

single plate to single grid (12,000 to 100,000)

(non-hum bucking type)

SPEC. NO. H 600

2 Coils

Winding	PRI	SEC				
Turns	1840	5000				
Taps						
Wind. Lgth.	3/8	3/8				
Wire Size	#41	#41				
T. P. L.	115-16	115-44				
Finish						
Type Lead		81, Br.				
Lead Lgth.	6"	8"				
Layer Insul.	16#	16#				
Test Volt.						
Wrapper	1L.005VP 6L 6L	1L.005GA				

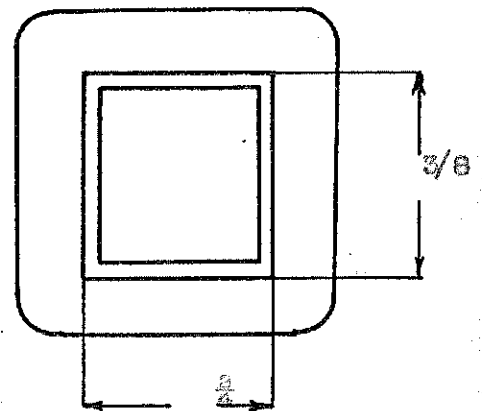
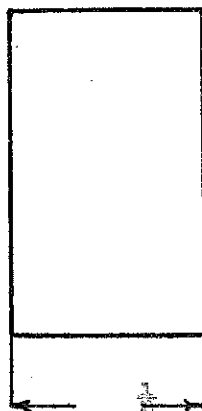
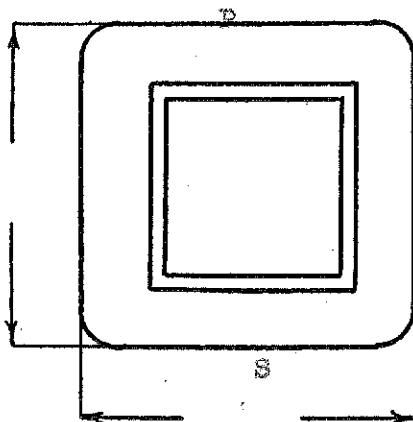
TUBE	4L.007	IMPREGNATION	VARNISH
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CORE	GA. 20	GRADE Au Metal	STACK Butt stack No gap
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MOUNTING HA- case with heavy copper shield around coil

OVER

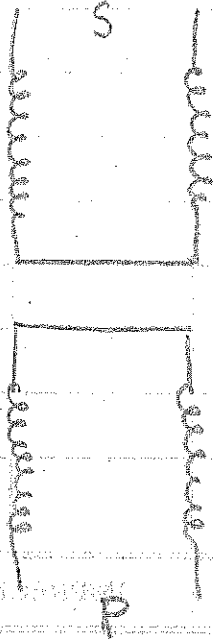
15 E and 13 I



DESIGNED BY

DATE

100 1374



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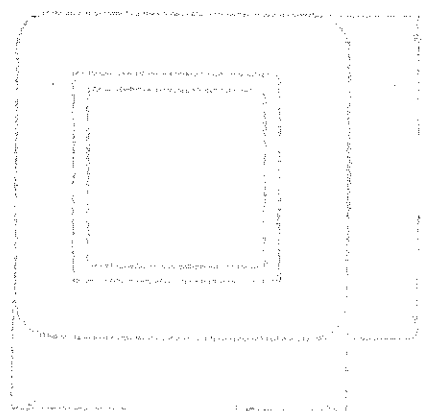
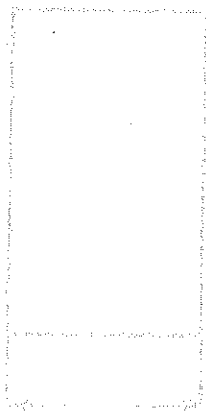
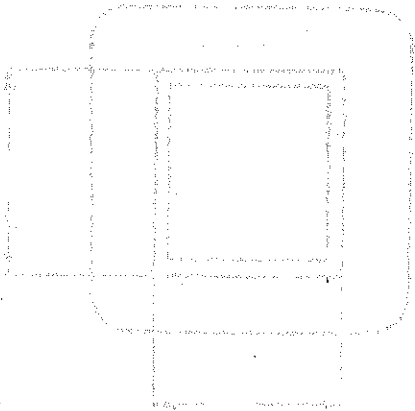
100 1374

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100 1374

Filament

New Stock

117V @ 50/60 ~ to

2.5V CT @ 500mA TEST ONE WIRE

SPEC. NO. F 600

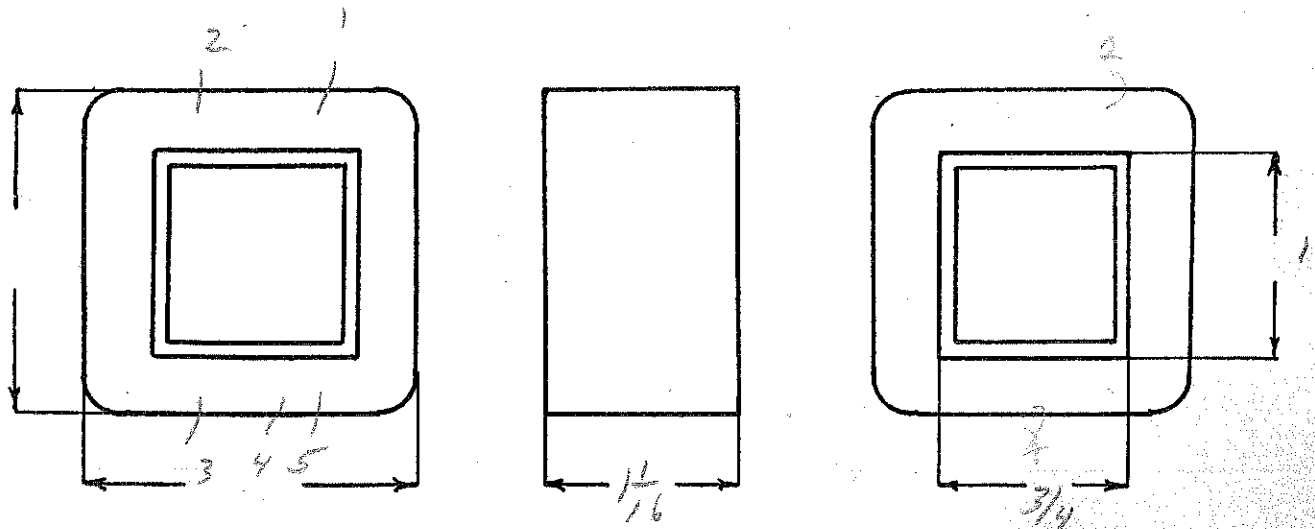
Winding	1-2 PRI	3-4-5 FIL				
Turns	1,000	26				
Taps	—	13				
Wind. Lgth.	7/8	3/4				
Wire Size	# 31	# 16				
T. P. L.	77-13L	13-2L				
Finish	85%	91%				
Type Lead	# 22 P.B.	W.O. SLEEVE				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30#	2L0076A				
Test Volt.	1250	2500				
Wrapper	2L0076A	2L0076A				

TUBE 5L010 6K IMPREGNATION Varnish

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

MOUNTING D - Leads

wn = 90%



DESIGNED BY S. Babcock

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 12
Pri VA = 12
Ip = 157 m

Winding	P.M.I	F.L				
Mean Turn	4.295	5.50				
Resistance 25° c	47.5	0.528				
Pounds Copper	1.089	1.02				
Copper Density	507	517				
Ratio Volts	115	2.56				
Test to Ground	1250	1000				

Iron Induction 12.15 @ 5° Cycles

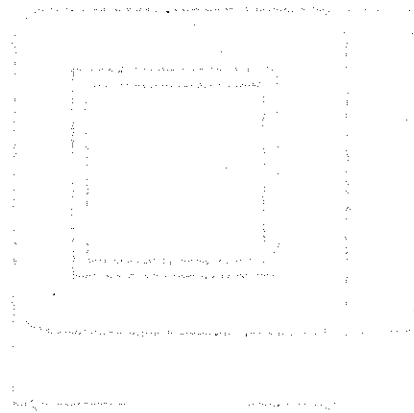
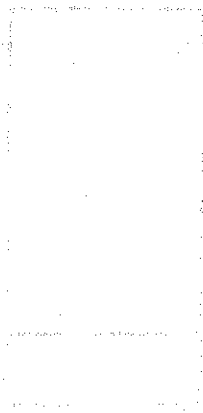
Exciting Current 39 milliamperes @ 117 volts 60 cycles on 12

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

Remarks:

1-2 Black

3-4-5 Yellow



filament

New Stock

117V @ 50/60 ~ to
2.5 V C.T. @ 5a

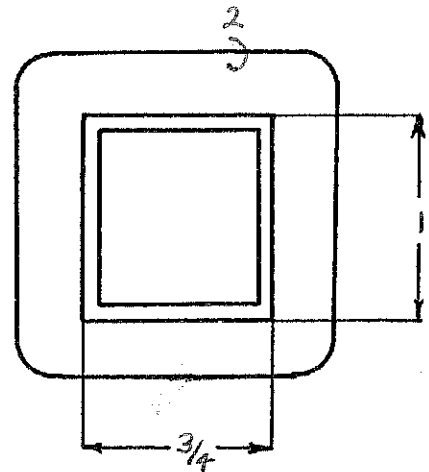
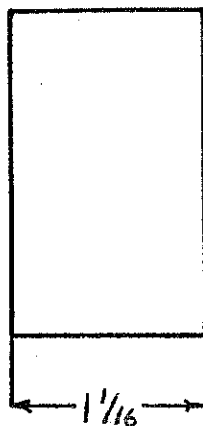
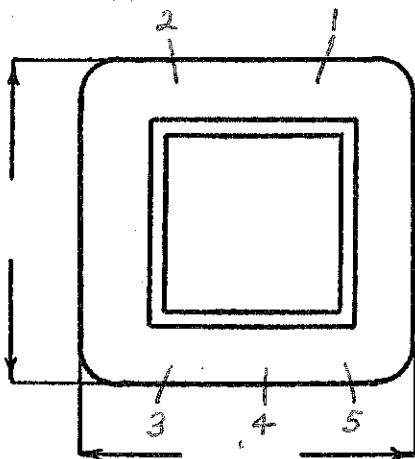
SPEC. NO. F 600

Winding	1-2 Pri	3-4-5 Fil				
Turns	1000	26				
Taps	—	13				
Wind. Lgth.	7/8	3/4				
Wire Size	#31	#16		For sales studio		
T. P. L.	77-13L	13-2L		See 10126		
Finish Pitch	85%	91%				
Type Lead	#22 P.B.	w. a. sleeve				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30#	1L007GA				
Test Volt.	1250	2500				
Wrapper	2L007GA	2L007GA				

TUBE 5L010 GK + 1L007GA IMPREGNATION Varnish

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

MOUNTING D-Leads



DESIGNED BY S. BABCOCK

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 12.5
Pri VA = 18
I_p = 157 ma

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	4.295	5.50				
Resistance 25° c	47.5	.0528				
Pounds Copper	.088	.102				
Copper Density	507	517				
Ratio Volts	115	2.56				
Test to Ground	1250	1000				

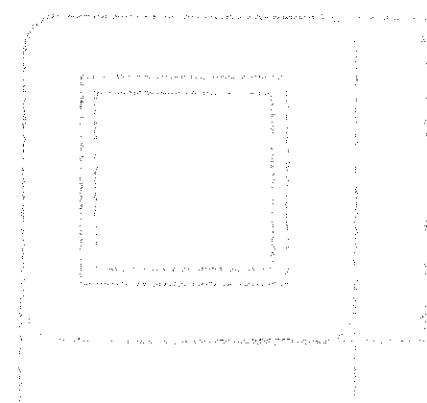
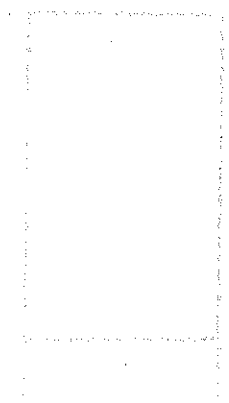
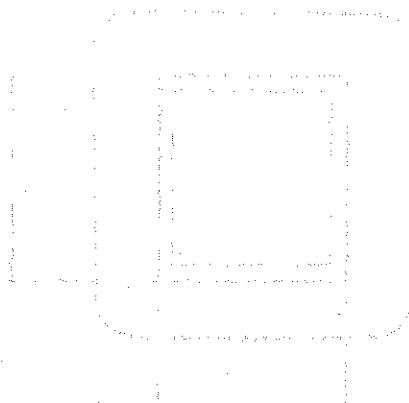
Iron Induction 12.15kg @ 50 Cycles

Exciting Current 39 milli-amperes @ 117 volts 60 cycles on 1-2

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

Remarks:

1-2 Black
3-4-5 Yellow



single plate to p. p. grids

12,000 - 100,000 or 25,000 ohms

SPEC. NO. H 201

(non-hum bucking type)

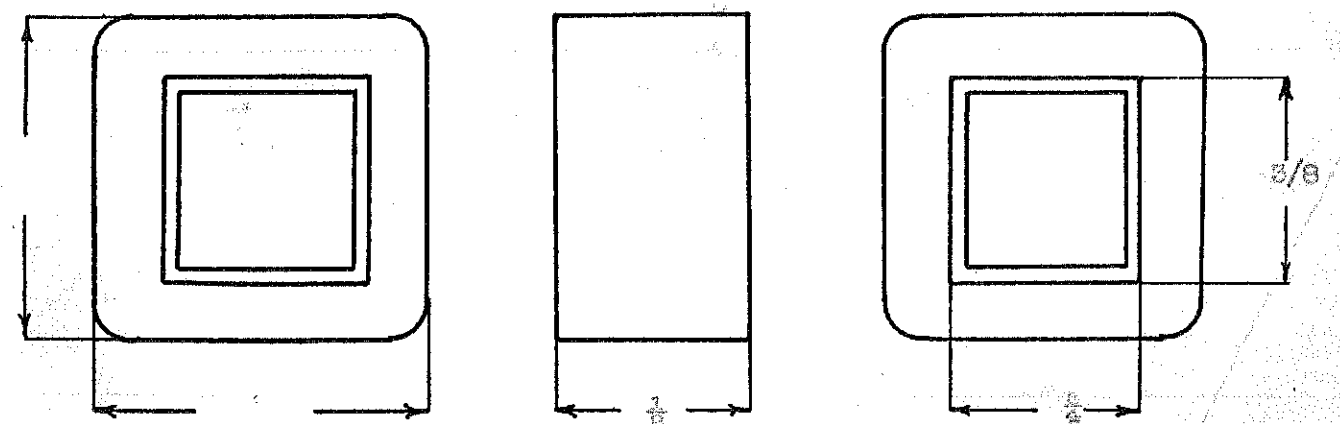
Winding	2 Coils					
	P	S				
Turns	1840	500				
Taps						
Wind. Lgth.	3/8	3/8				
Wire Size	#41	#41				
T. P. L.	115-16	115-16				
Finish						
Type Lead		Sil. Br.				
Lead Lgth.	6"	6"				
Layer Insul.	16#	16#				
Test Volt.						
Wrapper	1L.003VP 6L.01	1L.003CA				

TUBE	4L.007	IMPREGNATION	VARNISH
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CORE	GA. 29	GRADE	MU Metal	STACK	Butt Stack No Gap 1 x 1 pick
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MOUNTING HA - Case with heavy copper shield around coil

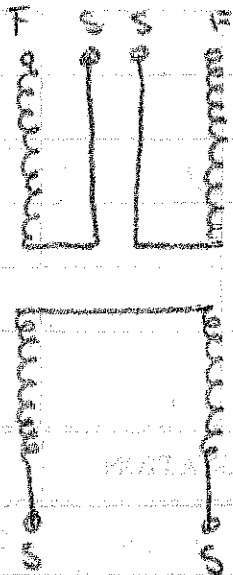
OVER 15 - E 15 - I



DESIGNED BY GW

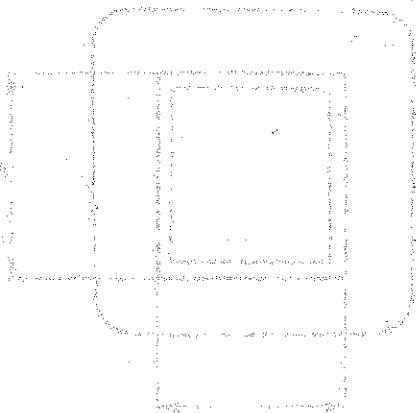
DATE

100 1993

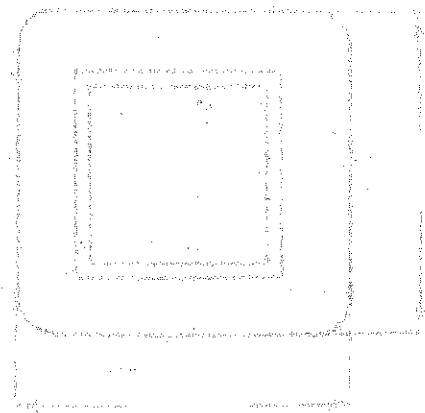
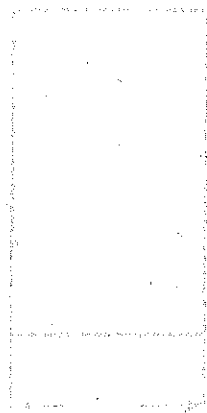


2

2



diagram



diagram

Filament

New Stock

117V @ 50/60 ~ Hz

2.5V ct @ 1000

2500 Vins.

SPEC. NO. F602

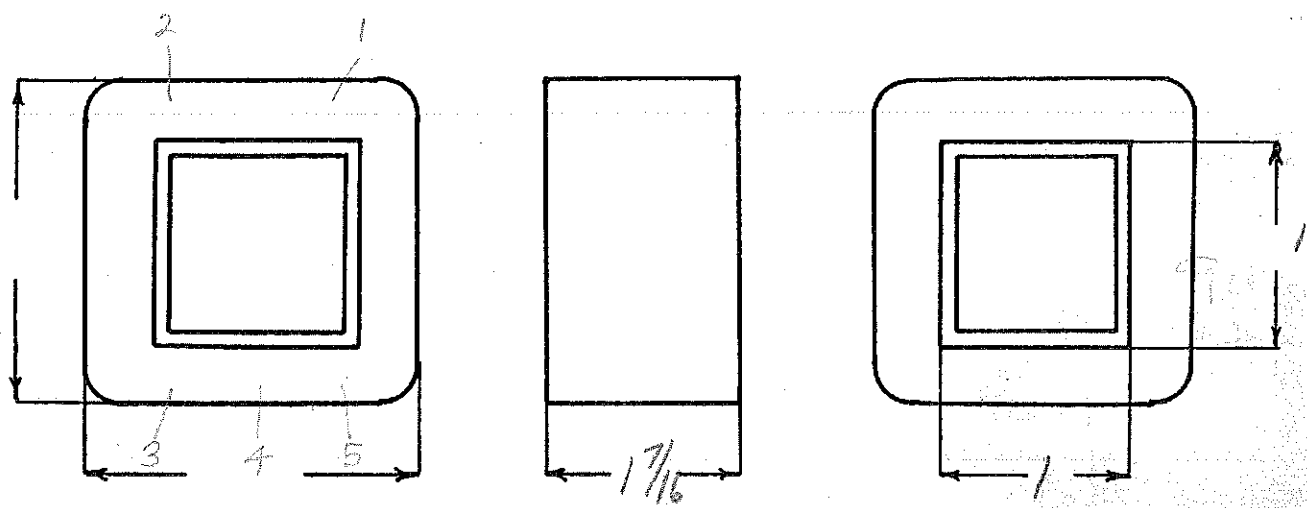
Winding	1-2 PFI	3-4-5 FIL.				
Turns	745	18				
Taps	—	9				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	# 28	# 13				
T. P. L.	75-102	9-22				
Finish	82%	53%				
Type Lead	# 22 P.B.	W.O. SLEEVE				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30#	12015CP				
Test Volt.	1500	2500				
Wrapper	12015CP	360076A				

TUBE 5L0106K IMPREGNATION Varnish

CORE 1X1 GA. 24 GRADE D STACK 2X2

MOUNTING D - Leads

80%



DESIGNED BY S. Babcock

DATE 4-6-49

DESIGN AND TEST DATA

Rating:

Sec VA = 25
 Pri VA = 34.5
 I_p = 295 ma.

Winding	Pri	Fil				
Mean Turn	4.93	6.19				
Resistance 25° c	20.2	.019				
Pounds Copper	.150	.147				
Copper Density	542	518				
Ratio Volts	117	2.49				
Test to Ground	1500	2500				

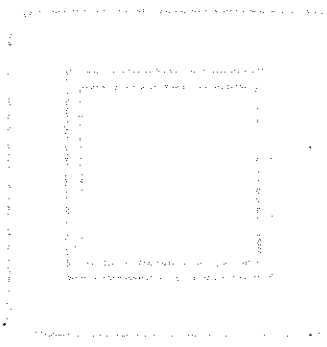
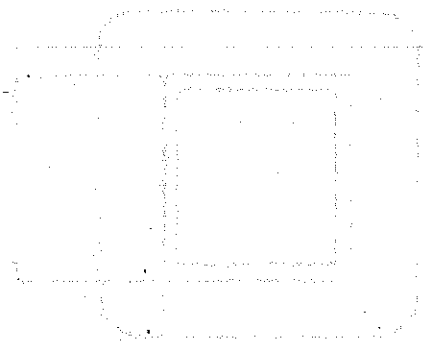
Iron Induction 12.5/9 @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
3-4-5 Yellow



Parlament

New stock

117 V @ 50/60 ~ to

2.5 V C.T. @ 10a.

2500V ins

TEST DATA SHEET

SPEC. NO. F 602

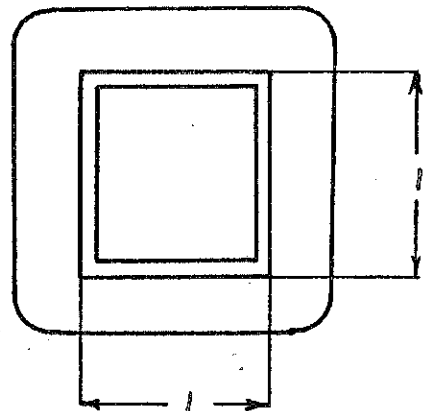
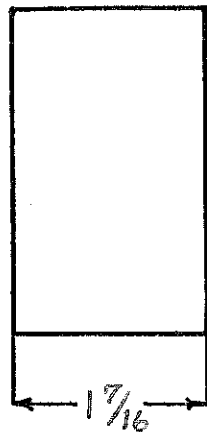
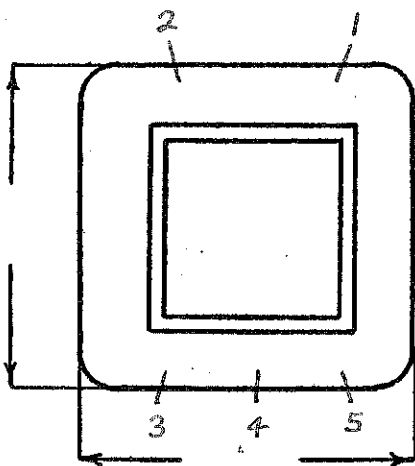
Winding	1-2 Pri	3-4-5 Fil				
Turns	745	18				
Taps	-	9				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	#28	#13				
T. P. L.	75-10L	9-2L				
Finish Pitch	82%	53%				
Type Lead	#22 P.B.	w.o. d. leads				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30#	1L015CP				
Test Volt.	1500	2500				
Wrapper	1L015CP	3L0075A				

TUBE 5L0106K+1L001CA IMPREGNATION Varnish

CORE 1 x 1 GA. 24 GRADE D10/ STACK 2 x 2

MOUNTING D-Leads

wn = 80%



DESIGNED BY S. BABCOCK

DATE 4-6-49

DESIGN AND TEST DATA

Rating:

Sec VA = 25
Pri VA = 34.5
I_p = 295 ma.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.93</i>	<i>6.19</i>				
Resistance 25° c	<i>20.2</i>	<i>.019</i>				
Pounds Copper	<i>.150</i>	<i>.147</i>				
Copper Density	<i>542</i>	<i>518</i>				
Ratio Volts	<i>117</i>	<i>2.47</i>				
Test to Ground	<i>1500</i>	<i>2500</i>				

Iron Induction *12.5 Kg* @ *50* Cycles

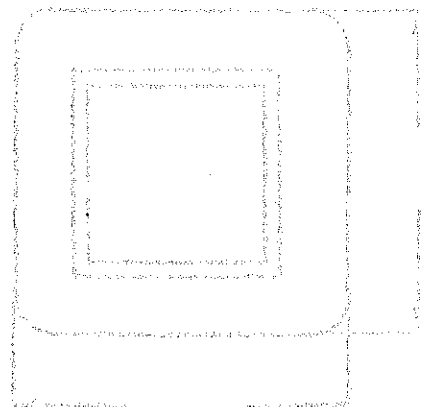
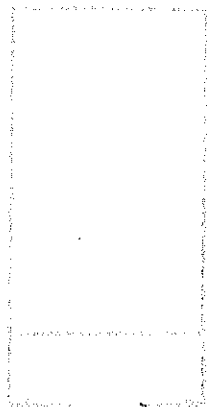
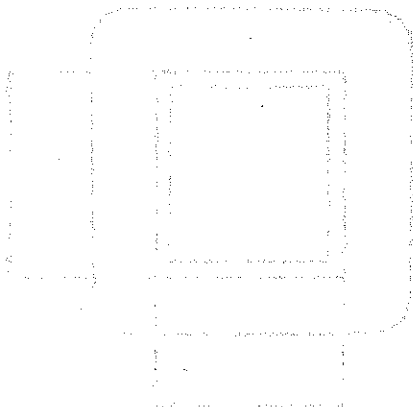
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

Induced Test: Apply _____ Volts at *30 Hz* Cycles _____ on *0* with _____ grounded

Remarks:

1-2 Black

3-4-5 yellow



Push Pull plates to Push Pull grids

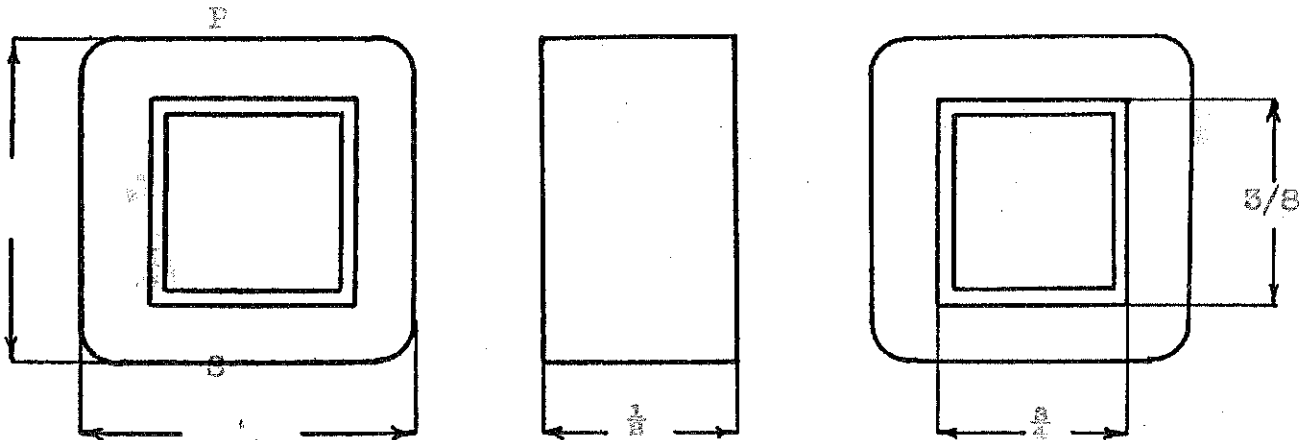
(Non-hum bucking type)

25,000/4250 to 100000/25000

SPEC. NO. H-602

Winding	2 Coils					
	P	S				
Turns	2500	5000				
Taps	--	--				
Wind. Lgth.	3/8	3/8				
Wire Size	#41	#41				
T. P. L.	115-22	115-44				
Finish						
Type Lead	Sil.	Br.				
Lead Lgth.	6"	6"				
Layer Insul.	16#	16#				
Test Volt.						
Wrapper	1L003VP 6LGL	2L005CA				
TUBE	4L007		IMPREGNATION		VACUUM	
CORE	GA.	29	GRADE Mu Metal		STACK 1 x 1	
MOUNTING	HA					

Case with heavy copper shield around coil



DESIGNED BY GW

DATE 2/16/39

Filament

New Stock

117V @ 50/60 to
2.5V ct @ 1000
10,000V ins.

SPEC. NO.

F604

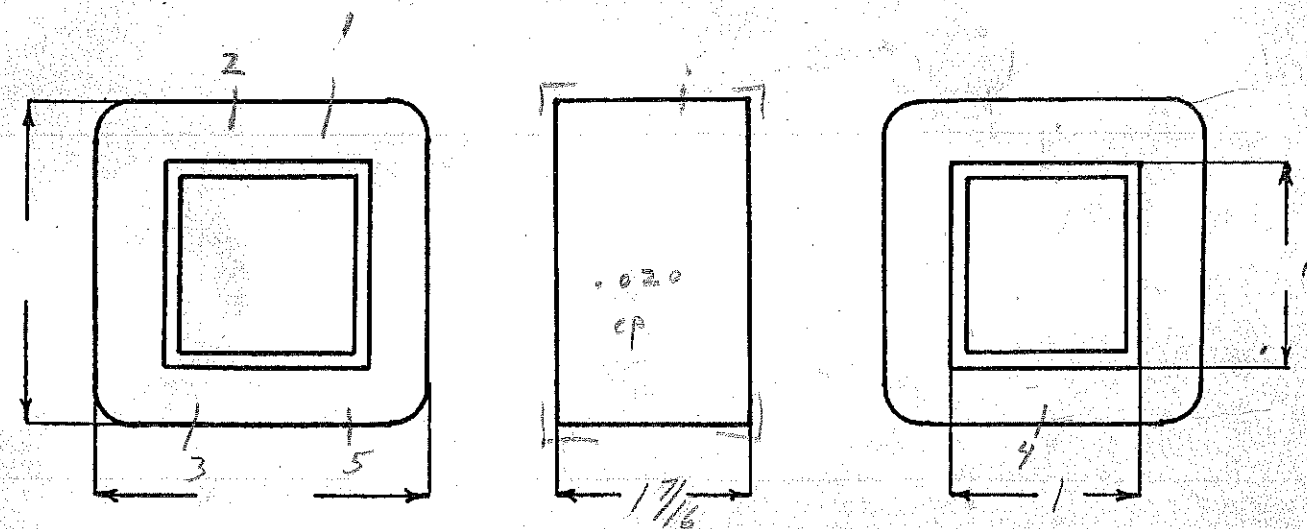
Winding	1-2 Pri	3-4-5 Fil.				
Turns	745	18				
Taps	—	9				
Wind. Lgth.	1 1/4	3/4 (center)				
Wire Size	#28	#13				
T. P. L.	75-10L	9-2L				
Finish	82%	94%				
Type Lead	4 Lugs S.L. Br.	w.o. sleeve no Lugs				
Lead Lgth.	3"	3"				
Layer Insul.	30#	1L015CP				
Test Volt.	1500	10,000				
Wrapper	#2005VC 1L015CP	4L005VC 2L007LA				

TUBE 5L0106K IMPREGNATION Vacuum

CORE 1x1 GA. 24 GRADE 20 STACK 2x2

MOUNTING BB-Lugs HS II

Wn's 87%



DESIGNED BY S. Babcock

DATE 4-15-49

DESIGN AND TEST DATA

Rating:

Sec VA = 25
Pri VA = 34

$I_p = 295 \text{ ma}$

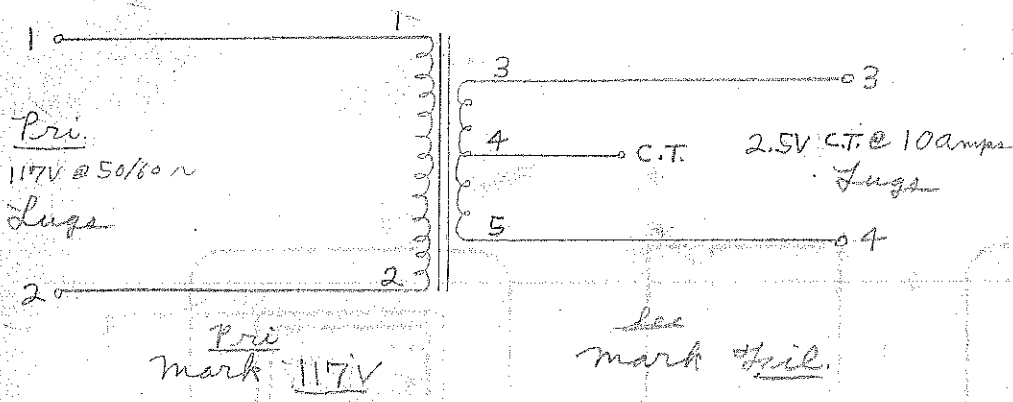
Winding	Pri	Fl.				
Mean Turn	4.93	6.34				
Resistance 25° c	2.83	.0194				
Pounds Copper	.151	.151				
Copper Density	542	518				
Ratio Volts	117	2.5				
Test to Ground	1500	10,000				

Iron Induction $12.5 \text{ kg} @ 50 \text{ rps}$ Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



Filament

New Stock

117V @ 50/60 ~ to

2.5 V C.T. @ 10a.

10,000 V ins.

SPEC. NO. F 604

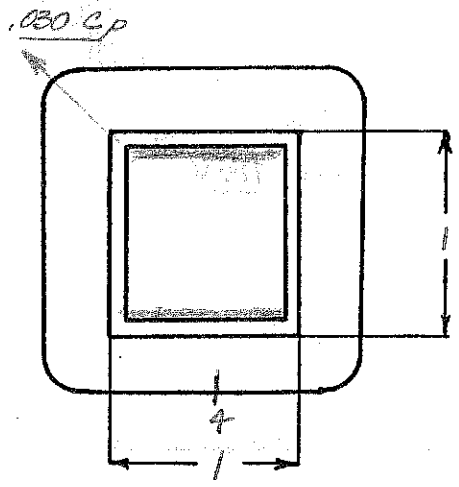
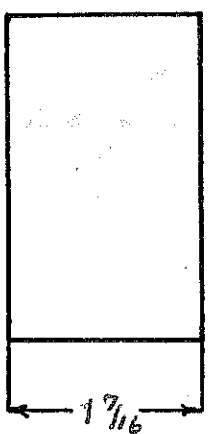
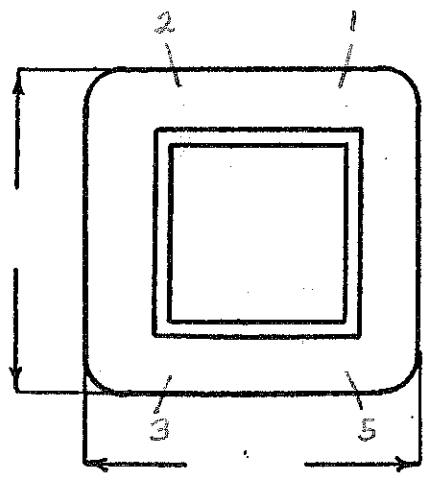
Winding	1-2 Pri	3-4-5 Fil				
Turns	745	18				
Taps	—	9				
Wind. Lgth.	1 1/4	3/4 (center)				
Wire Size	#28	#13				
T. P. L.	75-10L	9-2L				
Finish Pitch	82%	94%				
Type Lead	to lead	to lead				
Lead Lgth.	3"	3"				
Layer Insul.	30#	1L015CP				
Test Volt.	1500 3L005CA	10,000 3L005CP				
Wrapper	4L005VC 1L015CP	4L005VE 3L005GT 3L005CA				

TUBE 5L010 GK IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING BB HS II

wn = 87%



DESIGNED BY S. BABCOCK

DATE 4-15-49

DESIGN AND TEST DATA

Rating:

Sec VA = 25
Pri VA = 34.5
I_p = 295 ma.

