TRANSFORMERS
REACTORS
FILTERS

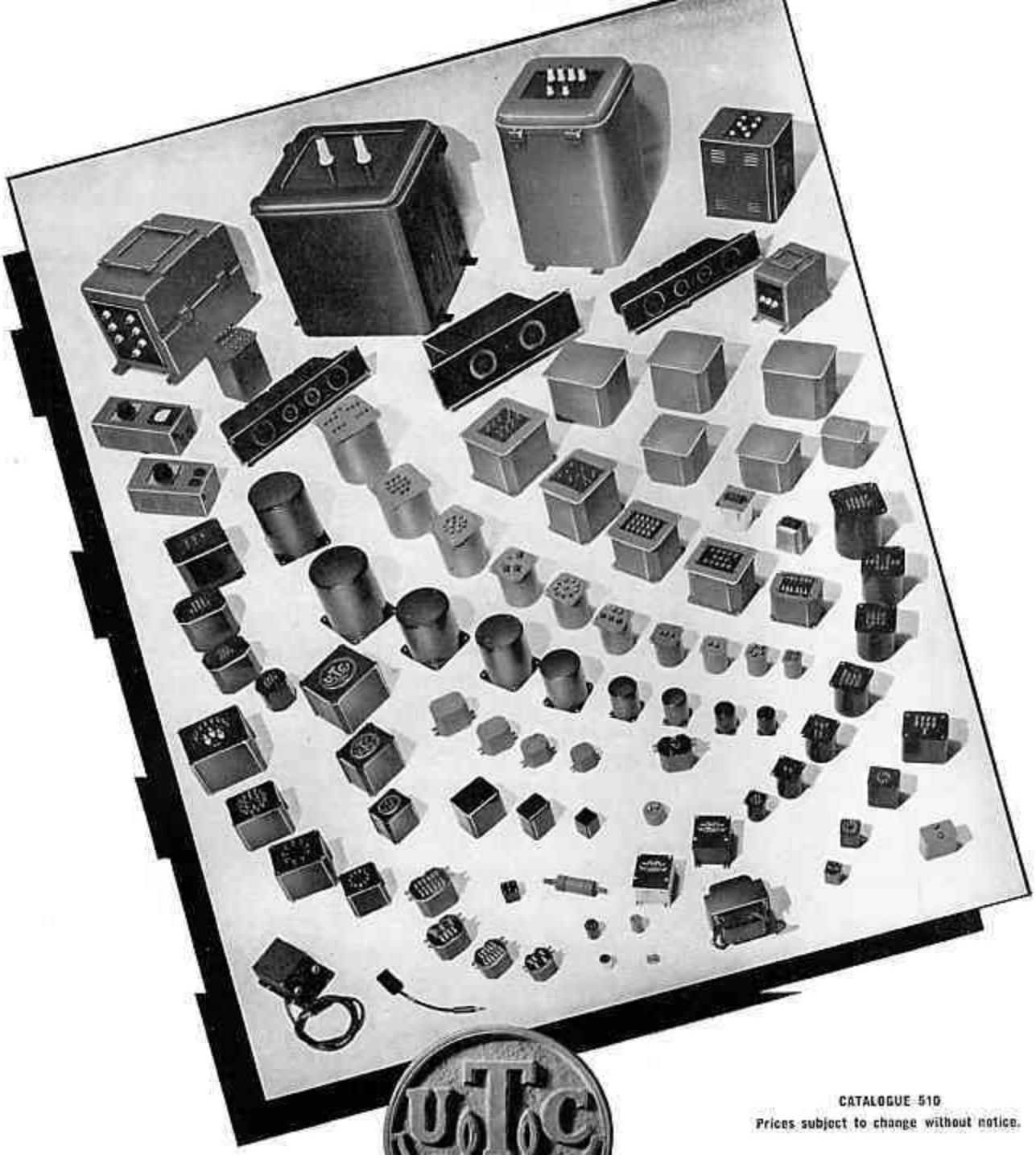
UNITED TRANSFORMER COMPANY • 150 VARICK STREET, NEW YORK 13, N. Y.
EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y., CABLES: "ARLAB"

