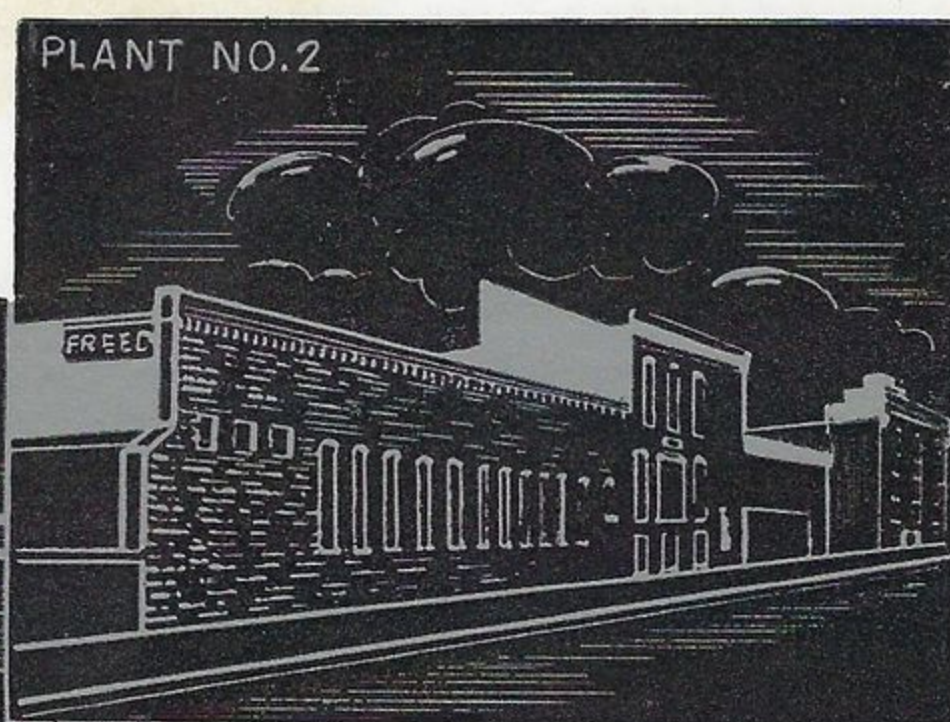
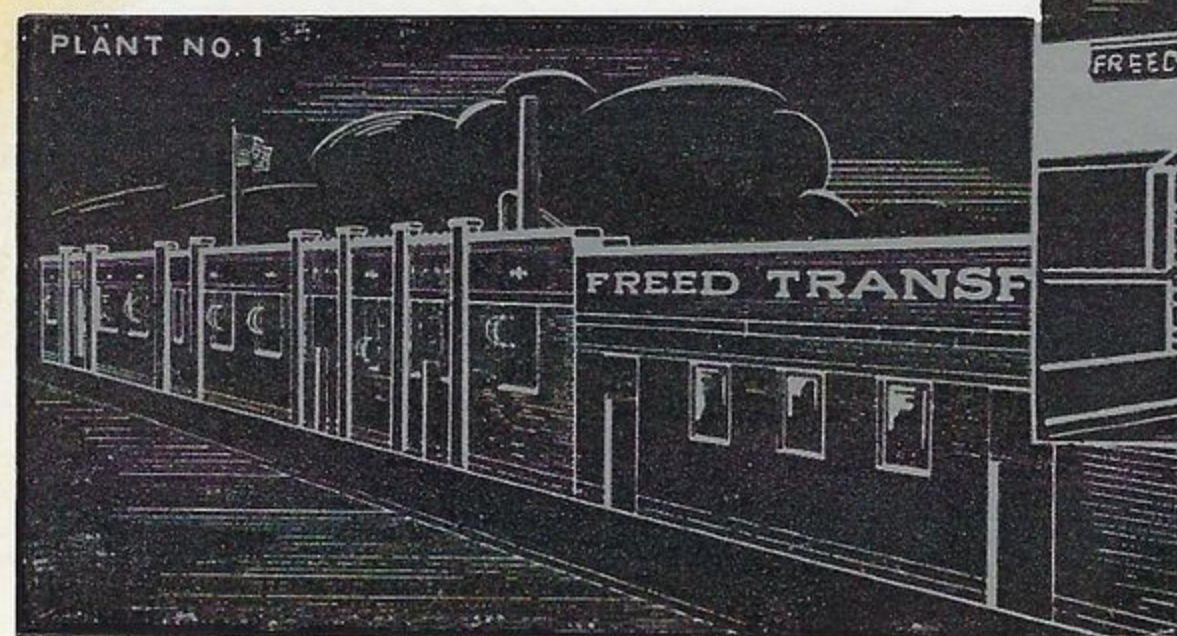


INDEX

CONTENTS

Pages

HIGH FIDELITY COMPONENTS	
INPUT TRANSFORMERS	
HYBRID AND REPEAT COILS	2
INTERSTAGE, LOW LEVEL OUTPUT, MIXING AND MATCHING TRANSFORMERS	3
DRIVER AND HIGH LEVEL OUTPUT TRANSFORMERS	4
TOROIDAL INDUCTORS	5-6-7-8-9
SUB-MINIATURE TOROIDAL INDUCTORS	10
MINIATURE TRANSISTOR TRANSFORMERS	10
HIGH FIDELITY COMPONENTS FOR AMPLIFIER CIRCUITS	11
FILTERS	11
MAGNETIC AMPLIFIERS	12-13
HIGH Q REACTORS	14
MILITARY PULSE TRANSFORMERS	14
STANDARD MIL. AUDIO TRANSFORMERS	15
PROFESSIONAL GRADE COMPONENTS	
MINIATURE AUDIO TRANSFORMERS	16
AUDIO INPUT TRANSFORMERS	16
LOW LEVEL OUTPUT—MIXING, DRIVER AND HIGH LEVEL OUTPUT TRANSFORMERS	17-18
HIGH Q REACTORS	18
FILTER REACTORS AND SWINGING REACTORS	19
POWER TRANSFORMERS	19-20
FILAMENT TRANSFORMERS	20
AUTO TRANSFORMERS	21
ISOLATION TRANSFORMERS	21
REPLACEMENT GRADE COMPONENTS	
AUDIO TRANSFORMERS	22
FILTER CHOKES	22
POWER TRANSFORMERS	23



FREED

Transformers

FREED TRANSFORMER CO., INC.

1718-1736 Weirfield Street

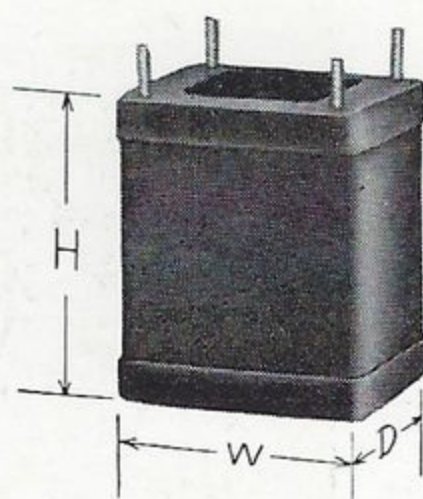
Brooklyn (Ridgewood) 27, New York

EXPORT DIVISION: 458 Broadway, New York City 13, N. Y.

CATALOG NO. 545

FREED Transformers

HIGH FIDELITY COMPONENTS INPUT TRANSFORMERS



CASE DIMENSIONS NO. DC2B

Mtg. Centers		Dimensions		
		W	D	H
	2" x 1 3/4"	2 5/8"	2 1/4"	3 1/2"
Knockout	Mtg. Studs	Wgt.		
1 1/2" x 1 3/8"	8-32	3 lbs.		

L after case number indicates leads.
T after case number indicates terminals.

Modern high fidelity broadcasting and transcription apparatus require the utmost performance and reliability in the audio transformers used in their circuitry. The Freed "Quality Grade" audio transformers are wide band, high fidelity components featuring astatic construction, longitudinal balance, low harmonic distortion, uniform response, high efficiency, and constant impedance match throughout the audio frequency spectrum. Maximum neutralization of stray fields is accomplished by use of humbalanced coil structures and multiple alloy shielding. High fidelity is achieved on every tap of universal impedance winding without line reflection of transverse coupling.

All Quality Grade Components are thoroughly impregnated in a special non-hygroscopic varnish, and fully encapsulated in a moisture proof, high-melting point compound.

U-60 IMPEDANCES ON OHMS

2.5, 5, 10, 15, 20, 30, 40, 60

U-500 IMPEDANCES ON OHMS

50, 125, 200 CT, 250, 330, 500 CT.
125 and 500 ohms can be used for 150 and 600 ohms.

Catalog No.	Application	Impedance Level Ohms		Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
		Primary	Secondary							
QGA 1	Universal 500 ohm line to push-pull grids	U-500	100,000 split	+10	1:14.1	70	0	0	+1.0 DB 20-20,000	DC-2BT
QGA 2	Universal 500-ohm line to push-pull grids	U-500	100,000 split	+10	1:14.1	90	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 3	Universal 500 ohm line to single or push-pull grids	U-500	60,000 split	+10	1:11	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 4	Universal 500 ohm line to single or push-pull grids	U-500	60,000 split	+10	1:11	90	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 5	Universal low impedance microphone, pickup or line to single or push-pull grids	U-60	60,000 split	+10	1:31.6	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 6	Universal low impedance microphone, pickup or line to single or push-pull grids	U-60	60,000 split	+10	1:31.6	90	0	0	±1.0 DB 20-20,000	DC-2BT

HYBRID AND REPEAT COILS

CASE DIMENSIONS
Same as Input Transformers above

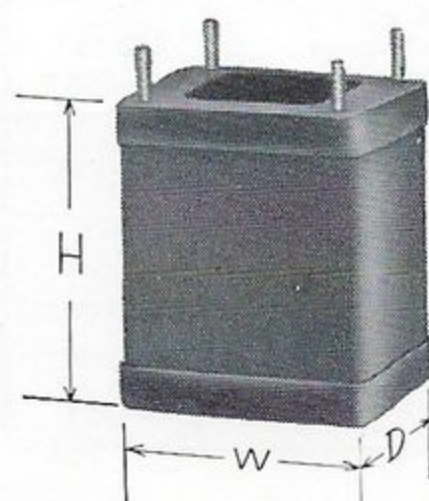
Catalog No.	Application	Impedance Level Ohms		Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
		Primary	Secondary							
QGA 7	Hybrid. Unbalanced 500/600 ohm lines to 600 ohms.	Total Pri 1200/1000 split 300/250 300/250	600/150 or 500/125 split	+10	1.41:1	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 8	Hybrid. Balanced 500/600 ohm lines to 600 ohms. Longitudinal balance 70 DB	Total Pri 1200/1000 split 300/250 C.T. 300/250 C.T.	600/150 or 500/125 split	+10	1.41:1	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 9	Hybrid. Unbalanced 500/600 ohm lines to triode plate. No. D.C. in secondary.	Total Pri 1200/1000 split 300/250 300/250	15,000 or 12,500	+10	1:3.54	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 10	Hybrid. Balanced 500/600 ohm lines to triode plate. No. D.C. in secondary. Longitudinal balance 70 DB.	Total Pri 1200/1000 split 300/250 C.T. 300/250 C.T.	15,000 or 12,500	+10	1:3.54	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 11	Repeat coil for low frequency ringing. Longitudinal balance 70 DB.	600/500 split	600/500 split Balanced	+10	1:1	90	0	0	±1.0 DB 20-20,000	DC-2BT

FREED Transformers

HIGH FIDELITY COMPONENTS

INTERSTAGE TRANSFORMERS

CASE DIMENSIONS



Case No.	Mtg. Centers	Dimensions			Knockout	Mtg. Studs	Wgt.
		W	D	H			
DC-2B	2" x 1 3/4"	2 5/8"	2 1/4"	3 1/2"	1 1/2" x 1 3/8"	8-32	3 lbs.
DC-4A	2 1/2" x 2 1/2"	3 1/8"	3"	3 3/4"	2" x 1 3/4"	8-32	4 1/2 lbs.

L after case number indicates leads.
T after case number indicates terminals.

Catalog No.	Application	Impedance Level Ohms		Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
		Primary	Secondary							
QGA 12	Bridging line to single or push-pull grids.	10,000	60,000 split	+10	1:2.45	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 13	Single 6C4, 6J5, 1/2 6SN7 triode to push-pull grids. Shunt feed.	15,000	60,000 split	+18	1:2	45	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 14	Single 6C4, 6J5, 1/2 6SN7 triode to push-pull grids.	15,000	60,000 split	+18	1:2	45	8	8	±1.0 DB 50-20,000	DC-2BT
QGA 15	Push-pull triode plates to push-pull class A grids.	20,000 split	45,000 split	+25	1:1.5	30	8	0.5	±1.0 DB 20-20,000	DC-4AT

LOW LEVEL OUTPUT, MIXING, MATCHING TRANSFORMERS

CASE DIMENSIONS
See DC-2AT above

U-500 IMPEDANCES IN OHMS
50, 125, 200 CT, 250, 330, 500 C.T.
125 and 500 ohms can be used for 150 and 600 ohms

Catalog No.	Application	Impedance Level Ohms		Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
		Primary	Secondary							
QGA 16	Single plate or bridging line to Universal 500 ohm line. Shunt feed.	15,000	U-500	+18	5.5:1	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 17	Single plate to Universal 500 ohm line	15,000	U-500	+18	5.5:1	70	8	8	±1.0 DB 50-20,000	DC-2BT
QGA 18	Push-pull triode plates to Universal 500 ohm line.	20,000 C.T.	U-500	+25	6.3:1	70	8	0.5	±1.0 DB 20-20,000	DC-2BT
QGA 19	Mixing, low impedance microphone or line to Universal 500 ohm line.	U-500	U-500	+12	1:1	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 20	Line level mixing and matching.	U-500	U-500	+30	1:1	70	0	0	±1.0 DB 20-20,000	DC-2BT
QGA 21	High mu triode photo-cell to Universal 500 ohm line.	100,000	U-500	+12	14.1:1	70	0	0	±1.0 DB 20-20,000	DC-2BT

FREED Transformers

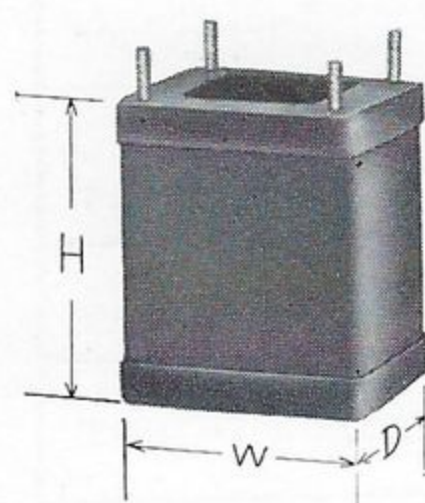
HIGH FIDELITY COMPONENTS DRIVER TRANSFORMERS

Catalog No.	Application	Primary Impedance Ohms	Maximum Power Level V.U.*	Turn Ratio Pri: 1/2 Sec.	Max. Pri. D.C. per Side Ma.	D.C. Un-balance Ma.	Frequency Response C.P.S.	Case Number
QGA 22	Universal 500 ohm line to Class B grids.	U-500	+40	1:1	0	0	±1.0 DB 20-20,000	DC-4AT
QGA 23	Push-pull 6J5, etc. to push-pull 2A3's, 6L6's, etc.	20,000 C.T.	+30	3.2:1	8	0.5	±1.0 DB 20-20,000	DC-2BT
QGA 24	Push-pull 2A3, 6B4 to push-pull 809, T2-40, 4/125A.	5,000 C.T.	+40	3.2:1	50	5	±1.0 DB 20-20,000	DC-4AT

HIGH LEVEL OUTPUT TRANSFORMERS TUBES TO LINE, TUBES TO VOICE COIL, LINE TO LINE, LINE TO VOICE COIL

Catalog No.	Application	Impedance Level Ohms Primary Secondary	Maximum Power Level V.U.*	Ratio	Max. Pri.DC. per Side Ma.	D.C. Un-balance Ma.	Frequency Response C.P.S.	Case Number
QGA 25	PP 2A3, 6B4, 6L6, 300A, 275A to Universal 500 ohm line.	5,000 split U-500	+42 (15 watts)	3.16:1	50	5	±0.5 DB 20-30,000	DC-5BT
QGA 26	As above to Universal voice coil.	5,000 split U-16	+42	17.7:1	50	5	±0.5 DB 20-30,000	DC-5BT
QGA 27	Push-pull 6V6, 6AQ5, 7C5, 6N7 to Universal 500 ohm line.	8,000 split U-500	+42	4:1	50	5	±0.5 DB 20-30,000	DC5-BT
QGA 28	As above to Universal voice coil.	8,000 split U-16	+42	22.4:1	50	5	±0.5 DB 20-30,000	DC-5BT
QGA 29	P.P. 6F6, 6V6, 6AQ5, 7C5, 7B5, 6AR5, 6K6, 6L6 to Universal 500 ohm line.	10,000 split U-500	+42	4.47:1	40	4	±0.5 DB 20-30,000	DC-5BT
QGA 30	As above to Universal voice coil.	10,000 split U-16	+42	25:1	40	4	±5 DB 20-30,000	DC-5BT
QGA 31	PP. 807, 1614, KT-66, (Williamson Amplifier) to Universal 500 ohm line.	10,000 split U-500	+45.5 (36 watts)	4.47:1	50	5	±0.5 DB 20-30,000	DC-6AT
QGA 32	As above to Universal voice coil.	10,000 split U-16	+45.5	25:1	50	5	±0.5 DB 20-30,000	DC-6AT
QGA 33	P.P. Parallel 2A3, 6A5G, 300A to Universal 500 ohm line.	2,500 split U-500	+45.5	2.24:1	100	10	±0.5 DB 20-30,000	DC-6AT
QGA 34	As above to Universal voice coil.	2,500 split U-16	+45.5	12.5:1	100	10	±0.5 DB 20-30,000	DC-6AT
QGA 35	P.P. 6L6 or P.P. Parallel 6L6 to Universal 500 ohm line.	3,800 split U-500	+47 (50 watts)	2.75:1	130	13	±0.5 DB 20-30,000	DC-7BT
QGA 36	As above to Universal voice coil.	3,800 split U-16	+47	15.4:1	130	13	±0.5 DB 20-30,000	DC-7BT
QGA 37	High level multiple line to Universal voice coil.	U-500 U-16	+42	5.6:1	0	0	±0.5 DB 20-30,000	DC-5BT
QGA 38	High level multiple line to Universal voice coil.	U-500 U-16	+47	5.6:1	0	0	±0.5 DB 20-30,000	DC-7BT

CASE DIMENSIONS



Case #	Mtg. Centers	Dimensions W D H	Knockout	Mtg. Studs	Wgt.
DC-2B	2" x 1 3/4"	2 5/8" 2 1/4" 3 1/2"	1 1/2" x 1 3/8"	8-32	2 1/2
DC-4A	2 1/2" x 2 1/2"	3 1/8" 3" 3 3/4"	2" x 1 3/4"	8-32	4 1/2
DC-5B	3 1/8" x 2 5/8"	4 1/8" 3 1/2" 4 1/2"	2 1/2" x 2"	10-32	10
DC-6A	3 3/4" x 3"	5" 4 1/8" 4 7/8"	3" x 2 1/2"	10-32	15
DC-7B	4 3/8" x 3 3/4"	5 1/2" 5" 6 3/4"	3" x 2 1/2"	1/4-20	22

When supplied with leads: DC-L.

