P-1 to Grid = 100,000
R = 63/1 approx

Universal Plate

Rec'd 12/14

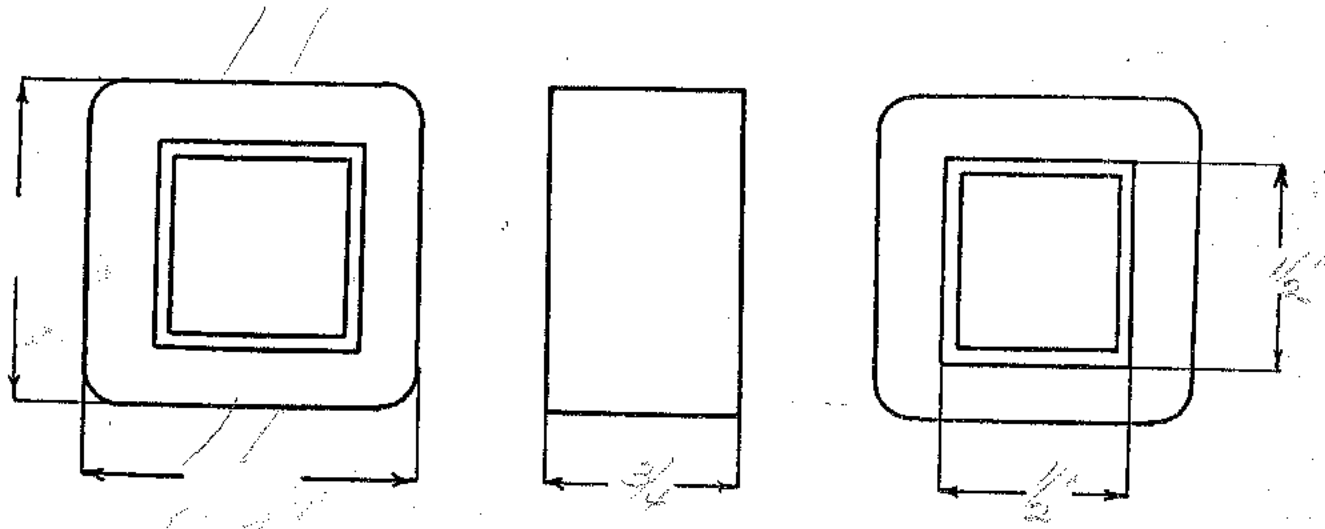
SPEC. NO. UA-1

Winding	P-1	Sec.					
Turns	403	40					
Taps	—	—					
Wind. Lgth.	5/16	"					
Wire Size	29	"					
T. P. L.	45-3	6-35					
Finish							
Type Lead							
Lead Lgth.	6	6					
Layer Insul.	2 mil	1 mil					
Test Volts	1250						
Wrapper	1/2 mil	2 mil					

TUBE Phenolic — IMPREGNATION Varnish

CORE 1/2 x 1/2 — GA. 29 — GRADE M — STACK 1 x 1

MOUNTING None



DESIGNED BY

DATE 8/20

Universal Rice

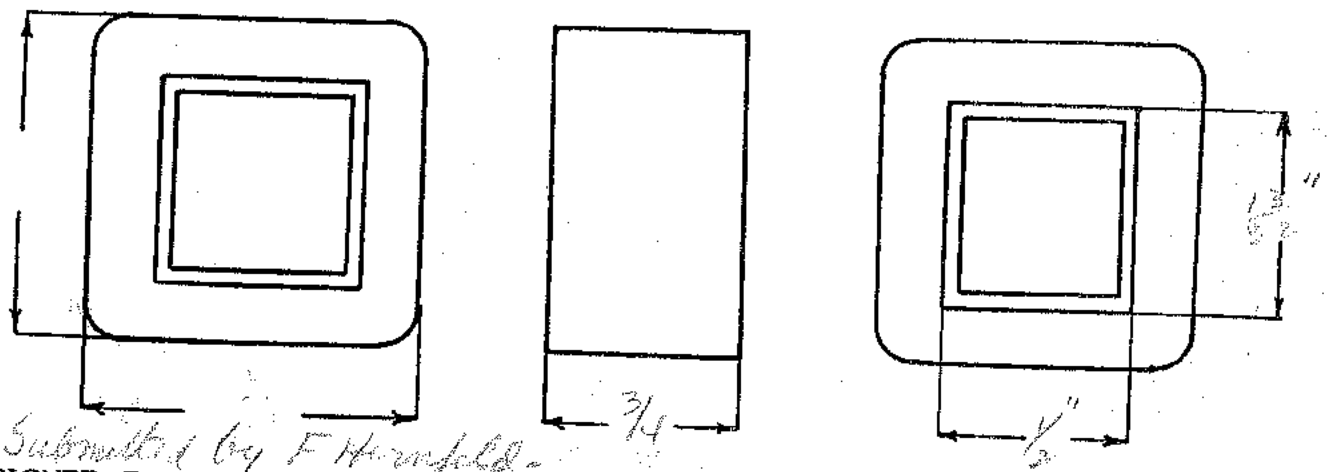
SPEC. NO. [illegible]

Winding	Pri	Sec					
Turns	158	5420					
Taps	—	—					
Wind. Lgth.	5/8	3/8					
Wire Size	#28	#43					
T. P. L.	40.4	160.52					
Finish							
Type Lead	[illegible]	[illegible]					
Lead Lgth.	[illegible]	[illegible]					
Layer Insul.	30#	16#					
Test Volt.							
Wrapper	1 Layer #77	2 Layers #60					[illegible]

TUBE 42 003 IMPREGNATION Varnish A

CORE 1/2 x 13/32 GA. 29 GRADE 13 STACK 1 x 1

MOUNTING



Submitted by F Hirschfeld.

DESIGNED BY

I checked with him over the phone. MD

DATE 9/6/60

Universal Mike

SPEC. NO. 1613

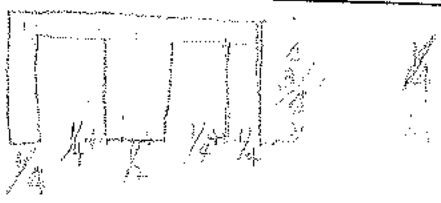
Winding	Pri.	Sec					
Turns	94	3240					
Taps	—	—					
Wind. Lgth.	5/8" (approx)	7/8"					
Wire Size	#32	#40					
T. P. L.	94	162					
Finish							
Type Lead	Flex.	Flex					
Lead Lgth.	3"	3"					
Layer Insul.	—	1 2#					
Test Volt.							
Wrapper	20# (2)	20# (1)					

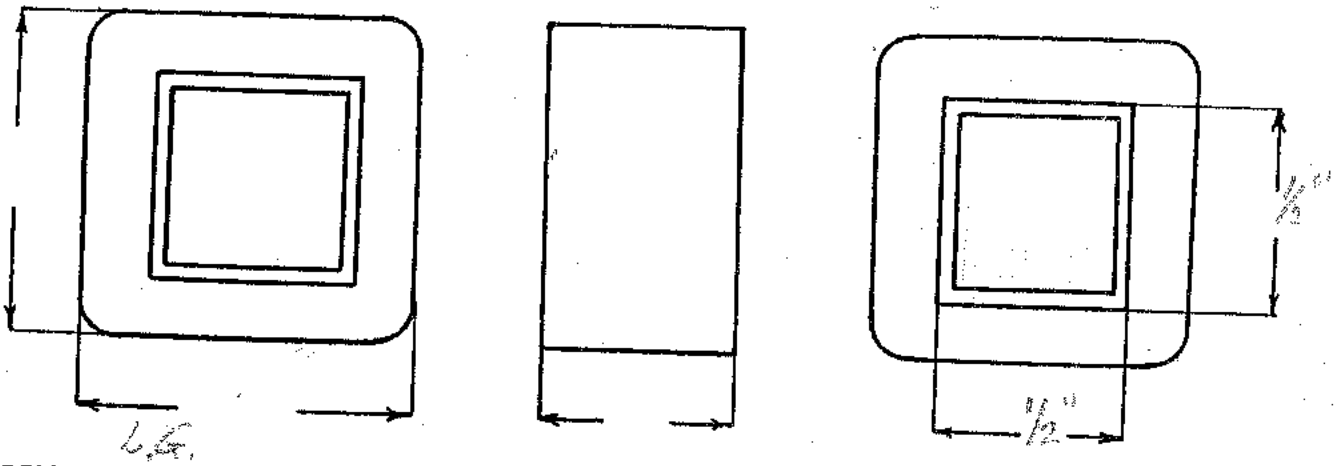
TUBE

IMPREGNATION

CORE 1/2" GA. GRADE STACK .1 x 1

MOUNTING





DESIGNED BY

DATE 1/2

Dynamic M.C. to grid for Universal Microphone Co.
2.2% 350 ohm Impedance

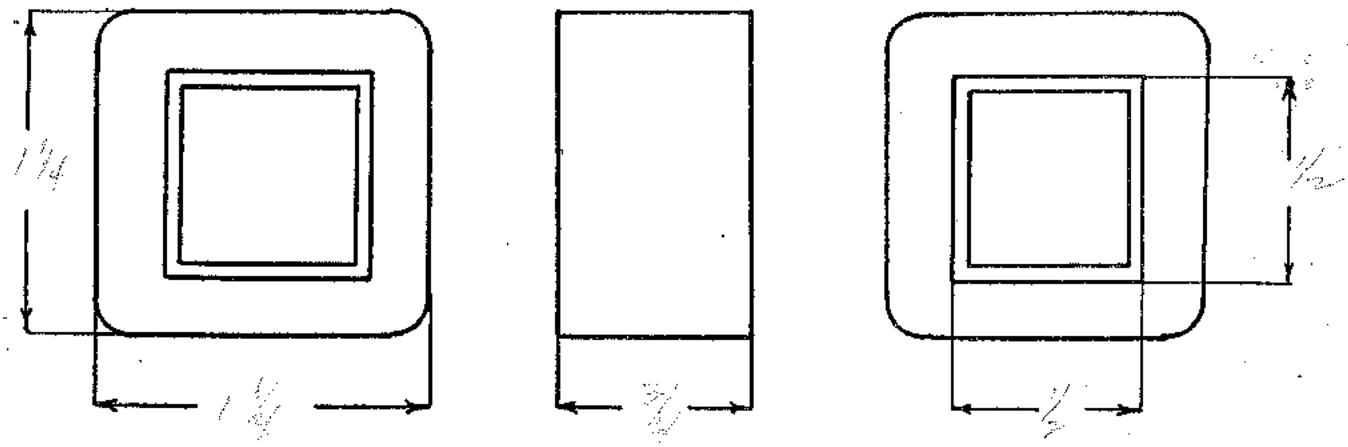
SPEC. NO. L-1164

Winding	Pri	Sec					
Turns	60	1960					
Taps	—	—					
Wind. Lgth.	.562	.562					
Wire Size	28	36					
T. P. L.	30 - 2	09 - 12					
Finish							
Type Lead	Wire only						
Lead Lgth.	8"	8"					
Layer Insul.	3 mil	2 mil					
Test Volt.	1250	1250					
Wrapper	1 coating	2 layers GP					

TUBE 1/4 x 1/2 x 1/2 IMPREGNATION Varnish

CORE 1/2" x 1/2" GA. 27 GRADE B STACK 1" x 1"

MOUNTING VH



DESIGNED BY M.C.D. DATE 9/[illegible]

PRI - 110 - V 60,000 cycle
SEC - 3260-3300 6752-6650 cycle
FIL #1 5 - V - 3A
FIL #2 6.3 V - 6.5 TYPE TRANS 6 TUBE
FIL #3

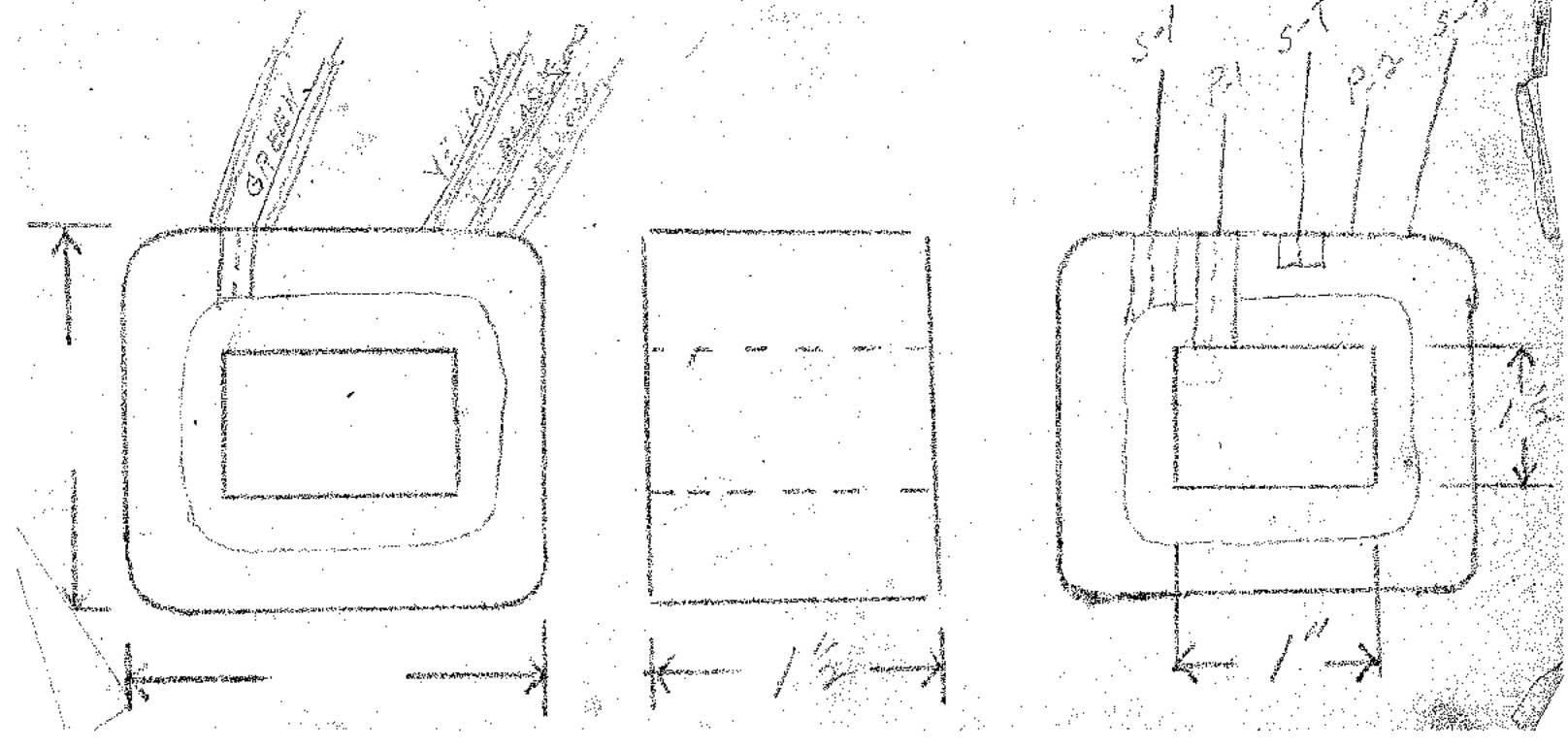
(No 4)

(SMALL CORE)

SPEC # 4

SPECIAL FOR RATHEON

	PRI	SHIELD	SEC.	FIL #1	FIL #2	
TURNS	718	61	2960	21	10	
TAPS	—	—	1425	—	5	
WIRE SIZE	#25	#25	#35	#20	#15	
LENGTH WINDING	1½"	1½"	1⅝"	1½"	1⅝"	
TURNS PER LAYER	61-7-L	61-1-L	120-116-L	22-1-L	11-1-L	
KIND OF TERMINAL	BLACK LEADS	WIRE ONLY	RED LEAD ONE END	WIRE WITH BLACK SLEEVE	WIRE WITH YELLOW SLEEVE	
LENGTH OF TERMINAL	12"	3"	12"	12"	12"	
TUBE	Fish Paper	PRI WRAP	SHIELD WRAP	SEC. WRAP	FIL #1 WRAP	
LAYER INSULATION	Fish Paper GLAZED	—	1-L-.002 GLAZED	—	—	
WRAPPER	1-L .005" VC	1-L .005 VC	2-L .005 VC	2-L .005 VC	2-L .005 VC	
TREATMENT						
RESISTANCE						



115v, 60cy.
6.3v @ 2 amp.
13.5v @ 4 amp.

SPEC. NO. 4-6 Sweet

Winding	Pri		Sec #1		Sec #2		
Turns	373		22	#10	47	#18	
Taps	—		—		—		
Wind. Lgth.	1 3/4"		1 3/4"		1 3/4"		
Wire Size	#20		#20		#28		
T. P. L.	47-8L		22-1L		16-3L		
Finish	90%		90%		65%		
Type Lead	—	Wire	#20	Sleeving	—		
Lead Lgth.	3"		3"		5"		
Layer Insul.	1 Sheet "K"		—		1 Sheet "K"		
Test Volt.	1250v				2v		
Wrapper	2L 1/2 "K"		3L 1/2 "K"		2L 1/2 "K"		

TUBE	72-007" Fish	IMPREGNATION	Varnish

CORE 1 1/4" x GA. 24 GRADE D STACK 2 x 2

MOUNTING "C"

Note: Sleeve over wire to lugs.

Two Rectifiers

$B_M = 650 - 5M - 5^{75}$

$F_c = 65$ @ 60cy

TPV = 3,34

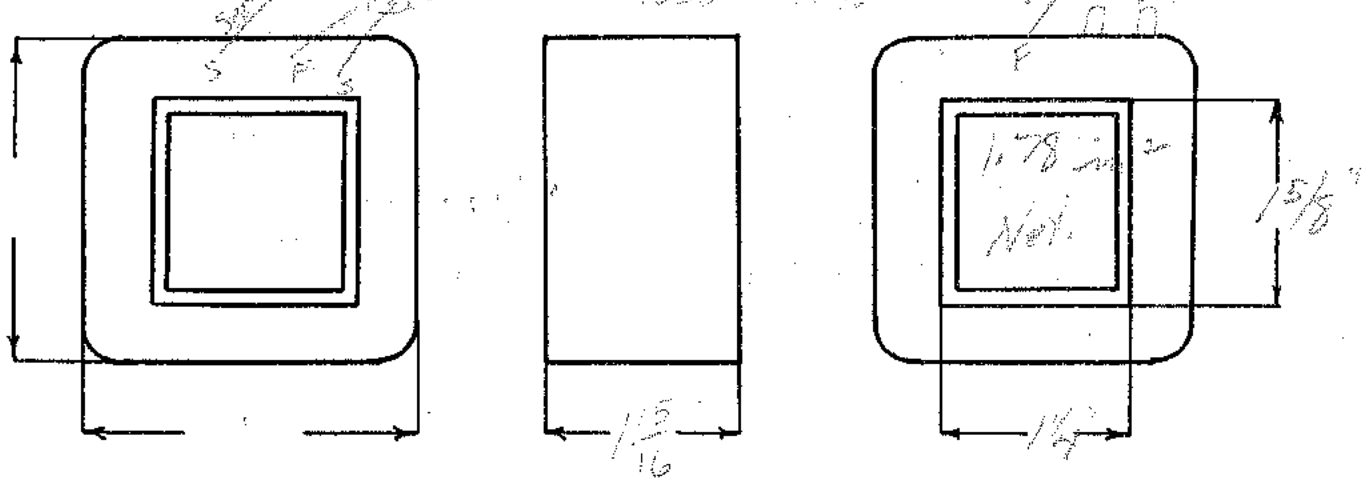
Wire Area = 0.525" (0.5 sq")

5 Sec #1 V4 = 135

Pri V4 = 120

Pri I = 1.57

η = 83%



DESIGNED BY H.W.S

DATE 7-2-41

0000

115 V – 60 cycle
6.3 V @ 2 Amps.
13.5 V @ 3.5 Amps (D.C.)

Stock

Tube, DX4

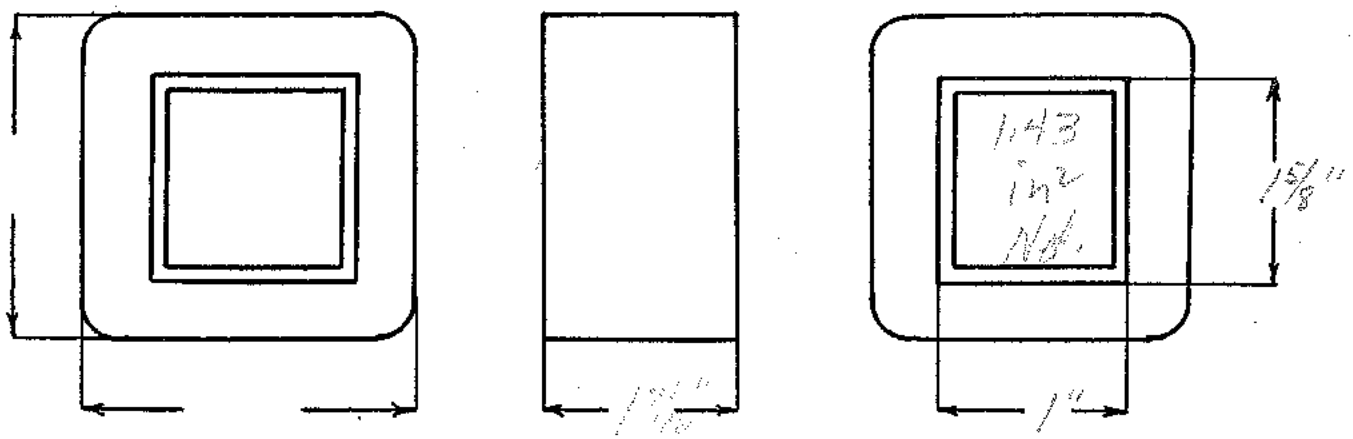
SPEC. NO. H-6 Rectifier

Winding	Pri		13.5V F1		6.3V F2		
Turns	420		49		25 + 2 (10%)		
Taps	—		—		—		
Wind. Lgth.	1¼"		1¼"		1¼"		
Wire Size	#25		#17		#20		
T. P. L.	40-7L		25-2L		25-1L		
Finish			93%		67%		
Type Lead	W.O. 2 Lugs		W.O. Sleeve		W.O. Sleeve		
Lead Lgth.	3"		3"		3"		
Layer Insul.	1L 2 mil		1L 2 mil		—		
Test Volt.	1250~ 2L		2L		2L		
Wrapper	0056A		0056A		0056A		

TUBE	7L-007 GK	IMPREGNATION	Varnish
CORE 1" x 1¼" Ext.	GA. 24	GRADE D	STACK 2.92"
MOUNTING "C" – Black on Rectifier Chassis			

Cu = 460 – 510 – 586
Fe = 71.8 @ 60~
TPV = 3.65
Wire Mil = 0.350" (0.287")

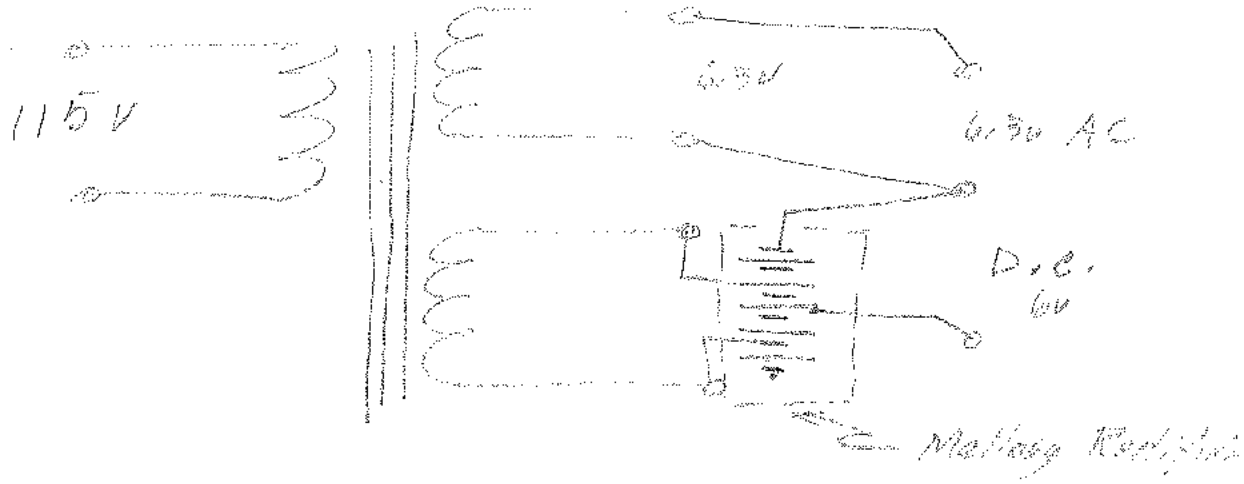
Σ See VA = 100 η = 83
Pri VA = 80 Cos θ = 90
Pri I = 609 mA



DESIGNED BY [illegible]

0056

DATE 2-18-42


115 V
6.3 V
6.3 V AC
D.C.
6V
Meter Rectifier

115v - 60~
6.3v @ 2 Amp.
16v @ ½ Amp. (Opt.)

Steel I-2-6

Inter. Dept.

SPEC. NO. H-7 Rect.

Winding	Pri		13.5v F1		6.3v F2		
Turns	361		50		22		
Taps	—		—		—		
Wind. Lgth.	1¼"		1¼"		1¼"		
Wire Size	#23		#17		#20		
T. P. L.	46-8L		25-2L		22-1L		
Finish	87½%		93%		59%		
Type Lead	W.O. Lok. ons		W.O. Sleeve		W.O. Sleeve		
Lead Lgth.	3"		3"		3"		
Layer Insul.	1L .5 Mylar		1L .2 Mylar		—		
Test Volt.	1500V		1500V.		1500V		
Wrapper	2-L .005" GA		2-L .005" GA		2-L .005" GA		

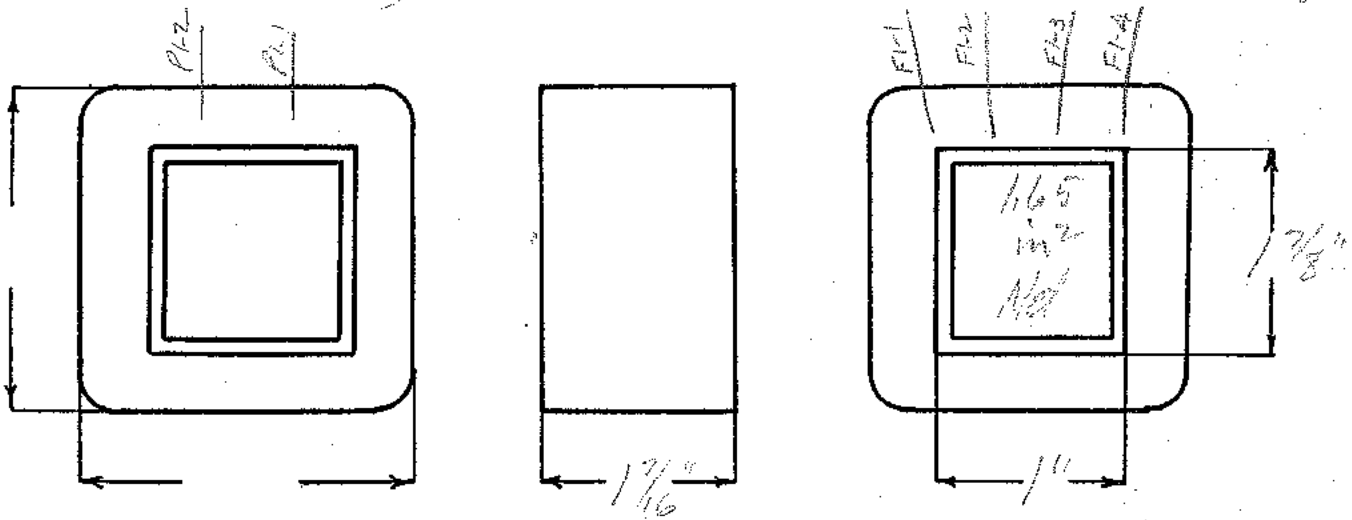
TUBE 7L-007 ½ +1-L .003" VP | IMPREGNATION Varnish

CORE 1" x 1⅜" E+I | GA. 24 | GRADE D | STACK 2 x 2

MOUNTING "C" - Block on Radiation Chassis.

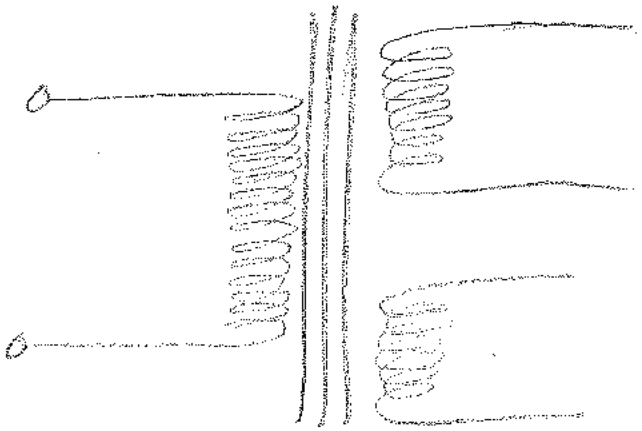
Cu = 450 - 512 - 510.
Fe = 92.3 @ 60~
TPV = 3.14
Wire Adj = 0.347" (0.348")

2 Sec VA = 77
Pri VA = 103
Pri I = 896 ma



DESIGNED BY NHR

DATE 2-8-62



E_P – 115V – 25W
E_{S_1} – 6.3V – 2 amps
E_{S_2} – 115V – 9 amps

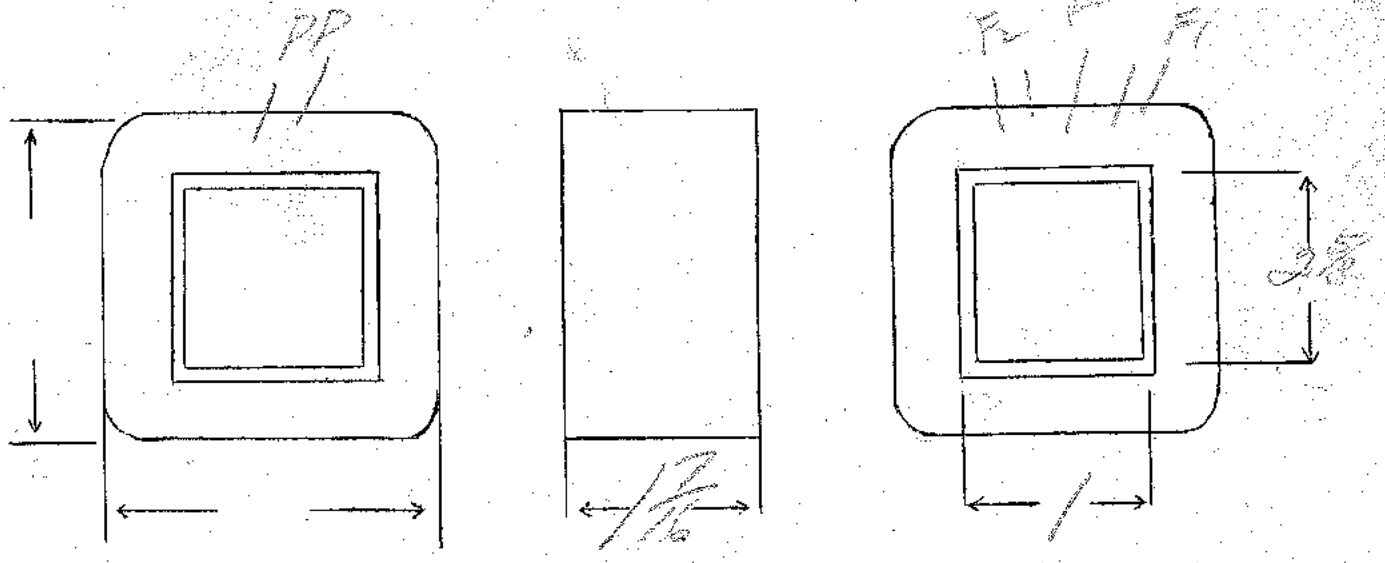
SPEC. NO. 47 Rectifier

	P	S_1	S_2				
Winding							
Turns	468	29	65				
Taps		—	—				
Wind. Lgth.	1.25"	1.25"	1.25"				
Wire Size	#25	#20	#14 Enam.				
T.P.L.	57-8						
Kind Term.	WIRE ONLY						
Term. Lgth.	3"	2½"	2½"				
Layer Insul.	40#						
Test Volt.	—	—	—				
Wrapper	1 thick	1 thick	1 thick				

TUBE 2007 | IMPREGNATION VARNISH

CORE 1×1.25 | PRIMARY V.A.

MOUNTING C



DESIGNED BY [signature] DATE 12/31/56

	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

SPECIFICATION NO. 12

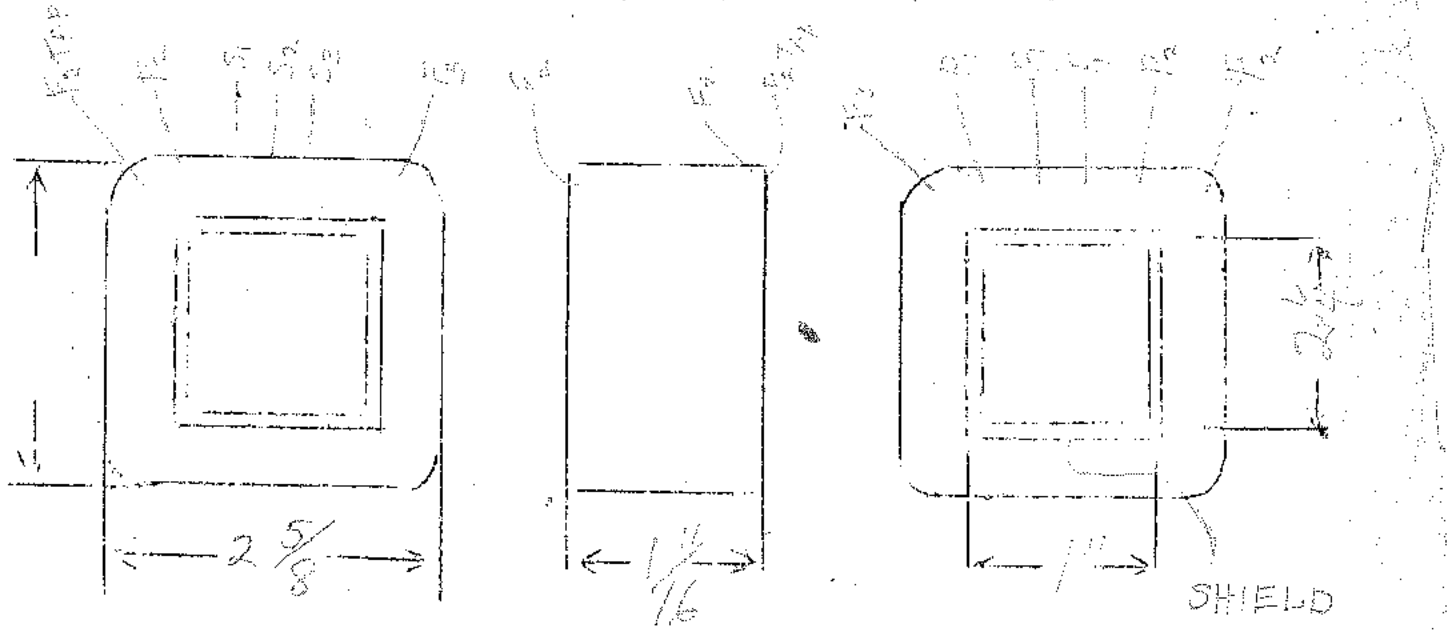
Type Transformer POWER

SPEC. NO. 12

Winding	PRI	SHIELD	SEC.	FIL. 1	FIL. 2	FIL. 3	
Turns	370			15	5	6	
Taps	NONE		CENT				
Wind. Lgth.							
Wire Size							
T.P.L.							
Kind Term.				WIRE			
Term. Lgth.							
Layer Insul.							
Wrapper							

TUBE 9LC07LP | IMPREGNATION

CURE THIS IS THE SAME AS 12 EXCEPT WITH SEC. VOLTAGE 16 VOLTS HIGHER EITHER SIDE.

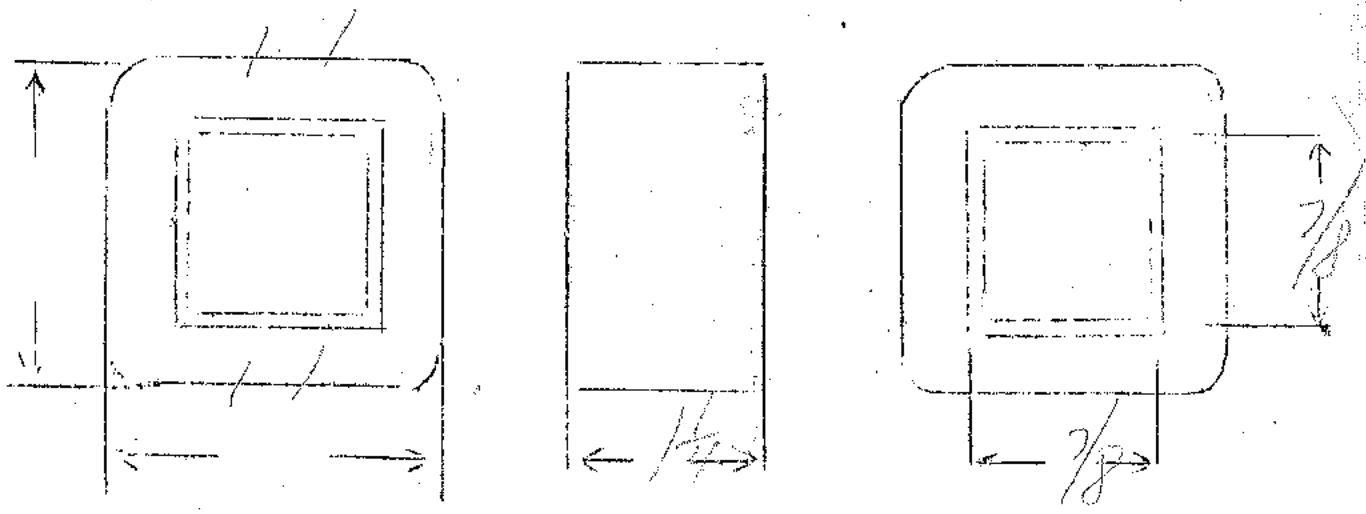


SPEC. NO. WG11 Coil

Winding	P	S					
Turns	3,700	11,100					
Taps	—	—					
Wind. Lgth.	1 1/16	1 1/16					
Wire Size	#40	#40					
T.P.L.	277	277					
Kind Term.	silver	braid					
Term. Lgth.	4"	4"					
Layer Insul.	#12 Sra	Sulvar					
Wrapper	7L007/C 3 Bl.	2L005CA					

TUBE | 7L007 | IMPREGNATION | Wax

CURE | —



120v - 60~
4 Windings each
20.5v @ 3.5 Amps.
12v DC @ 1.0 Amps.

Rect. Unit (4)

SPEC. NO. HP-12-10

Winding	Pri	Sec #1	Sec #2	Sec #3	Sec #4		
Turns	260	45	45	45	45		
Taps	—	—	—	—	—		
Wind. Lgth.	2¼"	2¼"	2¼"	2¼"	2¼"		
Wire Size	#16	#16	#16	#16	#16		
T. P. L.	38-72	31-1½	31-1½	31-1½	31-1½		
Finish Blk	90%	72%	72%	72%	72%		
Type Lead	W. O.	W. O.	W. O.	W. O.	W. O.		
Lead Lgth.							
Layer Insul.	1L .007 GA	1L .007 GA	1L .007 GA	1L .007 GA	1L .007 GA		
Test Volt.							
Wrapper	2L .005 GA		2L .005 GA		2L .005 GA		

TUBE 10L-007 GA | IMPREGNATION Varnish

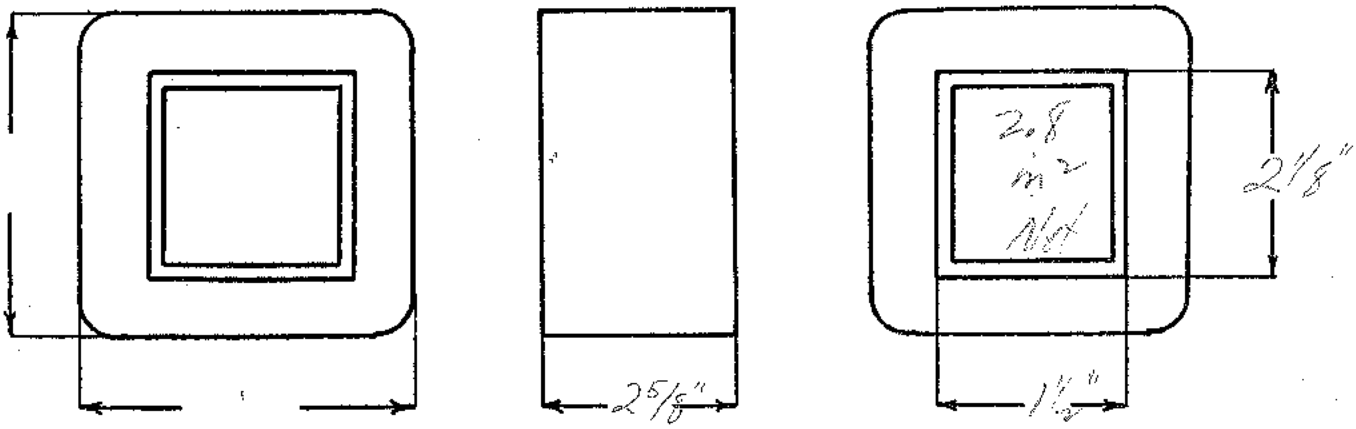
CORE 1½" x 2⅛" EI GA. 24 | GRADE D | STACK 2 x 2

MOUNTING "C" Lugs

Co = 808 - 738 - 788 - 738 - 708.
Fe = 61.7 @ 60~.
TPV = 2.17
Wire Wt = 2.770 (2.752)

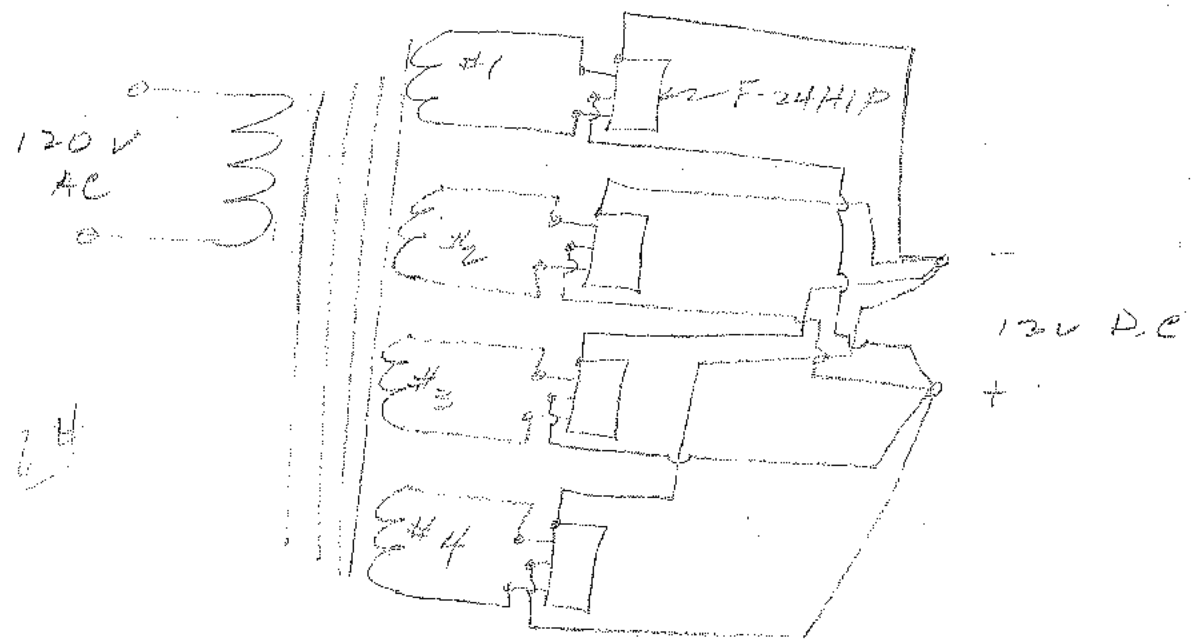
Σ Sec VA = 287
Pri VA = 384
Pri I = 3.2 Amps.

η = 83
1250 - 90



DESIGNED BY AWH

DATE 5-21-42


120 v
AC
#1
#2
#3
#4
12 v D.C
+
-

2 windings each
20.5 v @ 3.5 Amps.

Rect. Unit
12 v D.C.

12 v DC @ 5 Amps.

SPEC. NO. HP-12-5

Winding	Pri		Sec 1		Sec 2		
Turns	336		58		58		
Taps	—		—		—		
Wind. Lgth.	1 3/4"		1 3/4"		1 3/4"	= 1.75"	
Wire Size	#19		#16		#16		
T. P. L.	42 - 8L		30 - 2L		30 - 2L		
Finish	Q.P.C.		Q.P.C.		Q.P.C.		
Type Lead	W.O.		W.O.		W.O.		
Lead Lgth.	4"		4"		4"		
Layer Insul.	1L 504 G		1L 007 AA		1L 007 AA		
Test Volt.							
Wrapper	2L 005 AA		2L 005 AA		2L 005 AA		

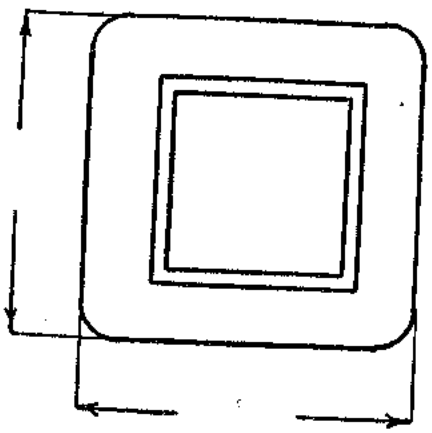
TUBE 7L-007 AA IMPREGNATION Varnish

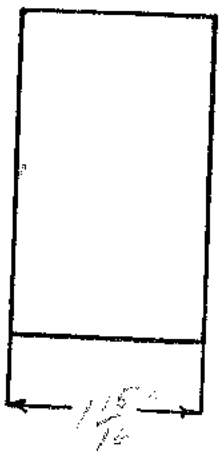
CORE 1 1/4" x 2" E x I GA. -24 GRADE D STACK

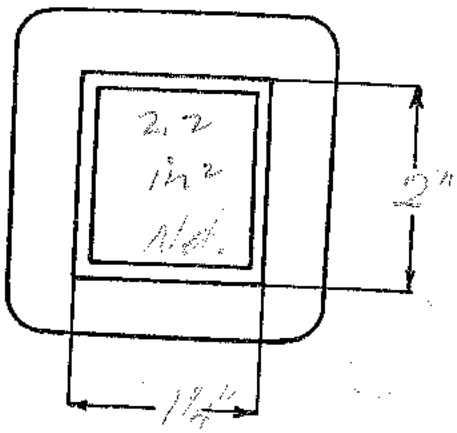
MOUNTING C

Lo = 805 - 738 - 738.
Fe = 60.8 @ 60 cy.
TPV = 2.8
Wire Ht. - 0.525" (0.556)

Σ Sec VA = 144 A = 83.
Pri VA = 192 Core = 92.
Pri I = 1.6 Amps.

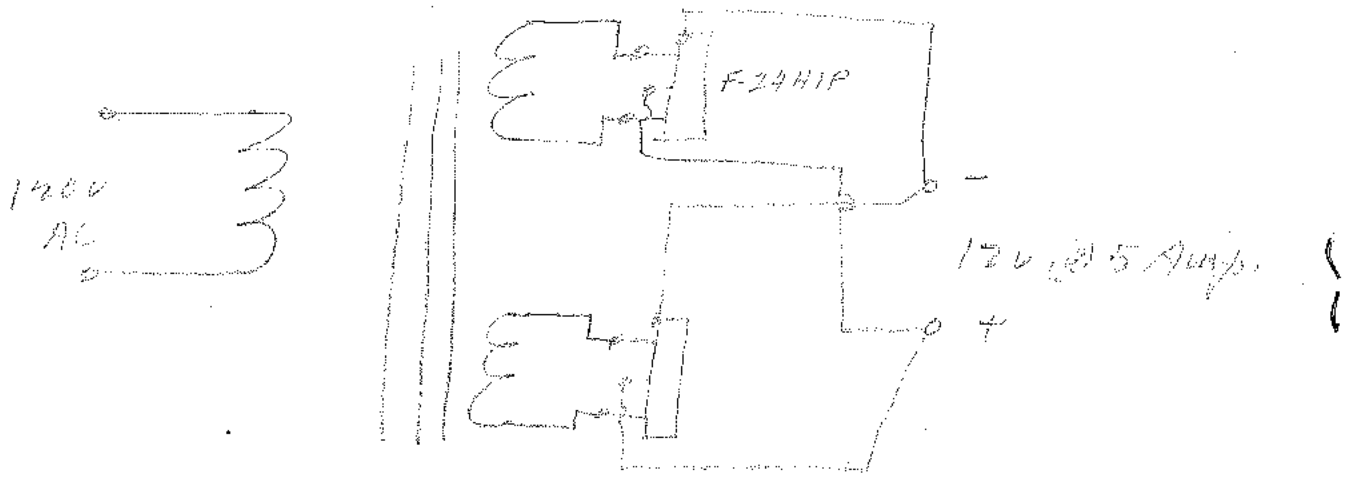






DESIGNED BY NHK

DATE 5-21-42


120V
AC
F-24HP
12V @ 5 Amps.
-
+

115v - 60~
6.3v @ 2 Amps.
20.5v @ 5 Amps. (D.C.)

Stock

SPEC. NO. 4-12 Rockford

Winding	Pri		20.5v Fil		6.3v Fil		
Turns	342		61		20		
Taps	—		—		—		
Wind. Lgth.	1 1/2"		1 1/2"		1 1/2"	3 = 4.46"	
Wire Size	#21		2-#18		#20		
T. P. L.	21-22		16-17		20-21		
Finish	Black	89%		89%		45%	
Type Lead							
Lead Lgth.							
Layer Insul.	1 Sheet		1 Sheet				
Test Volt.							
Wrapper	2 .005A		2 .005A		2 .005A		

TUBE 7L-007 1/2 IMPREGNATION Varnish

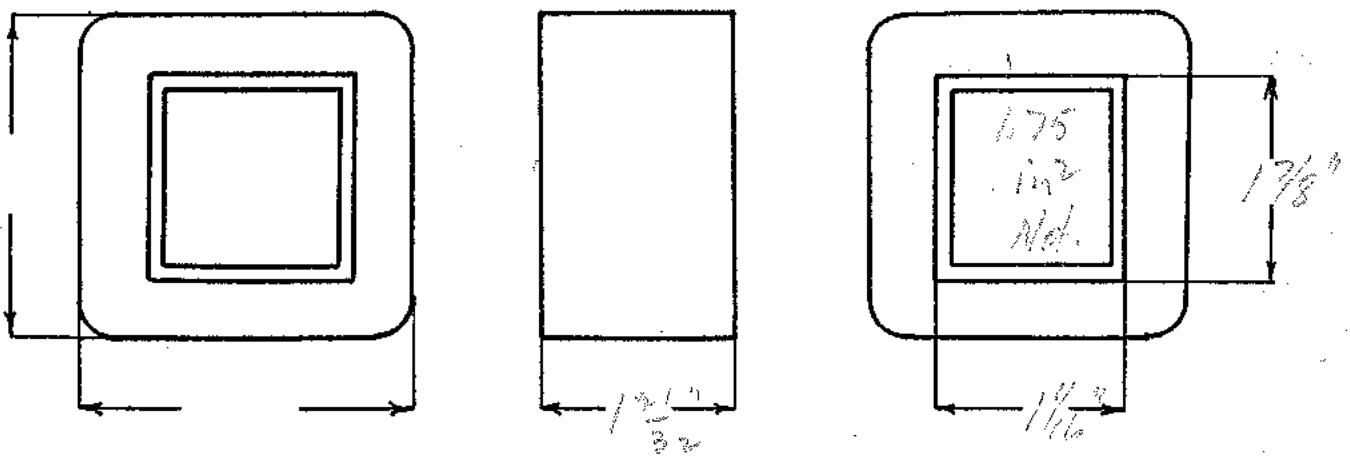
CORE 1 1/16" x 1 1/8" EL GA. 24 GRADE D STACK 2" x 2

MOUNTING "C" - Black on Rockford Chassis.

Ce = 603-650-51n
Fe = 77 @ 60~
TPV = 2.97
Wire Wt = 6.1490 (0.4877)

S Sec VA = 115
Pri VA = 154
Pri I = 0.34 Amp.