INDEX AND PRICE LIST

Type No.	Page No.	List Price	Type No.	Page No.	List Price	Type No.	Page No.	Net Price	Type No.	Page No.	List Price	Type No.	Page No.	List Price	Type No.	Page No.	Net Price
A-10	19	$16.00	CVL-10	17	$10.00	HDQ-1	13	$15.00	LS-184	7	$200.00	R-73	22	$14.00	S-47	20	$23.00
A-11	19	18.00	CVL-11	17	13.50	HQD-2	13	15.00	LS-185	7	450.00	R-74	22	25.00	S-48	20	34.00
A-12	19	16.00	CVL-12	17	20.00	HQD-3	13	15.00	LS-190	7	30.00	R-75	22	40.00	S-49	20	34.00
A-14	19	17.00				HQD-4	13	15.00	LS-192	7	35.00	R-76	22	65.00	S-50	20	50.00
A-16	19	15.00	CVM-0	18	10.00	HQD-5	13	15.00	LS-691	6	480.00	R-77	22	110.00	S-51	20	11.00
A-17	19	17.00	CVM-1	18	15.00	HQE-1	13	6.00	LS-692	6	860.00	R-78	22	20.00	S-52	20	14.00
A-18	19	18.00	CVM-2	18	23.00	HQE-2	13	6.00	LS-980	7	15.00	R-79	22	20.00	S-53	20	3.70
A-19	19	19.00	CVM-3	18	33.00	HQE-3	13	7.00		7	40.00	R-80	22	35.00	S-54	20	3.70
A-20	19	16.00	CVM-4	18	55.00	HQE-4	13	7.50	MA-1	8	15.00	R-81	22	70.00	S-55	20	3.70
A-21	19	18.00	CVN-5	18	130.00	HQE-5	13	8.00				R-82	22	20.00	S-56	20	3.70
A-24	19	16.00							MB-1	8	15.00	R-84	22	25.00	S-57	20	5.50
A-25	19	16.00	CVP-1	17	11.00	Type No.	Page No.	List Price				R-85	22	35.00	S-58	20	6.50
A-26	19	16.00	CVP-2	17	16.00				MC-1	8	15.00	R-86	22	70.00	S-59	20	5.50
A-27	19	16.00	CVP-3	17	26.00				MC-2	8	17.00	R-88	22	3.30	S-60	20	12.00
A-30	19	12.00	CVP-4	17	35.00	LS-61	5	50.00				R-91	22	7.50	S-61	20	5.50
A-32	19	10.00	CVP-5	17	60.00	LS-61J	5	35.00	O-1	11	14.00	R-92	22	7.50	S-62	20	6.50
						LS-61K	5	50.00	O-2	11	14.00	R-93	22	15.00	S-63	20	12.50
CC-1C	18	75.00	FT-1	21	3.50	LS-5	5	50.00	O-3	11	13.00	R-94	22	20.00	S-64	20	6.50
CC-1S	18	75.00	FT-2	21	3.25	LS-6	5	50.00	O-4	11	11.00	R-95	22	17.00	S-65	20	6.50
CC-2,6	19	20.00	FT-3	21	4.00	LS-7	5	40.00	O-5	11	13.00	R-101	21	7.50	S-66	20	6.50
CC-4L6	19	25.00	FT-4	21	4.25	LS-10	4	25.00	O-6	11	13.00	R-102	21	9.00	S-67	20	6.50
CC-15	19	13.00	FT-5	21	4.50	LS-10X	4	35.00	O-7	11	13.00	R-103	21	9.50	S-68	20	7.00
CC-16	19	13.00	FT-6	21	4.50	LS-12	4	28.00	O-8	11	14.00	R-104	21	10.50	S-69	20	7.00
CC-19	19	13.00	FT-7	21	4.50	LS-12X	4	35.00	O-10	11	14.00	R-105	21	13.00	S-70	20	7.00
CC-33	18	8.00	FT-8	21	6.00	LS-14	4	32.00	O-11	11	14.00	R-106	21	7.50	S-71	20	12.00
CC-34	18	13.00	FT-9	21	6.00	LS-14X	4	37.00	O-12	11	13.00	R-107	21	9.00	S-72	20	7.50
CC-40	18	10.00	FT-10	21	7.00	LS-15	4	32.00	O-13	11	10.50	R-108	21	10.50	S-74	20	20.00
CC-41	18	10.00				LS-15X	4	37.00	O-14	11	14.00	R-109	21	16.00			
CC-44	18	10.00	HA-10B	9	21.00	LS-18	4	26.00	O-15	11	14.00	R-110	21	7.50	SC-1	16	3.00
CC-45	18	10.00	HA-10BX	9	26.00	LS-19	4	26.00				R-111	21	9.00	SC-2	16	4.50
CC-48C	18	10.00	HA-10I	9	21.00	LS-20	4	26.00	P-1	11	15.00	R-112	21	10.50	SC-3	16	5.00
CC-50	17	16.00	HA-10IX	9	29.00	LS-21	4	26.00	P-2	11	15.00	R-113	21	16.00	SC-4	16	7.00
CC-51AX	18	13.00	HA-10SX	9	29.00	LS-22	4	32.00	P-3	11	14.00				SC-5	16	13.00
CC-53AX	18	15.00	HA-104	9	22.00	LS-25	4	32.00	P-4	11	13.00	SD-1	12	6.50			
CC-59AX	18	15.00	HA-10S	9	16.00	LS-26	4	30.00	P-5	11	13.00	SD-2	12	6.50	V-0	16	13.00
CC-100	18	11.00	HA-10T	9	18.00	LS-27	4	30.00	P-6	11	13.00	SD-3	12	6.50	V-0-B	16	17.00
CC-101	18	11.00	HA-1T7	9	26.00	LS-30	4	26.00	P-7	11	14.00	SD-4	12	6.50	V-1	16	19.00
CC-102	18	16.00	HA-10R	9	25.00	LS-30X	4	32.00	P-8	11	14.00	SD-5	12	6.50	V1-M	16	35.00
CC-103	18	16.00	HA-10RX	9	25.00	LS-31	4	32.00	P-9	11	15.00	SD-6	12	6.50	V-2	16	17.00
CC-104	18	23.00	HA-111	9	22.00	LS-31X	4	39.00	P-10	11	15.00	SC0-1	12	6.50	V-2-B	16	20.00
CC-105	18	23.00	HA-113	9	20.00	LS-32	4	34.00	P-11	11	15.00	SS0-2	12	6.50	V-3	16	29.00
CC-108	18	45.00	HA-114	9	22.00	LS-33	5	39.00	P-12	11	14.00	SS0-3	12	6.50	V-3-B	16	33.00
CC-109	18	10.00	HA-120X	9	35.00	LS-34	5	41.00	P-13	11	15.00	SS0-4	12	6.50	V-4	16	37.00
CC-120	13	17.00	HA-133	9	20.00	LS-34	4	40.00	P-14	11	15.00	SS0-5	12	5.50			
CC-121	18	25.00	HA-134	9	25.00	LS-39	4	39.00	P-15	11	15.00	SS0-6	12	6.50	Type No.	Page No.	List Price
CC-122	18	20.00	HA-135	9	25.00	LS-40	4	28.00									
CC-124	18	22.00	HA-137	9	22.00	LS-47	5	35.00	PF-1	22	12.00	Type No.	Page No.	List Price	V1-C1	14	11.00
CC-125	18	23.00				LS-48	5	60.00	PF-2	22	12.00				V1-C2	14	11.00
CC-126	18	37.00	HC-115	9	13.00	LS-49	5	50.00	PF-3	22	5.00				V1-C3	14	11.00
CC-131	17	11.00	HC-116	9	13.00	LS-50	4	50.00	PF-4	22	12.00	S-1	19	3.60	V1-C4	14	11.00
CC-132	17	12.00	HC-117	9	13.00	LS-51	4	28.00				S-2	19	4.50	V1-C5	14	11.00
CC-133	17	14.00				LS-52	5	35.00	R-14	21	2.20	S-3	19	3.50	V1-C6	14	11.00
CC-134	17	14.00	I/P-122	9	15.00	LS-54	5	25.00	R-15	21	2.40	S-4	19	5.30	V1-C7	14	14.00
CC-135	17	15.00	I/P-123	9	22.00	LS-55	5	35.00	R-16	21	2.20	S-5	19	4.70	V1-C8	14	14.00
CC-136	17	16.00				LS-56	5	35.00	R-17	21	3.00	S-6	19	3.50	V1-C9	14	14.00
CC-137	17	12.00				LS-57	5	25.00	R-18	21	3.00	S-7	19	5.50	V1-C10	14	14.00
CC-231	17	18.00	Type No.	Page No.	Net Price	LS-58	5	50.00	R-19	21	4.20	S-8	19	9.00	V1-C11	14	14.00
CC-231AX	18	35.00				LS-60A	5	40.00	R-20	21	4.60	S-9	19	6.00	V1-C12	14	14.00
CC-233	17	13.00	HQA-1	13	7.00	LS-61	5	35.00	R-21	21	4.60	S-10	19	5.50	V1-C13	14	14.00
CC-231	17	18.00	HQA-2	13	7.00	LS-62A	5	35.00	R-22	21	4.20	S-11	19	4.70	V1-C14	14	14.00
CC-238AX	18	35.00	HQA-3	13	7.50	LS-63	5	25.00	R-23	22	4.40	S-12	19	5.50	V1-C15	14	16.50
CC-300	18	20.00	HQA-4	13	7.50	LS-64	5	110.00	R-24	22	4.60	S-13	19	7.00	V1-C16	14	16.50
CC-301	18	30.00	HQA-5	13	8.00	LS-67	6	110.00	R-25	22	4.90	S-14	19	5.50	V1-C17	14	16.50
CC-302	18	37.00	HQA-6	13	8.00	LS-70	7	40.00	R-26	22	4.90	S-15	19	7.50	V1-C18	14	16.50
CC-303	19	50.00	HQA-7	13	8.00	LS-72	7	43.00	R-27	22	6.50	S-16	19	5.50	V1-C19	14	16.50
CC-304	18	145.00	HQA-8	13	9.00	LS-74	7	40.00	R-28	22	6.50	S-17	19	9.00	V1-C20	14	16.50
CC-305	18	75.00	HQA-9	13	10.00	LS-80	7	40.00	R-29	22	4.90	S-18	19	6.00	V1-C21	14	17.50
CC-306	18	140.00	HQA-10	13	10.00	LS-82	7	32.00	R-30	22	13.50	S-19	19	9.00	V1-C22	14	18.50
CC-307	18	125.00	HQA-11	13	10.00	LS-83	7	30.00	R-31	22	4.90	S-20	19	14.00			
CC-308	18	165.00	HQA-12	13	11.00	LS-84	7	30.00	R-32	22	5.50	S-21	19	18.00			
CC-309	18	300.00	HQA-13	13	11.00	LS-88	7	12.00	R-33	22	3.20	S-22	19	26.00			
CC-310	18	210.00	HQA-14	13	11.00	LS-89A	7	100.00	R-34	22	3.20	S-23	20	3.80	FILTERS AND EQUALIZERS		
CC-311	18	75.00	HQA-15	13	14.00	LS-90	7	15.00	R-35	22	4.20	S-24	20	4.20			
CC-314	18	75.00	HQA-16	13	15.00	LS-91	7	15.00	R-36	22	4.20	S-25	20	4.50			
CC-315	18	20.00	HQA-17	13	16.00	LS-92	7	25.00	R-37	22	4.50	S-26	20	3.50	Type No.	Page No.	List Price
CC-316	18	30.00	HQA-18	13	17.00	LS-93	7	40.00	R-38A	22	3.30	S-27	20	4.50			
CC-333	17	14.00				LS-94	7	15.00	R-39	22	4.20	S-28	20	4.50	3A	15	150.00
CC-422	18	22.00	HQB-1	13	16.00	LS-96	7	75.00	R-40	22	6.00	S-29	20	4.50	3AX	15	240.00
CC-428	18	30.00	HQB-2	13	16.00	LS-98	7	75.00	R-41	22	9.50	S-30	20	6.00	4C	15	200.00
CC-429	18	31.00	HQB-3	13	16.00	LS-99	7	120.00	R-42	22	10.50	S-31	20	6.00	BMI	14	25.00
CC-431	18	30.00	HQB-4	13	17.00	LS-102	6	110.00	R-43	22	12.00	S-32	20	6.00	BMI	14	25.00
CC-433	17	14.00	HQB-5	13	17.00	LS-103	6	110.00	R-44	22	14.50	S-33	20	8.50	BMI	14	25.00
CC-512	18	35.00	HQB-6	13	18.00	LS-104A	6	500.00	R-45	22	21.00	S-34	20	8.50	HMI	14	25.00
CC-710	17	13.00	HQB-7	13	19.00	LS-105	7	120.00	R-46	22	45.00	S-35	20	13.50	HMI	14	25.00
			HQB-8	13	20.00	LS-106	6	270.00	R-47	22	12.00	S-36	20	13.50	LMI	14	25.00
CGE-1A	17	30.00	HQB-9	13	21.00	LS-120	7	50.00	R-48	22	15.00	S-37	20	18.00	LMI	14	25.00
			HQB-10	13	22.00	LS-121Y	7	60.00	R-53	22	4.00	S-38	20	16.00			
CVA-1	18	14.00	HQB-11	13	23.00	LS-140	5	35.00	R-54	21	2.00	S-39	20	15.00			
CVA-2	18	17.00	HQB-12	13	24.00	LS-141	5	30.00	R-56	22	4.00	S-40	20	15.00			
CVA-3	18	22.00				LS-142	5	35.00	R-57	22	6.50	S-41	20	15.00			
CVA-4	18	32.00				LS-143	5	30.00	R-58	22	3.30	S-42	20	17.00			
CVA-5	18	45.00	HQC-1	13	13.00	LS-150	4	30.00	R-59	22	4.00	S-43	20	22.00			
			HQC-2	13	13.00	LS-151	4	27.00	R-60	22	4.10	S-44	20	18.00			
CVL-1	17	10.00	HQC-3	13	13.00	LS-180	7	20.00	R-64	22	80.00	S-45	20	15.00	W-10	B	75.00
CVL-2	17	13.50	HQC-4	13	13.00	LS-183	7	125.00	R-72	22	9.50	S-46	20	18.00	W-20	B	120.00
CVL-3	17	20.00	HQC-5	13	13.00												

AMPLIFIER KITS

Type No.	Page No.	List Price
W-10	B	75.00
W-20	B	120.00



CATALOGUE 510
Prices subject to change without notice.

This catalogue 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 out that by far the bulk of UTC production is on special units not normally catalogued. It is impossible to describe all these thousands of special designs as they become available. Our staff of application engineers will be more than pleased to discuss any customer's problem as related to special components.

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.