When supplied with terminals: DC-T.

U-16 IMPEDANCE IN OHMS 2, 4, 8, 12, 16

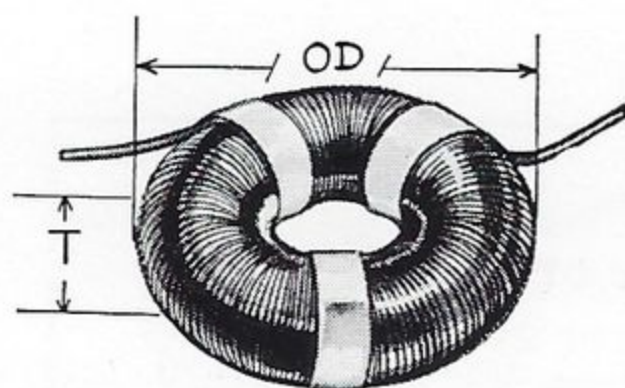
U-500 IMPEDANCES IN OHMS

50, 125, 200CT, 250, 330, 500CT.
125 and 500 ohms can be used for 150 and 600 ohms.

*A 70 volt level can be obtained for the following impedances:

500 ohms — 10 watts + 40 VU 200 ohms — 25 watts + 44 VU
330 ohms — 15 watts + 42 VU 125 ohms — 40 watts + 46 VU
250 ohms — 20 watts + 43 VU 50 ohms — 100 watts + 50 VU

FREED Transformers



FREED TOROIDAL INDUCTORS

STANDARD TOLERANCE $\pm 1\%$

TYPE TI-1

Available in following case types: DC, DT-3 and DT-5

Frequency Range — Up to 15 KC
Non-stabilized

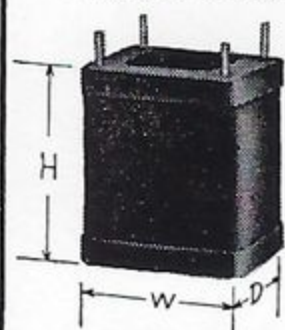
Maximum Inductance — 20 HY
Maximum "Q" 185 @ 7.5 KC

UNCASED DIMENSIONS

Type	T	OD
TI-1	$1\frac{1}{16}"$	$1\frac{13}{16}"$
TI-2s	$1\frac{1}{16}"$	$1\frac{9}{16}"$
TI-3s	$\frac{3}{4}"$	$1\frac{5}{8}"$
TI-3As	1"	$2\frac{1}{8}"$

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-800	5 MHY	F-811	1000 MHY	F-822	4500 MHY
F-801	10 MHY	F-812	1250 MHY	F-823	5000 MHY
F-802	15 MHY	F-813	1500 MHY	F-824	6000 MHY
F-803	30 MHY	F-814	1750 MHY	F-825	7000 MHY
F-804	50 MHY	F-815	2000 MHY	F-826	8000 MHY
F-805	75 MHY	F-816	2250 MHY	F-827	9000 MHY
F-806	100 MHY	F-817	2500 MHY	F-828	10000 MHY
F-807	150 MHY	F-818	2750 MHY	F-829	15000 MHY
F-808	200 MHY	F-819	3000 MHY	F-830	20000 MHY
F-809	500 MHY	F-820	3500 MHY		
F-810	750 MHY	F-821	4000 MHY		

CASE DIMENSIONS



DC CASE
8-32 Studs

Types TI-1, TI-2s, TI-3s

H	W	D
$2\frac{1}{2}"$	$2\frac{1}{16}"$	$1\frac{13}{16}"$
Mtg. Centers $1\frac{1}{2}" \times 1\frac{1}{4}"$		

TYPE TI-3As

H	W	D
3"	$2\frac{5}{8}"$	$2\frac{1}{4}"$
Mtg. Centers $2" \times 1\frac{3}{4}"$		

TYPE TI-2s

Available in following case types: DC, DT-3 and DT-5

Frequency Range — Up to 75 KC
Stabilized

Maximum Inductance — 500 MHY
Maximum "Q" 270 @ 23 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1800	1 MHY	F-1806	15 MHY	F-1812	200 MHY
F-1801	2 MHY	F-1807	30 MHY		
F-1802	3 MHY	F-1808	50 MHY	F-1813	300 MHY
F-1803	4 MHY	F-1809	75 MHY		
F-1804	5 MHY	F-1810	100 MHY	F-1814	400 MHY
F-1805	10 MHY	F-1811	150 MHY	F-1815	500 MHY

TYPE TI-3s

Available in following case types: DC, DT-3 and DT-5

Frequency Range — Up to 200 KC
Stabilized

Maximum Inductance — 10 MHY
Maximum "Q" 280 @ 75 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1846	.1 MHY	F-1850	.5 MHY	F-1854	4 MHY
F-1847	.2 MHY	F-1851	1 MHY	F-1855	5 MHY
F-1848	.3 MHY	F-1852	1 MHY	F-1845	7.5 MHY
F-1849	.4 MHY	F-1853	3 MHY	F-1844	10 MHY

TYPE TI-3As

Available in following case types: DC and DT-4

Frequency Range — Up to 200 KC
Stabilized

Maximum Inductance — 10 MHY
Maximum "Q" 300 @ 37 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1856	10 MHY	F-1859	30 MHY	F-1862	75 MHY
F-1857	15 MHY	F-1860	40 MHY		
F-1858	20 MHY	F-1861	50 MHY	F-1863	100 MHY

NOTE: When ordering Freed Toroidal Inductors in Commercial Type Cases, add "C" to Catalog Number.

When ordering Hermetically Sealed units, add "H" to Catalog Number.

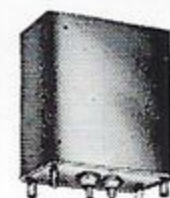
Commercial Type Cases have Bakelite Cover with Solder Lugs

DT-3 CASE
Types TI-1, TI-2s, TI-3s



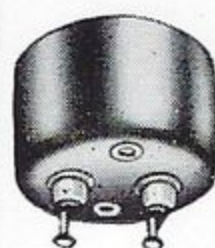
Length: $1\frac{25}{32}"$
Width: $\frac{7}{8}"$
Height: 2"
Mounting: $\frac{7}{8}" \times \frac{9}{32}"$
Inserts: 6-32
Cutout: $\frac{3}{8}" \times \frac{5}{8}"$

DT-4 CASE
Type TI-3As



Length: $2\frac{3}{4}"$
Width: $1\frac{5}{16}"$
Height: $2\frac{13}{16}"$
Mtg.: $2\frac{1}{16}" \times 1\frac{11}{16}"$
Studs: 8-32
Cutout: $\frac{3}{8}" \times \frac{5}{8}"$

DT-5 CASE
Types TI-1, TI-2s, TI-3s

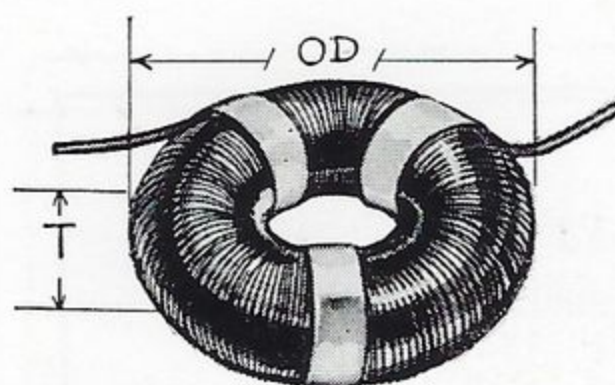


Diameter: $1\frac{13}{16}"$
Height: $1\frac{3}{16}"$
Mtg.: $1\frac{1}{8}"$
Inserts: 6-32
Cutout: $\frac{9}{16}" \times 1\frac{3}{16}"$

FREED Transformers

FREED TOROIDAL INDUCTORS

STANDARD TOLERANCE $\pm 1\%$



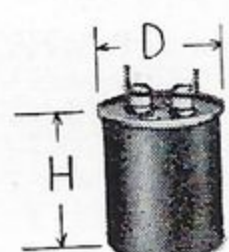
UNCASED DIMENSIONS

Type	T	OD
TI-4	5/8"	1 5/16"
TI-5*	3/8"	1"
TI-6	5/8"	1 5/16"
TI-7*	3/8"	1"

*Wedding Ring Size

CASE DIMENSIONS

Types TI-4, TI-5, TI-6



DM CASE

Types TI-4 and TI-6

H 1 1/2" DM D 1 3/8"
Mt. Centers 7/8"
6-32 Inserts

Types TI-5 and TI-7

H 1" DM D 1 1/8"
Mtg. Centers 5/8"
4-40 Inserts

Types TI-5, TI-7
DT-1 CASE



Length: 1 1/16"
Width: 1/2"
Height: 1 1/32"
Mtg.: 3/4"
Inserts: 4/40"
Cutout: 5/16" x 1/2"

Types TI-4, TI-6
DT-2 CASE



Length: 1 3/8"
Width: 3/4"
Height: 1 3/4"
Mtg.: 7/8" x 9/32"
Inserts: 6-32
Cutout: 3/8" x 5/8"

TYPES TI-4 & 4s

Available in following type cases: DM and DT-2

TYPE TI-4

Frequency Range — Up to 15 KC
Non-stabilized
Maximum Inductance — 5 HY
Maximum "Q" 175 @ 7.5 KC

TYPE TI-4s

Frequency Range — Up to 15 KC
Stabilized
Maximum Inductance — 5 HY
Maximum "Q" 175 @ 7.5 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-850	5 MHY	F-860	400 MHY	F-870	2.00 HY
F-851	10 MHY	F-861	500 MHY	F-871	2.25 HY
F-852	15 MHY	F-862	600 MHY	F-872	2.50 HY
F-853	30 MHY	F-863	700 MHY	F-873	2.75 HY
F-854	50 MHY	F-864	800 MHY	F-874	3.00 HY
F-855	75 MHY	F-865	900 MHY	F-875	3.50 HY
F-856	100 MHY	F-866	1.00 HY	F-876	4.00 HY
F-857	150 MHY	F-867	1.25 HY	F-877	4.50 HY
F-858	200 MHY	F-868	1.50 HY	F-878	5.00 HY
F-859	300 MHY	F-869	1.75 HY		

TYPES TI-5 & 5s

Available in following type cases: DM and DT-1

TYPE TI-5

Frequency Range — Up to 15 KC
Non-stabilized
Maximum Inductance — 2 HY
Maximum "Q" 115 @ 10 KC

TYPE TI-5s

Frequency Range — Up to 15 KC
Stabilized
Maximum Inductance — 2 HY
Maximum "Q" 115 @ 10 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1700	5 MHY	F-1707	150 MHY	F-1714	800 MHY
F-1701	10 MHY	F-1708	200 MHY	F-1715	900 MHY
F-1702	15 MHY	F-1709	300 MHY	F-1716	1.00 HY
F-1703	30 MHY	F-1710	400 MHY	F-1717	1.25 HY
F-1704	50 MHY	F-1711	500 MHY	F-1718	1.50 HY
F-1705	75 MHY	F-1712	600 MHY	F-1719	1.75 HY
F-1706	100 MHY	F-1713	700 MHY	F-1720	2.00 HY

TYPES TI-6 & 6s

Available in following type cases: DM and DT-2

TYPE TI-6

Frequency Range — Up to 75 KC
Non-stabilized
Maximum Inductance — 1 HY
Maximum "Q" 250 @ 17 KC

TYPE TI-6s

Frequency Range — Up to 75 KC
Stabilized
Maximum Inductance — 1 HY
Maximum "Q" 250 @ 17 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1726	1 MHY	F-1732	10 MHY	F-1738	100 MHY
F-1727	2 MHY	F-1733	15 MHY	F-1739	150 MHY
F-1728	3 MHY	F-1734	20 MHY	F-1740	200 MHY
F-1729	4 MHY	F-1735	30 MHY	F-1741	250 MHY
F-1730	5 MHY	F-1736	50 MHY	F-1742	300 MHY
F-1731	7.5 MHY	F-1737	75 MHY	F-1743	500 MHY

TYPE TI-7

Available in following type cases: DM and DT-1

Frequency Range — Up to 75 KC
Non-stabilized

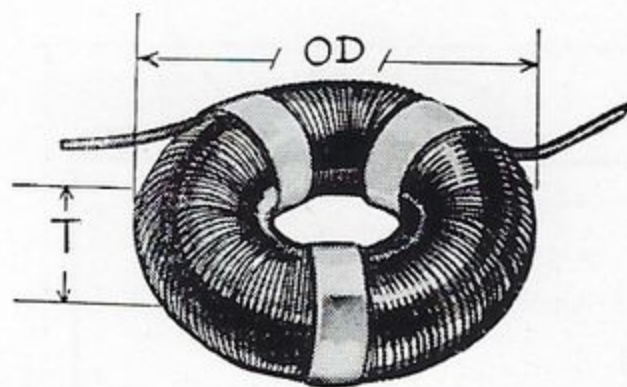
Maximum Inductance — 200 MHY
Maximum "Q" 170 @ 30 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1781	.5 MHY	F-1787	10 MHY	F-1793	50 MHY
F-1782	1 MHY	F-1788	15 MHY	F-1794	75 MHY
F-1783	2 MHY	F-1789	20 MHY	F-1795	100 MHY
F-1784	3 MHY	F-1790	25 MHY	F-1796	150 MHY
F-1785	5 MHY	F-1791	30 MHY	F-1797	200 MHY
F-1786	7.5 MHY	F-1792	40 MHY		

FREED Transformers

FREED TOROIDAL INDUCTORS

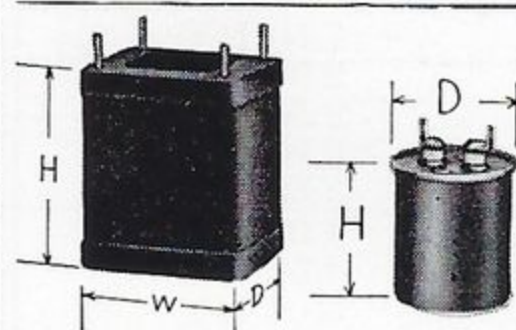
STANDARD TOLERANCE $\pm 1\%$



UNCASED DIMENSIONS

Type	T	OD
TI-8*	$\frac{3}{8}$ "	1"
TI-9	1"	$2\frac{1}{8}$ "
TI-10	$\frac{3}{4}$ "	$1\frac{5}{8}$ "
TI-11	$1\frac{5}{16}$ "	$2\frac{5}{8}$ "

*Wedding Ring Size



DC

DM

TYPE TI-8; DM CASE
H. 1", Mtg. Centers $\frac{5}{8}$ ",
D. $1\frac{1}{8}$ ", Inserts 4-40

TYPE TI-9; DC CASE
H. 3", W. $2\frac{5}{8}$ ", D. $2\frac{1}{4}$ "
Mtg. Centers $2\frac{1}{2}$ " x $1\frac{3}{4}$ "

TYPE TI-10; DC CASE
H. $2\frac{1}{2}$ ", W. $2\frac{1}{16}$ ", D. $1\frac{13}{16}$ "
Mtg. Centers $1\frac{1}{2}$ " x $1\frac{1}{4}$ "

TYPE TI-11; DC CASE
(Commercial*)
H. $3\frac{1}{2}$ ", W. $2\frac{5}{8}$ ", D. $2\frac{1}{4}$ "
Mtg. Centers $2\frac{1}{2}$ " x $1\frac{3}{4}$ "

TYPE TI-11; DC CASE
HERMETICALLY SEALED
H. $3\frac{9}{16}$ ", W. $1\frac{9}{16}$ ", D. $3\frac{1}{16}$ "
Mtg. Centers $2\frac{1}{2}$ " x 1"

TYPE TI-8
DT-1 CASE
Length: $1\frac{1}{16}$ "
Width: $\frac{1}{2}$ "
Height: $1\frac{7}{32}$ "
Mtg.: $\frac{3}{4}$ "
Screws: 4/40"
Cutout: $\frac{5}{16}$ " x $\frac{1}{2}$ "

TYPE TI-9
DT-4 CASE
Length: $2\frac{3}{4}$ "
Width: $1\frac{5}{16}$ "
Height: $2\frac{13}{16}$ "
Mtg.: $2\frac{1}{16}$ " x $1\frac{1}{16}$ "
Studs: 8-32
Cutout: $\frac{3}{8}$ " x $\frac{5}{8}$ "

TYPE TI-10
DT-3 CASE
Length: $1\frac{25}{32}$ "
Width: $\frac{7}{8}$ "
Height: 2"
Mtg.: $\frac{7}{8}$ " x $\frac{9}{32}$ "
Inserts: 6-32
Cutout: $\frac{3}{8}$ " x $\frac{5}{8}$ "

TYPE TI-10
DT-5 CASE
Diameter: $1\frac{13}{16}$ "
Height: $1\frac{3}{16}$ "
Mtg.: $1\frac{1}{8}$ "
Inserts: 6-32
Cutout: $\frac{9}{16}$ " x $\frac{3}{16}$ "

TYPES TI-8 & 8^s

Available in following type cases: DM and DT-1

TYPE TI-8

Frequency Range — Up to 60 KC
Non-stabilized
Maximum Inductance — 100 MHY
Maximum "Q" 150 @ 50 KC

Cat. No. Uncased	Inductance Value
F-1821	.1 MHY
F-1822	.2 MHY
F-1823	.3 MHY
F-1824	.4 MHY
F-1825	.5 MHY
F-1826	1 MHY
F-1827	2 MHY

TYPE TI-8^s

Frequency Range — Up to 60 KC
Stabilized
Maximum Inductance — 100 MHY
Maximum "Q" 150 @ 50 KC

Cat. No. Uncased	Inductance Value
F-1828	3 MHY
F-1829	4 MHY
F-1830	5 MHY
F-1831	7.5 MHY
F-1832	10 MHY
F-1833	15 MHY
F-1834	20 MHY

Cat. No. Uncased	Inductance Value
F-1835	25 MHY
F-1836	30 MHY
F-1837	40 MHY
F-1838	50 MHY
F-1839	75 MHY
F-1840	100 MHY