Eff = 88%
Core = 90



DESIGNED BY [illegible]

DATE 2-18-42

EB-115
EF1 - 6.3V - 2 amps
EF2 - 20.5 Cent-tap - 1 amp

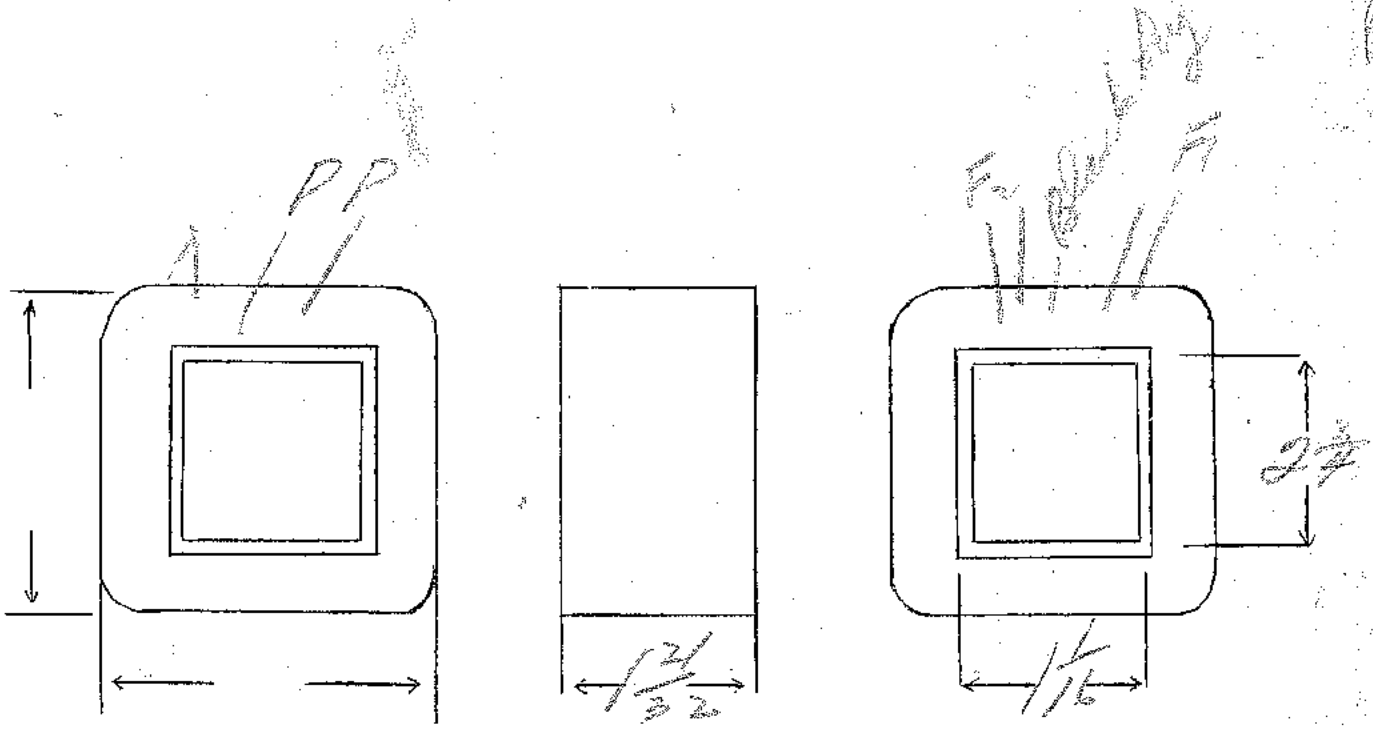
SPEC. NO. H12-25m

Winding	PRI	F1	F2				
Turns	400	25	71				
Taps	—	—	—				
Wind. Lgth.	1 5/32"	—	2 5/32"				
Wire Size	#22	#21	#28				
T.P.L.	50-8						
Kind Term.	WIRE	Wire					
Term. Lgth.	3"	3"	3"				
Layer Insul.	4 Mil	—	—				
Test Volt.	—	—	—				
Wrapper	2 Mil Sat	2 Mil Sat	2 Mil Sat				

TUBE 7L007 | IMPREGNATION VARNISH

CORE 1 1/16 x 1 1/2 | PRIMARY V.A.

MOUNTING C



DESIGNED BY Geo DATE 1/27/37

Ep - 230 V

EF1 - 6.3V - 2 amps

EF2 - 20.5V amps

SPEC. NO. HR-230

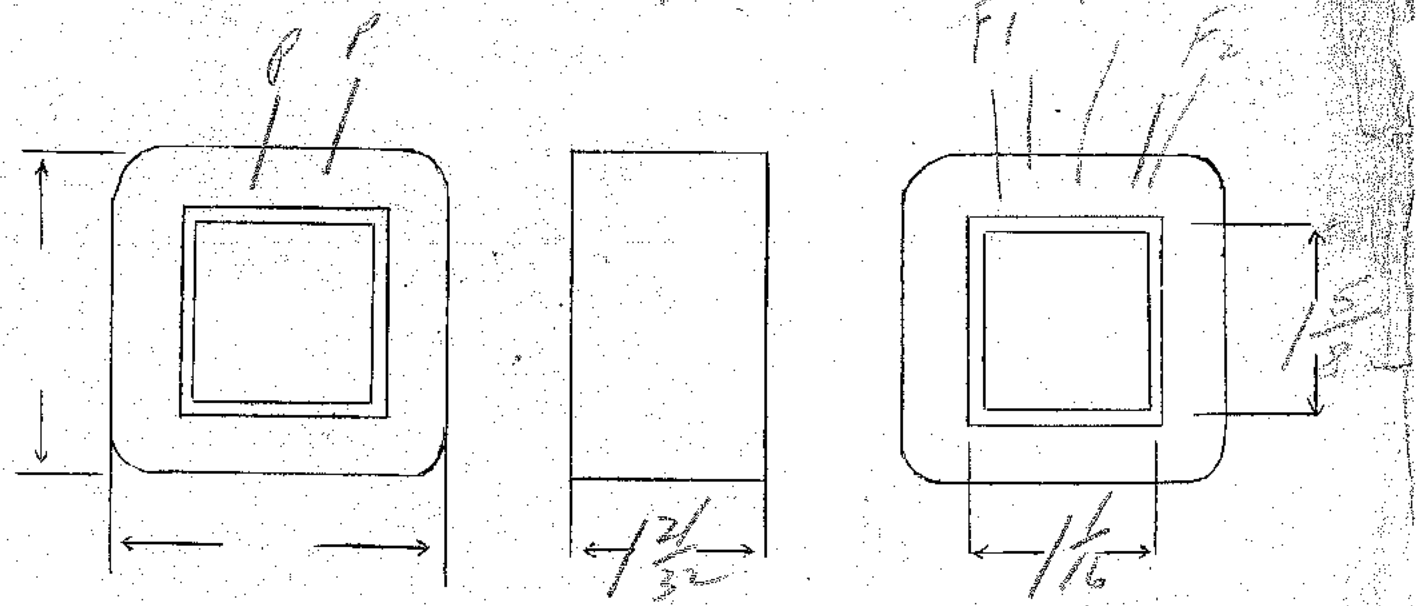
Winding	PRI	Blue F1	Green F2				
Turns	780	23	70				
Taps	—	—	—				
Wind. Lgth.	1 15/32	—	—				
Wire Size	#25	#21	#18				
T.P.L.	91-11	—					
Kind Term.	WIRE ONLY						
Term. Lgth.	3"	2 1/2"	2 1/2"				
Layer Insul.	40#						
Test Volt.							
Wrapper	2 1/2 OS GA	2 1/2 OS GA	2 1/2 OS GA				

TUBE 7/8 x 1 5/8 | IMPREGNATION

CORE 1/16 x 1 5/8 | PRIMARY V.A.

MOUNTING

Use Reinf. with Mtg. 2 Hole with Brkt.



DESIGNED BY [illegible] DATE 11-18-36

E_{P} = [illegible]

E_S = 6300 V 50 MA

F_1 = 5 V 2 A.

F_2 = 2.5 V 4.0 A

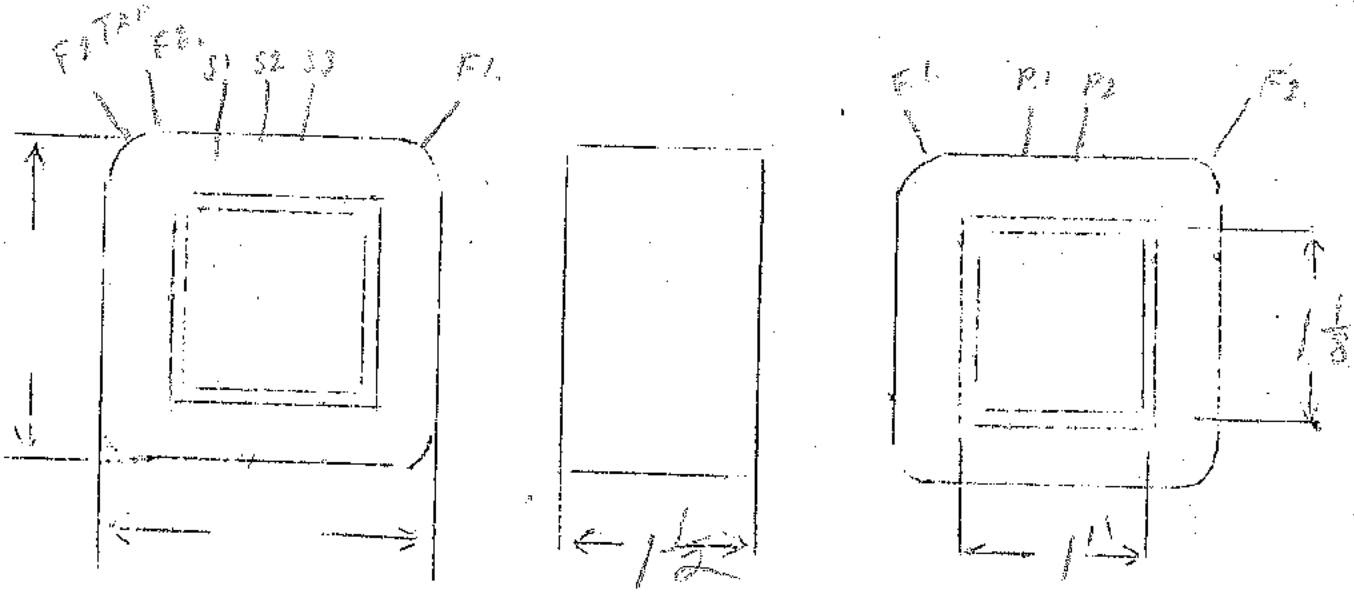
SPEC. NO. 13

Winding	PRI	SHIELD	SEC.	FIL (1)	FIL (2)		
Turns	540	68	3220	26	14		
Taps	—	—	1610	—	7		
Wind. Lgth.	1¼"	1¼"	1¼"	1¼	1¼		
Wire Size	26 E	26 E	36 E	20 E	17 E		
T.P.L.	68-8L	68-1L	216-152	2 C	1 C 1		
Kind Term.	#20 P.BR.	SIL. BR.	#20 P. BR.	WIRE ONLY	WIRE ONLY		
Term. Lgth.	9"	3"	9"	9"	9"		
Layer Insul	.50#	—	20#	—	—		
Wrapper	1 LAYER 2 C	2 LAYERS 2 C	2 LAYERS 2 C	1 LAYER C.A.	2 LAYERS C.A.		

TUBE 1 SL 007 | IMPREGNATION | VARNISH

CURE 1 HR 1½ N.W.

THIS IS THE SAME AS SPEC. NO. 3 EXCEPT ⅛" HIGHER.



	Voltage	Current
Primary	235	
Secondary	600	2.50
Filament No. 1	2	7
Filament No. 2	2.5	7
Filament No. 3		

SPEC. NO. 14

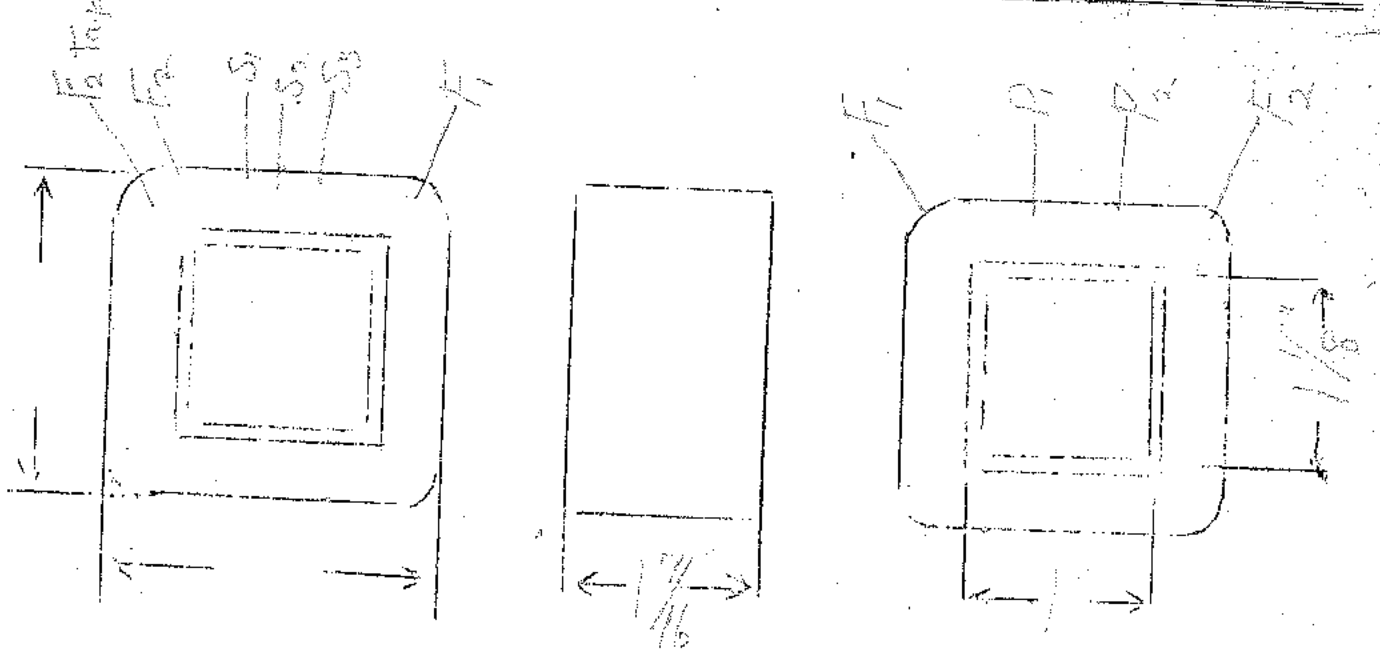
SPEC. NO. 14

Winding	PRI.	SHIELD	SEC.	Fil. (1)	Fil. (2)		
Turns	1150		3200	28	14		
Taps	NONE	NONE	1600	NONE	7		
Wind. Lgth.	1/4	1/4"	1/4"	1 LAYER			
Wire Size	29E	29	36E	20E	17E		
T.P.L.	91	91	216-157	28	14		
Kind Term.	#20 P.B.	Sl. to	#20 P.B.	WIRE ONLY	WIRE ONLY		
Term. Lgth.	8"	3"	9"	9"	9"		
Layer Insul.							
Wrapper	2 L 003 YP	2 L 003 YP	2 L 003 YP	2 L 005 GA	2 L 005 GA		

TUBE KL 00168

IMPREGNATION

CURE This is the same as 16.13 except 220 V. Prim.

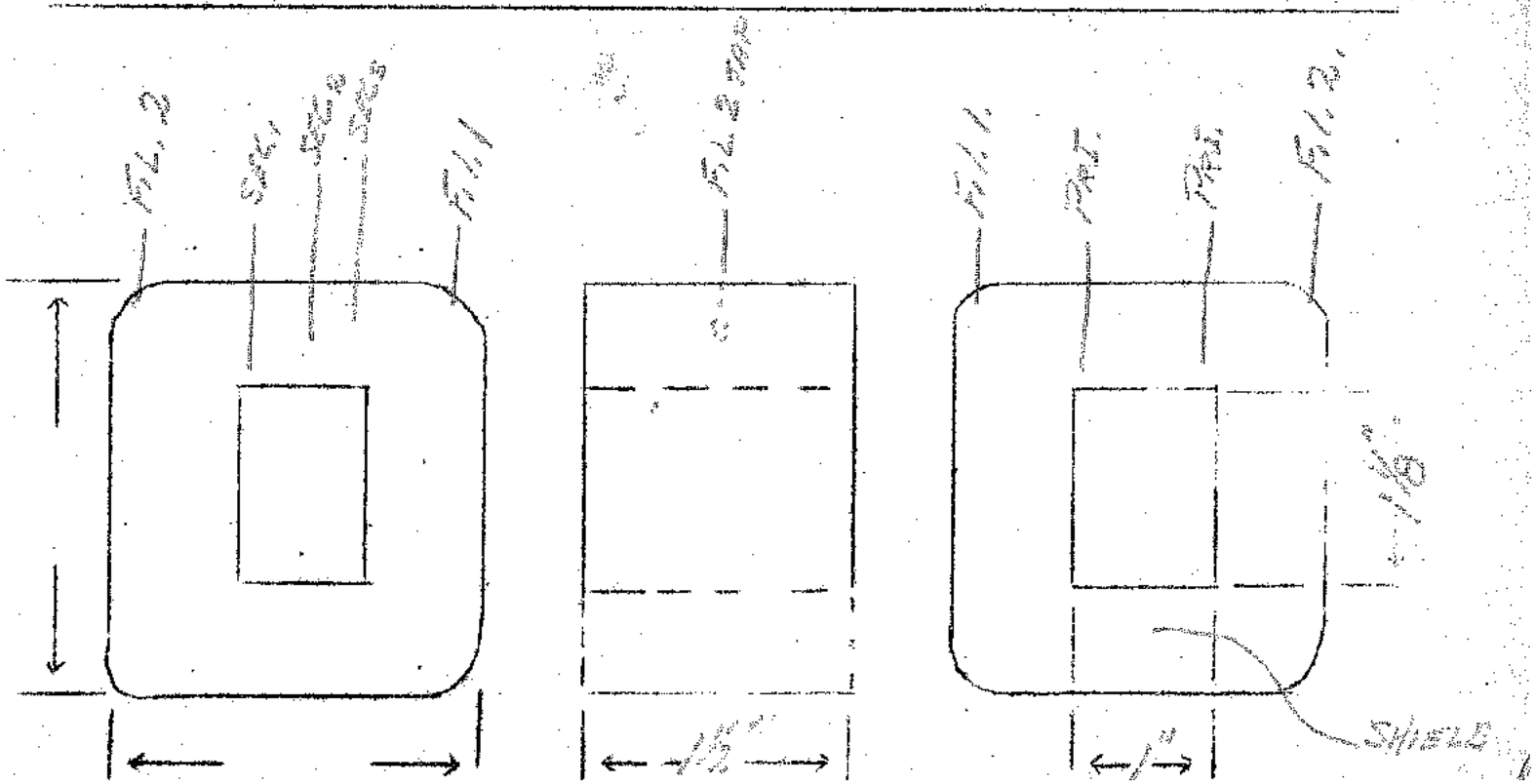


	Voltage	Current
Primary	110	
Secondary	600	.05
Filament No. 1	5	2
Filament No. 2	6.3	3.25
Filament No. 3		

Specification No. 15

Type Transformer Power

	Pri	Shield	Sec.	F.W.	F.(2)	
TURNS	520	68	3220	36	32	
TAPS	None	None	1610	None	16	
LENGTH OF WINDING	1½"	1⅛"	1 21/32"	1⅛	1	
SIZE WIRE	24E	34	36E	20E	18E	
TURNS PER LAYER	68-8L	68-1L	24-15L	36	32	
KIND OF TERMINAL	Wire only	Wire only	Sol. Sp.	Wire only	Wire only	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	2¼ over all	2¼ Wrapped	Shrunk Wrapped	2¼ Wrapped	2¼ Wrapped	
LAYER INSULATION	½ Sat.					
WRAPPER	14 Oil Vc 3 Cl.	2 Oil Vc 2 Cl.	24 Oil Vc 2 Cl.	2L Oil Cl.	2L Oil Cl.	
TREATMENT	Same as Spec. No. 13					
RESISTANCE						



120v Pri - 60ma
26v (Dual) @ 3 Amps.
6.3v @ 2 Amp.

SPEC. NO. H-15 Rev. 1

Winding	Pri		Sec		Fila.		
Turns	410		89		23	(7%)	
Taps	—		—		—		
Wind. Lgth.	1 3/4"		1 3/4"		1 3/4"		
Wire Size	#21		#15		#20		
T. P. L.	53-84		23-44		23-12		
Finish	90% W.O.		72% W.O.		44% W.O.		
Type Lead							
Lead Lgth.	4"		6"		4"		
Layer Insul.	1L 50# G		1L .007 GA				
Test Volt.	1250 2L		— 2L		— 2L		
Wrapper	.007 GA		.007 GA		.007 GA		

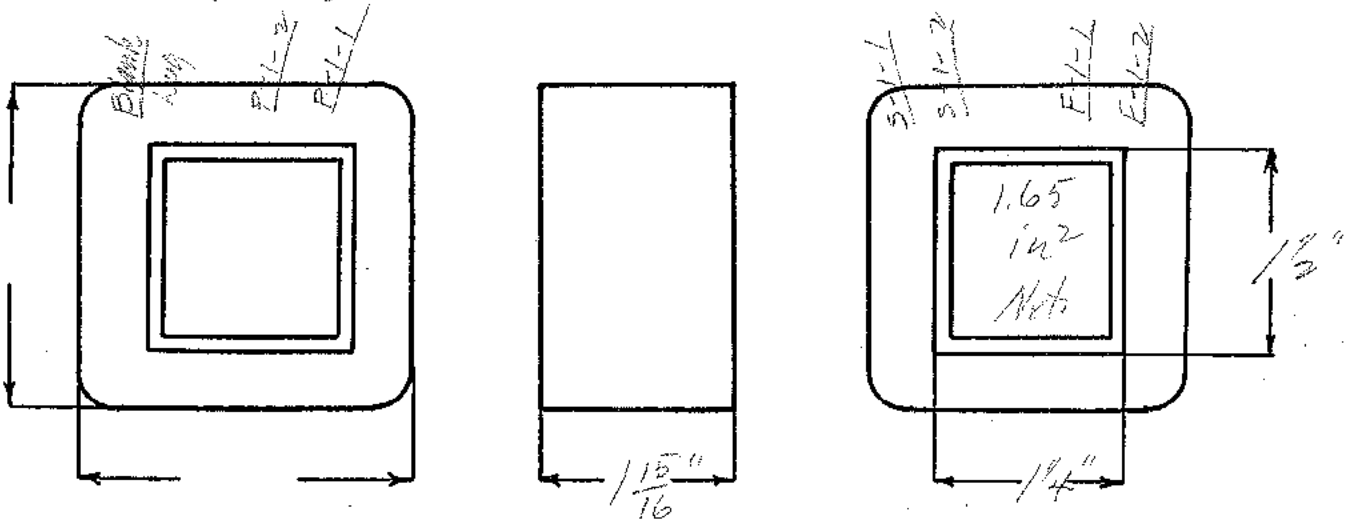
TUBE 7L-007 GK | IMPREGNATION Vacuum

CORE 1/4"x1 1/2" EI GA. 24 | GRADE D | STACK 2 x 2

MOUNTING "C" - Mount on Rectifier Chassis with Mallory F-28 HP Rect.

Cu = 853-1085-510
Fe = 66.14 @ 60ma
TPV = 3.42
Wire Mft = 0.560" (0.554")

Sec VA = 85 n = 83
Pri VA = 114 Eff = 90
Pri I = 950ma



Re DESIGNED BY NHA

DATE 4-1-42

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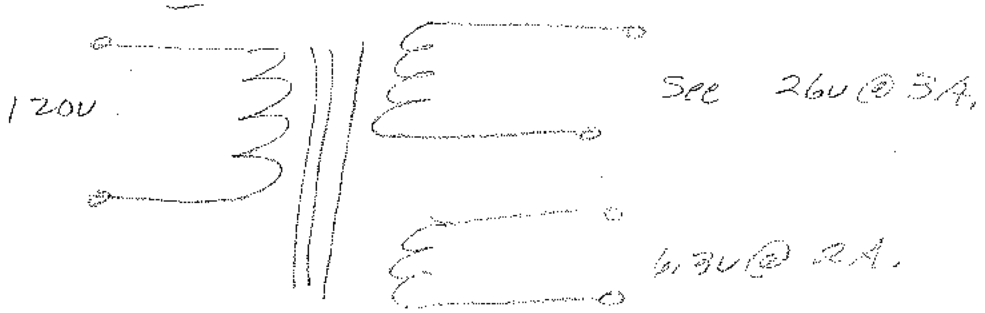

Pri.
120V
Sec 26v @ 5A.
6.3V @ 2A.

Type Transformer Audio CHOKE

Specification No. 16

SPEC. NO. 16

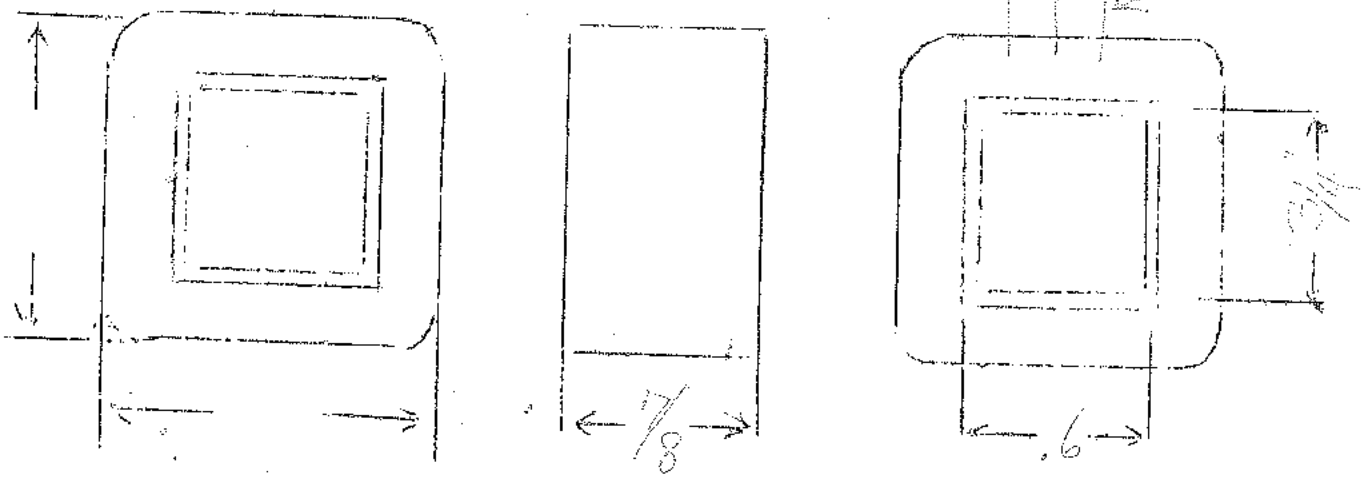
Winding							
Turns	13500						
Taps	6750						
Wind. Lgth.	3/4"						
Wire Size	41E						
T.P.L.	225						
Kind Term.	SILICO						
Term. Lgth.	2"						
Layer Insul.	14-16 lb						
Wrapper	[illegible]						

TUBE | 4L007GK | IMPREGNATION |

CURE | THIS IS APPX. TINCA No. 1983

STACK — 2 9/16

LUGS ON STRIP UNDER WRAPPER



120V Pri. - 60~
#1 - 28V @ 4 Amp (O.C.)
#2 - 6.3V @ 2 Amp.

Akron Stock

SPEC. NO. H-17

Winding	Pri		See 1		See 2		
Turns	360		20		84		
Taps	—		—		—		
Wind. Lgth.	1 3/4"		1 3/4"		1 3/4"		
Wire Size	# 20		# 20		# 16		
T. P. L.	45-82		20-12		28-32		
Finish	Pri 85%		38%		84%		
Type Lead	W.O. Sleeve		W.O. Sleeve		W.O. Sleeve		
Lead Lgth.	9"		9"		9"		
Layer Insul.	1/2 .005 "A"		—		1/2 .005 "A"		
Test Volt.	1250						
Wrapper	2 .007 KC		2 .005 A		2 .005 A		

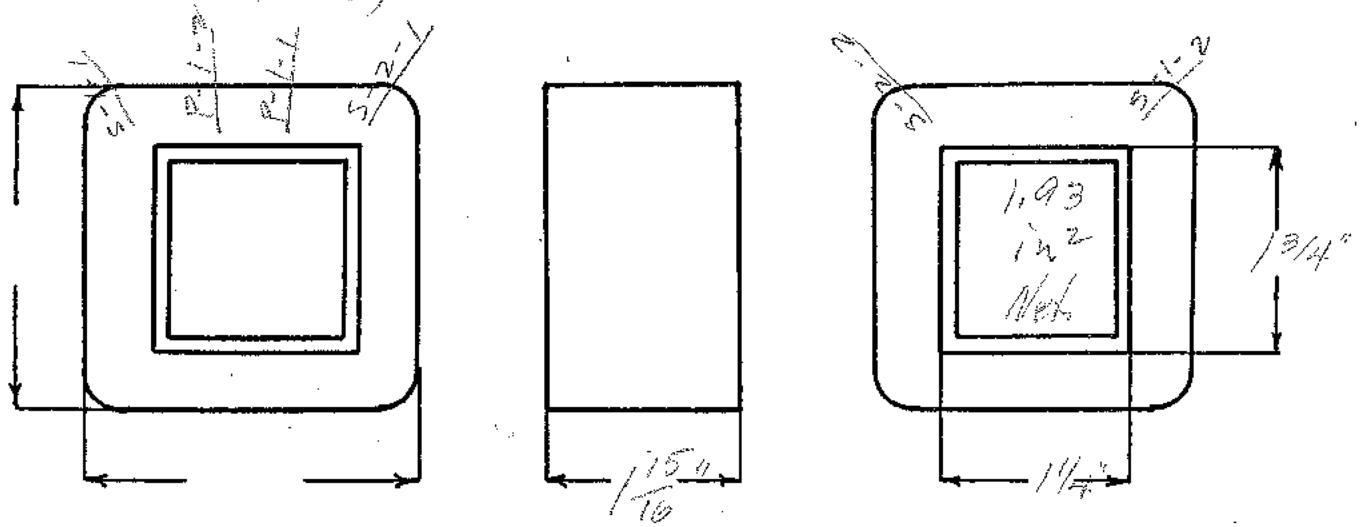
TUBE 42-007 KC IMPREGNATION Varnish

CORE 1 1/4 x 1 3/4" EI GA. 24 GRADE D STACK 2 x 2

MOUNTING "A" Note: Multi-Wind Pri & Sec #1.

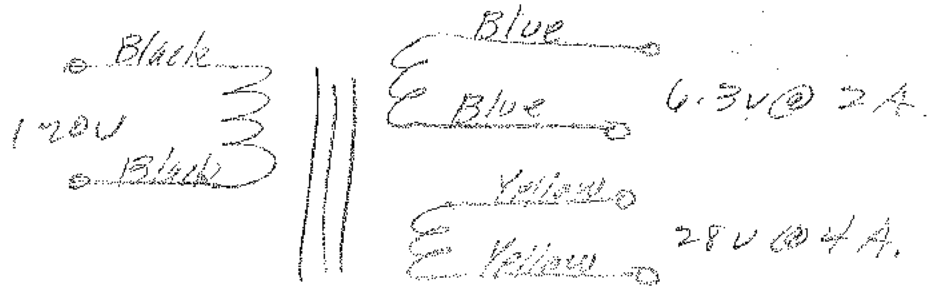
Cu = 735-512-645.
Fe = 648 @ 60~.
TPV = 3.10
Wire Mtl = 0.575" (0.300")

Sec VA = 175 η = 83
Pri VA = 167 Loss = 90
Pri I = 1.39 amps



DESIGNED BY KHR. DATE 3-24-42

OVER

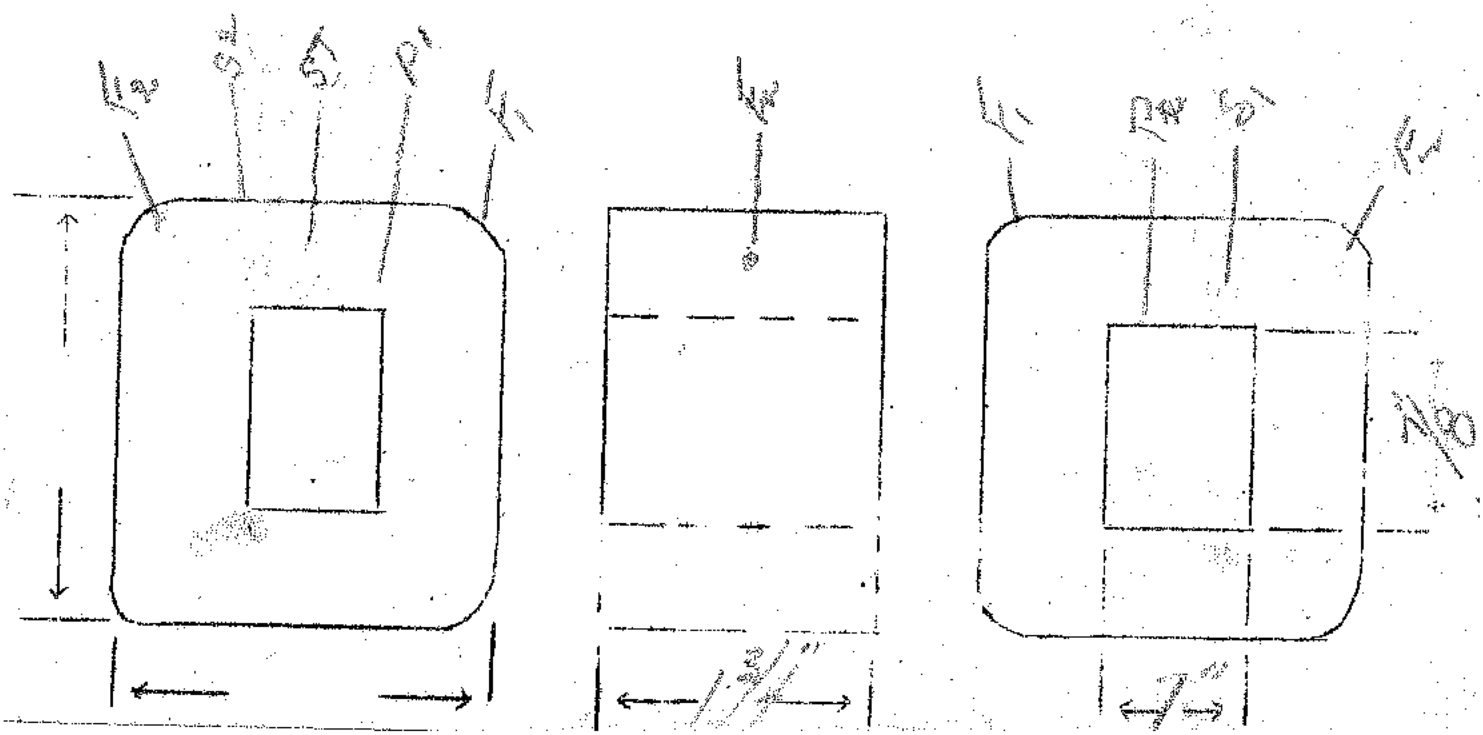

Black
120V
Black
Blue
Blue
6.3V @ 2A.
Yellow
Yellow
28V @ 4A.

	Voltage	Current
Primary	115	
Secondary	640	
Filament No. 1	2.5	
Filament No. 2	5	
Filament No. 3		

Specification No. 18

Type Transformer

	Pri.	Whole	Sec.	Fil. 2	Fil. 1
TURNS	680	200	4600	32	16
TAPS	None	None	2300	None	8
LENGTH OF WINDING	1 5/8"	1 5/8	1 5/8		
SIZE WIRE	28 E	23 E	33 E	20 E	13 E
TURNS PER LAYER	65-11	200-1	179-25		
KIND OF TERMINAL	No. 20 PB	Wire only	No. 20 PB	Wire only	Wire only
LENGTH OF TERMINAL	9"	3"	9"	9"	9"
TUBE	#4-007	Fiber Wind Before Winding	Shrink		
LAYER INSULATION					
WRAPPER	14,010 Vc	2460 Vc	32,010 Vc	2L.005" GA	2L.005" GA
TREATMENT					
RESISTANCE					



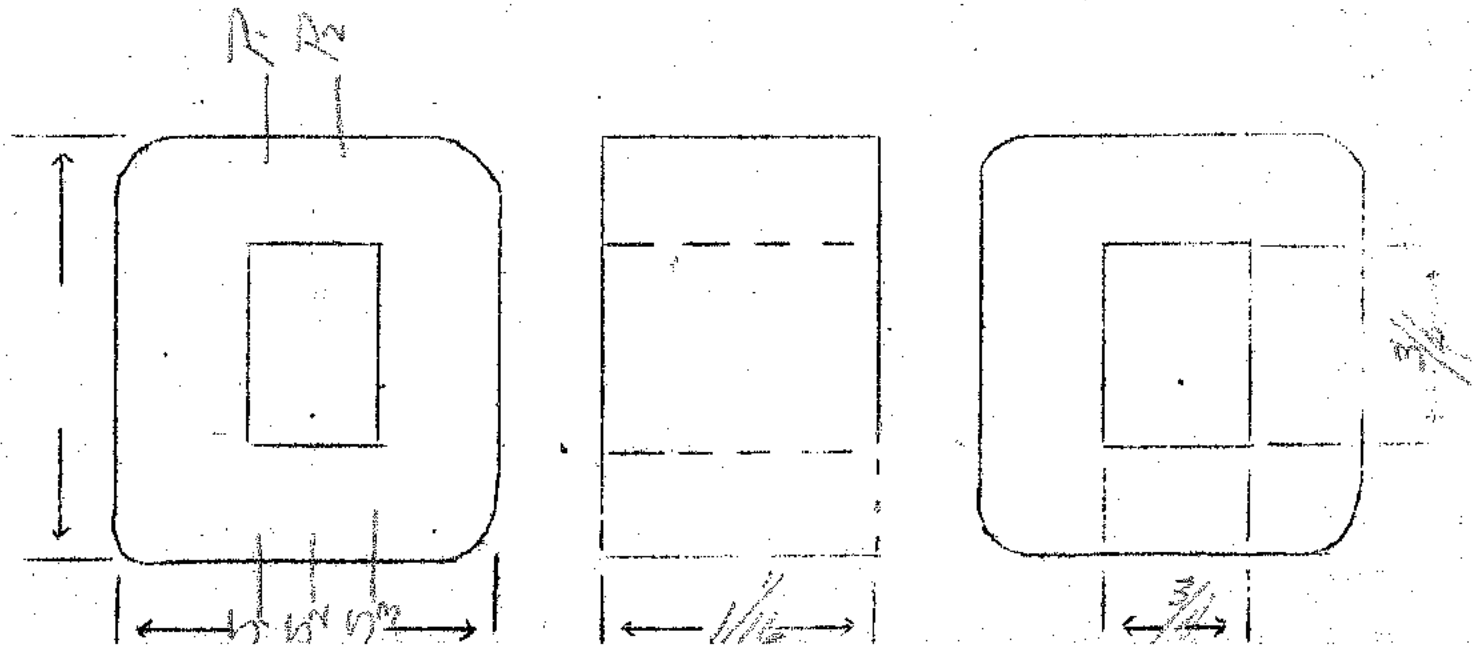
	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 19

Type Transformer AUDIO

SINGLE - PUSH - PULL - 1 - 1.5 RATIO

	PRI	SEC				
TURNS	3700	1480				
TAPS	None	555				
LENGTH OF WINDING						
SIZE WIRE	#40	#40				
TURNS PER LAYER	232	232.48				
KIND OF TERMINAL	S. 1 2	S. 1 3				
LENGTH OF TERMINAL	3"	3"				
TUBE	#2007	#192 Wrapped				
LAYER INSULATION	#856	#856				
WRAPPER	#2003 YD	#2 SA #2057				
TREATMENT						
RESISTANCE						

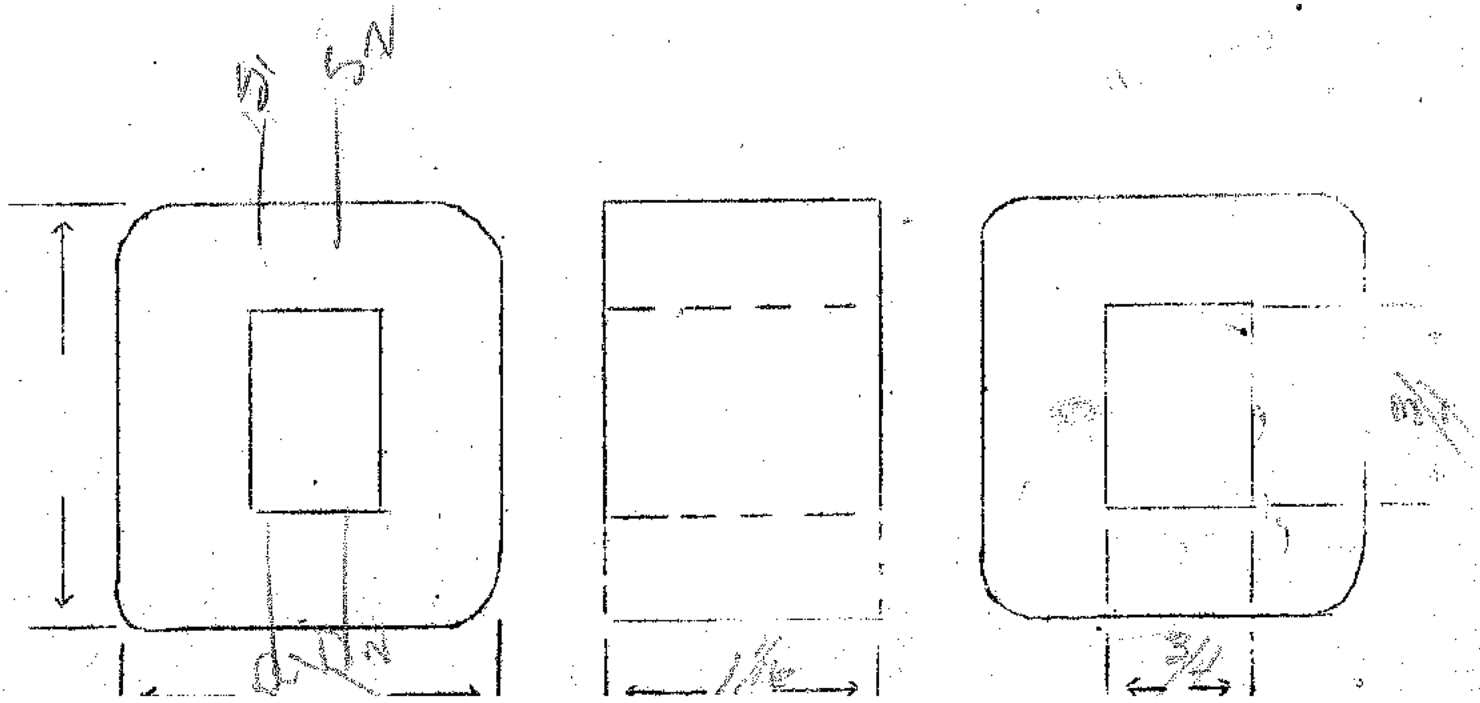


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 30

Type Transformer SINGLE PLATE SUPPLY 3-1 RATIO

	PRI	SEC				
TURNS	3700	11100				
TAPS	NONE	NONE				
LENGTH OF WINDING	1 3/8 1 5/8	1 3/8 1 5/8				
SIZE WIRE	#1	#1				
TURNS PER LAYER	232-16	232-48				
KIND OF TERMINAL	S.C. SOL.	S.C. SOL.				
LENGTH OF TERMINAL	3"	3"				
TUBE	#1.007	PRI SEC WINDOW				
LAYER INSULATION	16 LBS	16 LBS				
WRAPPER	4 COATS VP	2 COATS VP				
TREATMENT						
RESISTANCE						

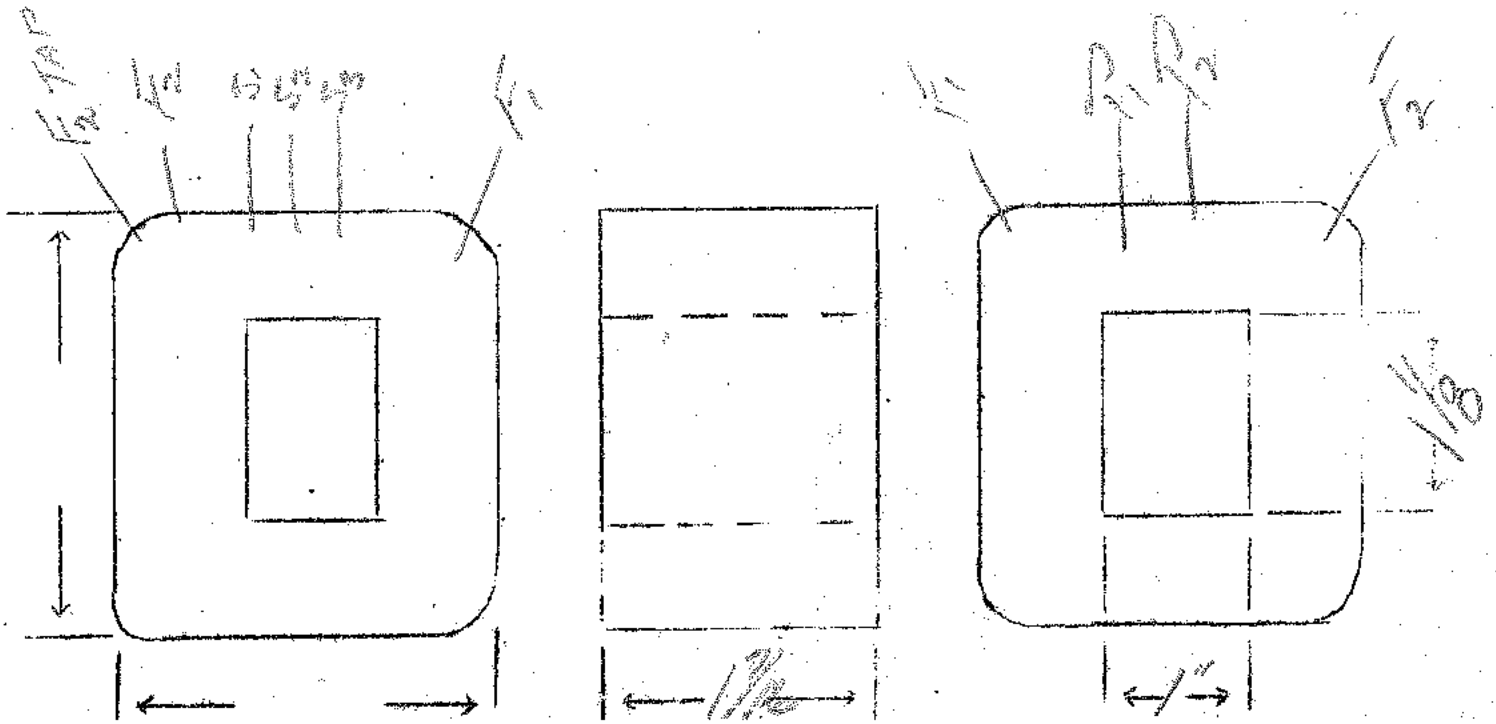


	Voltage	Current
Primary	117	0.30
Secondary	690	
Filament No. 1	5.	2.
Filament No. 2	6.3	1.6
Filament No. 3		

Specification No. 21

Type Transformer

	Pri.	Filament	Sec.	Fil (1)	Fil (2)	
TURNS	540	68	3220	26	32	
TAPS	None	None	1610	None	16	
LENGTH OF WINDING	1¼"	1¼"	1¼"	1"	1"	
SIZE WIRE	26 E	26 E	36 E	30 E	24 E	
TURNS PER LAYER	68-64	65-44	215-52	26	32	
KIND OF TERMINAL	No. 20 Tin.	No. 20 Tin.	No. 20 Tin.	No. 20 Tin.	No. 20 Tin.	
LENGTH OF TERMINAL	8"	8"	8"	8"	8"	
TUBE	Empire Fiber	Empire Fiber	Empire Fiber	Empire Fiber	Empire Fiber	
LAYER INSULATION	Empire					
WRAPPER	Empire Fiber	Empire Fiber	Empire Fiber	Empire Fiber	Empire Fiber	
TREATMENT	Per Spec 3/15 and Instructions Sheet No. 15					
RESISTANCE						



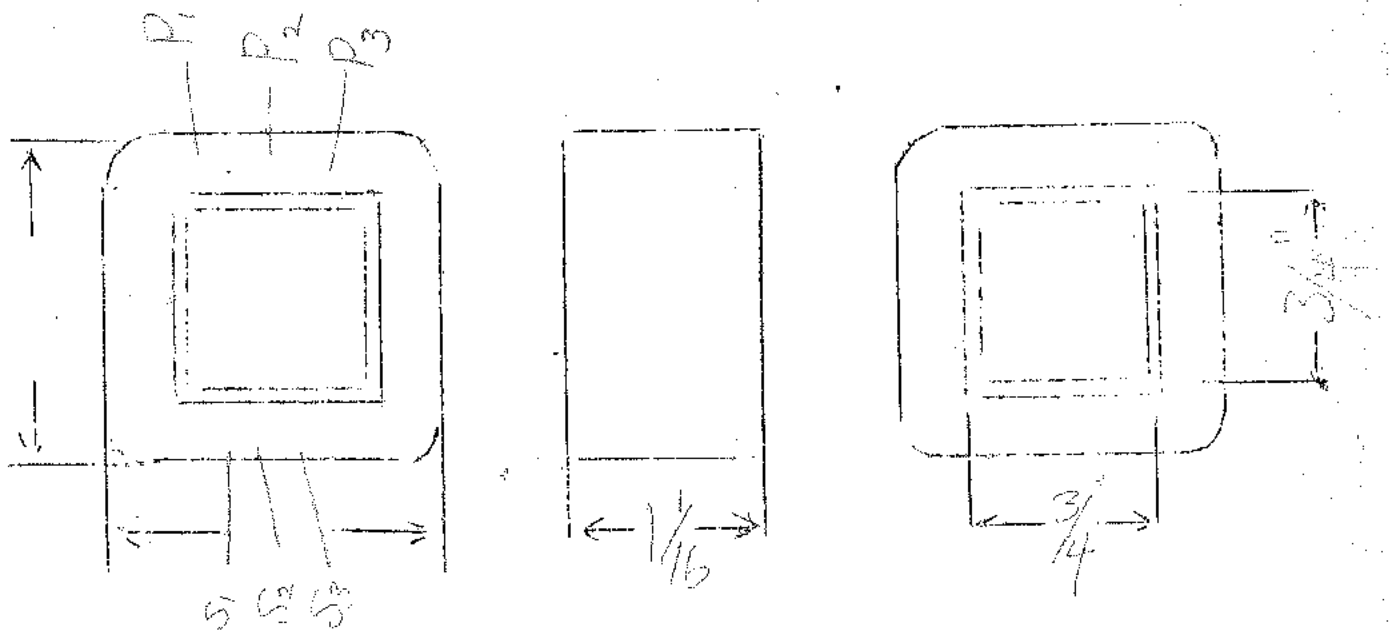
P.P. PLATE -- P.R. GRID

3-1 RATIO

SPEC. NO. 22

Winding	PRI	SEC.					
Turns	3700	11100					
Taps	1850	5550					
Wind. Lgth.							
Wire Size	40E	40E					
T.P.L.	232-16	232-48					
Kind Term.	Sil. Brd.	Sil. Brd.					
Term. Lgth.	3"	3"					
Layer Insul.	16 lb. GL	16 lb. GL					
Wrapper	1L 003 VP	1L SK					

TUBE	4L007	IMPREGNATION	
CURE	3/4 x 3/4		

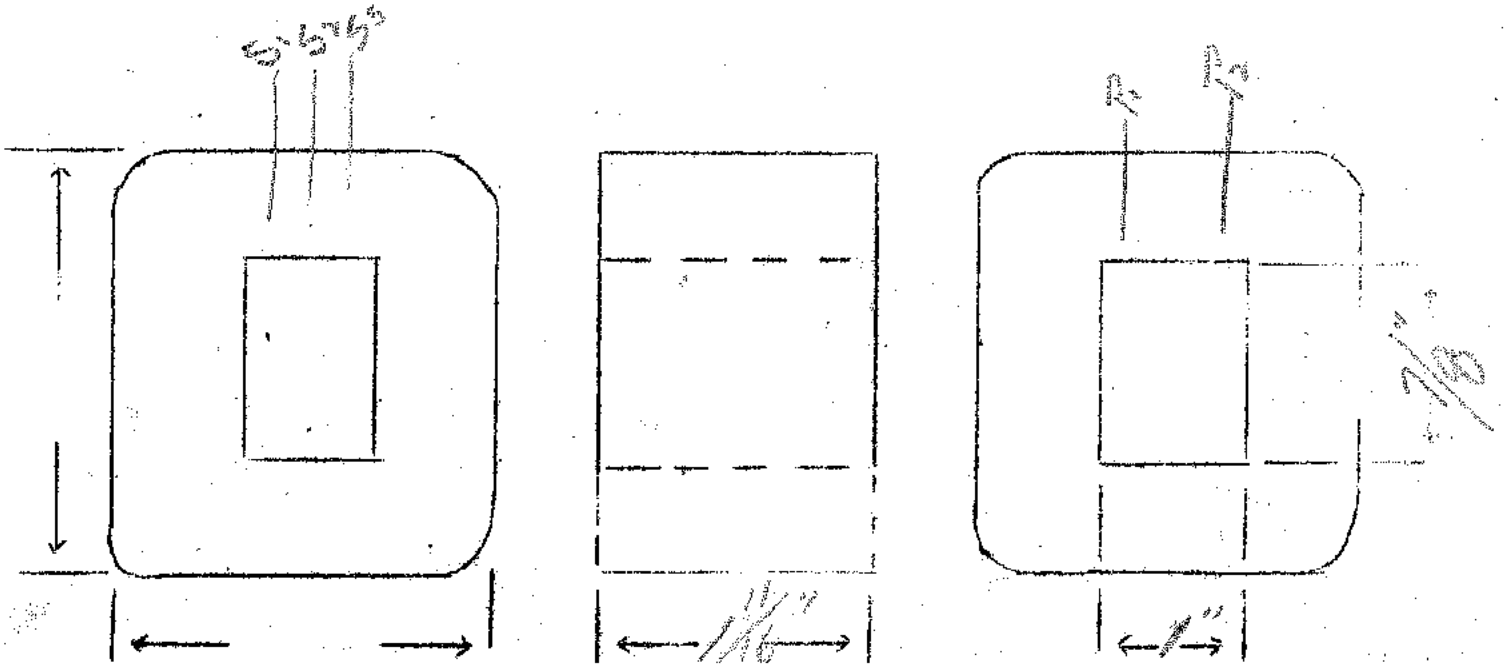


	Voltage	Current
Primary	115	.325
Secondary	600	
Filament No. 1	2.5	3.0
Filament No. 2	1.5	3.0
Filament No. 3	5	2

Specification No. 83

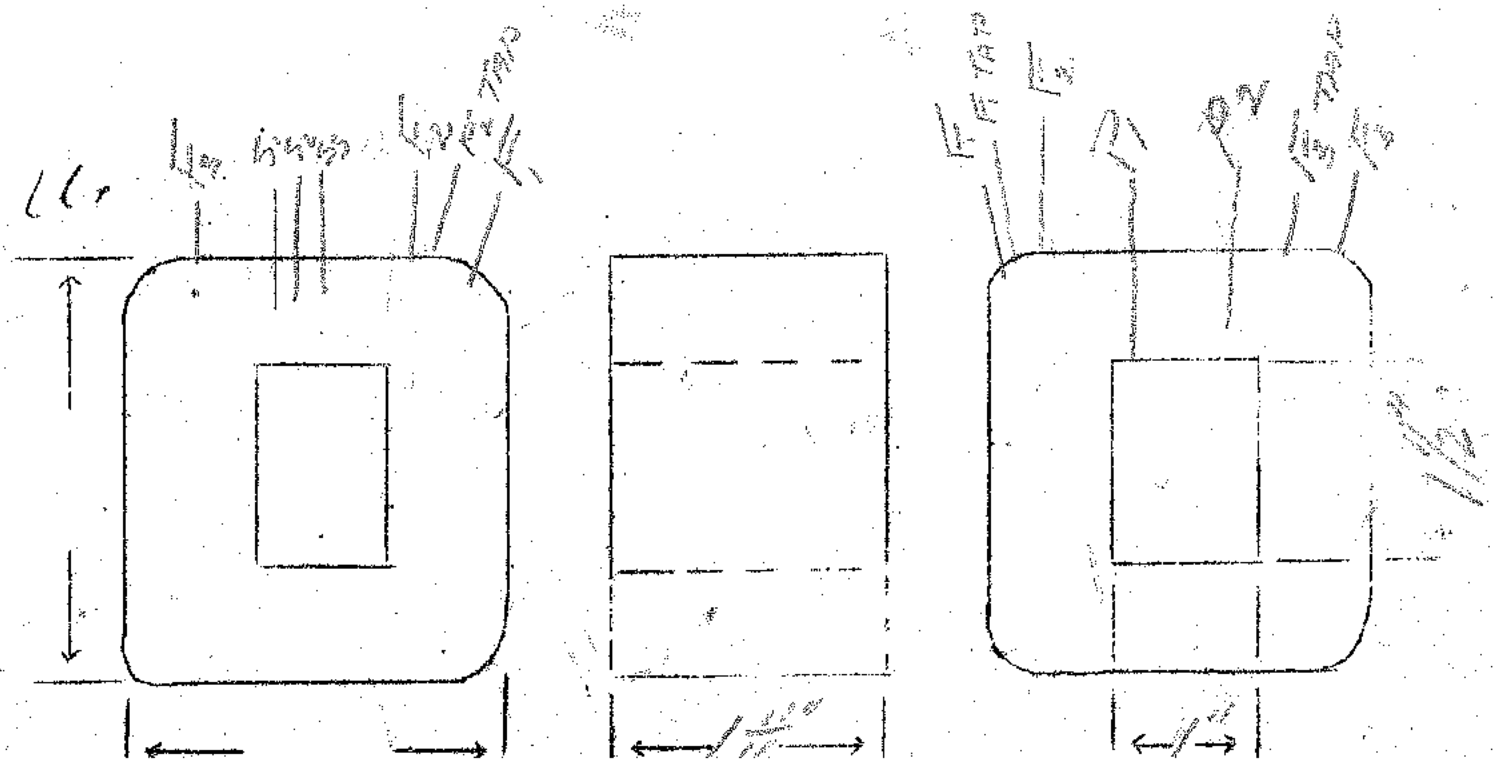
Type Transformer

	PRI.	SHIELD	SEC.	FIL. 1	FIL. 2	FIL. 3
TURNS	690		3450	16	10	32
TAPS	None	None	1725	8	5	16
LENGTH OF WINDING	1½	1½	1½			
SIZE WIRE	24 E	24 E	34 E	16 E	16 E	20 E
TURNS PER LAYER	69	69	200			
KIND OF TERMINAL	No 20 P.B.	WIRE ONLY	No 20 P.B.	WIRE ONLY	WIRE ONLY	WIRE ONLY
LENGTH OF TERMINAL	10"	3"	10"	10"	10"	10"
TUBE	4 x 4 x 7	PRI. WRAPPER	SHIELD WRAPPER	SEC. WRAPPER		
LAYER INSULATION	Scotch		16 C			
WRAPPER	22 x 25" VC	22 x 25" VC	22 x 25" VC	22 x 25" GP	22 x 25" GP	22 x 25" GP
TREATMENT						
RESISTANCE						



	Voltage	Current	
Primary	115		Specification No. 24
Secondary	230	120	
Filament No. 1	2.5	3	Type Transformer
Filament No. 2	2.5	3.06	
Filament No. 3	5	2	

	Pri.	Sh. Wdg.	Sec.	Fil. 1	Fil. 2	Fil. 3
TURNS	426	147	3950	10	10	30
TAPS	None	None	1425	5	5	10
LENGTH OF WINDING	1 1/2	1 1/2	1 1/2	.625"	.325"	1/2
SIZE WIRE	21 E	31 E	31 E	14 E	16 E	18 E
TURNS PER LAYER	48-42	14	142-30	10	10	30
KIND OF TERMINAL	Wire P.B.	S.C. Brs	S.C. Brs	Wire Cmt	Wire Cmt	Wire Cmt
LENGTH OF TERMINAL	12"	5"	5"	12"	12"	12"
TUBE	Black	Fib	Fib	Sec		Fib
LAYER INSULATION	50 Es		16 Es			
WRAPPER	2 Layers YC	2 Layers YC	2 Layers YC	2 Layers 42 Es 69		2 Layers 69
TREATMENT						
RESISTANCE						



120v - 60~
4 Windings each
51v @ 3 Amps.
24v DC @ 10 Amps.