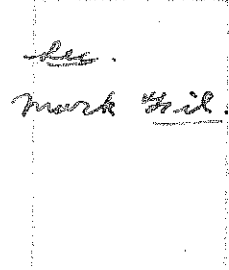
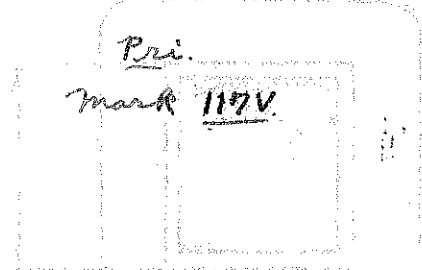
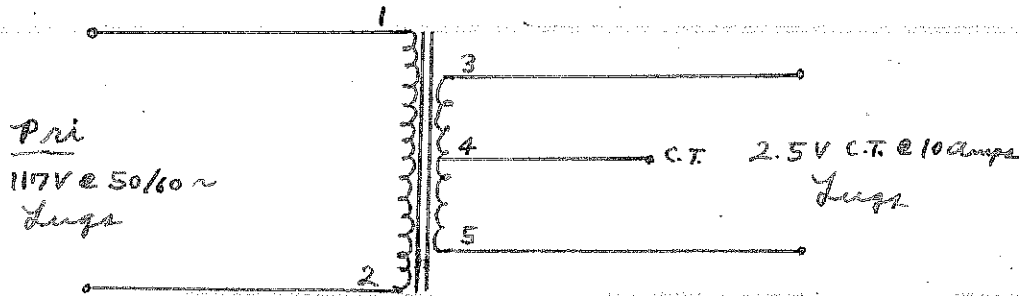
Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	4.93	6.34				
Resistance 25° c	20.3	.0194				
Pounds Copper	.151	.151				
Copper Density	542	518				
Ratio Volts	117	2.5				
Test to Ground	1500	10,000				

Iron Induction 12.5 Kg @ 50 Cycles

Exciting Current 70 ma. amperes @ 117 volts 60 cycles on Pri.

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

Remarks:



NOTE. S.W. ALLOW 3L 007-VG, EXTEND 1/4" OUTSIDE OF COIL UNDER ALL LUGS

Audio Input

Old Stock

500, 333, 250, 200, 125 450^W

to

25, 0+0^W 00 100, 000^W

(Non-Nom Bucking Type)

SPEC. NO. H-605

Winding	Pri	Shield	Sec			
Turns	380	1	5400			
Taps	13 2 ^W 3 -	-	-			
Wind. Lgth.	3/8"	3/8"	3/8"	= 0.375		
Wire Size	# 33	1001 Pr. Sheet	# 41			
T. P. L.	44-92	1	109-506			
Finish	90%	-	90%			
Type Lead	#22 Pr. Bv.	Sil. Bv.	#22 Pr. Bv.			
Lead Lgth.	6"	6"	6"			
Layer Insul.	12 30#G	-	12 14#G			
Test Volt.	1250V	-	-			
Wrapper	1K 005VC	1K 005VC	1K 005GA			

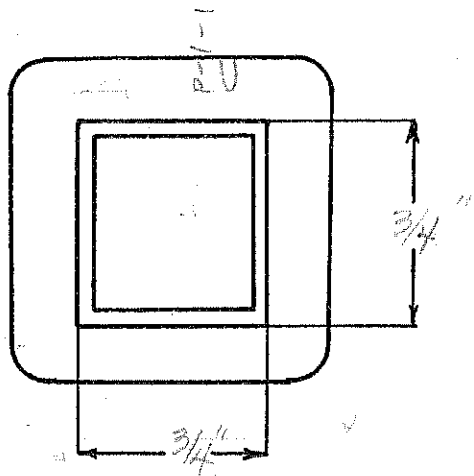
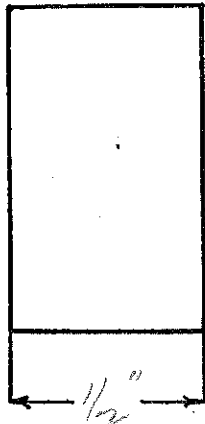
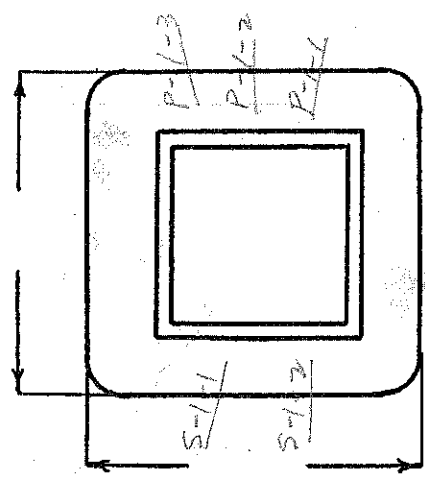
TUBE 5H-007 GN IMPREGNATION Varnish

CORE 3/4" x 3/4" EI GA. 29 GRADE MU STACK 1X1

MOUNTING HA - Heavy Copper Jacket

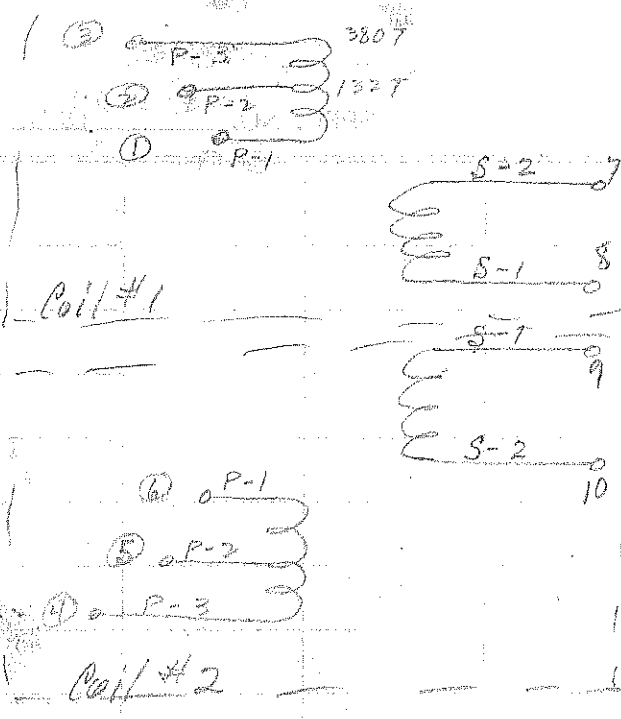
Wire Net = 0.273" (0.273")

Note: Two Coils/unit.



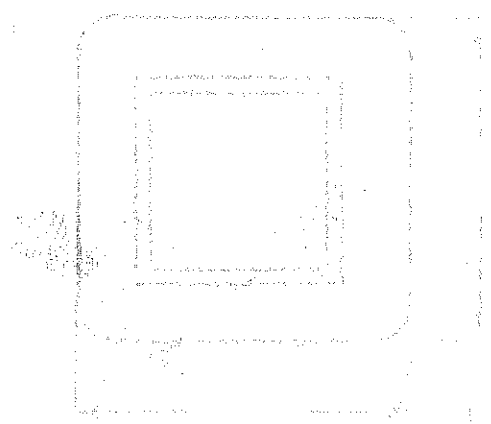
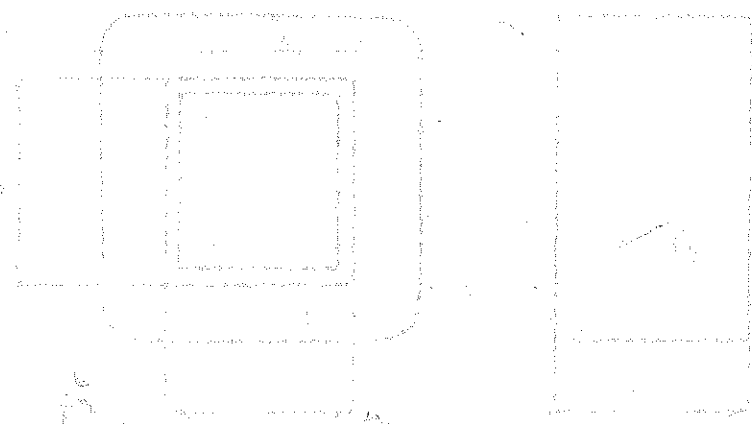
DESIGNED BY NWS

DATE 5-15-42



0	0	OS1
3	4	Sec
0	0	OS2
2	5	
0	0	OS3
1	6	Sec
		OS4

Note: Mount coils reverse direction -



Handwritten text at the bottom right corner.

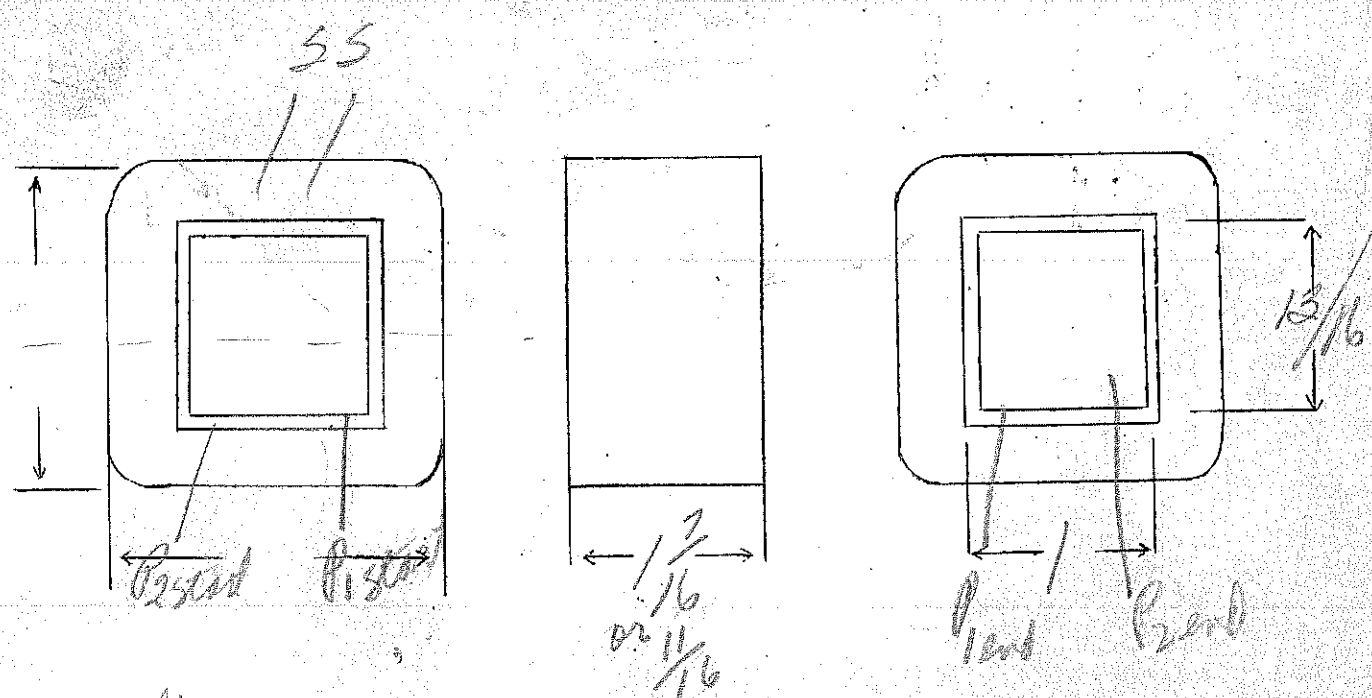
RIBBON MIKE (25 or 1 2/16 25000 or 100000)

SPEC. NO. H 606

2 files

Winding	PRI	SHIELD	SEC	SHIELD	PRI		$\frac{1}{2} = 50$
Turns	19	1	6000	1	19		Shield Panel 138 Volts
Taps	—	—	—	—	—		
Wind. Lgth.	1.25	1.25	1/2	1.25	1.25		
Wire Size	#15	skin	#39	skin	#15		
T.P.L.	1L				1L		
Kind Term.	W.O.	Silver Brand			W.O.		
Term. Lgth.	5/16	✓	✓	✓	✓		
Layer Insul.	—	—	20#	—	—		
Test Volt.	—	—	—	—	—		
Wrapper	210058A	210058A	210058A	210058A	210058A		

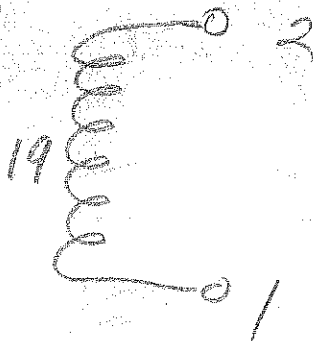
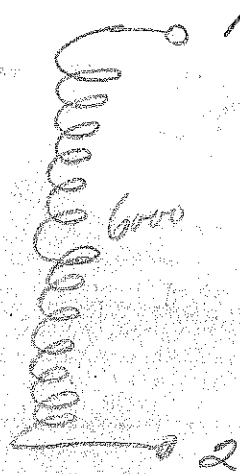
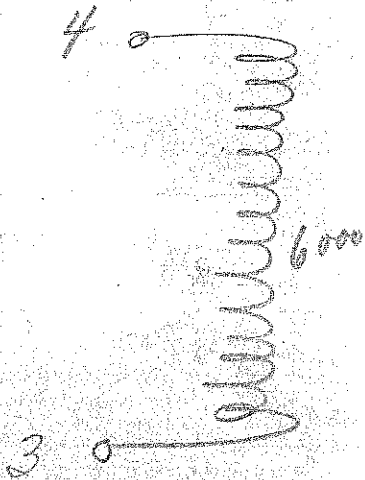
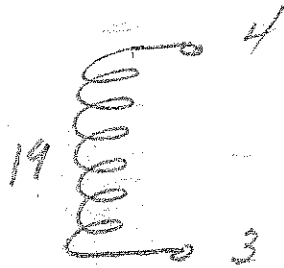
TUBE	76007	IMPREGNATION	WAX
CORE	1x 1 3/16	2x2 audio A	PRIMARY V.A.
MOUNTING	HA1		



DESIGNED BY Gaw

DATE 12-2-36

$$\frac{100,000}{1} = \frac{Z_1}{Z_2} \quad \frac{N_1}{N_2} = 314$$



P	S
F 04	40S
S 03	30S
F 02	20S
S 01	10S

brush pull plates (1800) to

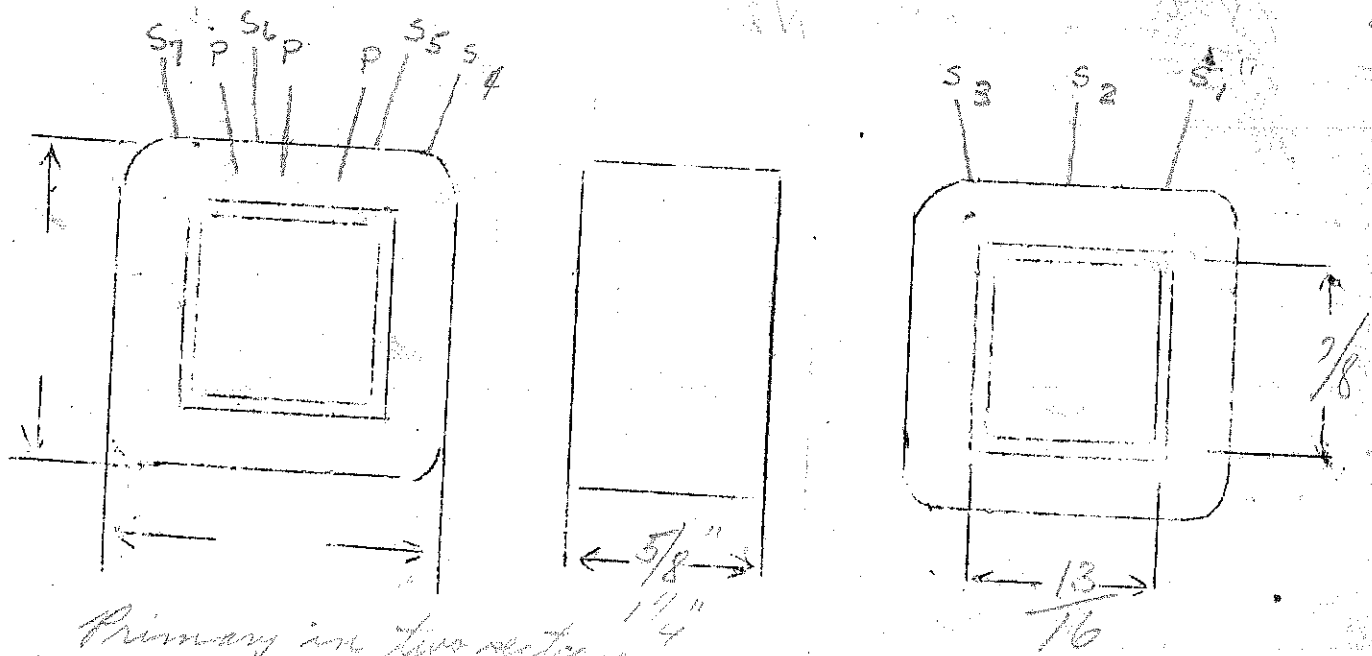
+10 DB

.06 watts

500
233
250
200
125
50
lines

SPEC. NO. 610

	PRI	SEC,	Continuans			
Winding	PRI	SEC,				
Turns	3000	500	530			
Taps	—	3/3	3/0-205-132			
Wind. Lgth.	1/2"	1 1/4"	1 1/2"			
Wire Size	#9	#29	#31			
T.P.L.	1/6-26:	82	100			
Kind Term.	silbr	sil	br			
Term. Lgth.	6"	6"	6"			
Layer Insul.	16#	20#	20#			
Wrapper	2007K		20056A			
TUBE	72007			IMPREGNATION	WAX	
CURE	13/16 x 7/8					



$$\frac{18000}{500} = 36$$

$$\frac{N_1}{N_2} = 6$$

$$\frac{6000}{6} = 1000T$$

$$\frac{18000}{333} = 54$$

$$\frac{N_1}{N_2} = 7.4$$

$$\frac{6000}{7.4} = 810T$$

$$\frac{18000}{250} = 72$$

$$\frac{N_1}{N_2} = 8.5$$

$$\frac{6000}{7.4} = 705T$$

$$\frac{18000}{200} = 90$$

$$\frac{N_1}{N_2} = 9.5$$

$$\frac{6000}{9.5} = 632T$$

$$\frac{18000}{125} = 144$$

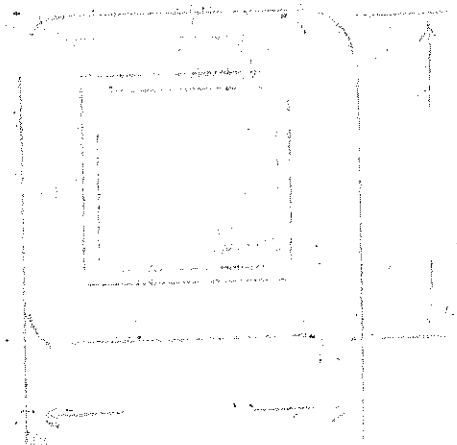
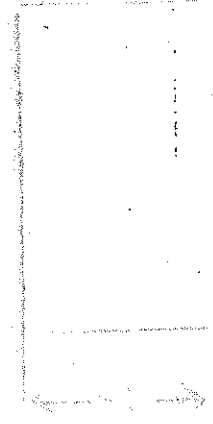
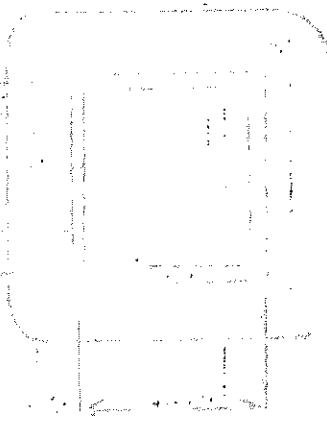
$$\frac{N_1}{N_2} = 12$$

$$\frac{6000}{12} = 500T$$

$$\frac{18000}{50} = 360$$

$$\frac{N_1}{N_2} = 19$$

$$\frac{6000}{19} = 313T$$



Filament

New Stock

117V @ 50/60 Hz

5V CT @ 3A

SPEC. NO. F610

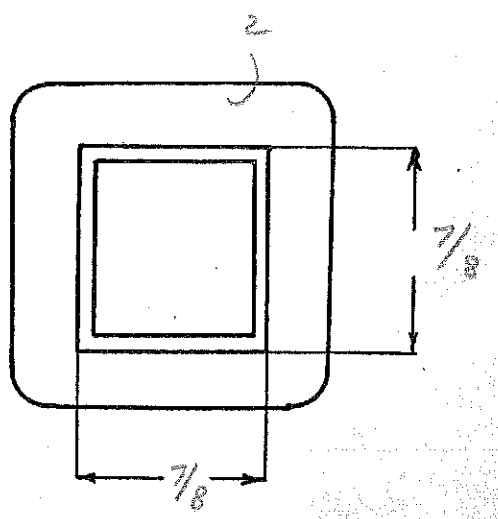
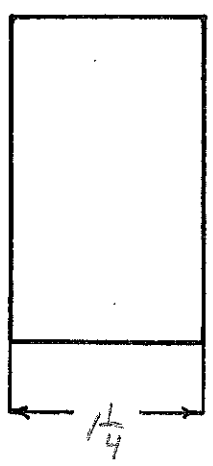
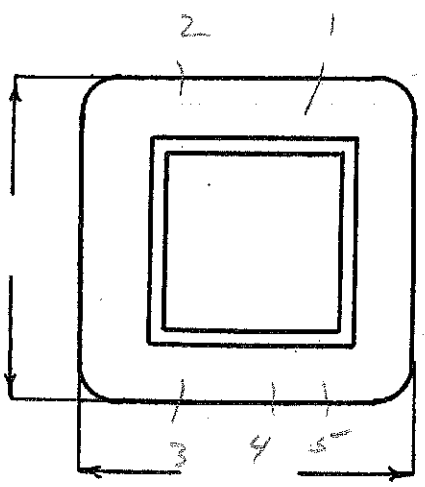
Winding	1-2 PFI	3-4-5 FIL.				
Turns	95°	48				
Taps	—	24				
Wind. Lgth.	1 1/16	3/4				
Wire Size	# 30	# 18				
T. P. L.	87-114	16-36				
Finish	899.	899.				
Type Lead	# 22 P.B.	W.P. 260000				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30 #	10005 GA				
Test Volt.	1250	2500				
Wrapper	260074A	260074A				

TUBE 5L0106K IMPREGNATION Varnish

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

MOUNTING D - Leads

mm = 82%



DESIGNED BY S. Babcock

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 15
Pr VA = 2
I_p = 175 ma

Winding	Pri	Sec				
Mean Turn	4.37	5.58				
Resistance 25° c	363	1152				
Pounds Copper	.107	.116				
Copper Density	575	541				
Ratio Volts	115	5.04				
Test to Ground	1250	2500				

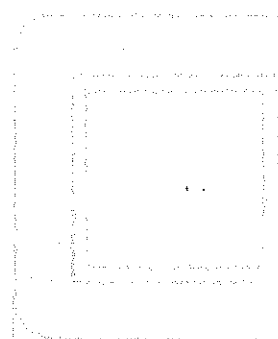
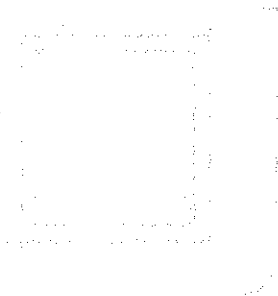
Iron Induction 12.6 K_v @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
3-4-5 yellow



Filament

New stock

117 V @ 50/60 ~ to

5V C.T. @ 3a.

AT&T TEST WMA MODEL

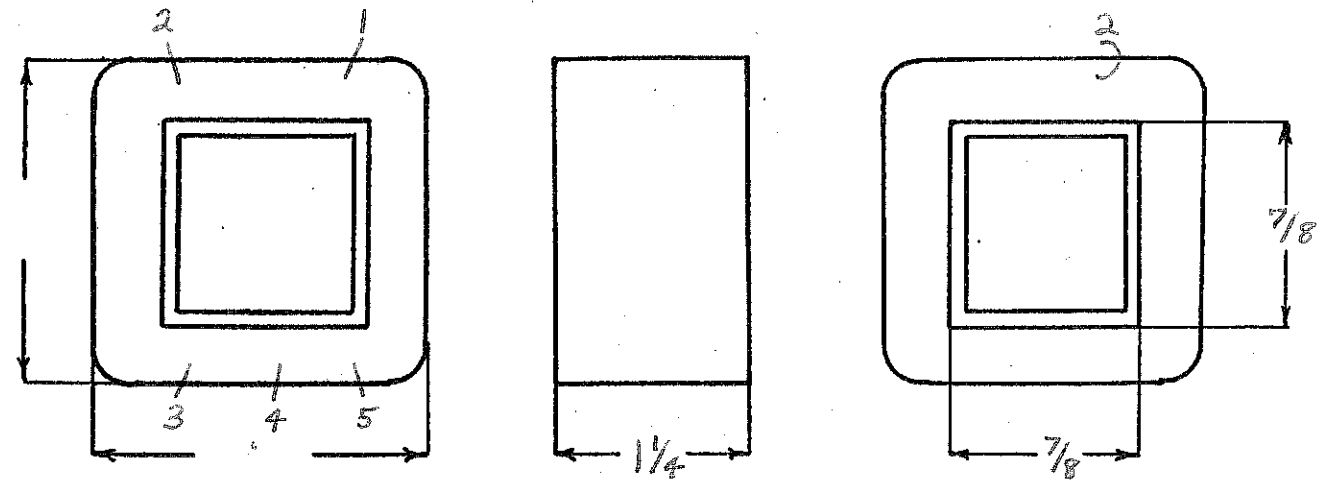
SPEC. NO. F 610

Winding	1-2 Pri	3-4-5 Fil				
Turns	950	48				
Taps	—	24				
Wind. Lgth.	1 1/16	3/4				
Wire Size	#30	#18				
T. P. L.	87-11L	16-3L				
Finish Pitch	89%	89%				
Type Lead	#22 P.B.	w.o. sleeve				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30 #	1L005GA				
Test Volt.	1250	2500				
Wrapper	2L007GA	2L007GA				

TUBE 5L010 GK IMPREGNATION Varnish

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

MOUNTING D-Leads



DESIGNED BY S. BABCOCK

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 15
Pri VA = 20
I_p = 175 ma.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.37</i>	<i>5.58</i>				
Resistance 25° c	<i>363</i>	<i>.152</i>				
Pounds Copper	<i>.107</i>	<i>.116</i>				
Copper Density	<i>575</i>	<i>541</i>				
Ratio Volts	<i>115</i>	<i>5.04</i>				
Test to Ground	<i>1250</i>	<i>2500</i>				

Iron Induction *12.6 Kg* @ *50* Cycles

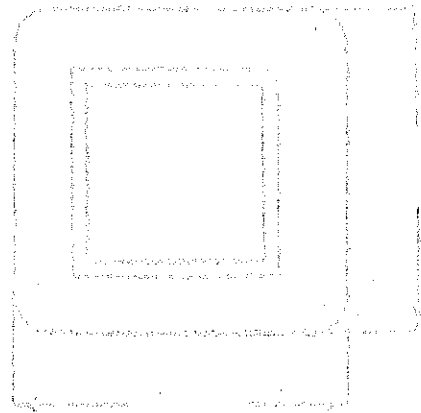
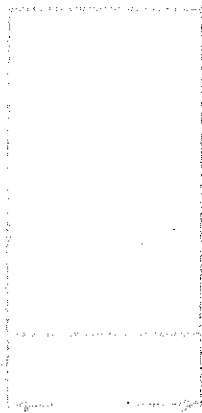
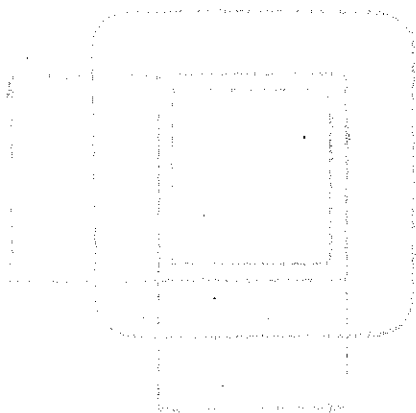
Exciting Current *60 ma.* amperes @ *117* volts 60 cycles on *Pri.*

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

Remarks:

1-2 Black

3-4-5 yellow

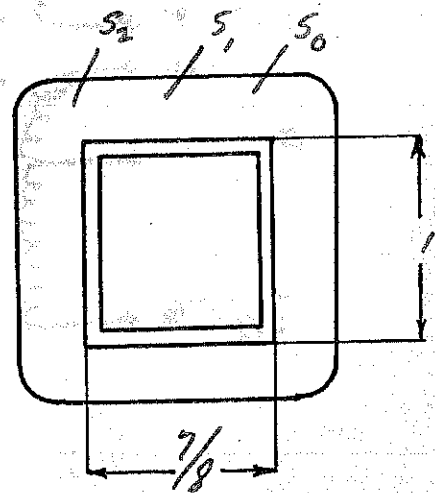
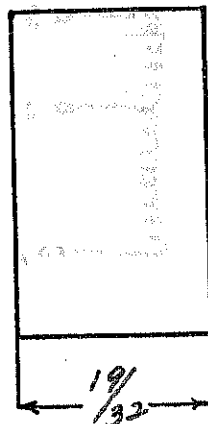
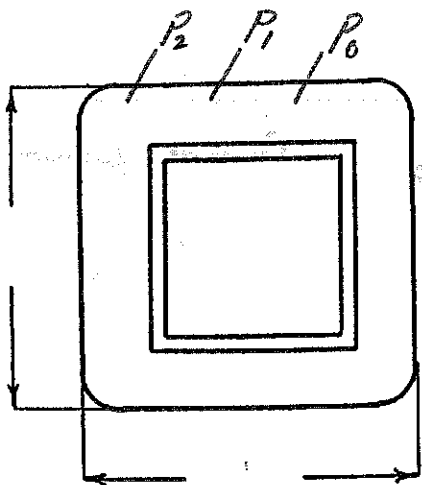


Multi-line matching transformer

500-353-250-200-125 or 50 ohm primary and secondary

SPEC. NO. H 611

Winding	WIND TWO COILS					
	P	S				
Turns	480	480				
Taps	180	300				
Wind. Lgth.	7/16	7/16				
Wire Size	#51	#31				
T. P. L.	40	40				
Finish						
Type Lead	<i>Pat.</i> 5111	Br.				
Lead Lgth.	6"	6"				
Layer Insul.	30#	30#				
Test Volt.						
Wrapper	1L.0077C 5L 61	2L.0050A				
TUBE	7L.007		IMPREGNATION	WAX		
CORE	7/8 x 1 Annealed	GA. 20	GRADE	STACK 2 x 2		
MOUNTING	HA					

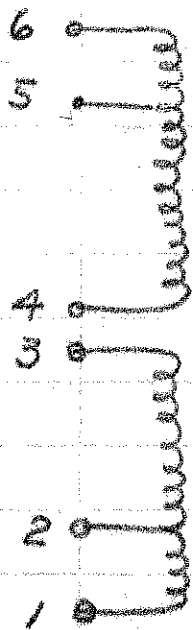


DESIGNED BY CW

DATE 10/20/37

- 500 - 22.4
- 333 - 18.3
- 250 - 15.8
- 200 - 14.1
- 125 - 11.2
- 50 - 7.07

OHMS



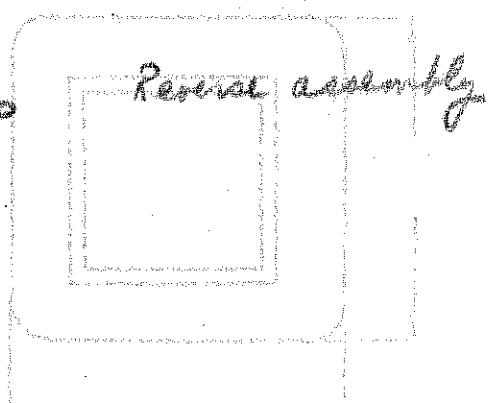
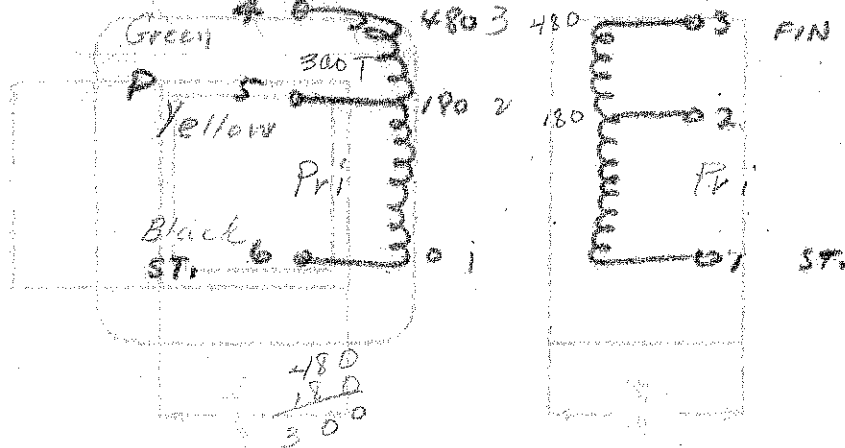
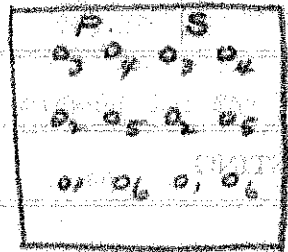
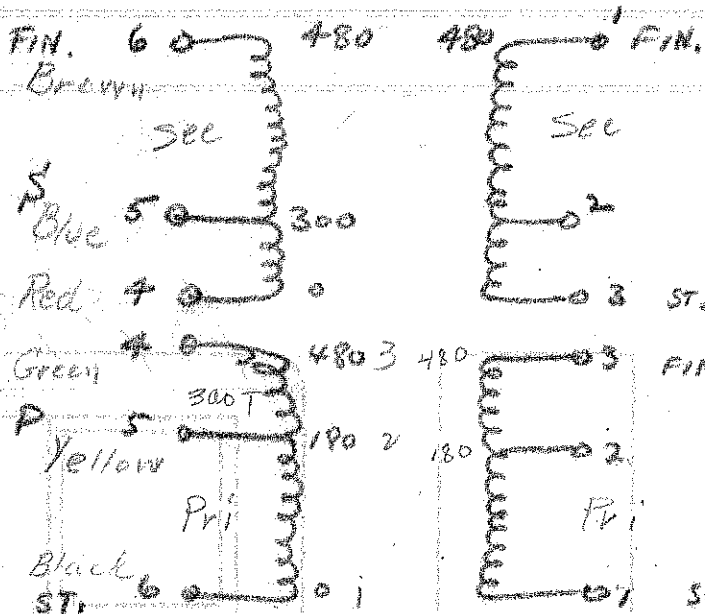
Connect to	Join	ohms
22.4 1-6	3-4	500
14.1 2-5	3-4	200
11.2 4-6	3-6, 1-4	125
7.07 4-5	3-5, 2-4	50
18.3 1-5	3-4	333
15.3 1-6	3-5	235 250