TYPE TI-9^s

Available in following type cases: DC and DT-4

Frequency Range — Up to 60 KC
Stabilized

Maximum Inductance — 500 MHY
Maximum "Q" 270 @ 17.5 KC

Cat. No. Uncased	Inductance Value
F-1554	1 MHY
F-1555	2 MHY
F-1556	3 MHY
F-1557	4 MHY
F-1558	5 MHY
F-1559	7.5 MHY

Cat. No. Uncased	Inductance Value
F-1560	10 MHY
F-1561	15 MHY
F-1562	30 MHY
F-1563	50 MHY
F-1564	75 MHY
F-1565	100 MHY

Cat. No. Uncased	Inductance Value
F-1566	150 MHY
F-1567	200 MHY
F-1568	300 MHY
F-1569	400 MHY
F-1570	500 MHY

TYPE TI-10^s

Available in following type cases: DC, DT-3 and DT-5

Frequency Range — Up to 60 KC
Stabilized

Maximum Inductance — 200 MHY
Maximum "Q" 180 @ 40 KC

Cat. No. Uncased	Inductance Value
F-1579	1 MHY
F-1580	2 MHY
F-1581	3 MHY
F-1582	4 MHY
F-1583	5 MHY

Cat. No. Uncased	Inductance Value
F-1584	7.5 MHY
F-1585	10 MHY
F-1586	15 MHY
F-1587	30 MHY
F-1588	50 MHY

Cat. No. Uncased	Inductance Value
F-1589	75 MHY
F-1590	100 MHY
F-1591	150 MHY
F-1592	200 MHY

TYPE TI-11^s

Available in following type cases: DC and DT-4

Frequency Range — Up to 15 KC
Stabilized

Maximum Inductance — 50 HY
Maximum "Q" 255 @ 4 KC

Cat. No. Uncased	Inductance Value
F-1747	1 MHY
F-1748	2 MHY
F-1749	3 MHY
F-1750	4 MHY
F-1751	5 MHY
F-1752	10 MHY
F-1753	15 MHY
F-1754	30 MHY
F-1755	50 MHY
F-1756	75 MHY
F-1757	100 MHY
F-1758	150 MHY

Cat. No. Uncased	Inductance Value
F-1759	200 MHY
F-1760	300 MHY
F-1761	400 MHY
F-1762	500 MHY
F-1763	750 MHY
F-1764	1.00 HY
F-1765	1.50 HY
F-1766	2.00 HY
F-1767	2.50 HY
F-1768	3.00 HY
F-1769	3.50 HY
F-1770	4.00 HY

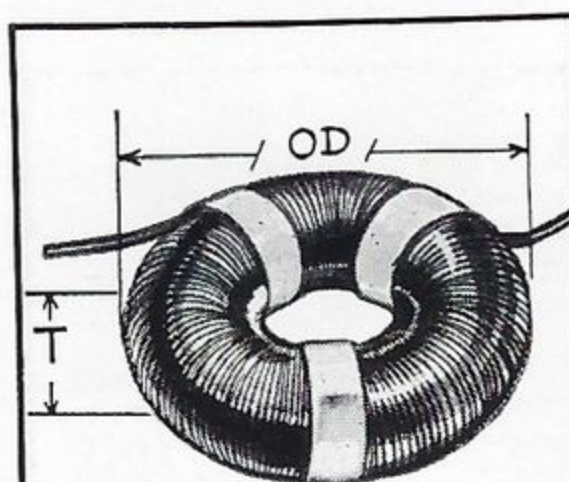
Cat. No. Uncased	Inductance Value
F-1771	4.50 HY
F-1772	5.00 HY
F-1773	7.50 HY
F-1774	10.00 HY
F-1775	15.00 HY
F-1776	20.00 HY
F-1777	25.00 HY
F-1778	30.00 HY
F-1779	40.00 HY
F-1780	50.00 HY

NOTE: When ordering Freed Toroidal Inductors in Commercial Type Cases, add "C" to catalog number.
When ordering Hermetically Sealed units, add "H" to catalog number.
*Commercial type cases have Bakelite cover with solder lugs.

FREED Transformers

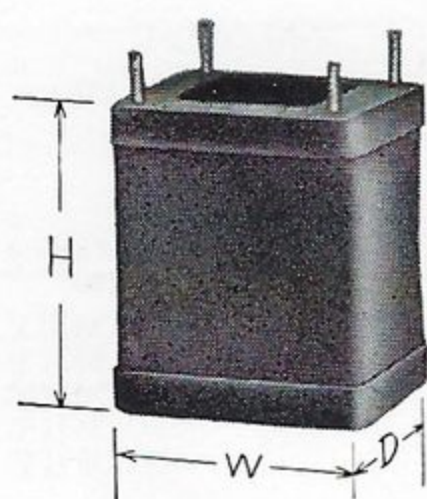
FREED TOROIDAL INDUCTORS

STANDARD TOLERANCE $\pm 1\%$



UNCASED DIMENSIONS

Type	T	OD
TI-12	$1\frac{5}{16}$ "	$2\frac{1}{8}$ "
TI-13	1"	$2\frac{1}{8}$ "

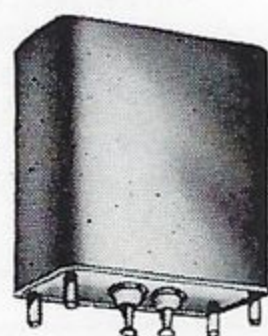


DC

Types TI-12, TI-13

H	W	D
3"	$2\frac{5}{8}$ "	$2\frac{1}{4}$ "

Mtg. Centers $2" \times 1\frac{3}{4}"$
8-32 Studs



DT-4 CASE

Length: $2\frac{3}{4}"$
Width: $1\frac{5}{16}"$
Height: $2\frac{13}{16}"$
Mounting: $2\frac{1}{16}" \times 1\frac{1}{16}"$
Studs: 8-32
Cutout: $\frac{3}{8}" \times \frac{5}{8}"$

TYPES TI-12 & 12^s

Available in case types: DC and DT-4

TYPE TI-12

Frequency Range — Up to 15 KC
Non-stabilized

Maximum Inductance — 30 HY
Maximum "Q" 200 @ 5 KC

Cat No. Uncased	Inductance Value
F-1655.....	1 MHY
F-1656.....	2 MHY
F-1657.....	3 MHY
F-1658.....	4 MHY
F-1659.....	5 MHY
F-1660.....	7.5 MHY
F-1661.....	10 MHY
F-1662.....	15 MHY
F-1663.....	30 MHY
F-1664.....	50 MHY
F-1665.....	75 MHY
F-1666.....	100 MHY
F-1667.....	150 MHY
F-1668.....	200 MHY
F-1669.....	300 MHY
F-1670.....	400 MHY
F-1671.....	500 MHY
F-1672.....	600 MHY
F-1673.....	750 MHY
F-1674.....	1,000 MHY

TYPE TI-12^s

Frequency Range — Up to 15 KC
Stabilized

Maximum Inductance — 30 HY
Maximum "Q" 200 @ 5 KC

Cat. No. Uncased	Inductance Value
F-1675.....	1.50 HY
F-1676.....	2.00 HY
F-1677.....	2.50 HY
F-1678.....	3.00 HY
F-1679.....	3.50 HY
F-1680.....	4.00 HY
F-1681.....	4.50 HY
F-1682.....	5.00 HY
F-1683.....	6.00 HY
F-1684.....	7.00 HY
F-1685.....	8.00 HY
F-1686.....	9.00 HY
F-1687.....	10.00 HY
F-1688.....	12.00 HY
F-1689.....	15.00 HY
F-1690.....	17.00 HY
F-1691.....	20.00 HY
F-1692.....	25.00 HY
F-1693.....	30.00 HY

TYPE TI-13^s

Available in case types: DC and DT-4

Frequency Range — Up to 75 KC
Non-stabilized

Maximum Inductance — 500 MHY
Maximum "Q" 340 @ 15 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1629.....	1 MHY	F-1638.....	50 MHY
F-1630.....	2 MHY	F-1639.....	75 MHY
F-1631.....	3 MHY	F-1640.....	100 MHY
F-1632.....	4 MHY	F-1641.....	150 MHY
F-1633.....	5 MHY	F-1642.....	200 MHY
F-1634.....	7.5 MHY	F-1643.....	300 MHY
F-1635.....	10 MHY	F-1644.....	400 MHY
F-1636.....	15 MHY	F-1645.....	500 MHY
F-1637.....	30 MHY		

All Freed Toroidal Inductors can be supplied in tolerances of closer than $\pm 1\%$ on special order. . . . Complete Toroid Catalog with curves for each unit is available on request. . . . Jobbers and Engineers are urged to send for it.

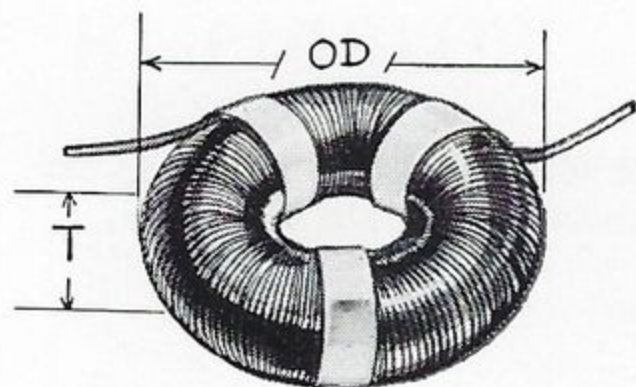
NOTE: When ordering Freed Toroidal Inductors in Commercial Type cases, add "C" to catalog number.

When ordering Hermetically Sealed units, add "H" to catalog number.

FREED Transformers

FREED TOROIDAL INDUCTORS

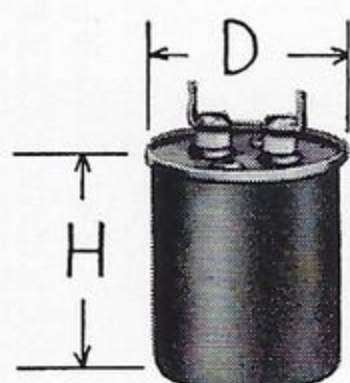
STANDARD TOLERANCE $\pm 1\%$



UNCASED DIMENSIONS

Type	T	OD
TI-14	$\frac{3}{8}$ "	1"
TI-15	$\frac{5}{8}$ "	$1\frac{15}{16}$ "

*Wedding Ring Size



DIMENSIONS DM CASES

Type TI-14

H. 1" D. $1\frac{1}{8}$ "
Mtg. $\frac{5}{8}$ " Inserts 4-40

Type TI-15*

H. $1\frac{1}{2}$ " D. $1\frac{3}{8}$ "
Mtg. $\frac{7}{8}$ " Inserts 4-40

DT-1 CASE

Length: $1\frac{1}{16}$ "
Width: $\frac{1}{2}$ "
Height: $\frac{7}{32}$ "
Mtg. $\frac{3}{4}$ "
Inserts: 4/40"
Cutout: $\frac{5}{16}$ " x $\frac{1}{2}$ "

Type TI-15

DT-2 CASE

Length: $1\frac{3}{8}$ "
Width: $\frac{3}{4}$ "
Height: $1\frac{3}{4}$ "
Mtg.: $\frac{7}{8}$ " x $\frac{9}{32}$ "
Screws: 6-32
Cutout: $\frac{3}{8}$ " x $\frac{5}{8}$ "

Type TI-14

TYPE TI-14^s

Available in following type cases: DM and DT-2

Temperature Stabilized

Frequency Range — Up to 50 KC

Maximum Inductance — 300 MHY

Maximum "Q" 140 @ 25 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1920.....	1 MHY	F-1929.....	30 MHY
F-1921.....	2 MHY	F-1930.....	50 MHY
F-1922.....	3 MHY	F-1931.....	75 MHY
F-1923.....	4 MHY	F-1932.....	100 MHY
F-1924.....	5 MHY	F-1933.....	150 MHY
F-1925.....	7.5 MHY	F-1934.....	200 MHY
F-1926.....	10 MHY	F-1935.....	250 MHY
F-1927.....	15 MHY	F-1936.....	300 MHY
F-1928.....	20 MHY		

TYPE TI-15^s

Available in following type cases: DM and DT-1

Temperature Stabilized

Frequency Range — Up to 50 KC

Maximum Inductance — 100 MHY

Maximum "Q" 140 @ 25 KC

Cat. No. Uncased	Inductance Value	Cat. No. Uncased	Inductance Value
F-1870.....	0.1 MHY	F-1880.....	7.5 MHY
F-1871.....	0.2 MHY	F-1881.....	10 MHY
F-1872.....	0.3 MHY	F-1882.....	15 MHY
F-1873.....	0.4 MHY	F-1883.....	20 MHY
F-1874.....	0.5 MHY	F-1884.....	25 MHY
F-1875.....	1 MHY	F-1885.....	30 MHY
F-1876.....	2 MHY	F-1886.....	40 MHY
F-1877.....	3 MHY	F-1887.....	50 MHY
F-1878.....	4 MHY	F-1888.....	75 MHY
F-1879.....	5 MHY	F-1889.....	100 MHY

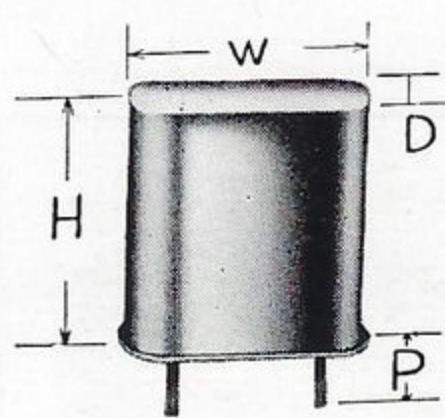
NOTE: When ordering Freed Toroidal Inductors in Commercial Type Cases, add "C" to Catalog Number.

When ordering Hermetically Sealed units, add "H" to catalog number.

Freed Toroidal Inductors can also be supplied on special order to tolerances of closer than $\pm 1\%$.

FREED Transformers

FREED SUB-MINIATURE TOROIDAL INDUCTORS

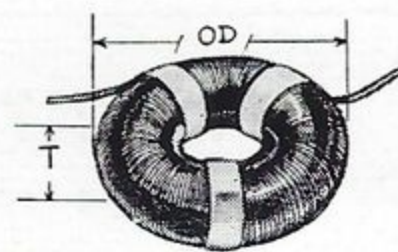


CASE DST-1

H.: $\frac{3}{4}$ "
W.: $\frac{11}{16}$ "
D.: $\frac{3}{32}$ "
P.: $\frac{1}{4}$ "

Pins fit $\frac{1}{2}$ " Crystal socket.

Actual Size
Uncased



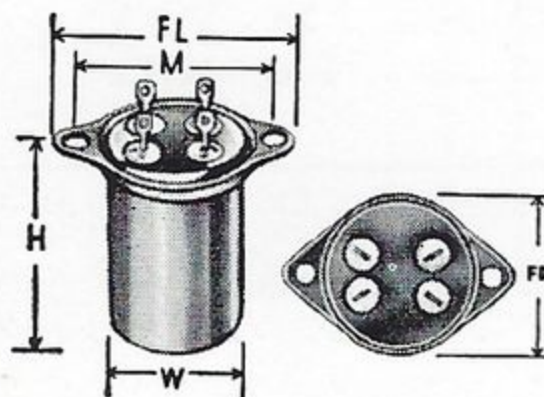
overall diam. $\frac{5}{8}$ "

Four types covering frequency ranges from 500 cycles to 200 Kc. Supplied uncased, or in DST-1 cases.

TYPE TI-16		TYPE TI-17		TYPE TI-18		TYPE TI-19	
Frequency Range up to 15 KC Maximum Inductance 2 HY Non-stabilized		Frequency Range up to 60 KC Maximum Inductance 100 MHY Non-stabilized		Frequency Range up to 75 KC Maximum Inductance 100 MHY Non-stabilized		Frequency Range up to 200 KC Maximum Inductance 5 MHY Non-stabilized	
Catalog No. Uncased	Inductance Value	Catalog No. Uncased	Inductance Value	Catalog No. Uncased	Inductance Value	Catalog No. Uncased	Inductance Value
F-2050	1 MHY	F-2100	.1 MHY	F-2140	.1 MHY	F-2180	.1 MHY
F-2051	2 MHY	F-2101	.3 MHY	F-2141	.2 MHY	F-2181	.2 MHY
F-2052	5 MHY	F-2102	.3 MHY	F-2142	.3 MHY	F-2182	.3 MHY
F-2053	10 MHY	F-2103	.4 MHY	F-2143	.4 MHY	F-2183	.4 MHY
F-2054	15 MHY	F-2104	.5 MHY	F-2144	.5 MHY	F-2184	.5 MHY
F-2055	20 MHY	F-2105	1 MHY	F-2145	1 MHY	F-2185	.6 MHY
F-2056	50 MHY	F-2106	2 MHY	F-2146	2 MHY	F-2186	.7 MHY
F-2057	75 MHY	F-2107	3 MHY	F-2147	3 MHY	F-2187	.8 MHY
F-2058	100 MHY	F-2108	4 MHY	F-2148	4 MHY	F-2188	.9 MHY
F-2059	150 MHY	F-2109	5 MHY	F-2149	5 MHY	F-2189	1 MHY
F-2060	200 MHY	F-2110	7.5 MHY	F-2150	7.5 MHY	F-2190	2 MHY
F-2061	300 MHY	F-2111	10 MHY	F-2151	10 MHY	F-2191	3 MHY
F-2062	400 MHY	F-2112	15 MHY	F-2152	15 MHY	F-2192	4 MHY
F-2063	500 MHY	F-2113	20 MHY	F-2153	20 MHY	F-2193	5 MHY
F-2064	750 MHY	F-2114	30 MHY	F-2154	30 MHY		
F-2065	1.00 HY	F-2115	50 MHY	F-2155	50 MHY		
F-2066	1.25 HY	F-2116	75 MHY	F-2156	75 MHY		
F-2067	1.50 HY	F-2117	100 MHY	F-2157	100 MHY		
F-2068	1.75 HY						
F-2069	2.00 HY						

FREED MINIATURE TRANSISTOR TRANSFORMERS

These high quality miniature transformers are high efficiency audio transformers featuring hermetic sealing for maximum protection against electricity, maximum protection against electrolysis and corrosion of fine wires caused by moisture penetration. The units are constructed in accordance with MIL-T-27 Specifications.