Rect. Unit (8)
24v DC.

SPEC. NO. HP-24-10

Winding	Pri	Sec #1	Sec #2	Sec #3	Sec #4		
Turns	175	75	75	75	75		
Taps	—	—	—	—	—		
Wind. Lgth.	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	= 3.75"	
Wire Size	#11	#15	#15	#15	#15		
T. P. L.	36-5L	46-2L	38-2L	38-2L	38-2L		
Finish	Pitch	90%	72%	72%	72%	72%	
Type Lead	W.O.	W.O.	W.O.	W.O.	W.O.		
Lead Lgth.	4"	4"	4"	4"	4"		
Layer Insul.	1L .010 A	1L .007 A	1L .007 A	1L .007 A	1L .007 A		
Test Volt.	1250	—	—	—	—		
Wrapper	2L .005 CA	1L .005 A	1L .005 A	1L .005 A	1L .005 A		

TUBE	12L-007 SE	IMPREGNATION	Varnish

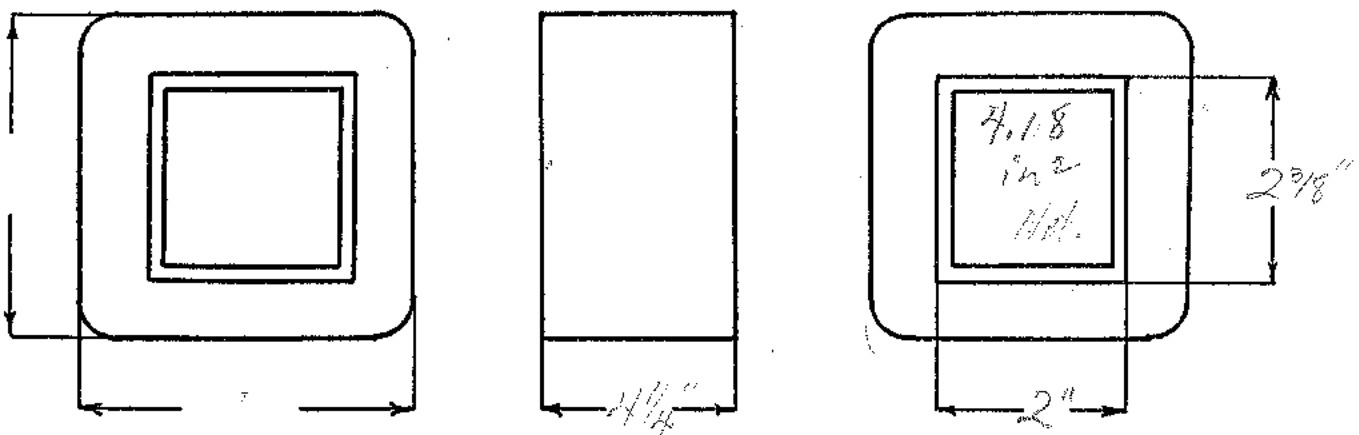
CORE 2"x2" EXL GA. .7 GRADE D STACK 2" x 2

MOUNTING 1/2 of "C"

Cu = 905 - 315 - 815 - 815 - 815.
Fe = 61.3 @ 60~
TPV = 1.46
Wire Wt. = 1.057# / 1.039#)

Σ See VA = 816
Pri VA = 1090
Pri I = 9.1 Amps.

A = .83
.05 A = .40



DESIGNED BY HHH

DATE 5-21-42

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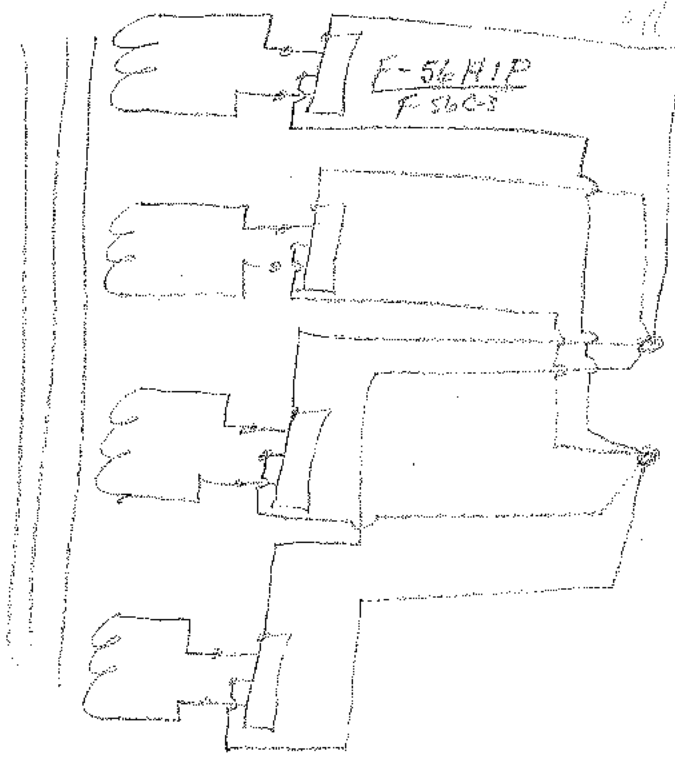


120v AC

2.7 Amps

A-1-A

24v @ 10 Amps.

+

FHC 3

7.20 @ 25'

16 ga 8.00
FIB 2.00.

6.40 50-99

5.60 100

AA-2 4 wks.

(5)

4 wks AA-1

1.25

McCall: Cristina
Ce-20121
Foster Heights

120v — 60~ Pri
2 - 20v Sec @ 5 Amp
1 - 6.3v @ 2 Amp

Power Device

SPEC. NO. H-24

Winding	Pri		Sec #1		Sec #2		Sec #3
Turns	228		387		387		12
Taps	—		—		—		—
Wind. Lgth.	1 3/4"		1 3/4"		1 3/4"		1 3/4"
Wire Size	#23		#15		#15		#19
T. P. L.	38 - 62		27 - 1 1/2		27 - 1 1/2		15 - 1 1/2
Finish	91%		91%		91%		28%
Type Lead	H. D. Sleeve		H. D. Sleeve		H. D. Sleeve		H. D. Sleeve
Lead Lgth.	4"		4"		4"		4"
Layer Insul.	1L 005 A		1L 005 K		1L 005 K		1L 005 A
Test Volt.	1250		—		—		—
Wrapper	2L 005 A		2L 005 A		2L 005 A		2L 005 A

TUBE 7L-007 FA IMPREGNATION Varnish

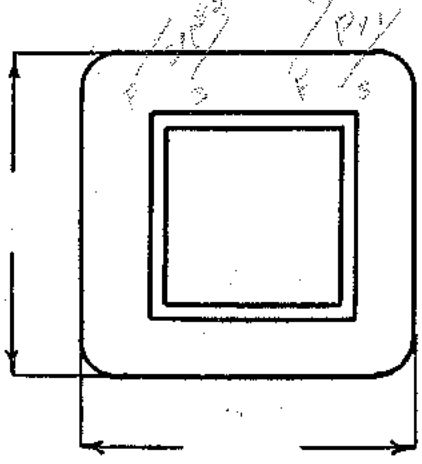
CORE 1 1/4" x 2 3/4" EI GA. 24 GRADE D STACK

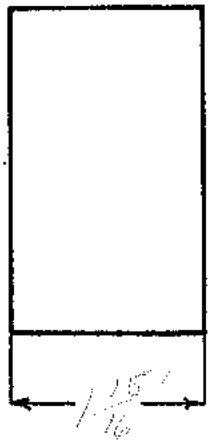
MOUNTING "C" - Leads

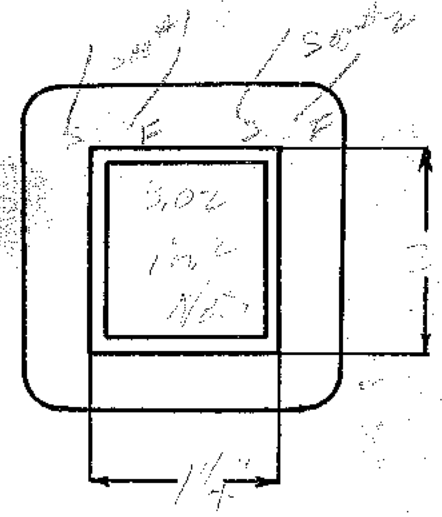
Note: 1L-005 AC Paper put over between Finish and Lead on Sheet of Sec #2

Co = 682 - 651 - 651 - 644
Fe = 65.3 @ 60~
18.3 @ 50~
TPV = 1.9
Wire dia = 0.565" (0.504")

5300 VA = 22.8
Pri. VA: 2.85
Pri. I = 2.38
A = 83 Core =



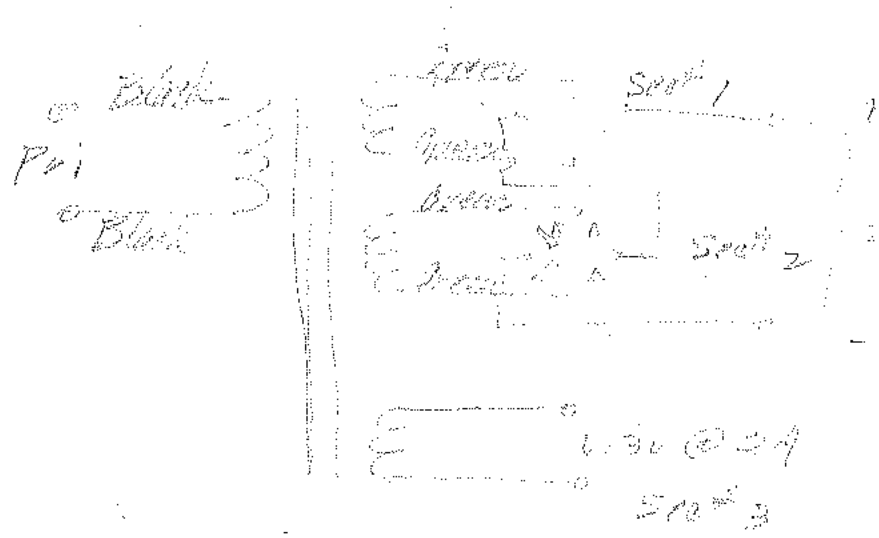




DESIGNED BY H. W. S

DATE 9-25-41

OVER

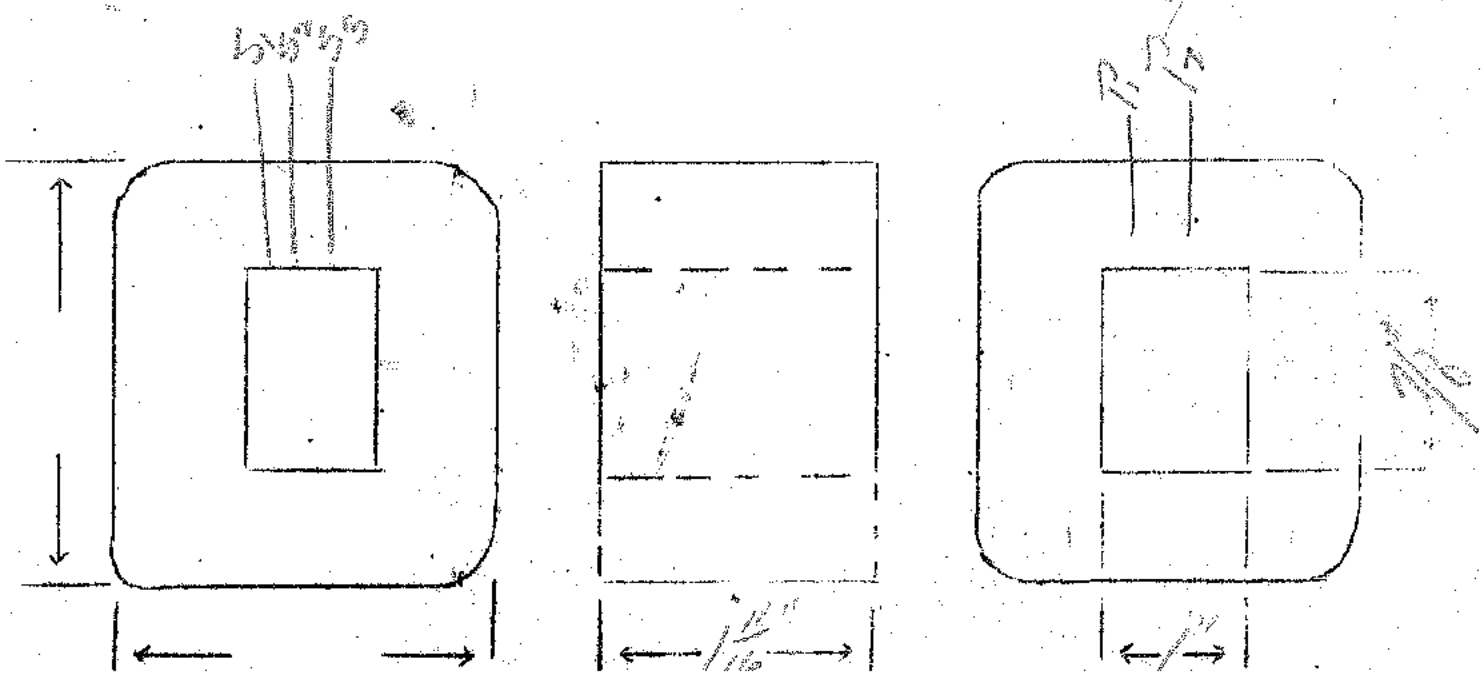


	Voltage	Current
Primary	115	
Secondary	600	
Filament No. 1	2.5	3.0
Filament No. 2	2.5	3.0
Filament No. 3	5.	2.

Specification No. 25

Type Transformer _____

	Pri	Sec	Sec	Fil 1	Fil 2	Fil 3	Fil 4
TURNS	690	69	3952	16	10	32	32
TAPS	None	None	@ 35	8	5	16	16
LENGTH OF WINDING	1 1/2	1 1/2	1 1/2				
SIZE WIRE	24 E	24 E	34 E	16 E	16 E	22 E	22 E
TURNS PER LAYER	69	69	200				
KIND OF TERMINAL	No 20 Pig.	Wire Only	No 20 Pig.	Wire Only	Wire Only	Wire Only	Wire Only
LENGTH OF TERMINAL	10"	5"	10"	10"	10"	10"	10"
TUBE	Leatoid	Per Specs	Leatoid	Sec Specs			
LAYER INSULATION	Bk Cat						
WRAPPER	2 Layers YC	2 Layers YC	2 Layers YC				
TREATMENT	This is the same as No 23 + additional						
RESISTANCE	5 V.C.L.						

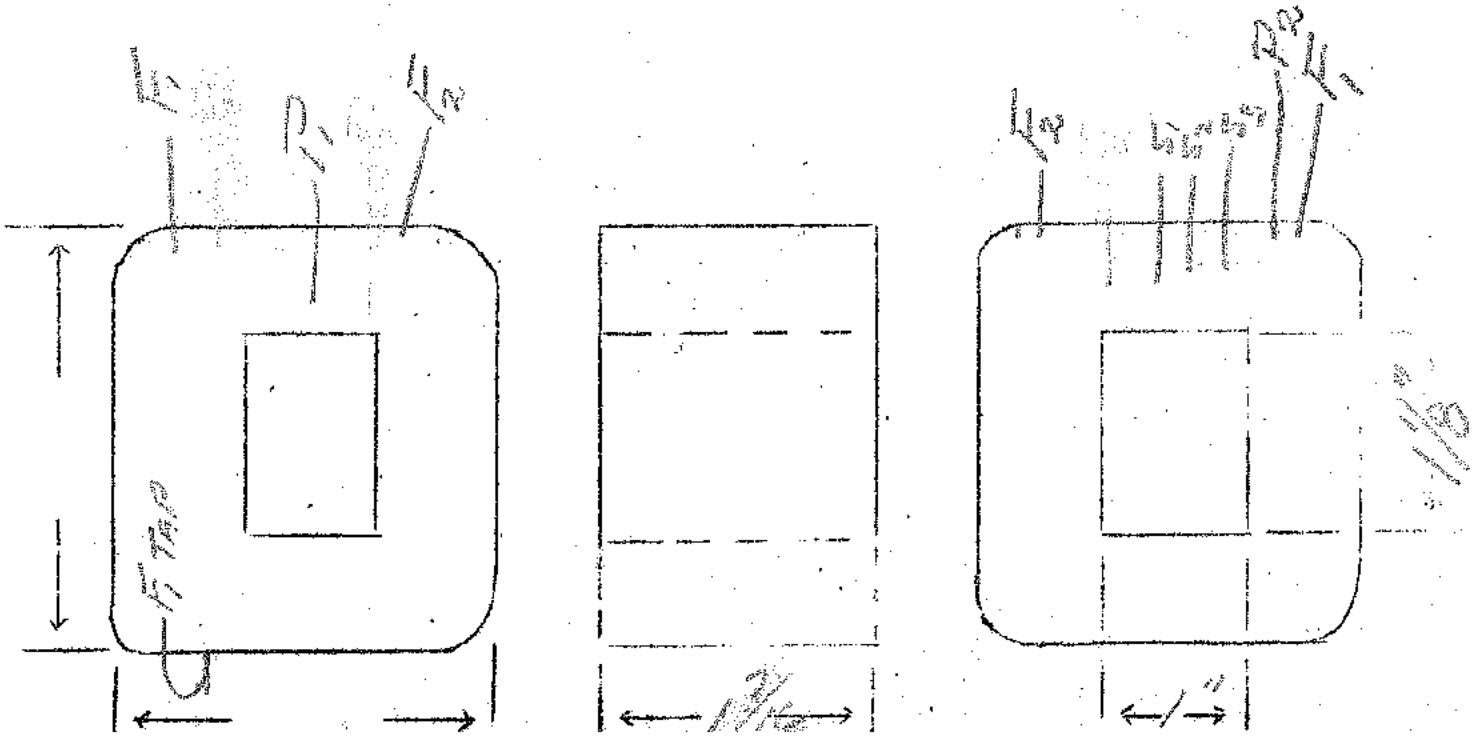


	Voltage	Current
Primary	115	.925
Secondary	350	
Filament No. 1	2.5	3.06
Filament No. 2	5	2
Filament No. 3		

Specification No. 36

Type Transformer

	Pri.	Shield	Sec.	Fil.(1)	Fil.(2)	
TURNS	329	164	2610	13	26	
TAPS	None	None	1305	6½	None	
LENGTH OF WINDING	1¼"	1⅛"	1¼"	.685	.67	
SIZE WIRE	25	34	34	16	20	
TURNS PER LAYER	61-62	164	164-1/2	13	26	
KIND OF TERMINAL	No 30 Pos.	S/Cu.	No 30 Pos.	Wire Out	Wire Out	
LENGTH OF TERMINAL	8"	3"	8"	8"	8"	
TUBE	4½ Empl	Pres Board	Shield Board	Slit Board	Slit Board	
LAYER INSULATION	30 Cl		16 Cl			
WRAPPER	4½ oz S Vc	4½ oz S Vc	4½ oz S Vc	4½ oz S Vc	3½ oz S Cp	
TREATMENT						
RESISTANCE						

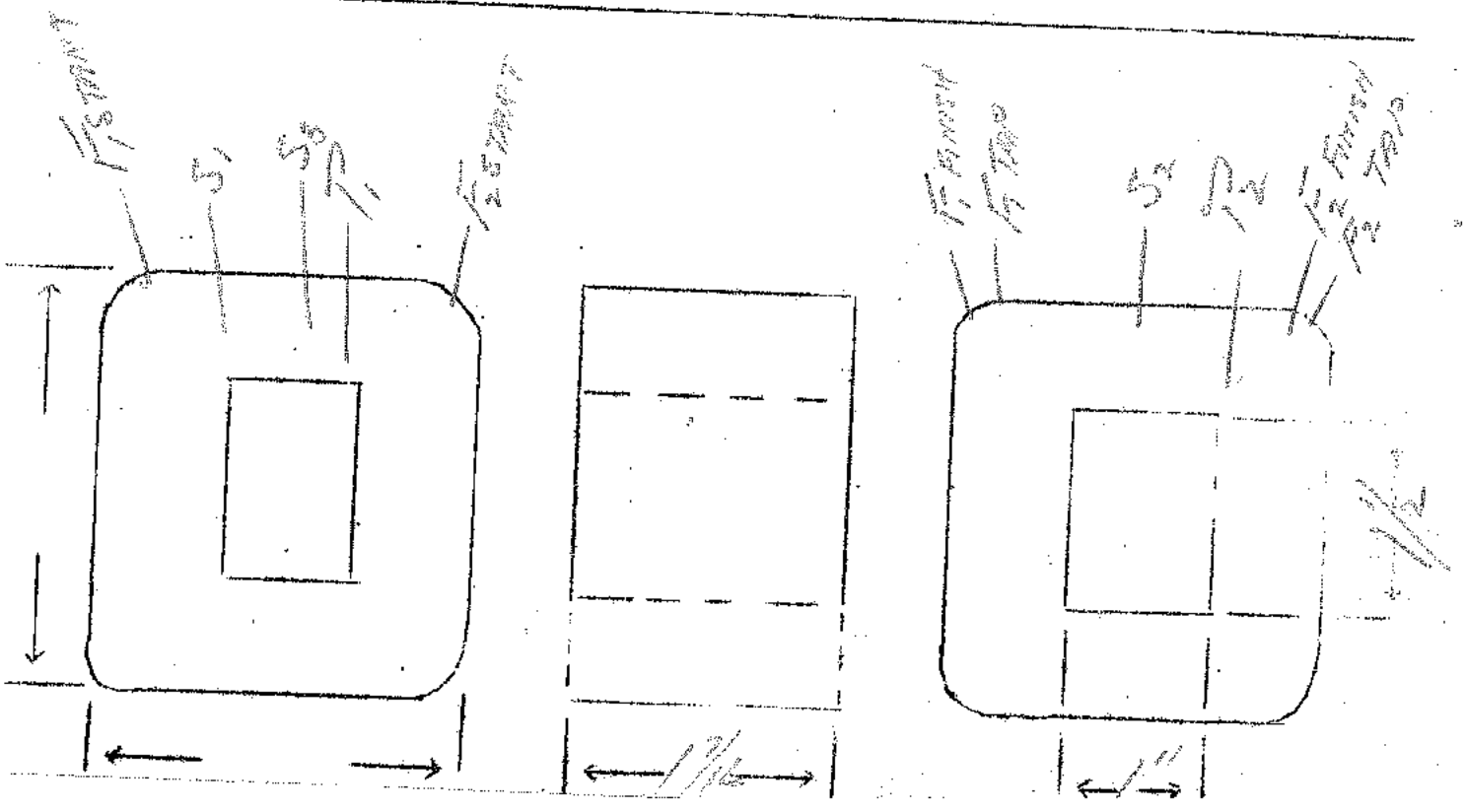


	Voltage	Current
Primary	110	6.5 Ma
Secondary	690	.050
Filament No. 1	2.5	2
Filament No. 2	5	3
Filament No. 3		

Specification No. 27

Type Transformer

	Fil	Shield	Sec	5Z3	5Z4
TURNS	40	24	2810	10	20
TAPS	None	None	1405	5	10
LENGTH OF WINDING	1/4"	1/2	1/2	.67	.84
SIZE WIRE	23 E	36 E	36 E	14 E	18 E
TURNS PER LAYER	60-7	24	24	10	20
KIND OF TERMINAL	No 30 Enam	No 30 Enam	No 30 Enam	Wire Out	Wire Out
LENGTH OF TERMINAL	1"	3"	1"	1"	1"
TUBE	66-002	1	Sleeve	See Insert	Fish Paper
LAYER INSULATION	52 Eq		1		
WRAPPER	1 Layer Kr	1 Layer Kr	1 Layer Kr	2 Layers Eq	2 Layers Eq
TREATMENT					
RESISTANCE	1" Wire .76				

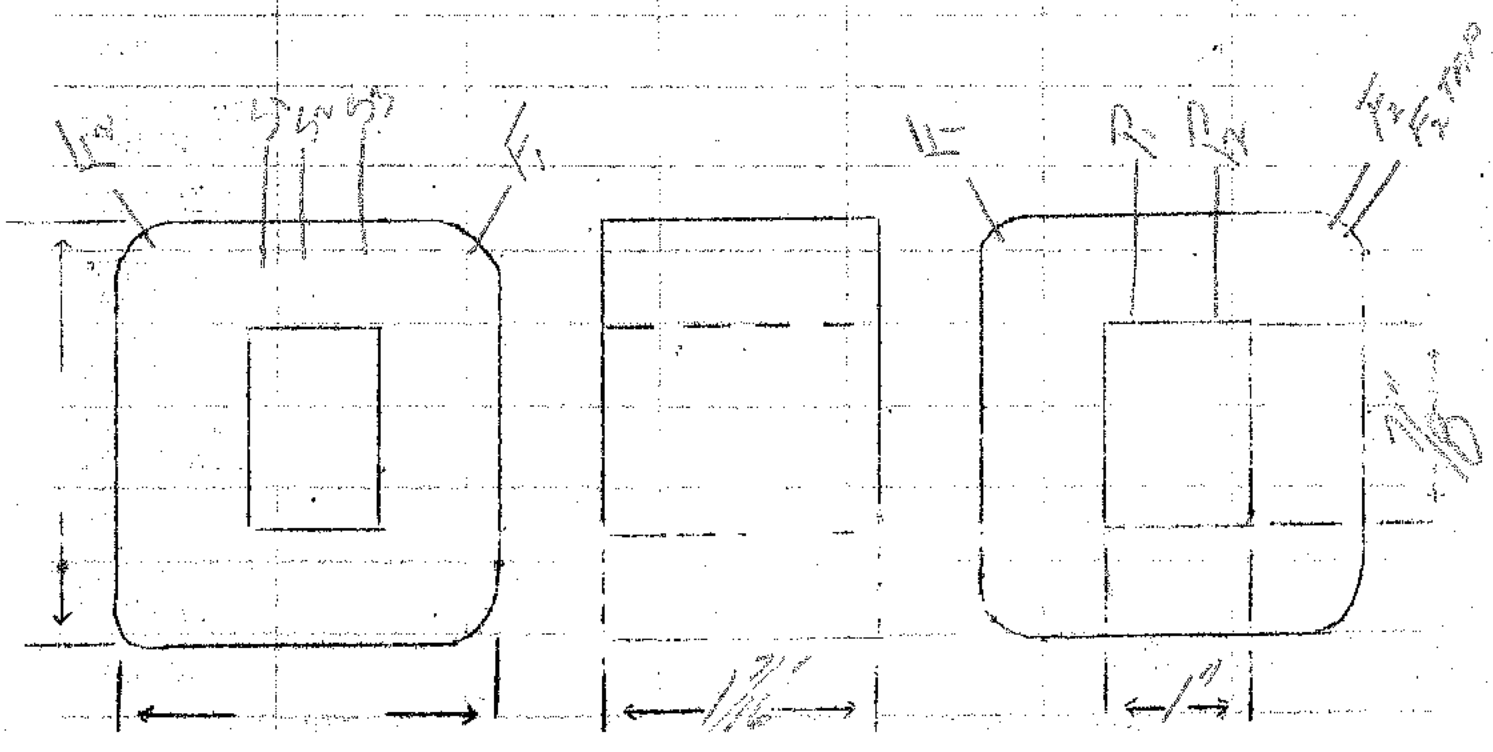


	Voltage	Current
Primary	110	
Secondary	680	.240
Filament No. 1	5	2
Filament No. 2	6.2	4
Filament No. 3		

Specification No. 29

Type Transformer

	Pri	Shunt	Sec	F.1.	F.2
TURNS	660	70	3920	34	42
TAPS	None	None	1960	None	21
LENGTH OF WINDING	1 1/4"	1 1/4	1 1/2	1	2
SIZE WIRE	#25	#25	#37	#20	#17
TURNS PER LAYER	70	70	245	34	21
KIND OF TERMINAL	Wire Ends	Wire Ends	Sol. Lug	Wire Ends	Wire Ends
LENGTH OF TERMINAL	3"	3"	3"	3"	3"
TUBE	Fish Paper	Fish Paper	Empire Cloth	Empire Cloth	Empire Cloth
LAYER INSULATION					
WRAPPER	Manila	Manila	Manila	Manila Empire Cloth	Manila Empire Cloth
TREATMENT	Pri and Sec + Shunt in Asphalt				
RESISTANCE					

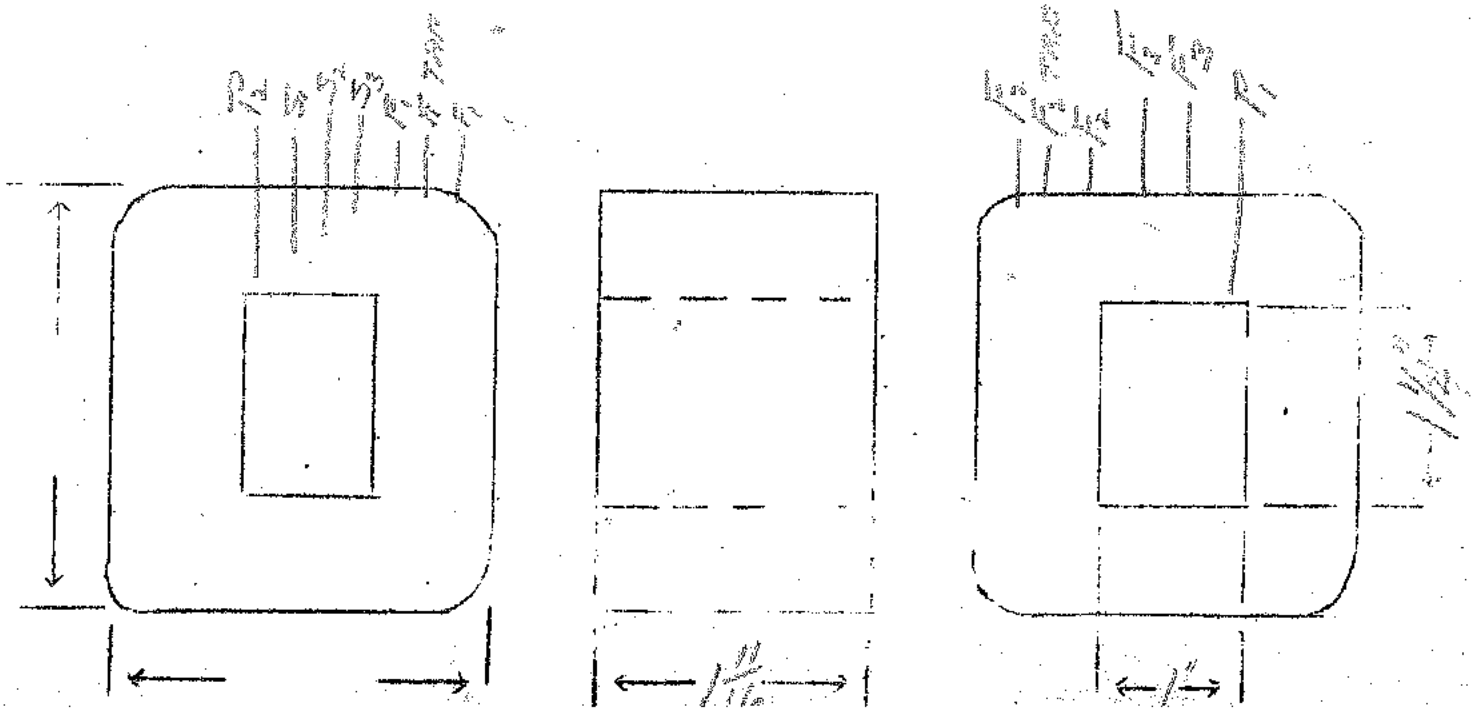


	Voltage	Current
Primary	115	4.2-4.8
secondary	750	140
Filament No. 1	2.5	3.0-3.5
Filament No. 2	2.5	3.25
Filament No. 3	5	5.25

Specification No. 30

Type Transformer

	Pri.	Shunt	Sec.	Fil 1	Fil 2	Fil 3
TURNS	510	150	3620	12	12	24
TAPS	None	None	1835	6	6"	None
LENGTH OF WINDING	1 7/16	1 1/16	1 7/16	.193	.503	1.06
SIZE WIRE	#22 E	#32 E	#32 E	#16 E	#18 E	#18 E
TURNS PER LAYER	44-11	150-1	150-25	12	12	24
KIND OF TERMINAL	Wire Ends	Shunt	Sec. Ends	Wire Ends	Wire Ends	Wire Ends
LENGTH OF TERMINAL	3"	3"	3"	4"	4"	4"
TUBE	Empire Fibre	Empire Fibre	Empire Fibre	Empire Fibre	Empire Fibre	Empire Fibre
LAYER INSULATION	Empire		Empire			
WRAPPER	2 Empire	2 Empire	2 Empire	2 Empire		2 Empire
TREATMENT	Thin Red Varnish No. 7					
RESISTANCE						

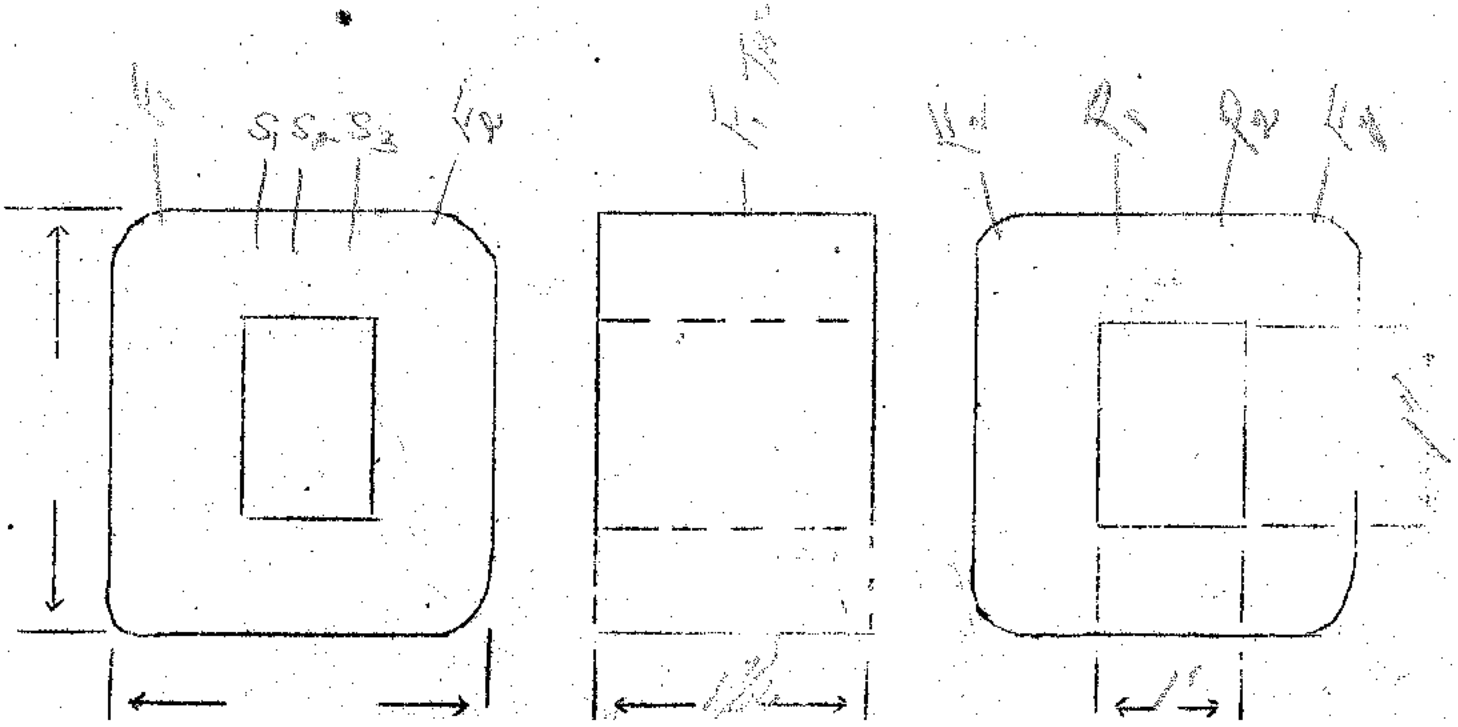


	Voltage	Current
Primary	115	.9 Amps.
Secondary	650	.25 Amps.
Filament No. 1	6.3	2.5 Amps.
Filament No. 2	5	2
Filament No. 3		

Specification No. 31

Type Transformer

	Pri.	Sec.	Sec.	Fil 1	Fil 2	
TURNS	612	245	3970	38	30	
TAPS	None	None	1985 - 1985	None	None	
LENGTH OF WINDING	1"	1"	1"			
SIZE WIRE	24 E	28 E	36 E	22 E	20 E	
TURNS PER LAYER	63.9	215	248 - 248	38	30	
KIND OF TERMINAL	No. 20 Tinned	Wire Lead	No. 20 Tinned	Wire Lead	Wire Lead	
LENGTH OF TERMINAL	9"	9"	9"	9"	9"	
TUBE	Empire	Empire	Empire	Empire	Empire	
LAYER INSULATION	Empire					
WRAPPER	Empire	Empire	Empire	Empire	Empire	
TREATMENT						
RESISTANCE						

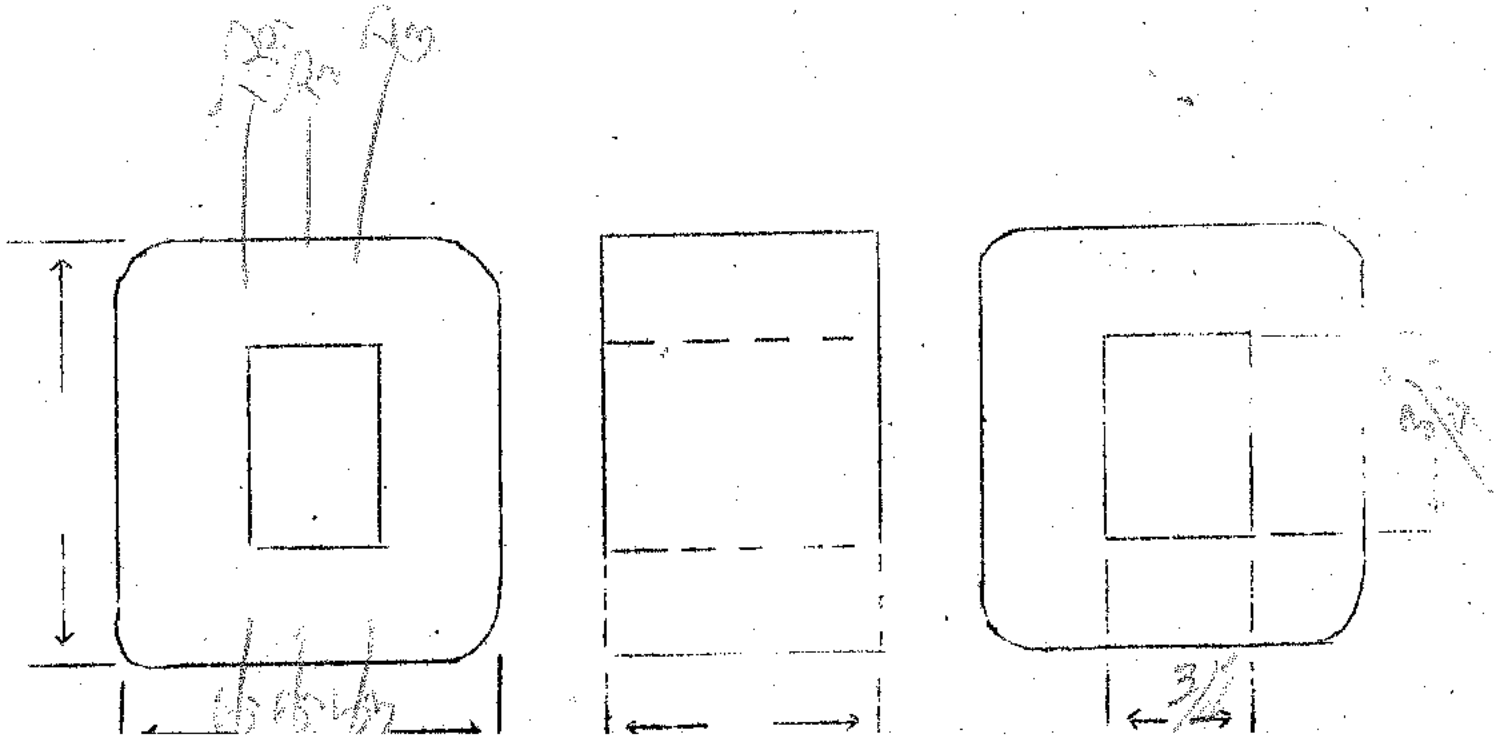


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 32

Type Transformer OUTPUT
Push Pull Pre — Voice Coil

	Full	Sec				
TURNS	3400	130				
TAPS	1600	75				
LENGTH OF WINDING	7/8	7/8				
SIZE WIRE	37 E-2	24 E				
TURNS PER LAYER	160					
KIND OF TERMINAL	Sol 82	Wire Solid				
LENGTH OF TERMINAL	3"	3"				
TUBE	Hard	Fiber				
LAYER INSULATION	Var Cl	Satd				
WRAPPER	3 Layers Vis					
TREATMENT	Wax 51				134	
RESISTANCE				577 ohms		



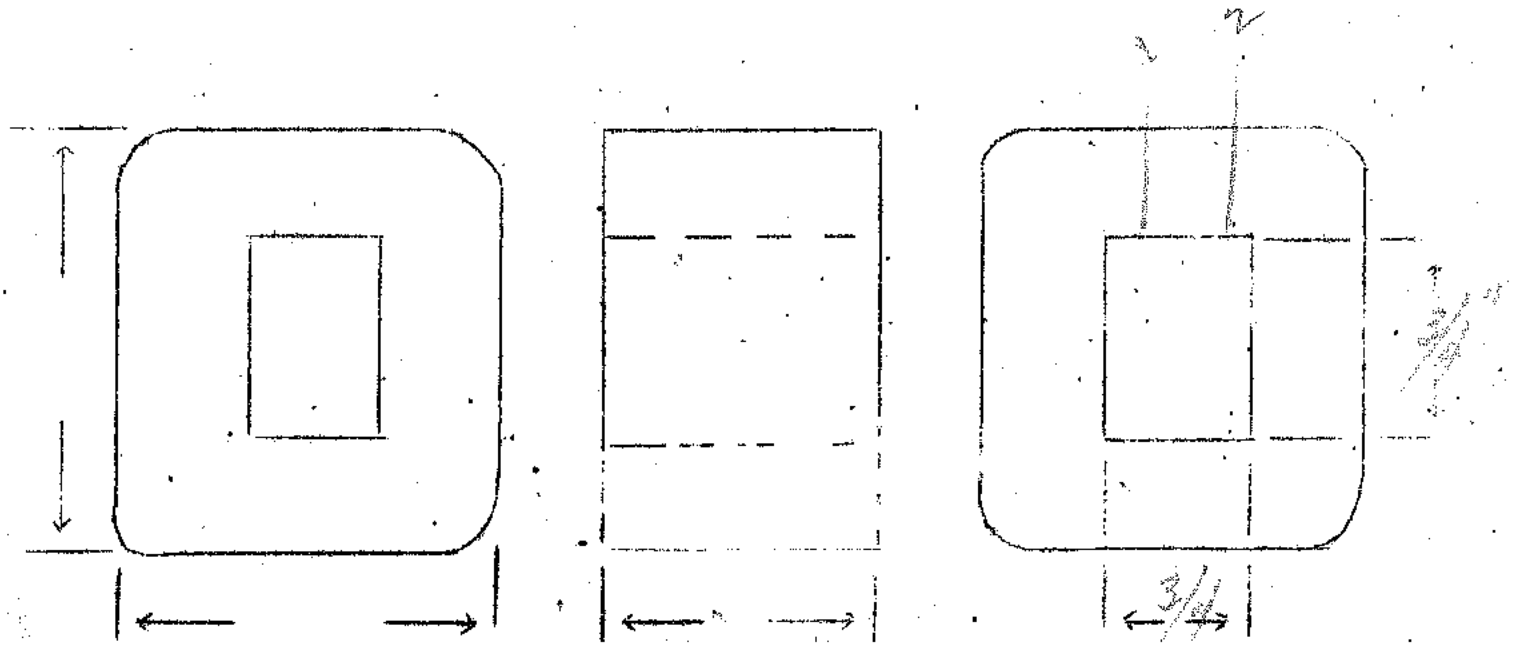
	Voltage	Current
Primary		
secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 33

Type Transformer 6L6 PP

40W - 40ma

TURNS	6500					
TAPS	None					
LENGTH OF WINDING	3"					
SIZE WIRE	36 E					
TURNS PER LAYER	146					
KIND OF TERMINAL	S / B					
LENGTH OF TERMINAL	3"					
TUBE	4 x 7					
LAYER INSULATION	1 Mil					
WRAPPER	Hi-Mu Hi-Ca					
TREATMENT						
RESISTANCE						



VOLTAGE

Sec. 425

Specification No. 34

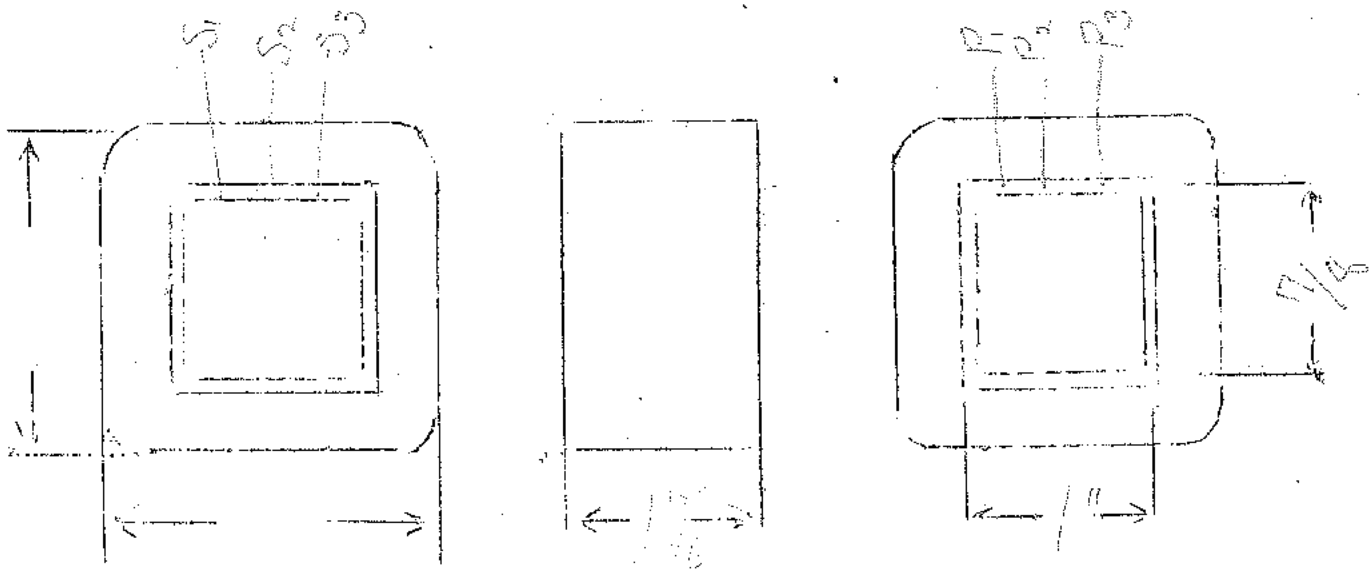
Type Transformer Auto B Power

SPEC. NO. 34

Winding	SEC.	SHIELD	PRI.	SHIELD			
Turns	3400	1	60	1			
Taps	1700	NONE	30	NONE			
Wind. Lgth.	1¼"	1¼	1¼	1¼			
Wire Size	33E	#003 Copper	19E	#003 Copper			
T.P.L.	143 150	1	50	1			
Kind Term.	Sil. Bra.	Sil. Bra.	WIRE Fancy	Sil. Bra.			
Term. Lgth.	3"	3"	3"	3"			
Layer Insul.	20 lb.						
Wrapper	1 Thick Hi Grade	1 Thick Hi Grade	1 Thick Hi Grade	1 Thick Hi Grade			

TUBE | | IMPREGNATION |

CURE | 1 x 72 Hrs

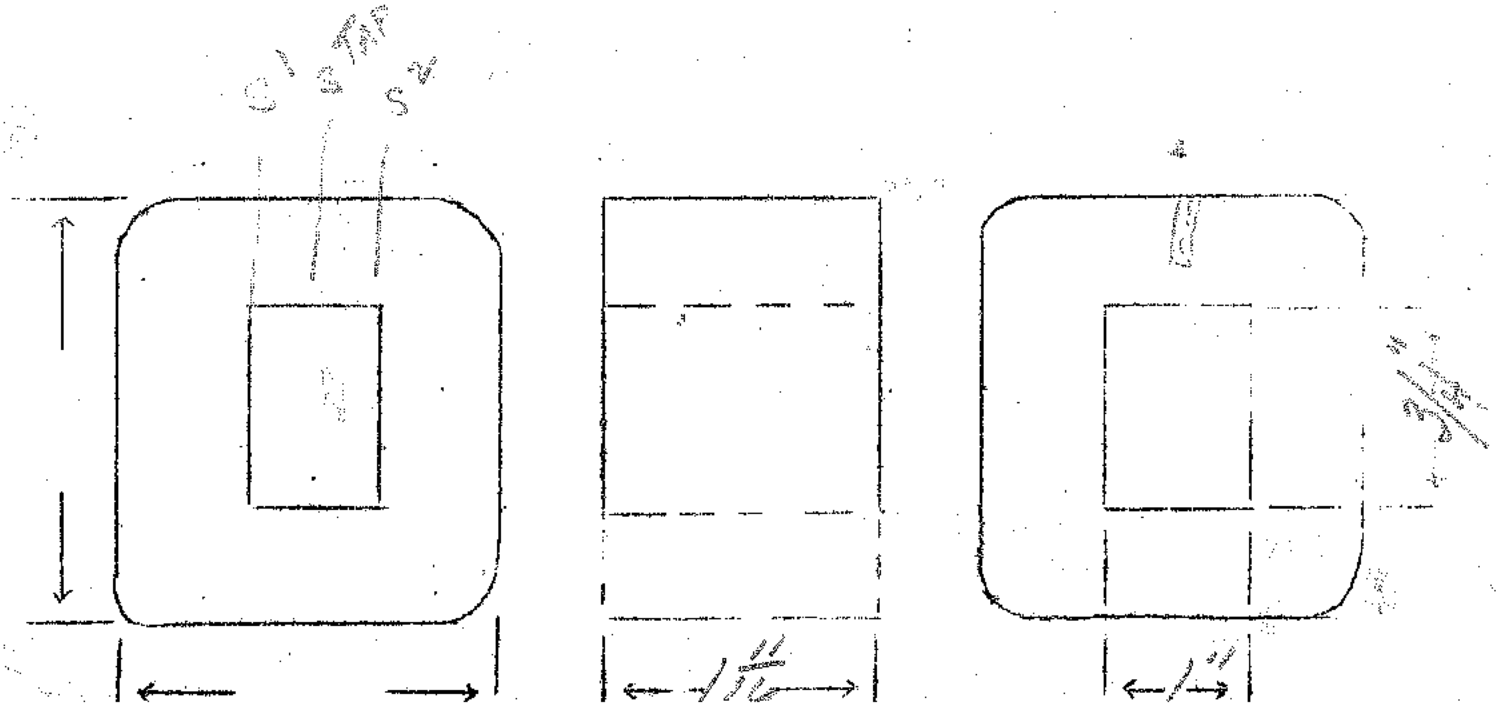


	Voltage	Current
Primary		
Secondary	532	
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 35