WINDING

BLACK

GREEN

AD



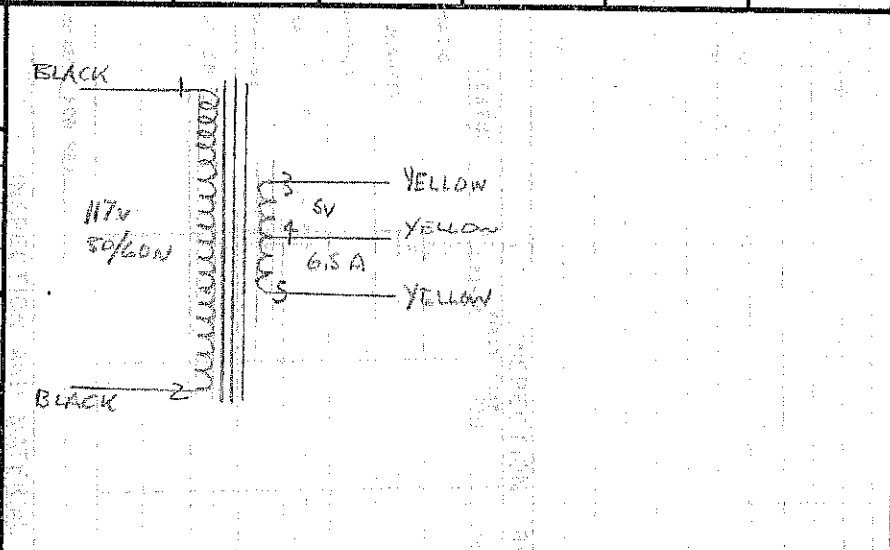
480
180
300

WINDING

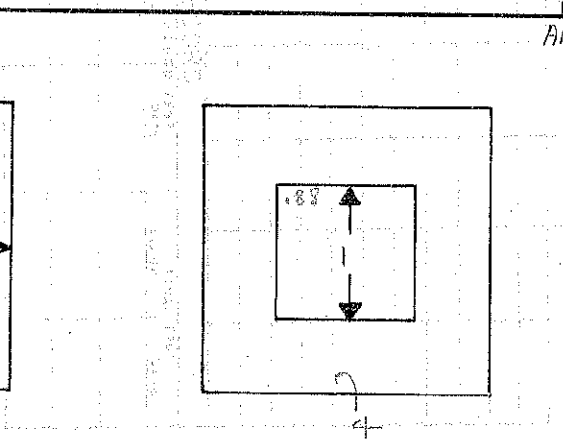
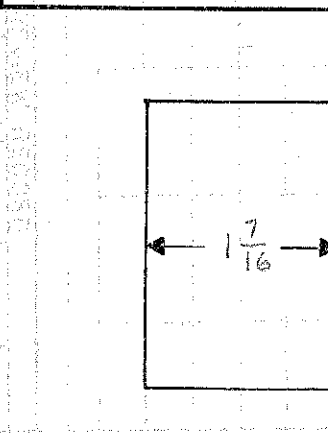
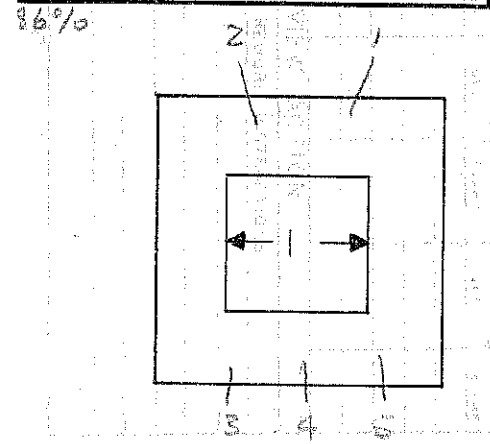
WINDING

CUSTOMER STOCK		WANTED		SPEC. NO.		F-672	
DATE		QUANT. ORDERED		JOB. NO.			
WINDING	1-2 PRI	3-4-5 FIL					SCHEDULE
URNS	790	46					M.W.
TAP	-	20					FIN.
WIRE SIZE	#26	#15					2
WINDG. LENGTH	1 1/4	1 1/4					S.W.
URNS/LAYER	66-126	20-24					3
PITCH	90%	94%					STACK
TYPE LEAD	UNL #22 PL	W.O SLEEVE					4
LEAD LENGTH	CUT 9"	CUT 9"					FIRST TEST
TERMINAL	-	-					5
LAYER INS.	40 ²	1L00760					VARNISH
WRAPPER	2L00760	2L00760					6
CU. MEAN TURN	5.21	6.61					ASSEMBLY
DENSITY	6.73	5.02					PLASTIC
WEIGHT	1268	1219					2ND TEST
RESISTANCE	142	10717					SEAL
NO-LOAD VOLTS	117	5.93	CT				PAIN
FL-LOAD VOLTS	117	5.18					FINAL
TEST VOLTS	1250	2500					7

B = 11.75 KG W / 115 V. 50 ~
 WL = WATTS IEX. = A.
 NCU = WATTS IP = 377MA.
 CORE 1X1
 GA. 24 GRADE D
 STACK 2X2
 IMPREGNATION: VARNISH
 COIL & CORE
 TUBE SLD10 GK



NSM
 7



AHH 20 AUG 1959
 REC. F-672
 O.

RM. HADLEY CO., INC. **PLANNER** A.H.H. **REV. DATE** 5/16/54 **CUSTOMER DWG.** **REV. DATE** **REV. CUSTOMER NAME** HUGHES

LINE	OPER. NO.	OPERATION OR MAT.	QTY.	ACCEPT. DATE	R.H.M. CUST. GOVT	TOOL NO.
1		52 MAR				
2		M.W.				
3						
4		FIN				
5						
6		S.W.				
7						
8		STACK				
9						
10		1ST TEST				
11						
12		VARNISH				
13						
14		FINAL INSP.				
15						
16		FINAL TEST				
17						
18		SHIPPAIR				
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						

LINE	OPER. NO.	OPERATION	QTY.	INSPECTION RECORD			
				FIRST TEST DATE	SECOND TEST DATE	STAMP	FINAL TEST DATE
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
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27							
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29							
30							
31							
32							
33							
34							
35							
36							
37							

INSPECTION AND MATERIAL REVIEW RECORD

REASON FOR REJ. _____

DEFECT _____

ROUTING _____

REWORK INSTRUCTIONS _____

Filament

New Stock

117V @ 50/60 - to

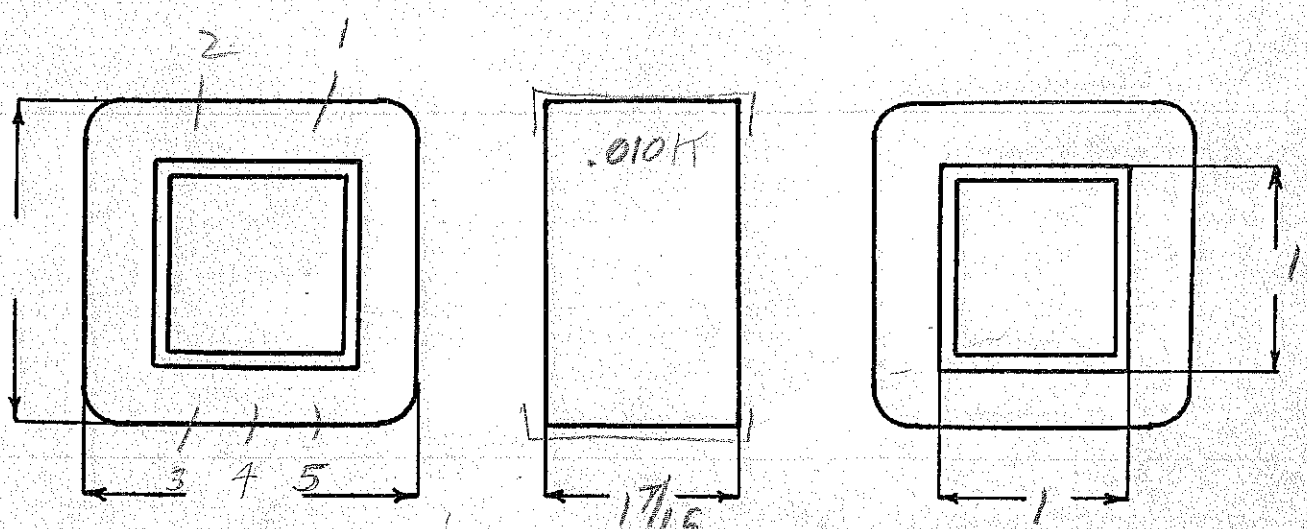
5V CT @ 6.5 a

SPEC. NO. F612

Winding	1-2 P.L.	3-4-5 Tail				
Turns	7790	40				
Taps		20				
Wind Lgth.	1 1/4	1 1/4				
Wire Size	#26	#15				
T.P.L.	66-12L	20-2L				
Finish	90%	94%				
Type Lead	#22 UNL PLASTIC	W.O. SILVER				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	404	160076A				
Test Volt.	1250	2500				
Wrapper	260074A	26007 GA				
TUBE	5LD106K		IMPREGNATION	Varnish		
CORE	1 X 1	GA. 24	GRADE D	STACK 2 X 2		
MOUNTING	D - Leads					

86%

HADLEY DECAL ON TOP



DESIGNED BY S Babcock

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 32
 PRI VA = 44
 PF = 37.7 mm

Winding	PRI	FIL.					
Mean Turn	5.21	6.61					High br.
Resistance 25° c	1.42	.0717					2.01W
Pounds Copper	2.68	.219					I.T
Copper Density	6.73	5.02					
Ratio Volts	117	5.94					
Test to Ground	1250	2500					100V test

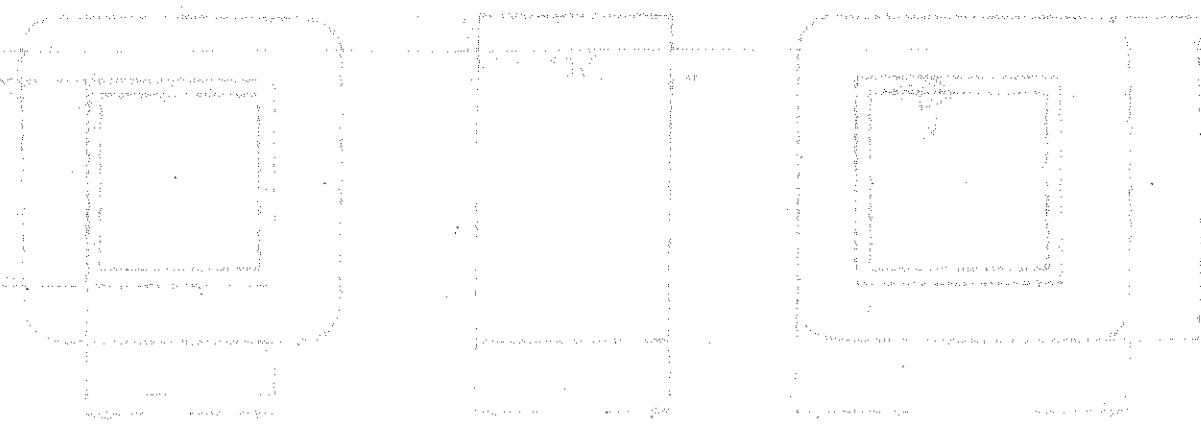
Iron Induction 11.75 kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on

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

Remarks:

1-2 Black
 3-4-5 Yellow



3 filament 1KR

New stock

117V @ 50/60 ~ to

5V C.T. @ 6.5a.

SPEC. NO. F 612

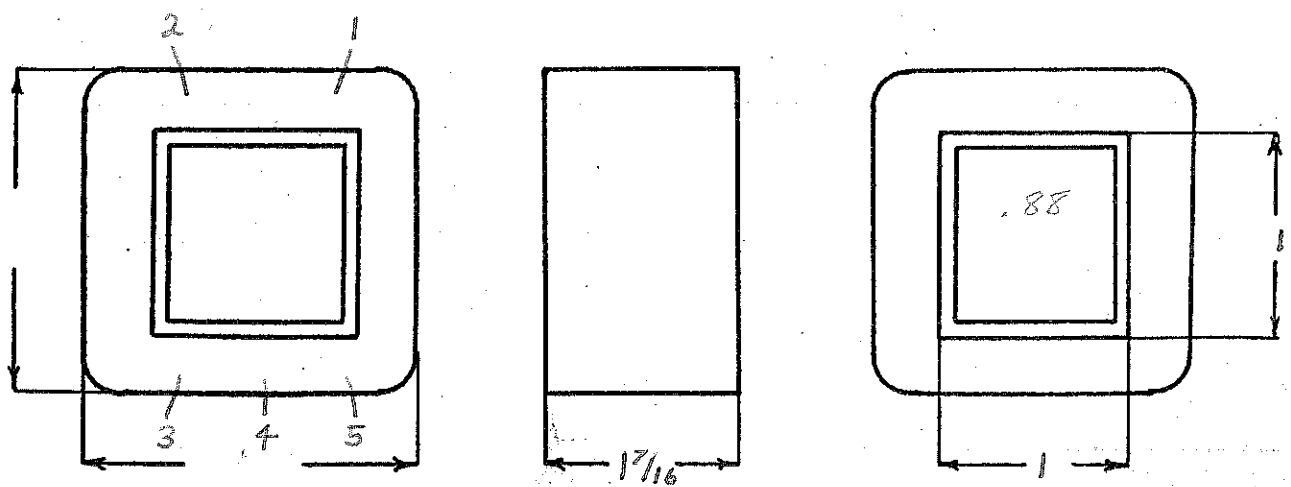
Winding	1-2 Pri	3-4-5 Tri		Pri		
Turns	790	40		1-66		
Taps	—	20		2-132		
Wind. Lgth.	1 1/4	1 1/4		3-198		
Wire Size	#26	#15		4-264		
T. P. L.	66-12L	20-2L		5-330		
Finish Pitch	90%	94%		6-396		
Type Lead	1/4 #.22 P. Q.	w. a. sleeve		7-462		
Lead Lgth.	cut 9"	cut 9"		8-528		
Layer Insul.	40#	1L007GA		9-594		
Test Volt.	1250	2500		10-660		
Wrapper	2L007GA	2L007GA		11-726 12-792		

TUBE 5L 0106K IMPREGNATION Varnish

CORE | x | GA. 24 GRADE D STACK 2x2

MOUNTING D-Leads (Horizontal)

wn = 86%
Hadley on top



DESIGNED BY S. BABCOCK

DATE 4-22-49

DESIGN AND TEST DATA

Rating:

Sec VA = 32.3
Pri VA = 44
I_p = 377 ma.

Winding	Pri	Sec				
Mean Turn	5.21	6.61				
Resistance 25° c.	142	.0717				
Pounds Copper	.268	.219				
Copper Density	673	502				
Ratio Volts	117	5.18				
LOAD	117	5.18				
NO LOAD	117	5.18				
Test to Ground	1250	2500				

Iron Induction 11.75 Kg @ 50 Cycles

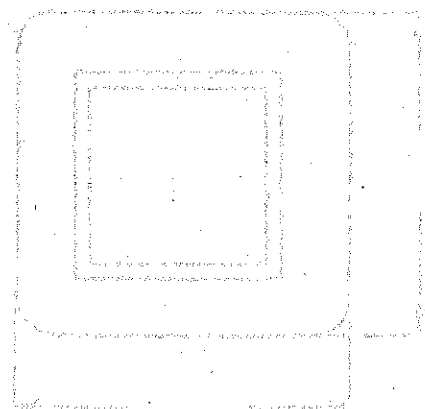
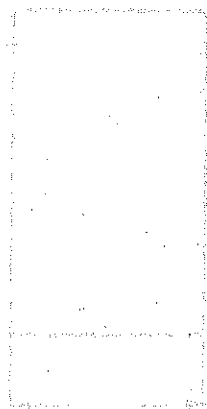
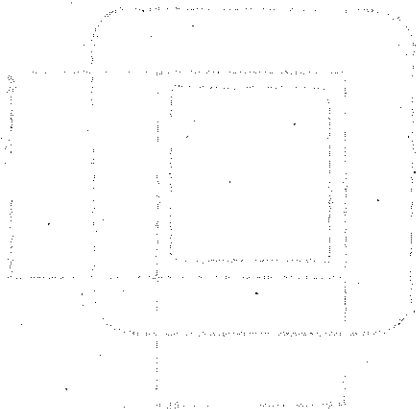
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

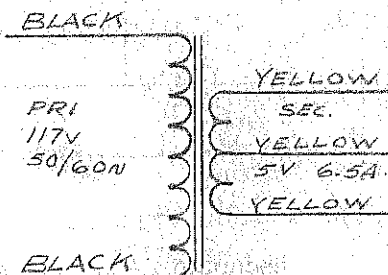
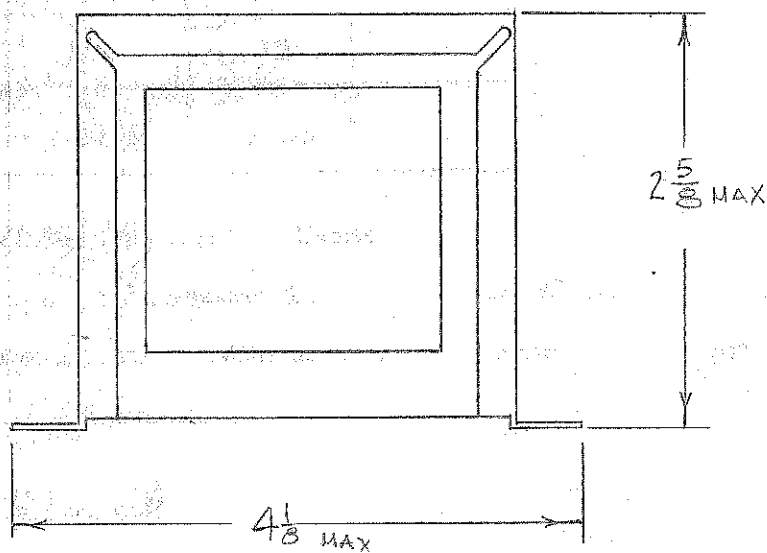
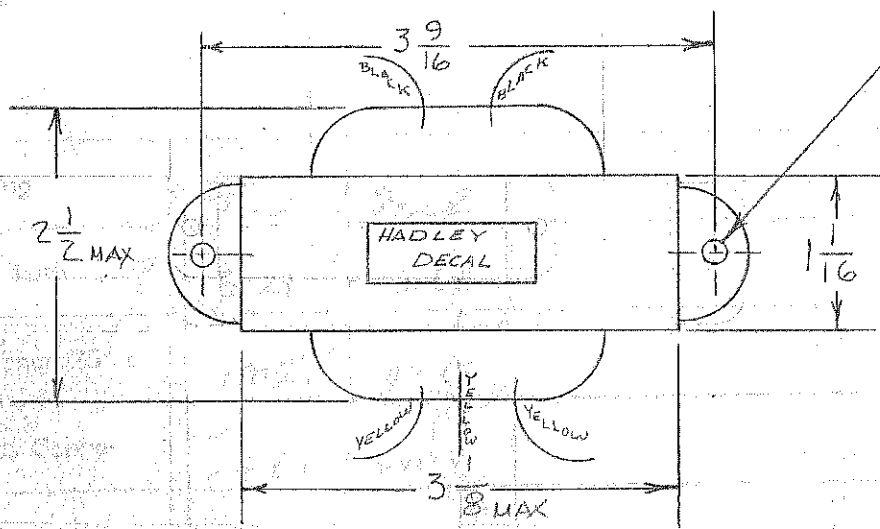
1-2 Black

3-4-5 yellow



DESIGN AND TEST DATA

3/16 DIA. MTG. HOLE (2) PLACES.



4. WEIGHT: 2.34 POUNDS MAX.

3. TOLERANCE: UNLESS OTHERWISE STATED MECHANICAL $\pm \frac{1}{16}$ ELECTRICAL $\pm 4\%$

2. MARKING: HADLEY DECAL ON TOP OF BRACKET

1. MOUNTING: HORIZONTAL D BRACKET LEADS

NOTES

NO.	REVISION	DATE	BY
	Redrawn	7-2-58	P.B.C.

ROBERT M. HADLEY CO., INC.
5112 SO. HOOVER ST.

SCALE	3/4
ENGR.	P.B.C./C. BABCOCK
DATE	7-2-58 / 14-22-46
SPEC.	

UNITS ON BATCH NO _____

BILL OF MATERIAL AND COST SHEET FOR F-612
 CUSTOMER DRWG NO. _____ REV. _____

X	DEPT.	MATERIAL DESCRIPTION		SOURCE	QUANTITY	PRICE		COST	
					PER ASSY.	PER UNIT		PER ASSY.	
	M.W.	COIL FORM	1X1X.050 GH		1 3/4"		.01		.02
		WIRE	#26 SF		.268LB		.76		.21
			#15 SF		.219LB		.58		.13
		WIRE							
	S.W.	COIL FORM							
		CORE							
	FIN.	LEAD WIRE							
	STK.	CORE	1X1, 26C		1.00		.46		.46
	ASSY.	TERMINALS							
		CANS							
		BRACKETS	1X1 HORIZ D		1		.05		.05
	PLST.	CUPS							
	PAIN								
	FINAL								
	MISC.								.13

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	10.00
DESIGN	10.00
QUAL. TESTS	_____
OTHER TESTS	20.00
DELIVERY	5W

CUSTOMER	STOCK + OTHER CUS. MATERIAL	DATE	9/69
1- 2	17.50	9-2-59	12-26-68
3- 4	15.50		3-22-68
5- 9	10.00		25-2000
10- 24	9.00		12.50
25- 49			11.50
50- 99			
100- 249			
250- 499			
500- 999			
1000			

Filament

New Stock

117V @ 50/60 Hz to

5V ct @ 13A

SPEC. NO. F614

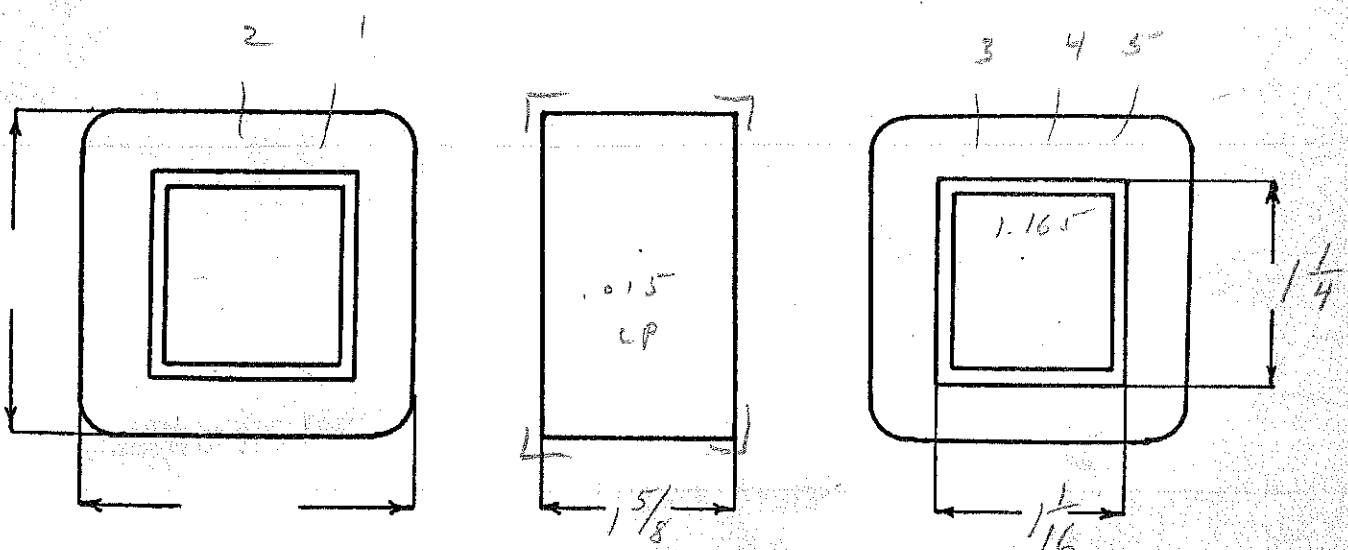
Winding	1-2 P51	3-4-5 Hand				
Turns	585	28				
Taps	—	14				
Wind. Lgth.	1 3/8	1 3/8				
Wire Size	#24	#12				
T. P. L.	59-10L	14-2L				
Finish	91% Patched	89%				
Type Lead	#22 P/B	W.O sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	50#	12015CP				
Test Volt.	1250	2500				
Wrapper	12015CP	240076A				

TUBE 52010 GK IMPREGNATION Varnish

CORE 1/16 x 1/4 GA. 24 GRADE D STACK 2X2

MOUNTING A

Wn = 76%



DESIGNED BY S. Babcock

DATE 4-23-49

DESIGN AND TEST DATA

See VA = 65
 PCVA = 85
 IP = 727

Rating:

g	PRI	SEC				
Turn	5.87	7.52				
Distance 25° c	75	.0284				
Wounds Copper	356	.35				
Copper Density	556	502				
Ratio Volts	117	4.97				
Test to Ground	1235	2500				

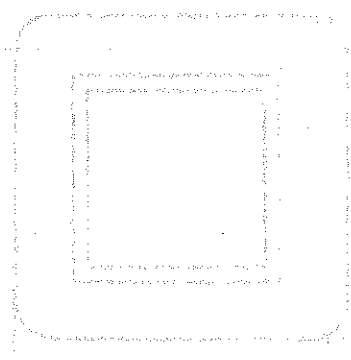
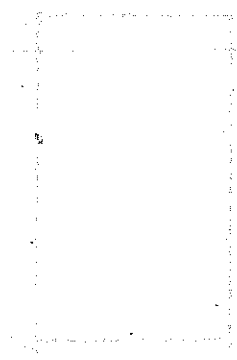
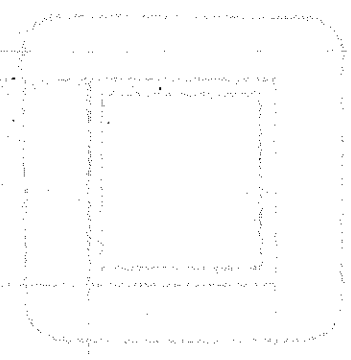
Iron Induction 12 kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks: _____

1-2 Black
 3-4-5 yellow



4-filament

New stock

117 V @ 50/60 ~ to

5V C.T. @ 13a

SPEC. NO. F 614

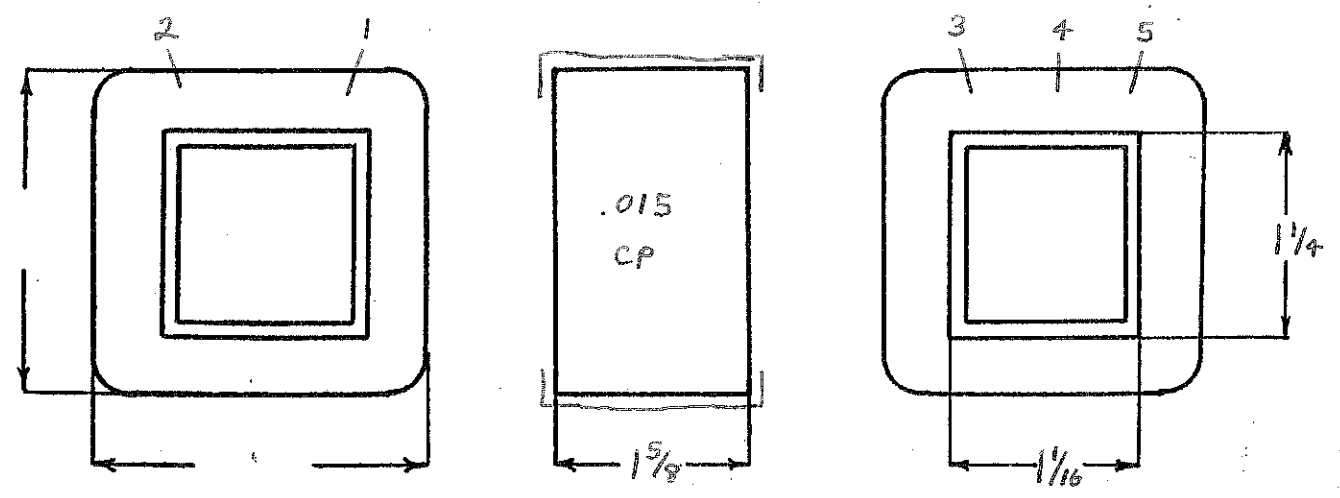
Winding	1-2 Pri	3-4-5 Fil				
Turns	585	28				
Taps	-	14				
Wind. Lgth.	1 3/8	1 3/8				
Wire Size	# 24	# 12				
T. P. L.	59-10L	14-2L				
Finish Patch	9190	8490				
Type Lead	# 22 P.B.	w. o. Sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	50#	1L015CP				
Test Volt.	1250	2500				
Wrapper	1L015CP	2L007GA				

TUBE 5L010GK+L001CA IMPREGNATION Varnish

CORE 1/16 X 1/4 GA. 24 GRADE D STACK 2x2

MOUNTING A

wr = 76%



DESIGNED BY S. BABCOCK

DATE 4-23-49

DESIGN AND TEST DATA

Rating:

Sec VA = 65
 Pri VA = 85
 I_p = 727 ma.

Winding	Pri	Sec				
Mean Turn	5.87	7.52				
Resistance 25° c	7.5	.0284				
Pounds Copper	.356	.35				
Copper Density	556	502				
Ratio Volts	117	4.97				
Test to Ground	1250	2500				

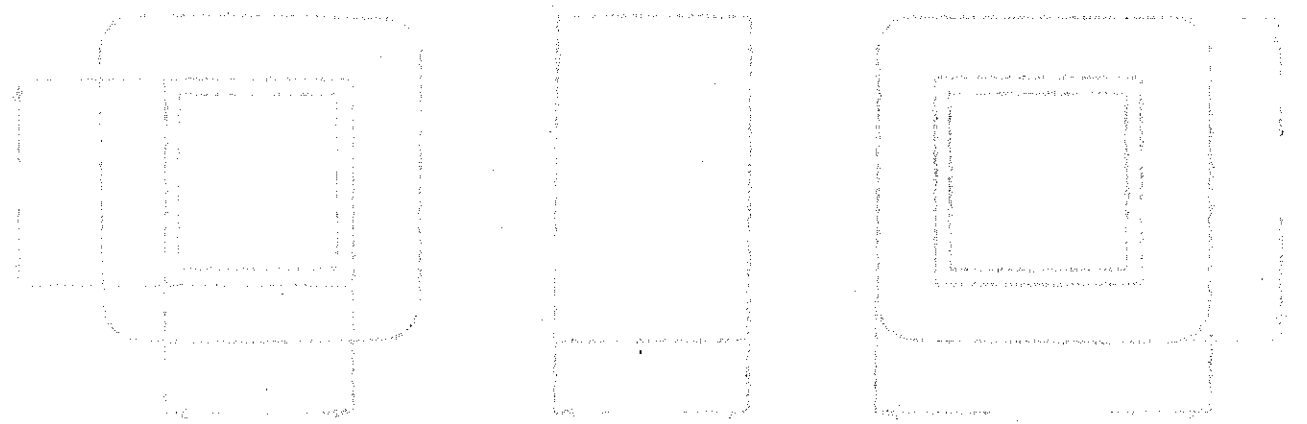
Iron Induction 12 Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
 3-4-5 Yellow



Filament

New Stock

117V @ 50/60 Hz

5V ct @ 20 a.

SPEC. NO. F61E

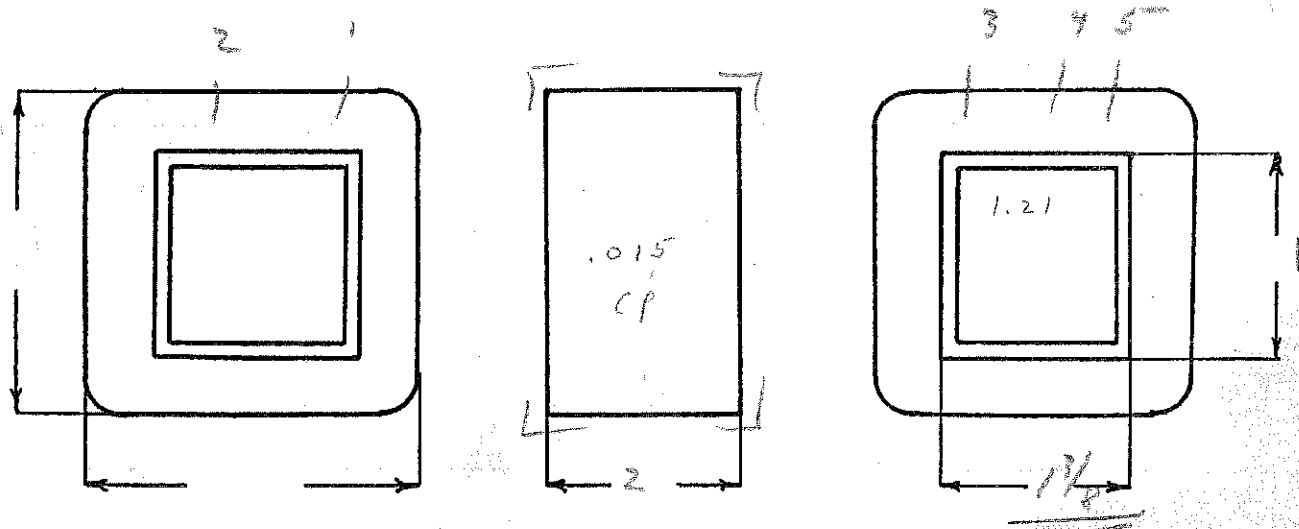
Winding	1-2 Pri.	3-4-5 Sec				
Turns	575	28				
Taps	—	14				
Wind. Lgth.	1 3/4	1 3/4				
Wire Size	# 22	# 10				
T. P. L.	58-10L	14-2L				
Finish	89%	84%				
Type Lead	# 20 P.R.	W.O. SLIP PL				
Lead Lgth.	cut 15"	cut 14"				
Layer Insul.	50#	16020CP				
Test Volt.	1250	2500				
Wrapper	16020 CP	360076A				

TUBE 5L010 GK IMPREGNATION Varnish

CORE 1 3/8 x 1 GA. 24 GRADE D STACK 2X2

MOUNTING A

Wm = 89%



DESIGNED BY S. Babcock

DATE 4-26-49

DESIGN AND TEST DATA

Rating:

Sec VA =
Pri VA = 12
I_p = 1.19

Winding	Pri	Sec				
Mean Turn	6.19	8.26				
Resistance 25° c	4.88	.0196				
Pounds Copper	.587	.612				
Copper Density	583	518				
Ratio Volts	117	5.04				
Test to Ground	1250	2500				

Iron Induction 11.75 kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
3-4-5 Yellow



Filament

New stock

117V @ 50/60 ~ to

5V C.T. @ 20a.