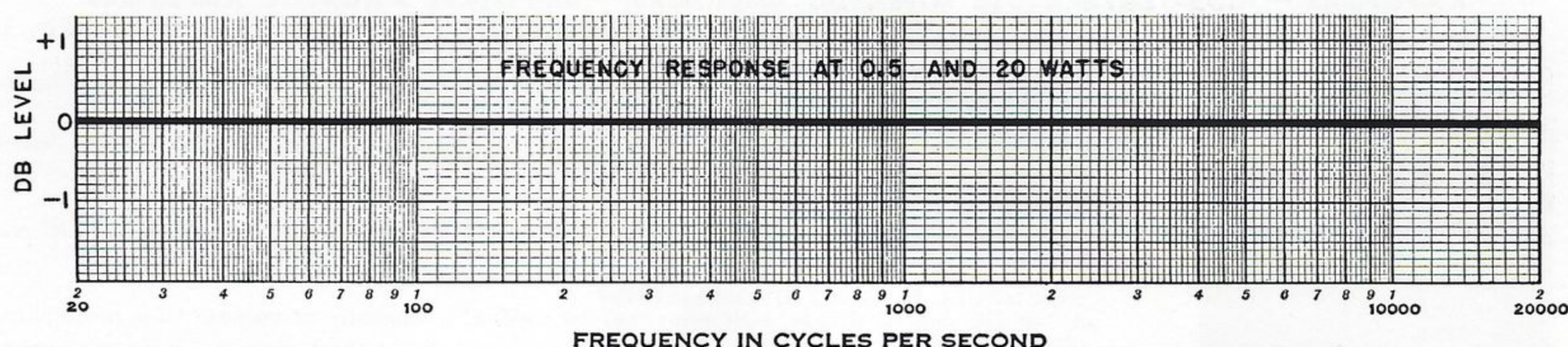
DM-15 CASE DIMENSIONS

FL: 1.375"
FD: 0.975"
W: 0.937"
H: 1.5"
M: 1.125"
Screws: 4-40
Cutout: 0.875"

Cat. No.	Impedance in Ohms		Max. Power Level VU	Frequency Response Cps	Case No.
	Impedance Pri.	In Ohms Sec.			
TMA- 1	500	500	+	± 1 db 200-15,000	DM-15
TMA- 2	50,000	500	+17	± 2 db 300-15,000	DM-15
TMA- 3	50,000	6	+17	± 2 db 300-15,000	DM-15
TMA- 4	100,000	1200 CT	+17	± 3 db 300-15,000	DM-15
TMA- 5	25,000	1200 CT	+17	± 2 db 200-15,000	DM-15
TMA- 6	50,000	1200 CT	+17	± 2 db 200-15,000	DM-15
TMA- 7	600/150	1200 CT	+17	± 1 db 200-15,000	DM-15
TMA- 8	25,000	600	+17	± 1 db 200-15,000	DM-15
TMA- 9	4,000 CT	600/150	+17	± 1 db 200-15,000	DM-15
TMA-10	2,000	3.2	+17	± 1 db 200-15,000	DM-15
TMA-11	4,000 CT	3.2	+17	± 1 db 200-15,000	DM-15

FREED Transformers

NEW FREED CIRCUIT REVISES WILLIAMSON HI-FIDELITY AMPLIFIER FOR IMPROVED PERFORMANCE



Freed ultra high fidelity amplifier with exceptional audio quality is now possible thru the use of specially designed high fidelity low cost Freed transformers and reactors; high fidelity output transformer KA-10, power transformer KP-10 and filter reactors KC-10 and KC-11.

Ask your Freed distributor or write for bulletin No. 5402. This bulletin contains detailed construction and performance characteristics of this unique amplifier.

FREED FILTERS

Freed Standard Filters are **Hermetically Sealed miniature** high performance components designed for both production and laboratory applications in the Communications and Electronic industry. In order to achieve attenuation requirements not obtainable with one single filter, one can combine several standard filters of different transmission characteristics. Wide Band Pass characteristics are obtainable by combining low and high Pass Units. The astatic construction of inductive components together with special shielding reduces the hum pick-up of the standard filters.

The standard filters are available in Low Pass, High Pass and Band Pass Filters.

Low Pass Filters: The attenuation characteristics of Low Pass Filters are 6db at cut-off frequency, 35db at 1.5 cut-off frequency and 40 db at 2 cut-off frequency.

ILP Interstage Low Pass Filter. Characteristic impedance 10,000 ohms.

LLP Line Low Pass Filter. Characteristic Impedance 500/600 ohms.

High Pass Filters: The attenuation characteristics of High Pass Filters are 6db at cut-off frequency, 35db and 40 db at 0.67 and 0.5 cut-off frequency.

IHP Interstage High Pass Filter. Characteristic Impedance 10,000 ohms.

LHP Line High Pass Filter. Characteristic Impedance 500/600 ohms.

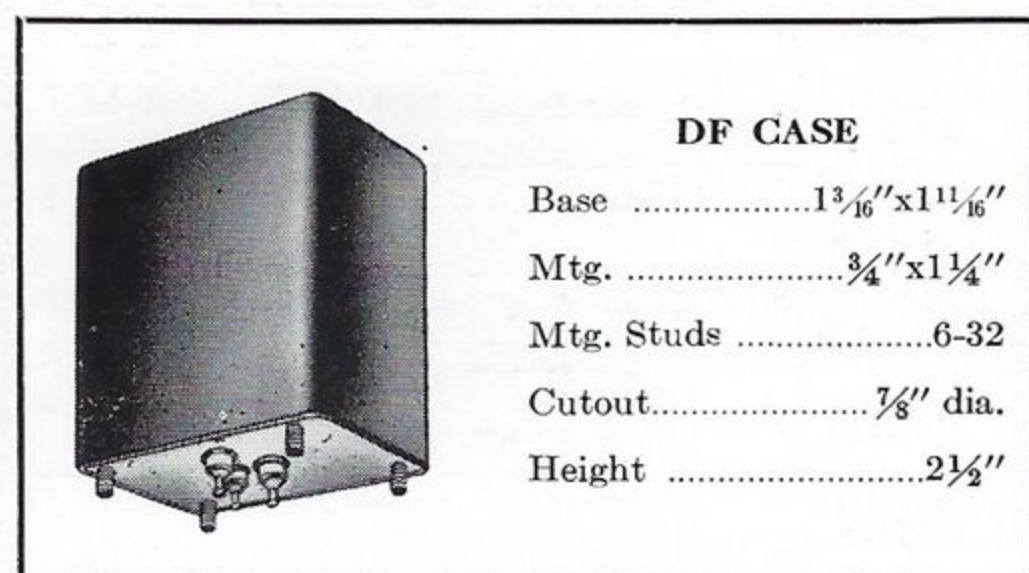
Band Pass Filters: The attenuation characteristics of Band Pass Filters are 2db at plus or minus 3% of center frequency, 40db at 0.5 and 2 center frequency.

IBP Interstage Band Pass Filter. Nominal input impedance — 10,000 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 2:1.

LBP Line Band Pass Filter. Nominal input impedance 500/600 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 9:1.

Special filters in all six types are available for any frequency from 300 to 20,000 cycles.

STOCK FILTERS



DF CASE

Base	1 ³ / ₁₆ "x1 ¹ / ₁₆ "
Mtg.	3/4"x1 ¹ / ₄ "
Mtg. Studs	6-32
Cutout.....	7/8" dia.
Height	2 ¹ / ₂ "

Frequency is indicated by numbers following filter designation:

ILP.....	1500	LLP.....	1500
ILP.....	2000	LLP.....	2000
ILP.....	2500	LLP.....	2500
ILP.....	3000	LLP.....	3000
IHP.....	300	LHP.....	300
IHP.....	400	LHP.....	400
IHP.....	1000	LHP.....	1000
IBP.....	400	LBP.....	400
IBP.....	1000	LBP.....	1000
IBP.....	3000	LBP.....	3000
IBP.....	10,000	LBP.....	10,000

FREED Transformers

FREED MAGNETIC AMPLIFIERS

MAGNETIC AMPLIFIERS — SATURABLE TRANSFORMERS — SATURABLE REACTORS — FAST-RESPONSE MAGNETIC AMPLIFIERS — HIGH-TEMPERATURE MAGNETIC AMPLIFIERS — DRIFT-FREE MAGNETIC AMPLIFIERS



Freed Magnetic Amplifiers, Saturable Transformers and Reactors are designed for efficient operation and long life. They can be used in most applications that require reliable power amplifiers. The types of amplifiers listed below are designed to control AC servomotors. Development facilities are available for the design of magnetic amplifiers to meet specific requirements. All standard units are hermetically sealed and meet MIL-T-27 Specifications.

SATURABLE TRANSFORMERS

Controlled with dual triode; plate supply can be either DC or AC; no rectifiers; AC or DC control signals.

PUSH-PULL MAGNETIC AMPLIFIERS

AC or DC control signals; high gain; may be used with magnetic or vacuum tube preamplifiers if needed.

FAST-RESPONSE MAGNETIC AMPLIFIERS

High gain; half-cycle per stage response time; AC or DC control signals; RC feedback networks for control system stabilization can be used directly; preamplifier not needed.

HIGH TEMPERATURE MAGNETIC AMPLIFIERS

Designed to operate in ambient temperatures as high as 200°C.; AC or DC control signals.

DRIFT-FREE MAGNETIC AMPLIFIERS

For rigid drift-free requirements of control systems; designed to meet specific requirements.

SATURABLE TRANSFORMERS								
Single Phase Supply Voltage and Frequency	Full Power Output	Max. Voltage Output	Signal Req. for full output	Maximum Power Gain	Mfr. and Type No.	Typical Motor Load Stall Torque	No. Load Speed	FREED Catalog Number
115V., 60 cps.	15 watts	115V. AC phase reversible	20 m.a. DC	30	Diehl FPE25-11	5.5 in.-oz.	3500 RPM	MAS-1
115V., 400 cps.	5 watts	115V. AC phase reversible	12 m.a. DC	25	Kearfott R110-2	1.5 in.-oz.	5300 RPM	MAS-2
115V., 400 cps.	10 watts	115V. AC phase reversible	14 m.a. DC	25	Kearfott R111-2	2.4 in.-oz.	5300 RPM	MAS-3
115V., 400 cps	18 watts	115V. AC phase reversible	14 m.a. DC	57	Kearfott R112-2	2.8 in.-oz.	9800 RPM	MAS-4
115V., 400 cps.	2.7 watts	26V. AC phase reversible	10 m.a. DC	9	Kearfott R118	.32 in.-oz.	7200 RPM	MAS-5
PUSH-PULL MAGNETIC AMPLIFIERS								
115V., 60 cps.	5 watts	115V. AC phase reversible	1.2 m.a. DC	5×10^4	Kollsman 951-0160	0.57 in.-oz.	3450 RPM	MAP-1
115V., 60 cps.	15 watts	115V. AC phase reversible	1.6 m.a. DC	3.5×10^6	Diehl FPE25-11	5.5 in.-oz.	3500 RPM	MAP-2
115V., 60 cps.	50 watts	115V. AC phase reversible	2 m.a. DC	2.5×10^4	Diehl FPF49-9	20 in.-oz.	3500 RPM	MAP-3
115V., 60 cps.	175 watts	115V. AC phase reversible	2 m.a. DC	3×10^5	Diehl FPF85-18-1	95 in.-oz.	3500 RPM	MAP-4
115V., 60 cps.	650 watts	115V. AC phase reversible	1.5 m.a. DC	1×10^6	Diehl ZP105-2212-1	190 in.-oz.	3500 RPM	MAP-5
115V., 60 cps.	2000 watts	115V. AC phase reversible	50 m.a. DC	200	Diehl ZP43-2247-1	570 in.-oz.	3500 RPM	MAP-6
115V., 400 cps.	15 watts	115V. AC phase reversible	.55 m.a. DC	3.9×10^5	Kearfott R112-2	2.8 in.-oz.	9800 RPM	MAP-7
115V., 400 cps.	50 watts	115V. AC phase reversible	1.75 m.a. DC	1×10^4	Bendix CK-3000	14 in.-oz.	3700 RPM	MAP-8
115V., 400 cps.	140 watts	115V. AC phase reversible	3 m.a. DC	1×10^5	Kearfott XW-14459	23 in.-oz.	10,500 RPM	MAP-9
115V., 400 cps.	5 watts	115V. AC phase reversible	.5 m.a. DC	4×10^5	Kearfott R110-2	1.5 in.-oz.	5300 RPM	MAP-10
115V., 400 cps.	10 watts	115V. AC phase reversible	.5 m.a. DC	4×10^5	Kearfott R111-2	2.4 in.-oz.	5300 RPM	MAP-11

FREED Transformers

FREED MAGNETIC AMPLIFIERS — (Continued)

FAST-RESPONSE MAGNETIC AMPLIFIERS

(Time of response: 2 cycles of power frequency for 100% response)

Single Phase Supply Voltage and Frequency	Full Power Output	Max. Voltage Output	Signal Req. for Full Output	Max. Power Gain	Mfr. and Type No.	Typical Motor Load Stall Torque	No Load Speed	FREED Type No.
115V., 60 cps.	15 watts	115V. AC EFF phase reversible	.1V. AC or DC (10,000 ohms input impedance)	1.5×10^5	Diehl FPE25-11	5.5 in.-oz.	3500 RPM	MAF-1
115V., 400 cps.	5 watts	57.5V. AC EFF phase reversible	.1V. AC or DC (10,000 ohms input impedance)	5×10^6	Kearfott R110-2	1.5 in.-oz.	5300 RPM	MAF-2
115V., 400 cps.	10 watts	57.5V. AC EFF phase reversible	.1V. AC or DC (10,000 ohms input impedance)	1×10^7	Kearfott R111-2	2.4 in.-oz.	5300 RPM	MAF-3
115V., 400 cps.	50 watts	115V. AC EFF phase reversible	.1V. AC or DC (10,000 ohms input impedance)	5×10^7	Bendix CK-3000	14 in.-oz.	3700 RPM	MAF-4

HIGH TEMPERATURE MAGNETIC AMPLIFIERS

Temperature Range: -55°C. to $+200^{\circ}\text{C.}$

115V., 60 cps.	15 watts	115V. AC phase reversible	1.6 m. a. DC	3.5×10^4	Diehl FPE25-11	5.5 in.-oz.	3500 RPM	MAH-1
115V., 400 cps.	2.7 watts	26V. AC phase reversible	2 m.a. DC	1×10^5	Kearfott R118	.32 in.-oz.	7200 RPM	MAH-2
115V., 400 cps.	5 watts	57.5V. AC phase reversible	2 m.a. DC	4×10^5	Kearfott R110-2	1.5 in.-oz.	5300 RPM	MAH-3

FAST-RESPONSE MAGNETIC AMPLIFIERS — DRIFT-FREE

(Time of response: 2 cycles of power frequency for 100% response)
Drift of null: None

115V. 60 cps.	15 watts	115V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	1.5×10^7	Diehl FPE25-11	5.5 in.-oz.	3500 RPM	MAFS-1
115V., 400 cps.	5 watts	57.5V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	5×10^6	Kearfott R 110-2	1.5 in.-oz.	5300 RPM	MAFS-2
115V., 400 cps.	10 watts	57.5V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	1×10^7	Kearfott R 111-2	2.4 in.-oz.	5300 RPM	MAFS-3
115V., 400 cps.	50 watts	115V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	5×10^7	Bendix CK-3000	14 in.-oz.	3700 RPM	MAFS-4

HIGH TEMPERATURE MAGNETIC AMPLIFIERS — DRIFT-FREE

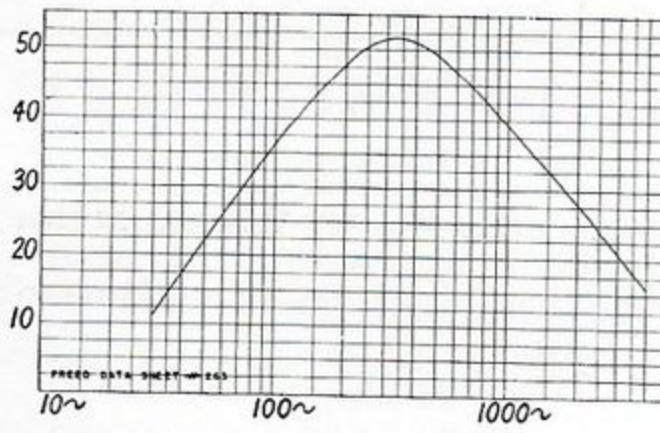
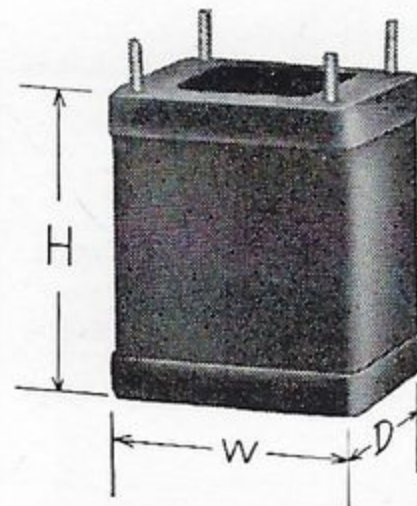
(Time of response: 2 cycles of power frequency for 100% response)
Drift of null: None

Temperature Range: -55°C. to $+200^{\circ}\text{C.}$

115V., 60 cps.	15 watts	115V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	1.5×10^7	Diehl FPE 25-11	5.5 in.-oz.	3500 RPM	MAHS-1
115V., 400 cps.	2.7 watts	26V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	2.6×10^6	Kearfott R 118	.32 in.-oz.	7200 RPM	MAHS-2
115V., 400 cps.	5 watts	57.5V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	5×10^6	Kearfott R 110-2	1.5 in.-oz.	5300 RPM	MAHS-3
115V., 400 cps.	10 watts	57.5V. AC phase reversible	.1V. AC (10,000 ohms input impedance)	1×10^7	Kearfott R 111-2	2.4 in.-oz.	5300 RPM	MAHS-4

FREED Transformers

QUALITY GRADE HIGH Q REACTORS



CASE DIMENSIONS

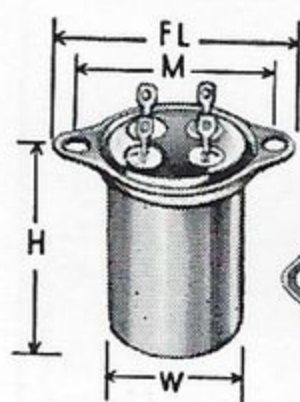
Case #	Mtg. Centers	W	Dimensions D	H
DC-2A	2" x 1 3/4"	2 5/8"	2 1/4"	3"
Knockout	Mtg.	Wgt.		
1 1/2" x 1 3/8"	8-32's	2 3/4"		

HIGH Q. LOW FREQUENCY REACTORS

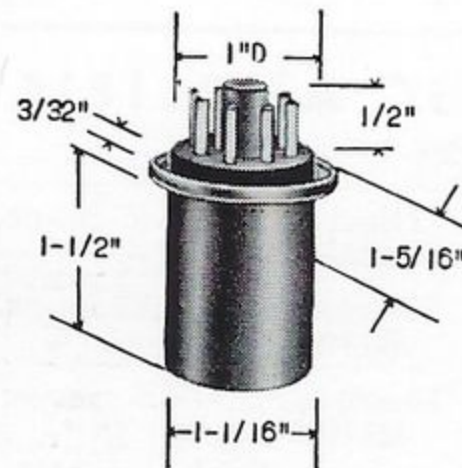
Whenever there is need for a stable reactor with high Q at the lower audio frequencies, these reactors will be ideally suited. Units up to 400 henries can be supplied with inductance tolerance of $\pm 2\%$.