Type Transformer Push-Pull

	See Plate	Plate	Tube			
TURNS	5300	1	10			
TAPS	2900	None	32			
LENGTH OF WINDING	1½"	1½	1½			
SIZE WIRE	32 Enc	#5 Enam	18 Enc			
TURNS PER LAYER	200	1				
KIND OF TERMINAL	Solder Lug	Solder Lug	Wire Ends			
LENGTH OF TERMINAL	3"	3"	3"			
TUBE	4 x 6	See Winding Diagram	1" Bakelite			
LAYER INSULATION	30 Ckt		405 Cf			
WRAPPER	2 x 6 3 Yds	2 x 6 .5 Yds	2 x 6 Yds			
TREATMENT	This is the Secondary of Trans. No. 503 50 P.T.					
RESISTANCE	About Two Ohms or Less					

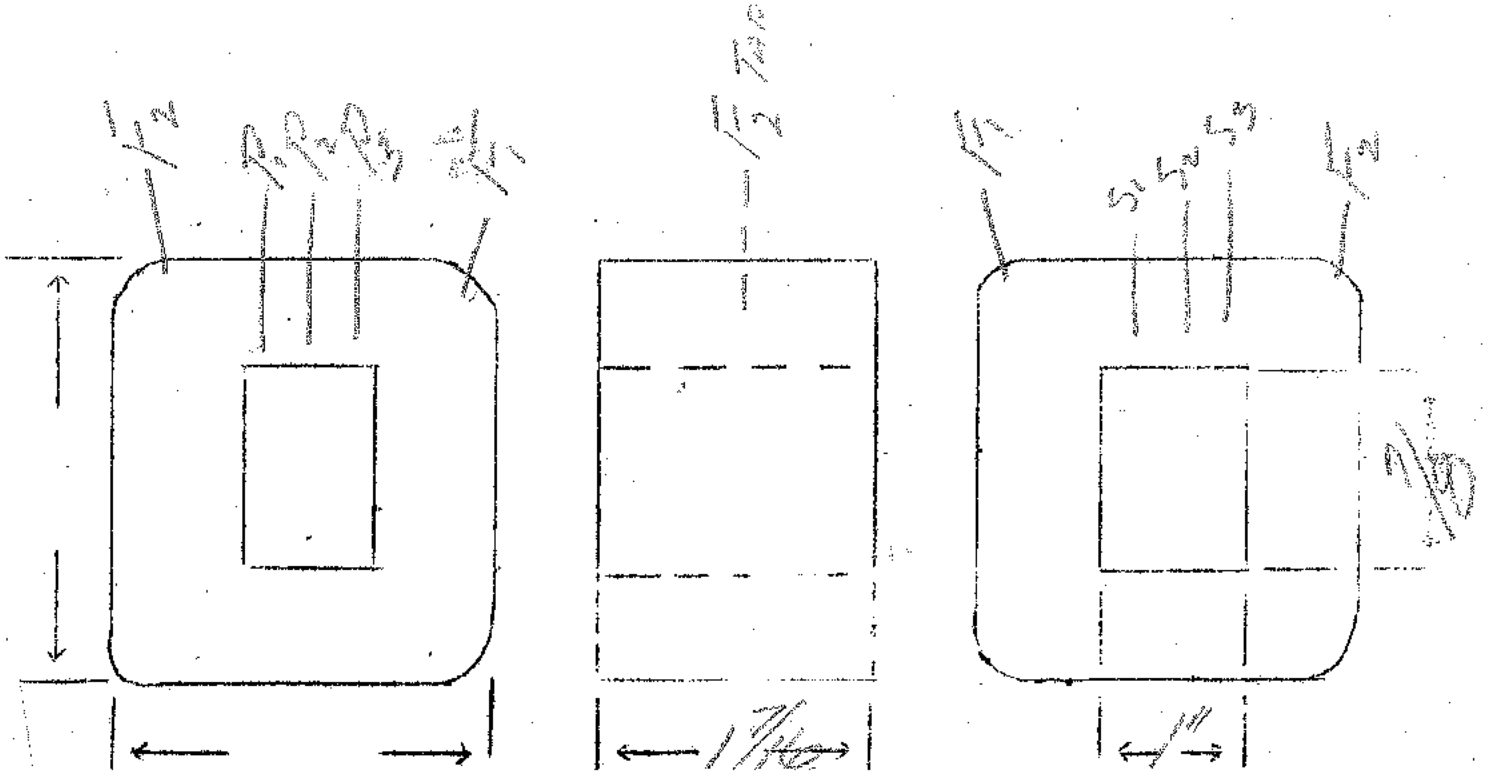


	Voltage	Current
Primary	115-120	
secondary	350	200
Filament No. 1	2.5	3.25
Filament No. 2	5?	2
Filament No. 3		

Specification No. 37

Type Transformer

	PRI	Sec	Sec	FIL (1)	FIL (2)	
TURNS	808	345	3920	34	16	
TAPS	715	None	1960	None	8	
LENGTH OF WINDING	1½"	1½"	1½"			
SIZE WIRE	#25	#32	#32	#20	#18	
TURNS PER LAYER	72	245	245	34	16	
KIND OF TERMINAL	Wire Only	Solder Lug	Solder Lug	Wire Only	Wire Only	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Fiber	Fiber	Fiber	Fiber	Fiber	
LAYER INSULATION	Tape		Tape			
WRAPPER	Paper	Paper	Paper	Paper	Paper	
TREATMENT						
RESISTANCE						



	Voltage	Current
Primary	115	
Secondary	400	.050
Filament No.1	6.5	4
Filament No.2	5	2
Filament No.3		

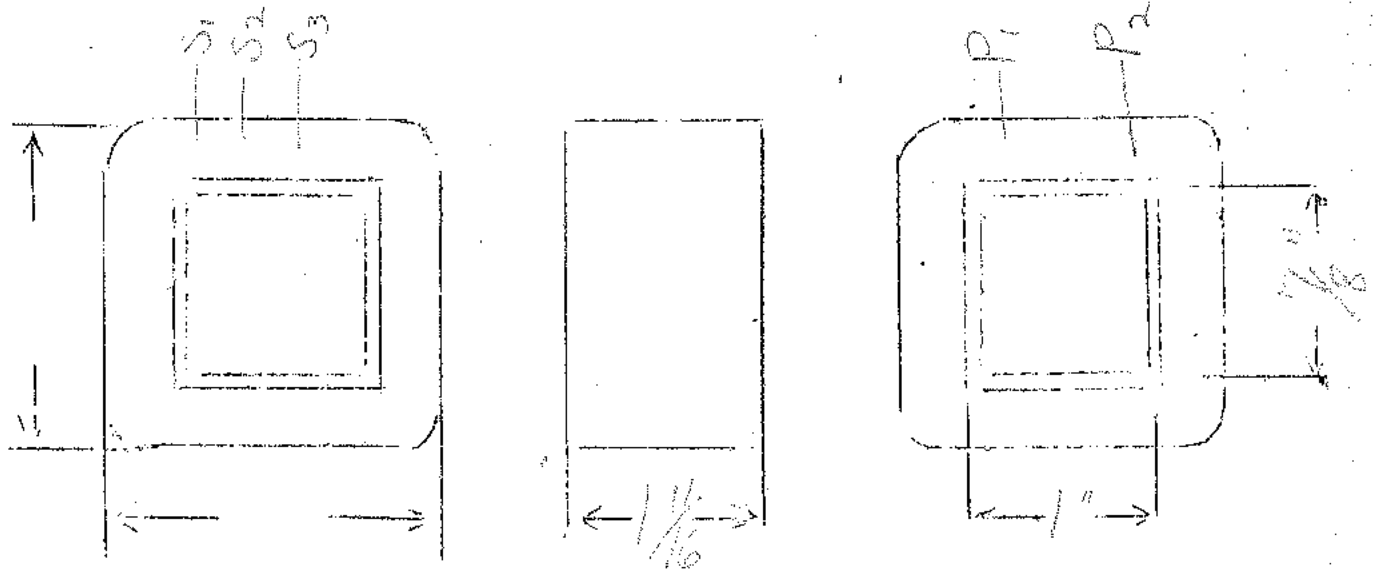
SPECIFICATION NO. 38
Type Transformer

SPEC. NO. 38

Winding	PRI.	SHIELD	SEC.	FIL (1)	FIL (2)		
Turns	682	75	4050	16	32		
Taps	NONE	NONE	2025	8	NONE		
Wind. Lgth.	1½	1½	1½				
Wire Size	26 E	26 E	36 E	17 E	20 E		
T.P.L.	75	75	240				
Kind Term.	No. 20 P. Ter.	Sil. Ter.	No. 20 P. Ter.	WIRE ONLY	WIRE ONLY		
Term. Lgth.	9"	3"	9"	9"	9"		
Layer Insul.	50 M.	16 M.					
Wrapper	1 Lay. V.G.	1 Lay V.G.	1 Lay V.G.		2 Lays V.G.		

TUBE | 4 L.Cot | IMPREGNATION |

CURE |

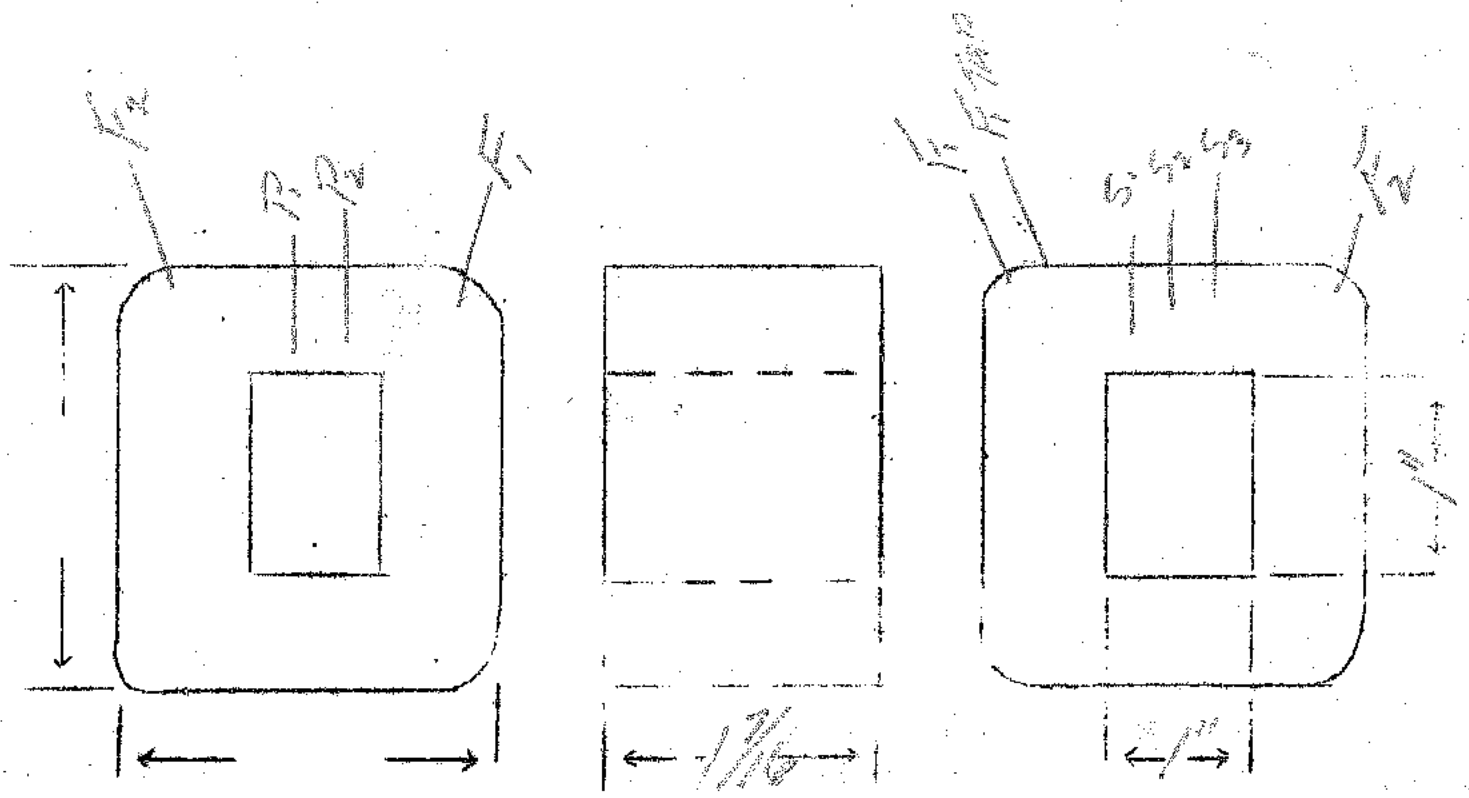


Primary — Voltage 230 — Current —
Secondary — 600 — .080
Filament No. 1 — 5.3 — 3
Filament No. 2 — 5.3 — 2
Filament No. 3 — —

Specification No. 57

Type Transformer —

	1st	Shield	Sec	F2 (1)	F2 (2)	
TURNS	1396		3640	38	38	
TAPS	None	None	1845	19	None	
LENGTH OF WINDING	1 1/2"	1"	1 1/2"			
SIZE WIRE	#24	#32	#35	#32	#30	
TURNS PER LAYER	94-95		116-30			
KIND OF TERMINAL	No 20 Tinned	Strip Cu	No 20 Tinned	Wire only	None Only	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Hard Fiber	Empire Cloth	Empire Cloth	Empire Cloth	Empire Cloth	
LAYER INSULATION	Empire Cloth		Empire Cloth			
WRAPPER	Empire Cloth	Empire Cloth	Empire Cloth	Empire Cloth	Empire Cloth	
TREATMENT						
RESISTANCE						

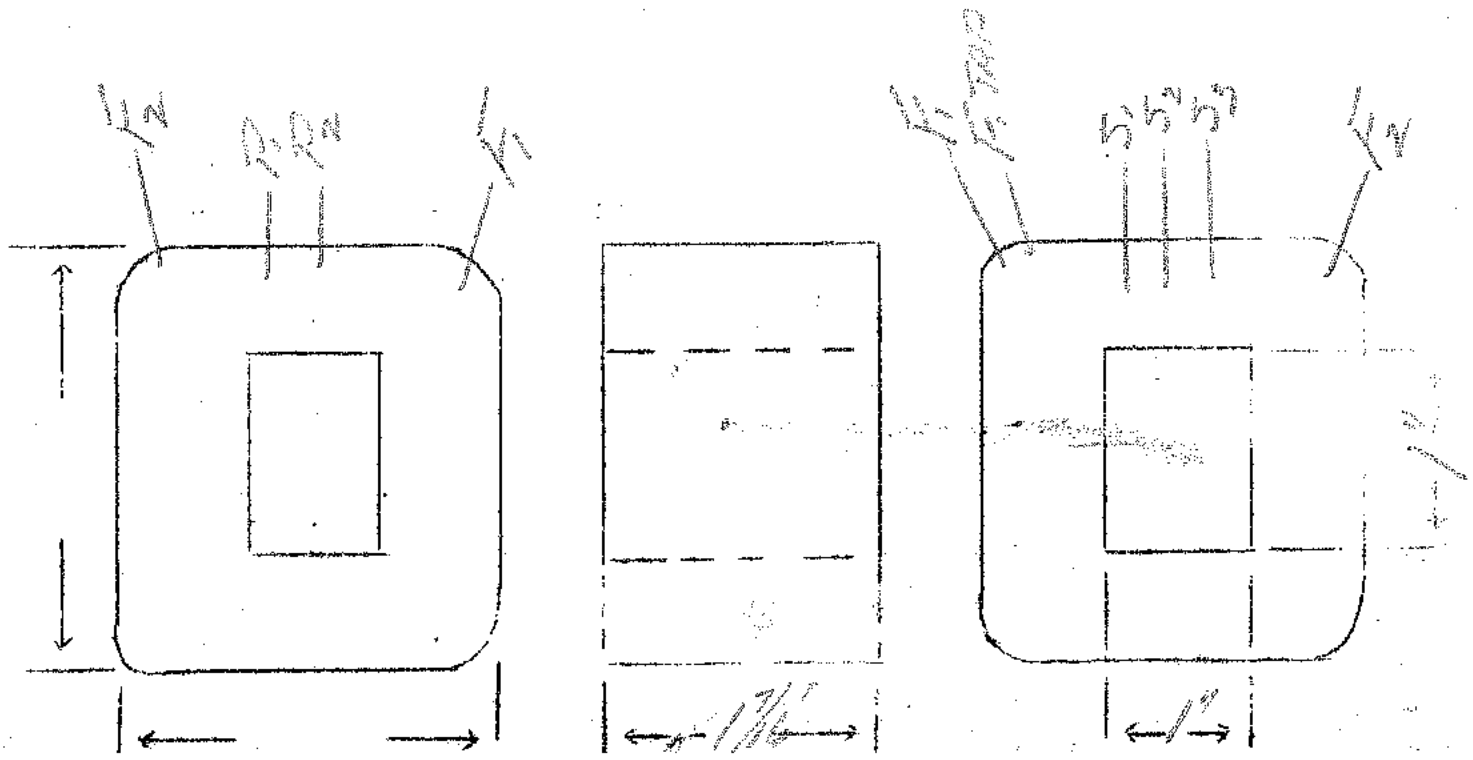


	Voltage	Current
Primary	230	
Secondary	600	160
Filament No. 1	2.5	2
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 40

Type Transformer

	Pri.	Sec.	Sec.	Fil (1)	Fil (2)	
TURNS	1350	1056	3630	15	30	
TAPS	None	None	1815	7½	None	
LENGTH OF WINDING	1"	3/8"	1"			
SIZE WIRE	29	33	23	17	20	
TURNS PER LAYER	90-15	106	182-20	15	30	
KIND OF TERMINAL	Lead Wire	Solder Lug	Lead Wire Solder Lug	Wire Ends	Wire Ends	
LENGTH OF TERMINAL	7"	3"	7"	7"	7"	
TUBE	Fish Paper	Empire Cloth	Empire Cloth	Empire Cloth		
LAYER INSULATION	Empire Cloth					
WRAPPER	Empire Cloth	Empire Cloth	Empire Cloth	Empire Cloth	Empire Cloth	
TREATMENT						
RESISTANCE						



	Voltage	Current
Primary	110	
Secondary	730	.055
Filament No. 1	2.5	3
Filament No. 2	5	2
Filament No. 3		

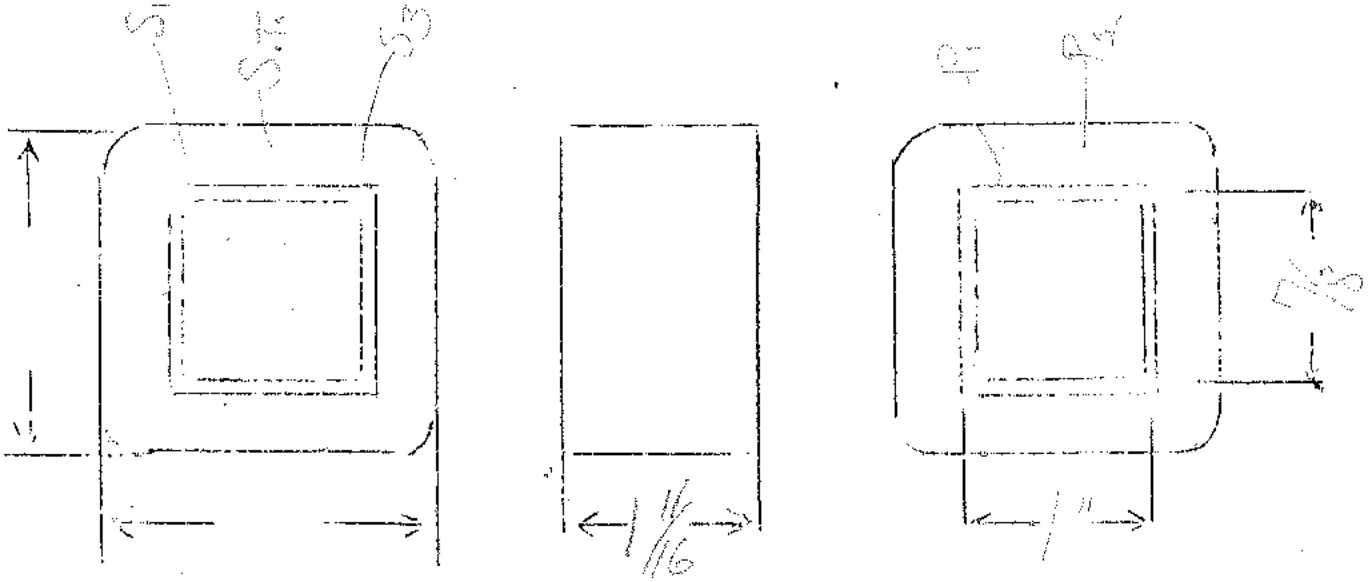
DESCRIPTION NO. 43

Type Transformer

SPEC. NO. 43

Winding	PRI	SHIELD	SEC.	Fil. (1)	Fil. (2)		
Turns	760	185	5140	36	18		
Taps	NONE	NONE	2570	NONE	9		
Wind. Lgth.	1/2	1/2	1/2				
Wire Size	23E	34E	34E	20E	16E		
T.P.L.	574	136	185				
Kind Term.	No. 20 Sol.	Sol.	WIRE ONLY	WIRE ONLY			
Term. Lgth.	9"	3"	9"	9"	9"		
Layer Insul.	50lbs						
Wrapper	2L003VP	2L003VP	2L003VP	2L005GA	2L005GA		

TUBE	6L007	IMPREGNATION		
CURE		25.5#	16#	

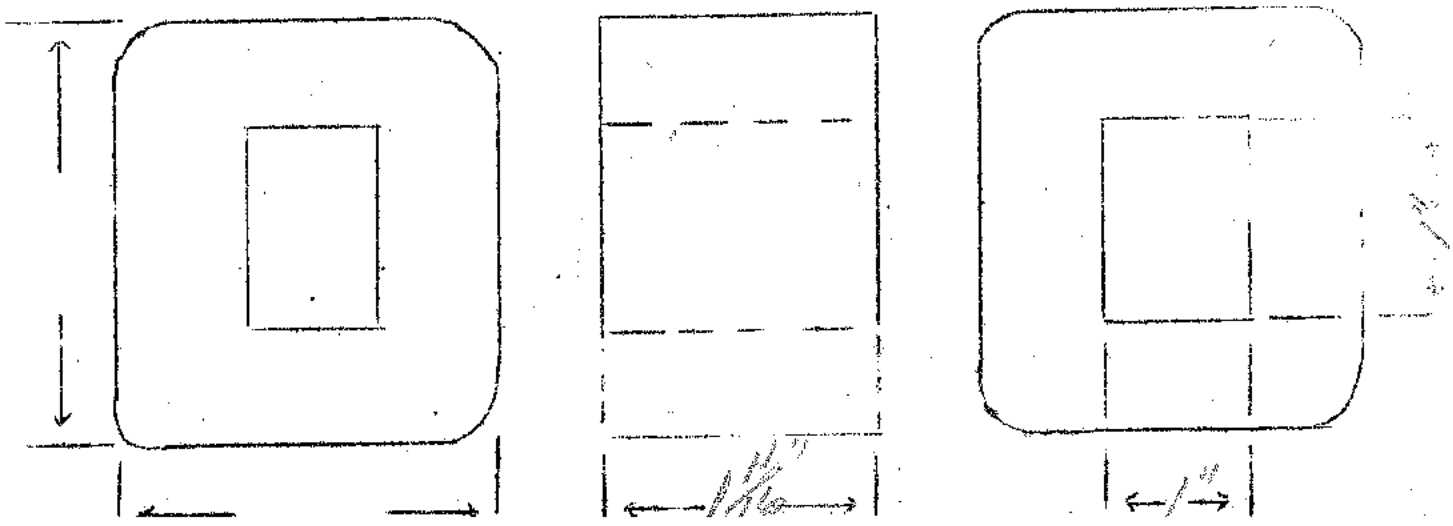


	Voltage	Current
Primary	110	
Secondary	550	225
Filament No. 1	5	2
Filament No. 2	2.5	3
Filament No. 3		

Specification No. 441

Type Transformer

	First	Second	Third	Fil 1	Fil 2	
TURNS	830	200	4900	38	19	
TAPS	None	None	3450	None	None	
LENGTH OF WINDING	1/2	1/2	1/2			
SIZE WIRE	24 E	34 E	34 E	19 E	15 E	
TURNS PER LAYER	64	200	200	38	19	
KIND OF TERMINAL	No 20 Tinned	Sol Cu	No 20 Tinned	Wire Cable	Wire Cable	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Empire	Empire	Empire	Empire	Empire	
LAYER INSULATION	Empire		Empire			
WRAPPER	2 thick Empire	2 thick Empire	2 thick Empire	2 thick Empire	2 thick Empire	
TREATMENT				26 Hours	15 Hrs	
RESISTANCE						

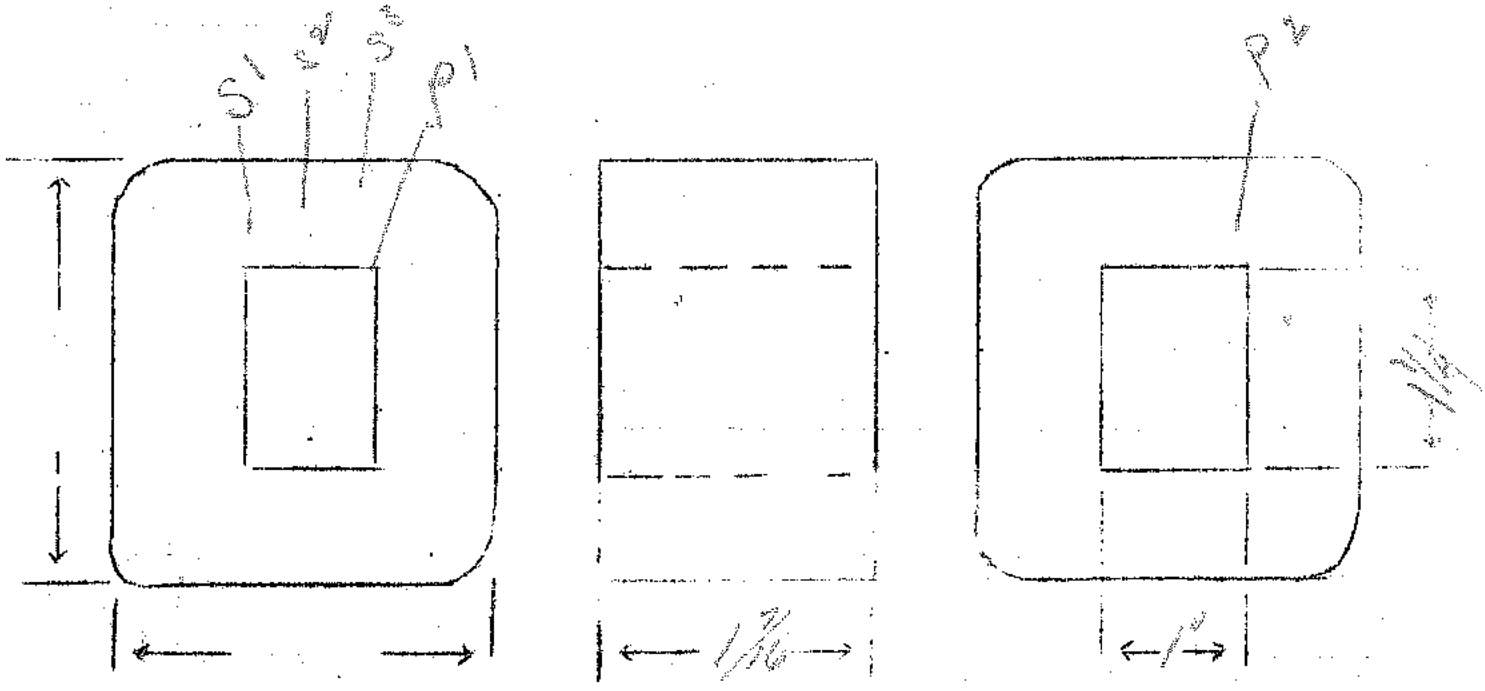


	Voltage	Current
Primary	115	
Secondary	620	.065
Filament No. 1	5	3
Filament No. 2	2.5	4
Filament No. 3		

Specification No. 45

Type Transformer

	PRI	Sec.	Sec.	F(1)	F(2)	
TURNS	572	168	3100	24	12	
TAPS	None	None	1550	None	None	
LENGTH OF WINDING	1"	1"	1"			
SIZE WIRE	25	35	36	20	17	
TURNS PER LAYER	60	168	168	24	12	
KIND OF TERMINAL	Wire Lead	Wire Lead	Wire Lead	Spade Lug	Spade Lug	
LENGTH OF TERMINAL	9"	9"	9"	9"	9"	
TUBE	Fish Paper	Fish Paper	Fish Paper	Fish Paper	Fish Paper	
LAYER INSULATION	3 Mil		3 Mil			
WRAPPER	2 Wds Var	2 Wds Var	2 Wds Var	2 Wds 6 Var	2 Wds 6 Var	
TREATMENT				1 1/2"	2 1/2"	
RESISTANCE						

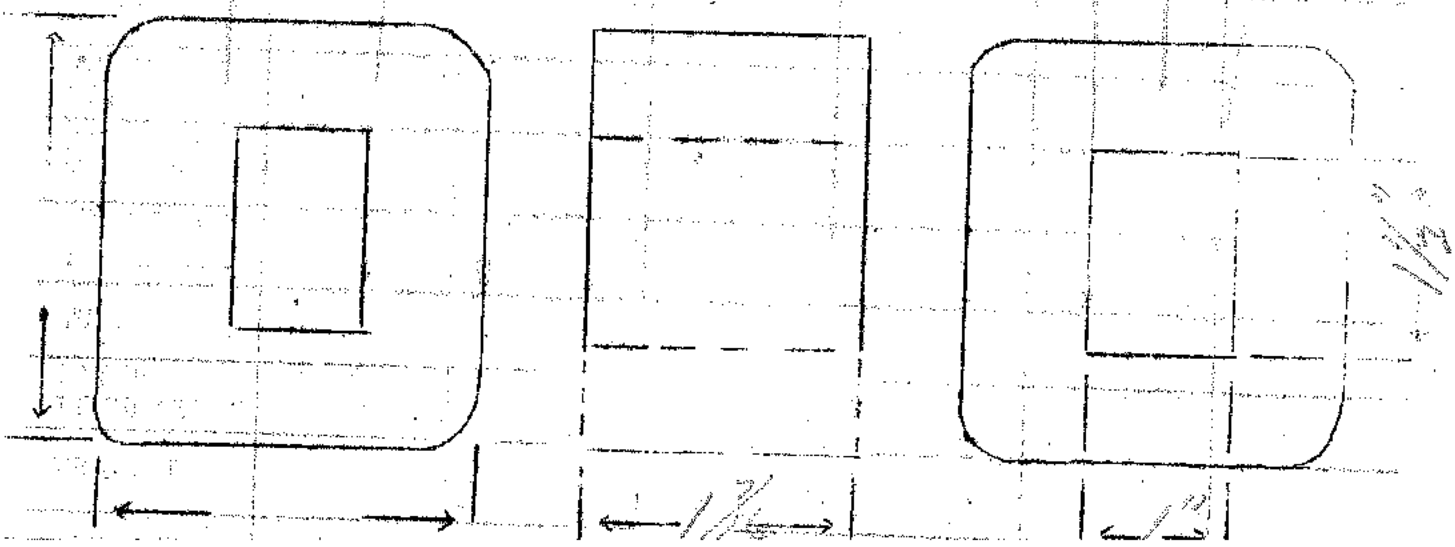


	Voltage	Current
Primary	230	
Secondary	350	.225
Filament No. 1	5	3
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 46

Type Transformer

	Pri	Sec	Sec	Fil (1)	Fil (2)	
TURNS	920	1400	2400	20	10	
TAPS	None	None	1200	None	5	
LENGTH OF WINDING	1¼	1¼	1¼	1¼	1¼	
SIZE WIRE	28 E	30 E	34 E	20 E	17 E	
TURNS PER LAYER	77-12	117	117	20	10	
KIND OF TERMINAL	Wire Flex	Sol. Cu	Wire Flex	Wire Flex	Wire Flex	
LENGTH OF TERMINAL	9"	9"	9"	9"	9"	
TUBE	Fish Paper	Fish Paper	Fish Paper	Fish Paper	Fish Paper	
LAYER INSULATION	Empire		Empire			
WRAPPER	2 thks Empire	2 thks Empire	2 thks Empire	2 thks Empire	2 thks Empire	
TREATMENT						
RESISTANCE						

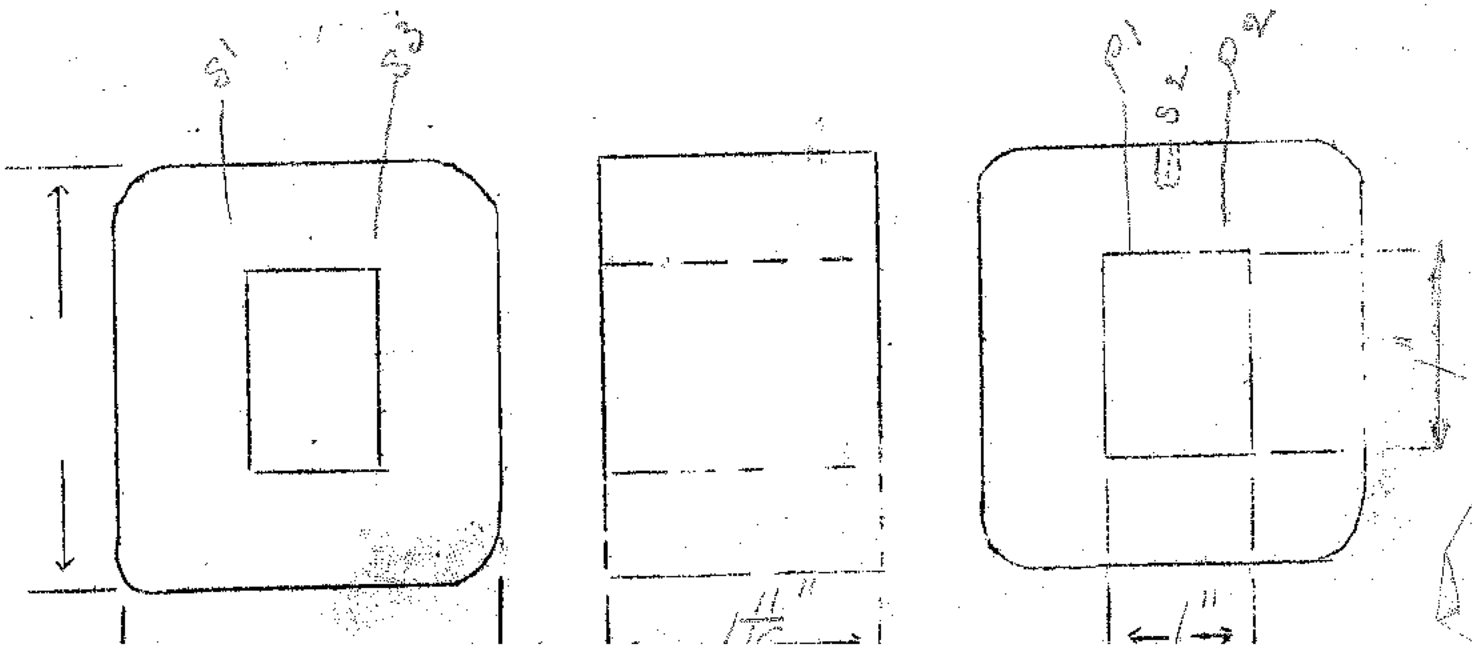


	Voltage	Current
Primary	230	.373
secondary	700	.070
Filament No. 1	2.5	5.0
Filament No. 2	2.5	4.0
Filament No. 3	5	2

specification No. 47

Type Transformer _____

	PRI.	SHIELD	SEC.	FIL (1)	FIL (2)	FIL (3)
TURNS	1382	200	4120	15	15	30
TAPS	NONE	NONE	2060	NONE	NONE	NONE
LENGTH OF WINDING	1½"	1½"	1½"			
SIZE WIRE	27E.	34E.	34E.	17E.	16E.	20E.
TURNS PER LAYER	87	200	200	15	15	30
KIND OF TERMINAL	No.20 P. BR.	SIL. BR.	No.20 P. BR.	WIRE ONLY	WIRE ONLY	WIRE ONLY
LENGTH OF TERMINAL	9"	3"	9"	9"	9"	9"
TUBE	4L-.007"	PRI. WRAPPER	SHIELD WRAPPER	SECONDARY WRAPPERS		FIL 1+2 WRAPPER
LAYER INSULATION	50#	———	20#			
WRAPPER	2L-.005" VP	2L-.005" VP	2L-.005" VP	2L-.005" GA	2L-.005 GA	2L-.005 GA
TREATMENT				12'	12'	20½'
RESISTANCE						

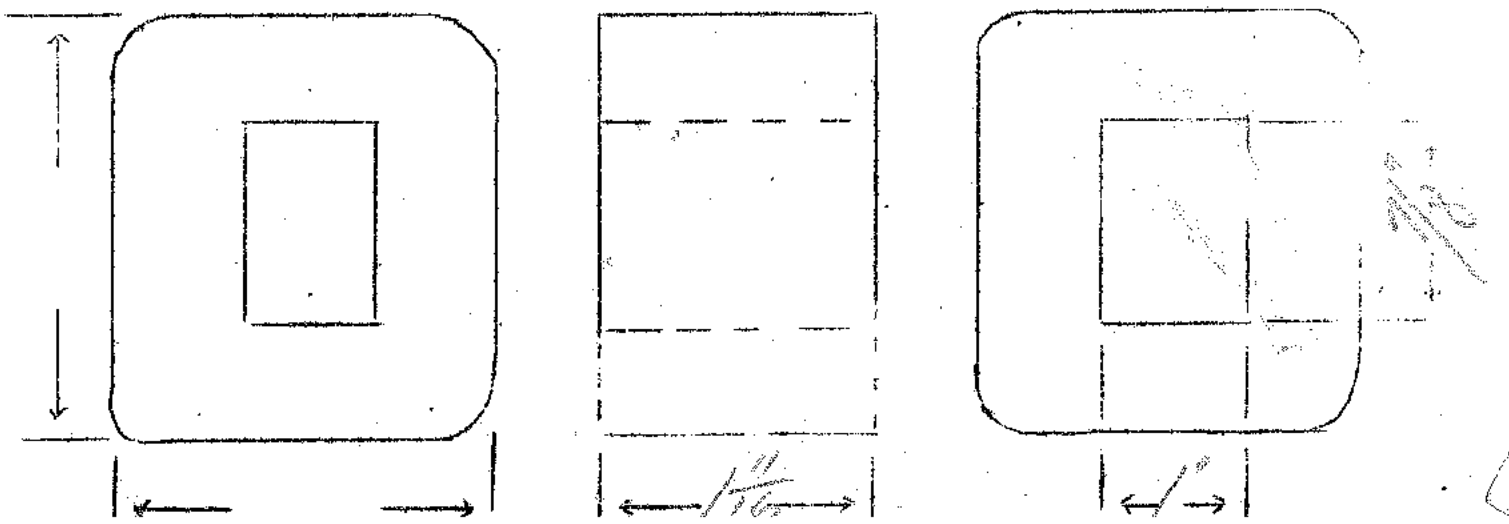


	Voltage	Current
Primary	230	
secondary	650	.065
Filament No. 1	5	2
Filament No. 2	2.5	6.5
Filament No. 3		

Specification No. 58

Type Transformer

	Pri	Shield	Sec.	Fil (1)	Fil (2)	
TURNS	1360	76	4400	35	17	
TAPS	None	None	2350	None	8½	
LENGTH OF WINDING	1¾	1½	1½			
SIZE WIRE	#22	27	#34	#20	#15	
TURNS PER LAYER	87	87	240	35	17	
KIND OF TERMINAL	Wire Lead	Paper Strip	Wire Lead	Wire Lead	Wire Lead	
LENGTH OF TERMINAL	5"	3"	5"	5"	5"	
TUBE	Fiber	Manila	Manila	Manila		
LAYER INSULATION	Oil					
WAXTER	Dip 3 hrs 110°	Dip 3 hrs 110°	Dip 3 hrs 110°	Dip 3 hrs 110°	Dip 3 hrs 110°	
TREATMENT				Varnish	Varnish	
RESISTANCE						

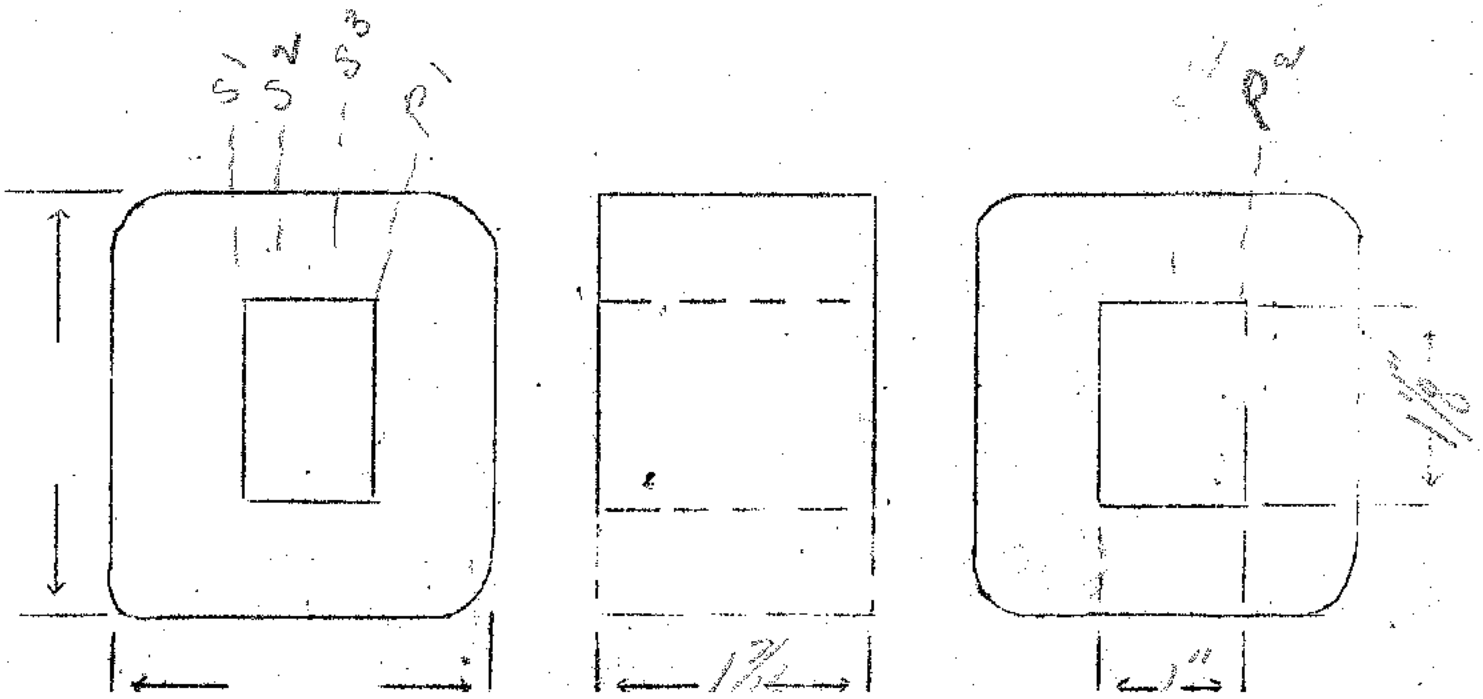


	Voltage	Current
Primary	240	
Secondary	220	.050-.055
Filament No. 1	2.5	2
Filament No. 2	2.5	3 AMP
Filament No. 3		4

Specification No. 49

Type Transformer

	P.P.	Driver	Pwr.	5Y3	5Y(2)	
TURNS	577	185	3033	34	43	
TAPS	None	None	1570	None	6½	
LENGTH OF WINDING	1½"	1"	1½"	1"	1"	
SIZE WIRE	#26	#32	#32	#20	#24	
TURNS PER LAYER	66	185	185	34	43	
KIND OF TERMINAL	#30 P.P.	#30 P.P.	#30 P.P.	Wire Out	Wire Out	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Fiber	Fiber	Cardboard	Fiber	Fiber	
LAYER INSULATION	Tissue		Tissue			
WAXED	Yes	Yes	Yes	Yes	Yes	
TREATMENT						
RESISTANCE						



Ep - 120 V.
Es - 675 V.C.T. - 45 Ma.
Ef - 5 V. - 2 A.
Ef - 2.5 V.C.T. - 2 A.
Ef - 2.5 V. - 5 A.

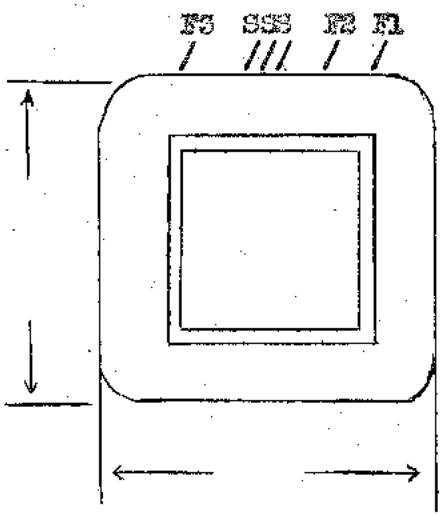
SPEC. NO. P50

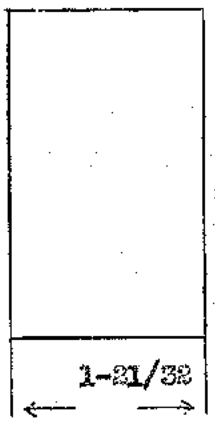
Winding	SEC.	SHIELD	PRIMARY	F_1	F_2	F_3	
Turns	4450	69	690	33	17	17	
Taps	2225				8		
Wind. Lgth.	1-7/16	1-7/16	1-7/16				
Wire Size	#36	#35	#25	#20	#20	#16	
T.P.L.	223-20	69	69-10				
Kind Term.	#20 Zeelite Wire Only		#20 Zeelite Wire Only		Wire Only		
Term. Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	Double 16#		40#				
Test Volt.							
Wrapper	1L007VC	1L005VC	2L005GA	2L005GA	2L005GA		

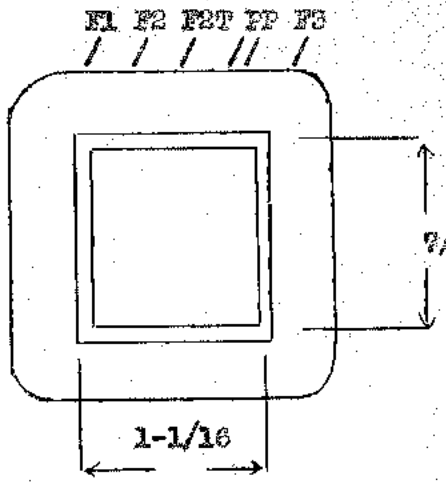
TUBE | 5L007 | IMPREGNATION | VARNISH

CORE | 24 Ga. D Grade 2 x 2 | PRIMARY V.A.

MOUNTING







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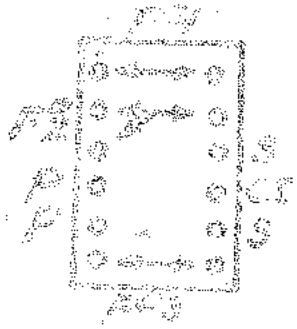


P-50

Pri - 115 V. - 50 - 60 Cycle
Black, Black

Sec - 875 V. C. T. - 65 Ma.
Red, Red - Red C. T.

Fil #1 - 5V. - 2 Amps
Green Stocking

Fil #2 - 2.5 V. C. T. - 2 Amps
Yellow Stocking

Fil #3 - 2.5 V. - 5 Amps
Black Stocking

E_P - 230 V.

E_S - 675 V.C.T. - 45 Ma.

E_{F_1} - 5 V. - 2 Amp.

E_{F_2} - 2.5 V. - 2 Amp. C.T.

E_{F_3} - 2.5 V. - 5 Amp.

6.1

Extra heavy - export

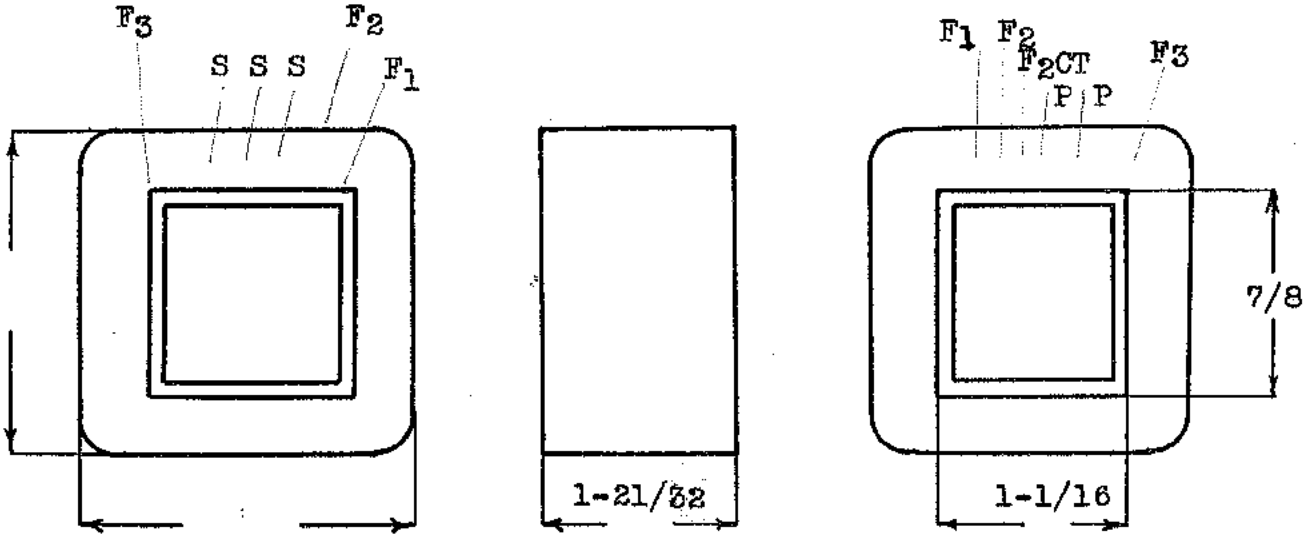
SPEC. NO. P50 - 230 V.