TEST CHA NO. 1000

SPEC. NO. F 616

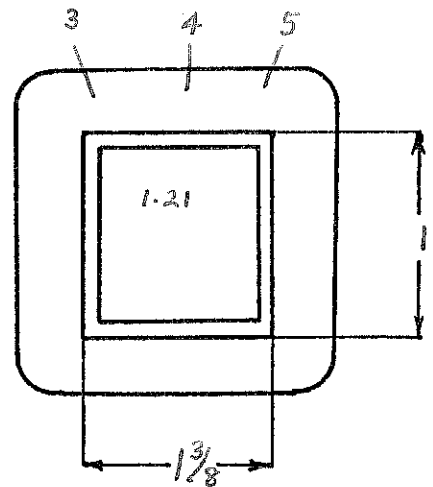
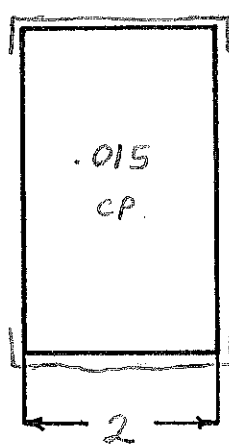
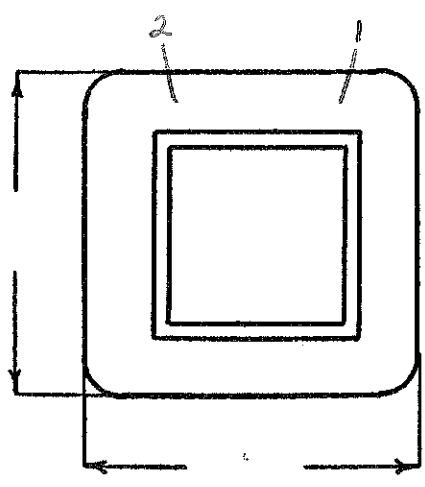
Winding	1-2 Pri	3-4-5 Sec				
Turns	575	28				
Taps	—	14				
Wind. Lgth.	1 3/4	1 3/4				
Wire Size	#22	#10				
T. P. L.	58-10L	14-2L				
Finish Pitch	89%	84%				
Type Lead	#20 P.B.	w.o. sleeve				
Lead Lgth.	cut 15"	cut 14"				
Layer Insul.	50#	1L020CP				
Test Volt.	1250	2500				
Wrapper	1L020CP	3L009GA				

TUBE 5L010 GK IMPREGNATION Varnish

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

MOUNTING A

wn = 89%



DESIGNED BY S. BABCOCK

DATE 4-26-49

DESIGN AND TEST DATA

Rating:

Sec VA = 100
Pri VA = 128.5
I_p = 1.1a.

Winding	<i>Pri</i>	<i>Sec</i>					
Mean Turn	<i>6.19</i>	<i>8.26</i>					
Resistance 25° c	<i>4.88</i>	<i>.0196</i>					
Pounds Copper	<i>.587</i>	<i>.612</i>					
Copper Density	<i>583</i>	<i>518</i>					
Ratio Volts	<i>117</i>	<i>5.04</i>					
Test to Ground	<i>1250</i>	<i>2500</i>					

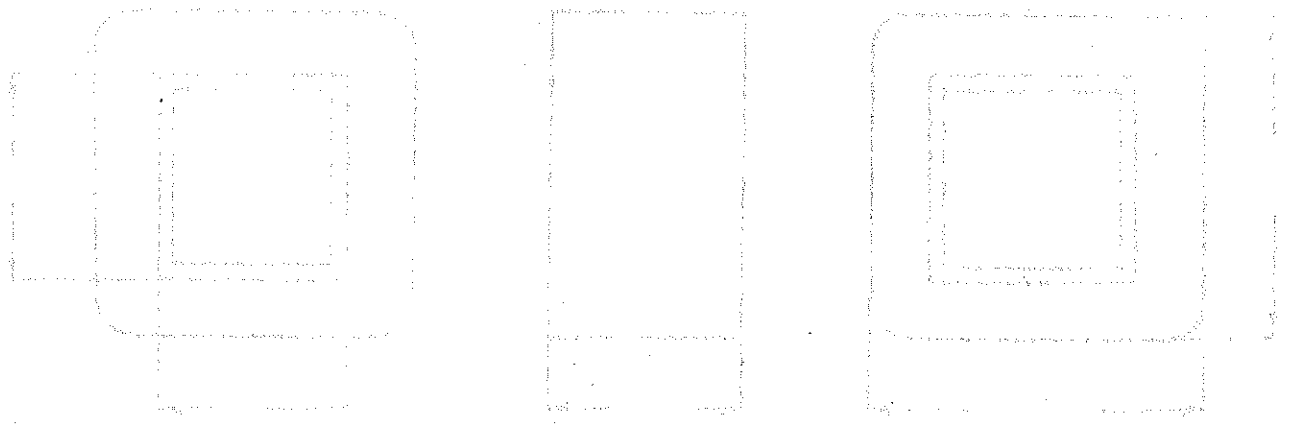
Iron Induction *11.75 Kg* @ *50* Cycles

Exciting Current *70 milli* amperes @ *117* volts 60 cycles on *1-2*

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

Remarks:

1-2 Black
3-4-5 Yellow



Filament

New Stock

117V @ 50/60 ~

to

5V C.T. @ 20a.

ATAU TEST OMA MOIRRO

10,000 V Insulation

SPEC. NO. F 618

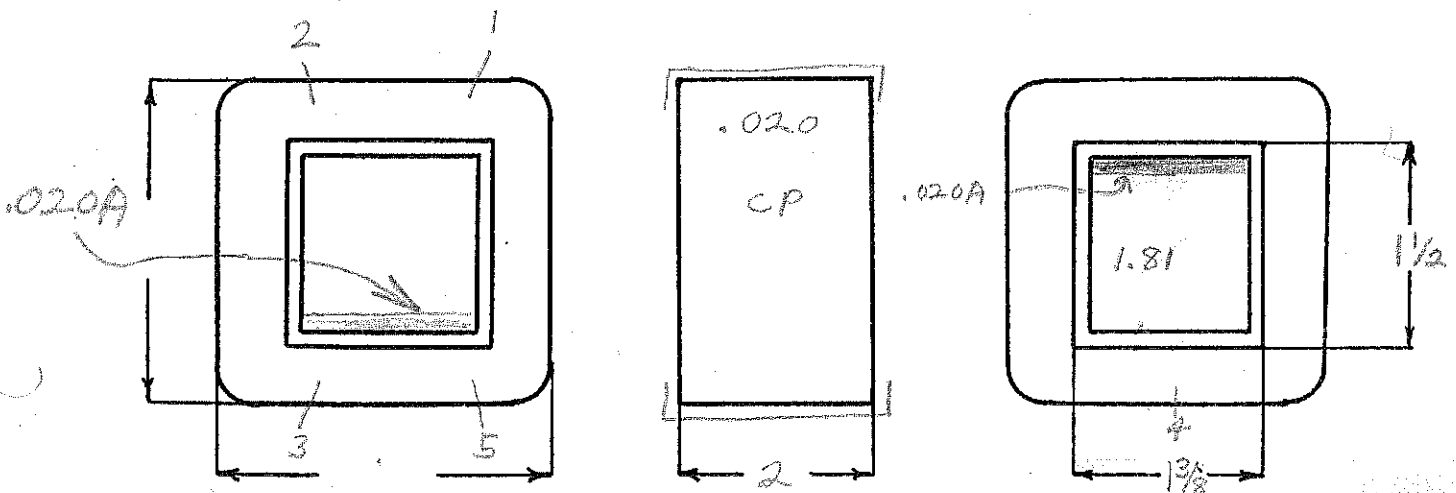
Winding	1-2 Pri	3-4-5 Sec				
Turns	383	18				
Taps	—	9				
Wind. Lgth.	1 3/4	1				
Wire Size	#21	#10				
T. P. L.	55-7L	9-2L				
Finish Pitch	94%	94%				
Type Lead	W.O. to lug	W.O. to Super lug				
Lead Lgth.	3"	3"				
Layer Insul.	50#	1L020CP				
Test Volt.	1500	10,000				
Wrapper	4L005VC 1L020 CP	4L005VC 2L007GA				

TUBE 5L0106K IMPREGNATION Varnish

CORE 3/8 X 1 1/2 GA. 24 GRADE D10V STACK 2X2

MOUNTING BB-^{Jugs on pri} Super lug on sec, H.S. 15

wn = 85%



REDESIGNED BY A. Hadley

DATE 8-3-49

DESIGN AND TEST DATA

Rating:

Sec VA = 100
Pri VA = 130
 $I_p = 1.11a$

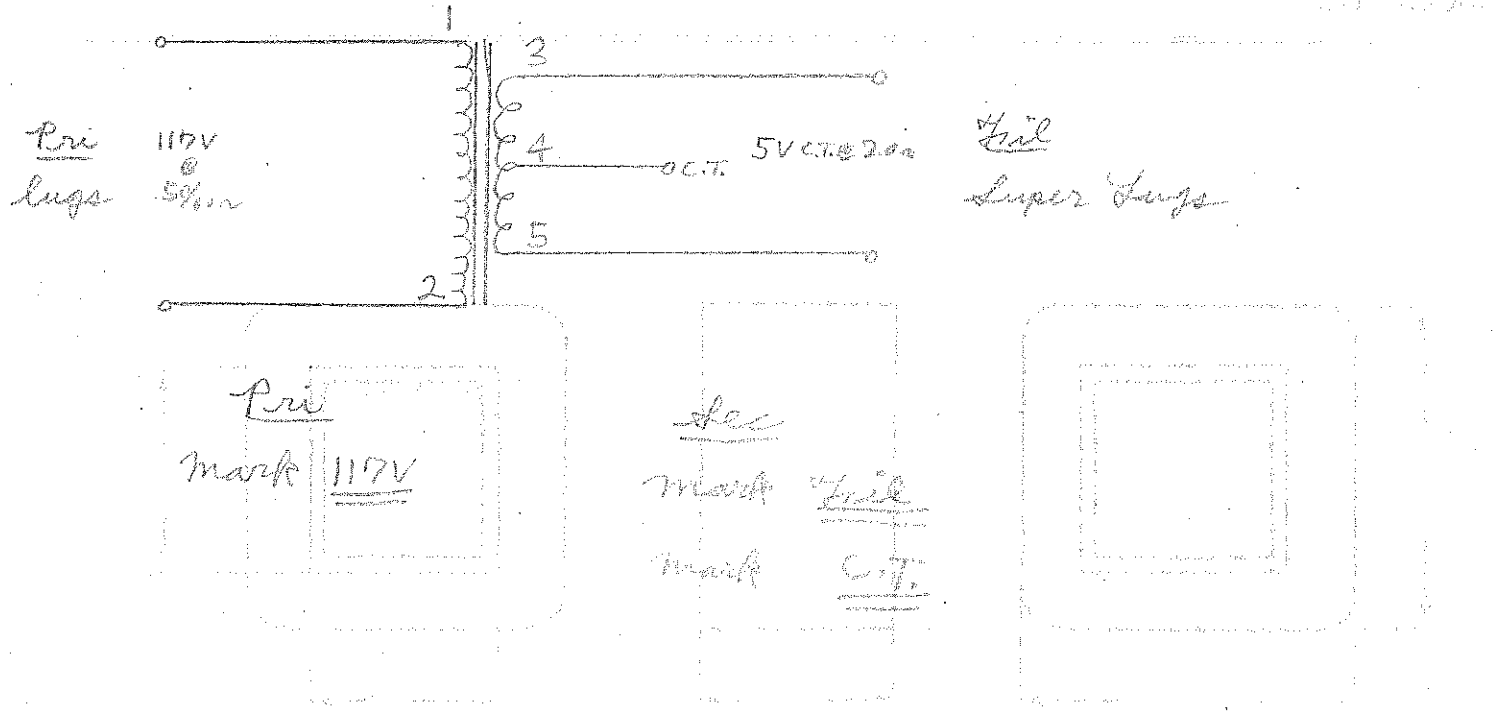
Winding	1-2 <i>Pri</i>	3-4-5 <i>Sec</i>					
Mean Turn	6.96	8.94					
Resistance 25° c	2.90	.01365					
Pounds Copper	.553	.425					
Copper Density	730	520					
Ratio Volts	<i>open circuit</i>	117	5.50				
	<i>Load</i>	117	5.08				
Test to Ground	1500	10,000					

Iron Induction 16.8 K_g @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



Tripartament

new stock

117 V @ 50/60 ~

to
5V C.T. @ 20a

AT&T TEST DATA

10,000 V Insulation

SPEC. NO. F 618

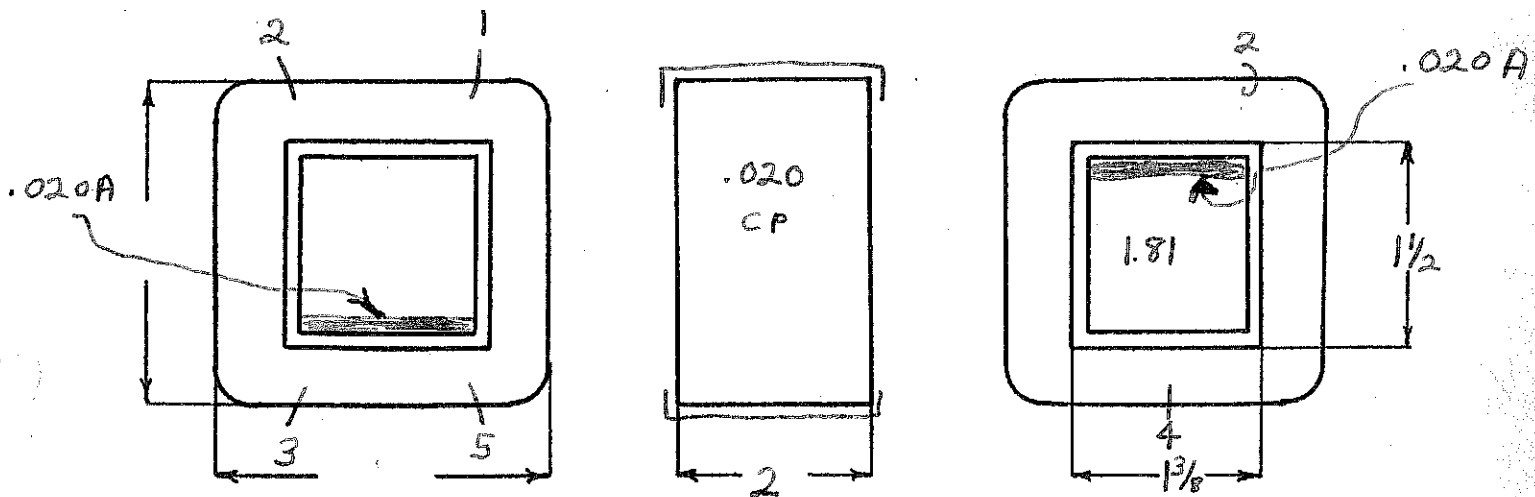
Winding	1-2 Pri	3-4-5 Tril				
Turns	383	18				
Taps	-	9				
Wind. Lgth.	1 3/4	1				
Wire Size	#21	#10				
T. P. L.	55-7L	9-2L				
Finish Pitch	94%	94%				
Type Lead	w.o. to lugs	w.o. to super lugs				
Lead Lgth.	3"	3"				
Layer Insul.	50#	1L020 CP				
Test Volt.	1500	10,000				
Wrapper	4L005VC 1L020 CP	4L005VC 2L0076A				

TUBE 5L010GH IMPREGNATION Varnish

CORE 1 3/8 x 1 1/2 GA. 24 GRADE D STACK 2X2

MOUNTING BB - Lugs on Pri, Super lugs on Tril, HS 15

w = 85%



RE-DESIGNED BY A. HADLEY

DATE 8-3-49

DESIGN AND TEST DATA

Rating:

Sec VA = 100
Pri VA = 130
I_p = 1.11a

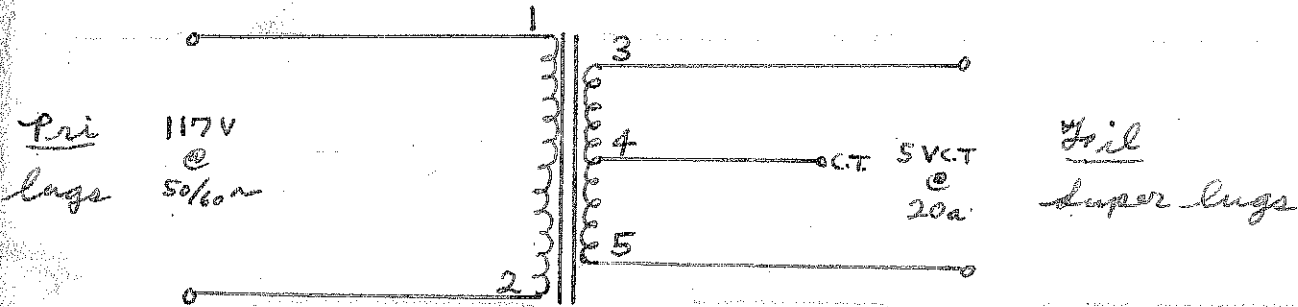
Winding	1-2 <i>Pri</i>	3-4-5 <i>Sec</i>				
Mean Turn	6.96	8.94				
Resistance 25° c	2.90	.01365				
Pounds Copper	.553	.425				
Copper Density	730	520				
Ratio Volts	<i>open circuit</i> 117	5.50				
	<i>Load</i> 117	5.08				
Test to Ground	1500	10,000				

Iron Induction 11.8 Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



Pri
Mark 117V

Sec
Mark Sec
Mark C.T.

Filament

117V @ 50/60 ~ to

5V C.T. @ 20a

10,000 V insulation

~~Standard~~

Has been Redesigned

SPEC. NO. F 618 R.D.

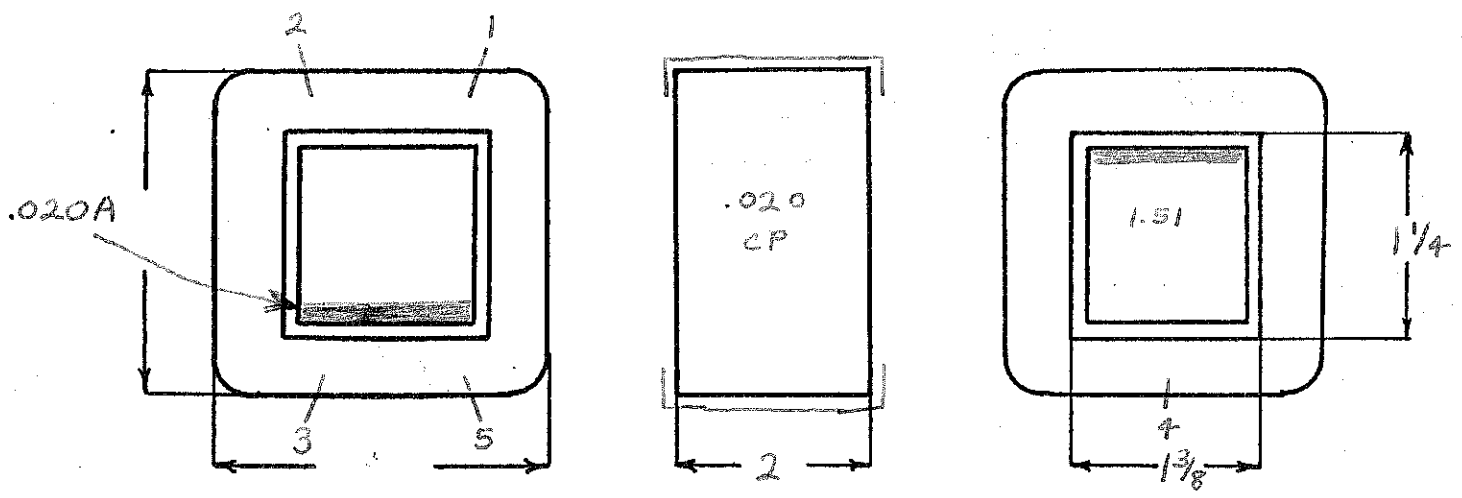
Winding	1-2 Pri	3-4-5 Tri				
Turns	430 475	22				
Taps	—	11				
Wind. Lgth.	1 3/4	1 1/4 (center)				
Wire Size	#22	#10				
T. P. L.	60-8L	11-2L				
Finish Pitch	92%	95%				
Type Lead	w. o. to lug	w. o. sleeve to lug				
Lead Lgth.	3"	3"				
Layer Insul.	50#	1L020CP				
Test Volt.	1500	10,000				
Wrapper	4L005VC 1L020CP	4L005VC 2L007GA				

TUBE 5L 010 GK IMPREGNATION Varnish

CORE 1 3/8 x 1 1/4 GA. 24 GRADE D STACK 2X2

MOUNTING BB-lug HS 15

wr = 84%



DESIGNED BY S. BABCOCK

DATE 4-15-49

DESIGN AND TEST DATA

Rating:

Sec VA = 100
Pri VA = 130
I_p = 1.11a

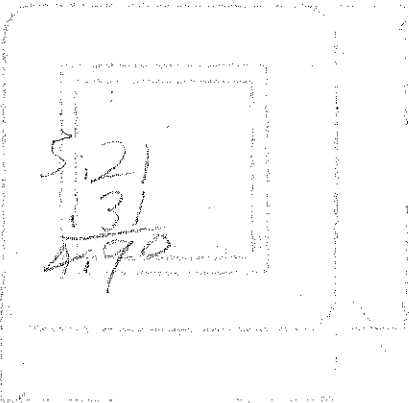
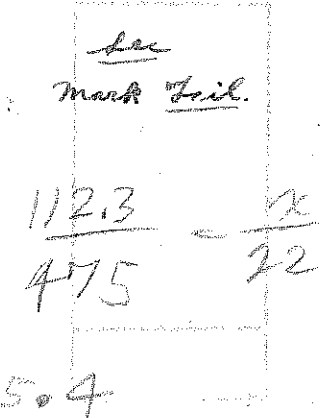
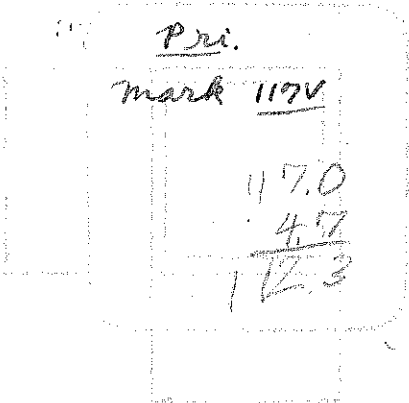
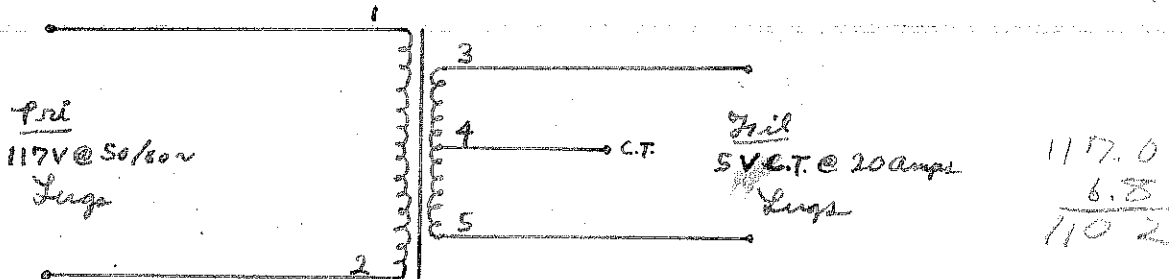
Winding	Pri	Tail					
Mean Turn	6.49 6.48	8.50 8.43					
Resistance 25° c	4.24 4.27	.0159 .0157					
Pounds Copper	IR 4.7 .512	IR .318 .49	.095 12.2				
Copper Density	578	518					
Ratio Volts	117	125 5.6					
Test to Ground	1500	10,000					

Iron Induction 11.4Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



Class B input

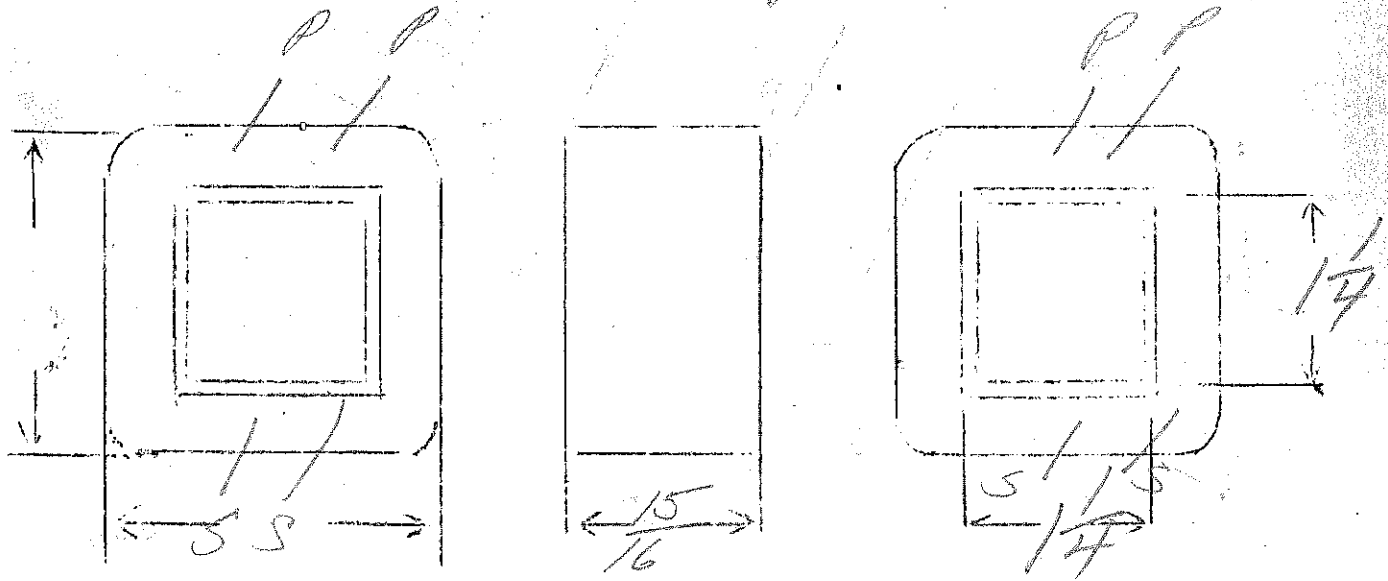
P.P. 2A3 plates to 2-210, 800, 203A

Ratio $\frac{P}{P_{max}} = 0.2$

SPEC. NO. 622

Winding	PR1	SEC				
Turns	2900	2620				
Taps	—	—				
Wind. Lgth.	3/4"	3/4"				
Wire Size	#33	#33				
T.P.L.	91-32	91-30				
Kind Term.	al br	al br				
Term. Lgth.	6"	6"				
Layer Insul.	30#	30#				
Wrapper	2L007VC	2L007GA				
TUBE	7L007 + L007VC		IMPREGNATION	VARNISH		
CURE	1/4 x 1/4 296 2x2					

Reverse Assembly

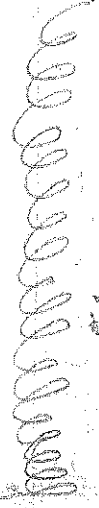


ON PAGE

CT₁

S

S



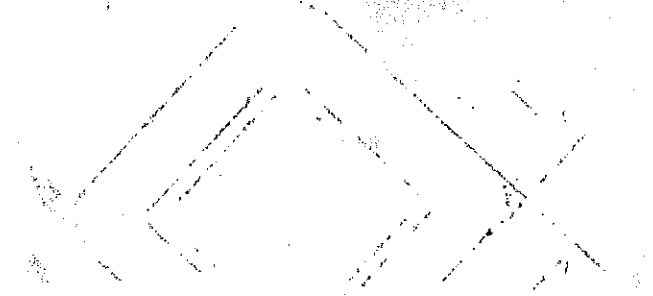
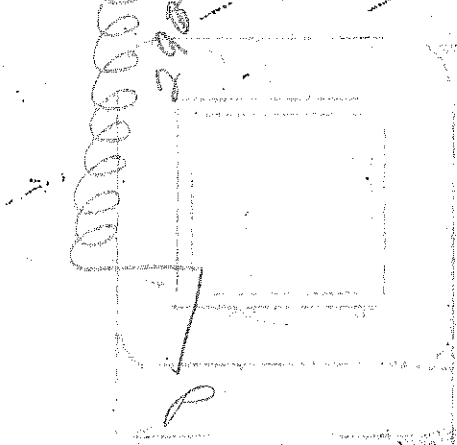
MULTIPLY BY 1000



P

CT₂

P



P.P. 45, 50 (8000) to 2-4-6.75-8-12-16-125-500 ohm.