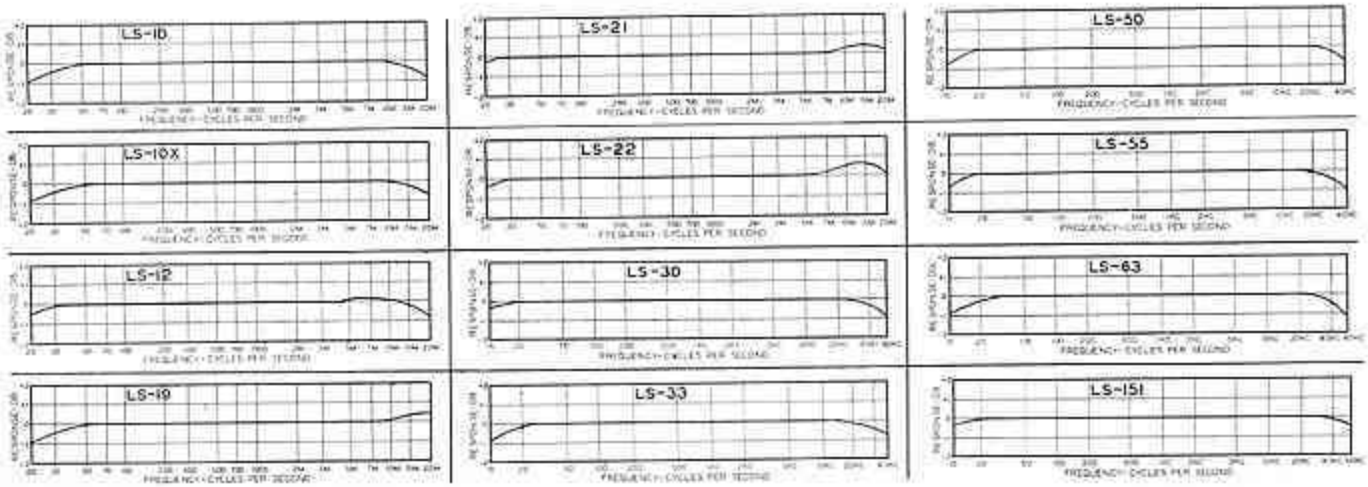
UTC LINEAR STANDARD transformers are the ONLY audio units with a **GUARANTEED** uniform response . . . ± 1 DB from 20 to 20,000 cycles.

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.

NEGLIGIBLE 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 distortion at 30 and 10,000 cycles. For this reason, UTC high level units have a frequency range better than guaranteed value, generally 10 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-15	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	—74 DB	.5 MA	LS-1
LS-15X	As above	As above	As above	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

LS-1 CASE

Length	3⅛"
Width	2⅝"
Height	3¼"
Mounting	1 15/16" x 2 7/16"
Screws	6-32
Cutout	1⅞" dia.
Unit Weight	3 lbs.

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	20-20,000	+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

LS-2 CASE

Length	4 7/16"
Width	3½"
Height	4 7/16"
Mounting	2 11/16" x 3 11/16"
Screws	8-32
Cutout	2¾" dia.
Unit Weight	7.5 lbs.

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, 300A. 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	20-20,000	+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, PHOTOCELL, AND BRIDGING TO LINE TRANSFORMERS

Type No.	Application	Primary Impedance	Secondary Imp. ohms	± 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	30-15,000 cycles	+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	20-20,000	+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	20-20,000	+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	15-30,000	+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	15-30,000	+18 DB	—74 DB	1 MA	LS-1

LS-3 CASE

Length	5 13/16"
Width	5"
Height	4 11/16"
Mounting	4 7/16" x 5 1/32"
Screws	10-24
Cutout	3¾" dia.
Unit Weight	15 lbs.

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.

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°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 45's, 2A3's, 6A5G'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 or similar plates to A prime 45's, 6F6's, 2A3's, 6L6'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, 6A5G's, or 300A's to class B 838's, 203A's, 805's, or ZB120's	5,000 ohms plate to plate	.1 pri. impedance turns ratio, Pri./½ 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./½ Sec. 5.1:1	20-20,000	+37 DB	15 MA	LS-3
LS-49	Push pull parallel 2A3, 6A5G, or 300A tubes to four 838, 203A, 805, or ZB120 tubes	2,500 ohms plate to plate	Ratio Pri./½ 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	±.2 db from	Max. Level	Case No.
LS-52	Push pull 245, 250, 6V6 or 245 A prime	8,000 ohms	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	25-20,000	15 watts	LS-2
LS-54	Same as above	8,000 ohms	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	25-20,000	15 watts	LS-2
LS-55	Push pull 2A3's, 6A5G's, 300A's, 275A's, 6A3's, 6L6's, 6AS7G	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	25-20,000	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	25-20,000	20 watts	LS-2
LS-58	Push pull parallel 2A3's, 6A5G's, 300A's, 6A3's	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	25-20,000	40 watts	LS-3
LS-60A	Push pull 2A3's, 6A3's, 6B4G's fixed bias, cathode follower drive	4,600 ohms plate to plate	15, 10, 7.5, 5, 3.75, 2.5, 1.2	20-20,000	30 watts	LS-3
LS-62A	Same as above	As above	500, 125	20-20,000	30 watts	LS-3
LS-61	Push pull 6F6, class B 46's GAS7G, 807-TR, 1614-TR	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	25-20,000	15 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	25-20,000	15 watts	LS-2
LS-6L1	Push pull 6L6's self bias	9,000 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	25-20,000	30 watts	LS-3
LS-6L3	Same as above	9,000 ohms plate to plate	30, 20, 15, 10, 7.5, 5, 2.5, 1.2	25-20,000	30 watts	LS-3
LS-6L4	Push pull 6L6's fixed bias or push pull parallel 6L6's self bias	3,800 ohms plate to plate and 4,500 ohms plate to plate	500, 333, 250, 200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2	25-20,000	55 watts	LS-3

HIGH LEVEL MATCHING TRANSFORMERS

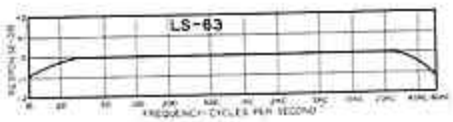
Type No.	Application	Primary Impedance	Secondary Impedance	±.2 db from	Max. Level	Case No.
LS-33	High level line matching	50, 125, 200, 250, 333, 500/600 ohms	1.2, 2.5, 5, 7.5 10, 15, 20, 30, 50, 125, 200, 250, 333, 500/600	20-20,000	15 watts	LS-2
LS-34	High level line matching	50, 125, 200, 250, 333,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

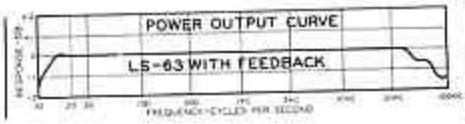
LS OUTPUT TRANSFORMERS...THE FINEST

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.





OUTPUT TRANSFORMERS TO HIGH IMPEDANCE (RF) LOAD

Type No.	Primary will match following typical tubes	Primary Impedance	Secondary Impedance	± .4 db. from	Max. Level	Case No.
LS-56	Push pull 2A3's, 6A5G's, 300A's, 275A's, 6A3's, 6AS7, 6LG	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	25-20,000	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	25-20,000	260 watts	*
LS-67	Class B 203A, 838, ZB120, 805	9,000 and 6,900 ohms plate to plate	10000, 2500	25-20,000	260 watts	*
LS-691	Class B 849, 833, 250TH	10,400 ohms plate to plate	4500, 4000, 3500, 2750, 2000	25-20,000	1000 watts	LS-6
LS-692	Class B push pull parallel 833's	4,750 ohms plate to plate	2500, 2000, 1750, 1500, 1250	25-20,000	2500 watts	LS-6

LS-6 CASE

Length	15¾"
Width	13"
Height	24"
Mounting Hole	⅜" dia.
Unit Weight	350 lbs.

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-7 CASE

Length	20⅜"
Mounting	7⅜" x 14¾"
Height	18½"
Mounting	11⅝" x 19⅜"
Mounting Hole	⅜" dia.
Unit Weight	500 lbs.
Width	17¾"

SPECIAL LS UNITS

Custom built LS units are available for any frequency from ½ cycle to 300 Kc. and for levels from—160 DB to 100 Kw. One of the many unusual LS designs is described below.

D-1515 BOLOMETER TRANSFORMER

Frequency range	½ cycle to 20 cycles
Primary Impedance	10 ohms C. T.
Secondary Impedance	1.5 megohms C. T.
Secondary Inductance	.75 meghenries
Shielding	For—160 DB operation
Case	3" x 5¼" x 5⅝" high
Type D-1515	**Net Price $80.00**

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	9¾	4¾	6¾	3⅞x 9⅛	37
LS-67	9¾	4¾	6¾	3⅞x 9⅛	37
LS-73	9½	4¾	6¾	3⅞x 8⅞	34
LS-83	8¾	4¾	6¾	3⅞x 8⅛	25
LS-89A	9⅜	7	9	6 x 8⅜	68
LS-96	10¼	4¾	6¾	3⅞x 9⅝	40
LS-99	14⅛	8½	10¼	7¼x13⅛	80
LS-102	9¾	4¾	6¾	3⅞x 9⅛	37
LS-103	13⅛	8½	10¼	7¼x12⅜	58
LS-105	13⅛	8½	10¼	7¼x12⅜	58
LS-121Y	8¼	3¾	5⅛	3x7-13/16	23
LS-181	9¾	4¾	6¾	3⅞x 9⅛	37
LS-182	10¾	4¾	6¾	3⅞x10⅛	45
LS-183	15½	10	13¼	8½x14½	70
LS-184	17¼	10	13¼	8½x16¼	102
LS-185	23	10	13¼	8½x22	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	415-385-0-385-415 275 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-94	Parallel feed and filter choke	Series-320 hy Parallel-80 hy	3 MA 6 MA	6400 ohms 1600 ohms	1500	LS-1
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 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. 1½" diameter . . . 2½" long . . . ½ 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.