Catalog Number	Inductance in Henries	Case Size
QGC-1	100	DC-2AT
QGC-2	75	DC-2AT
QGC-3	50	DC-2AT
QGC-4	25	DC-2AT
QGC-5	10	DC-2AT
QGC-6	5	DC-2AT
QGC-7	1	DC-2AT

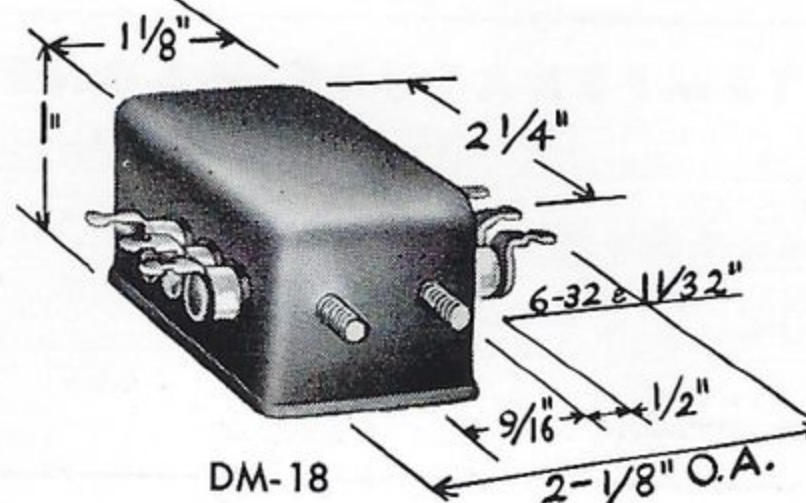
MILITARY PULSE TRANSFORMERS



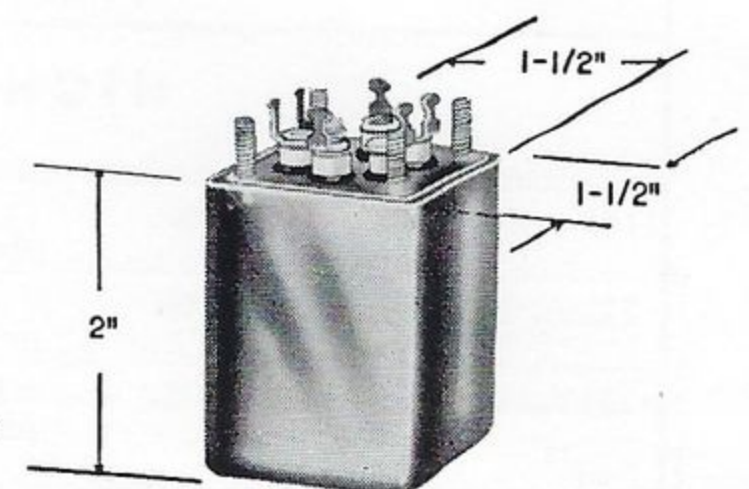
DM-12



DM-8



DM-18



Mtg. Centers 1-1/16" DM-01

CASE DIMENSIONS

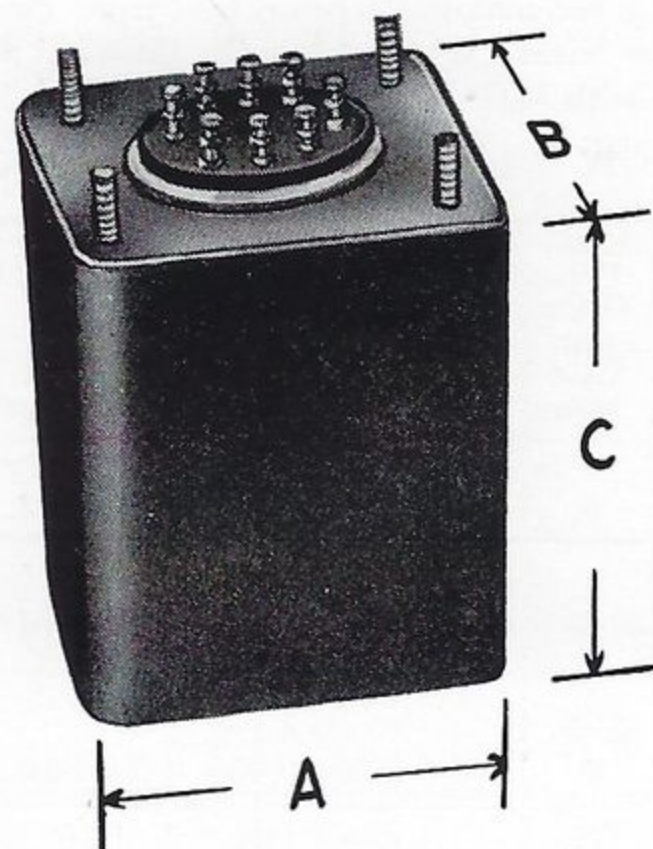
CASE #	FL	FD	W	H	M	Screws	Cutout	Wgt.
DM-12	1 1/2"	1 1/32"	1 5/16"	1 15/32"	1 7/32"	4-40	7/8"	1.5 oz.
DM-8	Dimensions shown on drawing.							
DM-18	Dimensions shown on drawing.							
DM-01	Dimensions shown on drawing (knockout 1 1/4" diam.)							

HERMETICALLY SEALED PULSE TRANSFORMERS for use in blocking oscillators, low level interstage coupling, and modulator outputs. Made in accordance with MIL-T-27 specifications. These pulse transformers are designed for maximum power, efficiency and optimum pulse performance. Balanced coil structures permit series or parallel connection of windings for turn ratios other than unity. Pulse characteristics, voltages and impedance levels will depend upon interconnections made.

Catalog Number	Application	Pulse Voltage Kilovolts	Pulse Duration Microseconds	Duty Ratio	Test Voltage KV., RMS	Characteristic Impedance Ohms	Case Size
MPT- 1	Blocking oscillator or interstage coupling.	0.25/0.25/0.25	0.2-1.0	.004	0.7	250	DM-12
MPT- 2	Blocking oscillator or interstage coupling.	.025/0.25	0.2-1.0	.004	0.7	250	DM-12
MPT- 3	Blocking oscillator or interstage coupling.	0.5/0.5/0.5	0.2-1.5	.002	1.0	250	DM-18
MPT- 4	Blocking oscillator or interstage coupling.	0.5/0.5	0.2-1.5	.002	1.0	250	DM-18
MPT- 5	Blocking oscillator or interstage coupling.	0.5/0.5/0.5	0.5-2.0	.002	1.0	500	DM-12
MPT- 6	Blocking oscillator or interstage coupling.	0.5/0.5	0.5-2.0	.002	1.0	500	DM-12
MPT- 7	Blocking oscillator, interstage coupling or low power output.	0.7/0.7/0.7	0.5-1.5	.002	1.5	200	DM-18
MPT- 8	Blocking oscillator interstage coupling or low power output.	0.7/0.7	0.5-1.5	.002	1.5	200	DM-18
MPT- 9	Blocking oscillator, interstage coupling or low power output.	1.0/1.0/1.0	0.7-3.5	.002	2.0	200	DM-18
MPT-10	Blocking oscillator, interstage coupling or low power output.	1.0/1.0	0.7-3.5	.002	2.0	200	DM-18
MPT-11	Blocking oscillator, interstage coupling or low power output.	1.0/1.0/1.0	1.0-5.0	.002	2.0	500	DM-01
MPT-12	Blocking oscillator, interstage coupling or low power output.	0.15/0.15 0.3/0.3	0.2-1.0	.004	0.7	700	DM-8

FREED Transformers

STANDARD MILITARY AUDIO TRANSFORMERS



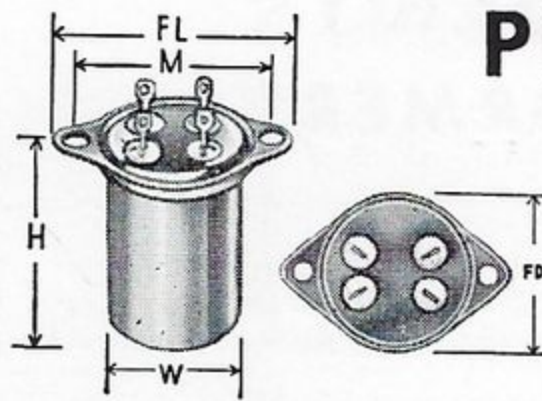
A group of hermetically sealed audio transformers designed in accordance with MIL-T-27 specifications. The functional characteristics of these transformers were established by the Armed Services.

#AJ CASE DIMENSIONS

A	B	C	Mtg. Centers	Studs
1 5/8"	1 5/8"	2 3/8"	1 1/16"	1 1/16"
				6-32

Cat. No.	Application	Type Designation	Impedance Level in Ohms		Ratio	Max. Power Level V.U.	Max. Pri. D.C. per Side in MA	Max. D.C. Unbalance	Frequency Response	Case No.
			Primary	Secondary						
MGA 1	Transformer; inter-stage, single or P.P. plates to single or P.P. grids	TF1A15AJ	10,000 CT	90,000 split and CT	1:3 overall	+15	10	10	±2 DB 300-10,000	AJ
MGA 2	Transformer; matching, 600 ohm line to voice coil	TF1A16AJ	600 split	4, 8, 16	6.12:1 overall	+33	0	0	±2 DB 300-10,000	AJ
MGA 3	Transformer; input, 600 ohm line to single or P.P. grids	TF1A10AJ	600 split	135,000 CT	1:15	+15	0	0	±2 DB 300-10,000	AJ
MGA 4	Transformer; matching, 600 ohm line to 600 ohm line	TF1A16AJ	600 split	600 split	1:1	+15	0	0	±2 DB 300-00,000	AJ
MGA 5	Transformer; output, single plate 7600 ohm, 4800 ohm to 600 ohm line	TF1A13AJ	7600 tap @ 4800	600 split	3.56:1	+33	40	40	±2 DB 300-10,000	AJ
MGA 6	Transformer; output, single plate 7600 ohm, 4800 ohm to voice coil	TF1A13AJ	7600 tap @ 4800	4, 8, 16	21.8:1	+33	40	40	±2 DB 300-10,000	AJ
MGA 7	Transformer; output, single or P.P. plates to 600 ohm line	TF1A13AJ	15,000 CT	600 split	5:1	+33	10	10	±2 DB 300-10,000	AJ
MGA 8	Transformer; output, P.P. plates to 600 ohm line	TF1A13AJ	24,000 CT	600 split	6.32:1	+30	10	1	±2 DB 300-10,000	AJ
MGA 9	Transformer; output, P.P. plates to 600 ohm line	TF1A13AJ	60,000 CT	600 split	10:1	+27	10	1	±2 DB 300-10,000	AJ

FREED Transformers



PROFESSIONAL GRADE COMPONENTS MINIATURE AUDIO TRANSFORMERS

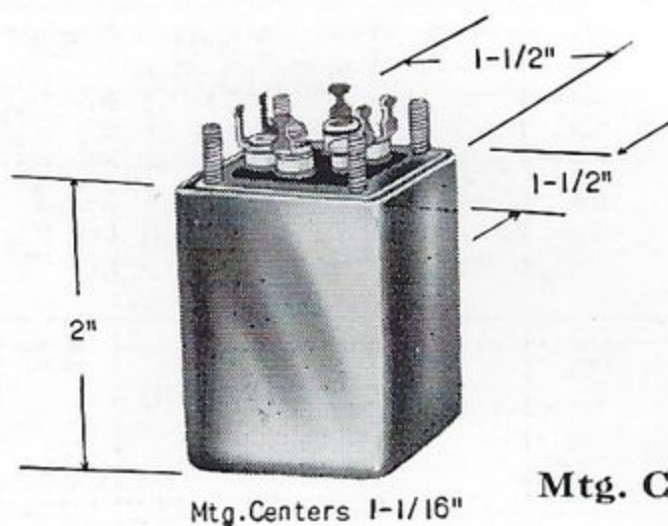
These high quality, miniature transformers feature hermetic sealing for maximum protection from moisture penetration with subsequent electrolysis and corrosion of fine wires. While primarily intended for non-military equipment, these units are constructed in accordance with MIL-T-27 Specifications.

DM-12 CASE DIMENSIONS FL — 1½" FD — 1½" W — ½" H — 1½" M — 1½"

Catalog No.	Application	Impedance Level Ohms Primary Secondary	Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
PMA 1	Line or microphone to single or push-pull grids.	50/200/500 60,000 C.T.	+8	1:11		0	0	±2.0 DB 30-20,000	DM-12
PMA 2	Dynamic microphone or speaker voice coil to single or P.P. grid.	4/8 60,000 C.T.	+8	1:86.6		0	0	±2.0 DB 30-20,000	DM-12
PMA 3	Line or microphone to single or push-pull grids. Magnetically shielded.	50/200/500 60,000 C.T.	+8	1:11	30	0	0	±2.0 DB 30-20,000	DM-12
PMA 4	Single triode plate to single or push-pull grids.	15,000 60,000 C.T.	+8	1:2		0	0	±2 DB 30-10,000	DM-12
PMA 5	Single triode plate to push-pull grids.	15,000 60,000 C.T.	+8	1:2		2	2	±2 DB 200-10,000	DM-12
PMA 6	Single triode plate to multiple line.	15,000 50/200/500	+8	5.48:1		0	0	±2 DB 30-20,000	DM-12
PMA 7	Single triode plate to multiple line.	15,000 50/200/500	+8	5.48:1		2	2	±1 DB 200-10,000	DM-12
PMA 8	Push-pull triode plates to multiple line.	30,000 C.T. 50/200/500	+8	7.75:1		2	0.25	±2 DB 30-20,000	DM-12
PMA 9	Crystal mike or pickup to multiple line	60,000 50/200/500	+8	11:1		0	0	±2 DB 30-20,000	DM-12
PMA 10	Mixing or matching	50/200 50/200/500	+8	1:1.50		0	0	±2 DB 30-20,000	DM-12
PMA 11	Parallel Feed Reactor.	40 hy, 3 ma dc, 3500 ohms d.c. resistance							DM-12

*1 mw. reference level.

PROFESSIONAL GRADE AUDIO TRANSFORMERS



For popular priced high fidelity amplifiers, professional equipment and receivers, for home and public address service. Freed has developed this series of audio transformers using the latest design techniques and the best commercially available materials. Except for units carrying unbalanced direct current, the frequency response is better than ±1 DB from 30 to 15,000 cycles. All units feature excellent performance characteristics with minimum size and weight.

INPUT TRANSFORMERS

DM-01 CASE DIMENSIONS

U-500 IMPEDANCES IN OHMS

Mtg. Centers Dimensions Knockout Mtg. Wgt. 50, 125, 200CT, 250, 330, 500 CT.
1 1/16" x 1 1/16" 1 1/2" 1 1/2" 2" 1 3/8" diam. 6-32 1/2 125 and 500 ohms can be used for 150 and 600 ohms.

Catalog No.	Application	Impedance Level Ohms Primary Secondary	Maximum Power Level V.U.*	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case Number
PGA 1	Universal 500 ohm line to single grid.	U-500 50,000	+12	1:10	50	0	0	±1.0 DB 30-15,000	DM-01T
PGA 2	Universal 500 ohm line to push-pull grids.	U-500 60,000 split	+12	1:11	50	0	0	±1.0 DB 30-15,000	DM-01T
PGA 3	Universal 500 ohm line to push-pull grids.	U-500 100,000 split	+12	1:14.1	50	0	0	±1.0 DB 30-15,000	DM-01T
PGA 4	Bridging line to single grid.	10,000 60,000	+12	1:2.45	50	0	0	±1.0 DB 30-15,000	DM-01T
PGA 5	Bridging line to push-pull grids.	10,000 60,000 split	+12	1:2.45	50	0	0	±1.0 DB 30-15,000	DM-01T
PGA 6	Low level line matching.	U-500 U-500	+18	1:1	50	0	0	±1 DB 30-15,000	DM-01T

*1 mw. reference level.

FREED Transformers

PROFESSIONAL GRADE COMPONENTS LOW LEVEL OUTPUT AND MIXING TRANSFORMERS

Cat. No.	Application	Impedance Level Ohms		Maximum Power Level V.U.* or Power in Watts	Ratio	Max. Pri. D.C. Per Side Ma.	D.C. Unbalance Ma.	Frequency Response C.P.S.	Case Number
		Primary	Secondary						
PGA 7	Single triode plate to Universal 500 ohm line. Shunt feed.	15,000	U500	+18	5.48:1	0	0	±1.0 DB 30-15,000	DM-01T
PGA 8	Single triode plate to Universal 500 ohm line.	15,000	U500	+18	5.48:1	8	8	±1.0 DB 100-15,000	DM-01T
PGA 9	Push-pull triode plates to Universal 500 ohm line.	20,000 CT	U500	+30	6.32:1	8	0.5	±1.0 DB 30-15,000	DM-01T
PGA 10	Low level line matching.	U500	U500	+18	1:1	0	0	±1.0 DB 30-15,000	DM-01T

*1 mw. reference level.

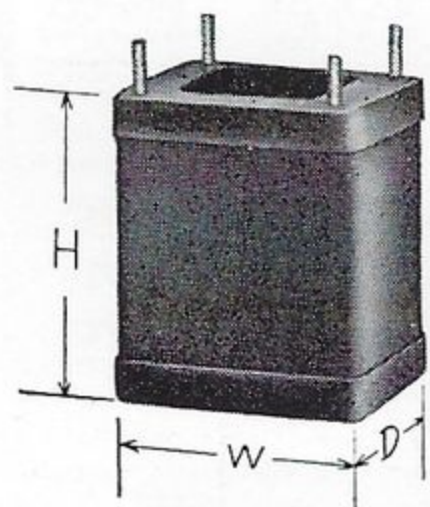
U-500 IMPEDANCES IN OHMS 50, 125, 200 CT, 250, 330, 500 CT — 125 and 500 ohms can be used for 150 and 600 ohms.

DRIVER TRANSFORMERS

Cat. No.	Application	Primary Impedance Ohms	Turn Ratio Pri: 1/2 Sec.	Max. Level V.U.*	Max. Pri. D.C. Per Side Ma.	Max. D.C. Unbalance Ma.	Frequency Response C.P.S.	Case No.
PGA 11	Universal 500 ohm line to push-pull grids.	U500	1:1	+40	0	0	±1.0DB 30-15,000	DC-2AL
PGA 12	Push-pull 6C4, 6SN7 triodes to push-pull 2A3, 6L6 grids.	20,000 C.T.	3.0:1	+30	10	1	±1.0 DB 30-15,000	DC-1AL
PGA 13	Push-pull 2A3, 6B4, 6A5G to push-pull 809, T-40, 4/125A	5,000 C.T.	3.2:1	+40	50	5	±1.0 DB 30-15,000	DC-2AL

U-500 IMPEDANCES IN OHMS 50, 125, 200 CT, 250, 330, 500 CT — 125 and 500 ohms can be used for 150 and 600 ohms.