Winding	SEC	SHIELD	PRI	Green F_1	White F_2	Black F_3	
Turns	4500	100	1400	33	17	17	
Taps	2250				8		
Wind. Lgth.	1-15/32	1-15/32	1-15/32				
Wire Size	#36	#28	#28	#19	#20	#15	
T. P. L.	240-20	100	100-14				
Finish							
Type Lead	#20 P. Br.	Sil. Br.	#20 P. Br.	W.O.	W.O.	W.O.	
Lead Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	double 16#		40#				
Test Volt.							
Wrapper	1L007VC	1L007VC	2L005GA	2L005GA	2L005GA	2L005GA	

TUBE 71007 IMPREGNATION DOUBLE VARNISH

CORE 1-1/16 x 7/8 GA. GRADE STACK

MOUNTING



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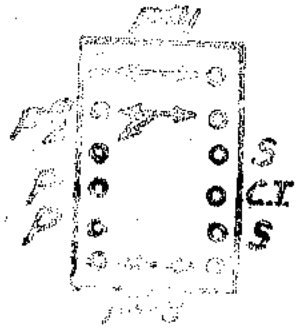
DATE 8/10/36



P 50

Pri - 115 V - 50 - 60 Cycle
Black Braid
Sec - 675 V. C. T. - 45 Ma
Red Braid - Blue C. T.
Fil #1 - 5V - 2 Amps
Green Sleeving
Fil #2 - 2.5 V. C. T. - 2 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 5 Amps
Black Sleeving

1200V - 62 ma
5 VCT @ 6.5 ma
F4: 6V @ 2A, 5V @ 1 Amp. - F2
2.5V CT @ 10.5A - F1
1.5V CT @ 6.5A - F3
1.5V @ 2.5A - F5

Old Stock

Manufacturers List

SPEC. NO. P-51

Winding	See	Shield	Pri	Blue F1	Red F2	Wht F3	Grn-Blue F4	Blue F5
Turns	2950	1	650	15	9	30	30	9
Taps	1175	—	—	7	5	15	—	—
Wind. Lgth.	1 3/4"	1 3/4"	1 3/4"	1 3/4"	— 1 3/4" →		— 1 3/4"	
Wire Size	#35	100% Cov. Shield	#23	2-#16	#15	#22	#19	#18
T. P. L.	246 - 12L	1	65-10L	15-1L	9 - 1/2	30 - 1/2	30-1/2	9 - 1/2 L
Finish	86%	—	88%	90%	80%	75%	64%	82%
Type Lead	#32 Tinned	#25 Solid	#20 Enam.	Wire	Wire	Wire	Wire	Wire
Lead Lgth.	9"	4"	9"	9"	9"	9"	9"	9"
Layer Insul.	2 Layers		1 Layer		— ONE LAYER →		— ONE LAYER →	
Test Volt.								
Wrapper	1L 007 VC	1L 005 VC	2L 0056A	2L 0056A	2L - 005 GA			2L 0056A

TUBE 7L-007 AW

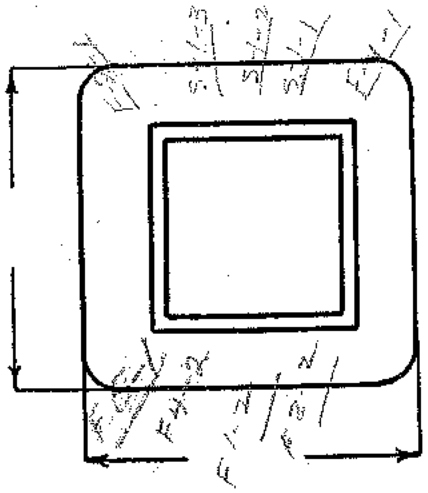
IMPREGNATION Varnish

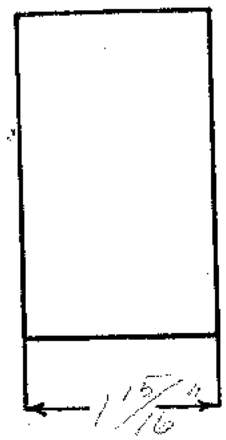
CORE 1 1/4" x 15/16" E-I GA. 24 GRADE D STACK 2 x 2

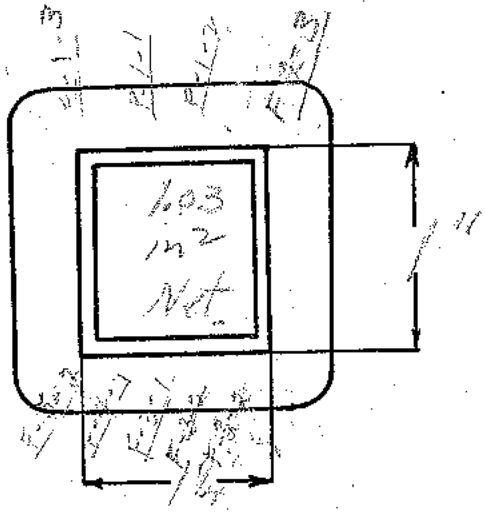
MOUNTING "A A" - Leads

Co = 807 - 648 - 493 - 500 - 642 - 643 - 650
Fe = 6773 @ 60 ~
TPW = 5.4
Pri. AP = 0.553" (0.505")

See VA = 71
Sec VA = 95.2
Pri I = 792 ma
η = 88 ; Load = 90



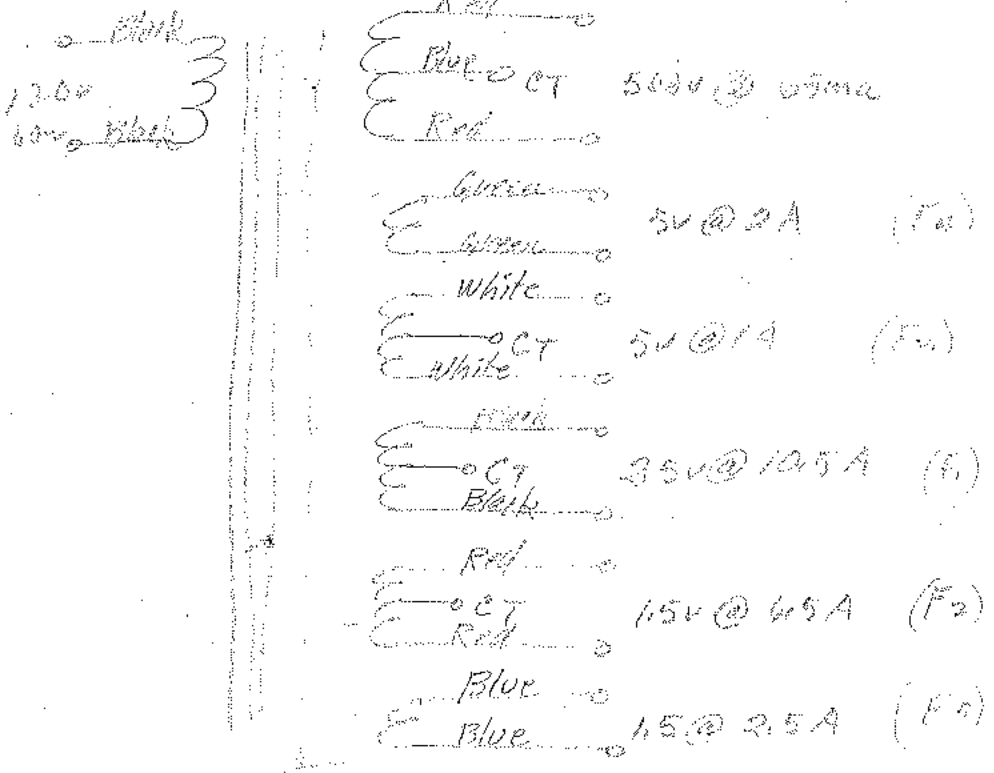




DESIGNED BY Rc

DRAWN

DATE 1-12-42


Black
120v
Black
Red
Blue
CT
Red
500v @ 65ma
Green
Green
5v @ 2A
(F4)
White
CT
White
5v @ 1A
(F3)
Black
CT
Black
35v @ 1.25A
(F1)
Red
CT
Red
15v @ 0.5A
(F2)
Blue
Blue
15 @ 2.5A
(F5)

Ep - ~~118~~ 120V
Es - 750VCT - 85Ma
Ef_1 - 5V - 3 amp. F1
Ef_2 - 2.5VCT - 3.5 amp.

Ef_3 - 2.5V - 3.5 amp.
Ef_4 - 1.5 VCT - 6.5 amp.
Ef_5 - 1.5 V - 2.5 amp.

SPEC. NO. P52

4.15

Winding	Sec.	Shield	Pri	Green F_1	Blue F_5	White F_2	Black F_3	Red F_4
Turns	3200	60	495	23	7	12	12	7
Taps	1600			-	-	6	-	4
Wind. Lgth.	1.75							
Wire Size	#34	#22	#22	#18	#18	#17	#17	double 17
T. P. L.	229-14		60-9					
Finish								
Type Lead	#20 P Br		#20 P Br	WIRE ONLY				
Lead Lgth.	9"	3"	9"					
Layer Insul.	double 16#		50#					
Test Volt.								
Wrapper	1L007VC 3L G1	1L005VC	2L007GA			2L007GA		2L007G

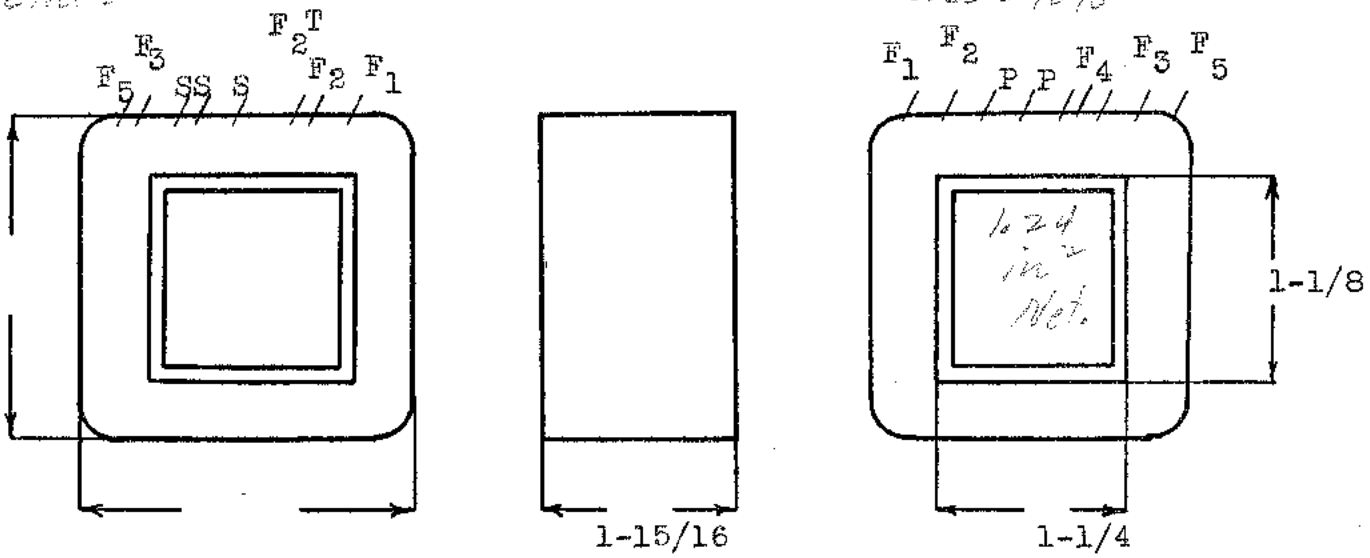
TUBE	7L007	IMPREGNATION	Varnish

CORE 1¼ x 1-1/8 GA. 24 GRADE D STACK

MOUNTING A or B

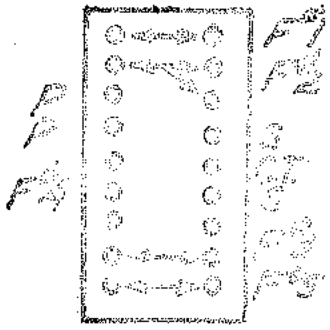
Cu = 780-727-542-465-650-700-700-630.
Fe = 75.2 @ 60 ~
TPV = 4.12
Wire Wt =

Σ Sec VA = 79
Pri VA = 106
Pri I = 883
η = 85%
cosθ = 90%



DESIGNED BY GW

DATE 2/7/38



P 52

Pri - 115 V - 50-60 Cycles
Black Braid

Sec - 750 V C. T. - 65 Ma
Red Braid - Blue C. T.

Fil #1 - 5V, 3 Amps
Green Sleeving

Fil #2 - 2.5 V. C.T. - 3.5 Amps
Yellow Sleeving

Fil #3 - 2.5 V. - 3.5 Amps
Black Sleeving

Fil #4 - 1.5 V. C.T. - 6.5 Amps
Red Sleeving

Fil #5 - 1.5 V. C.T. - 2.5 Amps
Blue Sleeving

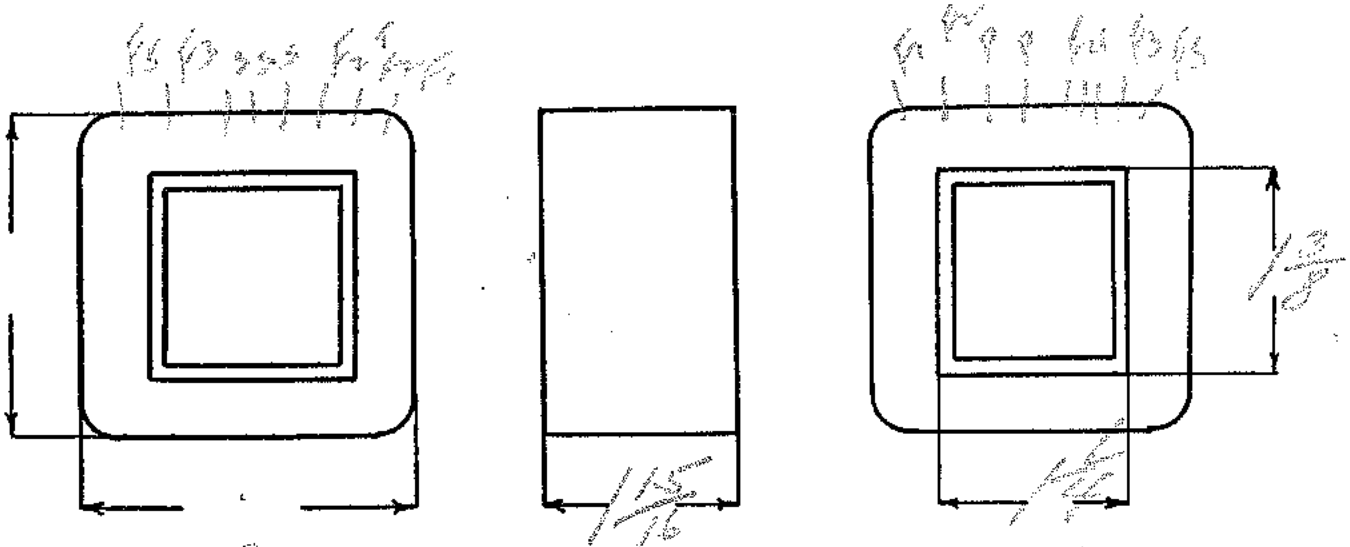
Eb-230 Ef-1.5VCT-6.5A
Es-750VCT-85MA Ef-1.5VCT-2.5A
Ef 5V-3A
Ef 2.5V-3.5A

3.55"

SPEC. NO. R52-2320

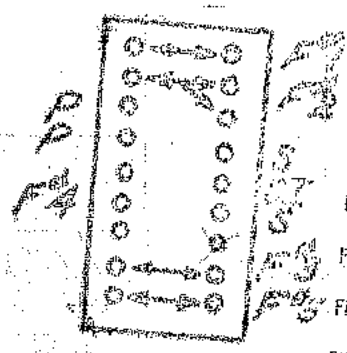
Winding	SEC	S4	P	F1	F5	F2	F3	F4
Turns	2900	54	580	20	6	10	10	6
Taps	1400			—	—	5	—	3
Wind. Lgth.	1.95							
Wire Size	#33	#25	#25	#18	#18	#17	#17	#17
T. P. L.	200-14		84-10					
Finish								
Type Lead	#26 Bl	W.O.	#26 Bl	same only				
Lead Lgth.	9"	3"	9"	"	"	"	"	"
Layer Insul.	Paper 1 Lyr		5 Lyr					
Test Volt.								
Wrapper	1 Lyr Mk	1 Lyr Mk	2 Lyr Mk	"		Varnish	2 Lyr Mk	

TUBE	71007	IMPREGNATION	Varnish
CORE	GA.	GRADE	STACK
MOUNTING	B		



DESIGNED BY

DATE 9/21/50



P 52

Pri - ~~115V~~ - 50-60 Cycle
Black Braid
Sec - 750 V. C. T. - 85 Ma
Red Braid - Disc C. T.
Fil #1 - 5V, 3 Amps
Green Sleeving
Fil #2 - 2.5 V. C.T. - 3.5 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 3.5 Amps
Black Sleeving
Fil #4 - 1.5 V. C.T. - 6.5 Amps
Red Sleeving
Fil #5 - 1.5 V. C.T. - 2.5 Amps
Blue Sleeving

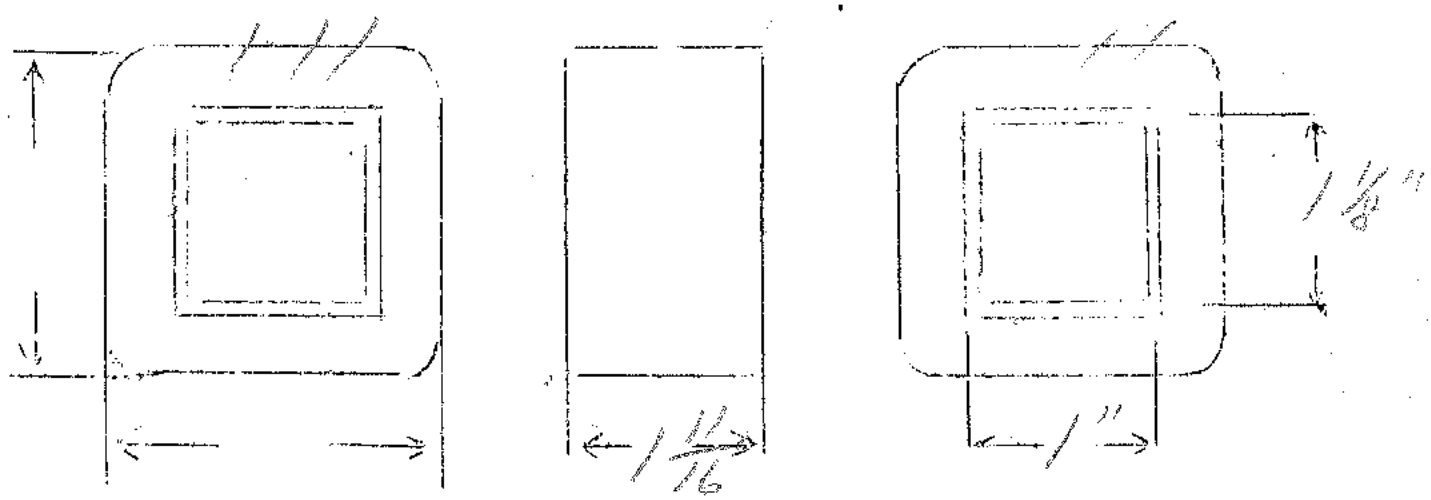
Same as #52 except
E_p = 125V.

SPEC. NO. 52N

Winding	PRI	SHIELD	SEC	F_1	F_2	F_3	F_4	F_5
Turns	620	193	3800	27	3	14	14	8
Taps	—	—	1900	—	4	7	—	—
Wind. Lgth.	1.5	1.5	1.5	—	—	—	—	
Wire Size	23.5	34	34	18	15	17	17	14
T.P.L.	55-12	190	190	—	—	—	—	
Kind Term.	#22 Plas.	Sil Gl.	#22 Plas.	Insul				
Term. Lgth.	9	5	7	7	5	5	7	
Layer Insul.	5 Mil	—	2 Mil	—	—	—	—	
Wrapper	1 Mil Mic	1 Mil Mic	2 Mil Mic					

TUBE | 2007 | IMPREGNATION | VARNISH

CURE | 1 x 1 Hr @ 90



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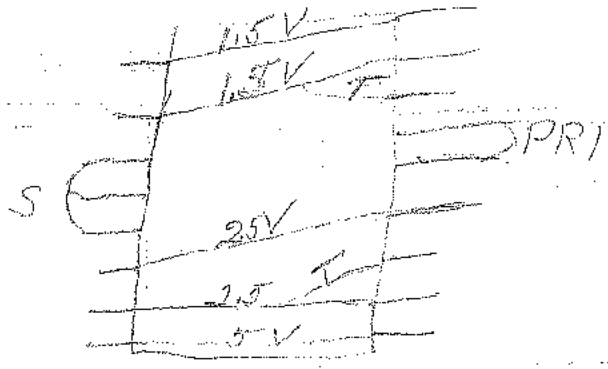

1.5V
1.5V
PRI
S
2.5V
2.5V
5V

E_p = 117V - 25~
E_{S_1} = 250V - 100Ma.
E_{F_1} = 5V - 3 Amps
E_{F_2} = 6.5V - 3A. CT
E_{F_3} = 2.5V - 9A.

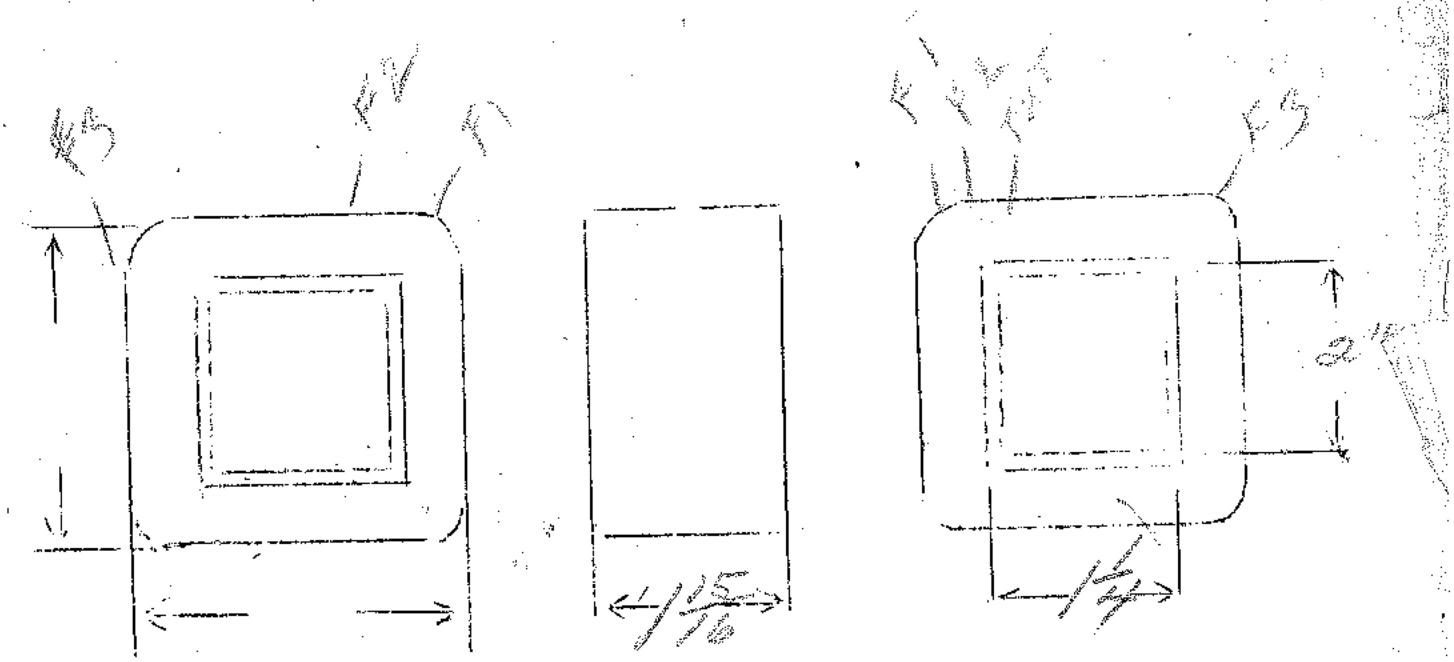
$\frac{N}{E} = 3.9$

SPEC. NO. 53-25~

Winding	SEC	SHIELD	PRI	F_1	F_2	F_3	
Turns	3200	180	460	22	11	11	
Taps	1600	—	—	—	6	—	
Wind. Lgth.	1.75	1.75	1.75	—	—	—	
Wire Size	#32	#32	#22	#18	#16	#16 double	
T.P.L.	180-18		58-8		—		
Kind Term.	#20 Pltd	oil bk	#20 Pltd	WIRE	ONLY		
Term. Lgth.	9	3	9	9	9	9	
Layer Insul.	Empire #52	—	50#	—	—	—	
Wrapper	2Lo7WC	1Lo7WC	2Lo7GA	2Lo7GA		2Lo7GA	

TUBE | 2L007 | IMPREGNATION | VARNISH

CURE | 1 hr x 2"



E_p - 230V
E_s - 750VCT - 160Ma.
F_1 - 5V 3Amp
F_2 - 2.5VCT - 4Amp
F_3 - 2.5V 9Amp

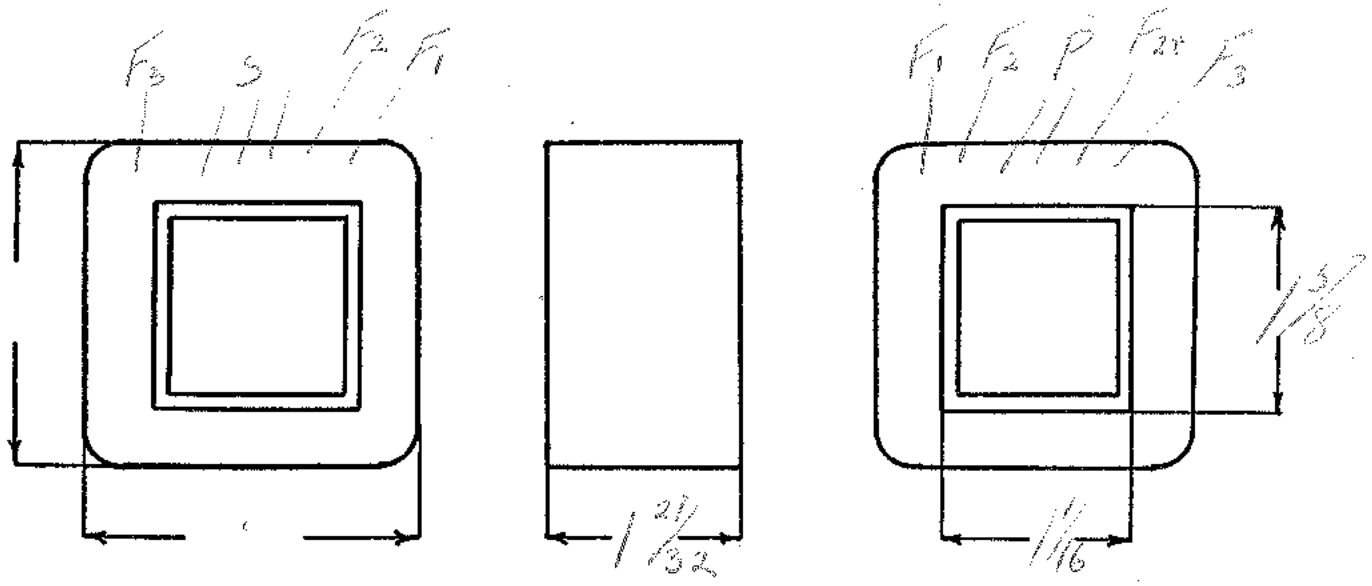
SPEC. NO. P-3-230V

3.3

Winding	Sec.	Shield	Pri.	Green F_1	White F_2	Black F_3	
Turns	2740	173	760	18	9	9	
Taps	1370				5		
Wind. Lgth.	1 15/32	"	"				
Wire Size	#33	#33	#25	#18	#16	Double #17	
T. P. L.	173-16	173	70-11				
Finish							
Type Lead	#20 P. Br.	#20 P. Br.	#20 P. Br.	#20 Stranded	#20 Stranded	#20 Stranded	
Lead Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	Double 16#		10#				
Test Volt.	2 KV RMS		2 KV RMS				
Wrapper	2L007W	2L007W	2L005GA	2L005GA		2L005GA	

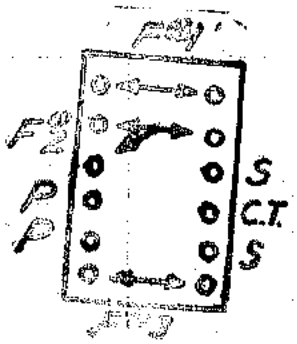
TUBE	7L007GT		IMPREGNATION	Double Varnish	
CORE	1 1/16 X 1 1/16	GA.	24	GRADE	2
STACK	2 X 2				

MOUNTING A or B



DESIGNED BY G.M.

DATE



P53

Pri - 115V - 50-60 Cycle
Black Braid
Sec - 750 V. C. T. - 100 Ma
Red Braid - Blue C. T.
Fil #1 - 5V - 3 Amps
Green Sleeving
Fil #2 - 2.5 V. C. T. - 5 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 2 Amps
Black Sleeving

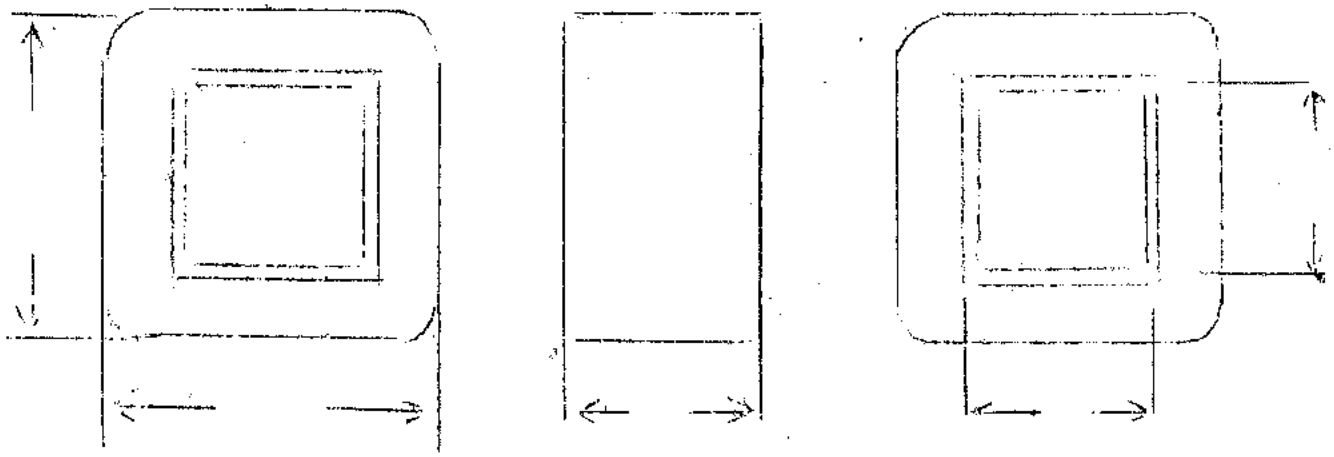
$E_b = 125$ V.

SPEC. NO. 534

Winding	PRI	SHIELD	SEC	F	F		
Turns	580						
Taps	—						
Wind. Lgth.	1.5	1.5	1.5				
Wire Size	22	33	33	18	14	16	
T.P.L.	53-11						
Kind Term.	[illegible]						
Term. Lgth.	6"						
Layer Insul.	534						
Wrapper	ABOVE						

TUBE | 2007 | IMPREGNATION | VARNISH

CURE |



115v Pri - 60w
750vCT @ 100ma
5v @ 3.4 amps
2.5vCT @ 7.4 amps
2.5v @ 9A amps.

Old Stock

SPEC. NO. P-53

Winding	Sec	Shield	Pri	F1 5v	F2 2.5v	F3 2.5v	
Turns	2740	1	380	18	9	9	
Taps	1370	—	—	—	5	—	
Wind. Lgth.	1 15/32"	1 15/32"	1 15/32"	← 1 15/32" →		1 15/32"	= 1.468"
Wire Size	#32	.001 Cu Shield	#22	#18	#16	2-#17	
T. P. L.	172-16L	1	48-8L	18-1/2L	9-1/2L	9-1L	
Finish	90%	—	87%	51%	32%	57%	
Type Lead	#32 Dble.	#25, 5mil	#20 Pol. Bkn.	W. O. Sleeve	W. O. Sleeve	W. O. Sleeve	
Lead Lgth.	9"	4"	9"	9"	9"	9"	
Layer Insul.	2L 1mil G		1L 5mil G	—	—	—	
Test Volt.	1250			ONE LAYER			
Wrapper	1L .007 VC	1L .007 VC	2L .0064	2L .005 GA		2L .005 GA	

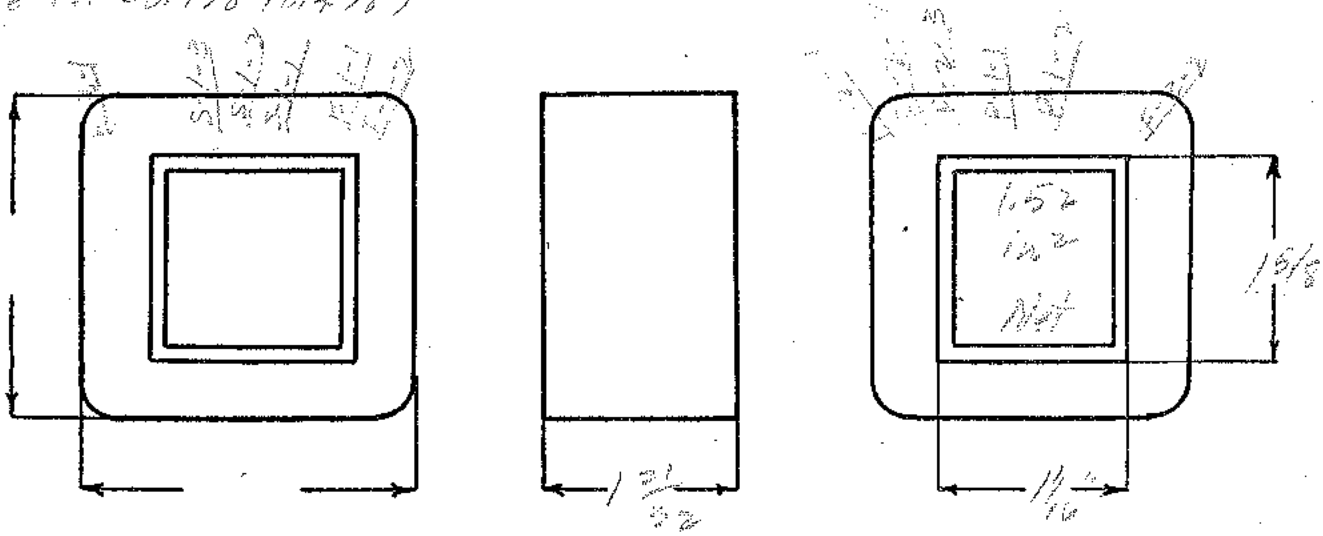
TUBE 7L-007 Fib | IMPREGNATION 1/2 mil L

CORE 1 1/16" x 1 5/8" EI GA. 24 | GRADE D | STACK 2 x 2

MOUNTING "A"

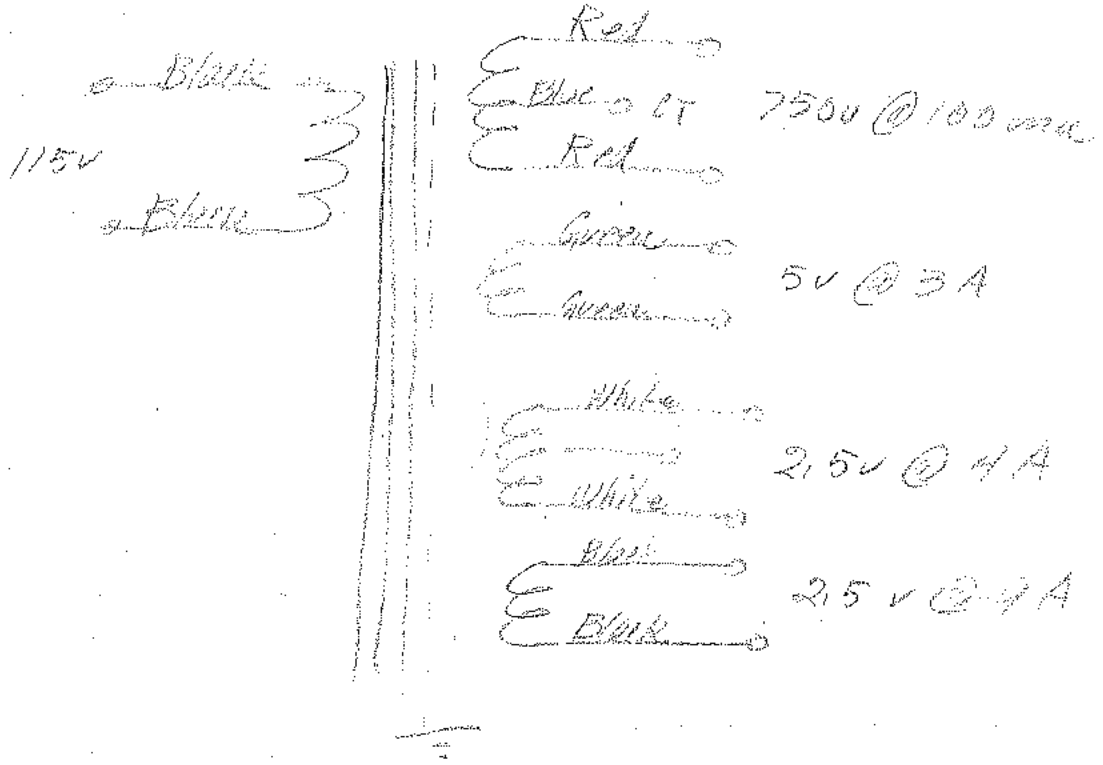
Cu = 835-648-542-604G-
Fe = 74.8 @ 60v
TPV = 3.8
Wire Mft = 0.478'/(0.478')

5 sec VA = 85
Pri VA = 114
Pri I = 9 amps
η = 83 x 83 = 90



DESIGNED BY MHD | DATE 1-5-92

OVER


Red
Blue
Blue
115v
Blue
Blue
Red
750v @ 100 mA
Green
Green
5v @ 3A
White
White
2.5v @ 4A
Blue
Blue
2.5v @ 4A

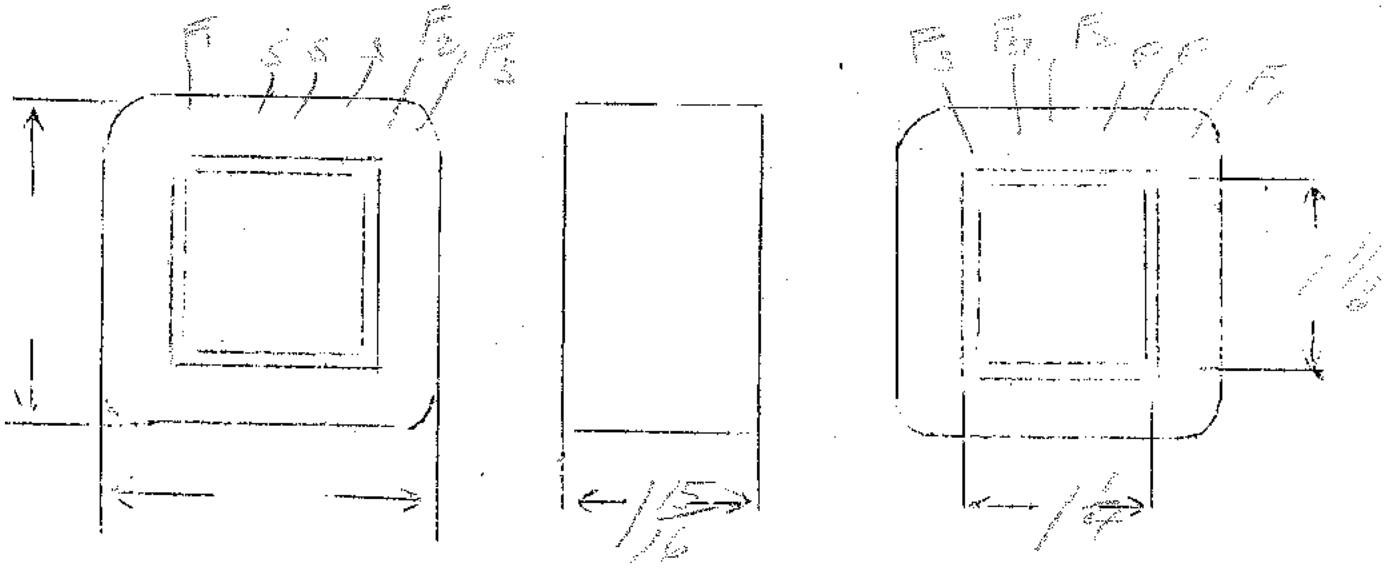
Same as #54 except E_p = 125V.

SPEC. NO. 54W

Winding	PRI	SHIELD	SEC	F_1 GREEN	F_2 BLACK	F_3 WHITE	
Turns	490	120	3180	22	11	11	
Taps	—	—	1590	—	—	5th	
Wind. Lgth.	1.75	1.75	1.75	—	—	—	
Wire Size	22	32	32	18	11	18	
T.P.L.	62-8	180	180-18	—	—	—	
Kind Term.	#22 Fiber	Fiber	#22 Fiber	Wire	—	—	
Term. Lgth.	9	3	9	9	9	9	
Layer Insul.	5 Mil	—	5 Mil	—	—	—	
Wrapper	7L007C	7L007C	7L007C	2 Mil GA	—	—	

TUBE | 7L007 | IMPREGNATION | VARNISH

CURE | 1¼ x 1⅛ HW



Ep---118V
Es---750V. C. T.-125 Ma.
Ef1--5V--3.25A
Ef2--2.5V.C.T.--3.5Amps
Ef3--2.5V--10Amps
N/E--3.64

F.H. Corp OLD

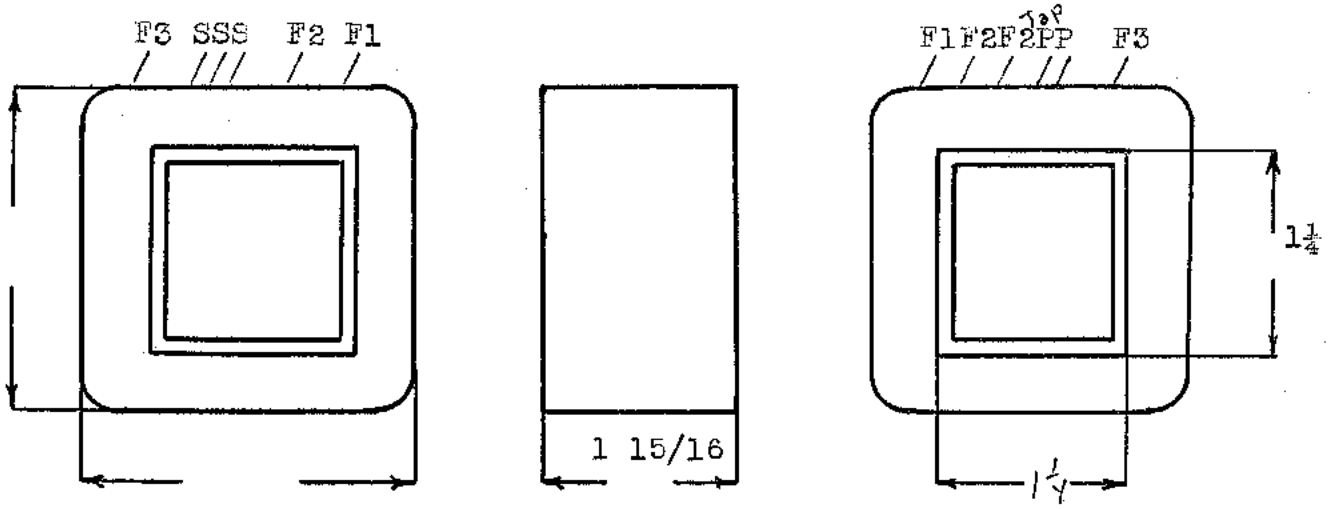
SPEC. NO. P 54

Winding	Sec.	Shield	Pri.	Green Fil. 1	White Fil 2	Black Fil. 3	
Turns	2950	170	424	20	10	10	
Taps	1475	----	----	----	5	----	
Wind. Lgth.	1.75	1.75	1.75	----	----	----	
Wire Size	#32	#32	#21	#18	#18	#14 Double	
T. P. L.	170-18	170	53-8				
Finish							
Type Lead	#20 Pr. Br.	Sil.	Br. #20 Pr. Br.	W I R E O N L Y			
Lead Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	30#		50#				
Test Volt.	2500		2500				
Wrapper	1Loo7VC 3L30#Gl.	1L007VC	2L007GA	2Loo7Ga	2L007GA	2L007GA	

TUBE	7L007	IMPREGNATION	VARNISH

CORE 1¼ x 1¼ GA. 24 GRADE D STACK 2 x 2

MOUNTING



DESIGNED BY G. W.

DATE

E_p = 117V plus -2.5 ~

E_s = 750V - C.T. - 125 MA

E_{F_1} = 5 V - 3 amps

E_{F_2} = 2.5V - C.T. - 3.5 amps

E_{F_3} = 2.5V - 16 amps

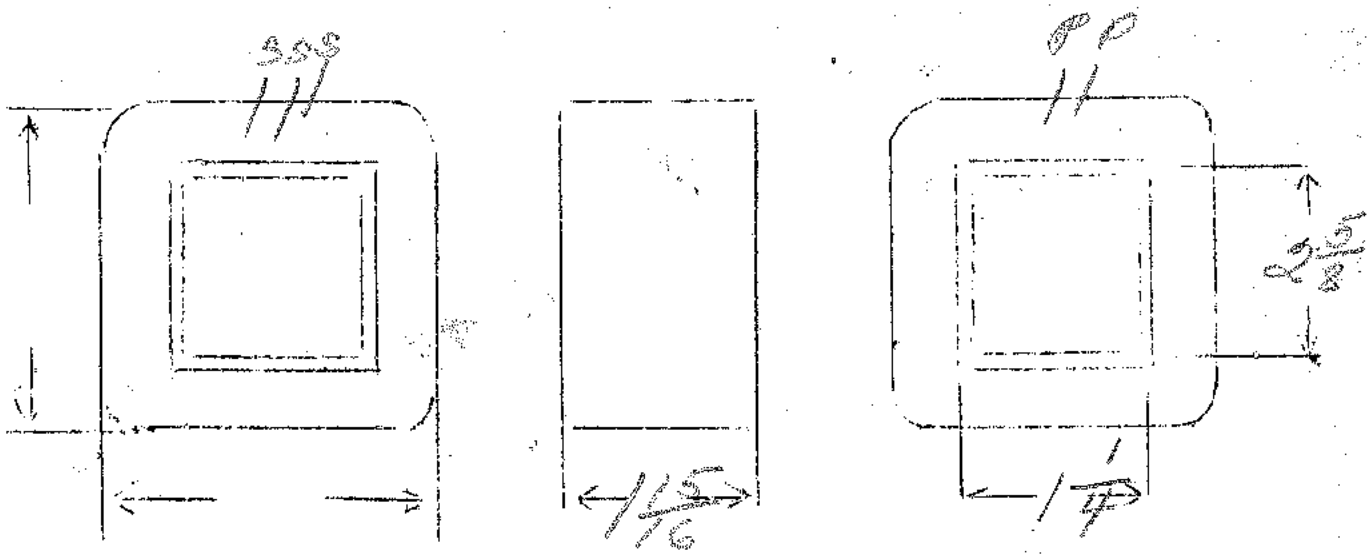
$\frac{A_c}{A_w} = \frac{6.15 \times 10}{14500 \times 1.25 \times 1.25} = 2.7$

SPEC. NO. 54 - 25 Cycle

Winding	SEC	SHIELD	PRI	F_1	F_2	F_3	
Turns	2350	148	340	16	8	8	
Taps	1175	—	—	—	4	—	
Wind. Lgth.	1.75	1.75	1.75	—	—	—	
Wire Size	#31	#31	#22	#18	#17	#11	
T.P.L.	148-16	148	60-6	—			
Kind Term.	#20 PBr	SPBr	#20 PBr	WIRE	ONLY		
Term. Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	Manilla 16 #		50 #				
Wrapper	2 Lo 7K	2 Lo 7K	2 Lo 16K	2 Lo 7K	2 Lo 7K	2 Lo 16K	

TUBE | 42007 | IMPREGNATION | VARNISH

CURE | $1\frac{5}{8} \times 2\frac{5}{8}$"



Load test shows I_p = 1.24 amps

EP = 210 - 230 - 250V
ES = 750VCT @ 125 MA
EF = 5V - 3 amp.
EF = 2.5VCF - 4 amp.
EF = 2.5V - 16 amp.

N/E = 335

SPEC. NO. 54-230U

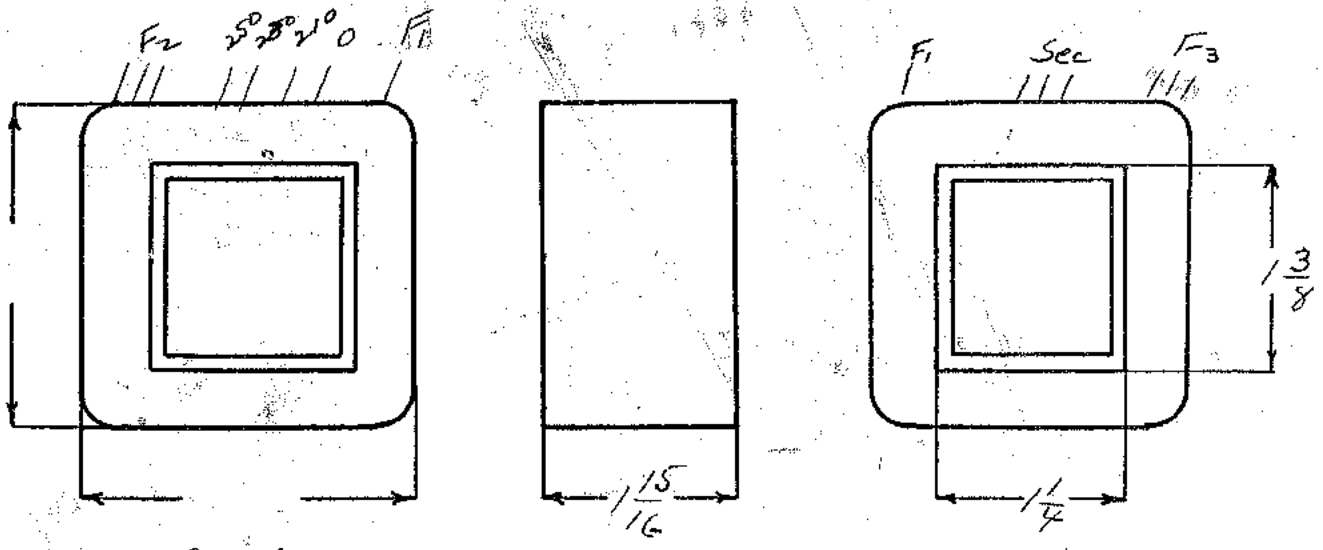
Winding	SEC	SHIELD	PRI	FIL 1	FIL 2	FIL 3	
Turns	2700	170	836 770	18	9	9	
Taps	1350		705		5		
Wind. Lgth.	1.75		1.75				
Wire Size	#32	#32	#24	#18	#17	Double #14	
T. P. L.	170-16		76				
Finish							
Type Lead	Sil Br	Sil Br	WIRE	ONLY			
Lead Lgth.	3"	3"	3"				
Layer Insul.	Double 16#		50#				
Test Volt.							
Wrapper	1L007VC	1L007VC	2L007GA		2L007GA	2L007GA	

TUBE 7L007 + 1L007VC

IMPREGNATION DOUBLE VARNISH

CORE 1¼ X 1 3/8 GA. 24 GRADE D STACK 2 X 2

MOUNTING B



DESIGNED BY JLT

DATE 8/40

Same as #55 except $E_p = 125V$.