15 Watt

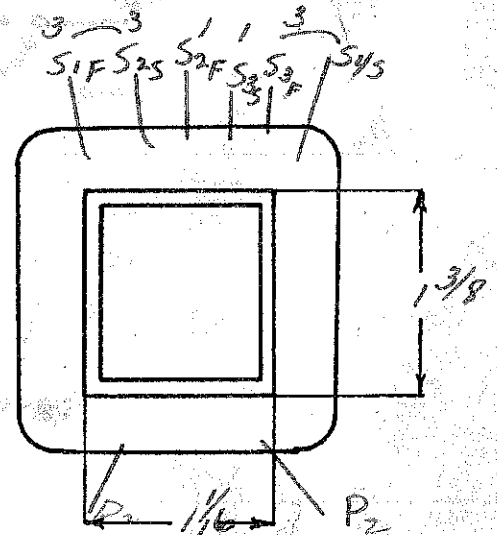
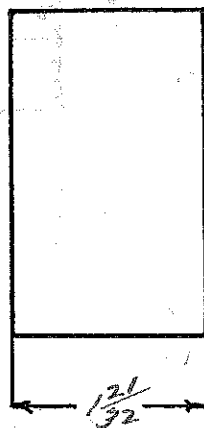
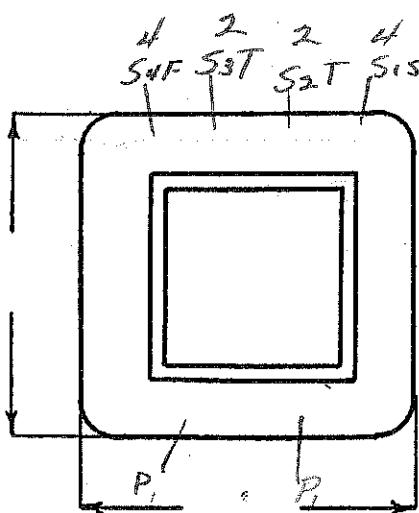
See 624

SPEC. NO. II-623

Winding	S	P	S	S	P	S	
Turns	285	1450	65	65	1450	285	
Taps	---	---	20	45	---	---	
Wind. Lgth.	1-15/32						
Wire Size	#28	#34	#21	#21	#34	#28	
T. P. L.	95-3	185-8	45	45	185-8		
Finish							
Type Lead	Sil. Br.	Sil. Br.	W.O.	W.O.	Sil. Br.		
Lead Lgth.	4"	4"					
Layer Insul.	40#	40#					
Test Volt.							
Wrapper	1L005VP 4LGL	1L005VP 4LGL	1L005VP 4LGL	1L005VP 4LGL	1L005VP 4LGL	2L005GA	
TUBE	7L007			IMPREGNATION		VARNISH	
CORE	GA. 29		GRADE A		STACK 2 x 2		
MOUNTING	HA						

TPV = 8, 38
 $F_c = 83.5 @ .25W$

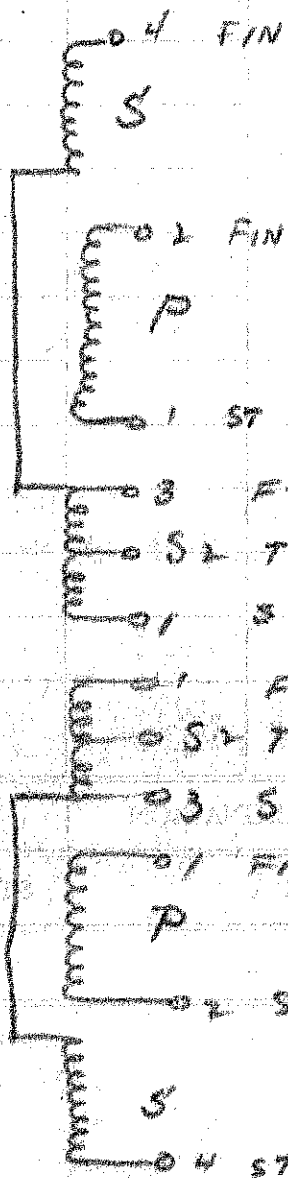
OVER



DESIGNED BY GW

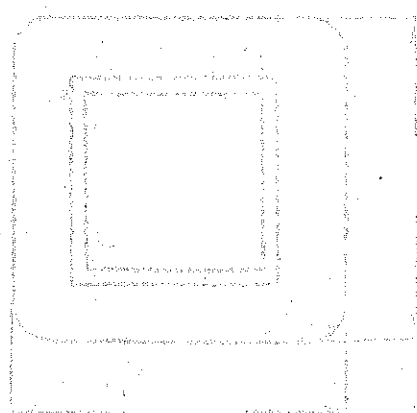
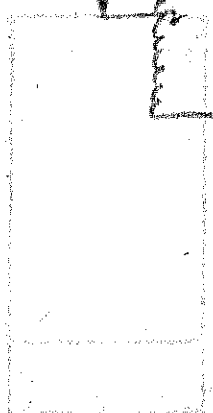
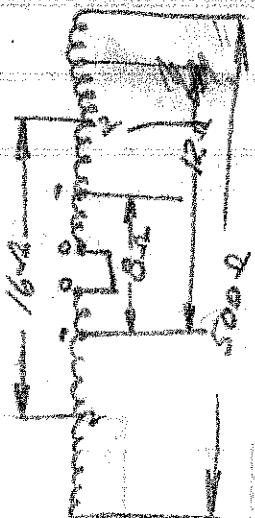
DATE 9/4/39

01-1001



01	04	04
01	03	03
01	02	02
02	01	01

11-623



TR (MOMENT)

PP 243 (5000^w CT or 5000^w CT)

Old Stock

70, 2, 4, 6, 75, 8, 12, 10

125 & 500w

15 Watt

SPEC. NO. H-624

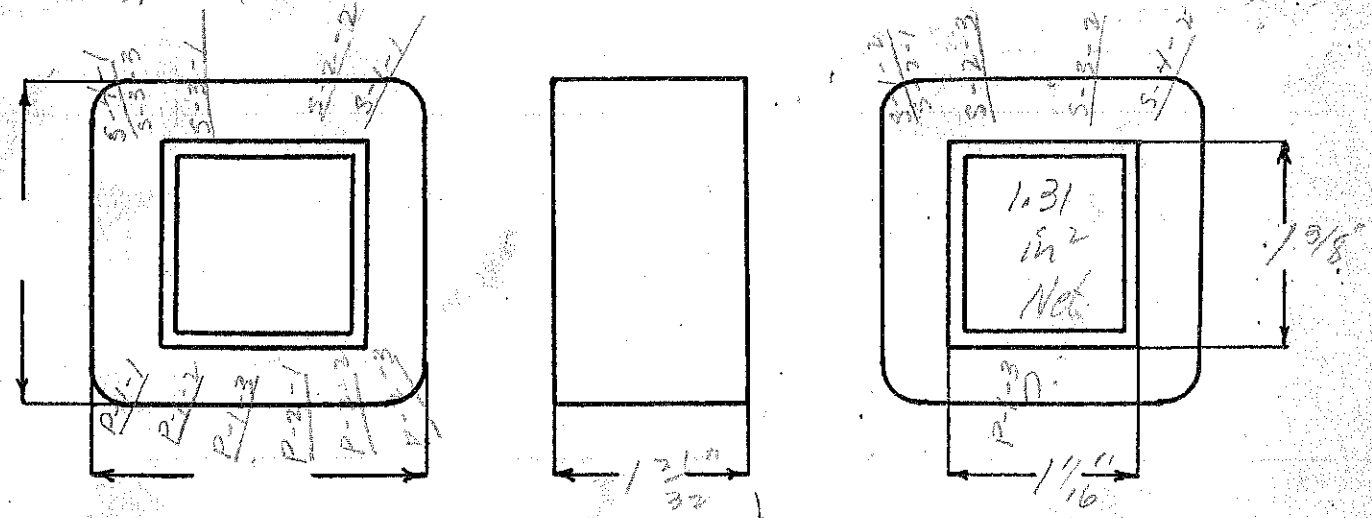
Winding	S ₁	P ₁	S ₂	S ₃	P ₂	S ₄	
Turns	285	1150	65	65	1150	285	
Taps	-	250-2	20-1	45-1	900-6	-	
Wind. Lgth.	1 15/32"	1 15/32"	1 15/32"	1 15/32"	1 15/32"	1 15/32"	= 1.468"
Wire Size	#28	#32	#21	#21	#32	#28	
T. P. L.	95-3L	150-8L	45-2L	45-2L	150-8L	95-3L	
Finish	87%	88%	91%	91%	88%	87%	
Type Lead	Sil. Br.	Sil. Br.	W.O.	W.O.	Sil. Br.	Sil. Br.	
Lead Lgth.	6"	6"	6"	6"	6"	6"	
Layer Insul.	1L 40#6	1L 40#6	1L 50#6	1L 50#6	1L 40#6	1L 40#6	
Test Volt.	-	2500	-	-	2500	-	
Wrapper	1L 007VC	1L 007VC	1L 007VC	1L 007VC	1L 007VC	2L 0056A	

TUBE 7L-007 GR IMPREGNATION Vapour

CORE 1 1/16" x 1 3/8" E7I GA. 29 GRADE Audio STACK 2 x 2

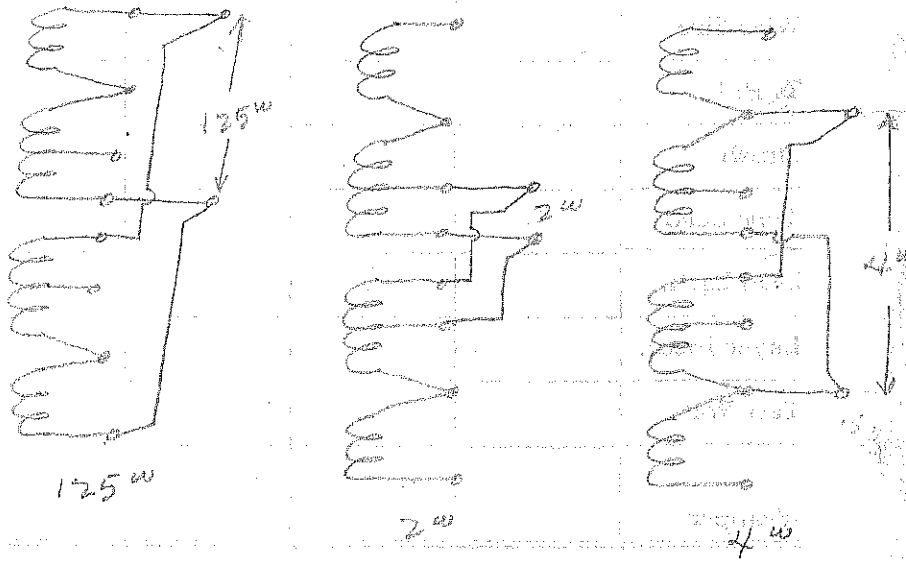
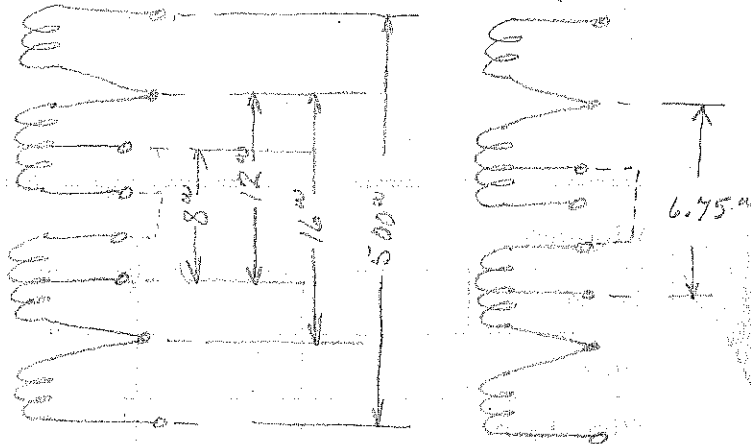
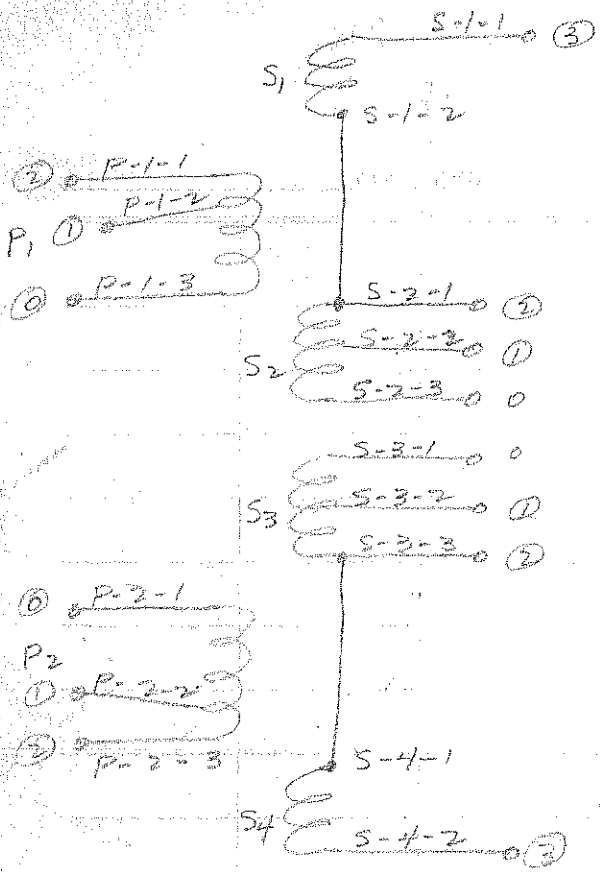
MOUNTING HA-

Cv : $\sqrt{15 \times 5000} = 273V$
 Fe = 8217 @ 25v
 TPV = 8.42
 Wire Net = 0.475" (0.456")



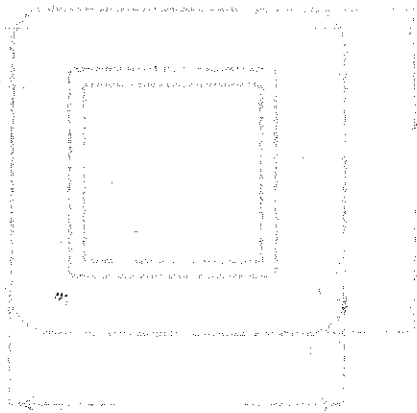
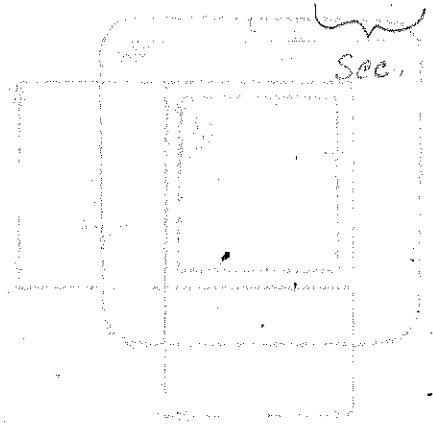
DESIGNED BY NWR

DATE 5-9-42



Term. Board Layout

Pri	02	03	03
	01	02	02
	00	01	01
	00	01	01
	01	0	0
	02	0	0



FILAMENT

NEW STOCK

- (1-2) 117V @ 50/60V
- (3-4) 12V @ 5A (r6A)
- (5-6) 12V @ 5A

(Beckman)

SPEC. NO. F 628

Winding	1-2 Pel	3-4 FIL#1	5-6 FIL#2				
Turns	375	42	42				
Taps	—	—	—				
Wind. Lgth.	1 1/16	1/4	1/4				
Wire Size	#21	#16	#16				
T. P. L.	47T-8L	21T-2L	21T-2L				
Pitch	88%	89%	89%				
Type Lead	1/64#20 PL	w.o. Sleeve	w.o. Sleeve				
Lead Lgth.	609 15"	— 15"	— 15"				
Layer Insul.	1L50 ^{#4}	1L010 A	1L010 A				
Test Volt.	1500	2500	2500				
Wrapper	1L010 A	2L007GA	2L007GA				

TUBE 9L005GA - IMPREGNATION VARNISH COIL & CORE

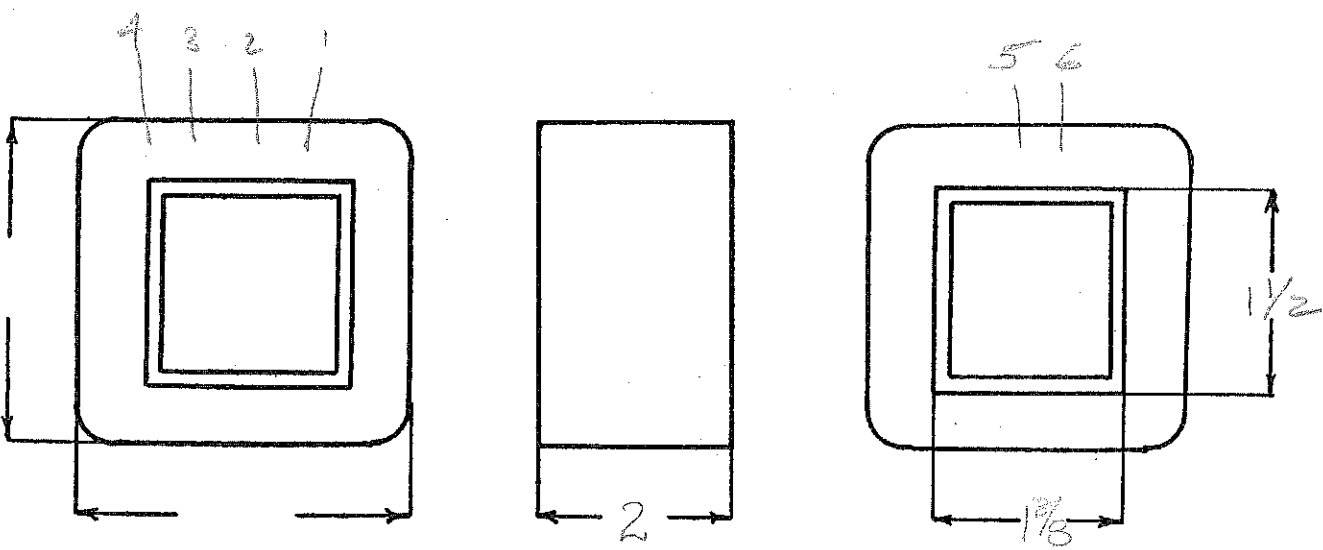
CORE 1 3/8 X 1 1/2 GA. 24 GRADE D STACK 4X4

MOUNTING A - LEADS

85%

HADLEY DECAL W/PART NO.

5mic Chromate Primer
Black Lacquer



DESIGNED BY Peter B. Calogeras

DATE August 25, 1955

4
 .74
 .68
 5.7
 4.43
 3.4
 13.5 walls

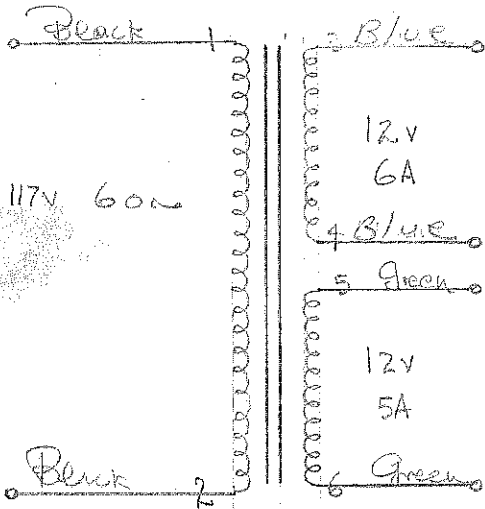
B = 9.9 -

3.493

TESTS

Copper Density	565	480	517			
Mean Turn	7.05	8.55	9.50			
Pounds Copper	.690	.238	.264			
Resistance 25°C	2.80	.123	.136			
Full Load Ratio Volts 260 Cy.	117	12.0	12.0			
No Load Ratio Volts 260 Cy.	117	13.1	13.1			
Test Volts	1500	2500	2500			
Winding	PE1 1-2	SEC #1 3-4	SEC #2 5-6			

OTHER TESTS:



Filament

New Stock

117.V @ 50/60 - 400

6.3V ct @ 0.6a

OBsolete

SPEC. NO. F630

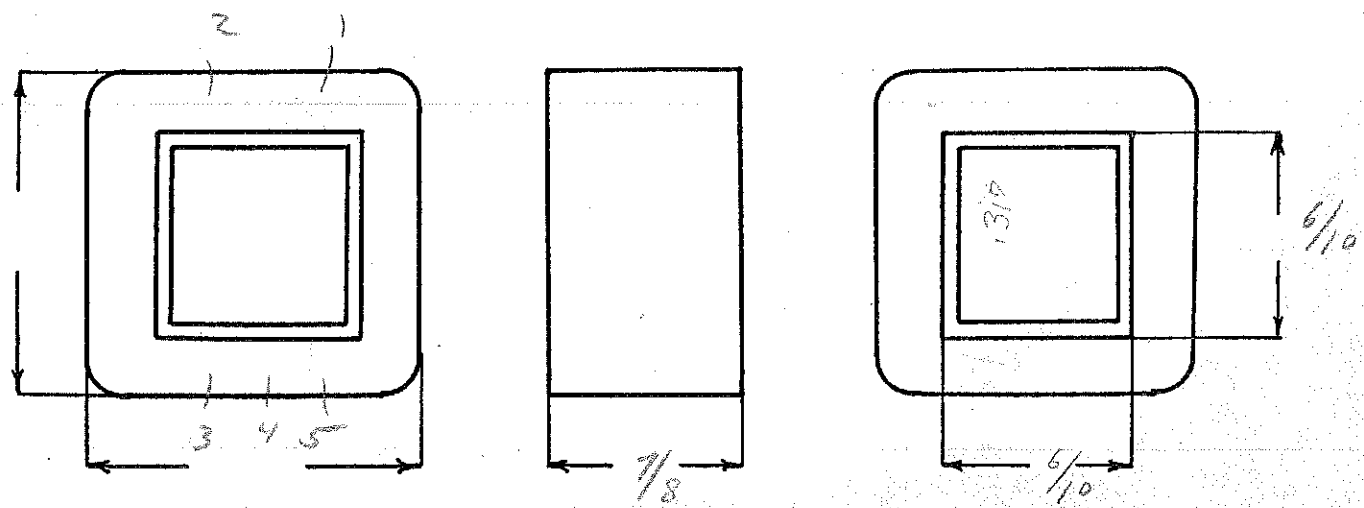
Winding	1-2 Pr1	3-4-5 FIL.				
Turns	1950	138				
Taps	—	69				
Wind. Lgth.	3/4	3/4				
Wire Size	#36	#26				
T. P. L.	122-162	35-46				
Finish	91%	80%				
Type Lead	#22 P.8	#22 DULOC				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	16#	40#				
Test Volt.	1500	2500				
Wrapper	2L005VC	3L0056A				

TUBE 5L0106K IMPREGNATION Varnish

CORE 4/10x6/10 GA. 24 GRADE D STACK 2x2

MOUNTING D Leads

85%



DESIGNED BY S. Babcock

DATE 3-29-25

DESIGN AND TEST DATA

Rating:

SEC VA = 3.78
 PRI VA = 6.67
 I_p = 57 ma

Winding	Pri	Sec				
Mean Turn	3.15	3.87				
Resistance 25° c	2.16	1.85				
Pounds Copper	.0396	.0378				
Copper Density	438	423				
Ratio Volts	117	6.31				
Test to Ground	1500	2500				

Iron Induction 13.25 @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
 3-4-5 Green

filament

New clock

117V @ 60 cycles
to

6.3VCT @ 0.60amp

SPEC. NO. F630

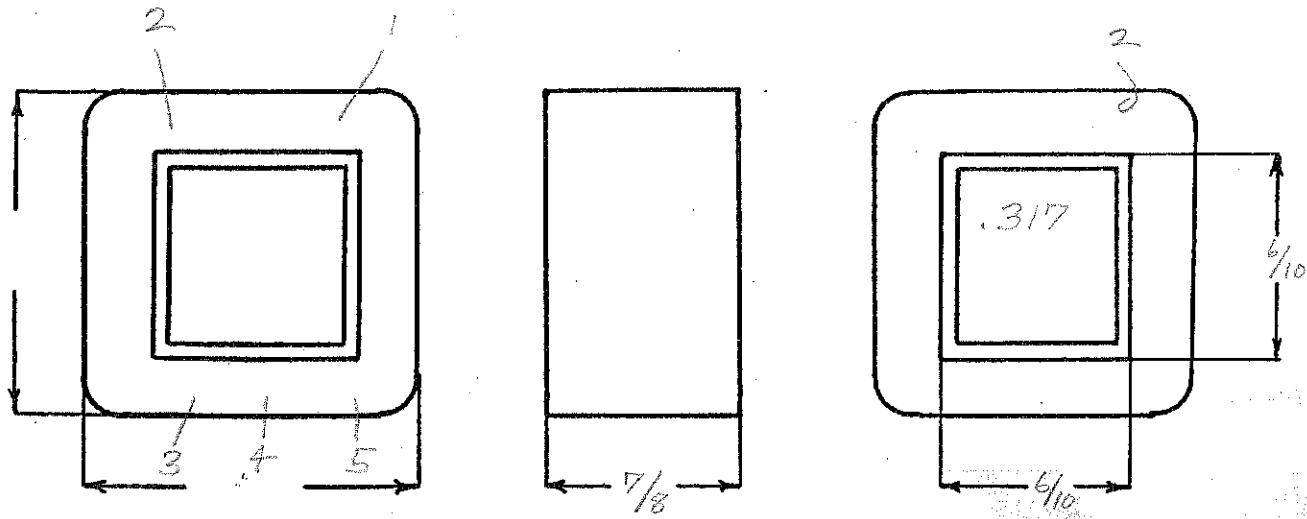
Winding	1-2 Pri	3-4-5 Sec				
Turns	1666	114				
Taps	—	57				
Wind. Lgth.	5/8	5/8				
Wire Size	#36	#26				
T. P. L.	98-17L	29-4L				
Finish Pitch	88%	79%				
Type Lead	#22 P.B.	#22 Dulac				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	20#	40#				
Test Volt.	1250	2500				
Wrapper	2L005VC	2L007GP				

TUBE 4L010GK IMPREGNATION Varnish

CORE 6/10 x 6/10 GA. 24 GRADE D STACK 2x2

MOUNTING D-leads

wn = 85%



RE-DESIGNED BY A. Hadley

DATE 5-19-50

DESIGN AND TEST DATA

Rating:

$$I_g = .6a$$

$$\text{Sec VA} = 3.78$$

$$\text{Pri VA} = 7.00$$

$$I_p = 60 \text{ ma}$$

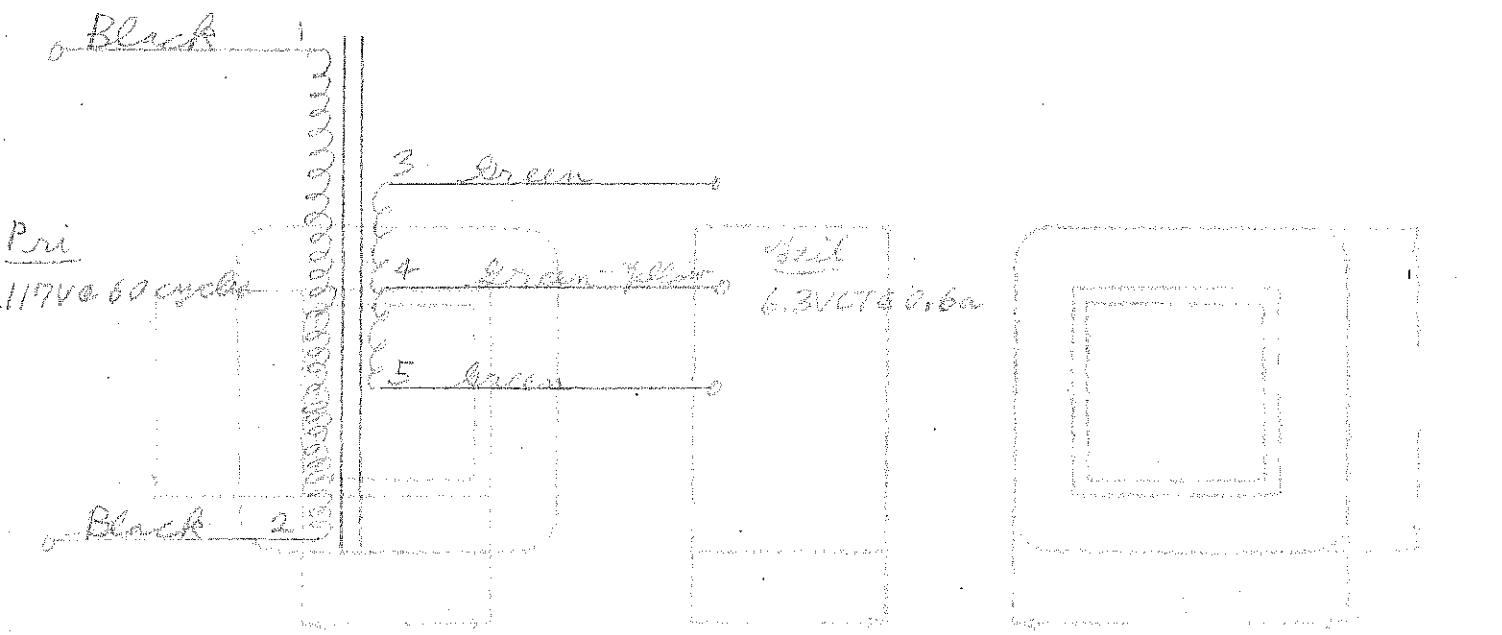
Winding	1-2 <i>Pri</i>	3-4-5 <i>Sec</i>					
Mean Turn	3.14	3.88					
Resistance 25° c	185	1.54					
Pounds Copper	.0338	.0290					
Copper Density	417	423					
Ratio Volts <i>Open Circuit</i> <i>Load</i>	117	8.00					
	117	6.32					
Test to Ground	1250	2500					

Iron Induction 12.9 Kg @ 60 Cycles with 117 V on 1-2

Exciting Current 40 milliamperes @ 117 volts 60 cycles on 1-2

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

Remarks:



Filament

new-dlock

117V @ 60 cycles

to

ATAE TEXT GRA M1880

6.3VCT @ 0.60 amps

SPEC. NO. F630

Winding	1-2 Pri	3-4-5 Fil				
Turns	1666	114				
Taps		57				
Wind. Lgth.	5/8	5/8				
Wire Size	#36	#26				
T. P. L.	98-17L	29-4L				
Finish Pitch	88%	79%				
Type Lead	#22 P.B.	#22 Dulac				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	20#	40#				
Test Volt.	1250	2500				
Wrapper	2L003CA 1L 40# 2L005VC	2L007GA				

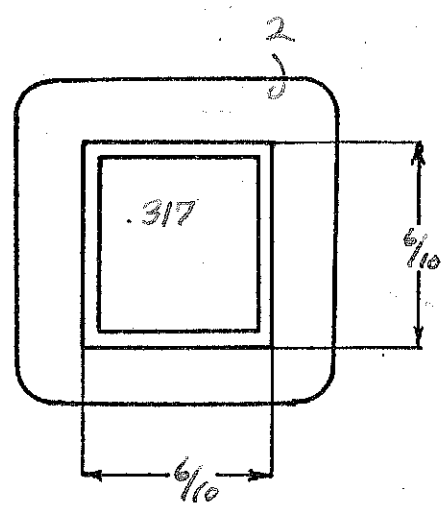
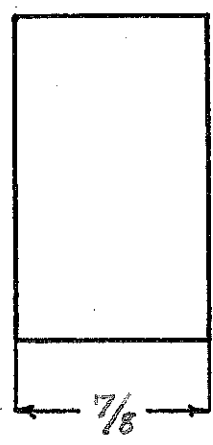
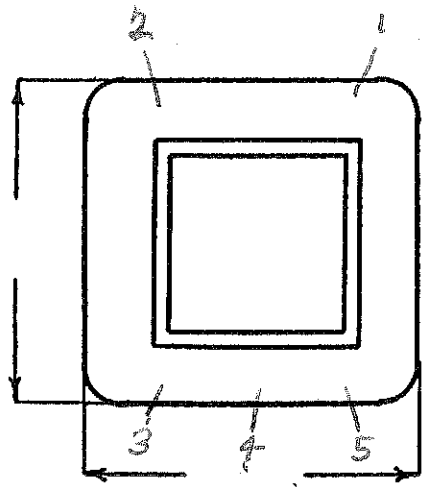
TUBE 4L010GK + 1L0012CA IMPREGNATION Varnish

CORE 6/10 x 6/10 GA. 24 GRADE D STACK 2X2

MOUNTING D-leads

rim = 85%

1c 20.00
10 days ARO



RE-DESIGNED BY A. Hadley

DATE 5-19-50

DESIGN AND TEST DATA

Rating:

$I_s = 0.6a$

Sec VA = 3.78

Pri VA = 7.00

$I_p = 0.060a$

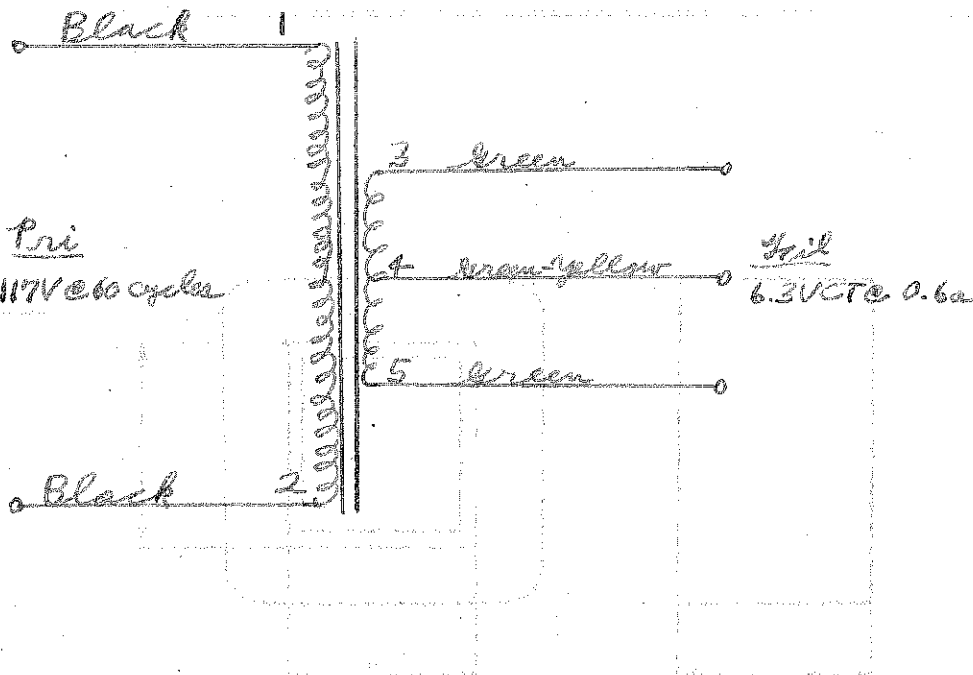
Winding	1-2 <i>Pri</i>	3-4-5 <i>Sec</i>				
Mean Turn	3.14	3.88				
Resistance 25° c	1.85	1.54				
Pounds Copper	.0338	.0290				
Copper Density	4.17	4.23				
Ratio Volts	<i>open circuit</i> 117	8.00				
	<i>load</i> 117	6.32				
Test to Ground	1250	2500				

Iron Induction 12.9 Kg @ 60 Cycles with 117V on 1-2

Exciting Current 40 milli amperes @ 117 volts 60 cycles on 1-2

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

Remarks:

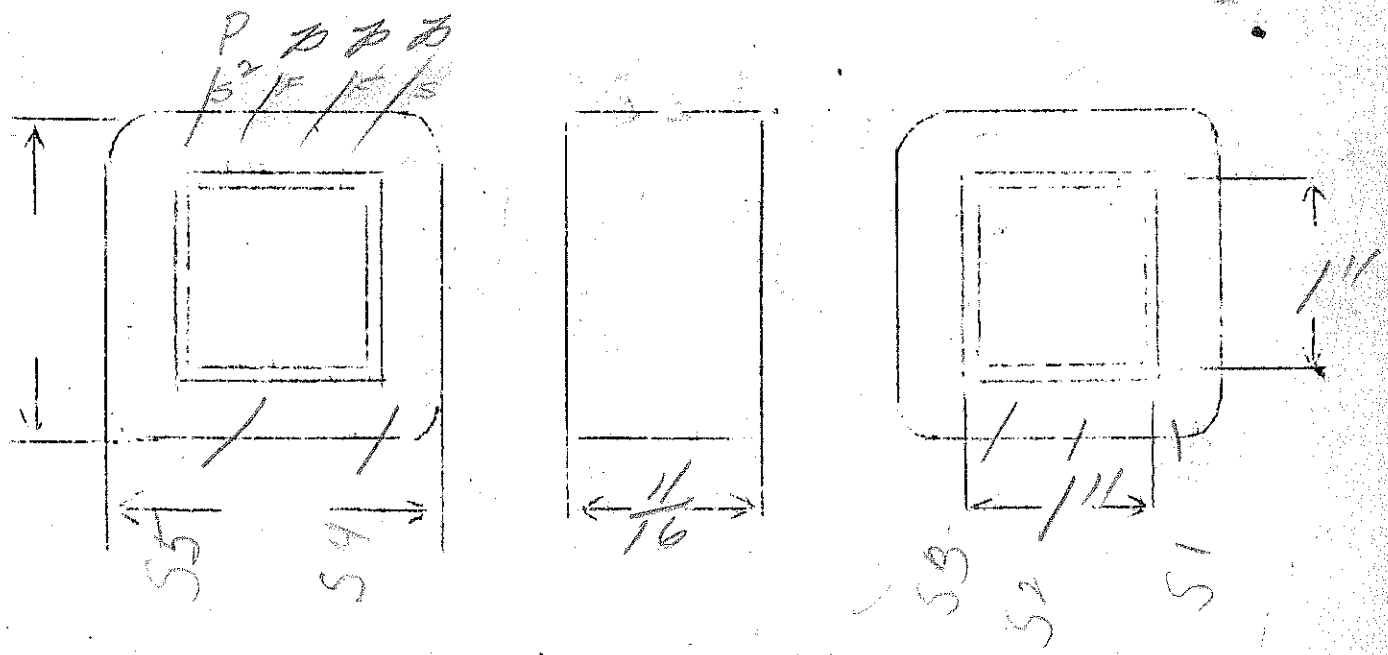


P.P. 45 Pts (8000) 6 15, 7.5, 5, 3.5 ~ VC
 + 33DB

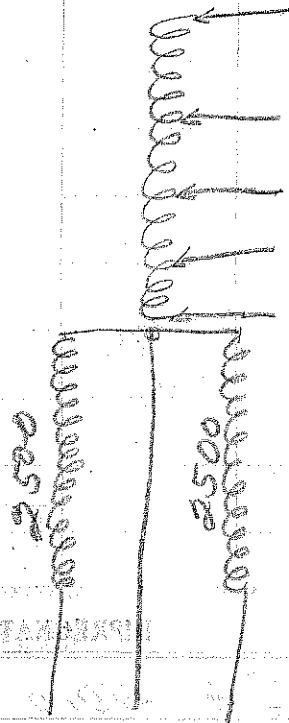
67

SPEC. NO. 632

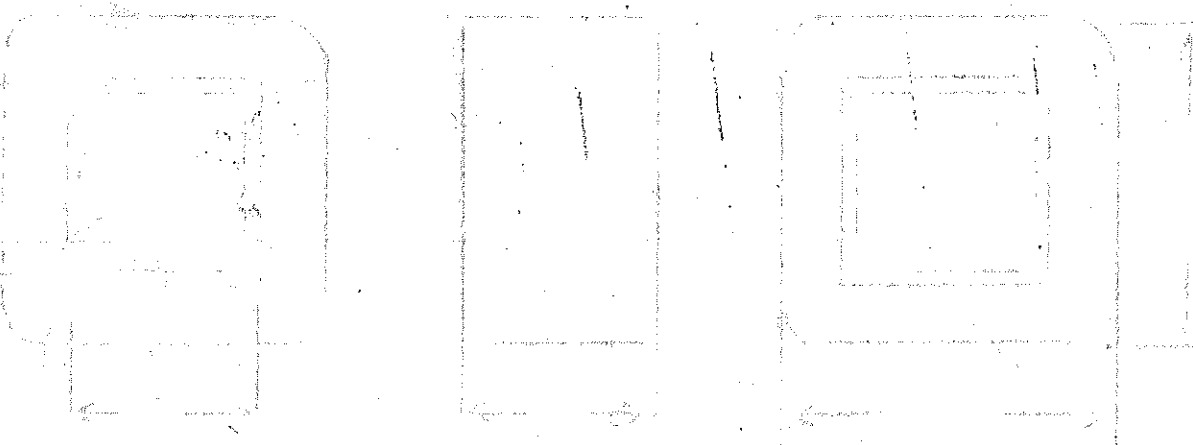
	CONTINUOUS					
Winding	PRI	SEC				
Turns	2500	128	94			
Taps	—	104	28			
Wind. Lgth.	9/16	9/16	1/4			
Wire Size	#36	#20	#22			
T.P.L.	96-26	30-4	37-3			
Kind Term.	sil br	wire	wire			
Term. Lgth.	6"	6"	6"			
Layer Insul.	30#	kraft				
Wrapper	2L0056A	2L0056A				
TUBE	7L007+2L003VP		IMPREGNATION	V+WAX		
CURE	1X1 NW 296 H.G. AUDIO		2X2			



OK 1/18/82



PRI REVERSE
ASSEMBLY



FILAMENT

New STOCK

117
~~120~~ volts @ 50/60 cycles to
 6.3 volts CT @ 1.0 Amps
 750 volts working

TEST QMA W1123U

F 632

SPEC. NO.