HIGH LEVEL OUTPUT TRANSFORMERS



CASE DIMENSIONS

Case No.	Mtg. Cent.	Dimensions W D H			Knockout	Mtg. Studs	Wgt.
DC-2AL	2"x1 3/4"	2 5/8"	2 1/4"	3"	1 1/2"x1 3/8"	8-32	2 3/4
DC-2BL	2"x1 3/4"	2 5/8"	2 1/4"	3 1/2"	1 1/2"x1 3/8"	8-32	3
DC-4AL	2 1/2"x2 1/2"	3 1/8"	3"	3 3/4"	2"x1 3/4"	8-32	4 1/2
DC-5AL	3 1/8"x2 5/8"	4 1/8"	3 1/2"	3 7/8"	2 1/2"x2"	10-32	9
DC-6AL	3 3/4"x3"	5"	4 1/8"	4 7/8"	3"x2 1/2"	10-32	15

L after case number indicates Leads.
T after case number indicates Terminals.

U-16 IMPEDANCES IN OHMS
2, 4, 8, 12, 16

U-500 IMPEDANCES IN OHMS
50, 125, 200CT, 250, 330, 500CT.
125 and 500 ohms can be used for 150 and 600 ohms.

A 70 volt level can be obtained for the following impedances:

500 ohms — 10 watts + 40 VU
330 ohms — 15 watts + 42 VU
250 ohms — 20 watts + 43 VU
200 ohms — 25 watts + 44 VU
125 ohms — 40 watts + 46 VU
50 ohms — 100 watts + 50 VU

Cat. No.	Application	Impedance Level Ohms		Maximum Power Level V.U.* or Power in Watts	Ratio	Max. Pri. D.C. Per Side Ma.	D.C. Unbalance Ma.	Frequency Response C.P.S.	Case Number
		Primary	Secondary						
PGA 14	P.P. 6K6, 6AR5, 7B5 Class A to Universal voice coil.	12,000 CT	U16	+40 (10 watts)	27.4:1	40	4	±1.0 DB 30-15,000	DC-2BL
PGA 15	P.P. 6F6 Cl. AB ₂ , P.P. 6V6, 6AQ5, 7C5, 6L6 Cl. AB ₁ , to Universal voice coil.	10,000 C.T.	U16	+43 (20 watts)	25:1	50	5	±1.0 DB 30-15,000	DC-4AL
PGA 16	P.P. 6L6 Cl. AB ₁ , self bias to Universal 500 ohm line.	9,000 C.T.	U500	+44.8 (30 watts)	4.23:1	50	5	±1.0 DB 30-15,000	DC-4AL
PGA 17	As above to Universal voice coil.	9,000 C.T.	U16	+44.8	23.7:1	50	5	±1.0 DB 30-15,000	DC-4AL
PGA 18	P.P. 6N7 Cl. B, P.P. 6V6, 6AQ5, 7C5 Cl. AB ₁ to Universal voice coil.	8,000 CT.	U16	+41.8 (15 watts)	22.3:1	45	5	±1.0 DB 30-15,000	DC-4AL
PGA 19	P.P. 6L6, fixed bias, Cl. AB ₁ to Universal 500 ohm line.	6,600 C.T.	U500	+44.8 (30 watts)	3.63:1	70	7	±1.0 DB 30-15,000	DC-4AL

*1 mw. reference level.

FREED Transformers

PROFESSIONAL GRADE COMPONENTS

HIGH LEVEL OUTPUT TRANSFORMERS

Continued from previous page — See same for case sizes

Catalog No.	Application	Impedance Level Ohms Primary Secondary	Max. Power Level V.U.* or Power in Watts Maximum	Ratio	Max. Pri. D.C. per Side Ma.	D.C. Unbal- ance Ma.	Frequency Response C.P.S.	Case Number
PGA 20	As above to Universal voice coil.	6600 C.T. U16	+44.8	20.3:1	70	7	±1.0 DB 30-15,000	DC-4AL
PGA 21	P.P. 6L6 Cl. A, P.P. 2A3, 6A5G, 6B4 self bias P.P. Par. 6V6 Cl. AB ₁ to Universal voice coil.	5000 C.T. U16	+43	17.7:1	80	8	±1.0 DB 30-15,000	DC-4AL
PGA 22	P.P. Par 6L6 Cl. AB ₁ self bias P.P. 6L6 Cl. AB ₂ fixed bias PP807 Cl. AB ₂ to Universal 500 ohm line.	4000 C.T. U500	+47 (50 watts)	2.83:1	100	10	±1.0 DB 30-15,000	DC-5AL
PGA 23	As above to Universal voice coil.	4000 C.T. U16	+47	15.8:1	100	10	±1.0 DB 30-15,000	DC-5AL
PGA 24	P.P. 6A5G, 6B4, 2A3, fixed bias Universal voice coil.	3000 C.T. U16	+41.8	13.7:1	75	7.5	±1.0 DB 30-15,000	DC-4AL
PGA 25	P.P. Par. 807 Cl. AB ₂ to Universal 500 ohm line.	2100 C.T. U500	+51.8 (150 watts)	2.05:1	240	12	±1.0 DB 30-15,000	DC-6AL
PGA 26	P.P. Par 2A3, 6A5G, fixed bias 6B4, 300A Cl. AB ₁ , P.P. Par 6L6 Cl. A to Universal 500 ohm line.	1500 C.T. U500	+44.8	1.73:1	150	15	±1.0 DB 30-15,000	DC-4AL
PGA 27	As above to Universal voice coil.	1500 C.T. U16	+44.8	9.7:1	150	15	±1.0 DB 30-15,000	DC-4AL
PGA 28	Matching line to Universal voice coil.	U500 U16	+44.8	5.6:1	0	0	±1.0 DB 30-15,000	DC-4AT
PGA 29	Matching line to Universal voice coil.	U500 U16	+47	5.6:1	0	0	±1.0 DB 30-15,000	DC-5AT
PGA 30	Matching line to Universal voice coil.	U500 U16	+50 (100 watts)	5.6:1	0	0	±1.0 DB 30-15,000	DC-6AT

*1 mw. reference level.

U-16 IMPEDANCES IN OHMS

2 ohms, 4 ohms, 8 ohms, 12 ohms, 16 ohms

U-500 IMPEDANCES IN OHMS

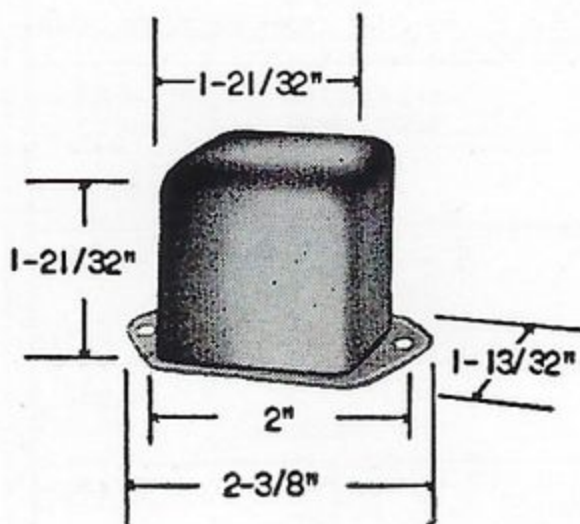
50, 125, 200 CT, 250, 330, 500 CT.
125 and 500 ohms can be used for 150 and 600 ohms.

A 70 volts level can be obtained for the following impedances:

500 ohms — 10 watts + 40 VU	200 ohms — 25 watts + 44 VU
330 ohms — 15 watts + 42 VU	125 ohms — 40 watts + 46 VU
250 ohms — 20 watts + 43 VU	50 ohms — 100 watts + 51 VU

HIGH Q REACTORS

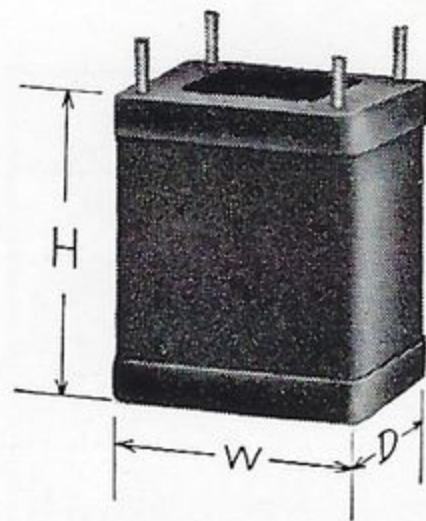
High Q Reactors for use in resonant wave traps and dynamic noise suppression circuits.



Cat. No.	Application	Rated Ind. in Henries	Q	Tuning Capacitor (Mf)	Case Size
PQC 1	60 cps resonant trap	14.00	10	.5	DM-02L
PQC 2	400 cps resonant trap	1.58	15	.1	DM-02L
PQC 3	1000 cps resonant trap	1.00	20	.025	DM-02L
PQC 4	Dynamic noise suppression inductor	2.40	20 @ 4 KC		DM-02L
PQC 5	Dynamic noise suppression inductor	2.00	20 @ 4 KC		DM-02L
PQC 6	Dynamic noise suppression inductor	1.30	20 @ 4 KC		DM-02L
PQC 7	Dynamic noise suppression inductor	.80	20 @ 4 KC		DM-02L
PQC 8	Dynamic noise suppression inductor	.60	20 @ 4 KC		DM-02L
PQC 9	Dynamic noise suppression inductor	.40	20 @ 4 KC		DM-02L

FREED Transformers

FILTER REACTORS — PROFESSIONAL GRADE COMPONENTS



CASE DIMENSIONS

Case No.	Mtg. Cent.	Dimensions			Mtg. Studs	Wgt
		W	D	H		
DM-01	1 1/16" x 1 1/16"	1 1/2"	1 1/2"	2"	6-32	1/2
DC-1A	1 1/2" x 1 1/4"	2 1/16"	1 3/16"	2 1/2"	8-32	1
DC-2A	2" x 1 3/4"	2 5/8"	2 1/4"	3"	8-32	2 3/4
DC-2B	2" x 1 3/4"	2 5/8"	2 1/4"	3 1/2"	8-32	3
DC-4A	2 1/2" x 2 1/2"	3 1/8"	3"	3 3/4"	8-32	4 1/2
DC-5B	3 1/8" x 2 5/8"	4 1/8"	3 1/2"	4 1/2"	10-32	10

Inductance measured at 50V, 60 cycles with rated direct current in the winding.

T following case number indicates Terminals.

L following case number indicates Leads.

Cat. No.	Inductance in Hy.	Rated Current D.C. Ma.	D. C. Resistance	Dielectric Test Voltage	Case Number
PGC 1	40	15	2000	1000	DM-01L
PGC 2	12	40	400	1000	DC-1AL
PGC 3	8	50	300	1000	DC-1AL
PGC 4	20	50	425	2500	DC-2AL
PGC 5	10	70	250	2500	DC-2AL
PGC 6	6	106	166	2500	DC-2AL
PGC 7	6	150	115	2500	DC-2BL
PGC 8	10	150	160	2500	DC-4AL
PGC 9	5.5	200	95	2500	DC-4AL
PGC 10	10	200	150	2500	DC-4AL
PGC 11	10	250	135	2500	DC-5BL
PGC 12	8	300	95	2500	DC-5BL
PGC 13	7	400	60	2500	DC-5BL
Parallel Feed Audio Chokes					
PGC 14	100	10	3500	1000	DM-01L
PGC 15	30	50	650	1500	DC-2AL
PGC 16	400	1	6000	1000	DM-01L

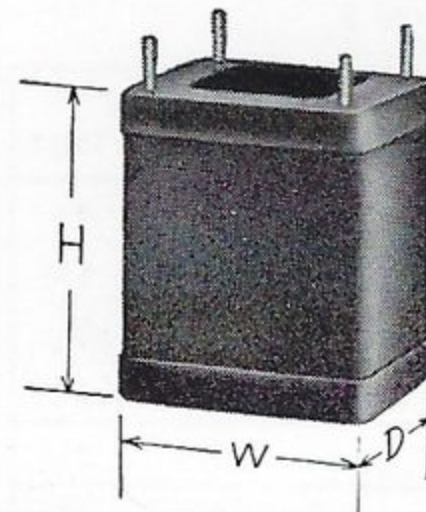
SWINGING INPUT REACTORS

Cat. No.	Inductance in Hy.*	Rated Current D.C. Ma.	D.C. Resistance	Dielectric Test Voltage	Case Number
PGC 17	5-20	150	160	1500	DC-4AL
PGC 18	5-20	250	135	1500	DC-5BL
PGC 19	3-15	300	95	1500	DC-5BL
PGC 20	3-15	400	60	1500	DC-5BL

* Inductance values for 100% and 10% of rated Direct Current.

PROFESSIONAL GRADE POWER TRANSFORMERS

ALL PRIMARIES ARE FOR 115V., 50/60 c.p.s. — AVAILABLE FOR 230V. OPERATION ON SPECIAL ORDER



CASE DIMENSIONS

Case No.	Mtg. Cent.	Dimensions			Mtg.	Wgt.
		W	D	H		
DC-2B	2" x 1 3/4"	2 5/8"	2 1/4"	3 1/2"	8-32	3
DC-4A	2 1/2" x 2 1/2"	3 1/8"	3"	3 3/4"	8-32	4 1/2
DC-5A	3 1/8" x 2 5/8"	4 1/8"	3 1/2"	3 7/8"	10-32	9
DC-5B	3 1/8" x 2 5/8"	4 1/8"	3 1/2"	4 1/2"	10-32	10
DC-6A	3 3/4" x 3"	5"	4 1/8"	4 7/8"	10-32	15
DC-7B	4 3/8" x 3 3/4"	5 1/2"	5"	6 3/4"	1/4-20	22

Fully impregnated and sealed in heavy gauge cases. Temperature rises range from 45° to 50°C.

T following case number indicates Terminals.

L Following case number indicates Leads.

Cat. No.	Pri. Va	Hi Volt Sec.	Choke Input D.C.V. D.C.Ma.	Cond. Input D.C.V. D.C.Ma.	Rectifier	Fil. No. 1	Fil. No. 2	Case Number
PGP 1	15	440V. C.T.	Low flux density, hum-bucking. For Preamplifier service.	270 15	6X4	6.3 CT @ 0.6A	6.3 @ 0.3A.	DC-2BL
PGP 2	30	550V. C.T.	Low flux density, hum-bucking. For Preamplifier service.	310 35	6X4	6.3 CT @ 0.6A	6.3 CT @ 0.9A.	DC-4AL
PGP 3	45	500V. C.T.		270 40	6X4, 5Y3	5/6.3V @ 2A	6.3 @ 2A.	DC-4AL
PGP 4	57	600V. C.T.		330 50	6X4, 5Y3	5/6.3V @ 2A	6.3 @ 2.5A.	DC-4AL
PGP 5	64	650V. C.T.		370 50	6X4, 5Y3	5/6.3V @ 2A	6.3 @ 3A.	DC-4AL
PGP 6	73	600V. C.T.		320 70	6X4, 5Y3	5/6.3V @ 2A	6.3 @ 3A.	DC-4AL

FREED Transformers

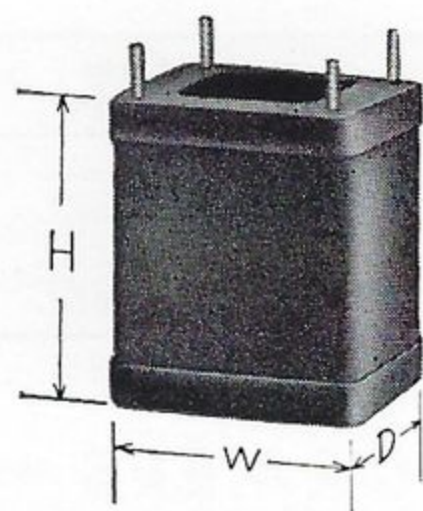
PROFESSIONAL GRADE POWER TRANSFORMERS

Continued from previous page — See same for case sizes

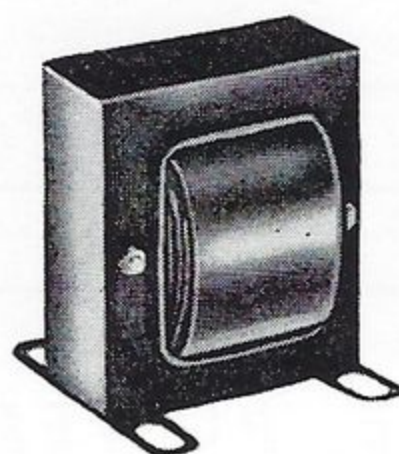
Cat. No.	Py Va	Hi Volt	Choke Input D.C.V.	D.C.Ma.	Cond. Input D.C.V.	D.C.Ma.	Bias. Tap.	Rectifier	Fil. #1	Fil. #2	Fil. #3	Case Number
PGP 7	110	650V. C.T.	225	140	330	100		5Y3,5U4	5 @ 3A.	6.3 @ 5A.		DC-5BL
PGP 8	76	700V. C.T.	260	100	385	70		5Y3	5 @ 2A.	6.3 @ 2.5A.		DC-5AL
PGP 9	108	700V. C.T.	250	125	370	90		5Y3,5U4	5 @ 3A.	6.3 @ 5A.		DC-5BL
PGP 10	127	700V. C.T.	260	170	350	120		5U4	5 @ 3A.	6.3 @ 5A.		DC-5BL
PGP-11	146	700V. C.T.	260	210	350	150		5U4	5 @ 3A.	6.3 @ 5A.	6.3 @ 1A.	DC-6AL
PGP 12	207	800V. C.T.	295	280	400	200		5U4, 2-5Y3	5 @ 4A.	6.3 @ 6A.		DC-6AL
PGP 13	225	800V. C.T.	295	280	400	200	80	5U4, 2-5Y3	5 @ 4A.	6.3 @ 6A.	5/6.3 @ 2A.	DC-6AL
PGP 14	268	840V. C.T.	330	350	450	250	80	2-5U4	5 @ 6A.	6.3 @ 6A.	5/6.3 @ 2A.	DC-6AL
PGP 15	320	900V. C.T.	340	420	490	300	80	2-5U4	5 @ 6A.	6.3 @ 6A.	5/6.3 @ 2A.	DC-7BL
PGP-16	127	900V. C.T.	360	150				5U4	5 @ 3A.	6.3 @ 5A.		DC-6AL
PGP 17	150	900V. C.T.	350	200				5U4	5 @ 3A.	6.3 @ 5A.		DC-6AL
PGP 18	203	1100V. C.T.	400	250				5R4GY	5 @ 3A.	6.3 @ 5A.		DC 6AL
PGP 19	248	1100V. C.T.	420	300				2-5R4GY	5 @ 4A.	6.3 @ 7A.		DC-6AL
PGP 20	310	1280V. C.T.	480	350				2-5R4GY	5 @ 4A.	6.3 @ 7A.		DC-7BL