UTC Telephone type MIKE/HIGH IMPEDANCE ADAPTOR is designed to match low impedance sources to an amplifier having high impedance input. Will match any source from 50 to 600 ohms, effecting a 15:1 step up ratio (225:1 impedance ratio). The plug on MA-1 goes into jack on amplifier . . . the plug from mike goes into jack on MA-1. Flat 40-10,000 cycles. Rugged die casting ⅞x1⅛x2⅛.

Type MA-1—primary 50 to 500 ohms . . . 15:1 ratio . . . jack input . . . plug output.

UTC Amplifier type mike/high impedance adaptor is identical to MA-1 in electrical characteristics. The high impedance side employs a connector similar to Amphenol 75-MC1F. This single conductor connector screws unit on to corresponding male plug connector usually found on amplifiers. The low impedance side employs a connector similar to Amphenol 91-MC3M . . . the usual 3 contact recessed male connector to which standard quality microphone plugs will mate.

Type MB-1—Primary 50 to 500 ohms . . . 15:1 ratio.

UTC MICROPHONE CABLE TRANSFORMERS

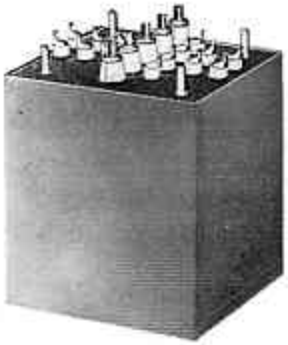
UTC Telephone type MIKE/HIGH IMPEDANCE ADAPTOR

UTC AMPLIFIER TYPE MIKE/HIGH IMPEDANCE ADAPTOR

HERMETICALLY SEALED COMPONENTS

During World War II the United Transformer Company was the largest supplier of transformers to the Armed Services. This same leadership continues in the UTC production of hermetic sealed components for present military applications. Extensive experience in supplying these components for the variety of equipment involved permits us to quickly resolve manufacturers' application problems. A wide range of tools and facilities are available for both standard and miniature types of hermetic sealed units. Standardized cases and terminals specifically designed for military service are available from stock.

For some aircraft and other light weight applications the elimination of the hermetic sealed case is essential. For these designs UTC units are Fosterite impregnated under Westinghouse license.



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 Prim'y shown is maximum unbalanced.

TYPE H-1 CASE

Length	2⅜"
Width	1 5/16"
Height	3⅛"
Mounting	1⅜" x 1 13/16"
Screws	6-32
Cutout	1 5/16" dia.
Unit Weight	2 lbs.

TYPE H-2 CASE

Length	3 5/16"
Width	2 13/16"
Height	3½"
Mounting	2" x 2¾"
Screws	8-32
Cutout	2 11/16" 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	+ 10DB	.5 MA	H-1
HA-100X	Same as above but with tri-alloy internal 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	+ 10DB	.5 MA	H-1
HA-101X	As above but with tri-alloy internal shield to effect very low hum pickup		80,000 ohms overall, split				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	+ 10DB	.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	30-20,000	+ 10DB	.5 MA	H-1
HA-108X	Same as above but with tri-alloy internal 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	+ 10DB	.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

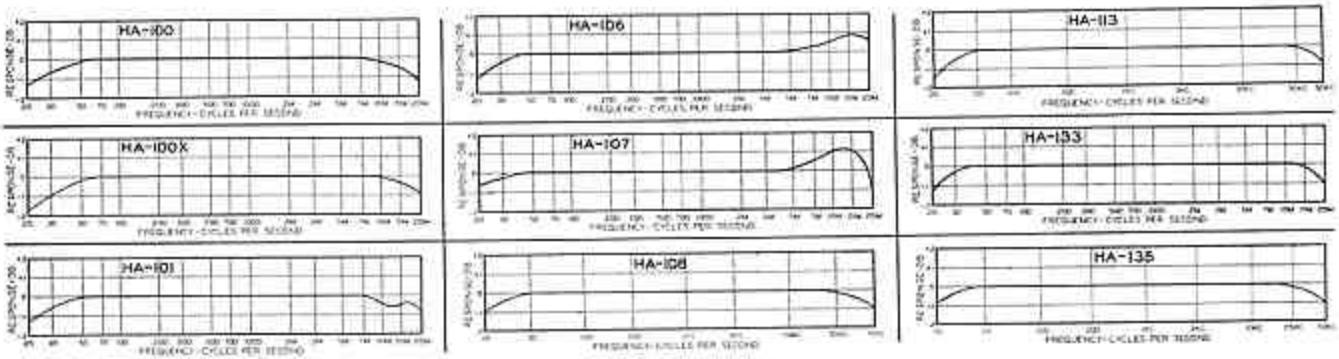
PLATE AND CRYSTAL TO LINE TRANSFORMERS

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	30-20,000	+ 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	30-20,000	+ 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	30-20,000	+ 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	30-20,000	+ 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	30-20,000	+ 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	30-20,000
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	30-20,000
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	30-20,000
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	30-20,000
A-21	Mixing, low impedance mike, pickup, or line to line	50, 200/250, 500/600	50, 200/250, 500/600	50-20,000 multiple alloy shield for extremely low hum pickup

TYPE A CASE

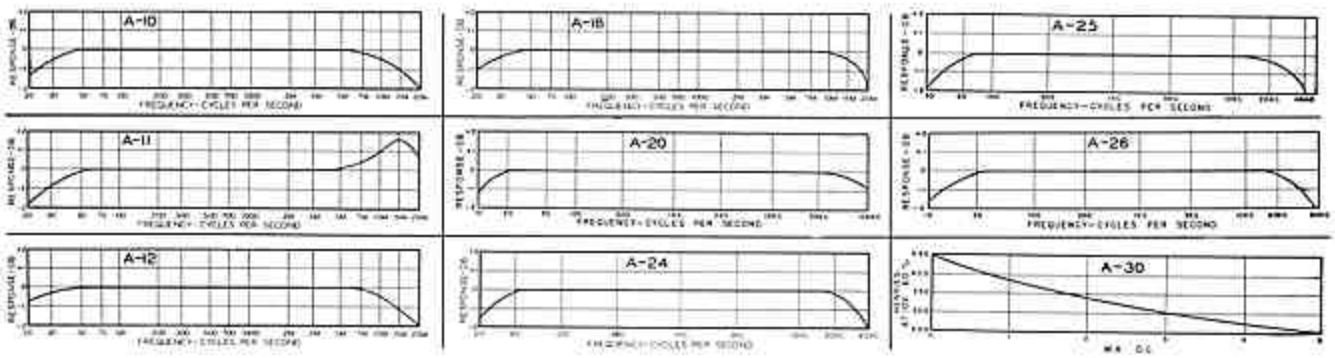
Length	1½"
Width	1½"
Height	2"
Mounting	$1\frac{5}{32}$" sq.
Screws	4-40
Cutout	$1\frac{3}{8}$" dia.
Unit Weight	½ lb.

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	30-20,000
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	50-20,000
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 overall	30-20,000
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio overall	50-20,000

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	30-20,000
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	50-20,000
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	30-20,000
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.			



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 ⅞" 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 from 40 to 15,000 cycles, except for O-14, O-15, and units carrying DC which are intended for voice frequencies from 150 to 4,000 cycles. 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.

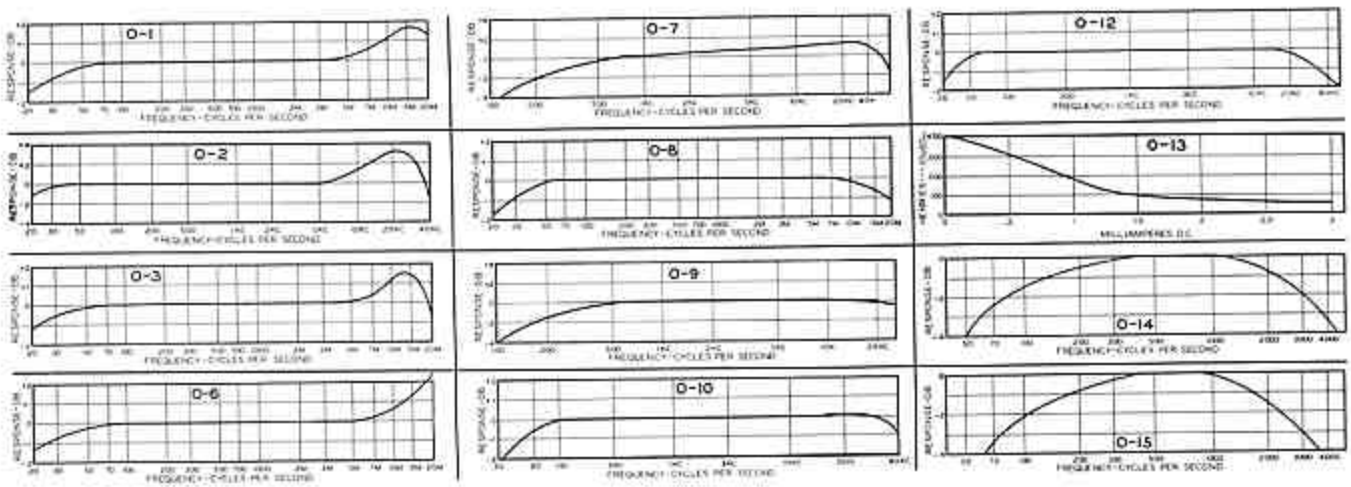
OUNCER CASE

Dia. ..... ⅞"
Ht. ..... 1 3/16"
Mtg. ..... 11/16"
Scr. 2-56
Wt. ..... 1 oz.

PLUG-IN CASE

Dia. ..... 1 3/32"
Ht. ..... 1 15/32"
Skt. ..... St. Oct.
Wt. ..... 2 oz.

