,000	1.0	50	1850	3.8
S0-5	Reactor 50 HY at 1 mil. D.C.	2675 ohms D.C. Res.					
S0-6	Output	+20 V.U.	100,000	.5	60	3400	3.7

* Impedance ratio is fixed, 1250:1 for S0-1, 1:50 for S0-3. Any impedance between the values shown may be employed.



SUBOUNCER UNIT

Dimensions..... $1\frac{1}{32}'' \times 4\frac{3}{64}'' \times \frac{7}{8}''$
Weight03 lb.

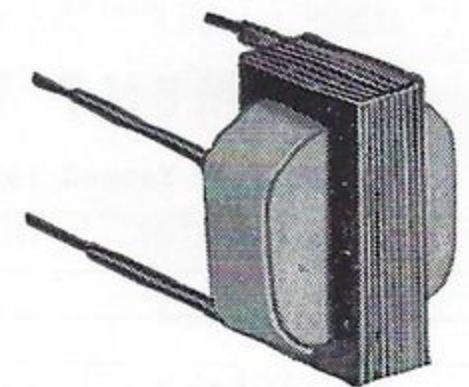


SUB-SUBOUNCER UNITS

UTC Sub-SubOuncer units have exceptionally high efficiency and frequency range in their ultra-miniature size. This has been effected through the use of specially selected Hipermet-Alloy core material and special winding methods. The constructional details are identical to those of the Sub-Ouncer units described above. The curves below show actual characteristics under typical conditions of application.

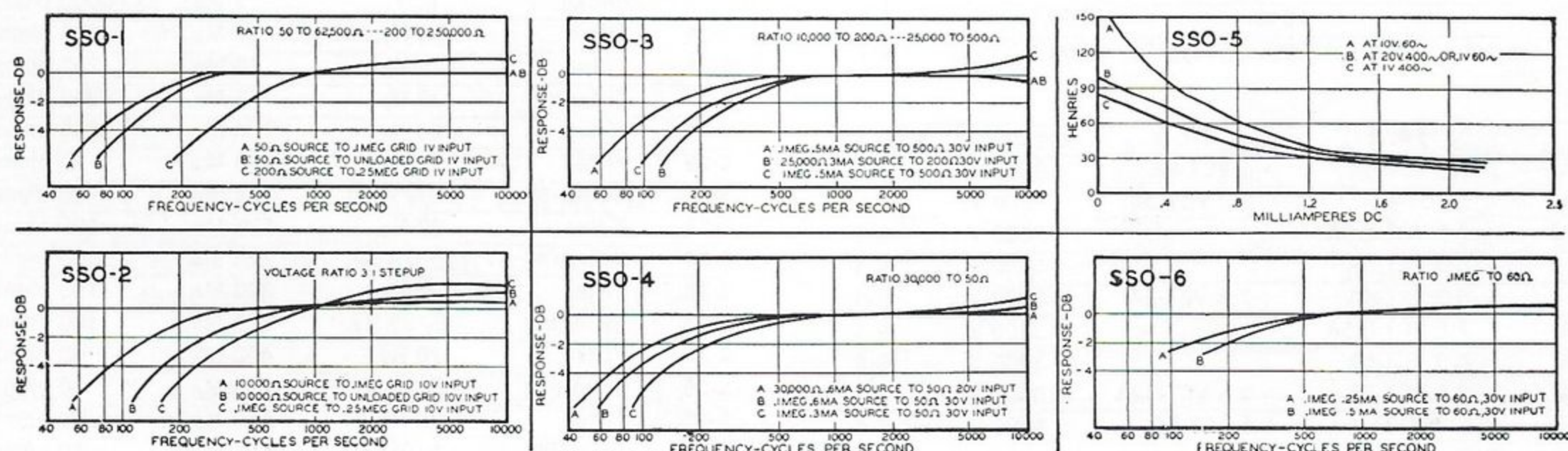
Type	Application	Level	Pri. Imp.	MA D.C. in Pri.	Sec. Imp.	Pri. Res.	Sec. Res.
*SSO-1	Input	+ 4 V.U.	200 50	0	250,000 62,500	13.5	3600
SSO-2	Interstage /3:1	+ 4 V.U.	10,000	0-.25	90,000	710	3150
*SSO-3	Plate to Line	+20 V.U.	10,000 25,000	3 1.5	200 500	2500	34
SSO-4	Output	+20 V.U.	30,000	1.0	50	2875	4.6
SSO-5	Reactor 50 HY at 1 mil. D.C.	4400 ohms D.C. Res.					
SSO-6	Output	+20 V.U.	100,000	.5	60	3500	3.3
*SSO-7	Transistor Interstage	+10 V.U.	20,000 30,000	.5 .5	800 1,200	800	110