FILAMENT TRANSFORMERS

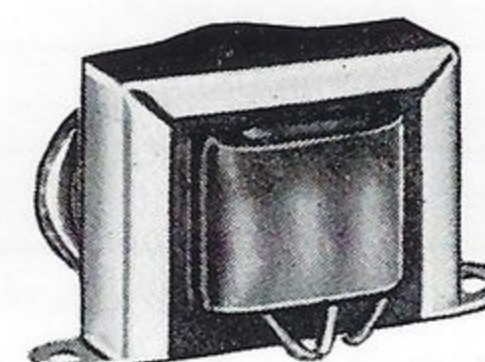
ALL PRIMARIES ARE FOR 115V., 50/60 c.p.s. — AVAILABLE FOR 230V. OPERATION ON SPECIAL ORDER



DC



FV



CH

CASE DIMENSIONS

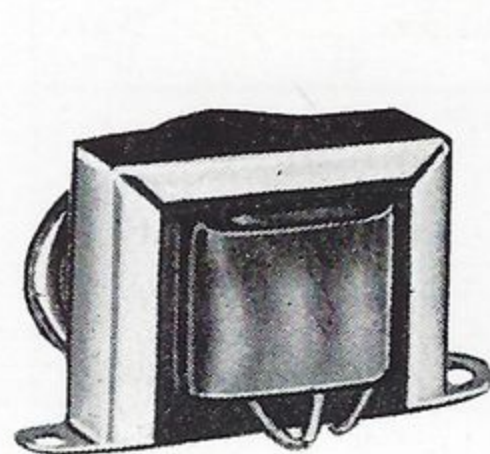
Cat. No.	Secondary Voltage	Secondary Current Amps.	Secondary Test Voltage RMS	Case Size
TF 1	2.5 (C.T.)	7.5	1500	CH60
TF 2	2.5 (C.T.)	10	1500	CH70
TF 3	2.5 (C.T.)	5	7500	DC2BT
TF 4	2.5 (C.T.)	10	7500	DC4AT
TF 5	5.0 (C.T.)	4	1500	CH60
TF 6	5.0 (C.T.)	6	1500	CH70
TF 7	5.0 (C.T.)	10	1500	CH80
TF 8	5.0 (C.T.)	10	1500	FV10
TF 9	5.0 (C.T.)	20	2500	FV30
TF 10	5.0 (C.T.)	20	10,000	DC6AT
TF 11	6.3 (C.T.)	1.35	1500	CH50
TF 12	6.3 (C.T.)	3	1500	CH60
TF 13	6.3 (C.T.)	5	1500	CH70
TF 14	6.3 (C.T.)	7	1500	FV12
TF 15	6.3 (C.T.)	10	1500	FV22
TF 16	10 (C.T.)	5	2500	CH80
TF 17	10 (C.T.)	5	2500	FV10
TF 18	10 (C.T.) or 11 (C.T.) (tapped primary)	12 or 11	7500	DC-5CT
TF 19	12.6 (C.T.)	2	1500	CH62

Case #	Mtg. Cent.	Dimensions W D H	Knockout	Mtg. Studs	Wgt.
DC-2BT	2 x 1 3/4	2 5/8 2 1/4 3 1/2	1 1/2 x 1 3/8	8-32	3
DC-4AT	2 1/2 x 2 1/2	3 1/8 3 3 3 3/4	2 x 1 3/4	8-32	4 1/2
DC-5CT	3 1/8 x 2 5/8	4 1/8 3 1/2 4 7/8	2 1/2 x 2	10-32	12
DC-6AT	3 3/4 x 3	5 4 1/8 4 7/8	3 x 2 1/2	10-32	15
FV-10	2 x 2	2 1/2 2 1/2 3 1/16			2 1/2
FV-12	2 x 2 1/8	2 1/2 2 5/8 3 1/16			2 3/4
FV-22	2 1/4 x 2 1/4	2 13/16 2 7/8 3 7/16			4
FV-30	2 1/2 x 2 1/4	3 1/8 3 1/4 3 13/16			5 1/2
CH-50	2 3/8	2 13/16 1 3/4 1 11/16			3/4
CH-60	2 13/16	3 1/4 2 2			1 1/2
CH-62	2 13/16	3 1/4 2 1/8 2			1 3/4
CH-70	3 1/8	3 11/16 2 1/4 2 5/16			2
CH-80	3 9/16	4 2 5/8 2 5/8			2 3/4

L after case number indicates Leads
T after case number indicates Terminals

FREED Transformers

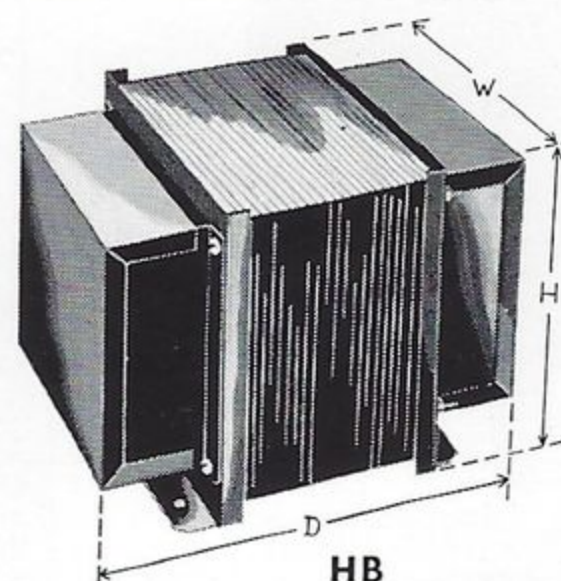
AUTO TRANSFORMERS



CH



VS



HB

To be used as a step-down transformer. Equipped with standard receptacle and line cord.

CATALOG NUMBER	TRANSFORMATION	VA RATING	CASE SIZE
SDT 1*	230/115 V. 50/60 c.p.s.	25	CH-60
SDT 2*	230/115 V. 50/60 c.p.s.	50	CH-62
SDT 3	230/115 V. 50/60 c.p.s.	50	VS-300
SDT 4	230/115 V. 50/60 c.p.s.	100	VS-401
SDT 5	230/115 V. 50/60 c.p.s.	200	VS-501
SDT 6	230/115 V. 50/60 c.p.s.	300	VS-601
SDT 7	230/115 V. 50/60 c.p.s.	400	VS-604
SDT 8	230/115 V. 50/60 c.p.s.	500	VS-611
SDT 9	230/115 V. 50/60 c.p.s.	750	VS-706
SDT 10	230/115 V. 50/60 c.p.s.	1000	VS-718
SDT 11	230/115 V. 50/60 c.p.s.	1500	VS-728
SDT 12*	230/115 V. 50/60 c.p.s.	2000	HB-718
SDT 13*	230/115 V. 50/60 c.p.s.	2500	HB-728
SDT 14*	230/115 V. 50/60 c.p.s.	3000	HB-828
SDT 15*	230/115 V. 50/60 c.p.s.	5000	HB-920

*Supplied with leads without line cord and receptacle.

CASE DIMENSIONS

Case No.	Mtg. Cent.	Dimensions W D H			Wgt. (lbs.)
CH-60	2 ¹³ / ₁₆	3 ¹ / ₄	2	2	1 ¹ / ₂
CH-62	2 ¹³ / ₁₆	3 ¹ / ₄	2 ¹ / ₈	2	1 ³ / ₄
HB-718	4 ³ / ₄ x4 ³ / ₄	6 ³ / ₈	8 ¹ / ₂	6 ¹ / ₄	36
HB-728	4 ³ / ₄ x6	6 ³ / ₈	9 ³ / ₄	6 ¹ / ₄	45
HB-828	5 ⁵ / ₈ x5 ⁷ / ₈	7 ¹ / ₄	9 ⁷ / ₈	6 ⁵ / ₈	54
HB-920	5 ⁵ / ₈ x4 ³ / ₄	7 ¹ / ₄	8 ⁵ / ₈	10	75
VS-300	2 x 1 ¹¹ / ₁₆	2 ¹⁹ / ₃₂	2 ³ / ₄	3 ³ / ₃₂	2 ³ / ₄
VS-401	2 ¹ / ₄ x1 ³ / ₄	2 ⁹ / ₃₂	3	3 ¹⁵ / ₃₂	4 ¹ / ₂
VS-501	2 ¹ / ₂ x2 ¹ / ₁₆	3 ⁷ / ₃₂	3 ⁵ / ₁₆	3 ²⁷ / ₃₂	6 ¹ / ₄
VS-503	2 ¹ / ₂ x2 ⁵ / ₁₆	3 ⁷ / ₃₂	3 ⁵ / ₈	3 ²⁷ / ₃₂	5 ¹ / ₄
VS-601	3 x 2 ⁷ / ₁₆	3 ⁷ / ₃₂	3 ⁵ / ₈	4 ¹⁹ / ₃₂	7 ¹ / ₄
VS-604	3 x 2 ¹¹ / ₁₆	3 ²⁷ / ₃₂	3 ⁷ / ₈	4 ¹⁹ / ₃₂	7 ³ / ₈
VS-611	3 x 3 ¹ / ₁₆	3 ²⁷ / ₃₂	4 ⁷ / ₈	4 ¹⁹ / ₃₂	12
VS-700	3 ¹ / ₂ x3 ⁵ / ₁₆	4 ¹ / ₂	4 ³ / ₄	5 ¹¹ / ₃₂	14
VS-706	3 ¹ / ₂ x3 ¹³ / ₁₆	4 ¹ / ₂	5 ¹ / ₄	5 ¹¹ / ₃₂	16
VS-714	3 ¹ / ₂ x4 ¹³ / ₁₆	4 ¹ / ₂	6 ¹ / ₄	5 ¹¹ / ₃₂	25
VS-718	3 ¹ / ₂ x5 ⁵ / ₁₆	4 ¹ / ₂	6 ³ / ₄	5 ¹¹ / ₃₂	29
VS-728	3 ¹ / ₂ x6 ⁹ / ₁₆	4 ¹ / ₂	8	5 ¹¹ / ₃₂	36

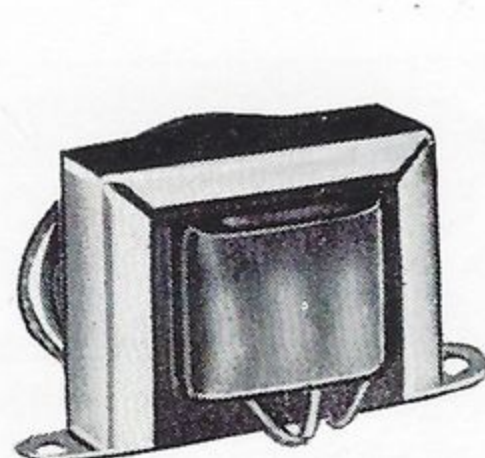
ISOLATION TRANSFORMERS

Electrostatic shield between primary and secondary. Equipped with standard receptacle and line cord.

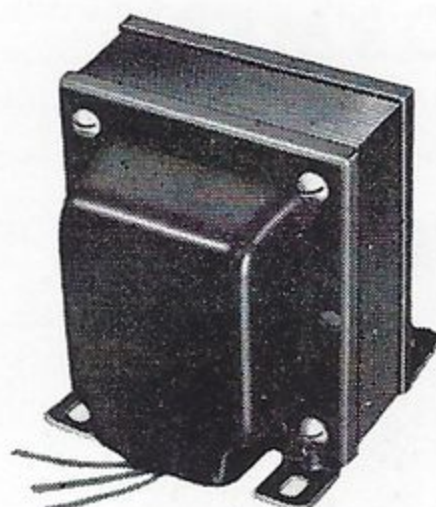
Catalog Number	Primary Voltage 50/60 c.p.s.	Secondary Voltage	VA Rating	Case Size
IT 1	115	115	50	VS-401
IT 2	115	115	100	VS-503
IT 3	115	115	300	VS-700
IT 4	115	115	500	VS-714

FREED Transformers

REPLACEMENT GRADE AUDIO TRANSFORMERS



CH



VS

CASE DIMENSIONS

Case Number	Mtg. Centers	Dimensions W D H	Wgt. lbs.
CH-40	2"	2 3/8" 1 5/8" 1 1/16"	1/2
CH-50	2 3/8"	2 13/16" 1 3/4" 1 11/16"	3/4
CH-60	2 13/16"	3 1/4" 2" 2"	1 1/2
CH-80	3 9/16"	4" 2 5/8" 2 5/8"	2 3/4
VS-100	1 1/2" x 1 7/16"	1 7/8" 2 1/4" 2 11/32"	1 1/2
VS-300	2" x 1 11/16"	2 13/32" 2 3/4" 3 3/32"	2 3/4

Cat. No.	Application	Impedance Level Ohms Primary Secondary		Max. Power Level V.U.* or Power in Watts	Ratio	Max. Pri. D.C. per Side Ma.	D.C. Un- balance Ma.	Freq. Response C.P.S.	Case No.
RGA 1	Input; multiple line or double button mike to single or push-pull grids.	500 CT 200 CT	100.000 CT	+20	1:14.1	50	5	± 2DB 200-5000	CH-40
RGA 2	Input; single button mike to single or push-pull grids.	100	100.000 CT	+20	1:31.6	50		±2 DB 200-5000	CH-40
RGA 3	Input; voice coil to grid. Single grid.	3.2	100,000	+20	1:179			±2 DB 200-5000	CH-40
RGA 4	Mixing and matching line to line.	600 CT 500 CT 200 CT 150/125/50	600 CT 500 CT 200 CT 150/125/50	+20	1:1			±2 DB 100-5000	CH-40
RGA 5	Interstage; single triode plate to single or P.P. grids.	10.000	90.000 CT	+30	1:3	10		±2 DB 200-5000	CH-40
RGA 6	Output; single plate to line or mixer.	10.000	600 CT 500 CT 200 CT 150/125/50	+30	4.8:1	10		±2 DB 200-5000	CH-40
RGA 7	Output; Push-pull plate to line or mixer.	20.000 CT	600 CT 500 CT 200 CT 150/125/50	+30	6.32:1	10	1	±2 DB 200-5000	CH-40
RGA 8	Output; plate to V.C. 6AL6, 6L6, 6Y6, 25B6, 25C6, 35A5, 35B5, 35C5, 50B5, 50C5, 50C6, 50L6, 117N7.	2500	3.2	5W		70		±3 DB 200-10000	CH-40
RGA 9	Output; plate to V.C. 6V6, 6AQ5, 6AS5, 7C5.	5000	3.2	5W		50		±3 DB 200-10000	CH-40
RGA 10	Output; plate to V.C. 6AR5, 6K6, 6V6, 7B5, 14A5, 3S4, 3U4, 3Q4, 3Q5, 3C5, 3A4.	10.000 or 7500	3.2	5W		30		±3 DB 200-10000	CH-40
RGA 11	Output; P.P. plates to V.C. P.P. 6V6, PP6K6.	12.000 CT or 8000 CT	3.2	15W		50	5	±2 DB 200-8000	CH-60

REPLACEMENT GRADE CHOKES

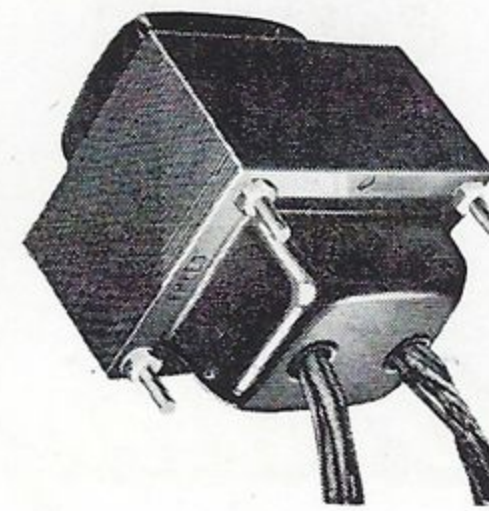
Cat. No.	Inductance in Henries	Rated Current D.C. Ma.	D.C. Resistance	Dielectric Test Voltage	Case No.
RGC 1	4	40	200	1000	CH-40
RGC 2	9	40	400	1000	CH-40
RGC 3	6	50	400	1000	CH-40
RGC 4	10	55	400	1500	CH-50
RGC 5	10	75	250	1500	CH-60
RGC 6	10	75	250	1500	VS-100
RGC 7	6	100	150	1500	CH-60
RGC 8	6	100	150	1500	VS-100
RGC 9	3.5	150	100	1500	CH-60
RGC 10	3.5	150	100	1500	VS-100
RGC 11	2	200	60	1500	CH-60
RGC 12	2	200	60	1500	VS-100
RGC 13	3.7	200	65	1500	CH-80
RGC 14	3.7	200	65	1500	VS-300
RGC 15	2.8	300	65	1500	CH-80
RGC 16	2.8	300	65	1500	VS-300

FREED Transformers

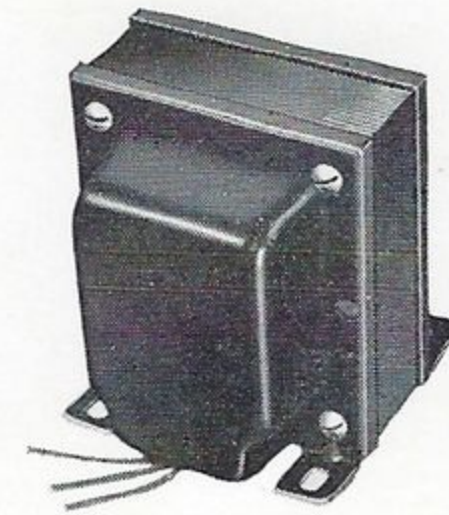
REPLACEMENT GRADE POWER TRANSFORMERS

CASE DIMENSIONS

Case #	Mtg. Centers	Dimensions W D H	Wgt. (lbs.)
VS-300	2" x 1 11/16"	2 19/32" 2 3/4" 3 3/32"	2 3/4
VS-303	2" x 1 13/16"	2 19/32" 3" 3 3/32"	3 1/2
VS-306	2" x 2 5/16"	2 19/32" 3 3/8" 3 3/32"	4 1/2
VS-307	2" x 2 7/16"	2 19/32" 3 3/4" 3 3/32"	4 3/4
VS-503	2 1/2" x 2 5/16"	3 7/32" 3 5/8" 3 27/32"	5 1/4
VS-505	2 1/2" x 2 9/16"	3 7/32" 3 7/8" 3 27/32"	6
VS-604	3" x 2 11/16"	3 27/32" 3 7/8" 4 19/32"	7 3/8
VS-605	3" x 2 13/16"	3 27/32" 4 1/8" 4 19/32"	8 3/4
VS-606	3" x 3 1/16"	3 27/32" 4 1/4" 4 19/32"	9 1/4
VS-609	3" x 3 7/16"	3 27/32" 4 5/8" 4 19/32"	11
VS-611	3" x 3 11/16"	3 27/32" 4 7/8" 4 19/32"	12
VS-612	3" x 3 13/16"	3 27/32" 5" 4 19/32"	13
VS-709	3 1/2" x 4 3/16"	4 1/2" 5 5/8" 5 11/32"	19
HS-300	2 1/2" x 2"	3" 2 1/2" 2 5/8"	2 3/4
HS-303	2 1/2" x 2"	3" 2 1/2" 2 7/8"	3 1/2
HS-306	2 1/2" x 2"	3" 2 1/2" 3 1/4"	4 1/2
HS-307	2 1/2" x 2"	3" 2 1/2" 3 3/8"	4 3/4
HS-503	3 1/8" x 2 1/2"	3 3/4" 3 1/8" 3 3/8"	5 1/4