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	½ megohm	P-14
O-15	10:1 single plate to 1 grid	15,000	1 megohm	P-15



WIDE RANGE HIGH-QUALITY AMPLIFIERS

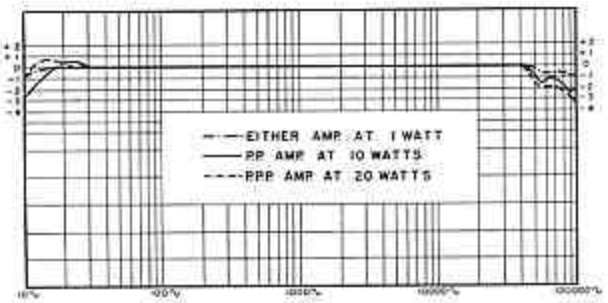
The two power amplifiers shown below have been developed in our laboratories to provide the critical listener with the utmost fidelity in music reproduction. Through the use of the highest quality components and the application of proven feedback techniques, two amplifiers of outstanding characteristics have been obtained. The amplifiers are essentially identical in circuitry, construction and performance, the principal difference being merely that of power output.

The table at the right gives performance specifications applicable to both amplifiers as indicated. From these figures it may be readily seen that because of their linearity and wide range, these amplifiers are ideal for laboratory applications outside the audio frequency range as well.

To assist the constructor in assembling these amplifiers, UTC has made each available in kit form. See page B for further details.

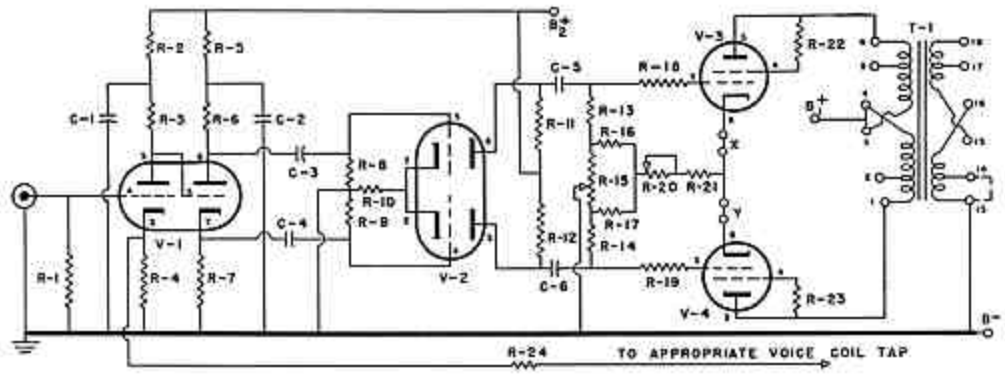
SPECIFICATIONS

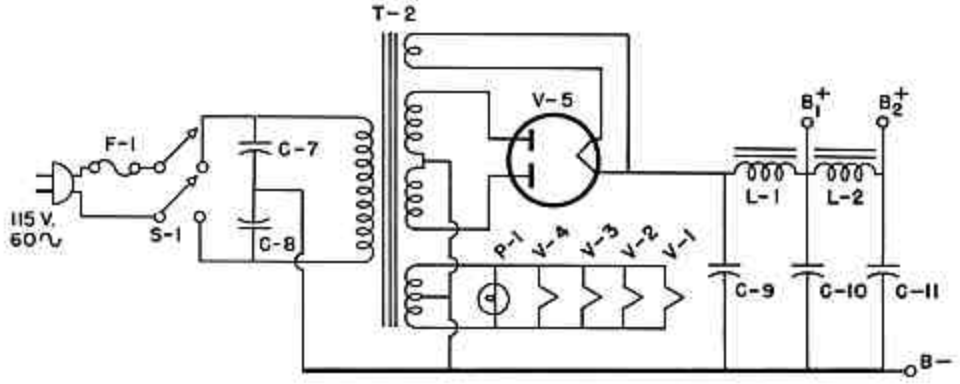
	PUSH-PULL	PUSH-PULL PARALLEL
DISTORTION	8 W — 0.1% 10 W — 0.3% 12 W — 1.0%	16 W — 0.1% 20 W — 0.4% 24 W — 0.8%
DAMPING FACTOR	25	25
HUM	—75 db	—75 db
SENSITIVITY	1.1 volt gives 8 watts	1.2 volt gives 16 watts



FREQUENCY RESPONSE

UTC W-10 10-WATT WILLIAMSON AMPLIFIER





PARTS LIST

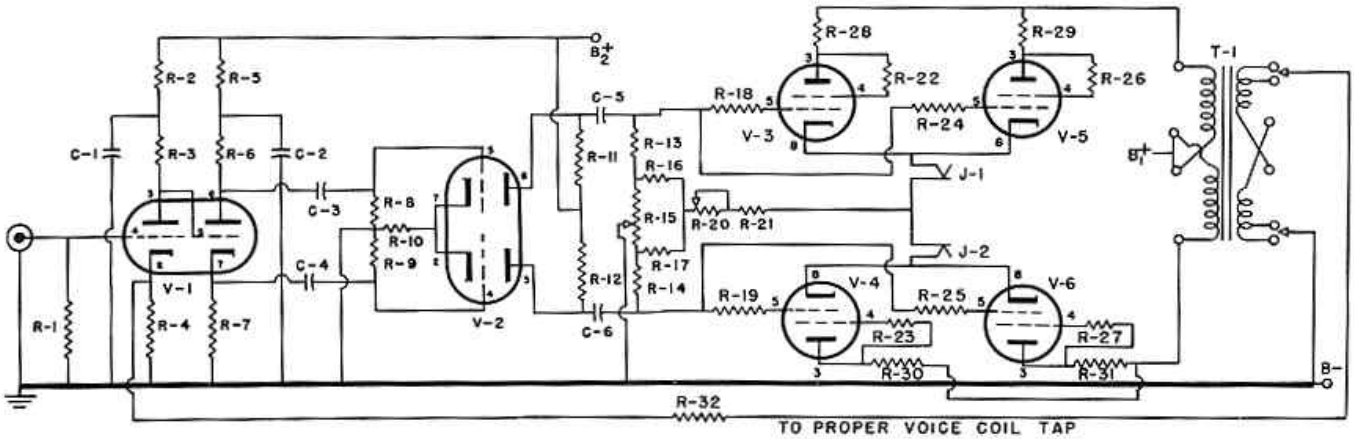
T-1	LS-63
T-2	LS-74 or R-113
L-1	CG-100
L-2	CG-48C
V-1, 2	7N7
V-3, 4	1614
V-5	5U4G
C-1, 2, 9, 10, 11	8 Mfd.-600 V.-elect.
C-3, 4	.05 Mfd.-400 V.-paper
C-5, 6	.25 Mfd.-600 V.-paper
C-7, 8	.1 Mfd.-400 V.-paper
R-1, 8, 9	470 K
R-2	33 K, 1 W
R-3	47 K, 1 W
R-4	470 ohms
R-5	22 K, 1 W
R-6, 7	22 K, 1 W, matched
R-10	390 ohms
R-11, 12	47 K, 2 W, matched
R-13, 14	100 K
R-15, 20	100 ohms, 2 W, wirewound pot.
R-16, 17, 22, 23	100 ohms, 1 W
R-18, 19	1 K
R-21	150 ohms, 5 W
R-24	*1200 √ Voice Coil Z
F-1	3 Amp. Fuse
P-1	6.3 V. Pilot Light
S-1	DPST

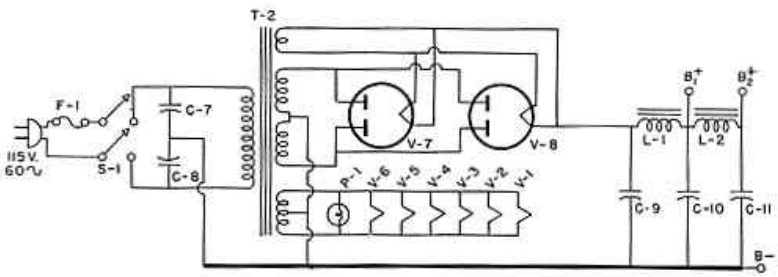
* 1200 times square root of voice coil impedance.

All resistors 10%, ½ watt except where noted otherwise.

Insert a 0-100 Ma. meter at X and one at Y. Adjust R-20 until sum of readings is 110 Ma. Adjust R-15 so that each meter reads 55 Ma.

UTC W-20 20 WATT WILLIAMSON AMPLIFIER





PARTS LIST

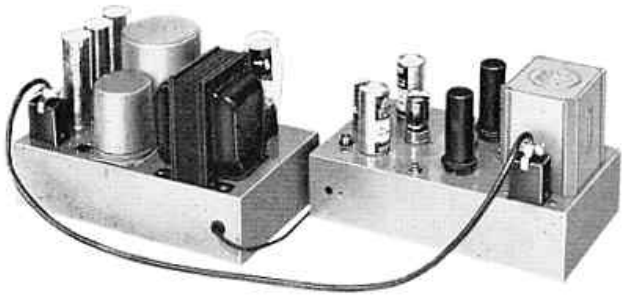
T-1	LS-60A	R-11, 12	47 K, 2 W, matched
T-2	LS-74	R-13, 14	100 K
L-1	CG-102	R-15, 20	50 ohms, 4 W, wirewound Pot.
L-2	CG-48C	R-16, 17	50 ohms, 5 W
V-1, 2	7N7	R-18, 19, 24, 25	1 K
V-3, 4, 5, 6	1614	R-21	100 ohms, 10 W
V-7, 8	5U4	R-22, 23, 26, 27	100 ohms, 1 W
C-1, 2, 9, 10, 11	8 Mfd.-600 V.-elect.	R-28, 29, 30, 31	47 ohms, 1 W
C-3, 4	.05 Mfd.-600 V.-paper	R-32	*1700 √ Voice Coil Z
C-5, 6	.25 Mfd.-600 V.-paper	F-1	5-Amp. Fuse
C-7, 8	.1 Mfd.-400 V.-paper	S-1	DPST
R-1, 8, 9	470 K	P-1	6.3 V. Pilot Light
R-2	33 K, 1 W	J-1, 2	Closed circuit jacks, insulated from chassis.
R-3	47 K, 1 W		
R-4	470 ohms		
R-5	22 K, 1 W		
R-6, 7	22 K, 1 W, matched		
R-10	390 ohms		

* 1700 times square root of voice coil impedance.