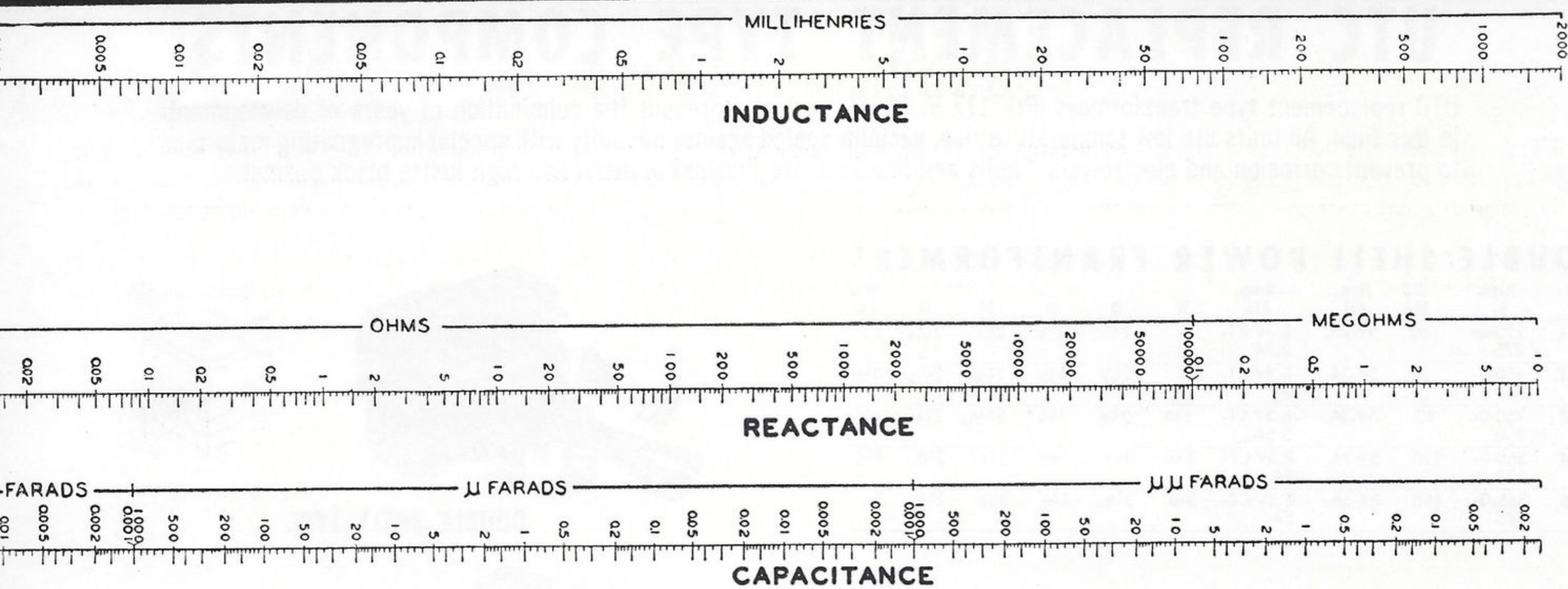
* Impedance ratio is fixed, 1250:1 for SSO-1, 1:50 for SSO-3. Any impedance between the values shown may be employed.