~~E759~~

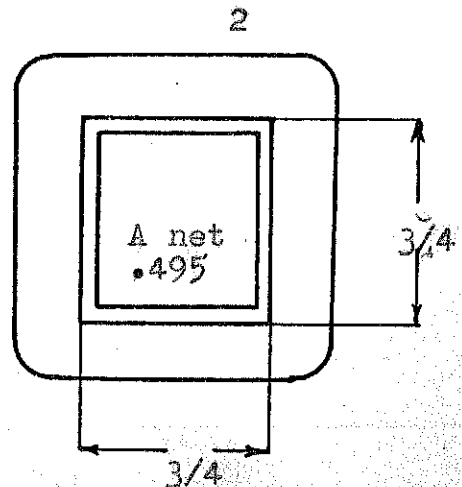
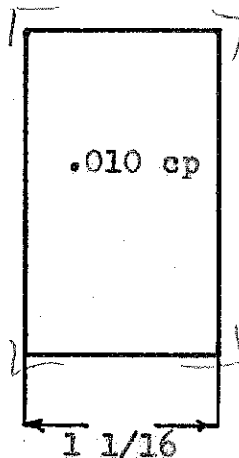
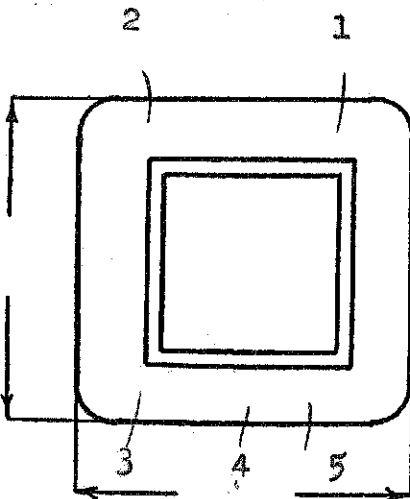
Winding	1-2 Pri.			3-4-5 Fil.			
Turns	1200 1220			80 82			
Taps	--			40 41			
Wind. Lgth.	7/8			3/4			
Wire Size	#33			#23			
T. P. L.	94 99-13L			28-3L			
Finish	80% 80%			80% 80%			
Type Lead	#22 PB Silver Braid to lugs			W.O. to Lugs			
Lead Lgth.	3" cut 14"			cut 14" 3"			
Layer Insul.	20#			1L005GA			
Test Volt.	1500			2500			
Wrapper	1L003CA 2L005GA 1L005GA			2L007GA 2L005GA			

TUBE 5L007GX + 1L002CA IMPREGNATION Varnish

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

MOUNTING D - ~~lugs~~ Leads

T. P. V. - 10.6
 window - $2659 / 375 = 71\%$



DESIGNED BY

S. W. B.

DATE 3/31-47

DESIGN AND TEST DATA

Rating:

Sec. VA = 6.3

Pri. VA = 9.9

Ip = 83 Ma.

Winding		1-2 Pri.			3-4-5 Fil.		
Mean Turn		3.69			4.60		
Resistance 25° c		83.0			.681		
Pounds Copper		.054 .001			.051		
Copper Density		679			570		
Ratio Volts		120			7.48		
Test to Ground		1500			2500		

Iron Induction 13.5 kg @ 50 Cycles

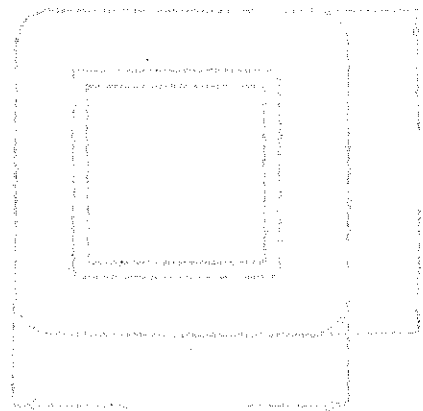
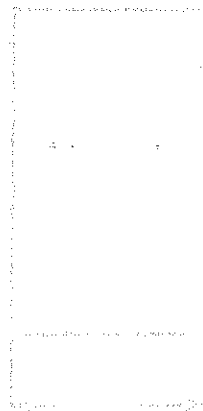
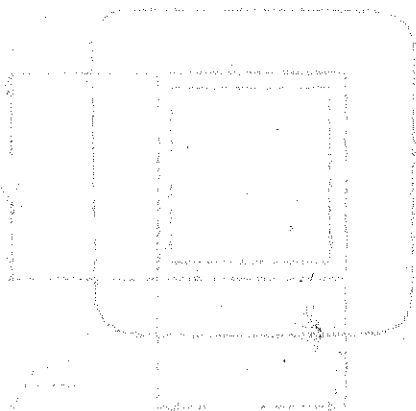
Exciting Current 39 Milli amperes @ 120 volts 60 cycles on 1-2

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

Remarks:

1-2 Black

3-4-5 Green



Filament

New stock

117V @ 50/60 Hz

6.3V ct @ 2.0

7.50 W. 6

SPEC. NO. F134

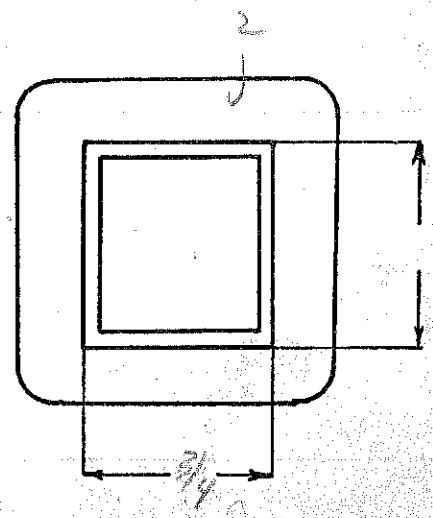
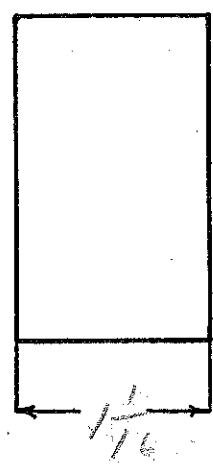
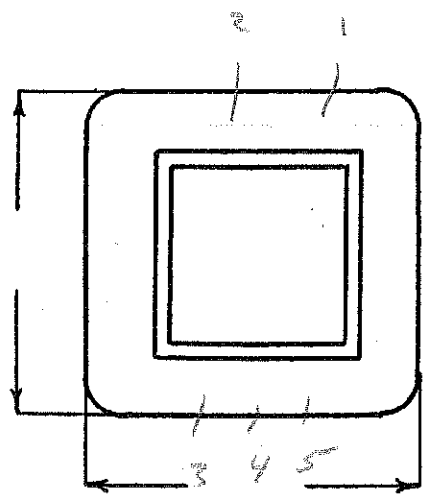
Winding	1-2 P11	3-4-5 50L				
Turns	945	600				
Taps	—	30				
Wind. Lgth.	7/8	3/4				
Wire Size	# 30	# 20				
T. P. L.	73-13L	20-3L				
Finish	90%	89%				
Type Lead	# 22 P. B	w. 5 sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	30#	100054A				
Test Volt.	1250	2500				
Wrapper	240076A	240076A				

TUBE 52010 GA IMPREGNATION Varnish

CORE 3/4 x 1/4 GA. 24 GRADE D STACK 2x2

MOUNTING D - Leads

min = 93%



DESIGNED BY

S. Babcock

DATE

5-1-47

DESIGN AND TEST DATA

Rating:

$$I_3 = 2a$$

Sec VA = 12.16

Pri VA = 18.2

$I_p = .158A$

Winding	Pri	Sec					
Mean Turn	4.365	5.579					
Resistance 25° c	36.2	.300					
Pounds Copper	.107	.091					
Copper Density	635	511					
Ratio Volts	117	6.3					
Test to Ground	1250	2500					

Iron Induction 12.9 K @ 50 Cycles

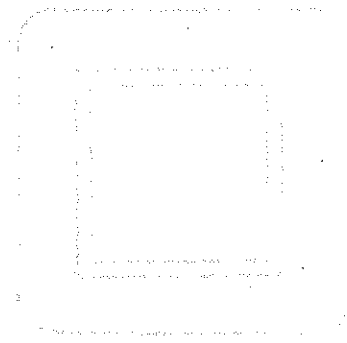
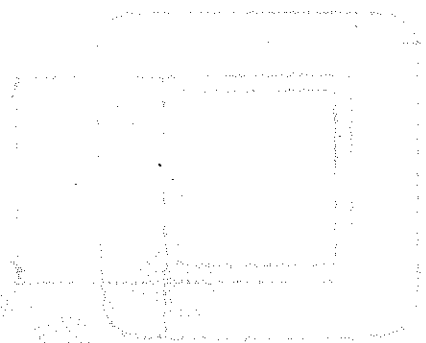
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Green



Filament

New Stock

117V @ 50/60 ~ to

6.3V C.T. @ 2a

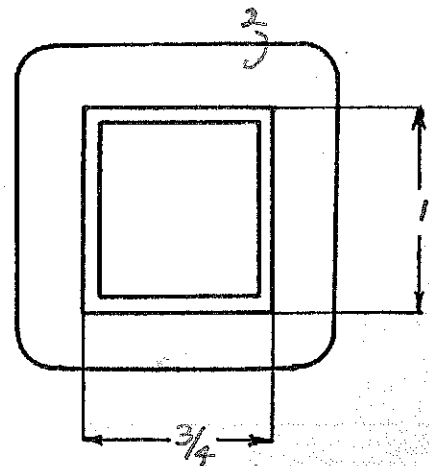
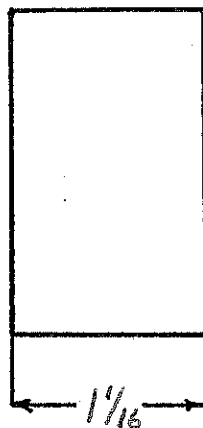
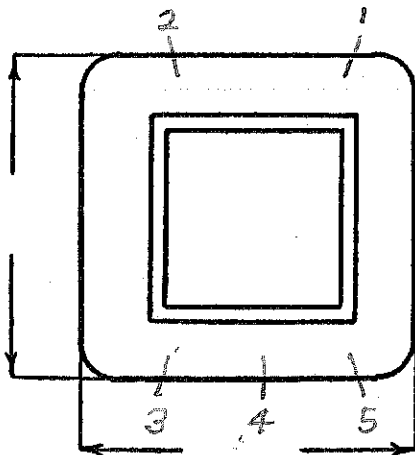
SPEC. NO. F 634

Winding	1-2 Pri	3-4-5 Fil		Pri		
Turns	945	60		1-73		
Taps	—	30		2-146		
Wind. Lgth.	7/8	3/4		3-219		
Wire Size	# 30	# 20		4-292		
T. P. L.	73-13L	20-3L		5-365		
Finish Pitch	90%	89%		6-438		
Type Lead	#22 P.B.	w.o. sleeve		7-511		
Lead Lgth.	cut 14"	cut 14"	cut 10"	8-584		
Layer Insul.	30 #	1L0056A		9-657		
Test Volt.	1250	2500		10-730		
Wrapper	2L007GA	2L007GA		11-808 12-876 13-945		

TUBE 5L010GK+1L001GA IMPREGNATION Varnish

CORE 3/4 x 1 GA. 24 GRADE D STACK 2x2

MOUNTING D - Leads



DESIGNED BY S. BABCOCK

DATE 5-1-47

DESIGN AND TEST DATA

Rating:

Sec VA = 12.6
Pri VA = 18.2
I_p = .158a

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.365</i>	<i>5.59</i>				
Resistance 25° c	<i>36.2</i>	<i>.300</i>				
Pounds Copper	<i>.107</i>	<i>.091</i>				
Copper Density	<i>635</i>	<i>511</i>				
Ratio Volts	<i>117</i>	<i>6.3</i>				
Test to Ground	<i>1250</i>	<i>2500</i>				

Iron Induction *12.9kg* @ *50* Cycles

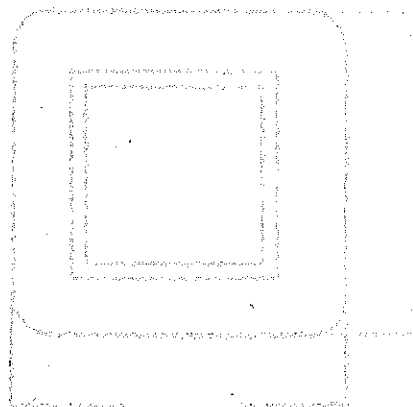
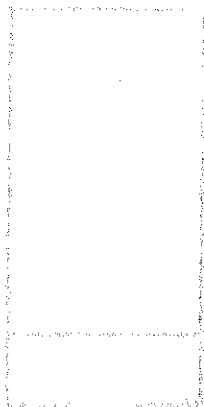
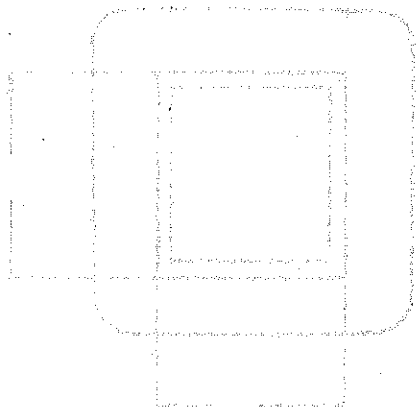
Exciting Current *40 ma* amperes @ *117* volts 60 cycles on *Pri.*

Induced Test: Apply *117* Volts at *36.2* Cycles on *117* with *grounded*

Remarks:

1-2 Black

3-4-5 Green



R.M. HADLEY CO. INTERNAL CHANGE	DATE	BY	DATE ENTERED	QUANTITY ORDERED	QUANTITY WOUND	DATE(S) WANTED	SPEC. NO.
							F636

WINDING	1-2 PRI	3-4-5 FIL							
RNS	815	50							
AP	—	25							
SIZE	#29	#18							
LENGTH	1 1/2	1 1/2							
3/LAYER	75-11L	17-3L							
CH	87%	67%							
D	#22 PL	W.O. SLEEVE							
LENGTH	CUT 9"	CUT 9"							
INAL	—	—							
INS.	30 #	1L0056A							
PER	2L001M 2L0056A	3L0056A							
AN TURN	4.67	5.80							
NSITY	557	542							
EIGHT	.123	.120							
SIST.	26.4	.157							
AD VOLT.	117	7.18VCT							
AD VOLT.	—	—							
VOLTS	1500	2500							

SCHEDULING
M.W.
1
FIN.
2
S.W.
3
STACK
4
1ST TEST
5
IMP.
6
ASSY.
PLAST.
MOLD
2ND TEST
SEAL
7
FINAL
U.S.M.
CUSTOMER
CO. BECHMAN
NAME
TEL.
EXT.
MARKING

3 KG @ 15 V 50 NON (1-2)

WATTS | I_{EX} = . A.

2.9 WATTS | I_P = .227 A.

7/8 x 1

E 24 GRADE D

K 2 x 2

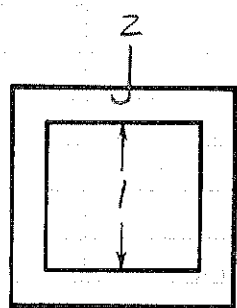
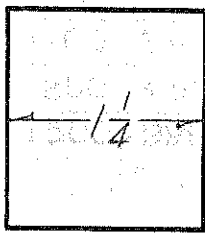
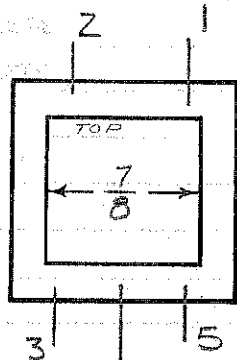
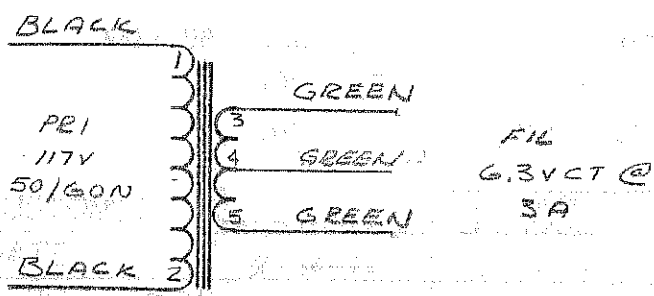
IGNATION & POTTING

VENISH COBE &

OIL & BRACKET.

5L0106K

3%



SPEC. NO. F636

UNITS ON BATCH NO _____

BILL OF MATERIAL AND COST SHEET FOR F 636

CUSTOMER DWG NO. _____

REV. _____

X	DEPT.	MATERIAL DESCRIPTION		SOURCE	QUANTITY PER ASSY.	PRICE		COST	
						PER UNIT	PER ASSY.	PER UNIT	PER ASSY.
	M.W.	COIL FORM	7/8X1 X.04064		1 1/2"		01		02
		WIRE	#29SF		.13LB		88		.12
			#18SF		.12LB		63		.08
		WIRE							
	S.W.	COIL FORM							
		CORE							
	FIN.	LEAD WIRE							
	STK.	CORE	7/8X1, 26C		1.00		37		37
	ASSY.	TERMINALS							
		CANS							
		BRACKET	7/8X1 HORIZ D		1		05		05
	PLST.	CUPS							
	PAINT								
	FINAL								
	MISC.								16

MARK UP	.50	4.40	TOTAL MAT'L.	.80
	.55	4.00	LABOR	1.40
	.60		TOTAL COST	2.20

FIXED CHARGES	
TOOLING	_____
MARKING	_____
SET UP	_____
DESIGN	_____
QUAL. TESTS	_____
OTHER TESTS	_____
	20.00
DELIVERY	_____

CUSTOMER	BECHMAN	BECHMAN INSTRUMENTS
DATE	2-10-60	2-3-61
1- 2	25.00	30.00
3- 4	17.50	25.00
5- 9	13.50	17.50
10- 24	11.00	13.50
25- 49	9.00	11.00
50- 99	8.00	9.00
100- 249		8.00
250- 499		7.50
500- 999		8.25
1000		7.00

T 636

F 636

ISSUE DATE

LM

TOTAL QTY

RM HADLEY CO., INC.

PLANNER AHH

REV. DATE 2/26/61

CUSTOMER DVS.

BECHMAN INSTRUMENTS
REV. CUSTOMER NAME

SPEC. NUMBER

CUSTOMER PURCHASE ORDER

REMAIN QTY

SPLIT QTY

SPLIT BY

OPERATION

PRODUCTION RECORD

QTY

CLOCK NO. DATE

LINE OPER. NO.	OPERATION OR MAT.	QTY	DATE	R.H.H. CUST GOVT	TOOL NO.
1	50% MR				
2					
3	M.W.				
4					
5	F.M.				
6					
7	S.W.				
8					
9	STACT + DMG				
10					
11	1ST TEST				
12					
13	VARNISH				
14					
15	FINAL MSP.				
16					
17	FINAL TEST				
18					
19	SHIPPING				
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					

INSPECTION RECORD

TESTS:	FIRST TEST		SECOND TEST		FINAL TEST	
	STAMP	DATE	STAMP	DATE	STAMP	DATE
RATIO						
POLARITY						
HI-POT						
EX. L-E						
MEGGER						
OTHER						

REASON FOR REJ.

INSPECTION AND MATERIAL REVIEW RECORD

ACTION	QTY	1 STAMP	QTY	2 STAMP	QTY	3 STAMP	QTY	4 STAMP
REJECTED								
O.K. TO USE								
REWORK								
SCRAP								
DATE								

INSPECTION AND MATERIAL REVIEW ACTION

DEFECT	ROUTING	REWORK INSTRUCTIONS

Fillament

New stock

117V @ 50/60 ~ to
6.3V C.T. @ 3a

TEST WKA M01830

SPEC. NO. F636

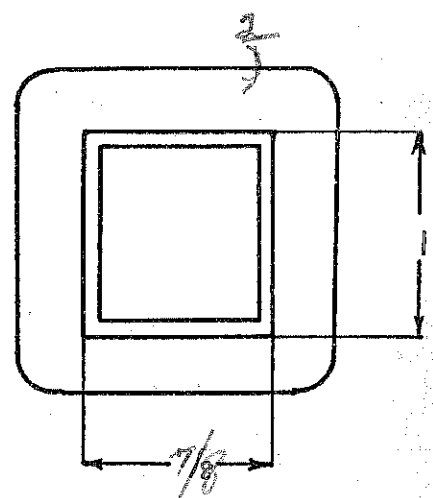
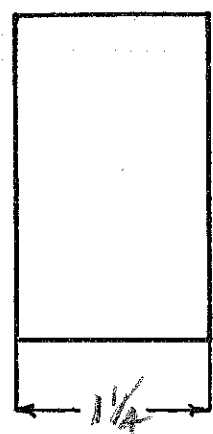
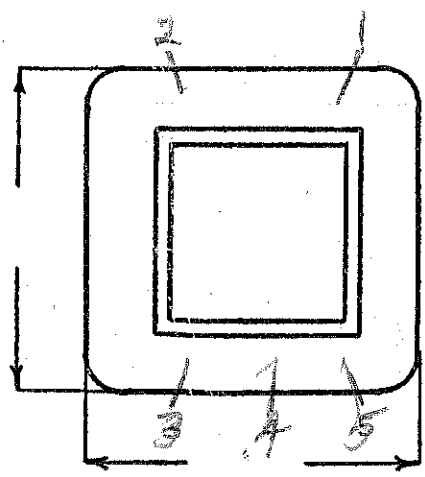
Winding	1-2 PRL	3-4-5 FHL				
Turns	815	50				
Taps	-	25				
Wind. Lgth.	1 1/16	1 1/16				
Wire Size	#29	#18				
T. P. L.	75-11L	17-3L				
Finish	87%	67%				
Type Lead	#22 DAR.TBC	#18 DAR.TBC				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	30#	1L005GA				
Test Volt.	1500	2500				
Wrapper	1L015K 2L005VC	1L003CA 2L005SK 3L005GA				

TUBE 5L010GK + 1L002CA IMPREGNATION V. B. R. W. H.

CORE 7/8 x 1 GA. 24 GRADE D STACK 2X2

MOUNTING D-Leads H.v.

WV = 83%



DESIGNED BY S. BABCOCK

DATE 3-30-49

NSM

DESIGN AND TEST DATA

Rating:

Sec VA = 18.9
Pri VA = 26.6
I_p = 227 ma

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.67</i>	<i>5.80</i>				
Resistance 25° c	<i>26.4</i>	<i>.157</i>				
Pounds Copper	<i>.123</i>	<i>.120</i>				
Copper Density	<i>557</i>	<i>542</i>				
Ratio Volts	<i>117</i>	<i>6.35</i>				
	<i>117</i>	<i>7.18</i>				
Test to Ground	<i>1500</i>	<i>2500</i>				

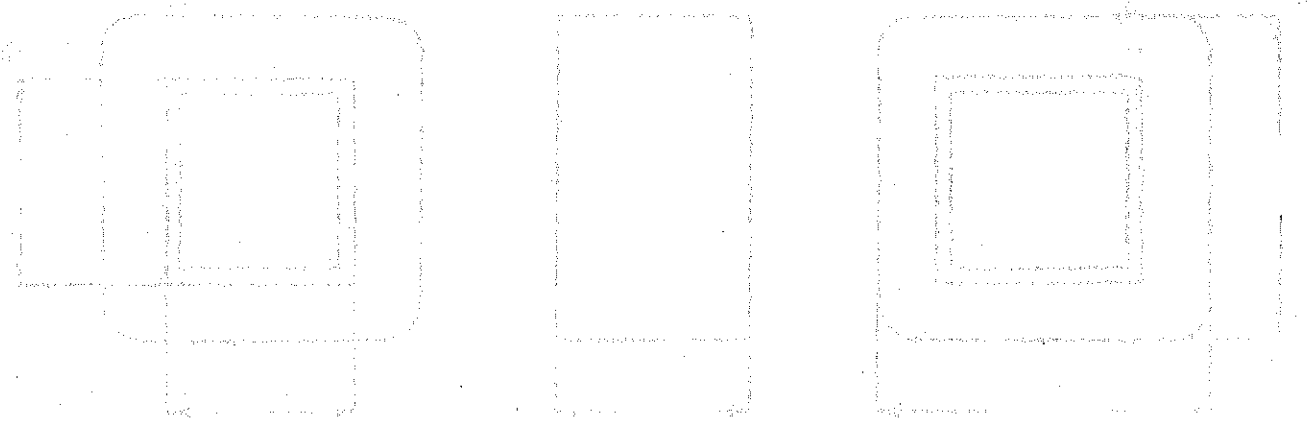
Iron Induction *13 Kg* @ *50* Cycles

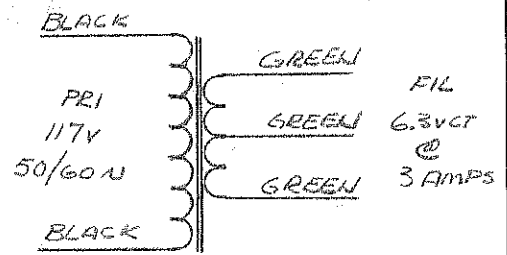
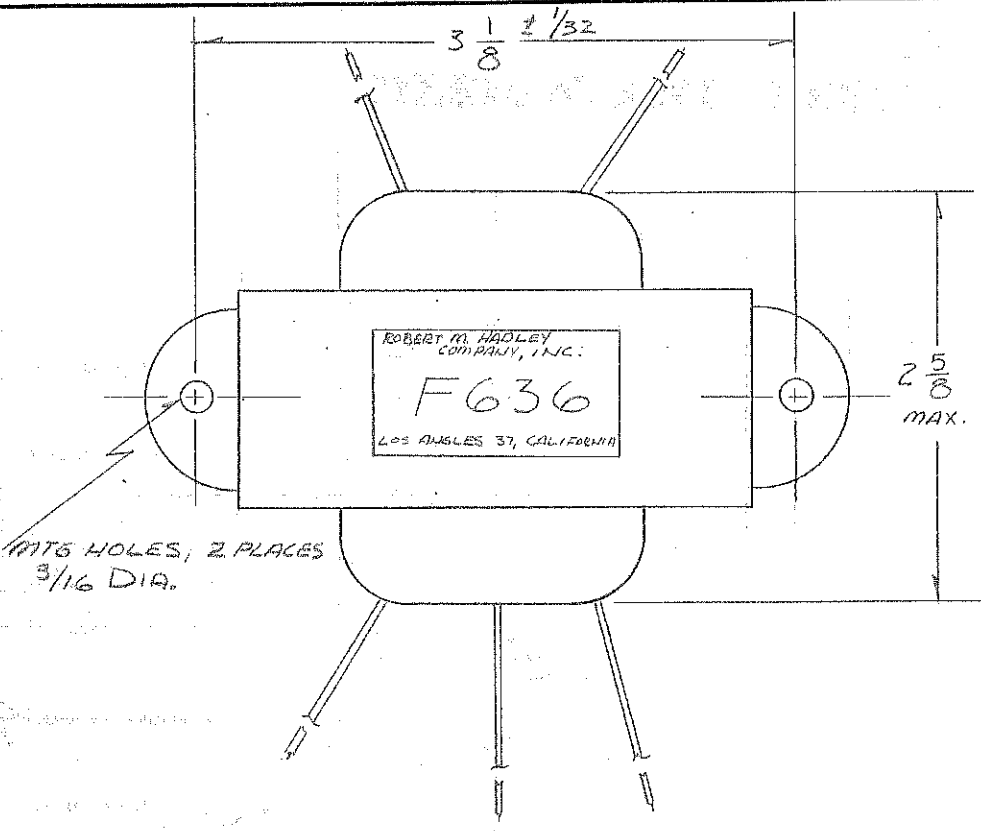
Exciting Current *70 ma* amperes @ *117* volts 60 cycles on

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

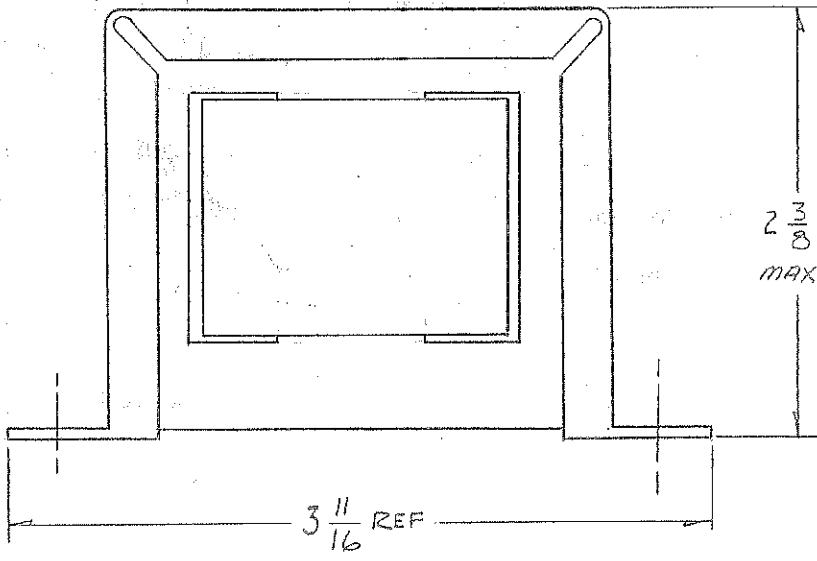
Remarks:

1-2 Black
3-4-5 Green





MTS HOLES, 2 PLACES
3/16 DIA.



2. MARKING: HADLEY No. 3 DECAL ON TOP OF BRACKET.
 1. CONSTRUCTION: HORIZ. D BRACKET, VARNISH IMPREGNATED
 NOTES

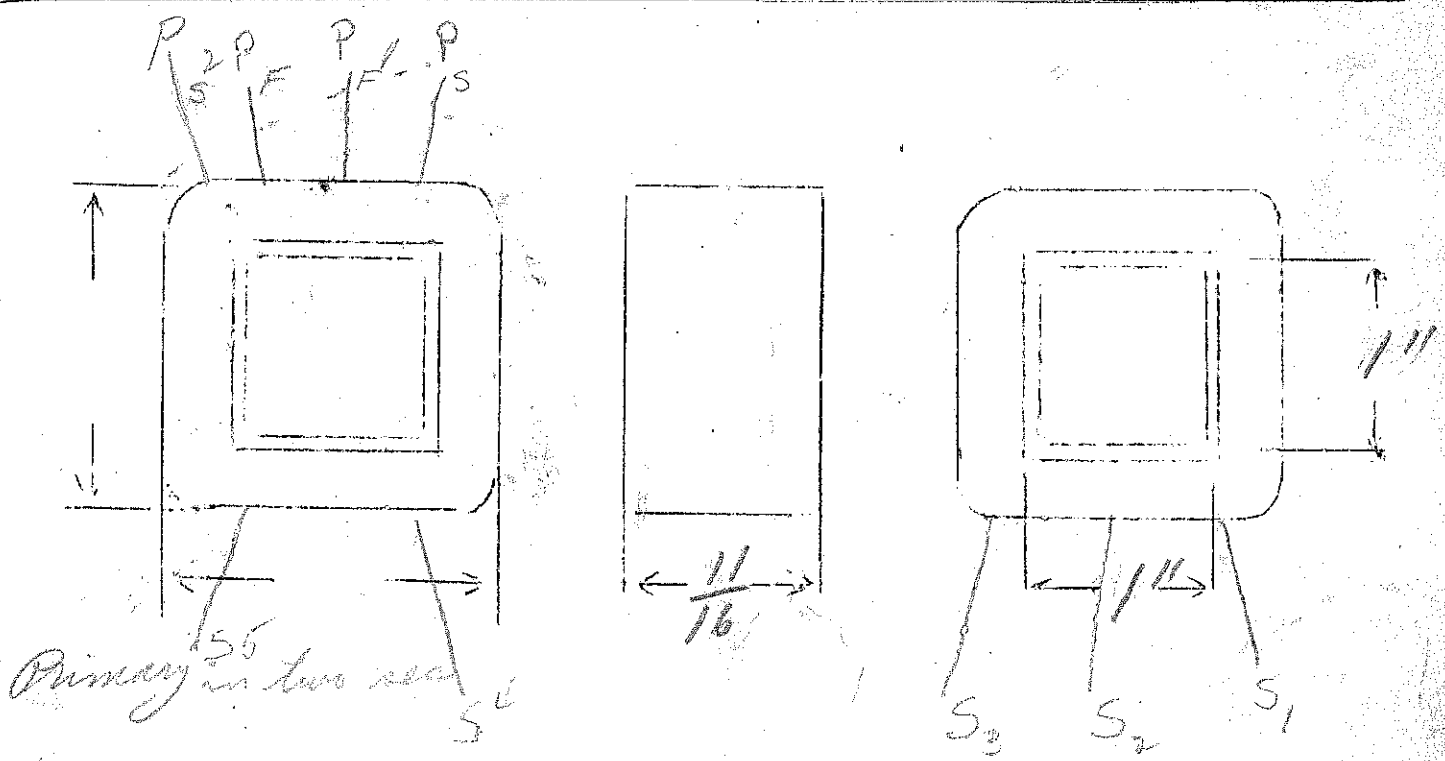
DRAWN BY EVORA	DATE 12 FEB '60	TITLE TRANSFORMER,					
ENGINEER S. BARCOCK (A.H.U.)	DATE 3/30/49	FILAMENT					
CHECKED BY A.H.U.	DATE 2-12-60						
TOLERANCE - UNLESS OTHERWISE STATED		CUSTOMER NAME					
FRACTIONS .XX .XXX		CUSTOMER REFERENCE NO.	REV.	LETTER	REVISION	DATE	BY
ELECTRICAL: UNDER RATED CONDITIONS VOLTS ± 5% O.T. %							
R.M. HADLEY CO., INC. 750 WEST 51ST STREET LOS ANGELES 37, CAL.		SCALE FULL	WEIGHT 2.0 POUND MAX.	SPEC. NO.	F636		

Rush pull 2A3 (4000) to
 +33DB
 14 watts

15
 2.5
 3
 3.5 } V.C.