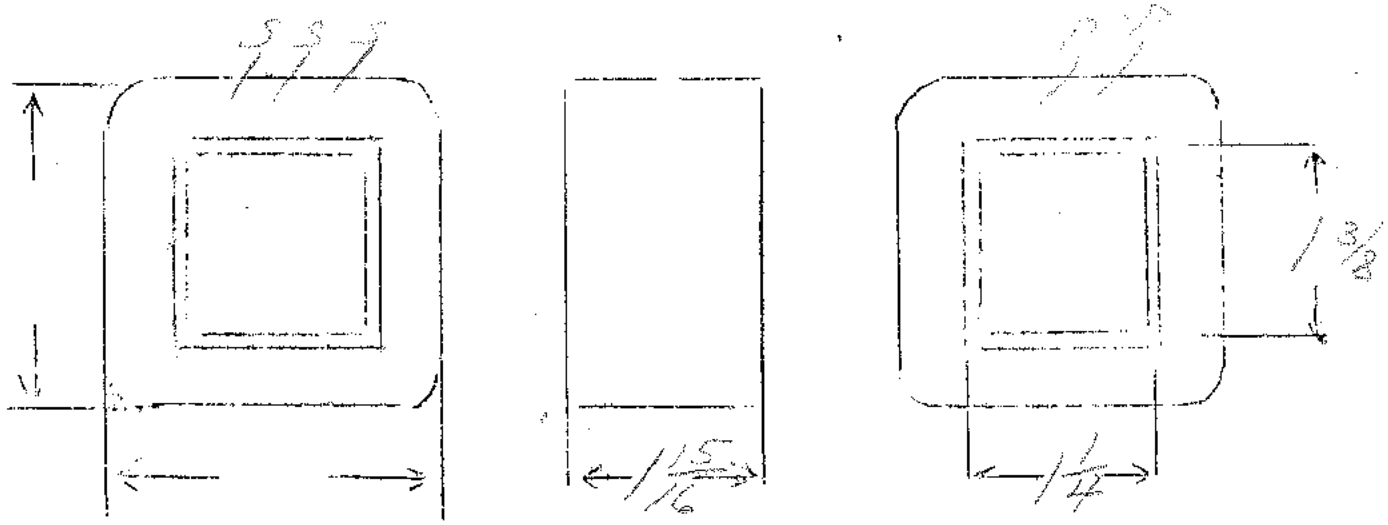
$\frac{N}{E} = 3.24$

SPEC. NO. 55N

Winding	PRI	SHIELD	SEC	E_1	E_2	E_3	E_4
Turns	400	1	2800	18	9	9	9
Taps	—		1400			5	5
Wind. Lgth.	1.75	1.25	1.75	—	—	—	—
Wire Size	#21E	(Foil)	#31E	#18E	#13E	#16E	#18E
T.P.L.	522	1	160-18	—	—	—	—
Kind Term.	#24 Flex.	Silver	#30 Flex.	wire ends			
Term. Lgth.	9"	3"	9"	9"	9"	9"	9"
Layer Insul.	50#	—	20#	—	—	—	—
Wrapper	KRAFT	2 layers KRAFT	KRAFT		2 layers KRAFT		

TUBE | IMPREGNATION

CURE



(new)

E_1 – 115 – 25 m
E_2 – 2.5 Volt – 12 amps
E_3 – 800 VCT – 200 MA
E_4 – 5V – 3 amps
E_5 – 6.3 Volt – 6 amps

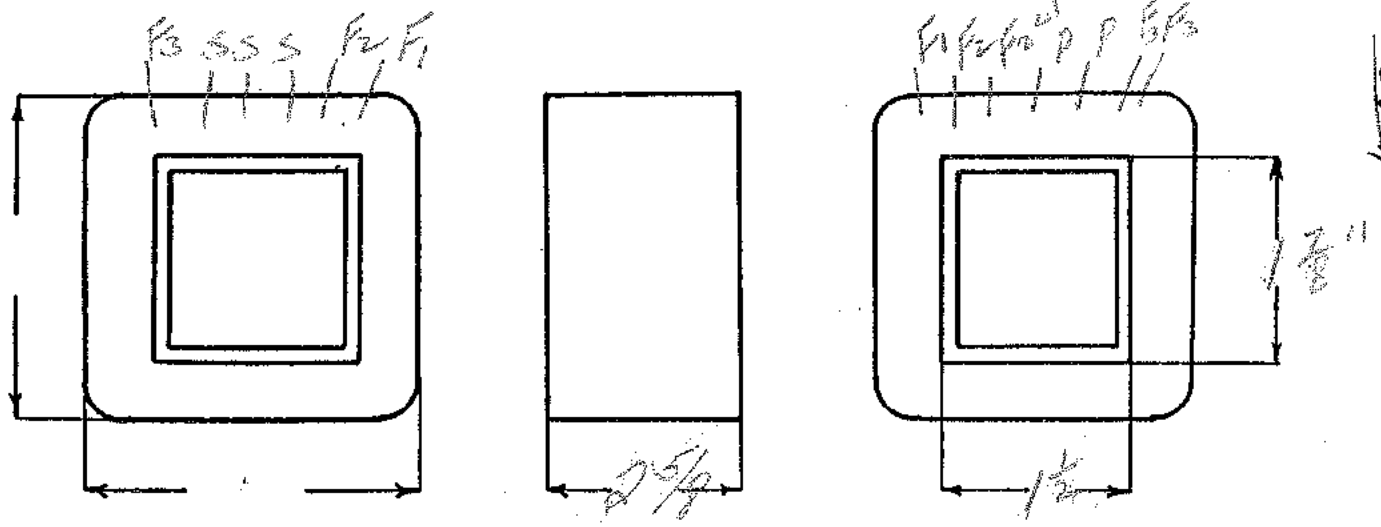
SPEC. NO. 56-355

Winding	SEC	SHIELD	PRI	E_1	E_2	E_3	
Turns	3200	165	410	20	10	10	
Taps	1600				5	5	
Wind. Lgth.	2 1/4						
Wire Size	#29		#20	#18	#16	#16	
T. P. L.	165-20		60-7				
Finish							
Type Lead	#20	#20	#20	WIRE ONLY			
Lead Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	1 Mil		1 Mil				
Test Volt.							
Wrapper	2 Mil	1 Mil	2 Mil			2 Mil	

TUBE 1 Mil x 1 1/2 x 1 1/2 | IMPREGNATION

CORE 1/2 x 1/2 GA. 24 GRADE D STACK 2 x 2

MOUNTING A or B



DESIGNED BY

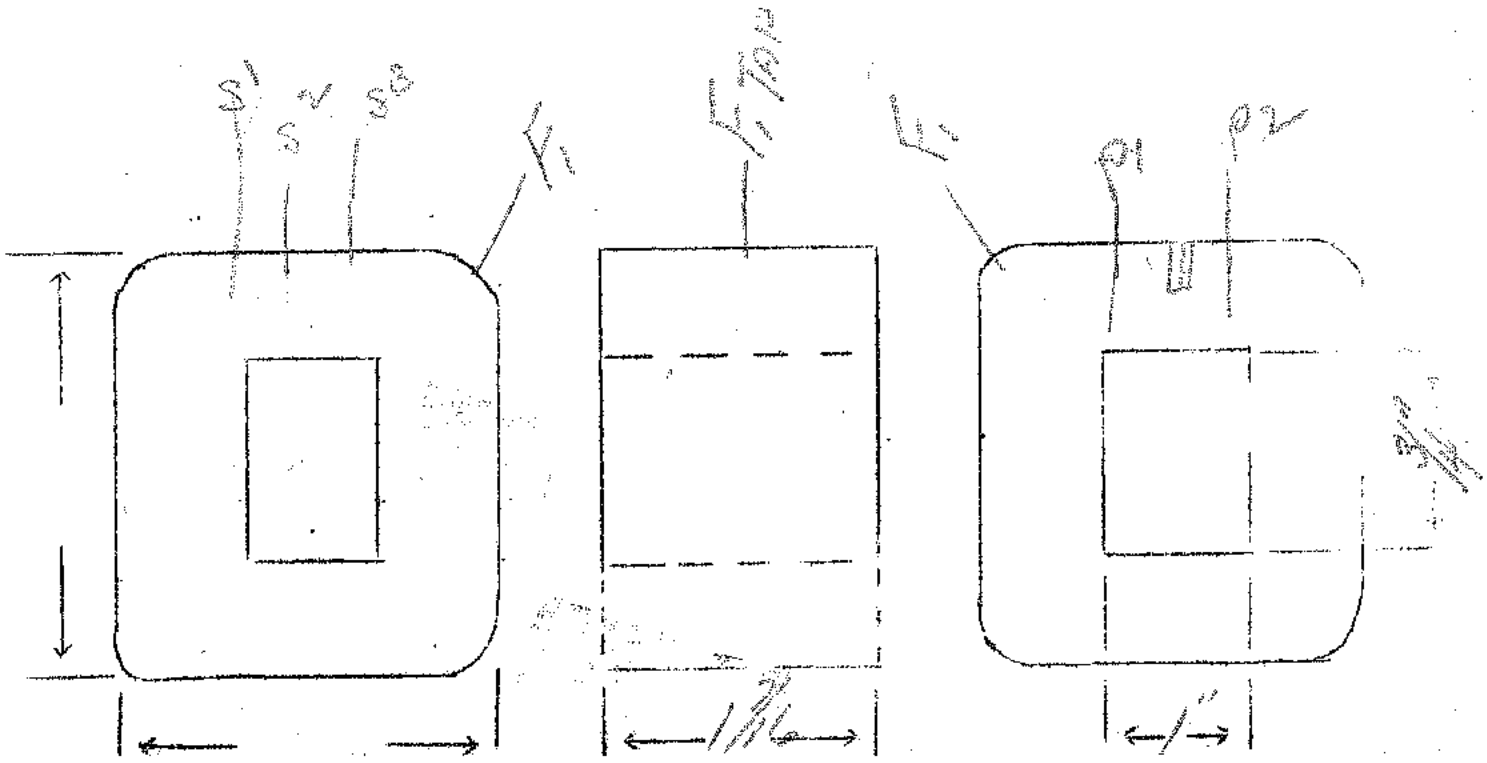
DATE

	Voltage	Current
Primary	115	
Secondary	22	0.2
Filament No. 1	2.5	3
Filament No. 2		
Filament No. 3		

Specification No. 80

Type Transformer Power

	PRI	Sec. 1	SEC	FIL 1		
TURNS	1012		610	18		
TAPS	None		305	9		
LENGTH OF WINDING	1 1/2"	1 1/4"	1 1/2"	1 1/2"		
SIZE WIRE	#28 E	#32 E	#32 E	#16 E		
TURNS PER LAYER	77	115	115			
KIND OF TERMINAL	Wire Ends	Sol. Lug	Sol. Lug	Wire Ends		
LENGTH OF TERMINAL	3"	3"	3"	3"		
TUBE	Red Fiber	Red Fiber	Red Fiber	Red Fiber		
LAYER INSULATION	Empire Cloth		Empire Cloth			
WRAPPER	2 Layers Empire Cloth	2 Layers Empire Cloth	2 Layers Empire Cloth	2 Layers Empire Cloth		
TREATMENT						
RESISTANCE						

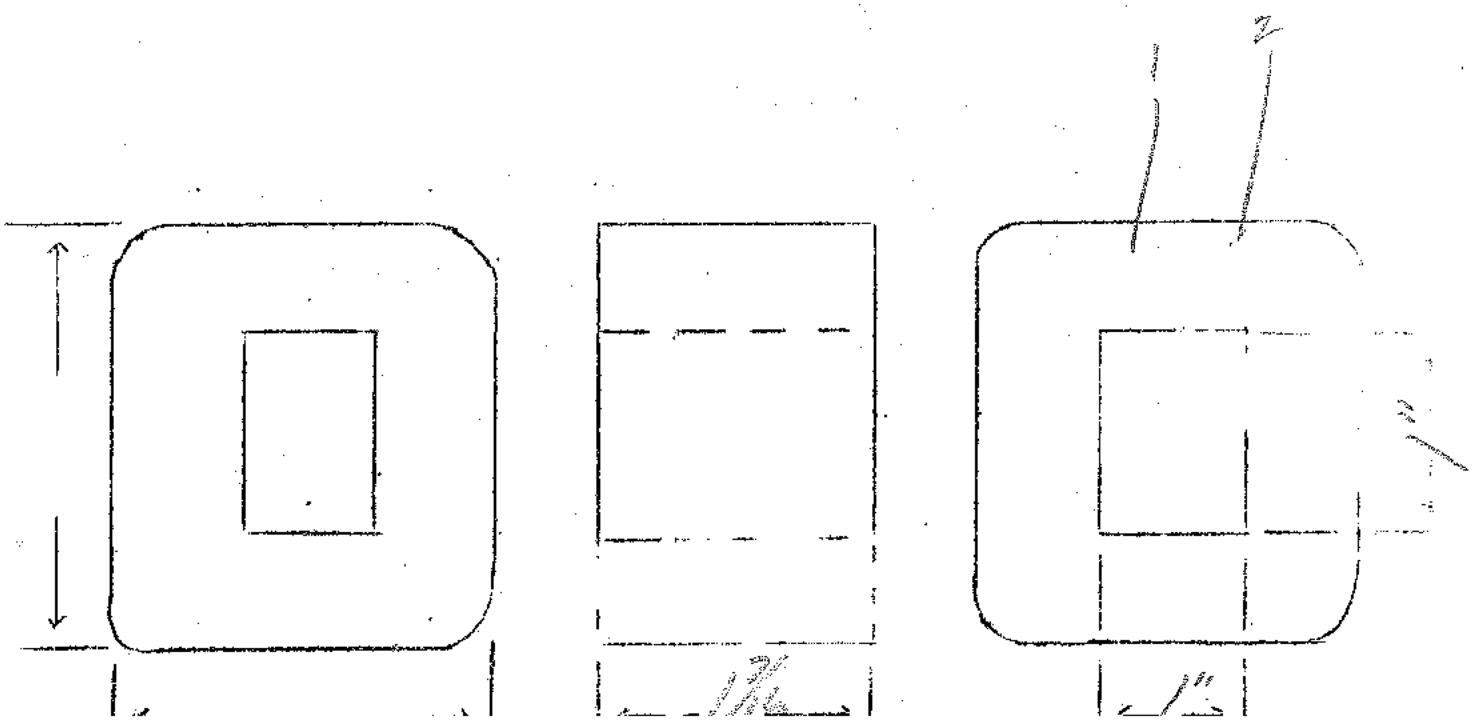


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 19

Type Transformer Choke

TURNS	4500					
TAPS	NONE					
LENGTH OF WINDING	1 1/2"					
SIZE WIRE	32					
TURNS PER LAYER	115					
KIND OF TERMINAL	SI/B					
LENGTH OF TERMINAL	3"					
TUBE	Kraft					
LAYER INSULATION	Paper					
WRAPPER	Kraft					
TREATMENT						
RESISTANCE						

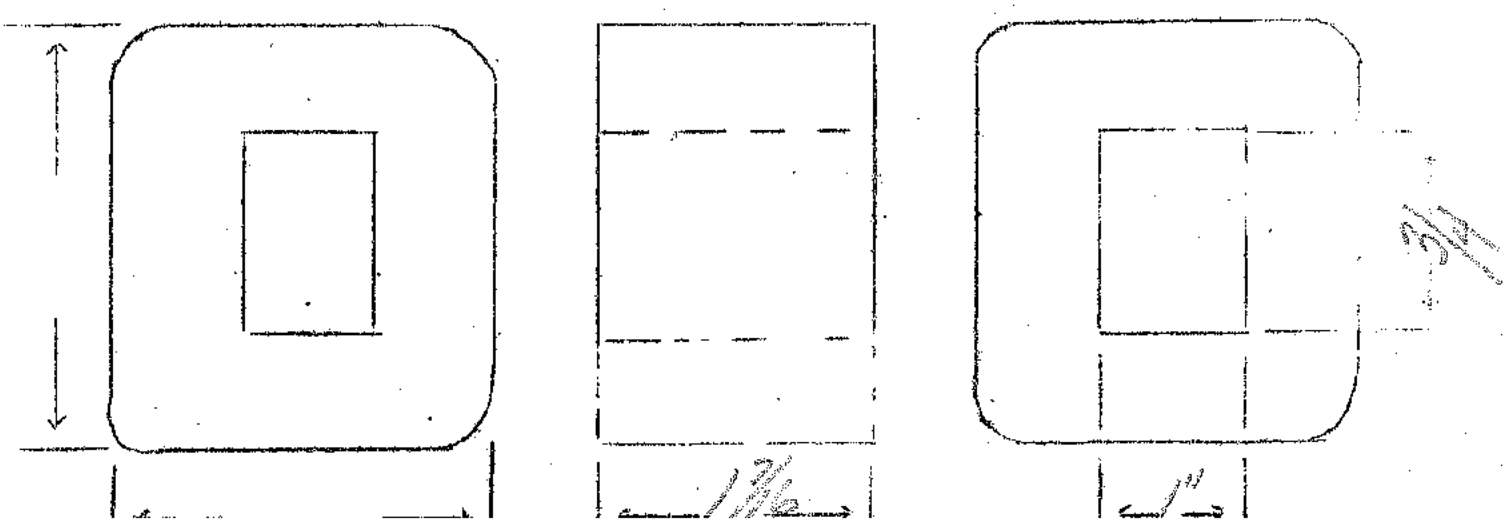


	Voltage	Current
Primary	115	
Secondary	350-0-350 and 20	
Filament No. 1	2.5	3
Filament No. 2		
Filament No. 3		

Specification No. 78

Type Transformer

	Pri	Shunt	Sec. 1	Sec 2	Fil 1	
TURNS	762	77	453	453	36	
TAPS	None	None	See Note	See Note	9 & 18	
LENGTH OF WINDING	1¼"	1⅛"	2"	2"		
SIZE WIRE	28 E	28 E	32 E	32 E	18 E	
TURNS PER LAYER	77-10	77-1	100			
KIND OF TERMINAL	No 20 Pig Tail	Wire Enam	No 20 Pig Tail	No 20 Pig Tail	Wire Enam	
LENGTH OF TERMINAL	9"	3"	5"	9"	3"	
TUBE	4 oz	Pri Winding	Shunt Winding	Sec 2 Winding	Sec Winding	
LAYER INSULATION	Empire		2 Empire	2 Empire		
WRAPPER	2 Empire 1 Empire	2 Empire 1 Empire	2 Empire 5 Empire	2 Empire 5 Empire	2 Empire 5 Empire	
TREATMENT	Note See Treatment 227-259-39					
RESISTANCE	324 - Element 53					

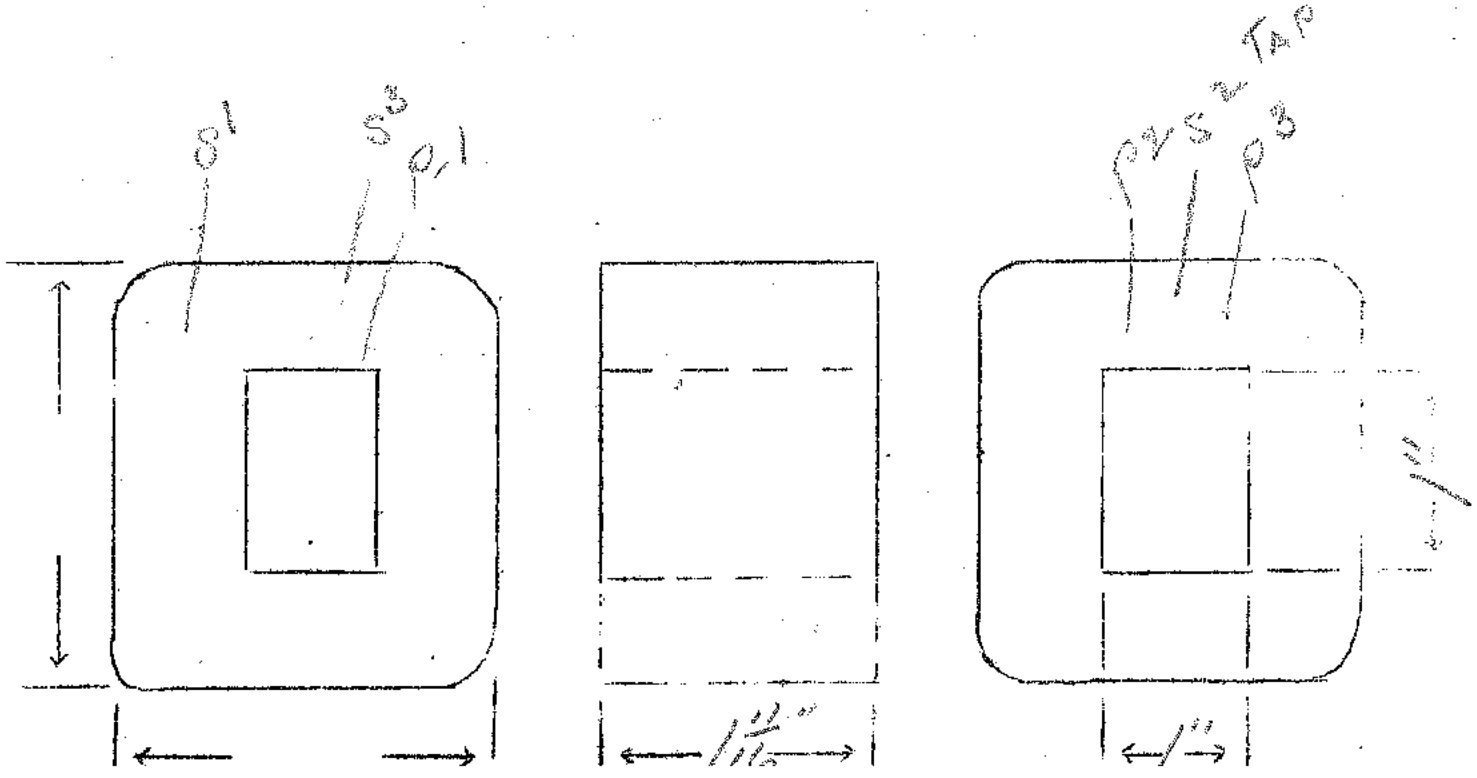


	Voltage	Current
Primary	112-125	
secondary	224	.060
Filament No. 1	2.5	2.
Filament No. 2	2.5	2.
Filament No. 3		

Specification No. 77

Type Transformer Power

	Pri	Sec. No. 1	Sec	Fil (1)	Fil (2)	
TURNS	690	191	4000	30	15	
TAPS	608	None	2000	None	None	
LENGTH OF WINDING	1 1/2"	1 1/2"	1 1/2"			
SIZE WIRE	23 E	34 E	34 E	20 E	15 E	
TURNS PER LAYER	58-12	191-1	191-21			
KIND OF TERMINAL	No. 20 Tap	Sol. Tap	No 20 Tap	Wire Only	Wire only	
LENGTH OF TERMINAL	11"	3"	11"	11"	11"	
TUBE	4.007	Pre Vulcanized Fiber	Sol. 20 Vulcanized Fiber	See Winding		
LAYER INSULATION	Sol.	2 Oil	2 Oil			
WRAPPER	2 Leno Yes	2 Leno Yes	2 Leno 69		2 Leno 69	
TREATMENT						
RESISTANCE						



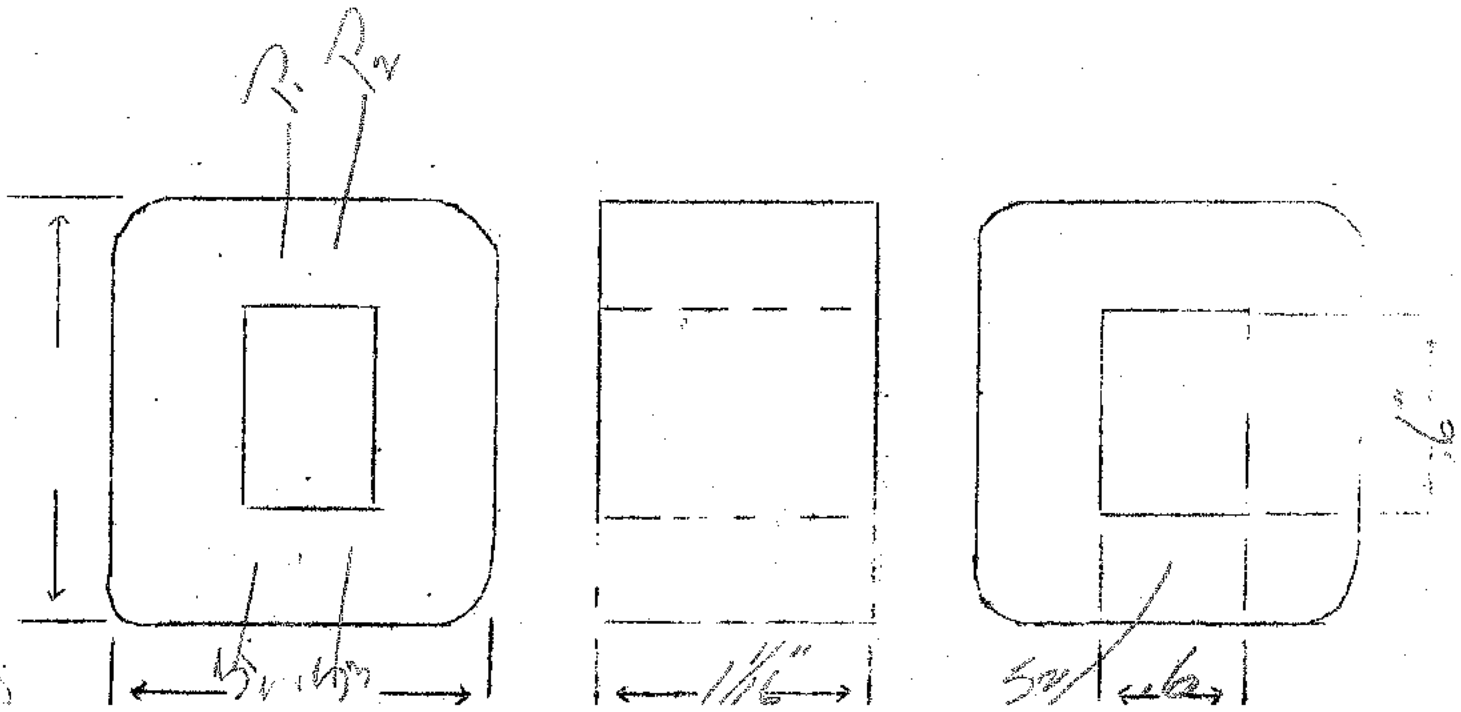
	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 76

Type Transformer Quad

SINGLE PHASE - R.R. 6-RIDGE - 1.5-1

	PRI	SEC.				
TURNS	4000	12000				
TAPS	None	6000				
LENGTH OF WINDING	.885"	.885"				
SIZE WIRE	#20	#40				
TURNS PER LAYER	215-19	215-56				
KIND OF TERMINAL	S.L. Bar	S.L. Bar				
LENGTH OF TERMINAL	3"	3"				
TUBE	11.007	PRI 11.020 SEC				
LAYER INSULATION	16 C	16 C				
WRAPPER	11.003 VP	11.005 C9				
TREATMENT						
RESISTANCE						

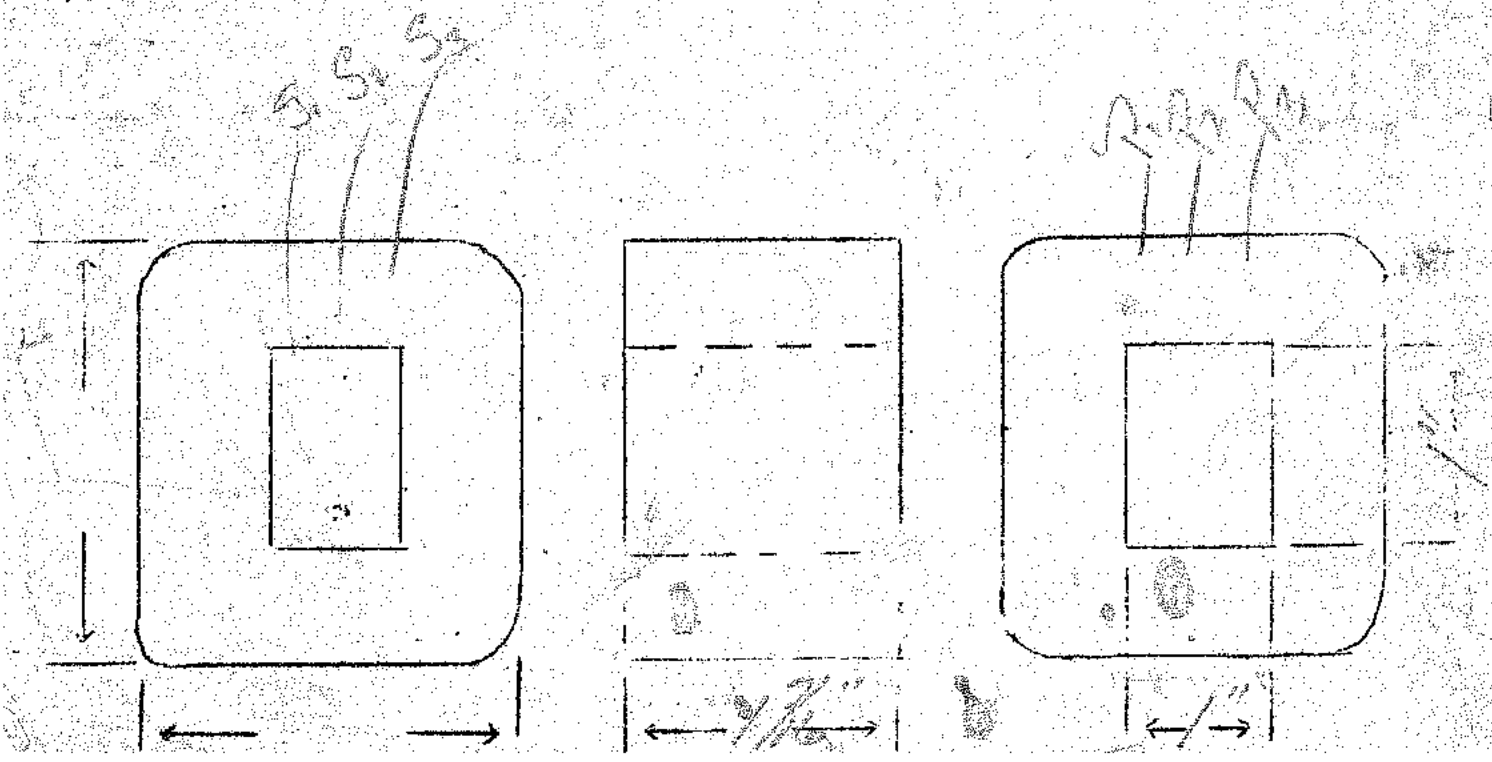


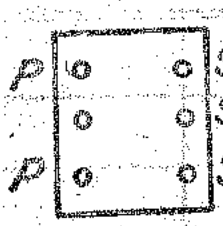
	Voltage	Current
Primary		
secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 75

Type Transformer Power

	Sec.	Sec.	Pri.			
TURNS	360	154	920			
TAPS	2812	None	45			
LENGTH OF WINDING	1/2"	1/2"	1/2"			
SIZE WIRE	34	34E	19			
TURNS PER LAYER	187	187	30			
KIND OF TERMINAL	Lead Wire	Sec. Lead	Wire Lead			
LENGTH OF TERMINAL	6"	3"	3"			
TUBE	Kraft	See Drawing	Shown Wrapper			
LAYER INSULATION	Paper					
WRAPPER	Kraft Leatheroid	Kraft Leatheroid	Kraft Leatheroid			
TREATMENT	Varnish	2½" Kelto extending on tube with leads with Varnished Cambric sleeving				
RESISTANCE	Vertical Impregnation Mark					





P 75

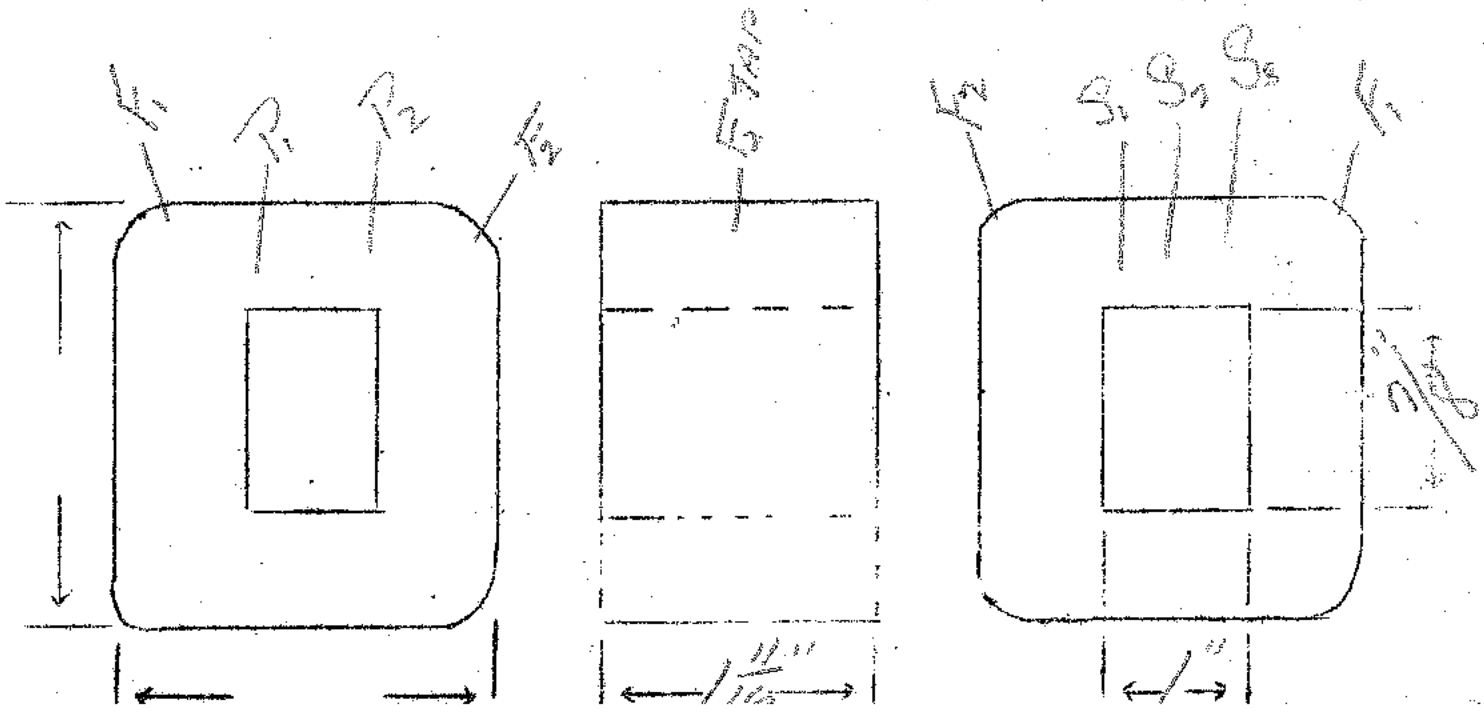
Pri - 6 Volt DC In Vibrator Circuit
Black Sleeving
Sec. - 500 V. C. T. - 50 Ma
Red Braid - Blue C. T.

	Voltage	Current
Primary	~~115~~	~~.965~~
secondary	~~660~~	~~.965~~
Filament No. 1	~~2.5~~	~~5~~
Filament No. 2	~~2.5~~	~~6.000~~
Filament No. 3		

Specification No. 7

Type Transformer

	P.P.I	Filament	Sec	F1(1)	F2(2)	
TURNS	766	20	4200	36	42	
TAPS	None	None	2400	None	9	
LENGTH OF WINDING	1½	1½	1½			
SIZE WIRE	30 E	30 E	36 E	30 E	12 E	
TURNS PER LAYER	64-12	20	100-24			
KIND OF TERMINAL	Solder Lug	Solder Lug	Solder Lug	Solder Lug	Solder Lug	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Fiber	Empire Wrapped	Empire Wrapped	Empire Wrapped	Empire Wrapped	
LAYER INSULATION	Empire		Empire			
WRAPPER	2 thick 2 wide	2 thick 1 wide	2 thick 6 wide	2 thick 6 wide	2 thick 6 wide	
TREATMENT				2½'	5½'	
RESISTANCE						

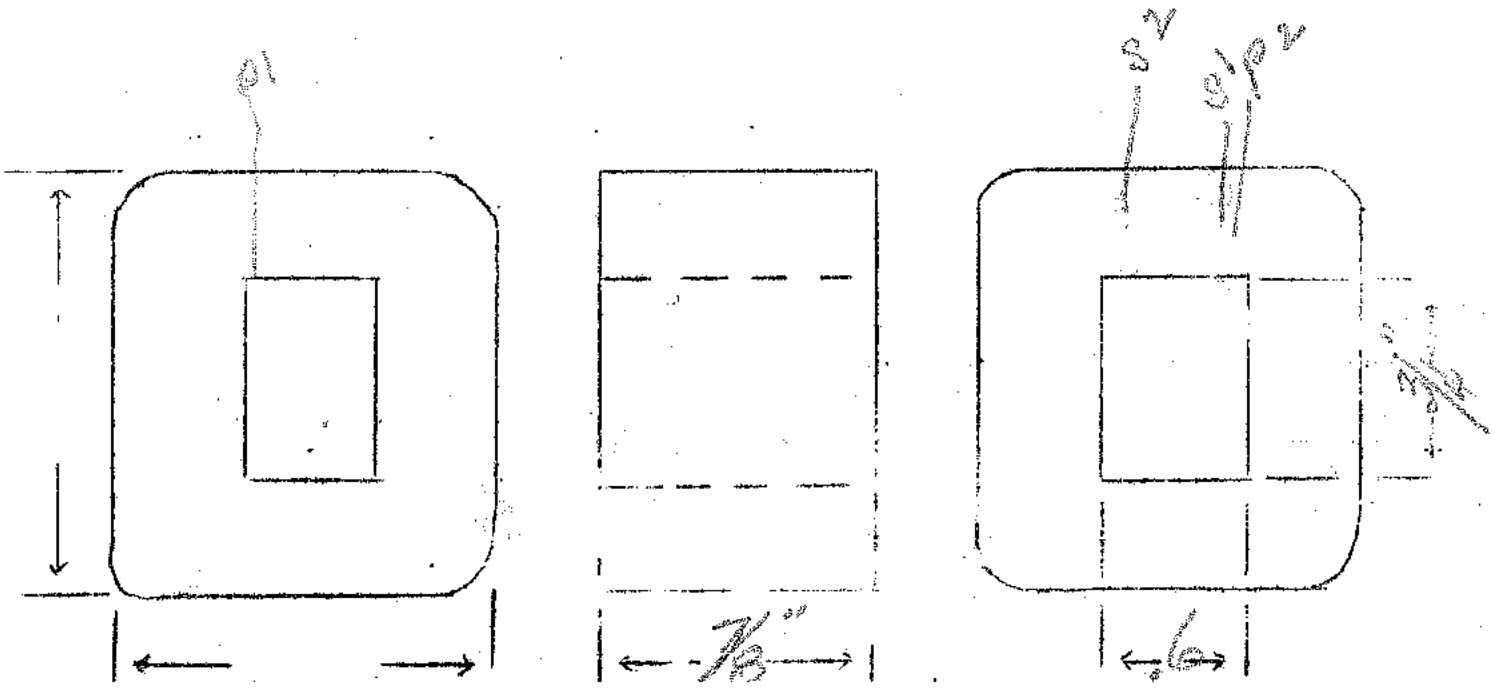


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 23

Type Transformer

	PRI	Blue	F.L			
TURNS	1150	1170	150			
TAPS	None	None	None			
LENGTH OF WINDING	3¼"	3¼"	3¼"			
SIZE WIRE	#32 E	#26 E	#22 E			
TURNS PER LAYER	39	195	45			
KIND OF TERMINAL	No. 20 Tin.	No. 20 Tin.	No 20 Tin			
LENGTH OF TERMINAL	6"	6"	6"			
TUBE	Kraft	Fish Paper Wrapped	Size Wrapped			
LAYER INSULATION	.005 Cot	.005 Cot	.005 Cot			
WRAPPER	1 .005 Cot	1 .005 Cot	2 .005 Cot			
TREATMENT			60'			
RESISTANCE						

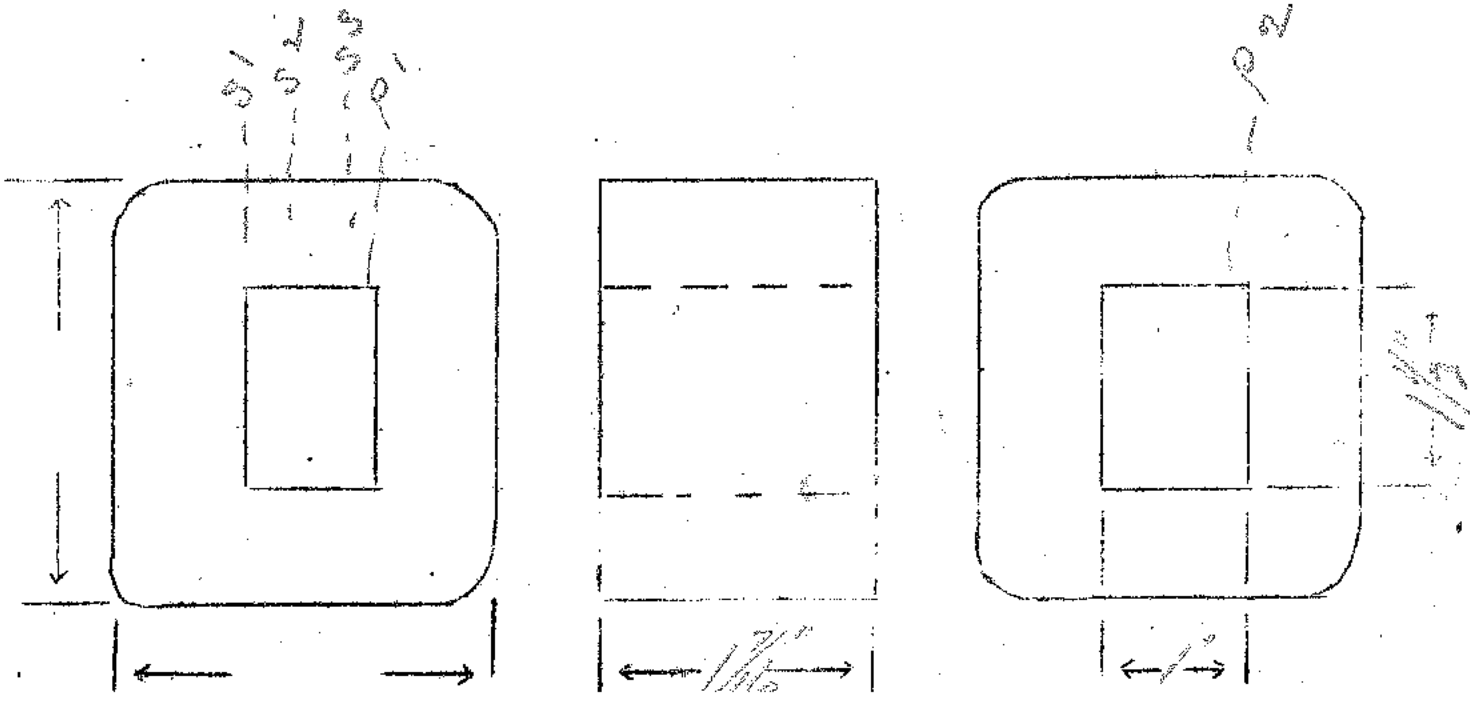


	Voltage	Current
Primary	115	
secondary	700	.120
Filament No. 1	5	2
Filament No. 2	2.5	6
Filament No. 3		

Specification No. 23

Type Transformer

	Pri	White	Sec.	5V @	5V @	
TURNS	430	169	2700	20	10	
TAPS	None	None	1350	None	5	
LENGTH OF WINDING	1/2	1/2	1/2	1/2	1/2	
SIZE WIRE	24 E	24 E	24 E	20 E	15 E	
TURNS PER LAYER	59-9	169	169-11	20	10	
KIND OF TERMINAL	10-32 Brass	Sol. Cu	6-32 Brass	Sol. Cu	Sol. Cu	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Leatheroid	Empire Wrapper	Empire Wrapper	Empire Wrapper	Empire Wrapper	
LAYER INSULATION	Empire		Empire			
WRAPPER	Empire 2 Lyrs	Empire 2 Lyrs	Empire 2 Lyrs	Empire 2 Lyrs	Empire 2 Lyrs	
TREATMENT				15M	7M	
RESISTANCE						



	Voltage	Current
Primary	110-125	1.6
Secondary	800	
Filament No. 1	2.5	7
Filament No. 2	2.5	9
Filament No. 3	5	14

SPECIFICATION NO. 71

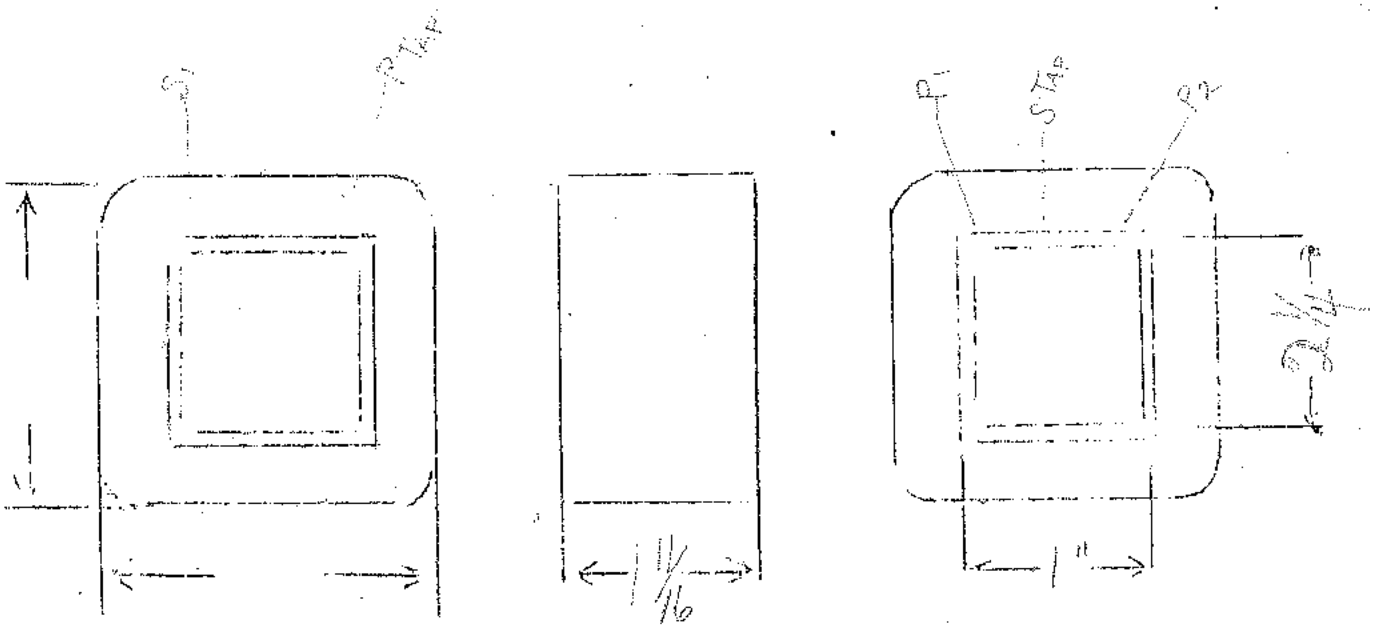
Type Transformer

SPEC. NO. 71

Winding	PRI	SHIELD	SEC.	FIL(1)	FIL (2)	FIL (3)	
Turns	324	125	2170	7	7	14	
Taps	285	NONE	1085	3½	3½	NONE	
Wind. Lgth.	1½	1½	1½	.4125	.519	.66	
Wire Size	20E.	30E.	30E.	15E.	13E.	17E.	
T.P.L.		125	125				
Kind Term.	WIRE ONLY	STL. Brd.	No. 20 Brd.	WIRE ONLY	WIRE ONLY	WIRE ONLY	
Term. Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	50lb.		20lb.				
Wrapper	2L003VP	2L005VG	2L005GA		2L005GA.		

TUBE	7L007	PRI WRAPPER	Shield WRAPPER	IMPREGNATION	

CURE

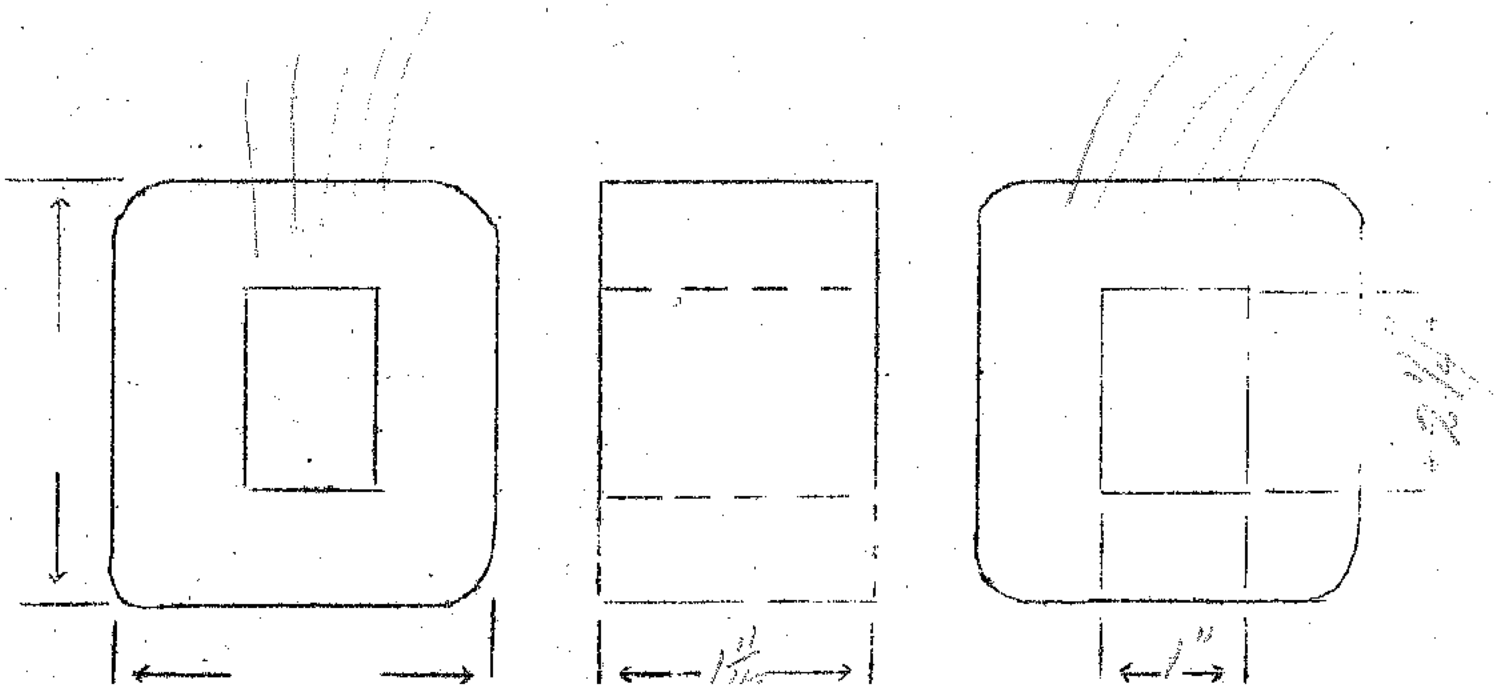


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 70

Type Transformer

TURNS	700					
TAPS	252-280-308-322-336-350-364-392-518-645-644					
LENGTH OF WINDING	1½					
SIZE WIRE	#32					
TURNS PER LAYER	37					
KIND OF TERMINAL	WIRE ONLY					
LENGTH OF TERMINAL	12"					
TUBE	FIBRE					
LAYER INSULATION	TISSUE					
WRAPPER	2 LAYERS OF					
TREATMENT						
RESISTANCE						



120V - 60 Cycle
700V CT @ 70 Ma.
5V @ 2A
6.3V CT @ 2.5A

SPEC. NO. P-64

Winding	Sec.	Shield	Pri.	5V	6.3V		
Turns	4250	1	696	32	40		
Taps CT	2125	-	-	-	20		
Wind. Lgth.	1-15/32"	1-15/32"	1-15/32"	1-15/32"	1-15/32" =	1.46875"	
Wire Size	#35	.001" Cu Sheet	#25	#30	#19		
T. P. L.	215 - 20L	1	70 - 10I	36 - 1L	20 - 2L	NOTE:	ALLOW TWO
~~Finish~~ Pitch	90%	-	90%	90%	51%	TURNS ON EACH END	
Type Lead	#22 Pr. Br.	Sil. Br.	#22 Pr. Br.	W.O. Sleeve	W.O. Sleeve	FOR LEADS.	
Lead Lgth.	A - 9" B - 3"	3"	A - 9" B - 3"	A - 9" B - 3"	A - 9" B - 3"		
Layer Insul.	~~1L .4mil~~ 1L	-	1L 40#C	-	1L .005" GA		
Test Volt.	2500V	-	-	-	-		
Wrapper	1L .007" VC	1L .005" VC	1L 005 GA	1L .005 VC 1L -005 GA	2L .005" GA		

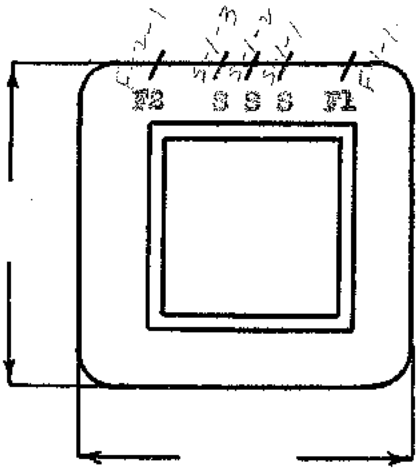
TUBE	7L - .007" GE	IMPREGNATION	VARNISH

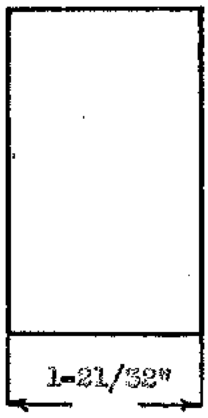
CORE 1-1/16" x 1" E & I GA. 24 GRADE D STACK 2 x 2

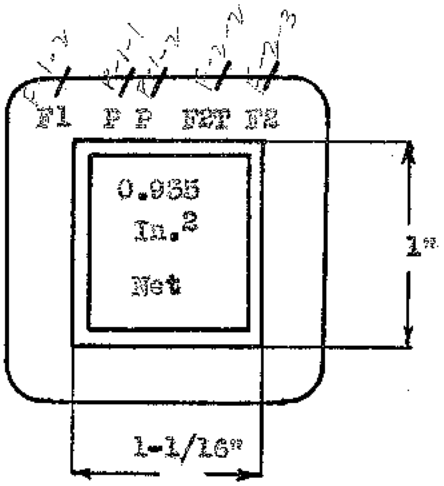
MOUNTING "A" ~~or "B"~~

C = 750 - 590 - 510 - 515
Fe = 69 @ 60 Cycle
TPV = 5.8
Wire Net = 0.478" (0.478")

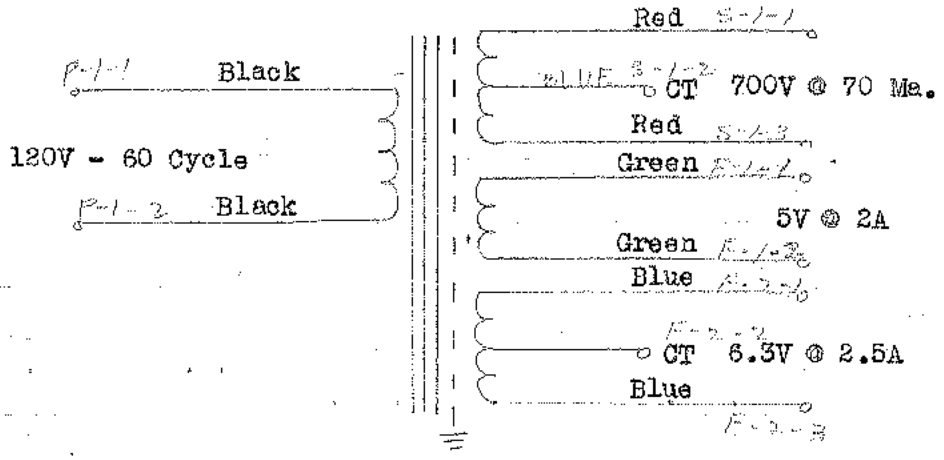
Sec. VA = 48.5
Pri. VA = 65
Pri. I = 541 Ma.
Efficiency = 83%
CDS @ = 90%







Re-DESIGNED BY HMB DATE 7-22-41


Red
Black
120V - 60 Cycle
Black
CT 700V @ 70 Ma.
Red
Green
5V @ 2A
Green
Blue
CT 6.3V @ 2.5A
Blue

120v Pri
700v CT @ 70mA
5v @ 3A
6.3v @ 2.5A (CT)

(40)

SPEC. NO. P-64

Winding	See	Shield	Pri	5v	6.3v		
Turns	3420	1	530	24	30		
Taps CT	1710	—	—	—	15		
Wind. Lgth.	1 15/32"	1 15/32"	1 15/32"	1 15/32"	1 15/32"	= 1.468"	
Wire Size	#36	.001 Cu Shield	#26	#20	#19		
T. P. L.	190-182	1	76-72	24-12	30-16		
Finish	90%	—	88%	55%	76%		
Type Lead	#22 Nylon	#26 Solid	#22 Bl. Nylon	W. O. Green	W. O. Green		
Lead Lgth.	9"	3"	9"	9"	9"	(from core)	
Layer Insul.	2L Mylar	—	1L 40#	—	—		
Test Volt.							
Wrapper	2L 007 VC	2L 007 VC	2L 005 GL	2L 005 GL	2L 005 GL		

TUBE 2L-007 Mylar

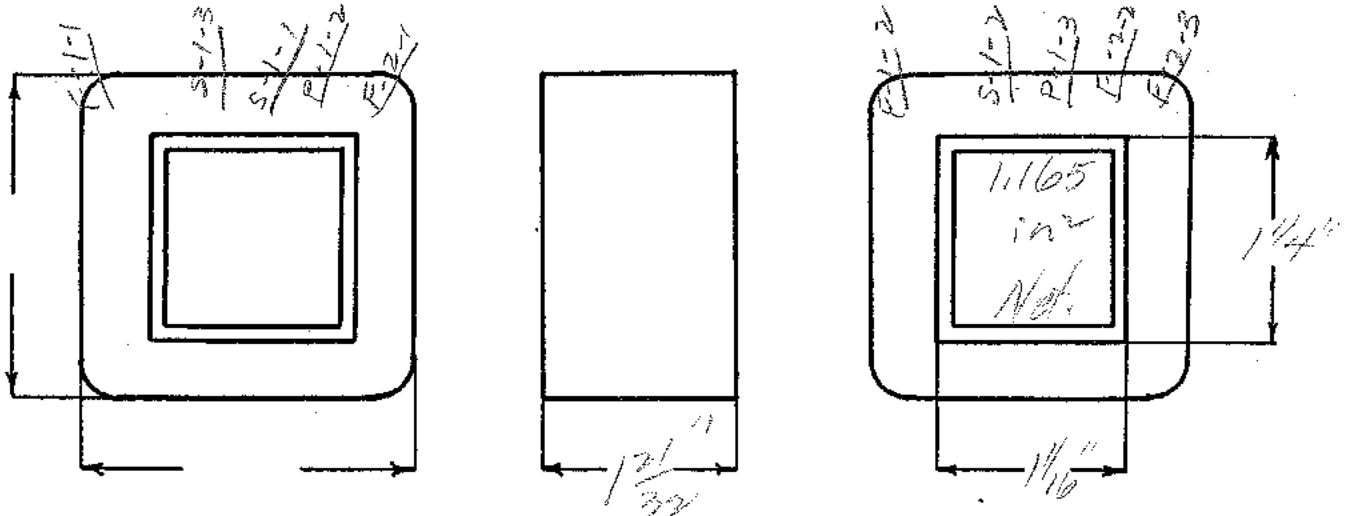
IMPREGNATION Varnish

CORE 1 1/16" x 1 1/4" E x I GA. 24 GRADE D STACK 2 x 2

MOUNTING "A"

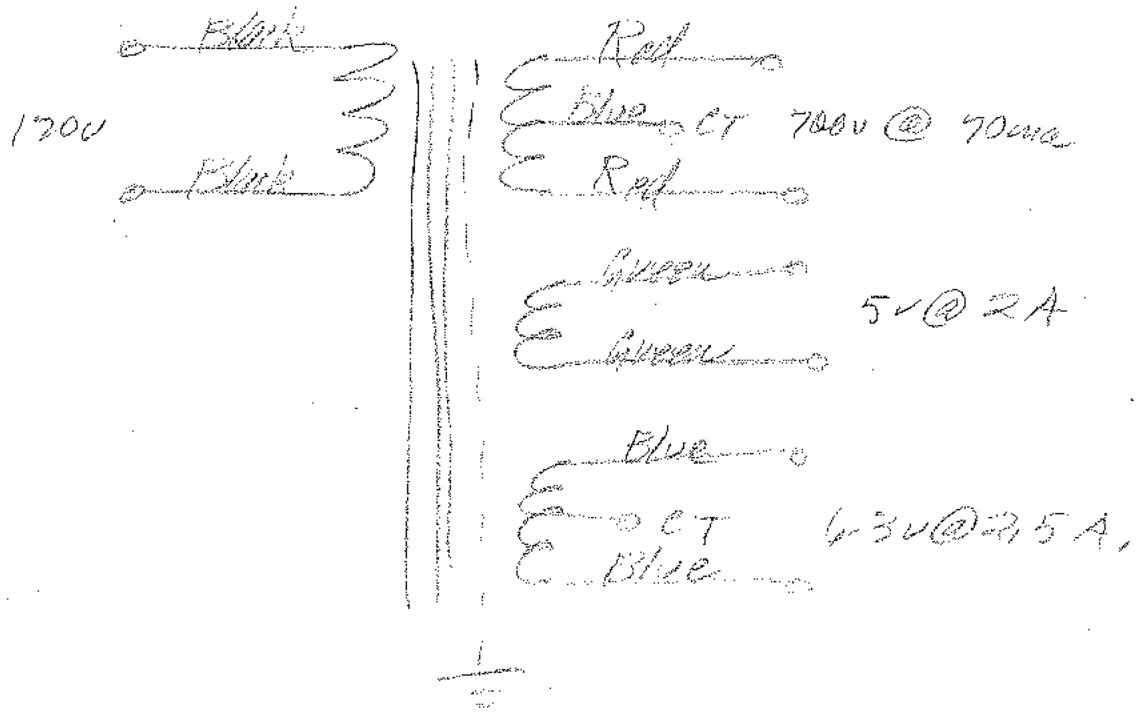
Cu = 750 - 470 - 510 - 515
Fe = 73.2 @ 60v
TPV = 4.15
Wire Mat = .0478 (0.334")

Sec VA = 50
Pri VA = 65
Pri I = 542 mA
$\theta = 85$ $\cos\theta = .92$



DESIGNED BY

DATE 12-12-41


Black
120v
Black
Red
Blue
CT
700v @ 70ma
Red
Green
5v @ 2A
Green
Blue
CT
6.3v @ 3.5A,
Blue

210, 230-115v - 60~
700vCT @ 65ma.
5v @ 2 Amp.
6.3vCT @ 2.5 Amp.