SUB-SUBOUNCER UNIT

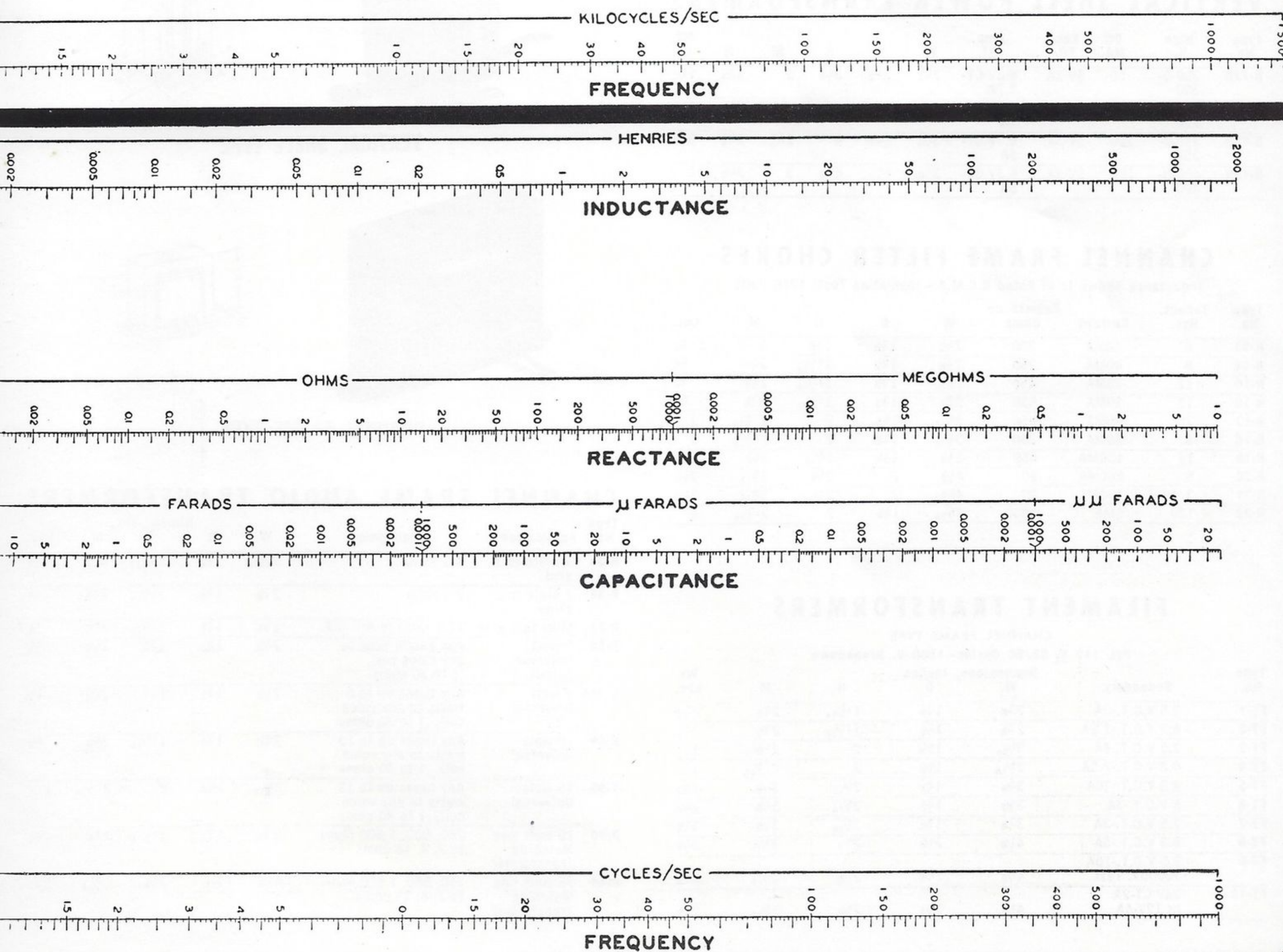
Dimensions..... $\frac{7}{16}'' \times \frac{3}{4}'' \times 4\frac{3}{64}''$
Weight02 lb.





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.

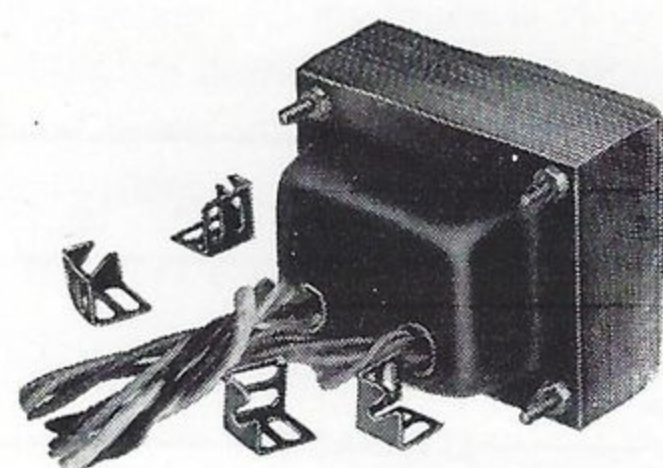


UTC REPLACEMENT TYPE COMPONENTS

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 and brackets are finished in attractive high lustre black enamel.