SPEC. NO. 637 HA

Winding	PRI	Continuoustec				
Turns	1800	128	94			
Taps	—	104	28			
Wind. Lgth.	9/16	1/4	1/4			
Wire Size	#35	#21	#23			
T.P.L.	25-24	30-4	37-3			
Kind Term.	sil Br	wire	wire			
Term. Lgth.	6"	6"	6"			
Layer Insul.	30*					
Wrapper	2L0056A	2L0056A				
TUBE	7L007 + 2L003VP			IMPREGNATION	b. WAX	
CURE	1 1X1 NW 296 2X2 H.G. AUDD					



$$\frac{4000}{15} = 266$$

$$\frac{N_1}{N_2} = 16.3$$

$$\frac{3000}{16.3} = 184$$

222

$\frac{Z_1}{Z_2}$

$$\frac{4000}{7.5} = 533$$

$$\frac{N_1}{N_2} = 23.2$$

$$\frac{3000}{23.2} = 130$$

15.6
106
128

$$\frac{4000}{5} = 800$$

$$\frac{N_1}{N_2} = 28.3$$

$$\frac{3000}{28.3} = 106$$

106
128

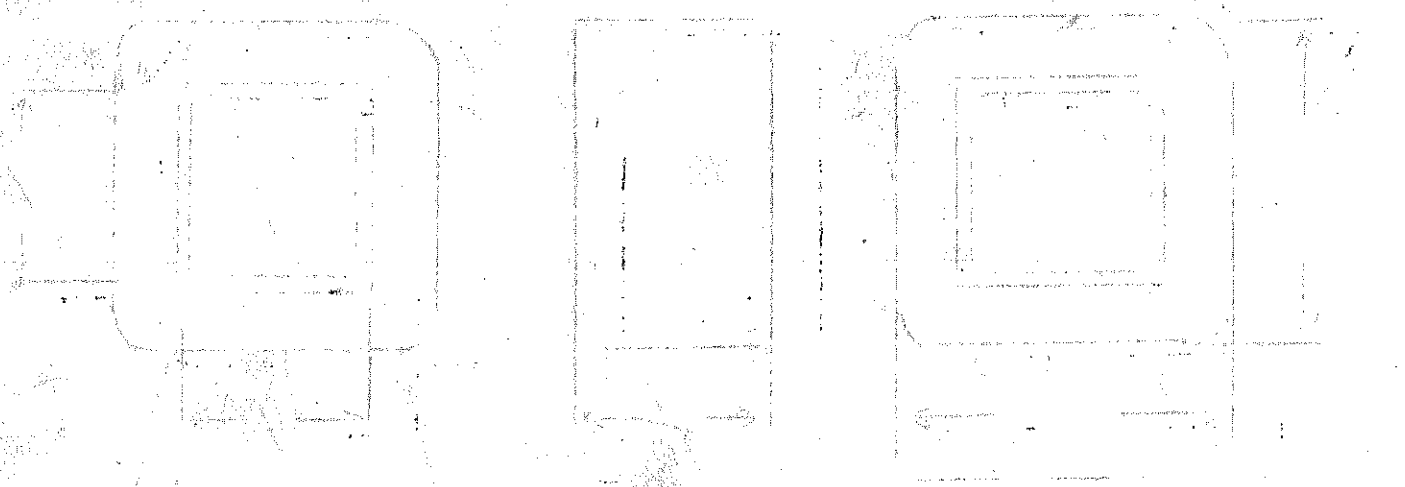
$$\frac{4000}{3} = 1333$$

$$\frac{N_1}{N_2} = 36.4$$

$$\frac{3000}{36.4} = 82$$

82
98

Reverse Assembly



PUSH-PULL 2A3 Pts (4000-2)

To - 15 - 7.5 - 5 - 3.5 Ω Voice Coil

+33 DB

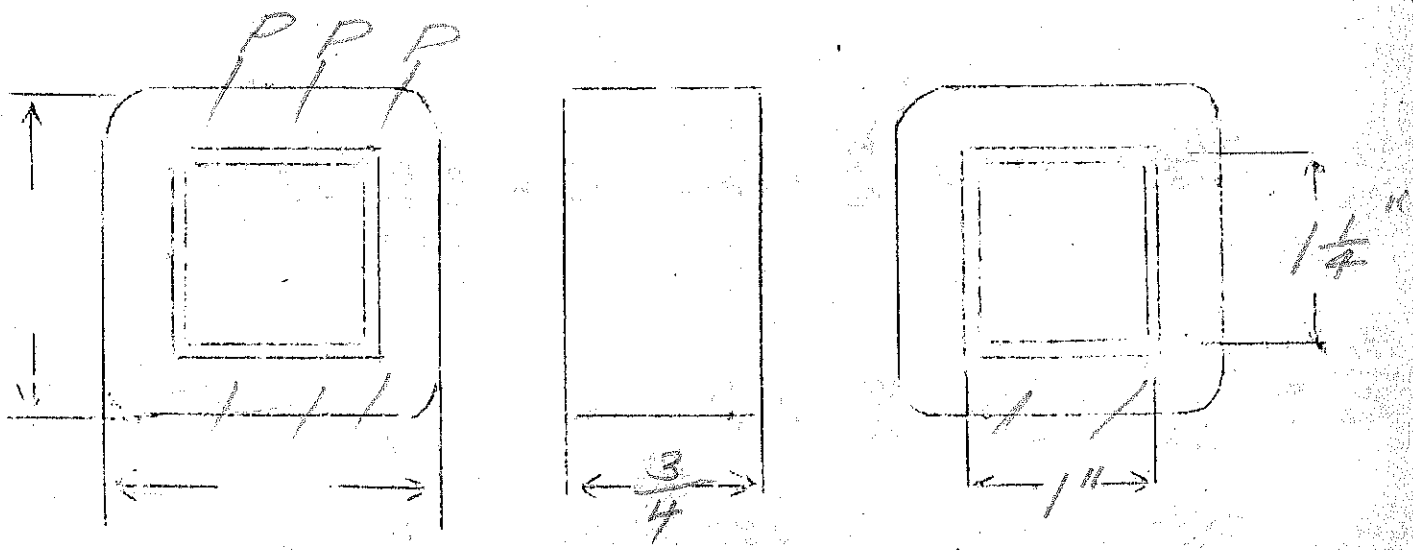
SPEC. NO. 637

Winding	PRI	CONTINUOUS				
		SEC _A	B			
Turns	3000	212	163			
Taps	NONE	7.76	4.6			
Wind. Lgth.	9/16"	1.5	1.5			
Wire Size	#33	#21	#22			
T.P.L.	64-47	45-5	50-4			
Kind Term.	#20 PBR	#20 PBR	—			
Term. Lgth.	6"	6"	6"			
Layer Insul.	40 #00	1L005 VC				
Wrapper	1L005 VC 2L005GA		2L005GA			

TUBE | 7L007 | IMPREGNATION | VARNISH

CURE | 1X1.25 M 296 HIGH GRADE AUDIO

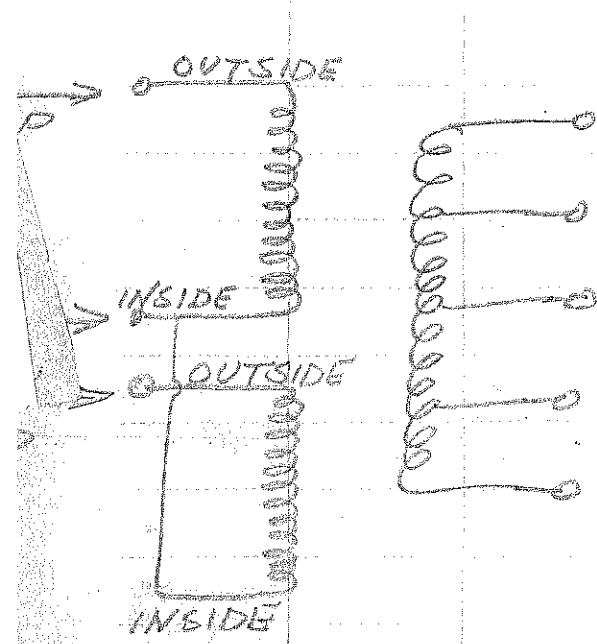
SEE OTHERSIDE FOR ASSEMBLY INFORMATION



REVERSE DIRECTION ASSEMBLY

PRI

04.13.92



The two pri coils are placed side by side
one coil reversed with respect to the other

$$\frac{E_1}{E_2} = \frac{4000}{15} = 266, \quad \frac{N_1}{N_2} = 16.6, \quad N_2 = \frac{6000}{16.6} = 375 T$$

$$\frac{E_1}{E_2} = \frac{4000}{7.5} = 533, \quad \frac{N_1}{N_2} = 28.2, \quad N_2 = \frac{6000}{28.2} = 258 T$$

$$\frac{E_1}{E_2} = \frac{4000}{5} = 800, \quad \frac{N_1}{N_2} = 28.2, \quad N_2 = \frac{6000}{28.2} = 212$$

$$\frac{E_1}{E_2} = \frac{4000}{3.5} = 1140, \quad \frac{N_1}{N_2} = 34, \quad N_2 = \frac{6000}{34} = 176$$

Filament

New Stock

117 V @ 50/60 ~ to

ATAO TEST CMA KIRKLAND

6.3V CT @ 4a

SPEC. NO. F638

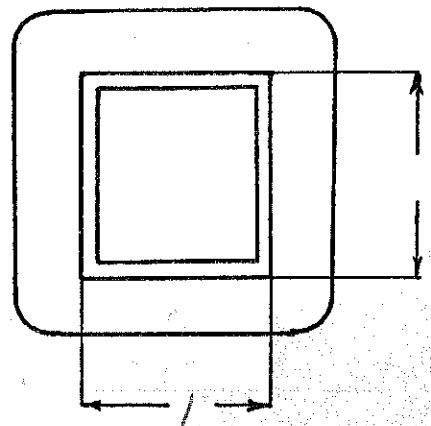
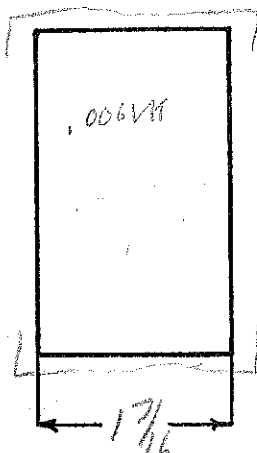
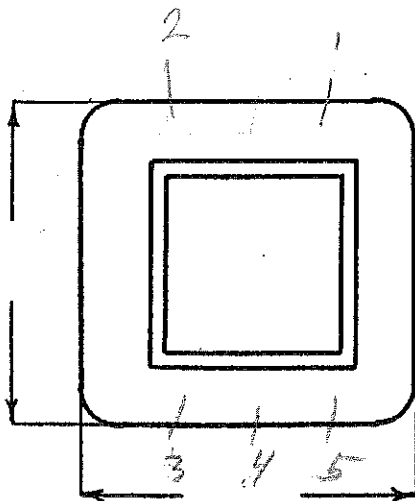
Winding		1-2 Pri		3-4-5 Sec		
Turns		736		46		
Taps		---		23		
Wind. Lgth.		13/16		13/16		
Wire Size		#28		#17		
T. P. L.		74-10L		23-2L		
Finish		85%		91%		
Type Lead		#22 P. B		w.o. sleeve		
Lead Lgth.		cut 10"		cut 10"		
Layer Insul.		40#		160-7 GA		
Test Volt.		1500		2500		
Wrapper		1L003CA 1L007GA		1L003CA 2L005GA		

TUBE 5L0106K+1L003CA IMPREGNATION Vacuum

CORE 1X1 GA 24 GRADE D STACK 12X12

MOUNTING D-Leads

W = 707



RE - DESIGNED BY

S. W. B.

DATE

3-5-49

DESIGN AND TEST DATA

Rating: _____

Sec VA = 25
 Pri VA = 3
 IP = 300

Winding		Pri		Sec			
Mean Turn		4.98		6.15			
Resistance 25° c		20.2		.1245			
Pounds Copper		.150		.1480			
Copper Density		523		513			
Ratio Volts		117		6.42			
Test to Ground		1500		2500			

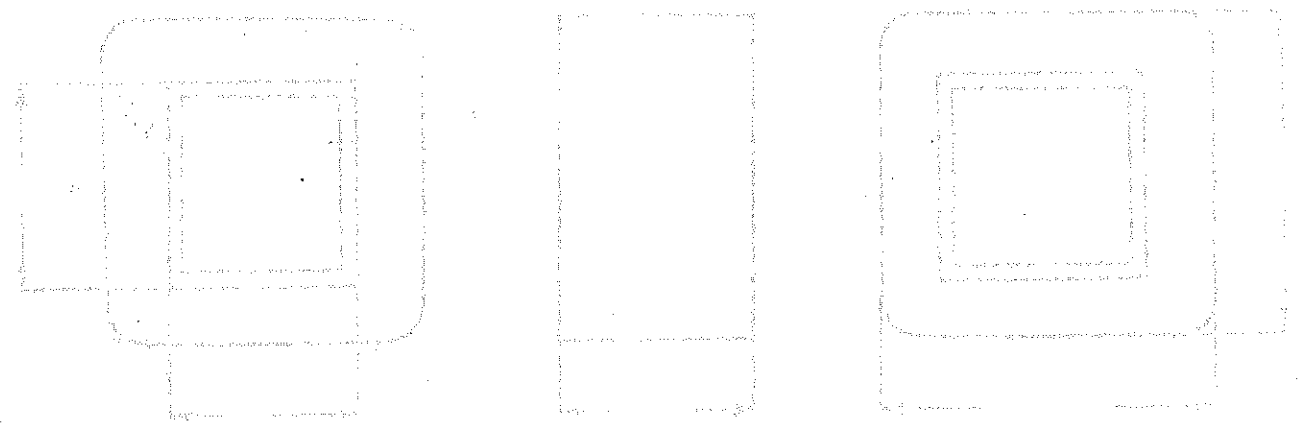
Iron Induction 12.6 kg @ 50 Cycles with 117V on 1-2

Exciting Current _____ amperes @ 120 volts 60 cycles on 1-3

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

Remarks:

1-2 Black
 3-4-5 Green



Orilament

New stock

117V @ 50/60 cycles

to

6.3VCT @ 4 amps

SPEC. NO. F638

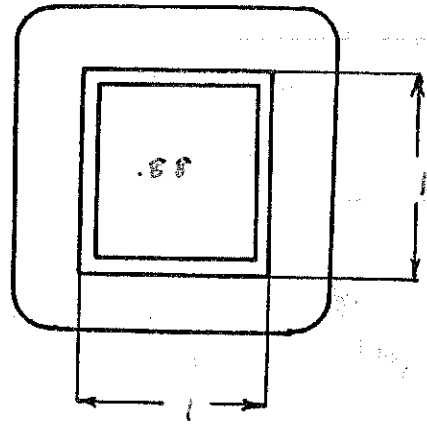
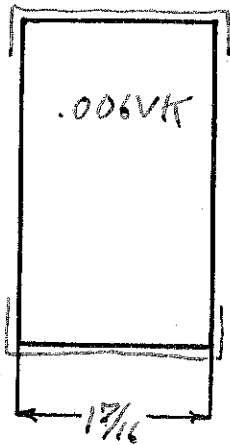
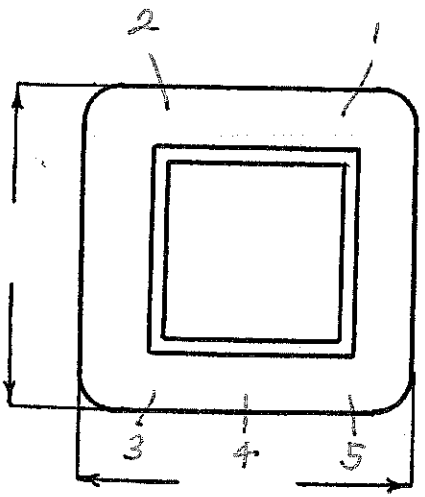
Winding	1-2 Pri	3-4-5 Sec					
Turns	736	46					
Taps	-	23					
Wind. Lgth.	1 ³ / ₁₆	1 ³ / ₁₆					
Wire Size	#28	#17					
T. P. L.	74-10L	23-2L					
Finish							
Pitch	85%	91%					
Type Lead	#22 P.B.	w.o. sleeve					
Lead Lgth.	cut 10"	8" from coil					
Layer Insul.	40#	1L007GA					
Test Volt.	1500	2500					
Wrapper	1L003CA 1L007GA	1L003CA 2L005GK					

TUBE 5L010GK + 1L003CA IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D-leads

wn = 72%



RE-DESIGNED BY S.W.B.

DATE 3-5-49

DESIGN AND TEST DATA

Rating: $I_s = 4a$

$sec VA = 25.2$
 $Pri VA = 39.6$
 $I_p = .300a$

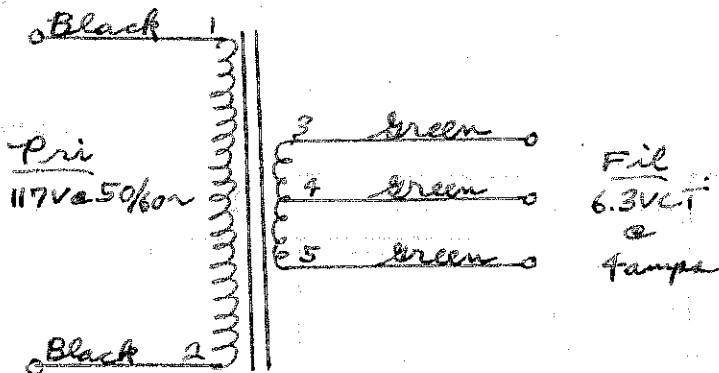
Winding	1-2 <i>Pri</i>	3-4-5 <i>sec</i>				
Mean Turn	4.98	6.15				
Resistance 25° c	20.2	.1215 ##				
Pounds Copper	.150	.148				
Copper Density	533	513				
Ratio Volts	<i>open circuit</i>	117	7.33			
	<i>Load</i>	117	6.42			
Test to Ground	1500	2500				

Iron Induction 12.6 kg @ 50 Cycles with 117V on 1-2

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



Filament

New Stock

117V @ 50/60 - 40

6.3V CT @ 50

SPEC. NO. F-690
ccc 8602

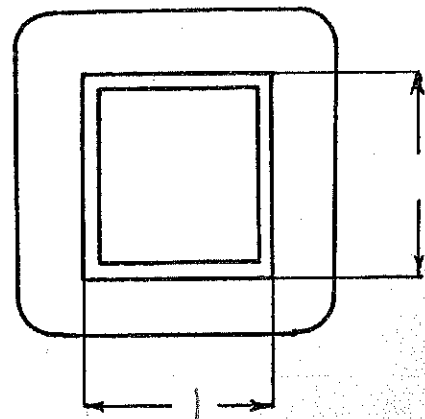
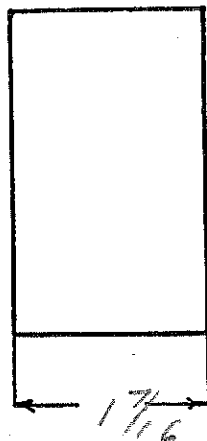
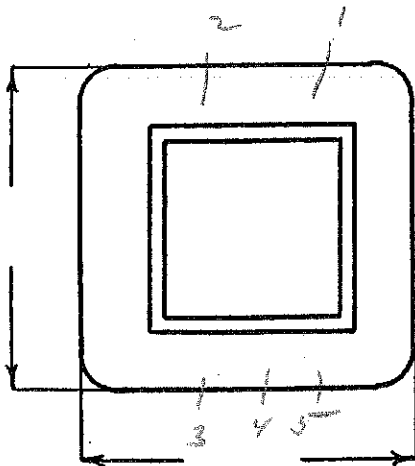
Winding	1-2 Pri	3-4-5 Sec				
Turns	728	44				
Taps	—	22				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	# 27	# 16				
T. P. L.	78-102	22-22				
Finish	90%	90%				
Type Lead	#22 P.R.	W.O. Sleeve				
Lead Lgth.	cut 10"	cut 10"				
Layer Insul.	40#	1L0076A				
Test Volt.	1500	2500				
Wrapper	2L0076A	2L0076A				

TUBE 5L010 GK IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D-Leads

$w = 73\%$



DESIGNED BY

F. Brazeal

DATE

3-31-47

DESIGN AND TEST DATA

Rating:

Sec VA = 31.5
Pri VA = 42.7
Ip = 356 ma

Winding	Pri	Sec					
Mean Turn	4.95	6.22					
Resistance 25° c	15.7	1.104					
Pounds Copper	1.186	1.201					
Copper Density	567	577					
Ratio Volts	117	603					
Test to Ground	1500	2500					

Iron Induction 13.14 @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Green

PP 46,59 (6000Ω) Class B

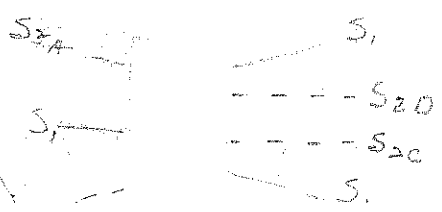
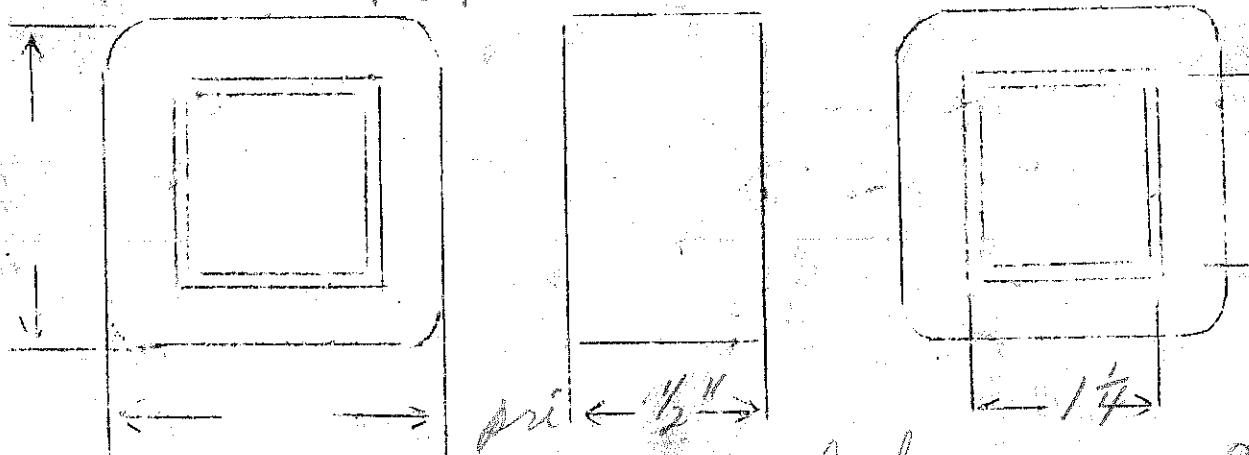
to 15 - 7.5 - 3.5 - VC or 500, 200

+36DB - 25 watts

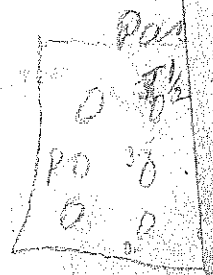
SPEC. NO. 640 HC

Winding	PRI	SEC ₁	SEC ₂			
Turns	1500	870	72	78		
Taps	—	530	—	28		
Wind. Lgth.	5/16"	3/4"	3/4	3/4		
Wire Size	#31	#27	#19	#21		
T.P.L.	24-52	44-20	44-18	44-20		
Kind Term.	wire	wire				
Term. Lgth.	6"	6"	6"	6"		
Layer Insul.	50#	50#	kraft			
Wrapper	2L0056A	2L0056A		3L0056A		
TUBE	7L0074/1L007VC			IMPREGNATION	VARNISH	
CURE	1/4x1/4			2x2 HF	290 A	

Primary Power assembly



sec 15/16"



For response down 1DB at 30 cycles, the inductance L_p should be 48 Henries

(1) $L = 48 \text{ Henries}$

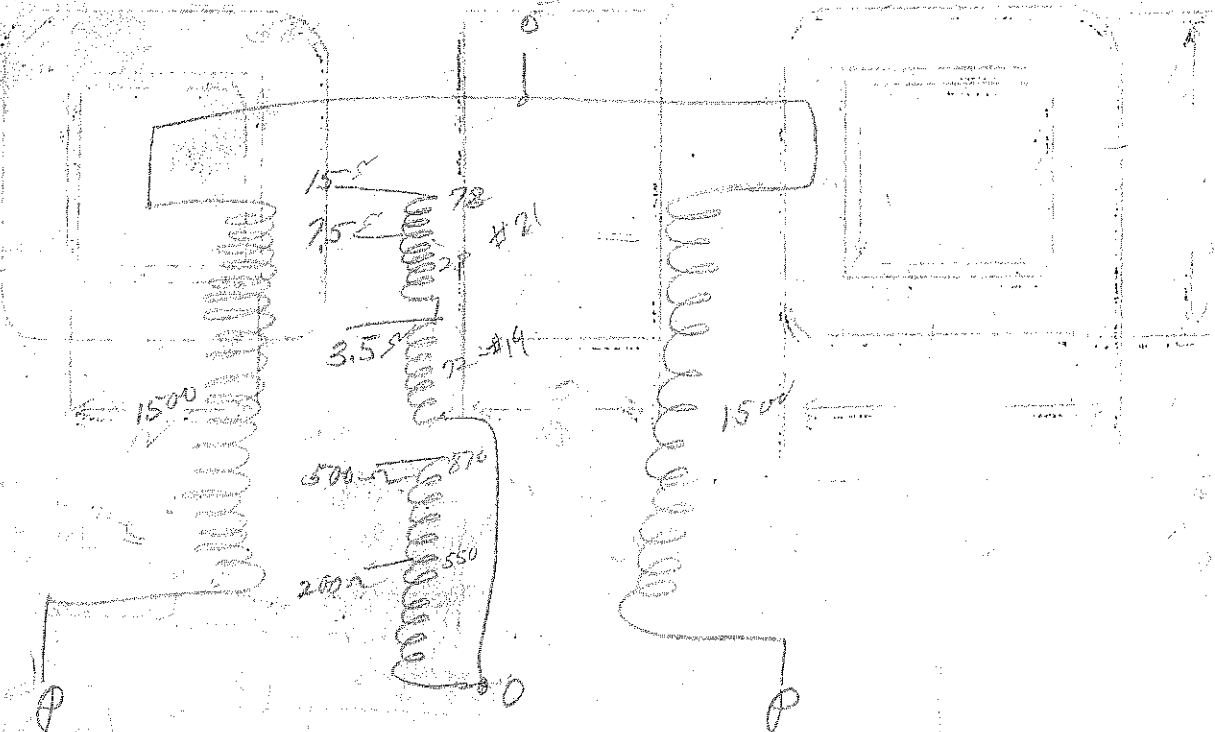
(2) $E_p \text{ (p.p. swing)} = 400V$

max flux density 5000 lines, $\mu = \frac{5000}{113} = 3800$

$L = \frac{.6 \times 10^{-8} K \mu^2 N^2 A}{156}$

$N^2 A = \frac{48 \times 156 \times 10^8}{.6 \times .95 \times 3800} = 35 \times 10^6$

$\frac{10^{18}}{3 \times 10^3} = \frac{10^{15}}{3} = 3 \times 10^{14}$



Trilament

New stock

117V @ 50/60 ~ to

6.3V C.T. @ 5a

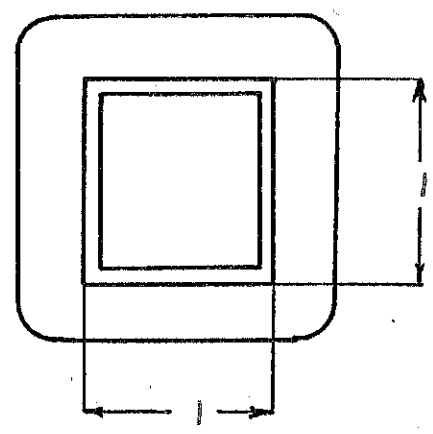
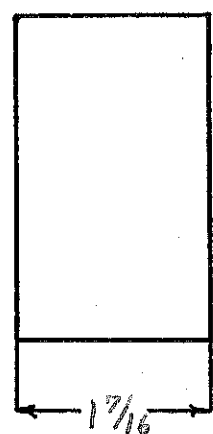
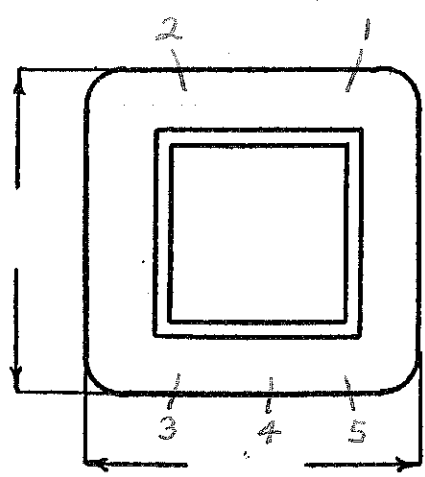
SPEC. NO. F 640
See 8602

Winding	1-2 Pri	3-4-5 Sec				
Turns	728	44				
Taps	-	22				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	#27	#16				
T. P. L.	73-10L	22-2L				
Finish Pitch	90%	92%				
Type Lead	#22 P.B.	w.o. dleeve				
Lead Lgth.	cut 10"	cut 10"				
Layer Insul.	40#	1L007GA				
Test Volt.	1500	2500				
Wrapper	2L007GA	2L007GA				

TUBE 5L 010 GK + 1L003CA IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D-Leads



DESIGNED BY F. FRAZEE

DATE 3-31-47

DESIGN AND TEST DATA

Rating:

Sec VA = 31.5
 Pri VA = 42.7
 I_p = 356 ma

Winding	Pri	S _{oil}				
Mean Turn	4.95	6.22				
Resistance 25° c	15.7	.104				
Pounds Copper	.186	.201				
Copper Density	567	577				
Ratio Volts	117	6.3				
Test to Ground	1500	2500				

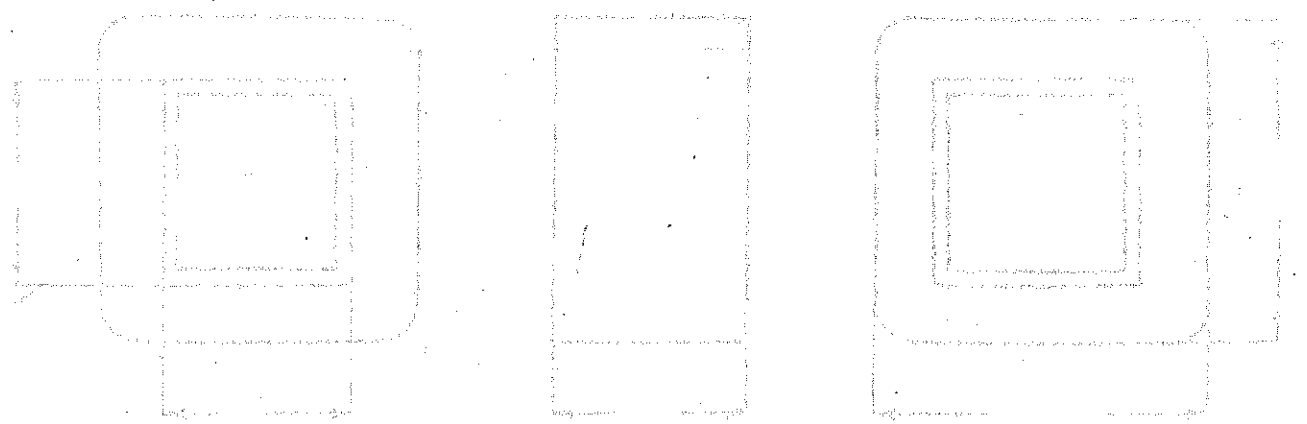
Iron Induction ^{IR # 41} 13.1 Kg @ 50 Cycles

Exciting Current 73 m.a. amperes @ 117 volts 60 cycles on 1-2

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

Remarks:

1-2 Black
 3-4-5 Green



FILAMENT

New stock

117
~~110-120~~ volts @ 50/60 cycles
 6.3 volts CT @ 8 Amps
 750 volts working

F 642

SPEC. NO. ~~R753~~

Winding	1-2- 3 Pri.		34.5 34.5			
Turns	567 553		34			
Taps	520		17			
Wind. Lgth.	1 1/4		1 1/4			
Wire Size	#25		#14			
T. P. L.	566I-10L		172L			
Finish	82%		90%			
Type Lead	W.O. #22 P.B.		W.O. sleeve			
Lead Lgth.	3- cut 12"		3- cut 12"			
Layer Insul.	40#		IL005GA			
Test Volt.	1500	.210	2 5 0 0	.139		
Wrapper	3L005GA		3L005GA			

TUBE 6L007GK + IL003VP IMPREGNATION Varnish

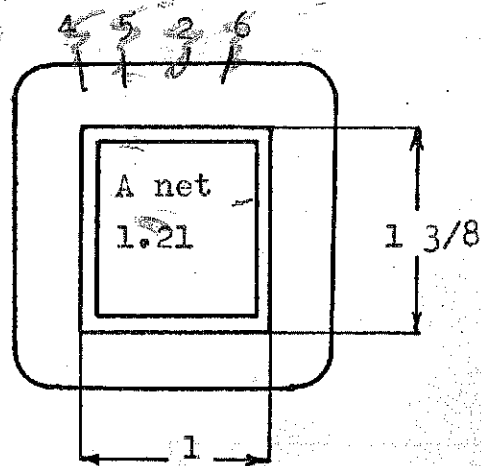
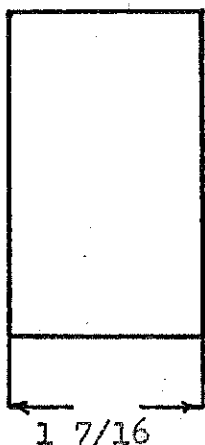
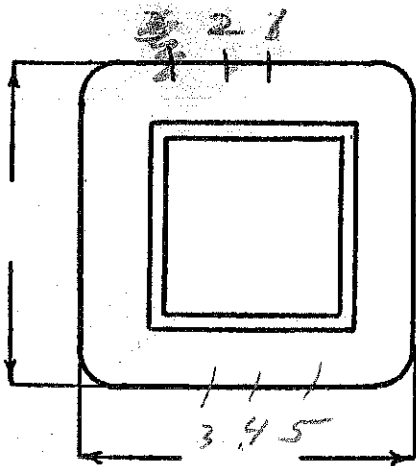
CORE 1 x 1 3/8 GA. 24 GRADE σ D σ V STACK 2x2

MOUNTING ~~3AA~~ Primary Lugs to Right

Use Super Lugs

T. P. V. - 4.72

Window - $1.434/1.50 = 86.8\%$



DESIGNED BY S. W. B.