All resistors 10%, ½ watt except where noted otherwise.

Insert a 0-150 Ma. meter in J-1 and one in J-2. Adjust R-20 until sum of readings is 200 Ma. Adjust R-15 so that each meter reads 100 Ma.

UTC AMPLIFIER KITS



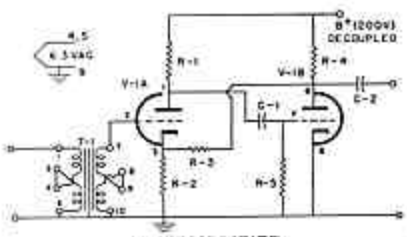
W-10

W-20

The two deluxe amplifiers described above are available in basic kit form. The kits consist of the parts listed below. Other components such as tubes, resistors, etc. are **not** supplied, but may be readily secured from your local distributor. The chassis come completely punched and finished in baked grey enamel. A comprehensive instruction manual is included with each kit.

W-10	W-20
1 LS-63 Output Transformer	1 LS-60A Output Transformer
1 CG-100 Choke	1 LS-74 Power Transformer
1 CG-48C Choke	1 CG-102 Choke
1 R-113 Power Transformer	1 CG-48C Choke
1 W-10A Amplifier Chassis, 7" x 12" x 3" high	1 W-20A Amplifier Chassis, 8½" x 15" x 3" high
1 W-10P Power Supply Chassis, 7" x 12" x 3" high	1 W-20P Power Supply Chassis, 8" x 12" x 3" high
1 W-10 Instruction Manual	1 W-20 Instruction Manual

AUXILIARY HIGH FIDELITY EQUIPMENT

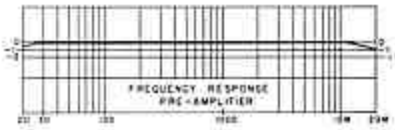


PRE-AMPLIFIER

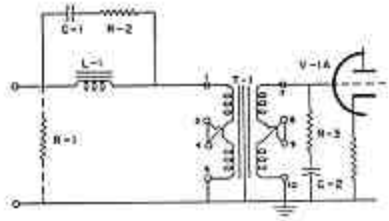
PARTS LIST

T-1	A-10 (A-11)
R-1	50 K, 1 W
R-2	680 ohms
R-3	68 K
R-4	30 K, 1 W
R-5	10 Meg.
C-1	.02 Mfd.-400 V.-paper
C-2	.05 Mfd.-400 V.-paper

All resistors 10%, ½ watt except where noted otherwise.



The pre-amplifier shown is suitable for low-level amplification where high gain (approx. 60 db.), low distortion, and low noise are required. The use of degenerative current and voltage feedback minimizes distortion and provides excellent frequency characteristics. (See graph above). The type 12AY7 tube is especially designed for low hum, noise, and microphonics. The components have been selected to permit construction in ultra-compact form. (Note use of A-10 transformer and minimum number of condensers.) Where ambient magnetic fields are high, UTC type A-11 may be used to insure additional shielding.



VARIABLE RELUCTANCE EQUALIZER

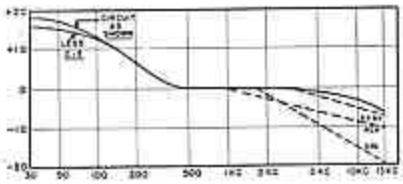
PARTS LIST

L-1	HQA-15
T-1	A-10 (A-11)
R-1	See Text
R-3	150 K
C-2	.04 Mfd.-150 V.-paper

Values for R-2 and C-1

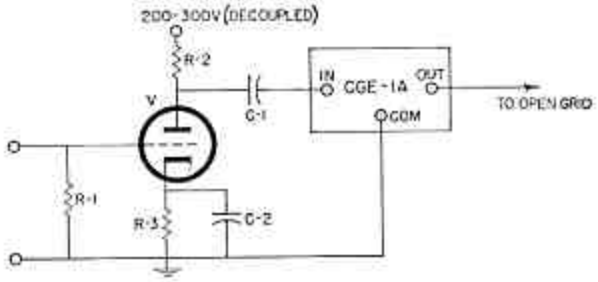
Turnover Freq.	R-2	C-1
450 c.p.s. (Shown)	15 K	.03 Mfd.
350	12 K	.04 Mfd.
550	18 K	.02 Mfd.

All resistors 10%, ½ watt except where noted otherwise.



The basic circuit at the left may be incorporated into an excellent equalizer for the variable reluctance type pickup. The HQA-15 is compact and has low hum pickup. The inductor-capacitor network provides a characteristic much closer to that desired than do simple RC circuits. The characteristic for a 450 cycle turnover is shown below. Increased roll-off may be obtained through use of resistor R-1. Cartridge manufacturers' recommendations should be considered if this resistor is used.

CONTINUOUSLY VARIABLE EQUALIZER



Parts List

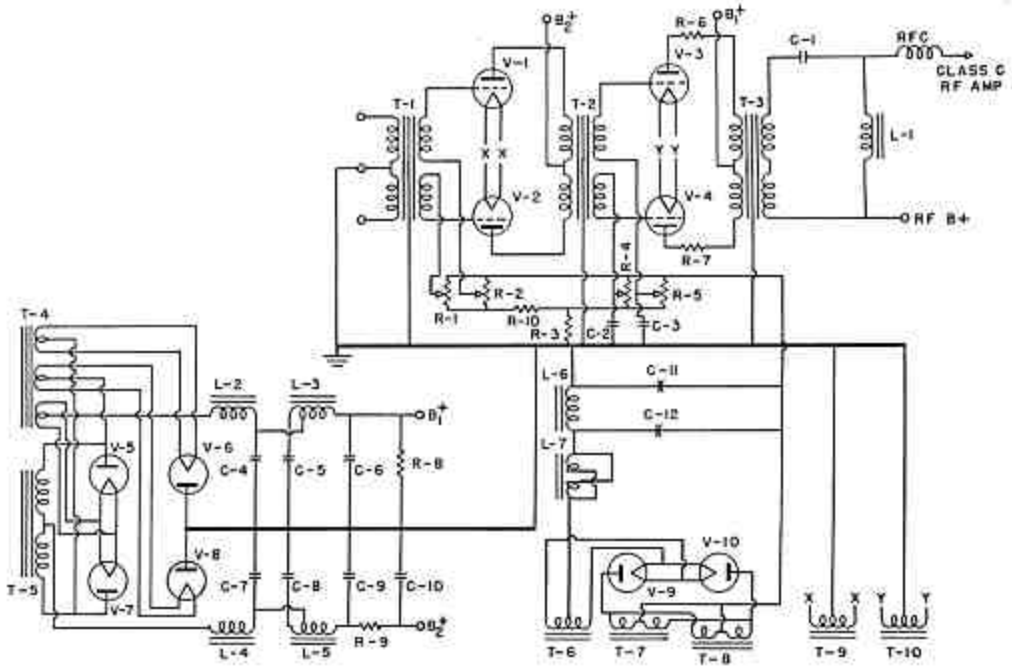
R-1	1 Meg. ½ W.
R-2	22K, 1 W.
R-3	1K, ½ W.
C-1	0.1 Mfd.—400 V.-paper
C-2	50 Mfd.—10 V.-elect.

V is 6J5, 6C5, 6C4, ½ 6SN7, ½ 12AU7, etc.

In addition to the equalization required as correction for deliberately introduced response variations (e.g., recording characteristics, etc.), it is desirable to control the relative response at the ends of the spectrum to compensate for individual tastes or deficiencies in components such as pick-ups and loudspeakers.

The UTC CGE-1A equalizer provides continuously variable equalization up to 15 DB in either direction at both the low end and the high end. (See page 17.) The simple circuit to the left will provide both the extra amplification (18 DB) and proper source impedance for optimum operation of the equalizer. Since a D.C. path is provided through the equalizer, no grid-leak is required for the succeeding stage.