DOUBLE SHELL POWER TRANSFORMERS

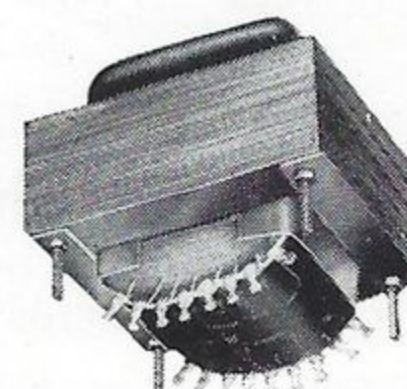
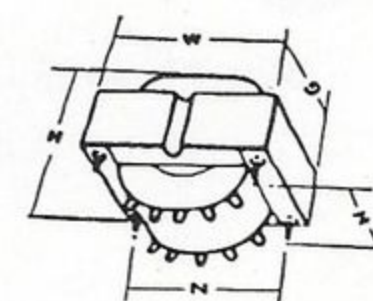
Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lb.
R-101	275-0-275	50	5V-2A.	6.3V CT-2.7A	3	2 1/2	2 3/4	2 1/2	2 1/16	2 1/2
R-102	350-0-350	70	5V-3A.	6.3V CT-3A	3	2 1/2	3 3/8	2 1/2	2 1/16	3 1/2
R-103	350-0-350	90	5V-3A.	6.3V CT-3.5A	3 3/8	2 7/8	3 3/8	2 13/16	2 1/4	4 1/2
R-104	350-0-350	120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



DOUBLE SHELL TYPE

SINGLE SHELL POWER TRANSFORMERS

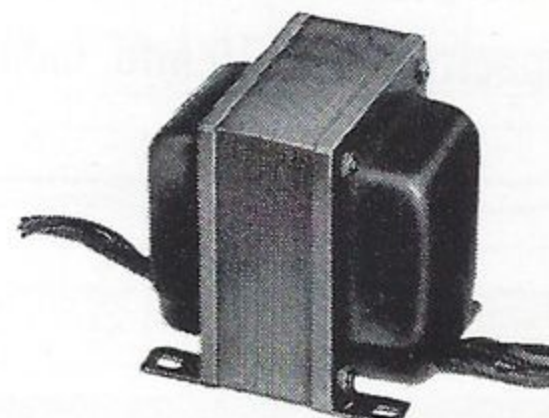
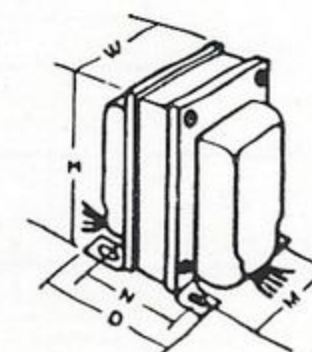
Type No.	High V.	DC MA.	Rec. Fil.	Amp. Fil.	W	D	H	M	N	Wt. Lb.
R-106	300-0-300	50	5V-2A.	6.3V CT-2.7A	3	2 1/2	3	2 1/2	2 1/16	2 1/2
R-107	350-0-350	70	5V-3A.	6.3V CT-3A	3	2 1/2	3 5/8	2 1/2	2 1/16	3 1/2
R-108	350-0-350	120	5V-3A.	6.3V CT-5A	3 3/4	3 1/8	3 5/8	3 1/8	2 1/2	5 1/2
R-109	400-0-400	200	5V-3A.	6.3V CT-6A	4 1/2	3 3/4	4	3 3/4	3	8



SINGLE SHELL TYPE

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 1/2	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 1/8	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 5/8	4	2 1/2	2 1/2	5 1/2
R-113	400-0-400	200	5V-3A.	6.3V CT-6A	3 7/8	4 1/4	4 5/8	3	3 1/8	8