HS



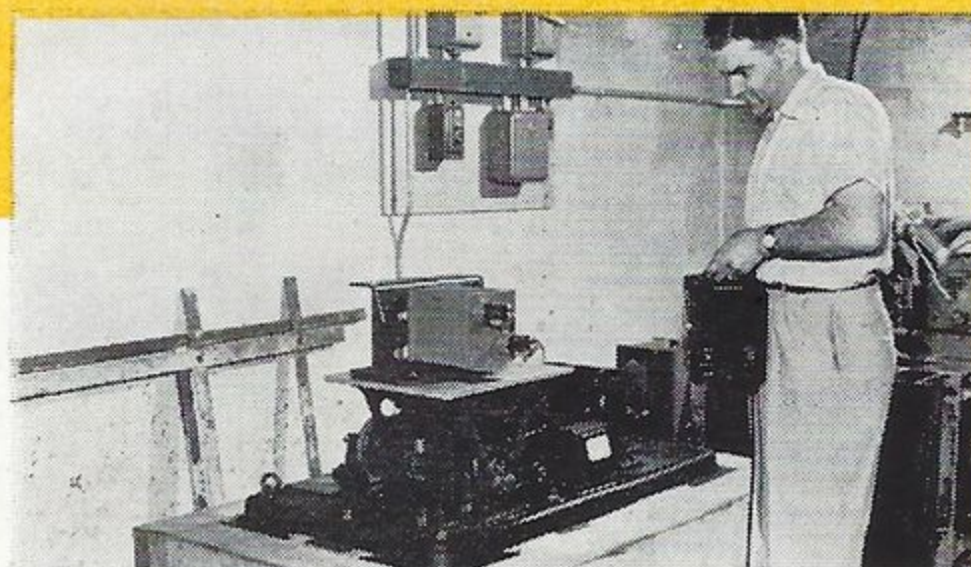
VS

CASE DIMENSIONS

Case #	Mtg. Centers	Dimensions W D H	Wgt. (lbs.)
HS-505	3 1/8" x 2 1/2"	3 3/4" 3 1/8" 3 5/8"	6
HS-604	3 3/4" x 3"	4 1/2" 3 3/4" 3 5/8"	7 3/8
HS-605	3 3/4" x 3"	4 1/2" 3 3/4" 3 7/8"	8 3/4
HS-606	3 3/4" x 3"	4 1/2" 3 3/4" 4"	9 1/4
HS-609	3 3/4" x 3"	4 1/2" 3 3/4" 4 3/8"	11
HS-611	3 3/4" x 3"	4 1/2" 3 3/4" 4 5/8"	12
HS-612	3 3/4" x 3"	4 1/2" 3 3/4" 4 3/4"	13
HS-709	4 3/8" x 3 1/2"	5 1/4" 4 3/8" 5 7/8"	19

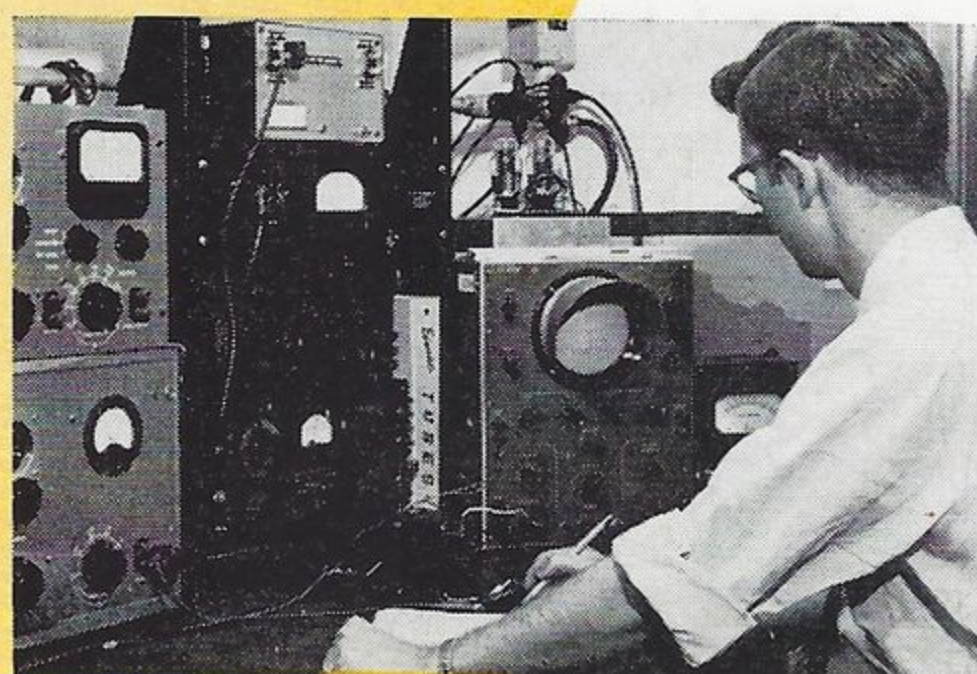
ALL PRIMARIES DESIGNED FOR 115V/50-60 CYCLE OPERATION. AVAILABLE FOR 230 VOLT OPERATION ON SPECIAL ORDER

Cat. No.	Py Va	Hi Volt	Choke Input D.C.V. D.C.Ma.	Cond. Input D.C.V. D.C.Ma.	Bias Tap.	Rectifier	Fil. No. 1	Fil. No. 2	Fil. No. 3	Case No.
RGP 1	45	500V. CT				6X4, 5Y3	5/6.3 @ 2A	6.3 @ 2A		VS300
RGP 2	"	"				"	"	"		HS300
RGP 3	57	600V. CT				6X4, 5Y3	5/6.3 @ 2A	6.3 @ 2.5A		VS303
RGP 4	"	"				"	"	"		HS303
RGP 5	64	650V. CT				6X4, 5Y3	5/6.3 @ 2A	6.3 @ 3A		VS303
RGP 6	"	"				"	"	"		HS303
RGP 7	73	600V. CT				6X4, 5Y3	5/6.3 @ 2A	6.3 @ 3A		VS306
RGP 8	"	"				"	"	"		HS306
RGP 9	110	650V. CT	225	140	330	5Y3, 5U4	5 @ 3A	6.3 @ 5A		VS503
RGP 10	"	"	"	"	"	"	"	"		HS503
RGP 11	76	700V. CT	260	100	385	5Y3	5 @ 2A	6.3 @ 2.5A		VS307
RGP 12	"	"	"	"	"	"	"	"		HS37
RGP 13	108	700V. CT	250	125	370	5Y3, 5U4	5 @ 3A	6.3 @ 5A		VS503
RGP 14	"	"	"	"	"	"	"	"		HS503
RGP 15	127	700V. CT	260	170	350	5U4	5 @ 3A	6.3 @ 5A		VS505
RGP 16	"	"	"	"	"	"	"	"		HS505
RGP 17	146	700V. CT	260	210	350	5U4	5 @ 3A	6.3 @ 5A	6.3 @ 1A	VS604
RGP 18	"	"	"	"	"	"	"	"	"	HS604
RGP 19	207	800V. CT	295	280	400	5U4, 2-5Y3	5 @ 4A	6.3 @ 6A		VS606
RGP 20	"	"	"	"	"	"	"	"		HS606
RGP 21	225	800V. CT	295	280	400	80V. 5U4, 2-5Y3	5 @ 4A	6.3 @ 6A	5/6.3 @ 2A	VS606
RGP 22	"	"	"	"	"	"	"	"	"	HS606
RGP 23	268	840V. CT	330	350	450	2-5U4	5 @ 6A	6.3 @ 6A	5/6.3 @ 2A	VS612
RGP 24	"	"	"	"	"	"	"	"	"	HS612
RGP 25	320	900V. CT	340	420	490	80V. 2-5U4	5 @ 6A	6.3 @ 6A	5/6.3 @ 2A	VS709
RGP 26	"	"	"	"	"	"	"	"	"	HS709
RGP 27	127	900V. CT	360	150		5U4	5 @ 3A	6.3 @ 5A		VS604
RGP 28	"	"	"	"		"	"	"		HS604
RGP 29	150	900V. CT	350	200		5U4	5 @ 3A	6.3 @ 5A		VS605
RGP 30	"	"	"	"		"	"	"		HS605
RGP 31	203	1100V. CT	400	250		5R4GY	5 @ 3A	6.3 @ 5A		VS611
RGP 32	"	"	"	"		"	"	"		HS611
RGP 33	248	1100V. CT	420	300		2-5R4GY	5 @ 4A	6.3 @ 7A		VS612
RGP 34	"	"	"	"		"	"	"		HS612
RGP 35	310	1280V. CT	480	350		2-5R4GY	5 @ 4A	6.3 @ 7A		VS709
RGP 36	"	"	"	"		"	"	"		HS709

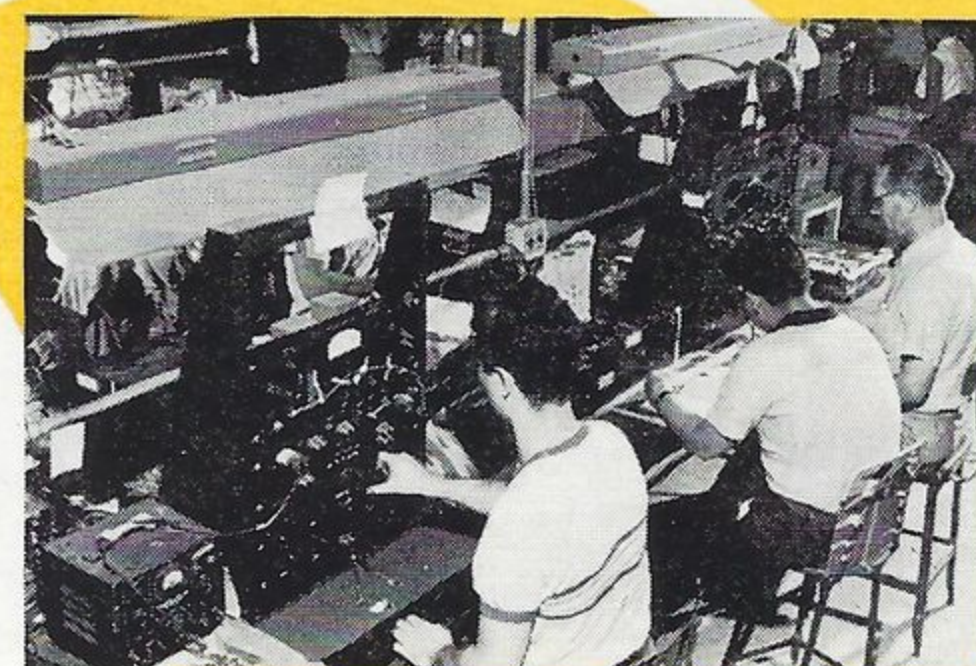


Vibration Testing

*Quality
Accuracy
Dependability
of*



Audio Transformer Development



Toroidal Adjustment & Inspection

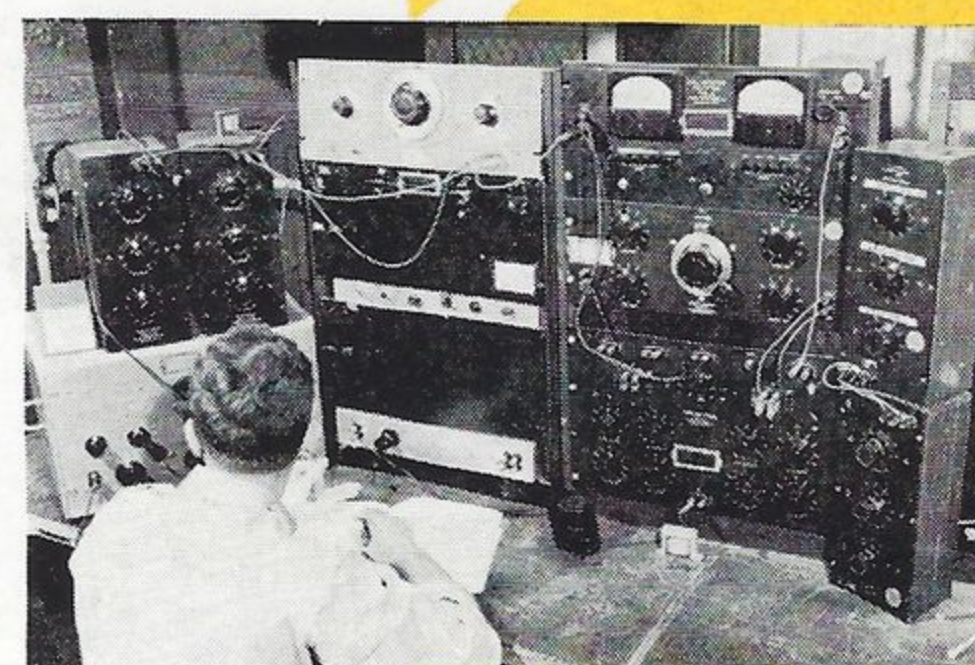
FREED TRANSFORMERS

IS A DIRECT RESULT
OF INTENSIVE RESEARCH AND
CONTINUING LABORATORY CONTROL

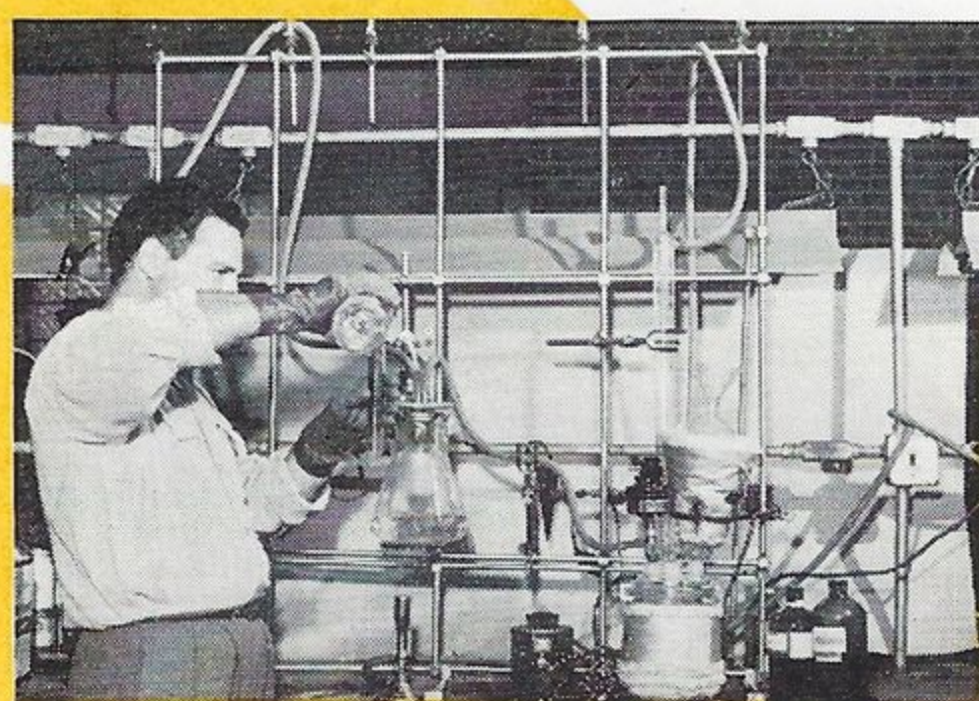


Magnetic Amplifier Development

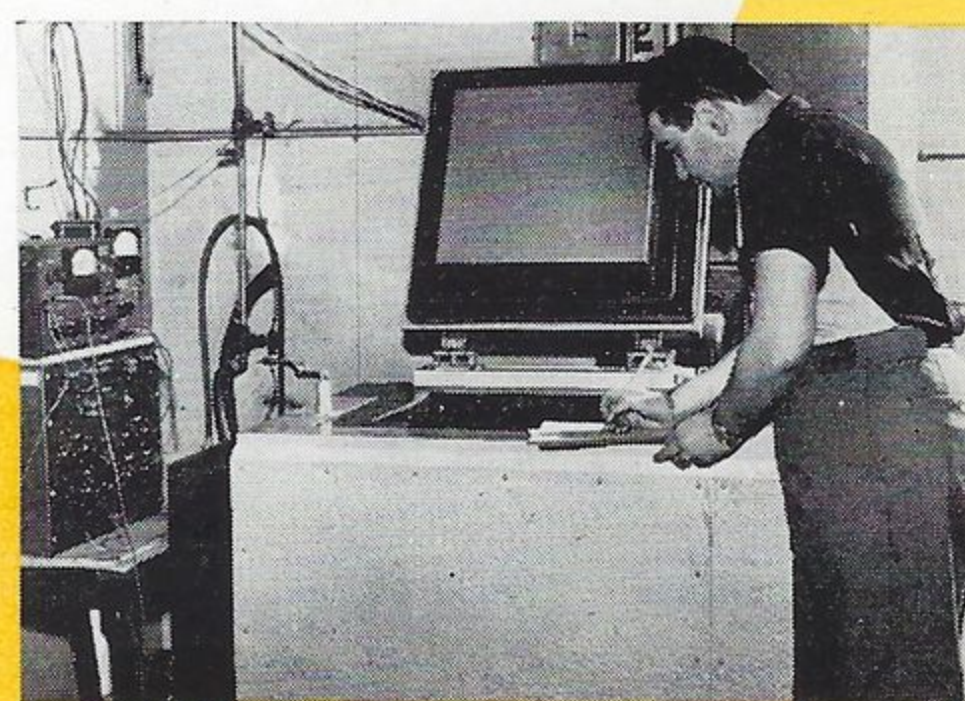
The close attention paid to initial development and step-by-step production of all Freed Transformers manifests itself in top-notch performance whatever the application. These photographs show but small sections of our research and quality control departments.



Basic Research Department



Chemical Engineering Department



Freezer Chamber

FREED TRANSFORMER CO., INC.

1718-1736 Weirfield Street

Brooklyn (Ridgewood) 27, New York

EXPORT DIVISION: 458 Broadway, New York City 13, N. Y.