Stock

SPEC. NO. P-664 - 230v

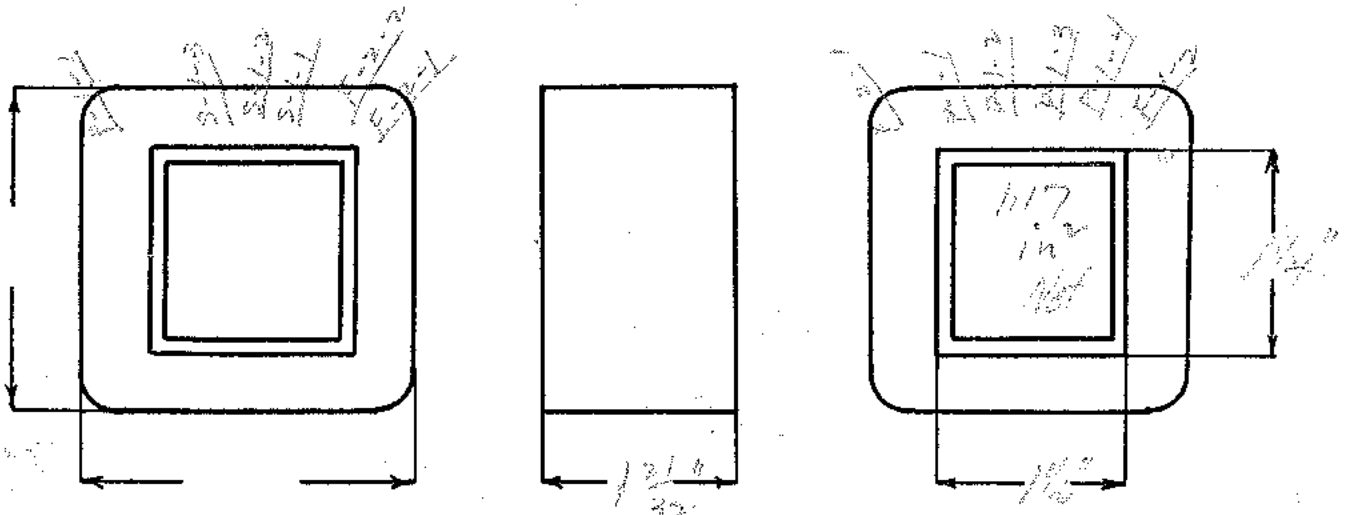
Winding	Sec.	Shield	Pri.	5v F	6.3v F		
Turns (#35)	3480	1	1144	26 (#19)	33 (#18)		
Taps	1740	—	1255-968	—	16		
Wind. Lgth.	1 5/32"	1 5/32"	1 13/32"	1 13/32"	1 13/32"		
Wire Size	#35	.001 Cu Sheet	#27	#19	#18		
T. P. L.	218-164	1	82-134	26-1L	33-1L		
Finish (Phos)	90%		90%	66%	94%		
Type Lead	Sil. Bl.	#22 Sol.	W. O.	W. O.	W. O.		
Lead Lgth.	3"	3"	3"	3"	3"		
Layer Insul.	2 1/2 #6	—	1L 40 #6	—	—		
Test Volt.	2000v						
Wrapper	1L 007 VC	1L 007 VC	1L 005 GA	2L 005 GA	2L 005 GA		
TUBE	7L-007 2L			IMPREGNATION		Double Varnish	

CORE 1 1/16 x 1 1/4" GA. 24 GRADE D STACK 2 x 2

MOUNTING "B"

Cu = 807-640-644-650
Fe = 68.5 @ 60~
TPV = 4.53
Wire Res = 0.476 (0.426)

S.a. VA = 49
Pri VA = 66
Pri I = 514 ma.



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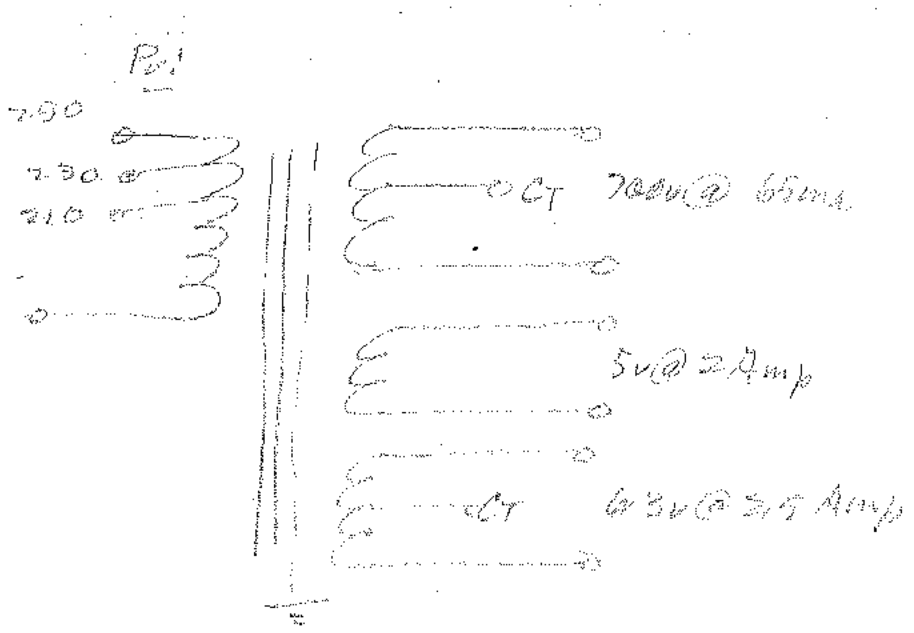
DATE 2-13-63


P2.1
200
230
210
CT
700V @ 65mA
5V @ 2A
CT
6.3V @ 3A

E_P = 117 V – 25 ~

E_3 = 700 V – CT – 60 MA

E_{F_1} = 5 V – 2 amps

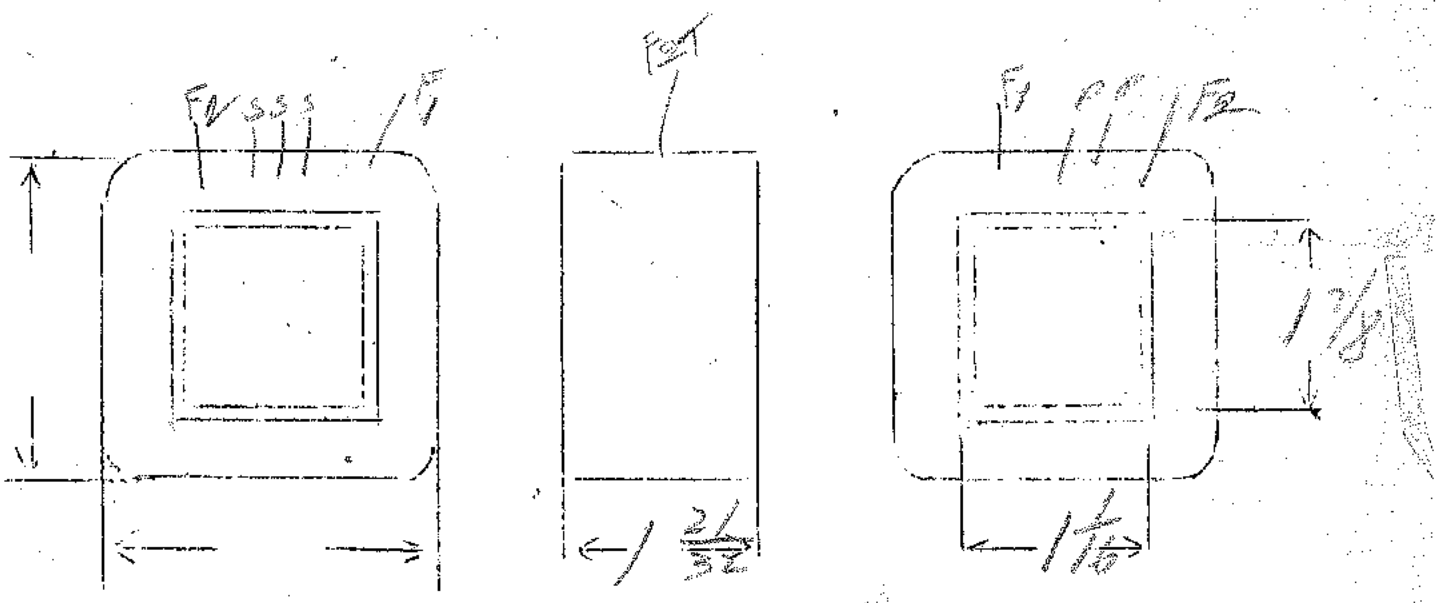
E_{F_2} = 63 V – 2.3 amps

SPEC. NO. 64-25~

Winding	PRI	SHIELD	SEC	F_1	F_2			
Turns	568	189	3950	23	35			
Taps	—	—	1875	—	17			
Wind. Lgth.	1 5/32	1 5/32	1 5/32	—				
Wire Size	#24	#34	#34	#20	#18			
T.P.L.	53-20	189	189-20	—	—			
Kind Term.	#20 Str	silver	#22 Str	WIRE ONLY				
Term. Lgth.	9"	3"	9"	9"	9"			
Layer Insul.	3 #1		2 #1	—	—			
Wrapper	Kraft	Kraft	2 Wds Gas	2 Wds Gas	2 Wds Gas			

TUBE | Nomex | IMPREGNATION | VARNISH

CURE | 1 hr x 175



Ep-230V Ef 6.3VCT-3A
Es-300VCT-20ma Ins Ep 30V
Ef 5V 3Amp
Ef 2.5VCT-3Amp

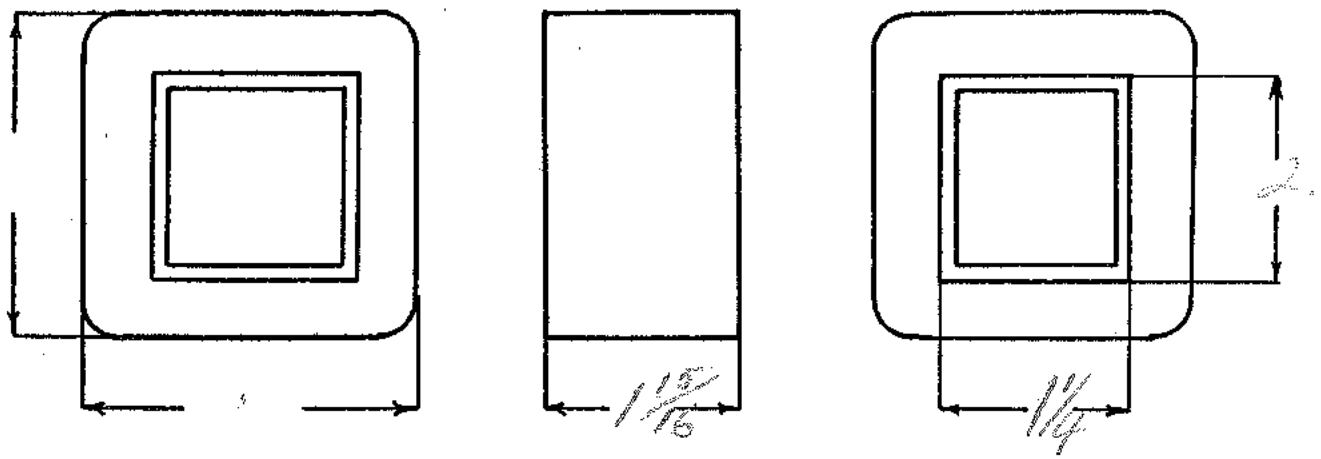
SPEC. NO. F38-230

Winding	Pri	Sec	Sec	Green F1	Black F2	Blue F3	
Turns Green →	1940 1170	1	536	12	6	12	
Taps	770				3	1	
Wind. Lgth.	1 3/4	1 3/4	1 3/4		Double	Double	
Wire Size	#29	Shim	#23	#18	#17	#17	
T. P. L.	125		60-7				
Finish							
Type Lead	#30 Enam	Lead	#30 Enam	Enamel Cambric			
Lead Lgth.	9"	9"	9"	9"	9"	9"	
Layer Insul.	Double 20#		2				
Test Volt.	—	Enamel	Enamel	—	—		
Wrapper	2L007VC	2L007VC	2L007GA			2L007GA	

TUBE 7L007GT/S IMPREGNATION Double Varnish

CORE 1 1/4 X 2 GA. 24 GRADE D STACK 2X2

MOUNTING A



DESIGNED BY JCG DATE 2-24-39

Ep - 120V.
Es - 800V.C.T. - 200 Ma.
Ef - 5V. - 3 A.
Ef - 2.5V.C.T. - 5 A.
Ef - 6.3V.C.T. - 5 A.

SPEC. NO. P58

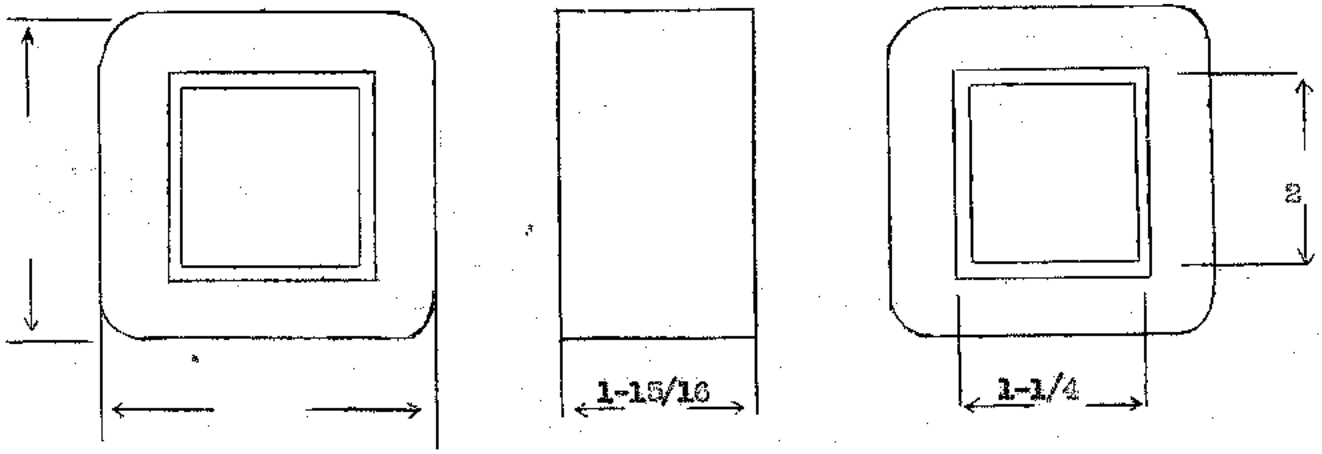
Green Black White

Winding	SEC.	SHIELD	PRI.	F_1	F_2	F_3	
Turns	1940 1170	1	368	13	6	15	
Taps	970 (5)		—		3	7	
Wind. Lgth.	1.75	1.75	1.75				
Wire Size	#29	.0015" Brass	#20	#18	Double #19	Double #19	
T.P.L.	125-1/2	1	45-6	12-1/2	6-1/2	15-1/2	
Kind Term.	#20 Par. Br.	Sil. Br.	#20 Par. Br.	WIRE ONLY			
Term. Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	Double 20#		50#				
Test Volt.							
Wrapper	2L007VC	1L007VC	2L007GA			2L007GA	

TUBE | 7L007 | IMPREGNATION | VARNISH

CORE | 1-1/4 x 2 | PRIMARY V.A.

MOUNTING A



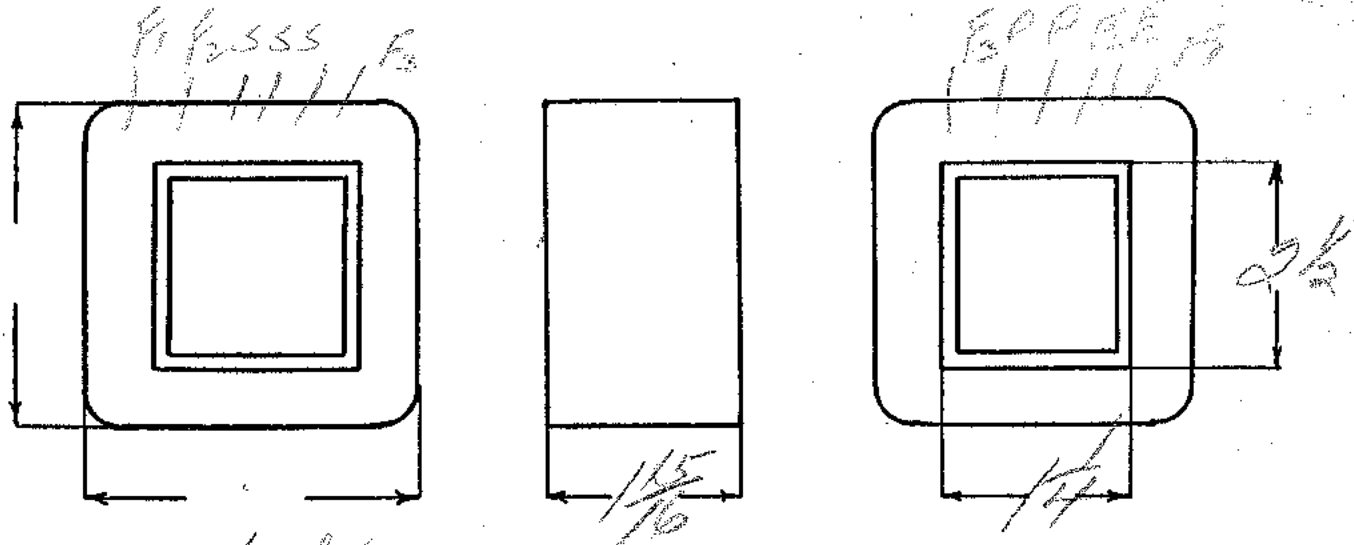
DESIGNED BY G.W. DATE 6-25-39

Ef - 115
E3 - 1000 ft. 250 MA
Ef - 5V - 3 Amp

E2 - 825 Ct. CT - 5 Amps
E3 - 2.5V - 9 Amp

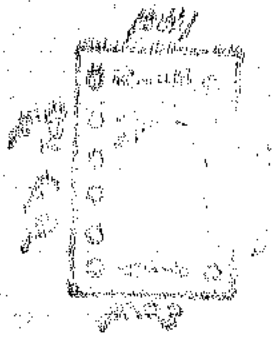
SPEC. NO. P-57

Winding	SEC SHIELD	PRI	E1	E2	E3		
Turns	2000	112	210	10	5	5	
Taps	1000	—	—		3		
Wind. Lgth.	1.75	"	"	"	"	"	
Wire Size	#28	#28	#29	#20	#16	#16	
T. P. L.	112-0		BS	1 Layer			
Finish							
Type Lead	#30 Bus Pr	W.O.	#30 Plas	W.O.	W.O.		
Lead Lgth.	9"	3"	9"	"	"	"	
Layer Insul.	Manila 2 #		30 #				
Test Volt.	2500 V	1KV 1 Min					
Wrapper	2 Mils MC	2 Mils MC	2 Mils MC			5 Mils MC	
TUBE	2 MIL MC		IMPREGNATION	VARNISH			
CORE	1 1/4 x 2 1/2	GA.	GRADE	STACK			
MOUNTING	Under						



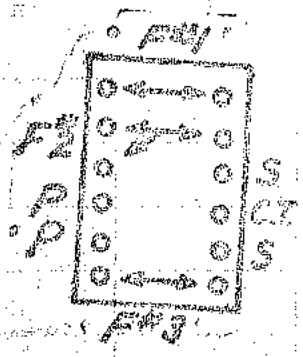
DESIGNED BY

DATE



P 57
Pri - 115V, 50 - 60 Cycle
Black Braid
Sec - 1000 V. C. T. - 250 Ma
Red Braid - Blue C. T.
Fil #1 - 5V - 3 Amps
Green Sleeving
Fil #2 - 2.5 V. C. T. - 5 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 9 Amps
Black Sleeving

P 57
Pri - 115V, 50 - 60 Cycle
Black Braid
Sec - 1000 V. C. T. - 250 Ma
Red Braid - Blue C. T.
Fil #1 - 5V - 3 Amps
Green Sleeving
Fil #2 - 2.5 V. C. T. - 5 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 9 Amps
Black Sleeving



P 57
Pri - 115V, 50 - 60 Cycle
Black Braid
Sec - 1000 V. C. T. - 250 Ma
Red Braid - Blue C. T.
Fil #1 - 5V - 3 Amps
Green Sleeving
Fil #2 - 2.5 V. C. T. - 5 Amps
Yellow Sleeving
Fil #3 - 2.5 V. - 9 Amps
Black Sleeving

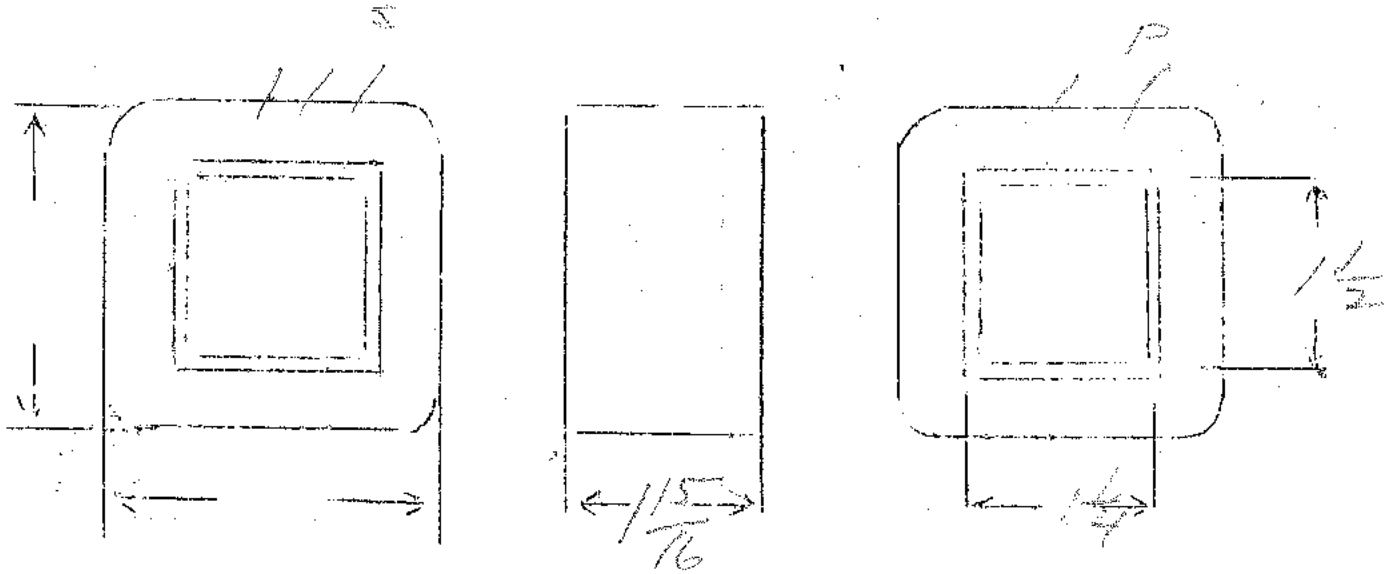
Same as 56 except Eb = 125 V

SPEC. NO. 56M125V

Winding	SEC	SHLD	PRI	F1	F2	F3	
Turns	2540	143	320	16	8	4	
Taps	1270	—	—	—	4	—	
Wind. Lgth.	1.75	1.25	1.25	—	—	—	
Wire Size	30	30	20	18	16	12	
T.P.L.	143-18	143	4.8				
Kind Term.	#30 Litz	Solid	#20 Litz		Twisted		
Term. Lgth.	9"	3"	9"			3"	
Layer Insul.	3 mil		3 mil				
Wrapper	2 Layers GA	2 Layers GA	2 Layers GA				

TUBE | 2 Layers GA | IMPREGNATION | VARNISH

CURE | 1 Hr @ 1 1/2



E_p - 230 V
E_5 - 800 VCT - 200 Ma dc E_3 - 2.5 VCT - 12 Amp
E_4 - 5 V - 3 Amp
E_2 - 2.5 VCT - 3 Amp

2.26

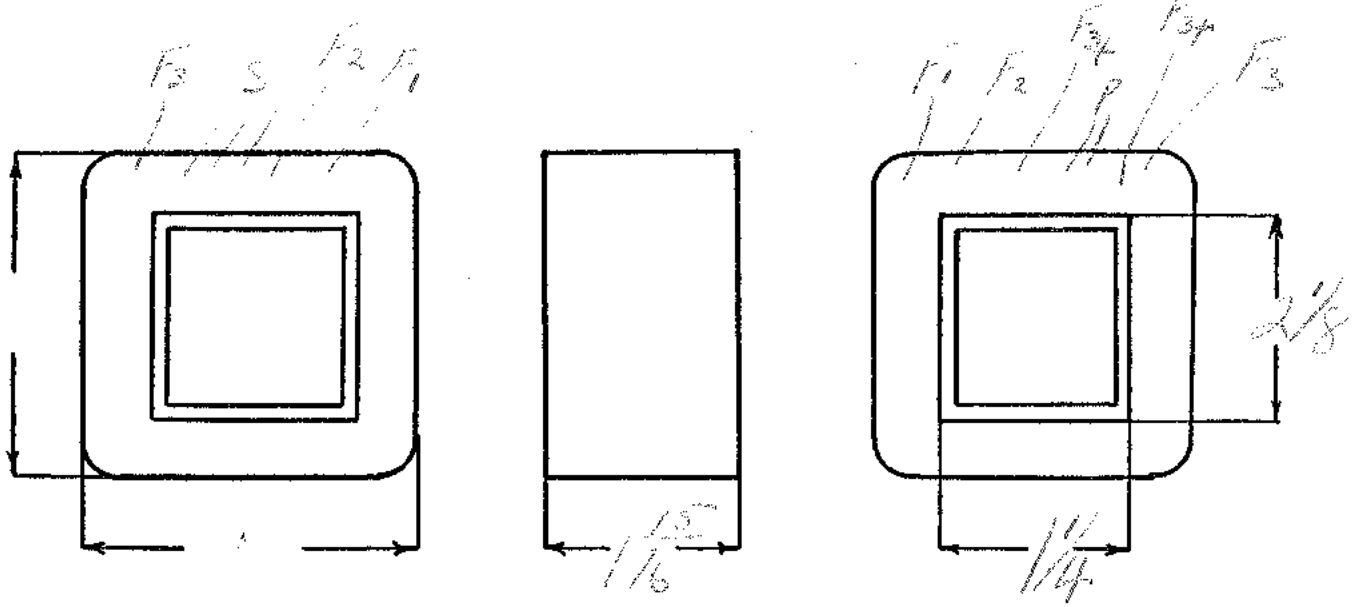
SPEC. NO. E30-230V

Winding	Sec.	Shield	Pri	Green F_1	White F_2	Black F_3	
Turns	1920	139	920	12	6	6	
Taps	710				3	3	
Wind. Lgth.	1 3/4	1 3/4	1 3/4				
Wire Size	#29	#29	#23	#18	#16	Double #15	
T. P. L.	125-16	139	66-8				
Finish							
Type Lead	#26 P&Br	#26 P&Br	#26 P&Br		#18 Stranded	#18 Stranded	
Lead Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	30 ga. 10 ga.		30 ga.				
Test Volt.							
Wrapper	2L007VC	1L007VC	2L007GA			2L007GA	

TUBE 2L007GA + 1L007VC IMPREGNATION Double Varnished

CORE 1 1/4 X 2 1/2 GA. 24 GRADE L-2 STACK 1 X 2

MOUNTING A



DESIGNED BY JCG DATE 2-7-39

P 56
Pri - 115V - 50-60 Cycle
Black Braid
Sec - 800 V. C. T. - 200 Ma.
Red Braid - Blue C. T.
Fil #1 - 5V. 3 Amps
Green Shielding
Fil #2 - 2.5 V. C. T. - 5 Amps
Yellow Shielding
Fil #3 - 2.5 V. C. T. - 2 Amps

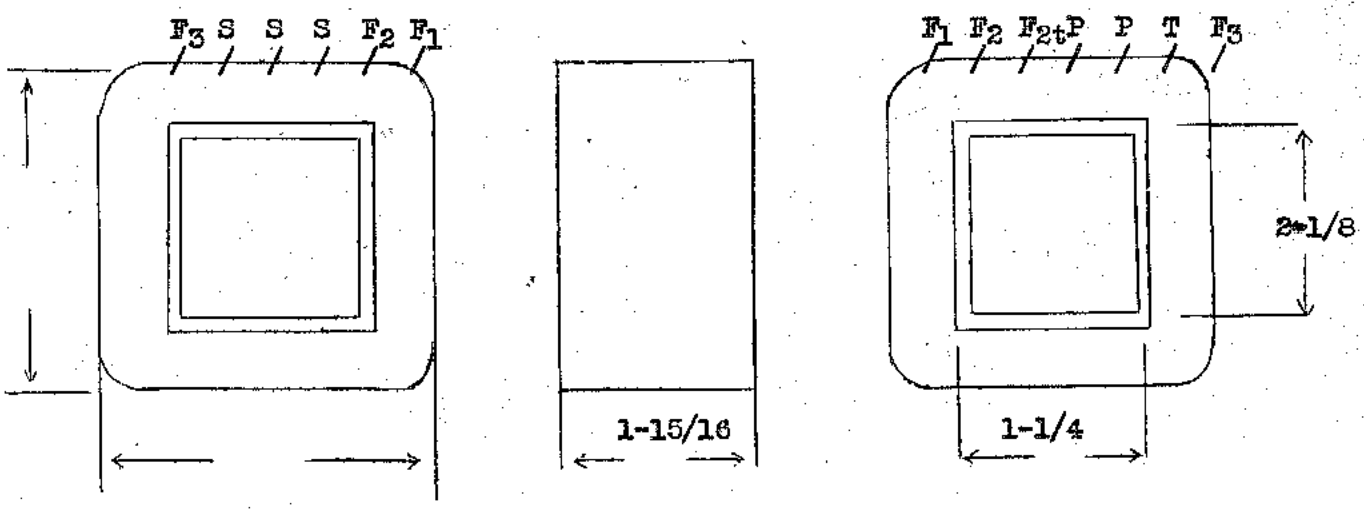
Ep - 115 V.
Es - 800 V.C.T. - 200 Ma.
Ef - 5 V. - 3 A.
Ef - 2.5 V.C.T. - 5 A.
Ef - 2.5 V.C.T. - 12 A.

OLD

SPEC. NO. P56

Winding	SEC.	SHIELD	PRI.	Green F_1	White F_2	Black F_3	
Turns	1940	139	260	12	6	6	
Taps	970				3	3	
Wind. Lgth.	1.75	1.75	1.75				
Wire Size	#29	#29	#20	#18	#16	Double #15	
T.P.L.	125-16	139	45-6				
Kind Term.	#20 P. Br.	Sil. Br.	#20 P. Br.	WIRE	ONLY		
Term. Lgth.	9"	3"	9"	9"	9"	9"	
Layer Insul.	Double 2 mil		50#				
Test Volt.							
Wrapper	2L007VC	1L007VC	2L007GA			2L007GA	

TUBE	7L007 & 1L007VC	IMPREGNATION	VARNISH
CORE	1-1/4 x 2-1/8	PRIMARY V.A.	
MOUNTING	A or B		



DESIGNED BY G. W. DATE

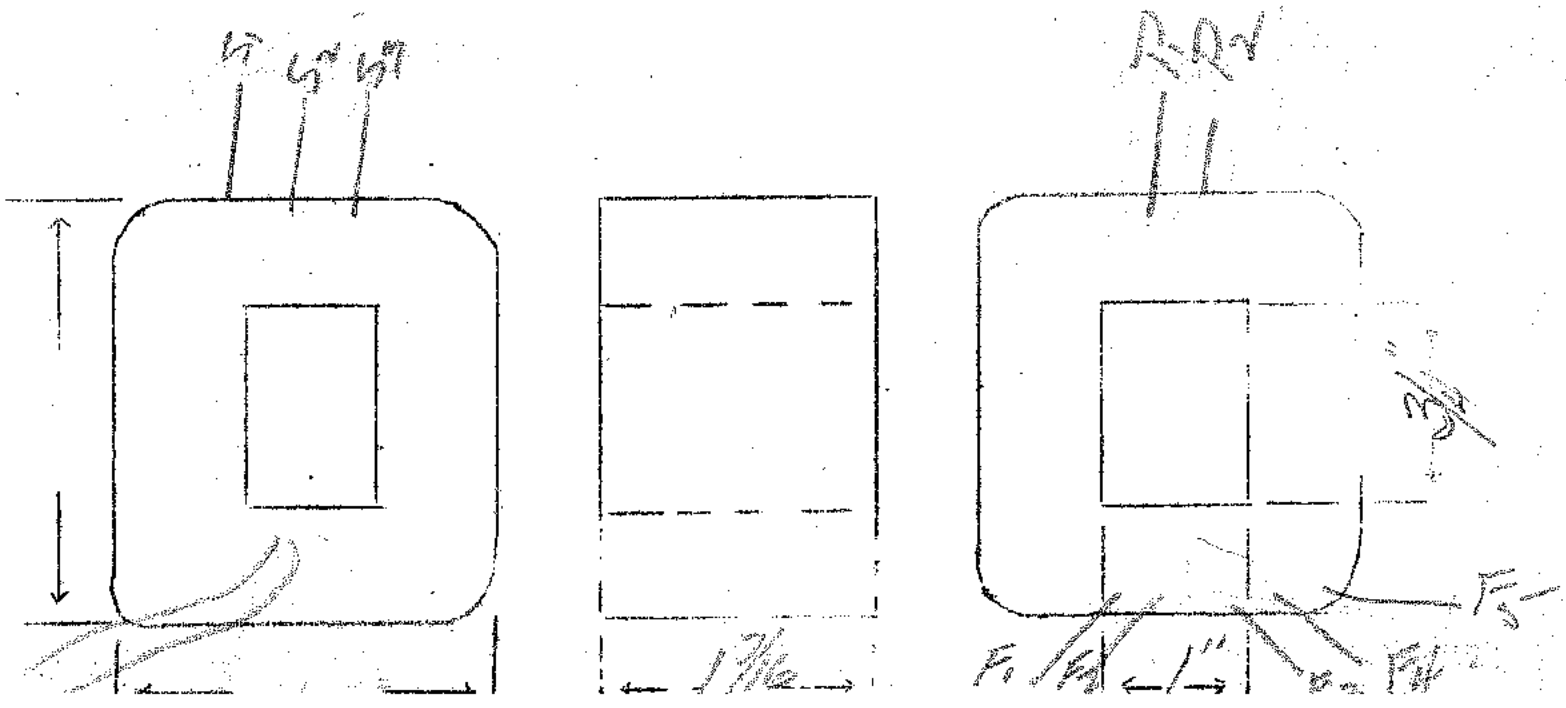
	Voltage	Current
Primary	115	
secondary	~~450~~	.052
Filament No. 1	1225	3
Filament No. 2		
Filament No. 3		

Specification No. 81

Type Transformer Power Xfmr 5-Terminal

	Pri	Sec	Sec	Sec	Fil	
TURNS	762	182	3000	182	84	
TAPS	None	None	1500	None	28-42-56	
LENGTH OF WINDING	1 1/2"	1/4	1 1/2	1/4	1/4	
SIZE WIRE	28 E	35 E	35 E	35 E	18 E	
TURNS PER LAYER	77-10	182-1	182-10	182-1	28-3	
KIND OF TERMINAL	No 20 Pig Tail	Sol. Tag	No 20 Pig Tail	Sol. Tag	Wire Lead	
LENGTH OF TERMINAL	9"	3"	9"	3"	5"	
TUBE	Hard Fiber	Pre Impregnated	Shellac Varnished	Shellac Varnished	Shellac Varnished	
LAYER INSULATION	Dolph		Dolph		Dolph	
WRAPPER	24003 Vp	24003 Vp	24003 Vp	24003 Vp	24003 Vp	
TREATMENT						
RESISTANCE						

Start - White
28 - Blue
42 - Red
56 - Black
84 - Green

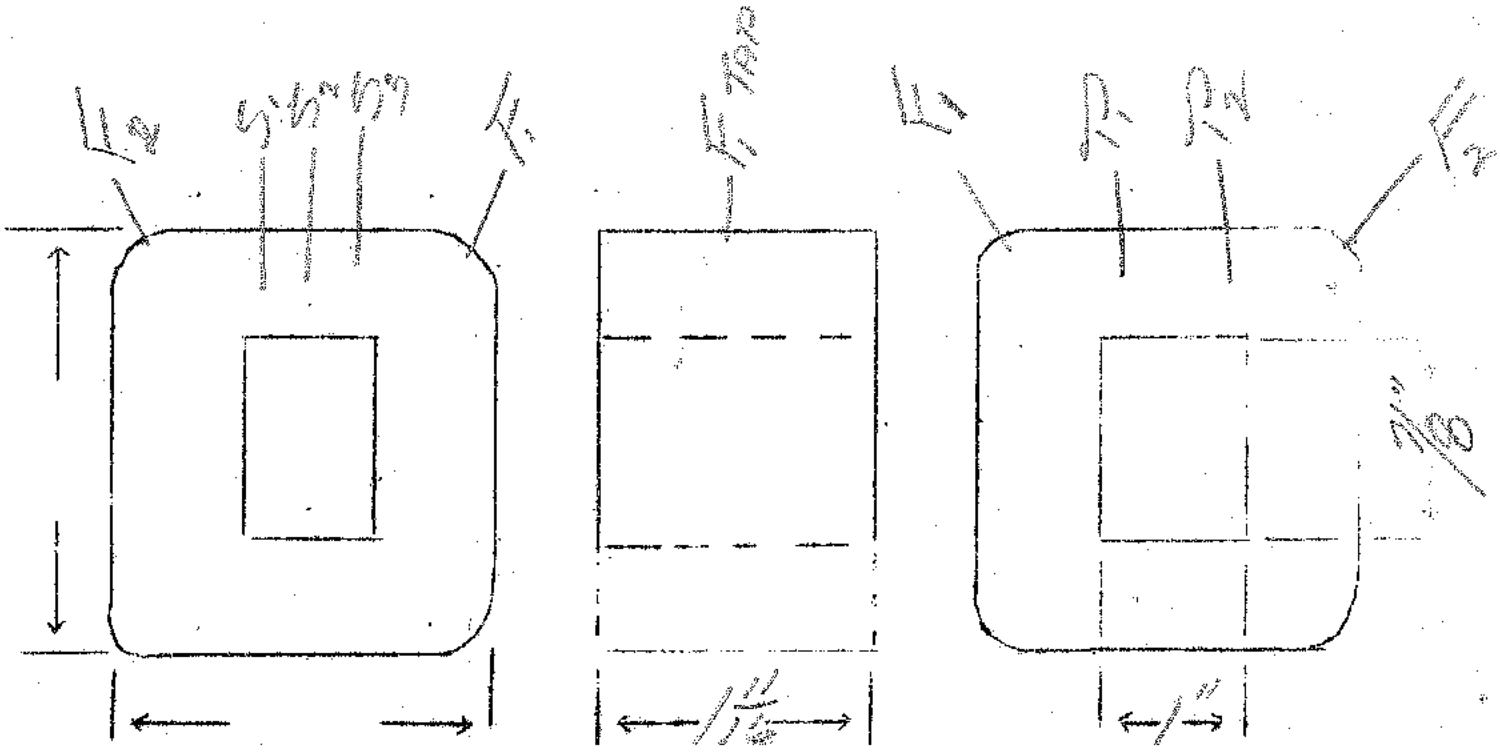


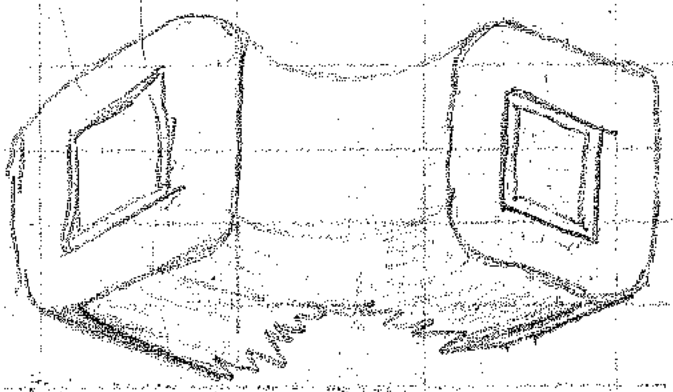
	Voltage	Current
Primary	115	
Secondary	220	.250
Filament No. 1	2.5	2.
Filament No. 2	5	2.
Filament No. 3		

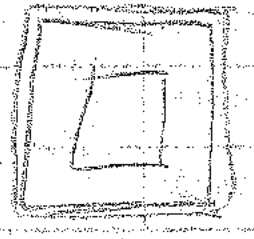
Specification No. 82

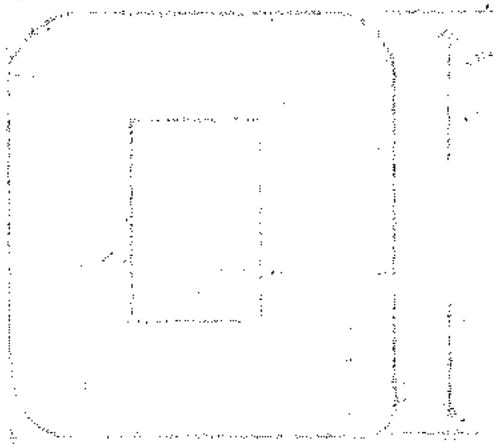
Type Transformer

	PRI	Sec.	Sec.	Fil (1)	Fil (2)	
TURNS	682	75	450	16	32	
TAPS	None	None	225	8	None	
LENGTH OF WINDING	1/2	1/2	1/2			
SIZE WIRE	26 E	26 E	36 E	12 E	20 E	
TURNS PER LAYER	75	75	240			
KIND OF TERMINAL	Wrapped Cable	Wrapped Cable	Sol Bar	Wrapped Cable	Wrapped Cable	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Leno	Press Board	Press Board	Press Board		
LAYER INSULATION	Sc Cl		Sc Cl			
WRAPPER	2L003 YP	2L003 YP	2L005 GP	2L005 GP	2L005 GP	
TREATMENT	This is the same as No 34 transf					
RESISTANCE						







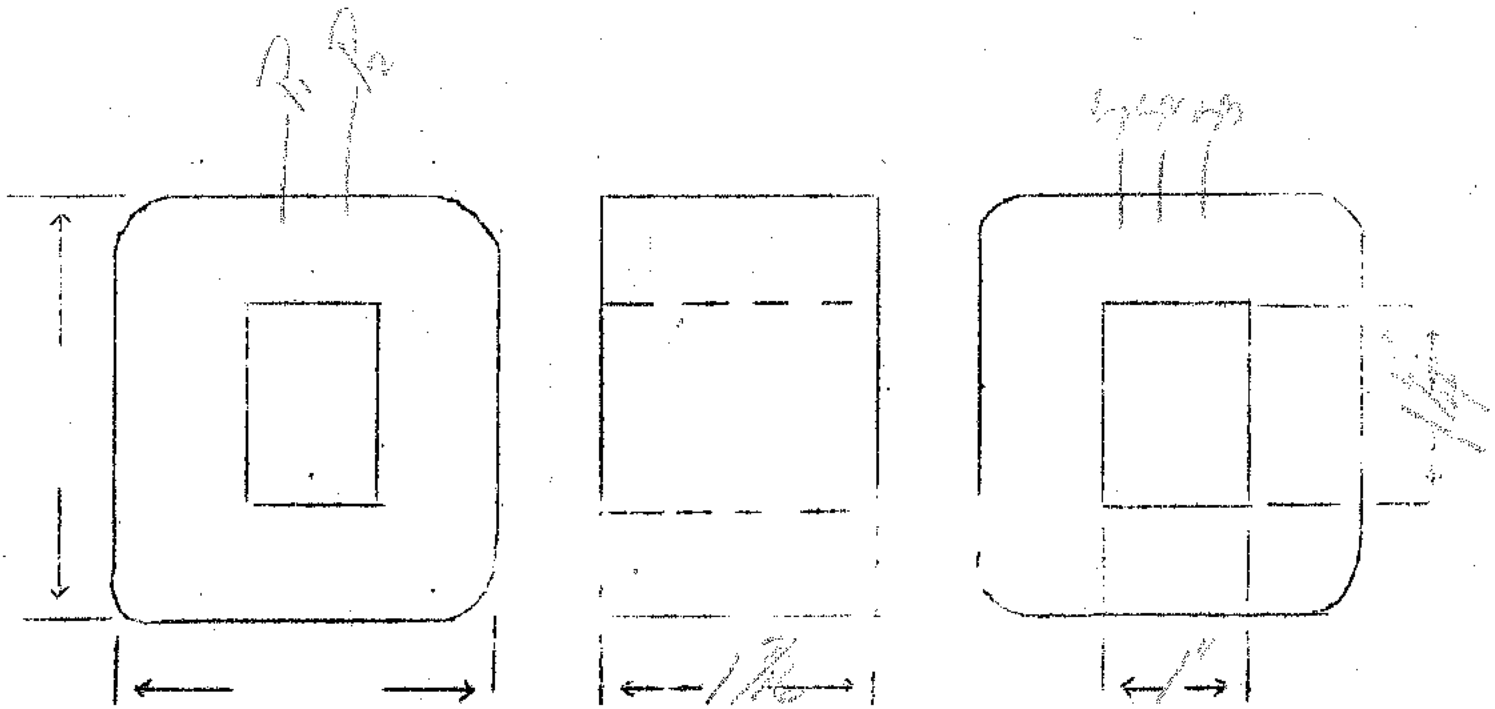


	Voltage	Current
Primary	115	
secondary	750	
Filament No. 1	5	3
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 83

Type Transformer

	Pri.	Sec.	Sec.	Fil (1)	Fil (2)
TURNS	575	200	3490	24	12
TAPS	None	None	1745	None	6
LENGTH OF WINDING	1¼	1¼	1¼		
SIZE WIRE	25 E	34 E	34 E	20 E	17 E
TURNS PER LAYER	39-9	20-1	20-18	24	12
KIND OF TERMINAL	No 20 Pig	Pig	No 20 Pig	Wire end	Wire end
LENGTH OF TERMINAL	10"	9"	10"	10"	10"
TUBE	Fiber	Fiber	Shellac Manila		
LAYER INSULATION	Bond Ppr		Bond Ppr		
WRAPPER	Manila	Manila	Manila	Manila	Manila
TREATMENT				17'	12'
RESISTANCE					

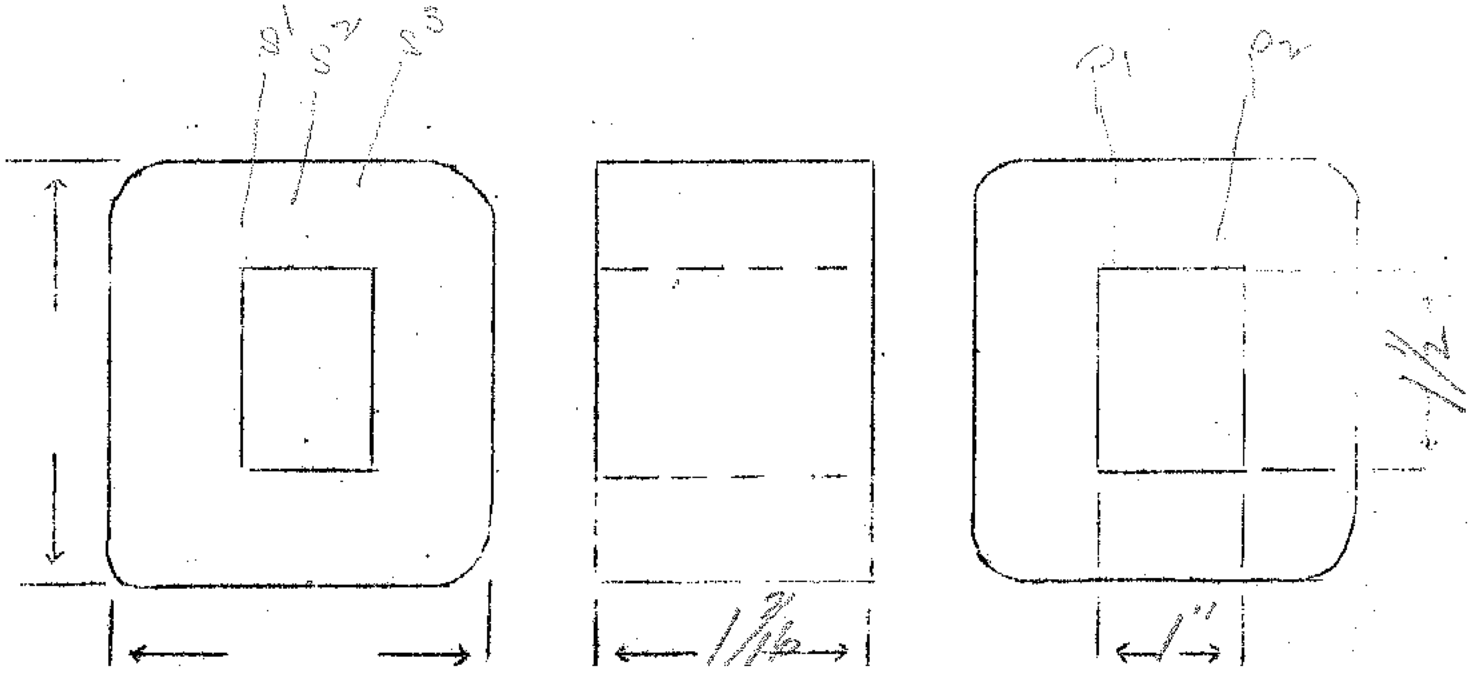


	Voltage	Current
Primary	115	
Secondary	750	.053
Filament No. 1	2.5	2
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 84

Type Transformer

	Pri	Sec. 1	Sec. 2	F. 1 (a)	F. 1 (b)	
TURNS	460	180	2880	20	10	
TAPS	None	None	1440	None	5	
LENGTH OF WINDING	1"	1"	1"			
SIZE WIRE	24	35	33	20	14	
TURNS PER LAYER	92-5	180-1	180-16	3	10	
KIND OF TERMINAL	No 20 Tag	Solder	No 20 Tag	No 20 Tag	No 20 Tag	
LENGTH OF TERMINAL	10"	3"	10"	10"	10"	
TUBE	Empire	Empire	Spaulding	Spaulding		
LAYER INSULATION	Empire		Empire			
WRAPPER	Empire	Empire	Empire		Empire	
TREATMENT				15'	12'	
RESISTANCE						