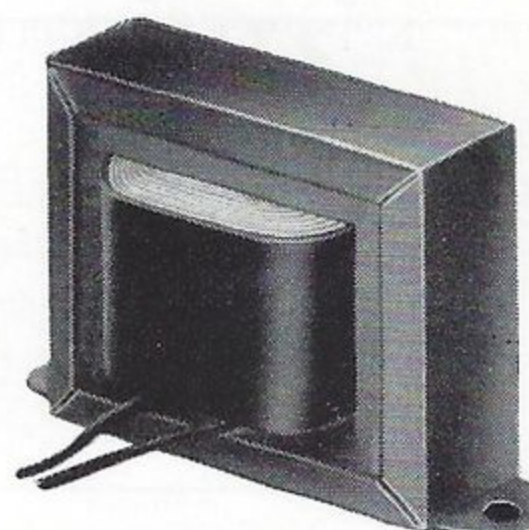
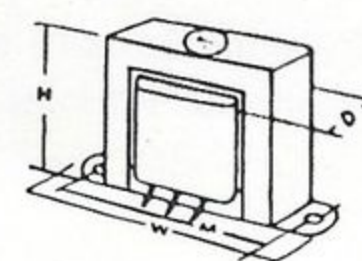


VERTICAL SHELL TYPE

CHANNEL FRAME FILTER CHOKES

Inductance Shown Is at Rated D.C.M.A.—Insulation Test: 1750 Volts

Type No.	Induct. Hys.	Current	Resistance Ohms	W	D	H	M	Lbs.
R-55	6	40MA	300	2 1/2	1 3/8	1 3/8	2	1 1/2
R-14	8	40MA	250	2 7/8	1 3/8	1 11/16	2 3/8	3/4
R-15	12	30MA	450	2 7/8	1 3/8	1 11/16	2 3/8	3/4
R-16	15	30MA	630	2 7/8	1 3/8	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 3/4	2 5/16	3 1/8	1 1/2
R-20	5	200MA	90	4 1/8	2	2 5/8	3 9/16	2 1/2
R-21	3/15	200MA	90	4 1/8	2	2 5/8	3 9/16	2 1/2
R-22	120	5MA	4000	3 5/16	1 5/8	2	2 13/16	1



CHANNEL FRAME TYPE

FILAMENT TRANSFORMERS

CHANNEL FRAME TYPE

Pri. 115 V. 50/60 Cycles—1500 V. Breakdown

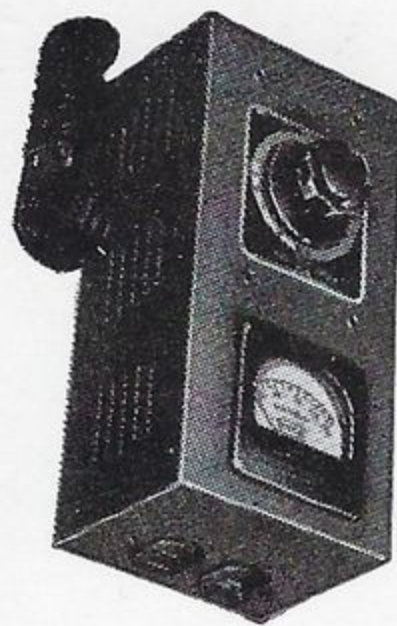
Type No.	Secondary	Dimensions, Inches	W	D	H	M	Wt. Lbs.
FT-1	2.5 V.C.T.-3A		2 7/8	1 3/8	1 11/16	2 3/8	3/4
FT-2	6.3 V.C.T.-1.2A		2 7/8	1 3/8	1 11/16	2 3/8	3/4
FT-3	2.5 V.C.T.-6A		3 5/16	1 5/8	2	2 13/16	1
FT-4	6.3 V.C.T.-2.5A		3 5/16	1 5/8	2	2 13/16	1
FT-5	2.5 V.C.T.-10A		3 3/4	1 3/4	2 5/16	3 1/8	1 1/2
FT-6	5 V.C.T.-3A		3 3/4	1 3/4	2 5/16	3 1/8	1 1/2
FT-7	7.5 V.C.T.-3A		3 3/4	1 3/4	2 5/16	3 1/8	1 1/2
FT-8	6.3 V.C.T.-6A		4 1/8	2 1/4	2 5/8	3 9/16	2 1/2
FT-9	2.5 V.C.T.-10A 10000V. Test		4 1/8	2 1/4	2 5/8	3 9/16	2 1/2
FT-10	24V CT-2A or 12V-4A		4 1/8	2 1/4	2 5/8	3 9/16	2 1/2