1 KW BROADCAST MODULATOR

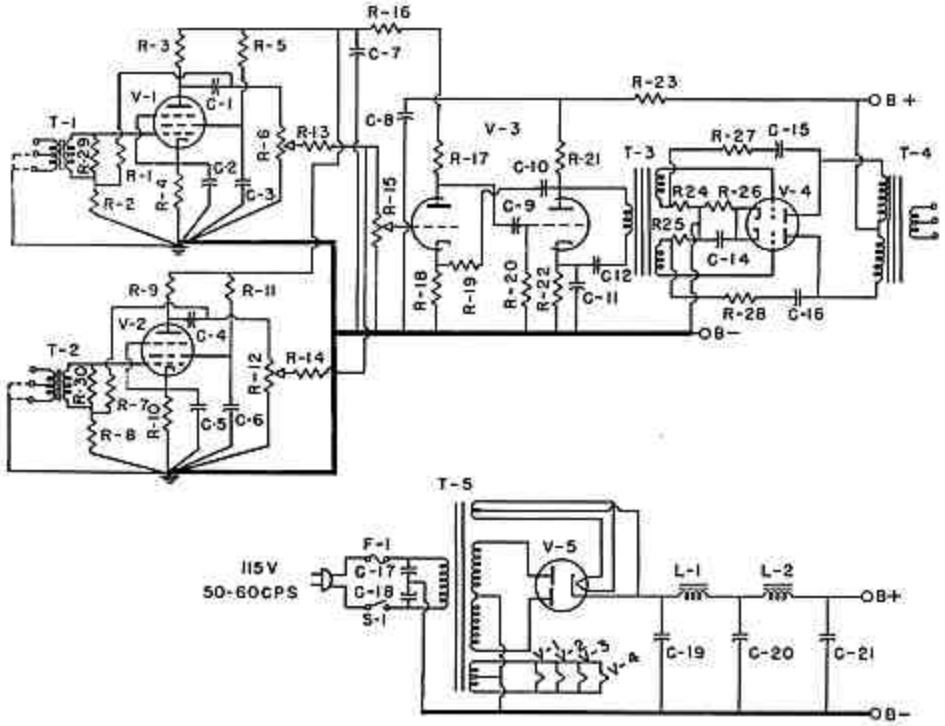


PARTS LIST

T-1	LS-18
T-2	LS-48
T-3	LS-691
T-4	LS-121Y
T-5	LS-185
T-6	LS-80
T-7, 8	CG-316
T-9	LS-84
T-10	CG-125
L-1	LS-104A
L-2	LS-105
L-3, 6, 7	LS-96
L-4	LS-92
L-5	LS-93
V-1, 2	845
V-3, 4	849
V-5, 6, 7, 8	872
V-9, 10	866
C-1	4 Mfd.
C-2, 3, 11, 12	20 Mfd.
C-5, 8	1 Mfd.
C-4, 6, 7, 9, 10	2 Mfd.
R-1	250 ohms, 5 W
R-3	275 ohms, 200 W
R-4, 5	125 ohms, 25 W
R-6, 7	50 ohms, 10 W
R-8	50 K, 200 W
R-9	1500 ohms, 100 W
R-10	500 ohms, 10 W

The circuit above shows a 1000 watt modulator suitable for high-fidelity broadcast service. The use of a duplex plate supply permits the use of a Class A driver stage with resulting low distortion. Although a common bias supply is used, provision is made for adjusting the bias of each tube independently. The input transformer matches the 845 grids to a high level 500 or 600 ohm line.

REMOTE BROADCAST AMPLIFIER



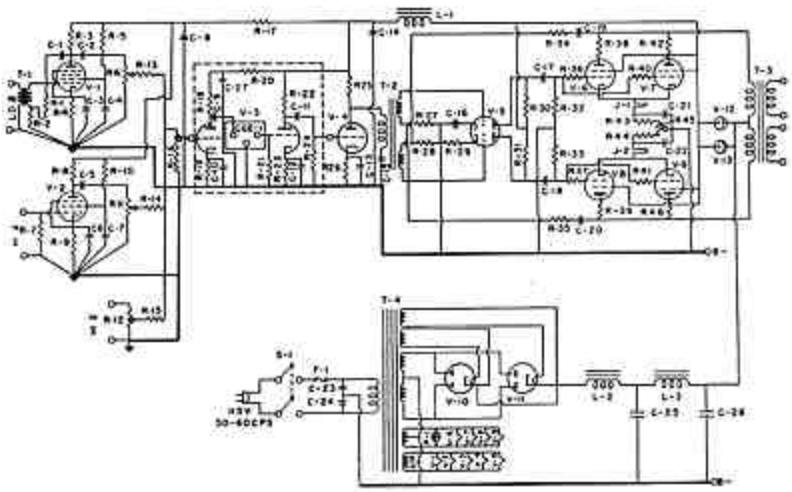
PARTS LIST

T-1, 2	HA-100X
T-3	HA-106
T-4	HA-114
T-5	HP-122
L-1, 2 (series connection)	HC-117
V-1, 2	1620
V-3, 4	12AY7
V-5	6X4
C-1, 4	.1 Mfd.-400 V.-paper
C-2, 5, 11, 14	50 Mfd.-25 V.-elect.
C-3, 6	1 Mfd.-200 V.-metallized
C-7, 8, 20, 21	20 Mfd.-350 V.-elect.
C-9, 15, 16, 17, 18	.05 Mfd.-400 V.-paper
C-10, 12	.5 Mfd.-400 V.-metallized
R-1, 5, 7, 11	1.5 Meg.
R-2, 8	10 K
R-3, 9	270 K
R-4, 10	1800 ohms
R-6, 12	500 K Pot.
R-13, 14	470 K
R-15	3 Meg. Pot.
R-16	20 K
R-17, 21	47 K, 1 W
R-18, 22	820 ohms
R-19	120 K
R-20	1 Meg.
R-23	5.6 K, 1 W
R-24, 25	18 K
R-26	390 ohms, 1 W
R-27, 28	82 K
R-29, 30	68 K

All resistors 10%, ½ watt except where noted otherwise.

The amplifier shown is excellent for remote broadcast service. The use of Hiperm Alloy transformers permits the realization of excellent fidelity and small size in one design. Flat frequency response and low distortion are achieved through the use of feedback networks in each stage, while the two-stage LC filter and the employment of low-noise type tubes keep the noise and hum output at a very low value. The push-pull output stage will deliver a signal of 18 dbm level to the 600 ohm output with very low distortion. The voltage gain from either input is approximately 85 db.

PUBLIC ADDRESS AMPLIFIER



High power, low distortion, good frequency response and flexibility are features of the public address amplifier depicted here. Three inputs provide a variety of gains and impedances, with level adjustments easily maintained through the use of simple mixing circuits and a master volume control. Complete bass and treble equalization may be effected through the use of the CGE-1 Equalizer. A power supply of excellent regulation, both for plates and screens, and the use of 6L6's in Class AB-1 with negative feedback enable a power output of 50 watts to be achieved with low distortion. Provision is made for balancing of the output stages.

PARTS LIST

T-1	CG-235	C-1	.005 Mfd.-400 V.-paper
T-2	CG-136	C-2, 5, 11, 23, 24	.05 Mfd.-400 V.-paper
T-3	CG-4L6	C-3, 6, 10, 12, 13, 16	50 Mfd. 25 V.-elect.
T-4	CG-428	C-4, 7	.5 Mfd.-200 V.-metallized
L-1	CG-45	C-8, 14, 25, 26, 27	20 Mfd.-450 V.-elect.
L-2, 3	CG-102	C-9, 15	.5 Mfd.-400 V.-metallized
V-1, 2	6J7	C-17, 18, 19, 20	.1 Mfd.-400 V.-paper
V-3, 5	6SN7	C-21, 22	50 Mfd.-150 V.-elec*
V-4	6C5		
V-6, 7, 8, 9	6L6		
V-10, 11	5V4G		
V-12, 13	OB2 (VR-105)		

R-1, 5, 10	1.5 Meg.	R-24	1 Meg.
R-2	10 K	R-29	1200 ohms, 1 W
R-3, 8	270 K	R-30, 31	100 K, 1 W
R-4	2 K	R-32, 33	220 K
R-9, 23, 26	1800 ohms	R-34, 35	470 K
R-6, 11, 12	500 K Pot.	R-36, 37, 40, 41	10 K
R-7	2.7 Meg.	R-38, 39, 42, 46	47 ohms, 1 W
R-13, 14, 15	470 K	R-43, 44	200 ohms, 10 W
R-16	3 Meg. Pot.	R-45	100 ohms, 4 W wirewound pot.
R-17	47 K, 1 W	S-1	DPST Switch
R-18	22 K, 1 W	F-1	5 Amp. Fuse
R-19	2700 ohms	P-1	6.3 V. Pilot light
R-20	10 K, 1 W	J-1, 2	Short-circuit jacks, insulated from chassis.
R-21, 27, 28	10 K		
R-22, 25	56 K, 2 W		

All resistors 10%, ½ watt except where noted otherwise.

SUBOUNCER UNITS

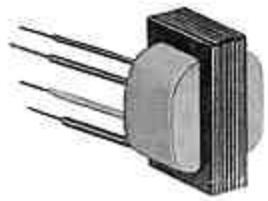
FOR HEARING AIDS...VEST POCKET RADIOS...MIDGET DEVICES

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.

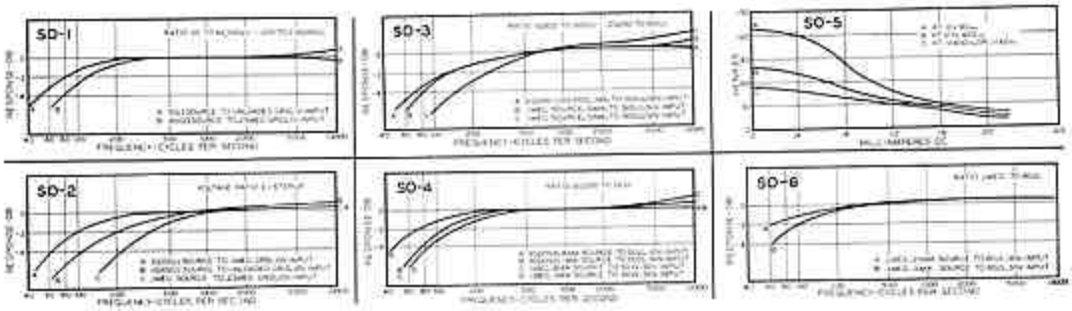
Type	Application	Level	Pri. Imp.	D.C. in Pri.	Sec. Imp.	Pri. Res.	Sec. Res.
*SO-1	Input	+ 4 V.U.	200 50	0	250,000 62,500	16	2650
SO-2	Interstage/3:1	+ 4 V.U.	10,000	0	90,000	225	1850
*SO-3	Plate to Line	+ 20 V.U.	10,000 25,000	3 mil. 1.5 mil.	200 500	1300	30
SO-4	Output	+ 20 V.U.	30,000	1.0 mil.	50	1800	4.3
SO-5	Reactor 50 HY at 1 mil. D.C. 3000 ohms D.C. Res.						
SO-6	Output	+ 20 V.U.	100,000	.5 mil.	60	3250	3.8

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



SUBOUNCER UNIT

Dimensions ..... 9/16" x 5/8" x 7/8"
Weight ..... .03 lb.