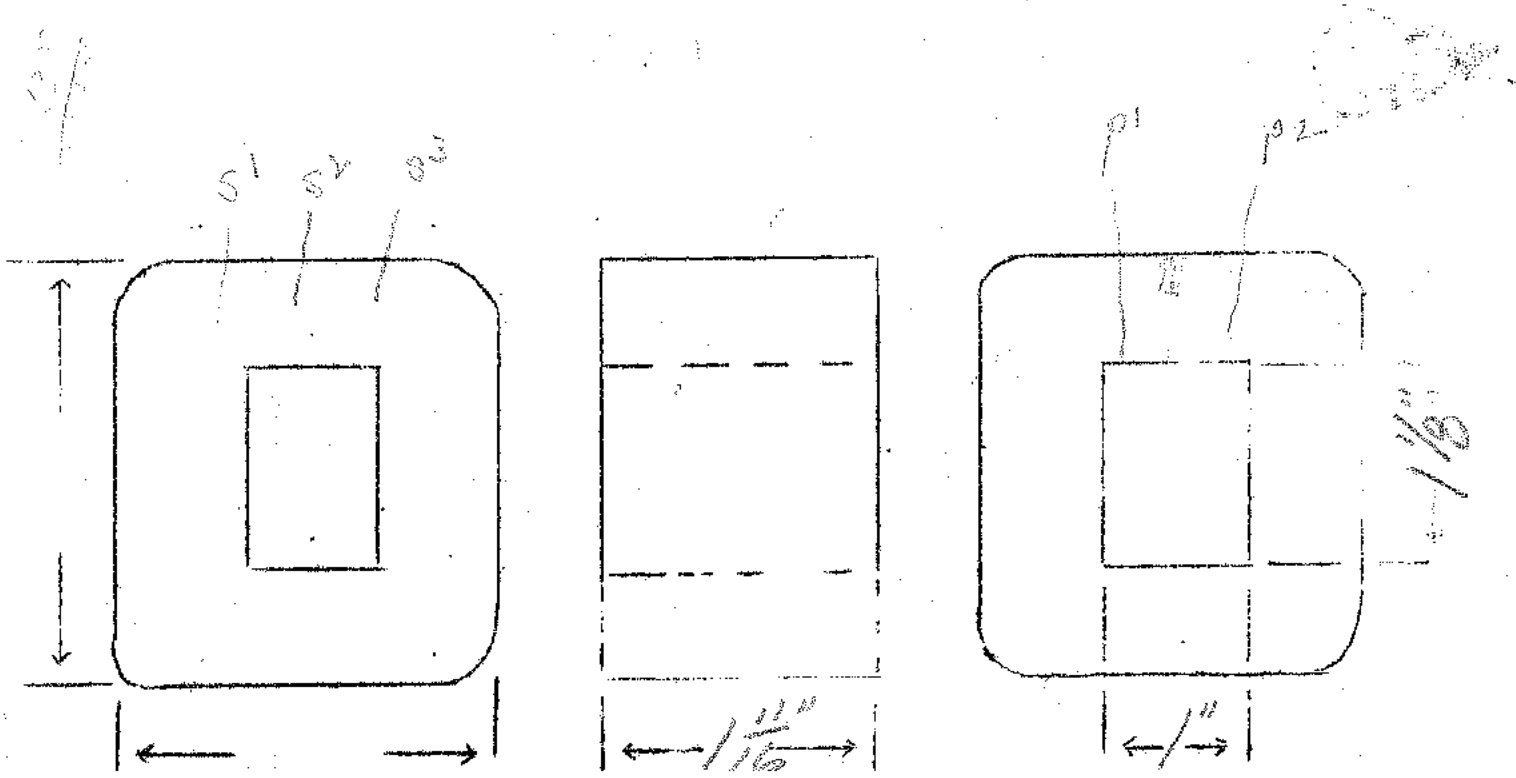


	Voltage	Current
Primary	115	
secondary	350	250
Filament No. 1	5	3
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 45

Type Transformer

	Pri	Sec 1	Sec 2	F (1)	F (2)	
TURNS	536	145	3320	26	13	
TAPS	None	None	1375	None	6½	
LENGTH OF WINDING	1½	1½	1½			
SIZE WIRE	23 E	38 E	33 E	20 E	14 E	
TURNS PER LAYER	57-10	145-1	175-22			
KIND OF TERMINAL	No. 20 Tex.	5/1 Tex	No 20 Tex	Wire Ends	Wire Ends	
LENGTH OF TERMINAL	10"	3"	10"	10"	10"	
TUBE	4 x 3½	Fibre Manson	Manson	Manson		
LAYER INSULATION	Bk 6		Bk 6			
WRAPPER	2 x 3½ Vp	2 x 3½ Vp	2 x 3½ Vp		2 x 3½ Vp	
TREATMENT				17'	13'	
RESISTANCE						

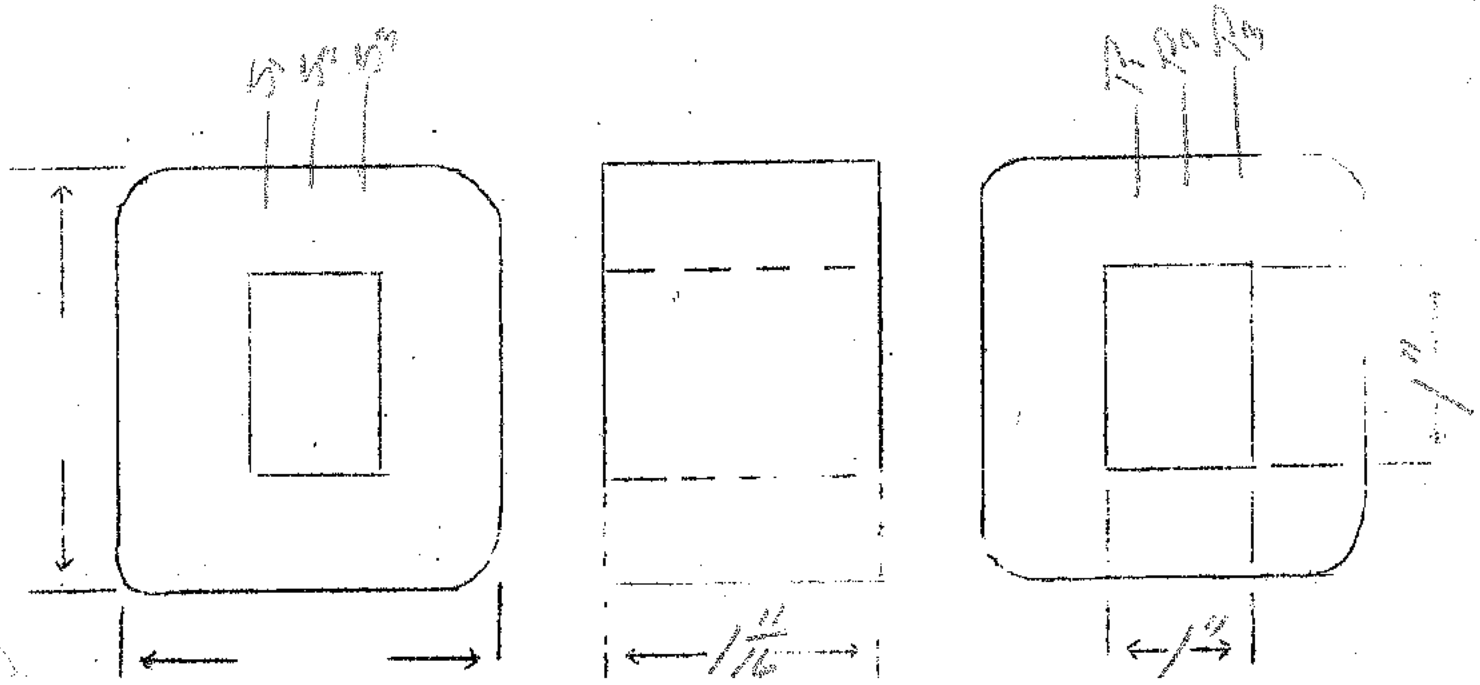


	Voltage	Current
Primary		
secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 86

Type Transformer Audio Driver

	Sec	Pl Pl Sec	Plate			
TURNS	5500	2 x 5500	80			
TAPS	2750		40			
LENGTH OF WINDING	1½"	1½"	1½"			
SIZE WIRE	36		18			
TURNS PER LAYER	220-23	"	34			
KIND OF TERMINAL	Solder Lug	Solder Lug	Wire end			
LENGTH OF TERMINAL	3"	3"	3"			
TUBE	4 x 7	Sec Winding	Shield Winding			
LAYER INSULATION	3 x 60		3 x 7			
WRAPPER	2 x 5 6	2 x 5 6	2 x 5 6			
TREATMENT	Dip in Transformer Oil 4½"					
RESISTANCE	None By Customer					

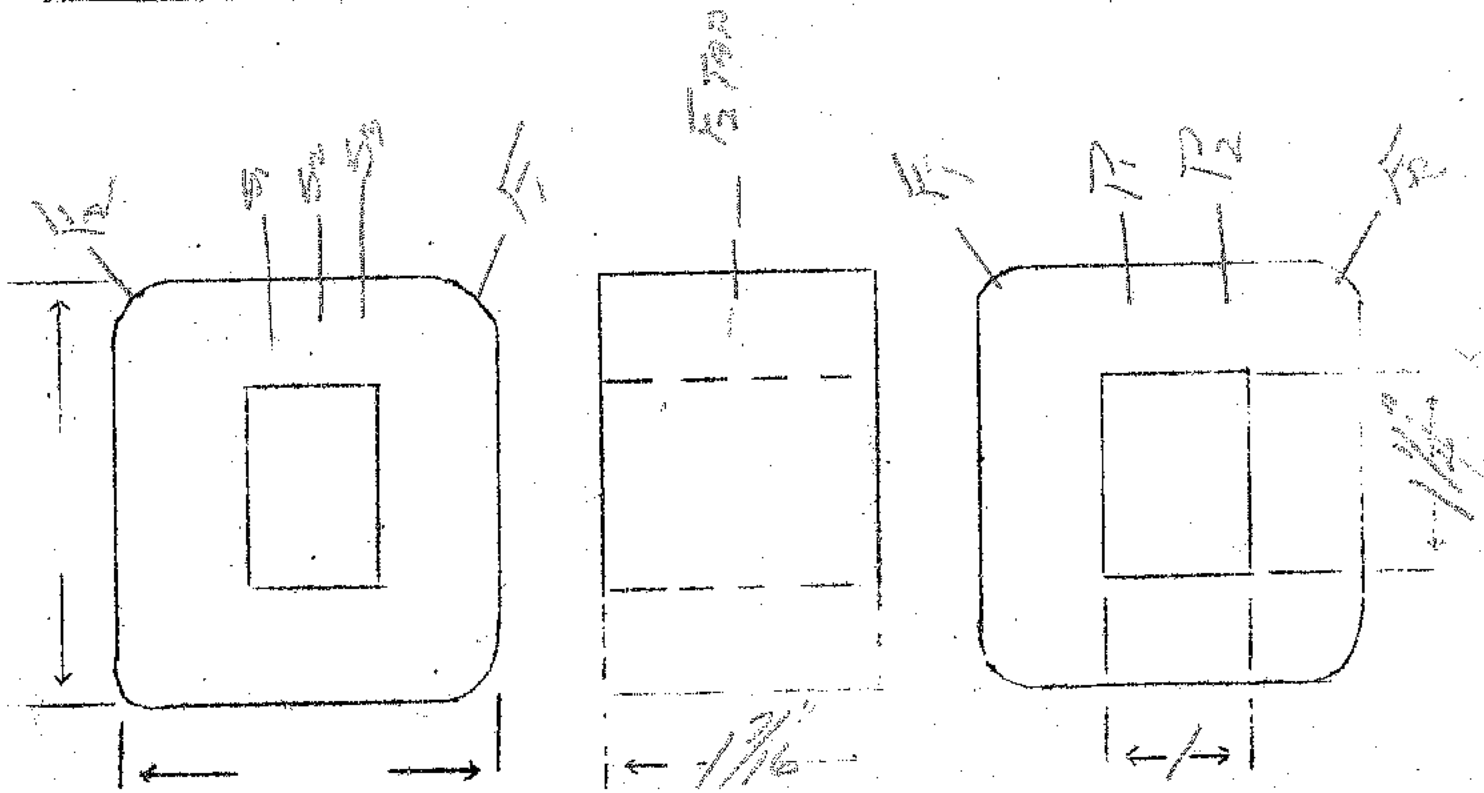


	Voltage	Current
Primary	230	
secondary	600	.050
Filament No. 1	5	2
Filament No. 2	2.5	2
Filament No. 3		

Specification No. 37

Type Transformer Power

	Prim	Sec.	Sec.	F No 1	F No 2	
TURNS	534	180	2800	24	12	
TAPS	None	None	None	None	6	
LENGTH OF WINDING	1¼"	1⅝"	1⅝"			
SIZE WIRE	#25	#35	#35	#22	#17	
TURNS PER LAYER	58-9	180-1	180-16	all	12	
KIND OF TERMINAL	Wire out	S. Lug	S. Lug	Wire out	Wire out	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	Fibre	Fibre Wrapped	Fibre Wrapped	Fibre Wrapped		
LAYER INSULATION	Paper		Paper			
WRAPPER	2 thick Var	2 thick Var	3 thick Var	2 thick Var	2 thick Var	
TREATMENT						
RESISTANCE						



Welcome Meter Co.

SPEC. NO. 89 Coil

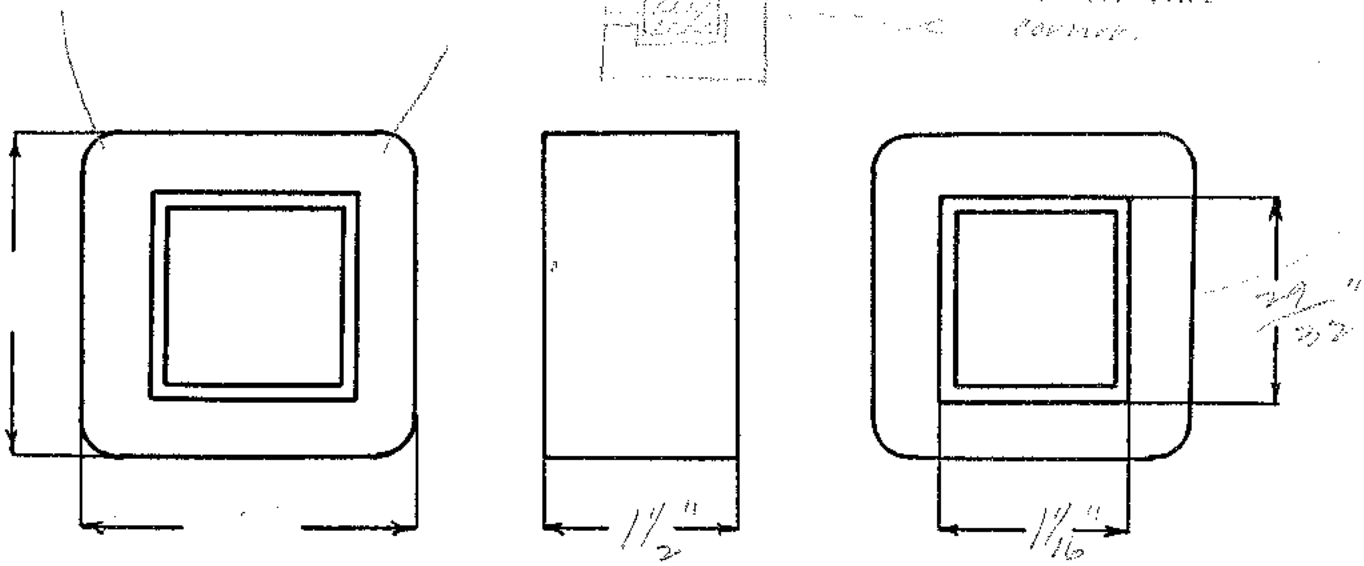
Winding		Coil					
Turns		980					
Taps		—					
Wind. Lgth.		1 1/4"					
Wire Size		#27					
T. P. L.		70-14					
Finish							
Type Lead		#18-F3-2 Flexible Wire					
Lead Lgth.		6" Cut		Note: Splice on ends of leads.			
Layer Insul.		12 #9					
Test Volt.							
Wrapper		22 #554					

TUBE 9L-007"-8K IMPREGNATION Varnish

CORE M Special Westinghouse Lamination GA. 24 GRADE D STACK

MOUNTING Use panel

Leads must be in extreme corner.



DESIGNED BY Copied AWS DATE 7-30-41

Thermador Co.

SPEC. NO. 89-252

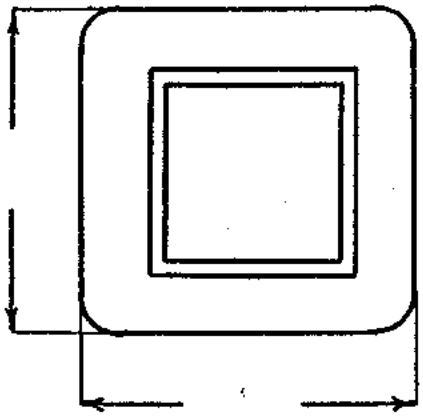
Winding							
Turns	1860						
Taps	--						
Wind. Lgth.	1 3/8"						
Wire Size	#28						
T. P. L.	93-20						
Finish							
Type Lead	#20 Sn Cu						
Lead Lgth.	3" — Cut 5"						
Layer Insul.	30#						
Test Volt.	1250						
Wrapper	2100554						

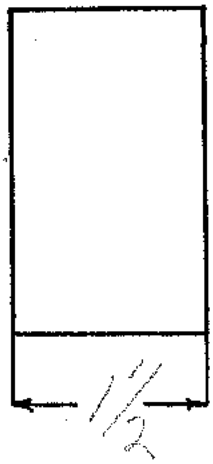
TUBE 2007 IMPREGNATION Varnish

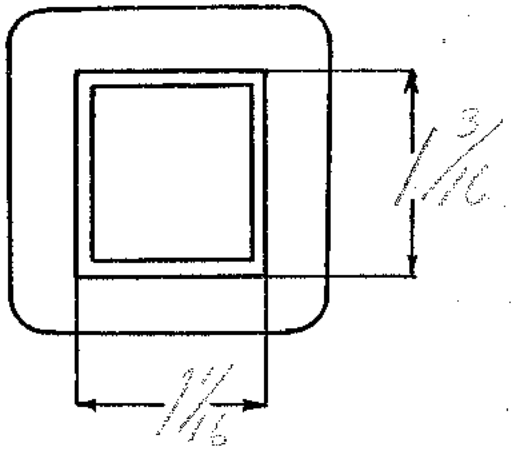
CORE 1 1/16 X 39/32 GA. Westinghouse Lam GRADE STACK

MOUNTING

Leads away from slot







DESIGNED BY JCG DATE 5-28-37

Welcome Meter

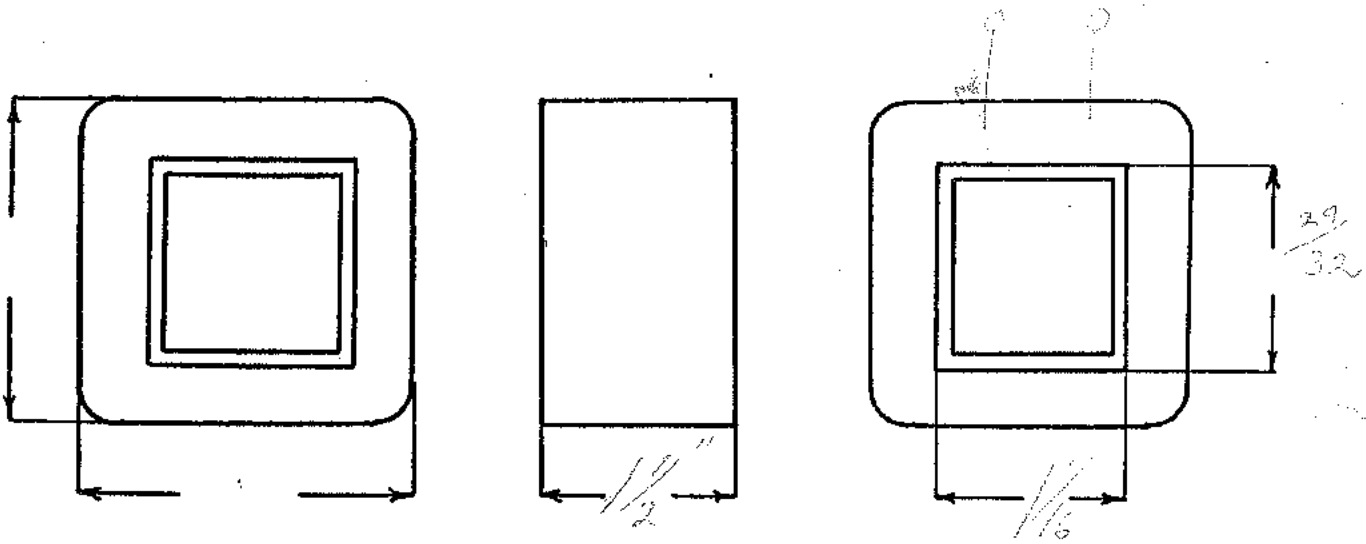
SPEC. NO. 89-230V

Winding							
Turns	1960						
Taps	—						
Wind. Lgth.	1¼						
Wire Size	#30						
T. P. L.	101-19						
Finish							
Type Lead	#20 SnBr						
Lead Lgth.	3"	— add'l 5"					
Layer Insul.	30						
Test Volt.							
Wrapper	240056A						

TUBE	9L007GK	IMPREGNATION	Varnish
CORE 1/10 X 29/32 M	GA. 24	GRADE D	STACK

MOUNTING

Lead away from slot.



DESIGNED BY

DATE 6-27-39

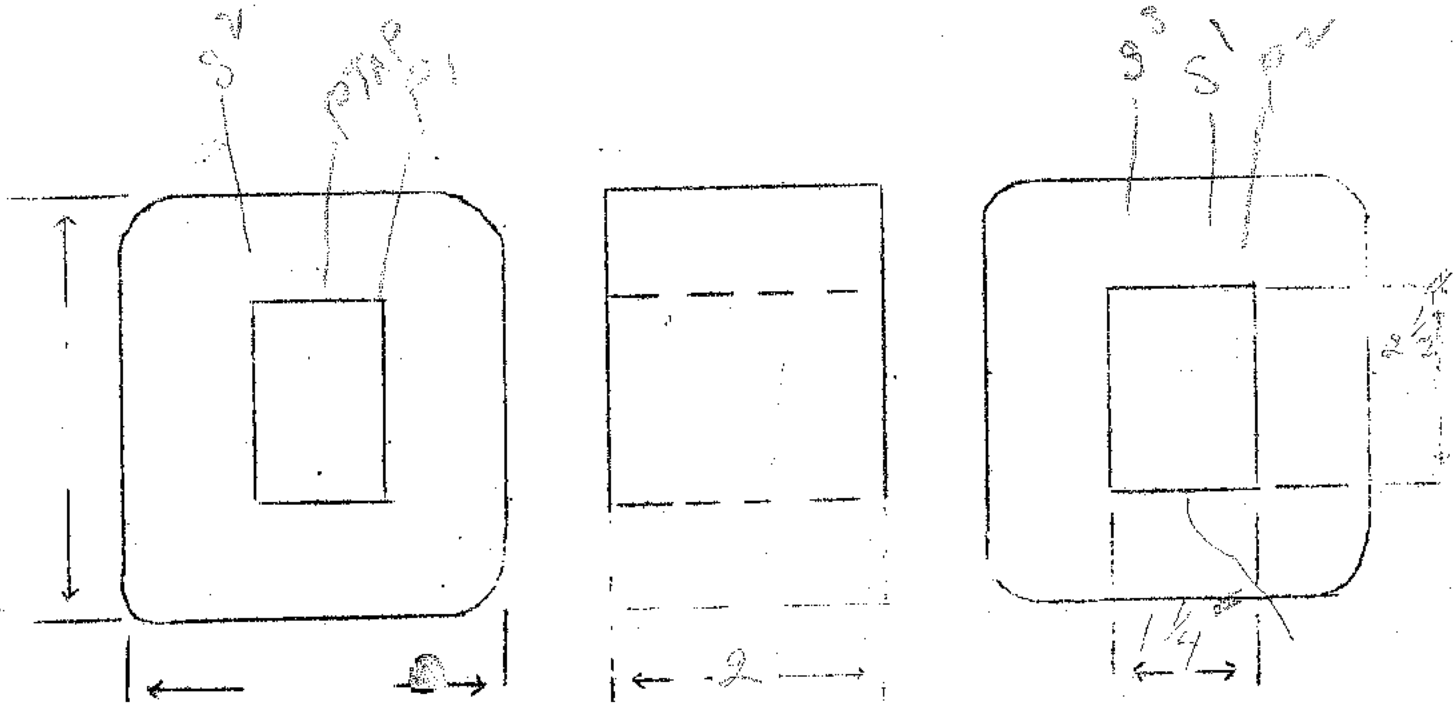
	Voltage	Current
Primary		
secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 88

Type Transformer Power

	Pri.	SHIELD	SEC	FIL 1	FIL 2	FIL 3
TURNS	231	123	1720	5	6	10
TAPS	208	—	860		2½	
LENGTH OF WINDING	1.65"	1.65"	1.65"			
SIZE WIRE	18 E	29	29	13	13	16
TURNS PER LAYER	34-7L	123-1	123-1 HF			
KIND OF TERMINAL	Par. Br.	WIRE	Par. Br.			
LENGTH OF TERMINAL	12 IN.		12 IN.			
TUBE	7L					
LAYER INSULATION	50 M.S.		2 OOS V.C. AT TAP			
WRAPPER	1L 005 V.C. 1L 005 V.P.	1L 005 V.C. 1L 005 K.D.	1L 005 V.C. 1L 005 G.A.			
TREATMENT						
RESISTANCE						

Back Like T 55

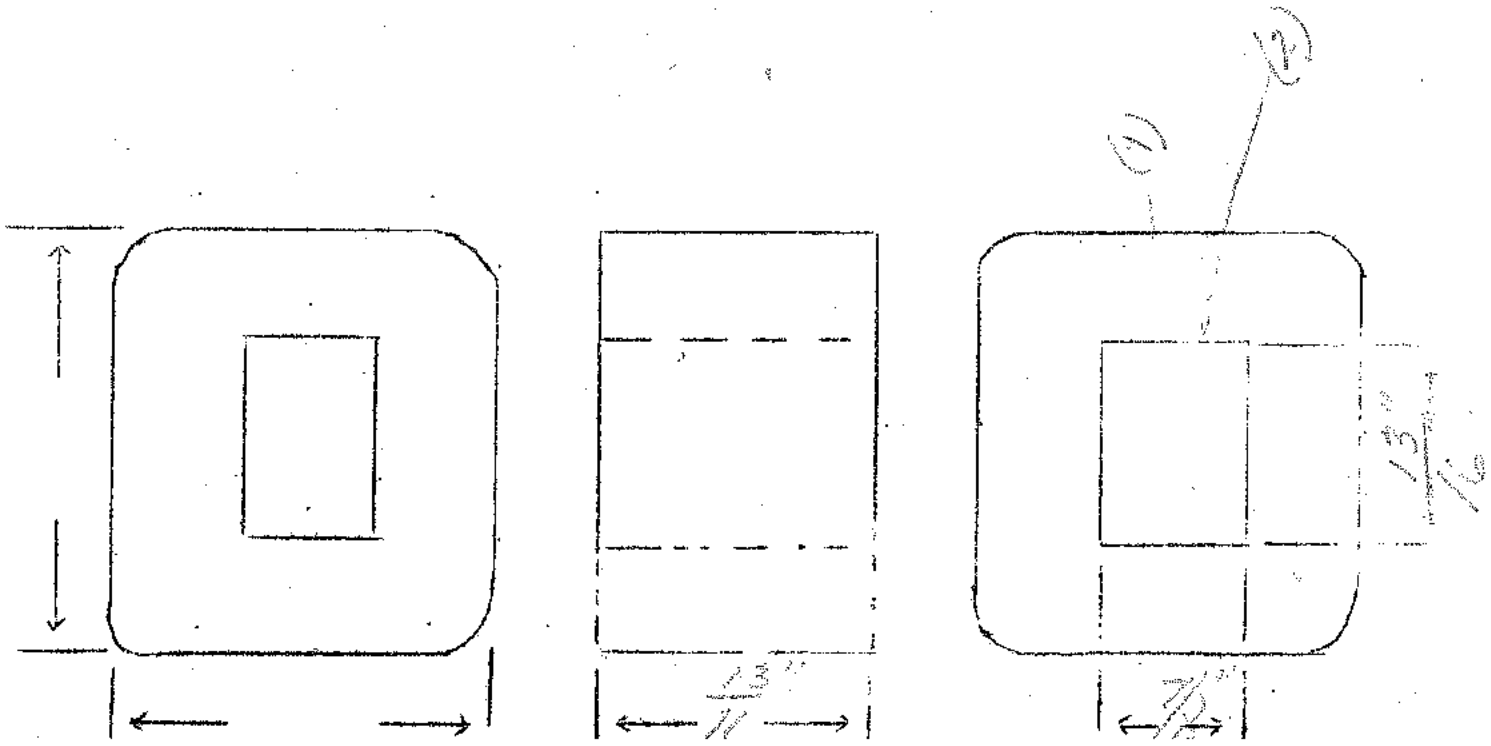


	Voltage	Current
Primary		
Secondary		
Filament No. 1		
Filament No. 2		
Filament No. 3		

Specification No. 90

Type Transformer Coil Only

TURNS	1450					
TAPS	None					
LENGTH OF WINDING	1/2"					
SIZE WIRE	37E					
TURNS PER LAYER	102					
KIND OF TERMINAL	No 20 [illegible] "					
LENGTH OF TERMINAL	No2 - 2½" No1 - 3"	- outside — - inside		S/1B R2B		
TUBE	Fiber 28					
LAYER INSULATION	20lb					
WRAPPER	2L .005 GP					
TREATMENT						
RESISTANCE						

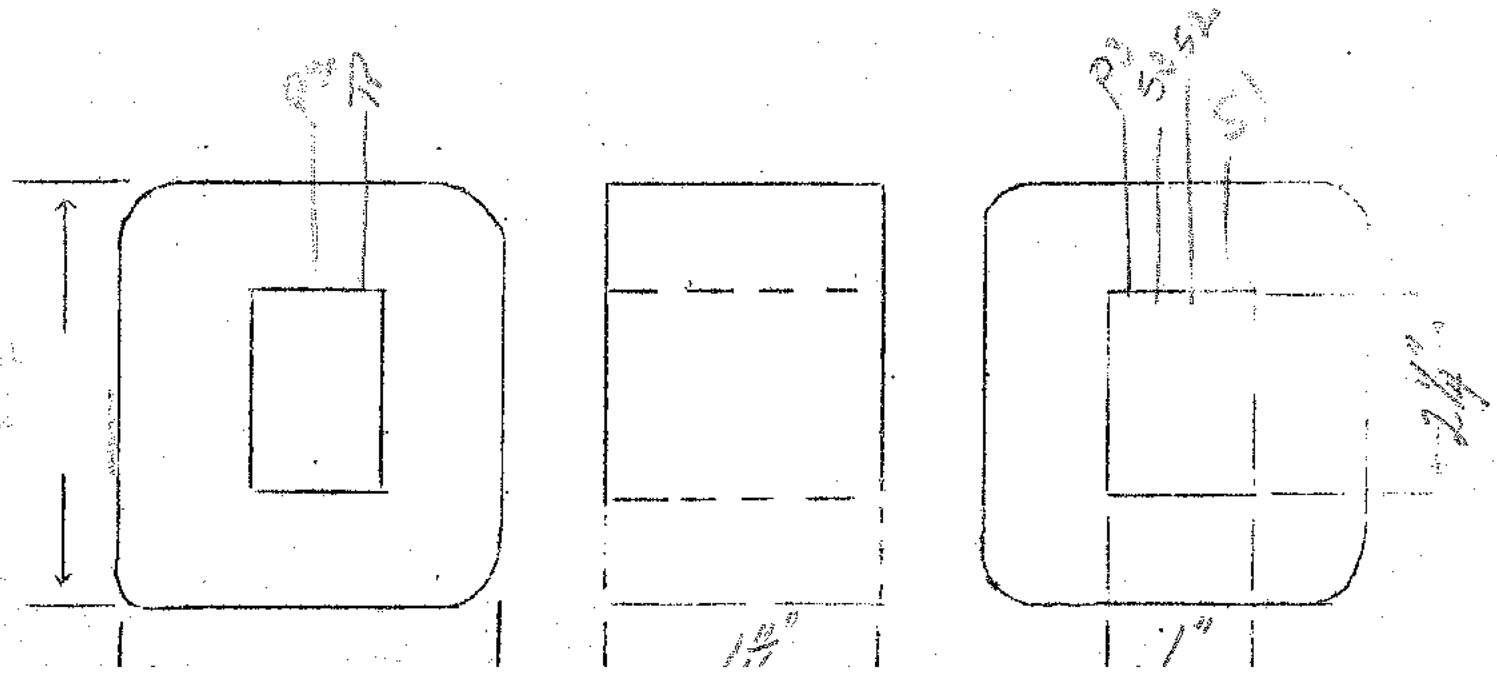


	Voltage	Current
Primary	110-125	
secondary	320	100-130
Filament No. 1	2.5	2
Filament No. 2	2.5	2
Filament No. 3	5	4

Specification No. 91

Type Transformer Power

	Pri	Plate	Sec	F.L.(1)	F.L.(2)	F.L.(3)
TURNS	357	134	2200	9	9	16
TAPS	315	None	1350	4½	4½	None
LENGTH OF WINDING	1½	1½	1½			
SIZE WIRE	20E	31E	31E	13E	13E	16E
TURNS PER LAYER	40-9	134-1	134-20			
KIND OF TERMINAL	No 20 Flex	Sq	No 20 Flex			
LENGTH OF TERMINAL	12"	3"	12"			
TUBE	2.002	Pri Plate	Sec			
LAYER INSULATION	2250		2016			
WRAPPER	2.003 VP	2.003 VP	2.003 SVP 2.003 SVP			
TREATMENT						
RESISTANCE						



	Voltage	Current
Primary	110	
Secondary	330	.240
Filament No. 1	2.5	3.25
Filament No. 2	5	2
Filament No. 3		

Specification No. 100

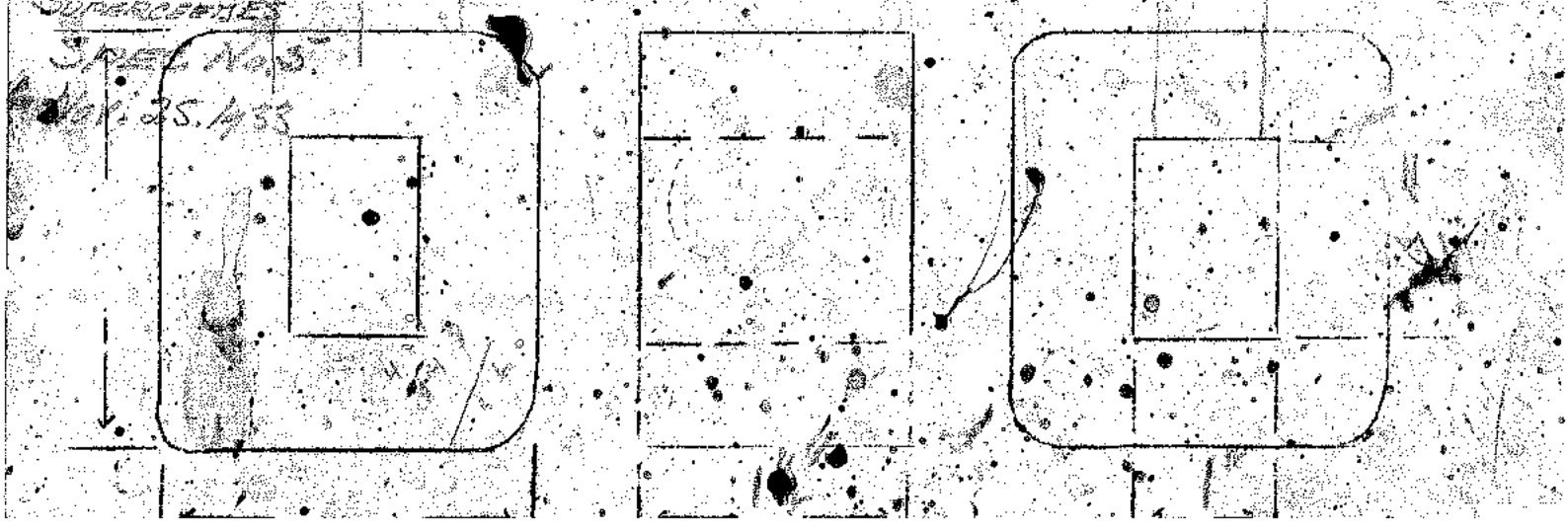
Type Transformer Power

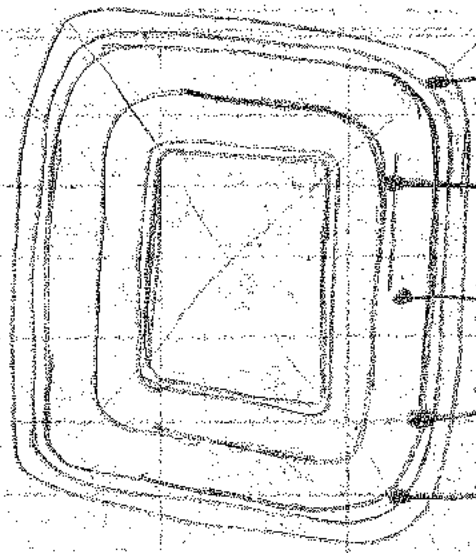
	PRI	SHIELD	SEC	FIL. 1	FIL. 2	
TURNS	660	70	3320	34	16	
TAPS	None	None	1960	None	8	
LENGTH OF WINDING	1 1/4"	1"	1"	1"	1"	
SIZE WIRE	27E	37E	37E	20E	18E	
TURNS PER LAYER	70	70	225	34	16	
KIND OF TERMINAL	WIRE ONLY	WIRE ONLY	SIL. BR.	WIRE ONLY	WIRE ONLY	
LENGTH OF TERMINAL	3"	3"	3"	3"	3"	
TUBE	FIBRE 1 1/2 x 1 3/4	PIPE WRAPPER	SHIELD WRAPPER	SEC WRAPPER	FIL. 1 WRAPPER	
LAYER INSULATION	1 GL		1 GL			
WRAPPER	1 GL 010 VC 3 GL	1 GL 010 VC 3 GL	2 GL 007 GA	2 GL 00769	2 GL 00769	
TREATMENT	Impregnate 2-3 Hr 110°C Min Bake 5-6 Hr					
RESISTANCE						

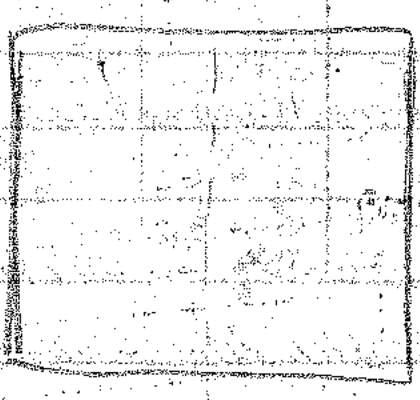
Nov. 24. 1933
Spec. No. 100

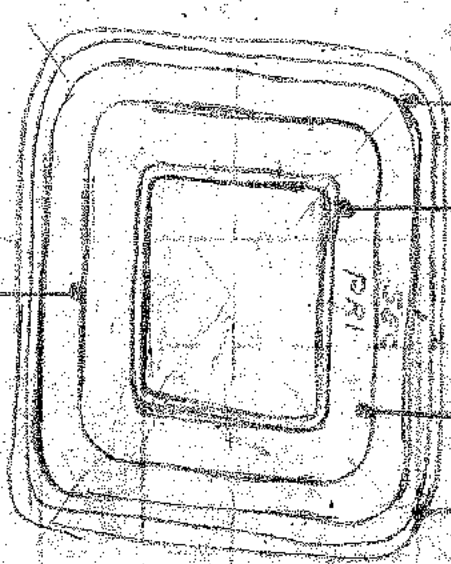
1 5/8" SEE OTHER SIDE

Supersedes
Spec. No. 3
Nov. 25. 1933




FIL. 2
SEC. START
SEC. END
SEC. FINISH
FIL. 1


FIL. 2. CF


FIL. 1.
PRE. START
PRE. FINISH
FIL. 2

POWER
117 V @ 60 ~
to
410 V ct @ 50 ma.
6.3 V @ 2.5 a.

SPEC. NO. P 100

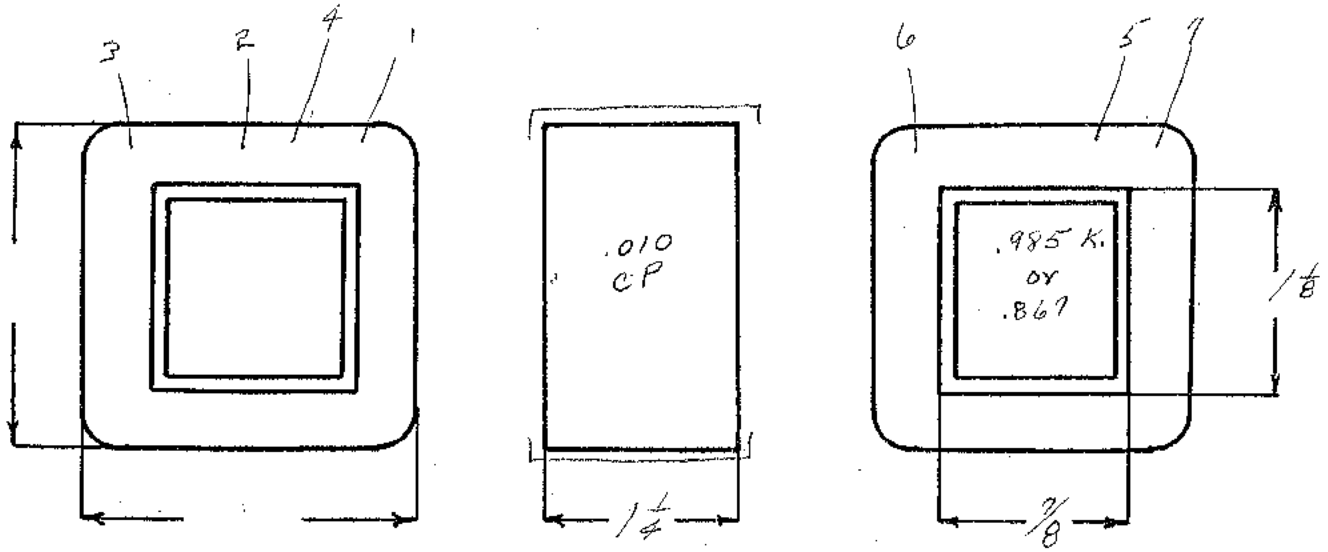
Winding	1-2-3 Sec.	Shield	4-5 Pri.	6-7 Fil.			
Turns	2340	1	594	37			
Taps	1170	–	–	–			
Wind. Lgth.	1"	1"	1"	1"			
Wire Size	#36	.001	#28	#20			
T. P. L.	146-162	–	66-92	19-22			
Finish	82%	–	90%	63.5%			
Type Lead	#22 Dulac	Sil. Be.	#22 P.B.	W.O. Sleeve			
Lead Lgth.	Cut 14"	3"	Cut 14"	Cut 14"			
Layer Insul.	20 #		40 #	1L005GA			
Test Volt.	2000	–	1500	1500			
Wrapper	1L001CA 1L003CA 1L005VC	1L003CA	1L001CA 1L005GA	1L002CA 1L005GK ~~1L005GA~~			

TUBE 4L010GK + 1L002CA 1L003VK — IMPREGNATION VARNISH

CORE 7/8 x 1 1/8 — GA. 24 — GRADE D — STACK 2 x 2

MOUNTING A, N, HS10-LEADS

88%



DESIGNED BY [illegible]

DATE 6-1-50

DESIGN AND TEST DATA

Rating: $I_S \approx 50$ ma.

Sec VA = 30.3
Pri VA = 41.3
I_P = 353 ma.

Winding	1-2-3 Sec	shield	4-5 Pri	6-7 Fil			
Mean Turn	4.7		5.64	6.48			
Resistance 25° c	388		21.7	.207			
Pounds Copper	.0715		.161	.063			
Ratio Volts OPEN	440		117	7.3			
~~Copper Density~~ LOAD	410.7		117	6.33			
COPPER DENSITY ~~Ratio Volts~~	535		452	408			
Test to Ground	2000		1500	1500			

Iron Induction 13.2 Kg @ 60 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

Induced Test: Apply _____ Volts at _____ Cycles _____ on _____ with _____ grounded

Remarks:

$$B = \frac{58.2 \times 117}{.867 \times 594} = 13.2 \text{ Kg.}$$

1-2-3 Red and red-yellow on top.
4-5 black
6-7 green

Power
117 V @ 50/60 ~ to
440 V ct @ 52 ma.
6.3 V @ 2.5 a.

New Stock

OBSOLETE

SPEC. NO. P100

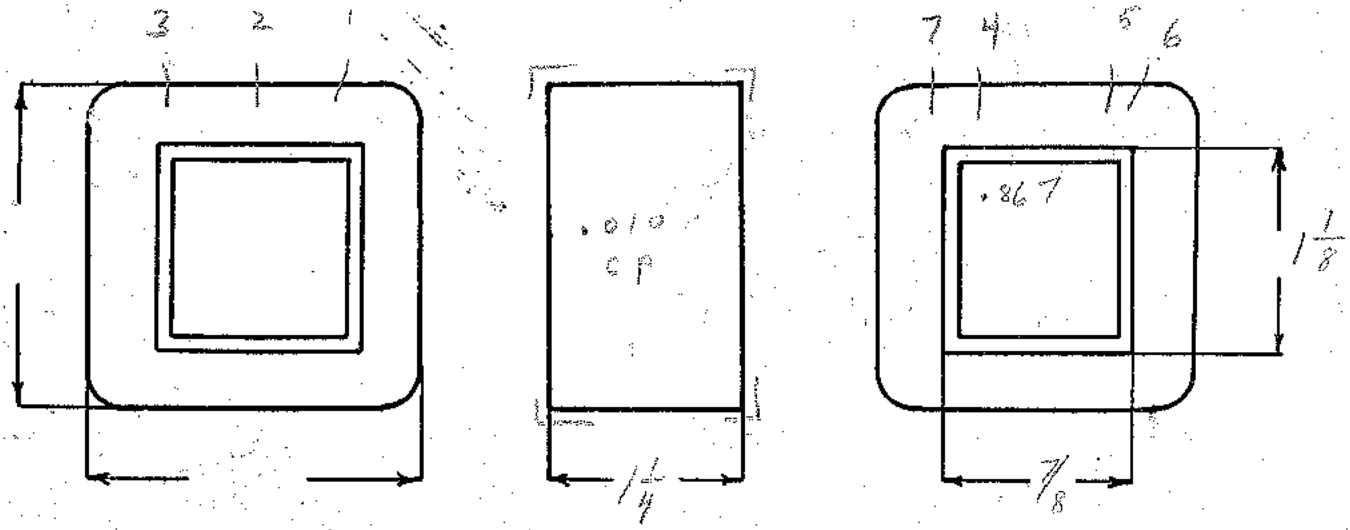
Winding	1-2-3 Sec	Shield	4-5 Fil.	6-7 Fil.			
Turns	2800	1	700	44			
Taps	1400	—	—	—			
Wind. Lgth.	1 1/16	1 1/16	1 1/16	1 1/16			
Wire Size	#37	.001 Cu.	#28	#20			
T. P. L.	175-166	—	70-106	22-21			
Finish	83%	—	90%	70%			
Type Lead	#32 Stranded	S.L.B.C.	#22 P.E.	W.O. Cover			
Lead Lgth.	cut 14"	3"	cut 14"	cut 14"			
Layer Insul.	12 #	—	40 #	1L005A			
Test Volt.	2000	—	1500 ~	1500			
Wrapper	2L095VC	1L005VC	2L005A	2L005A			

TUBE 4L010BK + 1L005VP IMPREGNATION Varnish

CORE 7/8 x 1 1/2 GA. 24 GRADE D STACK 2x2

MOUNTING A, N, HS10 — Leads 1

Wt = 90 %



DESIGNED BY S. Babcock DATE 4-21-49

DESIGN AND TEST DATA

Rating: $I_{sc} = .9 \times 50 = 45$ amps

Sec VA = 30.3
Pri VA = 41.
I_p = .353 amps

Winding	Sec	Sh	Pri	Ex L			
Mean Turn	4.61		5.58	6.49			
Resistance 25° c	573		2.16	.246			
Pounds Copper	.066		.16	.0745			
Copper Density	442		452	408			
Ratio Volts	412		117	6.28			
Test to Ground	3000		1500	1500			

Iron Induction 13.5 Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

Induced Test: Apply _____ Volts at _____ Cycles _____ on _____ with _____ grounded

Remarks:

1 – 3 Red
2 Red – Yellow
4 – 5 Black
6 – 7 Green

LOWER
119 V @ 60 ~

220 V CT @ 60 ~
6.3 V @ 5.0 A

New Stock

SPEC. NO. P 102

Winding	1-2-3	Shield	4-5	6-7			
	2 Wire		Pri	Sec			
Turns	2240	1	84	57			
Taps	1190	—	—	—			
Wind. Lgth.	1"	1"	1"	1"			
Wire Size	#32	.005 Cu	#28	#20			
T. P. L.	146-12	—	66-12	19-12			
Finish	82%	—	90%	65.5%			
Type Lead	#22 PL	#26 TW	#28 PL	#20 PL			
Lead Lgth.	Cut 14"	3"	Cut 14"	Cut 14"			
Layer Insul.	80 #	—	40 #	1 120 #			
Test Volt.	2000	—	1500	1500			
Wrapper	3 Layers M 1 120 #	1 Layer M 1 40 #	1 Layer M 1 60 #	1 Layer GL			

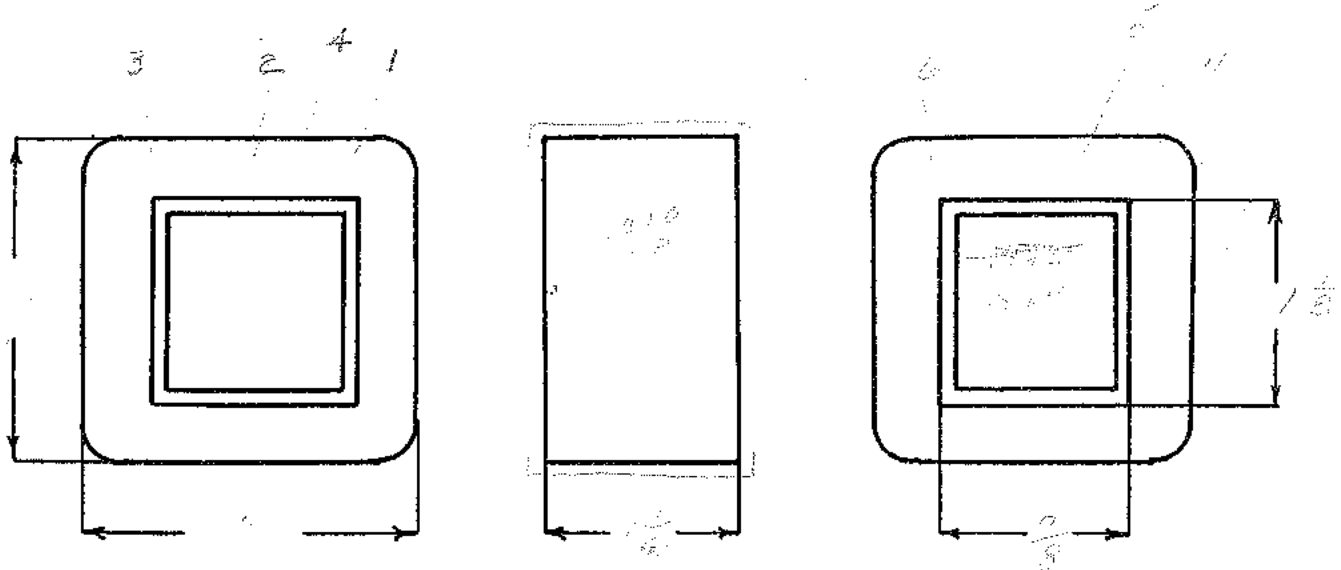
TUBE #40 x 1 3/8 x 1 3/8 x 3 M | IMPREGNATION Varnish

CORE 3/8 x 1 1/8 | GA. 24 | GRADE O | STACK 2 x 2

MOUNTING 4 - Leads

81%

ZINC CHR. PLATE/BLACK LACQUER



DESIGNED BY [illegible]

DATE 6-1-60

DESIGN AND TEST DATA

ing:

Winding	1-2-3						
Mean Turn	4.7		5.69	6.98			
Resistance 25° c	395		21.7				
Pounds Copper			.161	.063			
Copper Density			452	408			
Ratio Volts	240 / 240		117 / 117				
Test to Ground							

Iron Induction _____ @ _____ Cycles _____

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

Induced Test: Apply _____ Volts at _____ Cycles _____ on _____ with _____ grounded

Remarks:

1 RED

2 RED & YELLOW

3 RED

(4 5 BLACK)

(6 YELLOW)

_____UNITS ON BATCH NO.____ BILL OF MATERIAL AND COST SHEET FOR P-100

CUSTOMER DRWG NO. REV.

X	DEPT.	MATERIAL DESCRIPTION		SOURCE	QUANTITY PER ASSY.	PRICE PER UNIT	COST PER ASSY.
	M.W.	COIL FORM	7/8 X 1 1/8 X .040 GK		1 1/2	.01	.02
		WIRE	#36 SF		.072 LB	1.22	.09
			#28 SF		.16 LB	.83	.14
			#20 SF		.063 LB	.64	.05
		WIRE					
	S.W.	COIL FORM					
		CORE					
	FIN.	LEAD WIRE					
	STK.	CORE	7/8 X 1 1/8 . 24C		1.13"	.37	.42
	ASSY.	TERMINALS					
		CANS					
		CASES	7/8 A CASE		1	.17	.17
	PLST.	CUPS					
	PAINT						
	FINAL						
	MISC						.11

MARK UP	.50 5.00	TOTAL MATERIAL	1.00
	.55 4.55	LABOR	1.50
	.60 4.17	TOTAL COST	2.50

FIXED CHARGES

TOOLING _____

MARKING _____

SET UP 25.00

DESIGN _____

QUAL. TESTS _____

OTHER TESTS _____

25.00

DELIVERY _____

CUSTOMER			
DATE	8-25-59		
1- 2	35.00		
3- 4			
5- 9			
10- 24			
25- 49			
50- 99			
100-249	5.00 4.60		
250-499	4.65 4.25		
500-999	4.40 4.00		
1000			