CHANNEL FRAME AUDIO TRANSFORMERS

Type No.	Application	Description	W	D	H	M	Lbs.
R-33	1 plate to 1 grid	4:1 ratio	2 7/8	1 3/8	1 11/16	2 3/8	3/4
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 3/8	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 5/16	1 5/8	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 3/8	1 11/16	2 3/8	3/4
R-40	25 watt line Matching Transformer	250, 500, 1,500 ohms to 2, 8, 15 ohms	4 1/8	2 1/4	2 5/8	3 9/16	2 1/2

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		Dimensions	Wt.
V-1-M	with meter	4 7/8 x 9 7/8 x 3 5/8	14 lbs.
V-1	without meter	4 7/8 x 8 x 3 5/8	12 lbs.

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	Wgt. Lbs.
R-47	85 watts	4 1/2
R-48	150 watts	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	Wgt. Lbs.
R-49	350 watts	5

STEP DOWN AUTO-TRANSFORMERS

With 6 foot cord and female receptacle 220-240 to 110-120 Volts—50/60 Cycles

Type No.	Application	L	W	H	Wgt. Lbs.
R-41	85 watt capacity	2 5/8	2 5/8	3 1/8	4
R-42	125 watt capacity	3	3	3 1/2	5
R-43	175 watt capacity	3 1/4	3 1/4	3 7/8	5 1/2
R-44	250 watt capacity	3 7/8	3 1/4	3 7/8	6 1/2
R-45	500 watt capacity	4 1/8	3 7/8	4 5/8	12
R-46	1200 watt capacity	6 3/8	3 7/8	4 5/8	18
R-64	2500 watts, no cord	10 1/2	4 3/4	6 3/4	30

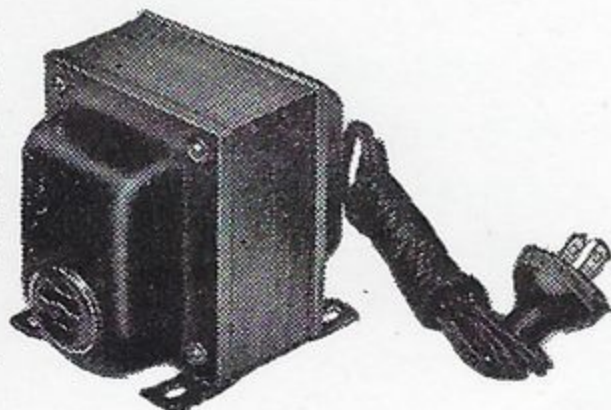
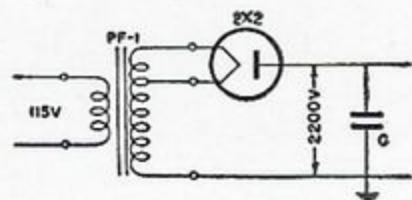


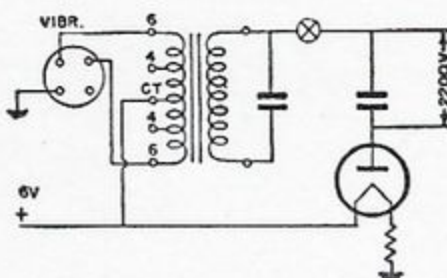
PHOTO FLASH TRANSFORMERS

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

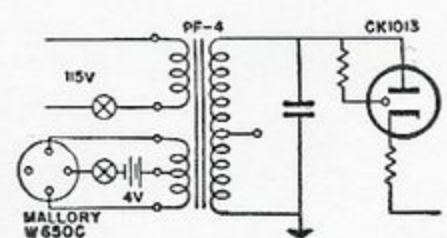
PF-1 Primary for 115 volts, 50/60 cycles. Secondaries for power supply delivering 2200 volts DC to condenser up to 100 Mfd. Compound sealed in G-3* case 2 1/8 x 2 3/4 (5 3/4 including flanges) x 2 1/2 inches high. Weight 2 lbs.