SUB-SUBOUNCER UNITS

FOR HEARING AIDS AND ULTRA-MINIATURE EQUIPMENT

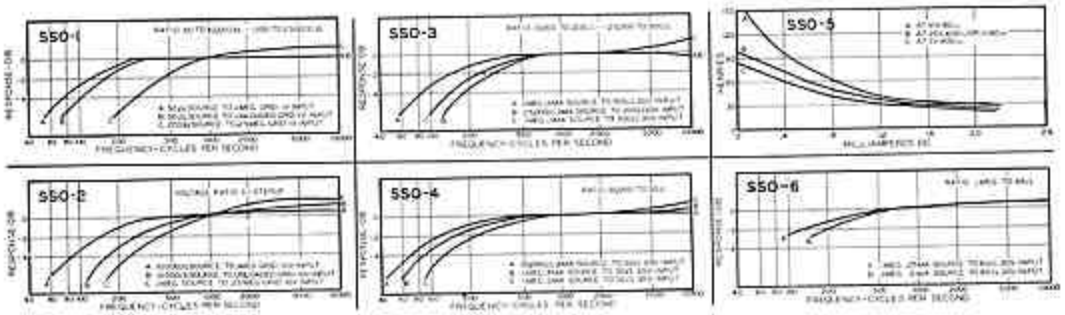
UTC Sub-SubOuncer units have exceptionally high efficiency and frequency range in their ultra-miniature size. This has been effected through the use of specially selected Hiperm-Alloy core material and special winding methods. The constructional details are identical to those of the Sub-Ouncer units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

Type	Application	Level	Pri. Imp.	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	3700
SSO-2	Interstage/3:1	+ 4 V.U.	10,000	0	90,000	750	3250
*SSO-3	Plate to Line	+ 20 V.U.	10,000 25,000	3 mil. 1.5 mil.	200 500	2600	35
SSO-4	Output	+ 20 V.U.	30,000	1.0 mil.	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 mil.	60	4700	3.3

*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 ..... 7/16" x 3/4" x 5/8"
Weight ..... .02 lb.



UTC HIGH Q TOROID INDUCTORS

HQA, HQC, HQD CASE

Diameter	1 13/16"
Height	1 3/16"
Mounting	1 1/8"
Screws	6-32
Cutout	9/16" x 1 3/16"
Weight	5 oz.

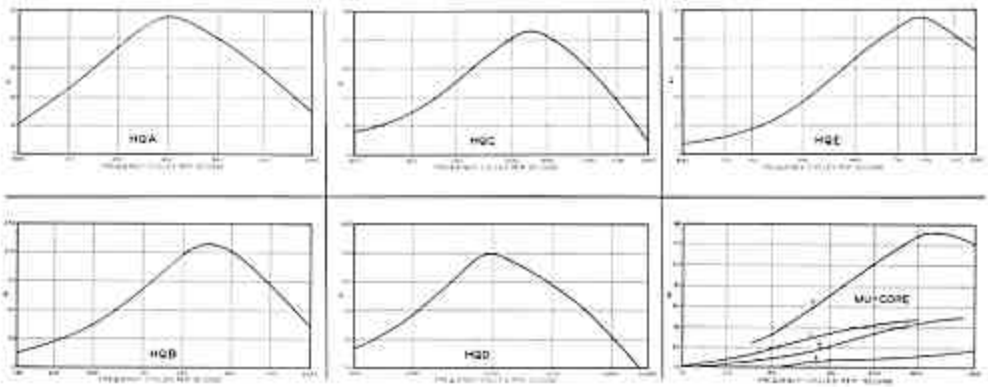
HQB CASE

Length	2 3/8"
Width	1 5/8"
Height	2 1/2"
Mounting	1 11/64" x 2 11/64"
Screws	6-32
Cutout	5/16" x 1 1/8"
Unit Weight	14 oz.

HQE CASE
(sub-miniature)

Length	1 3/16"
Width	1/2"
Height	1 3/16"
Mounting	1 3/16"
Screws	6/32"
Cutout	3/16" x 7/8"
Unit Weight	1.5 oz.

UNCASED HIGH Q TOROIDS



There are many applications in the audio, carrier, and supersonic 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.**

Uncased HQ Coils in any of the types listed are available from stock. Deduct $1.50 from cased price.

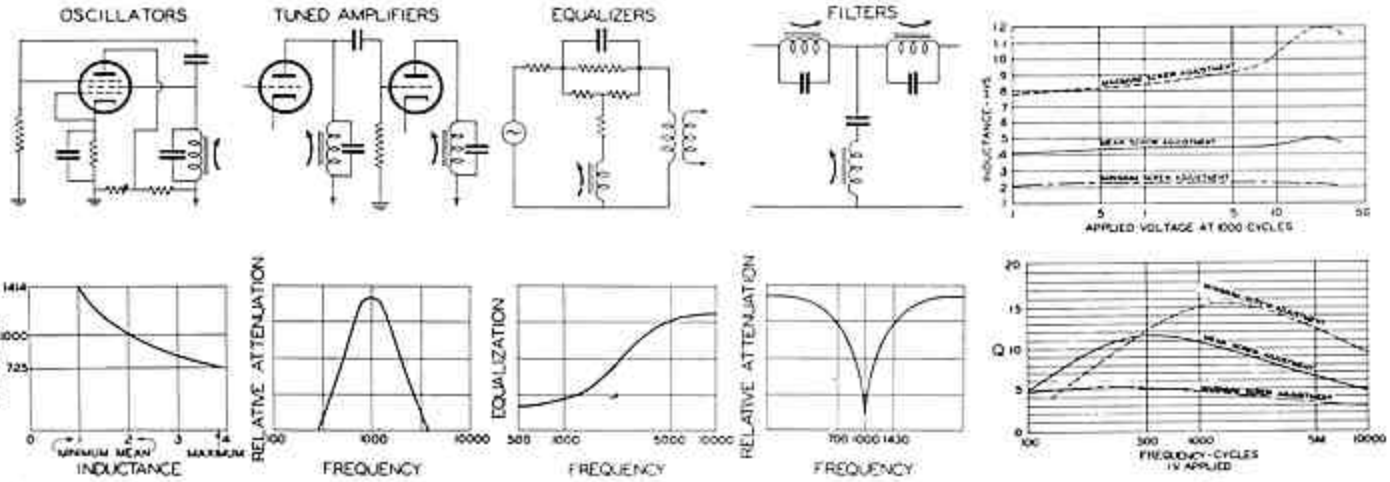
Other Values of Inductance than those listed available on special order at price of next higher listed value.

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		*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 ½% in L with 6.5MA.

UTC VARIABLE INDUCTORS

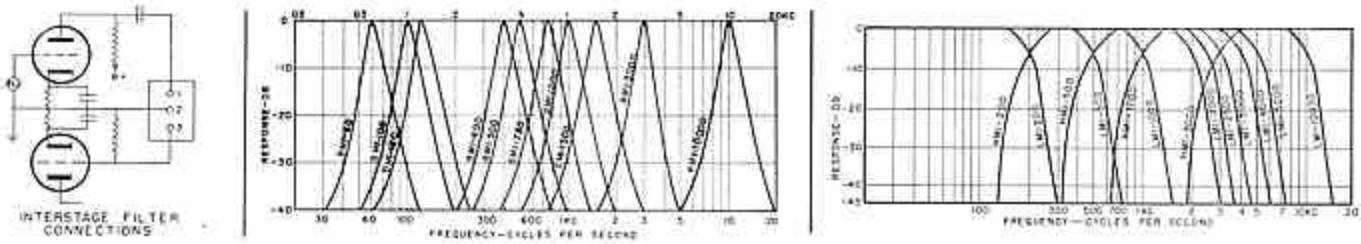


Type	Mean Hys.	Type	Mean Hys.
VI-C1	.0085	VI-C12	1.3
VI-C2	.013	VI-C13	2.2
VI-C3	.021	VI-C14	3.4
VI-C4	.034	VI-C15	5.4
VI-C5	.053	VI-C16	8.5
VI-C6	.084	VI-C17	13.
VI-C7	.13	VI-C18	21.
VI-C8	.21	VI-C19	33.
VI-C9	.34	VI-C20	52.
VI-C10	.54	VI-C21	83.
VI-C11	.85	VI-C22	130.

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 +90%, −50% 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 $1\frac{11}{32}$" long, $1\frac{1}{4}$" wide and $1\frac{3}{16}$" high with mounting centers on terminal board side $1\frac{13}{16}$" by $\frac{29}{32}$". Weight is 5½ oz.

UTC INTERSTAGE AND LINE FILTERS



STOCK FREQUENCIES

(Number after letters is frequency)

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

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.

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.

BML (Band Pass), **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.

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 200 to 10,000 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	$1\frac{3}{16}$" x $1\frac{11}{16}$"
Mtg.	¾" x 1¼"
Mtg. Screws	6-32
Cutout	⅞" dia.
Height, BMI, LMI, BML	1⅝"
Height, HMI, HML, LML	2½"
Weight	6 oz. and 9 oz.