PF-2 For portable service. Primary tapped for 4 volt or 6 volt battery (full valve 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.



PF-4 Dual Pri. for either 4V battery or 115V 50/60 cycles. Secondary for power supply delivering 900 volts DC to condenser up to 150 Mfd. G-3* case, 2 Lb.

* See page 21.

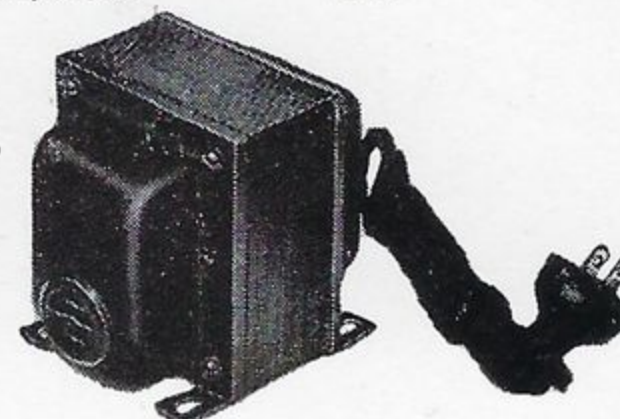
VOLTAGE BOOSTERS

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.



R-87

Type No.	Rating	L	W	H	Wgt. Lbs.
R-87	3A. 350 W.	3 3/8	2	2 3/4	2
R-88	18A. 2 KW.	3 7/8	4 1/8	4 5/8	12



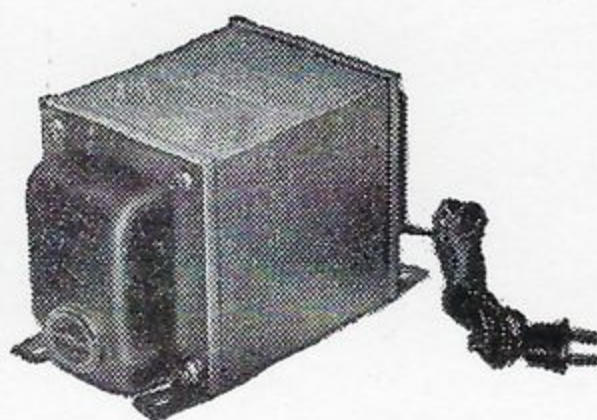
R-88

ISOLATION TRANSFORMERS

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

Primary 110-120 volts, 50/60 cycles—Secondary 110-120 volts

Type No.	Rating	L	W	H	Wgt. Lbs.
R-72	40 watts	2 3/4	2 5/8	3 1/8	4
R-73	100 watts	3 3/8	3 1/4	3 7/8	6
R-74	250 watts	4 3/8	3 7/8	4 5/8	12
R-75	600 watts	6 7/8	3 7/8	4 5/8	20
R-76	1200 watts	8 3/8	4 1/2	5 7/8	30
R-77	2500 watts (no-cord)	12	7	9	70



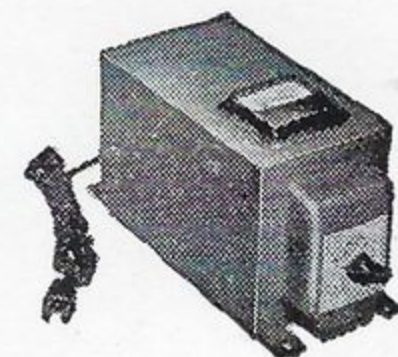
LINE VOLTAGE ADJUSTERS WITH METER

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 models.

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



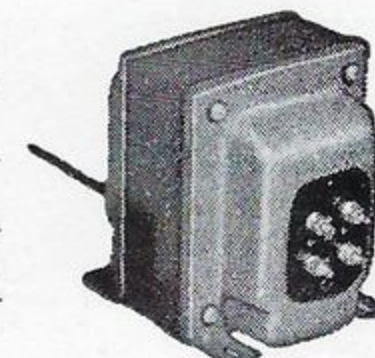
Type No.	Primary Voltages	Sec. Volts	Watts	L	W	H	Wgt. Lbs.
R-78	60, 70, 80, 90, 100, 110, 120, 130, 140	115	150	7	4	4 3/4	6
R-79	60, 70, 80, 90, 100, 110, 120, 130, 140	115	300	7	4	4 3/4	9
R-80	60, 70, 80, 90, 100, 110, 120, 130, 140	115	600	10 1/4	4	4 3/4	13
R-81	60, 70, 80, 90, 100, 110, 120, 130, 140	115	1200	10 1/4	4	4 3/4	21
R-83	160, 170, 180, 190, 200, 210, 220, 230, 240	230	150	7	4	4 3/4	6
R-84	160, 170, 180, 190, 200, 210, 220, 230, 240	230	300	7	4	4 3/4	9
R-85	160, 170, 180, 190, 200, 210, 220, 230, 240	230	600	10 1/4	4	4 3/4	13
R-86	160, 170, 180, 190, 200, 210, 220, 230, 240	230	1200	10 1/4	4	4 3/4	21

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.	Watts	Overall Dimensions	Mtg. Dim.	Wgt. Lbs.
SC-3	50	3 x 3 1/2 x 3 3/16	1 7/8 x 2 1/4	3
SC-4	100	3 1/4 x 4 x 4	2 1/8 x 2 1/2	5
SC-5	250	4 x 5 x 4 3/4	3 1/4 x 3	10





Humidity . . . temperature . . .
altitude testing



Tracing filter curves electronically



Development tests . . . $\frac{1}{2}$ cycle filter



Pioneering at UTC

UTC's reputation for producing more advanced and higher quality units is well deserved. This position of engineering leadership has been effected through a continuous program of research and development at the UTC laboratories. A few views of these laboratories are shown on this page.



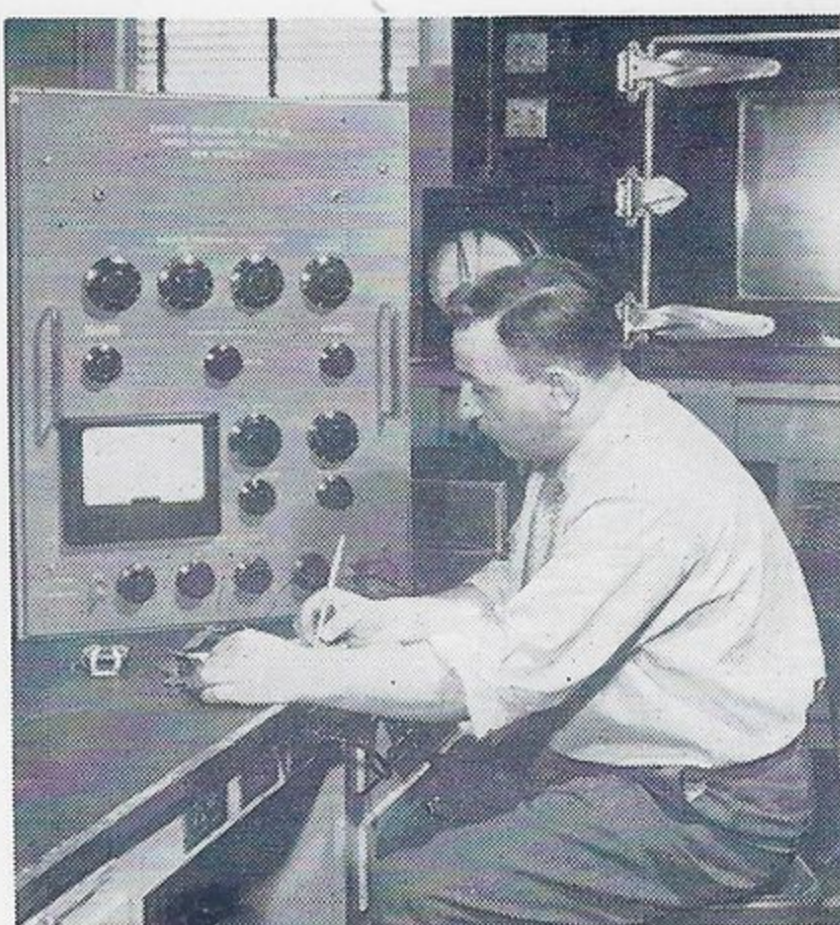
Filter development



Audio development



Testing modulation transformer under
operating conditions



Q meter measurements on
low frequency coils



Pulse transformer development

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