DATE 5-2-47

DESIGN AND TEST DATA

Rating:

Sec. VA = 50.4

Pri. VA = 66.3

I Pri. = 603 Ma. max.

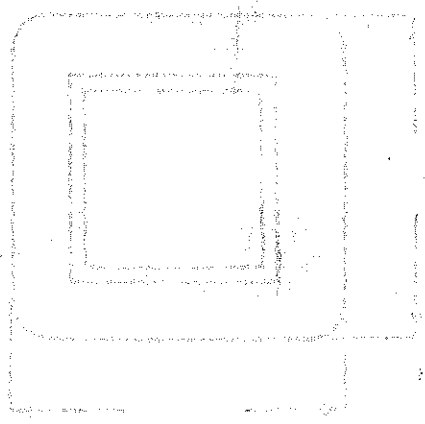
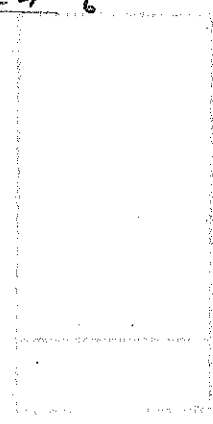
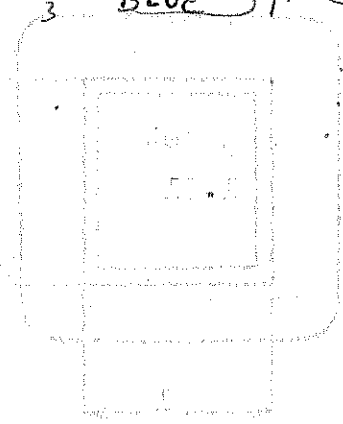
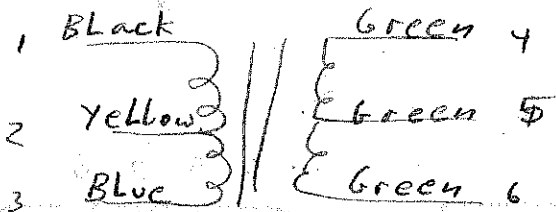
Winding	Pri.	Sec.				
Mean Turn	5.86	7.44				
Resistance 25° c	9.15	.057				
Pounds Copper	.273	.277				
Copper Density	532	514				
Ratio Volts	110-120	6.41				
Test to Ground	1500	2500				

Iron Induction 12.2 @ 50 Cycles

Exciting Current 93 Ma. amperes @ 120 volts 60 cycles on 1-3 +

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

Remarks:



filament

new stock

117 V @ 50/60 ~ to

6.3 V C.T. @ 80

STANDARD TEST DATA SHEET

SPEC. NO. F 642

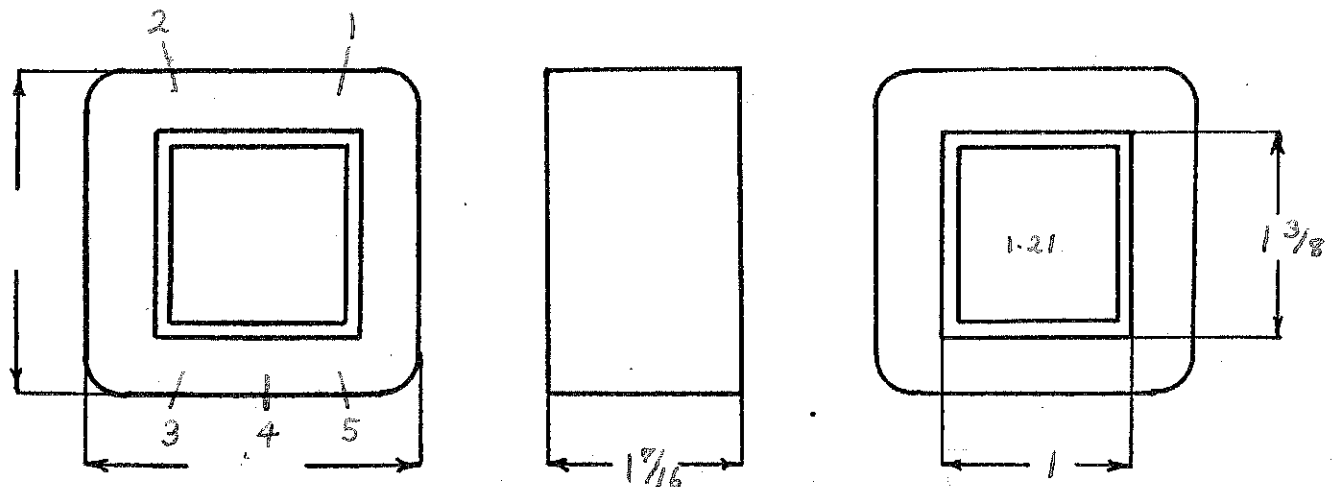
Winding	1-2 Pri	3-4-5 Sec				
Turns	553	34			5, W	
Taps	—	17			1 chip cap 1/2"	
Wind. Lgth.	1 1/4	1 1/4			1- .005CA 8"	
Wire Size	#25	#14			2- .015K 8"	
T. P. L.	56-10L	17-2L			1- .003CA 8 1/2"	
Finish Pitch	82% P.B.	90% w. o. d. leave			1- .007GA 8 1/2"	
Type Lead	#22 P.B.	w. o. d. leave				
Lead Lgth.	cut 12"	cut 12"				
Layer Insul.	40#	1L015K 1L005GA				
Test Volt.	1500	2500				
Wrapper	1L003CA 1L015K 3L005GA	1L003CA 1L007GA 3L005GA				

TUBE 6L007GK + 1L003CA IMPREGNATION Varnish

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

MOUNTING AA

wn = 87%
P.B.



DESIGNED BY S. W. B.

DATE 5-2-47

DESIGN AND TEST DATA

Rating:

Sec VA = 50.4

Pri VA = 66.3

I_p = 6.03 ma

Winding	<i>Pri</i>	<i>Sec</i>					
Mean Turn	<i>5.86</i>	<i>7.44</i>					
Resistance 25° c	<i>9.15</i>	<i>.057</i>					
Pounds Copper	<i>.273</i>	<i>.277</i>					
Copper Density	<i>532</i>	<i>514</i>					
Ratio Volts	<i>117</i>	<i>6.41</i>					
Test to Ground	<i>1500</i>	<i>2500</i>					

Iron Induction *12.2 Kg* @ *50* Cycles

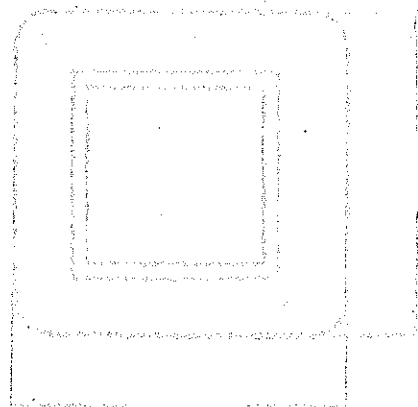
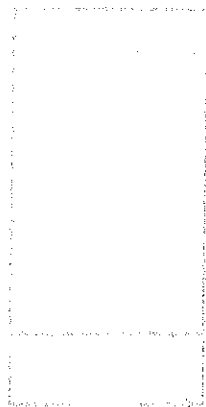
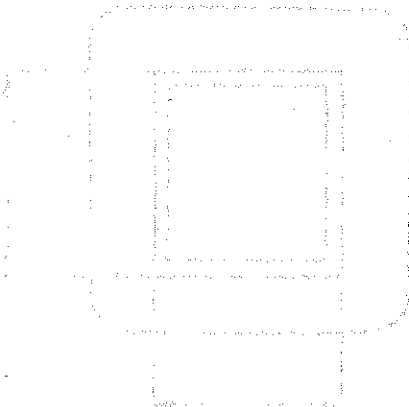
Exciting Current *93 milliamperes* @ *120* volts 60 cycles on *1-3*

Induced Test: Apply *117* Volts at *60 Hz* Cycles on *1-3* with *1-2* grounded

Remarks:

1-2 Black

3-4-5 Green



Class A 42-pp output to 7000 ω
 sec ant. current - 50Ma

643

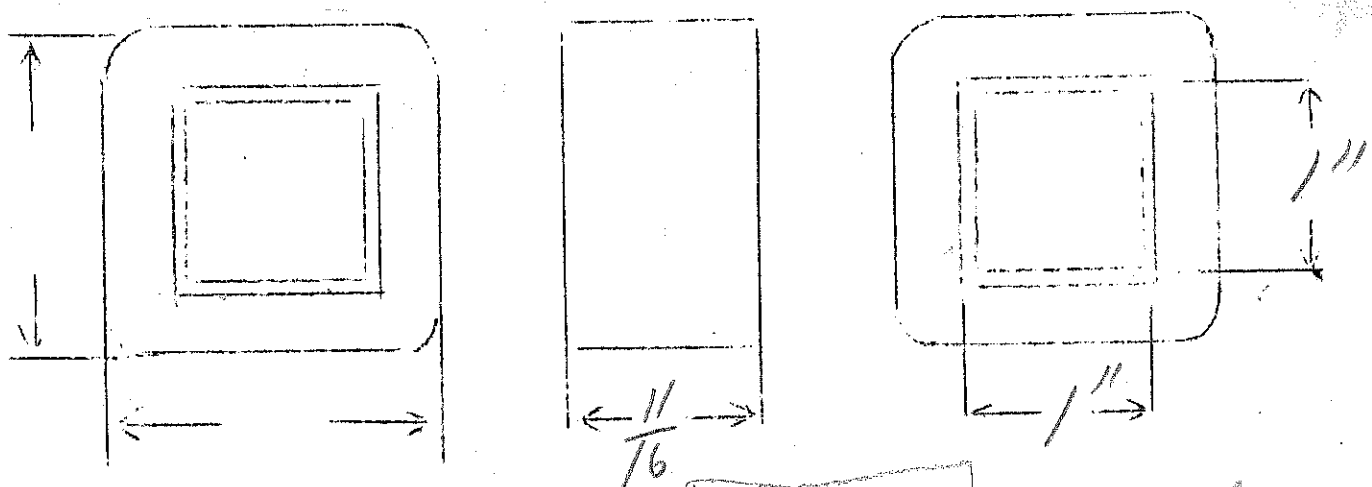
SPEC. NO. 642

Winding	PRI	SEC				
Turns	2500	3500				
Taps	—	—				
Wind. Lgth.	1/2"	1.25				
Wire Size	#36	#34				
T.P.L.	24-30	165-22				
Kind Term.	sil br	sil br				
Term. Lgth.	6"	6"				
Layer Insul.	20#	20#				
Wrapper		2L0056A				

TUBE 72007 IMPREGNATION V+W

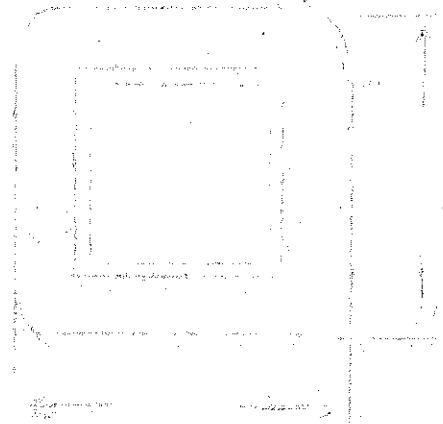
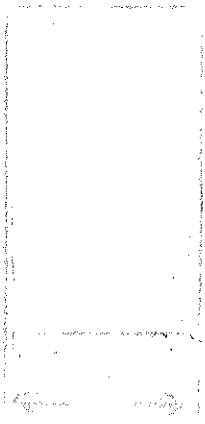
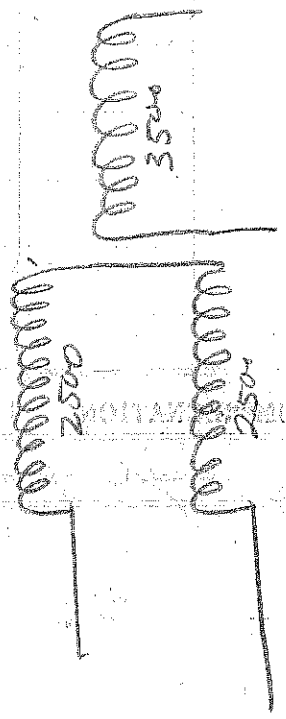
CURE 1 XI NW 290 .005% high grade cured

2 Pri Coils.
 Reverse Assembly



OARA
 OARA
 P OAB
 OAB

BY CRIP

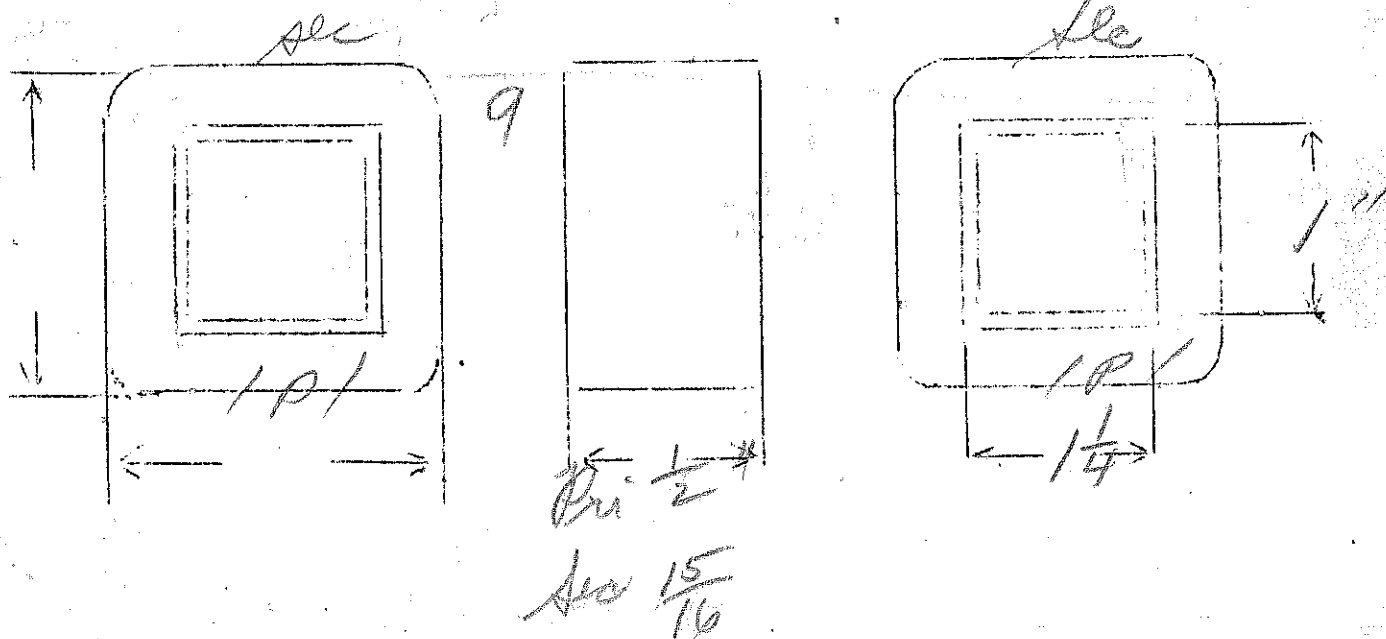


Push pull 2A3 to (4000r) to

0-15-50-125-200-330-500 ohm

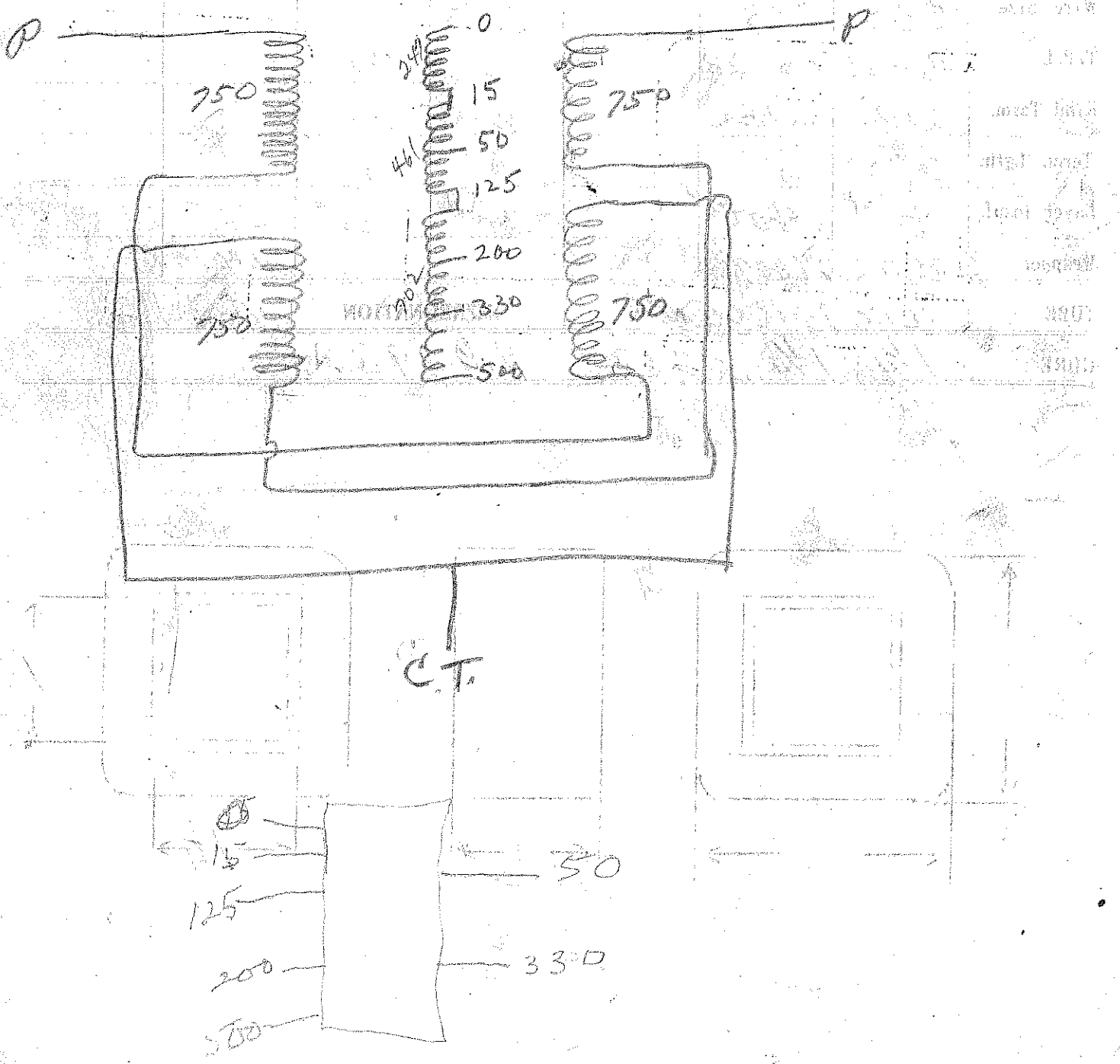
SPEC. NO. 644

Winding	PR1	PR1/2	Continuous		
			SEC1	SEC	SEC
Turns	1000	1000	702 (300) 512 (330) 360 (200)	461 (15)	247 (15)
Taps	—	—	293		
Wind. Lgth.	5/16	5/16	13/16	13/16	13/16
Wire Size	#33	#33	#28	#26	#23
T.P.L.	36-28	36-28	56	45	32
Kind Term.	AlBr	AlBr	WIRE	ONLY	
Term. Lgth.	6"	6"	6"	6"	6"
Layer Insul.	40#	40#	30#	30#	50#
Wrapper	2L007VC	2L0076A			2L0076A
TUBE	7L007+1L007VC		IMPREGNATION		VARNISH
CURE	1/4 x 1/4	2 x 2	H/D 290A		



note end of winding is start of secondary

Reverse Assembly



Filament

New Stock

117V @ 50/60 ~ to

7.5V ct @ 4 a.

SPEC. NO. F 650

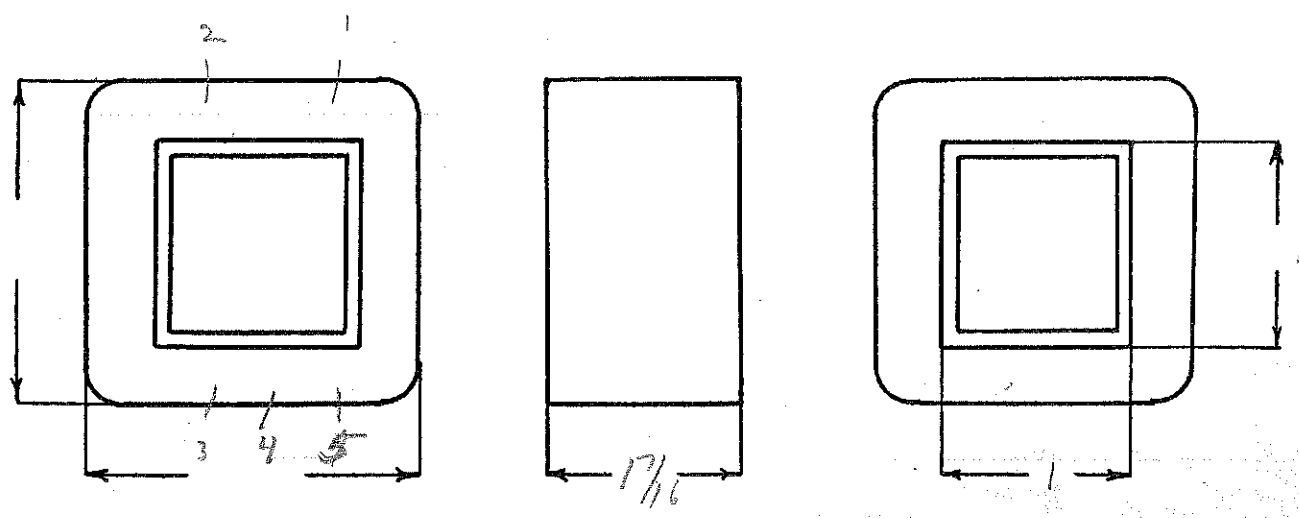
Winding	1-2. PRI	3-4-5 FIL.				
Turns	715	52				
Taps	—	26				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	#27	#17				
T. P. L.	72-10L	18-3L				
Finish	88%	68%				
Type Lead	#22 P.B	W.O. SLEEVE				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	40#	1L0076A				
Test Volt.	1500	2500				
Wrapper	2L005V2	3L0056A				

TUBE 5L0106k IMPREGNATION Varnish

CORE 1x1 GA. 24 GRADE D STACK 2x2

MOUNTING D - Leads

80%



DESIGNED BY

S. Babcock

DATE

3-31-47

DESIGN AND TEST DATA

Rating:

SEC VA = 3
PRI VA = 4
I_p = 350 mA

Winding	PRI	FIL.				
Mean Turn	5.00	6.28				
Resistance 25° c	15.6	.140				
Pounds Copper	.185	.171				
Copper Density	576	513				
Ratio Volts	117	7.56				
Test to Ground	1500	2500				

Iron Induction 13K_g @ 5° Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Brown

DESIGN AND TEST DATA

Rating:

SEC VA = 3
PRI VA = 4
I_p = 350 ma.

Winding	PRI	FIL.				
Mean Turn	5.00	6.28				
Resistance 25° c	15.6	.140				
Pounds Copper	.185	.171				
Copper Density	576	513				
Ratio Volts	117	7.56				
Test to Ground	1500	2500				

Iron Induction 13 K_v @ 5° Cycles

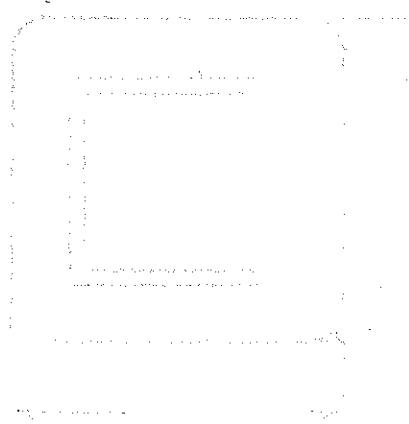
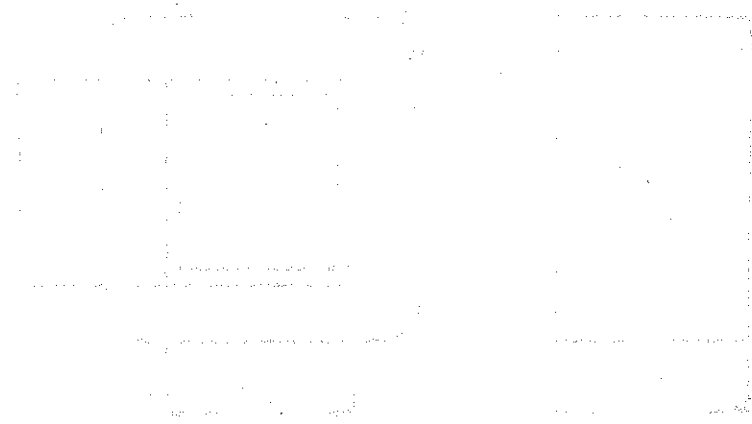
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1 - 2 Black

3 - 4 - 5 Brown



Spilament

New stock

117 V @ 50/60 ~ to

7.5 V C.T. @ 4a. TEST VMA MO1830

SPEC. NO. F 650

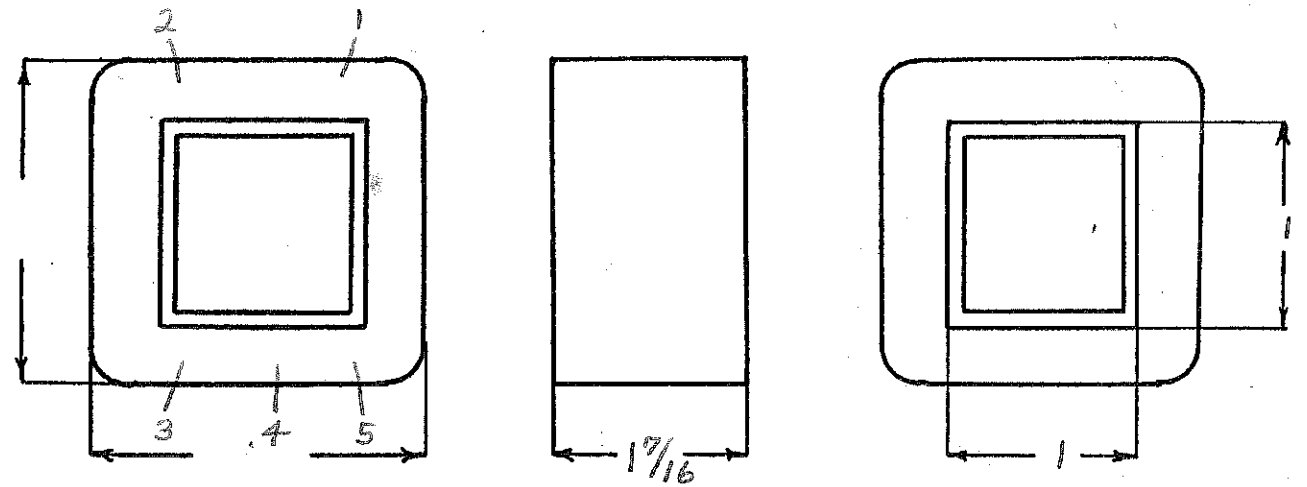
Winding	1-2 <i>Pri</i>	3-4-5 <i>fil</i>				
Turns	715	52				
Taps	—	26				
Wind. Lgth.	1 1/4	1 1/4				
Wire Size	# 27	# 17				
T. P. L.	72-10L	18-3L				
Finish <i>Pitch</i>	88%	68%				
Type Lead	# 22 P.B.	w. o. sleeve				
Lead Lgth.	cut 9"	cut 9"				
Layer Insul.	40#	1L007GA				
Test Volt.	1500	2500				
Wrapper	1L003CA 2L005GA 1L007GA	1L003CA 2L005GA 3L005GA				

TUBE 5L0106K + 1L0012CA IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D-Leads

avn = 80%



DESIGNED BY S. BABCOCK

DATE 3-31-49

DESIGN AND TEST DATA

Rating:

Sec VA = 30
Pri VA = 41
I_p = 350 ma.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>5.00</i>	<i>6.28</i>				
Resistance 25° c	<i>15.6</i>	<i>.140</i>				
Pounds Copper	<i>.185</i>	<i>.171</i>				
Copper Density	<i>576</i>	<i>513</i>				
Ratio Volts	<i>117</i>	<i>7.56</i>				
Test to Ground	<i>1500</i>	<i>2500</i>				

Iron Induction *13Kg* @ *50* Cycles

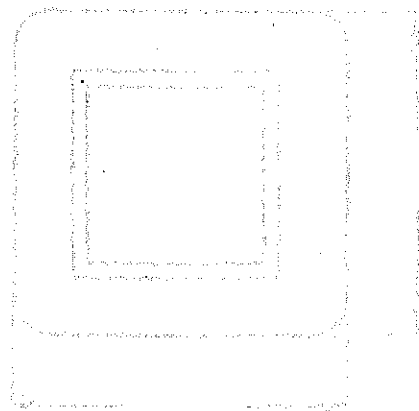
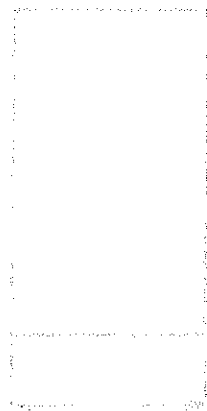
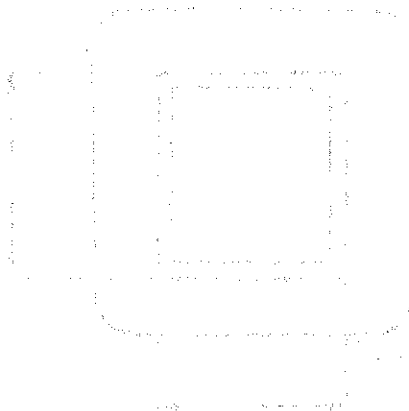
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Brown



Filament

New Stock

117 V @ 50/60 Hz

7.5 V LF @ 80 Hz

SPEC. NO. F652

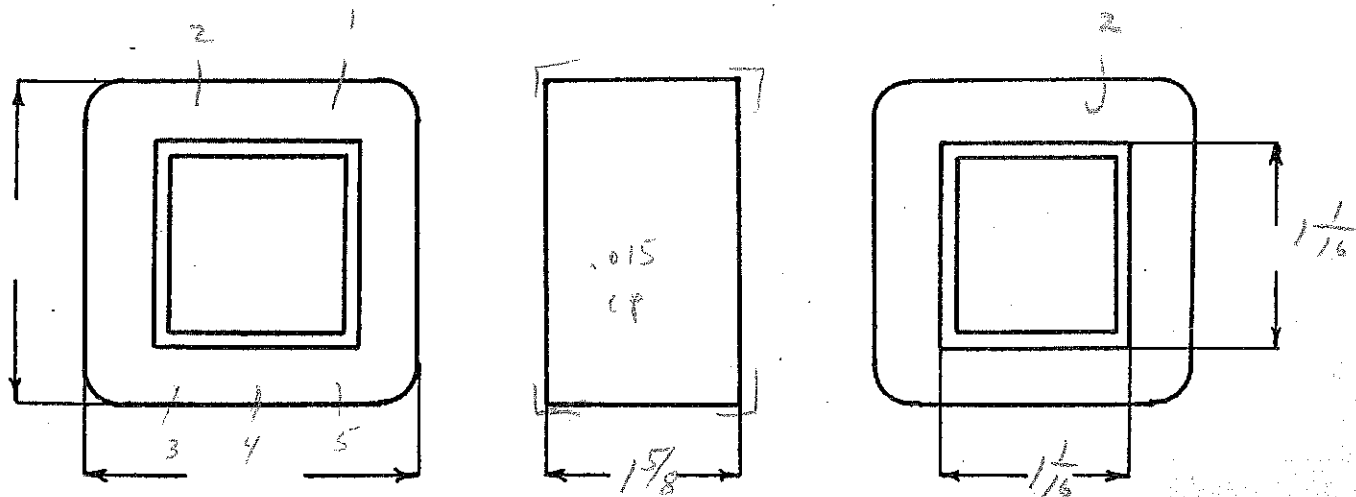
Winding	1-2 PRI	3-4-5 FIL.				
Turns	660	48				
Taps	—	24				
Wind. Lgth.	1 3/8	1 3/8				
Wire Size	# 24	# 14				
T. P. L.	60-11L	16-3L				
Finish	93%	77%				
Type Lead	# 22 P.B.	w.o. sleeve				
Lead Lgth.	cut # 14"	cut 14"				
Layer Insul.	50#	1L010CP				
Test Volt.	1500	2500				
Wrapper	3L0056A	3L0056A				

TUBE 5L010 GK IMPREGNATION Varnish

CORE 1 1/16 x 1 1/16 GA. 24 GRADE D STACK 2x2

MOUNTING AA

w = 85%



DESIGNED BY S. Babcock

DATE 3-31-49

DESIGN AND TEST DATA

Rating:

Sec VA = 6
 Pri VA = 7
 I_p = 675 ma

Winding	Pri	Sec				
Mean Turn	558	7.43				
Resistance 25° c	8.03	.0165				
Pounds Copper	3.83	.374				
Copper Density	598	513				
Ratio Volts	117	7.51				
Test to Ground	1500	2500				

Iron Induction 12.5 Kg @ 5° Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on

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

Remarks:

1 - 2 Black
 3 - 4 - 5 Brown



filament

New stock

117V @ 50/60 ~ to

7.5 V C.T. e 8a

SPEC. NO. F 652

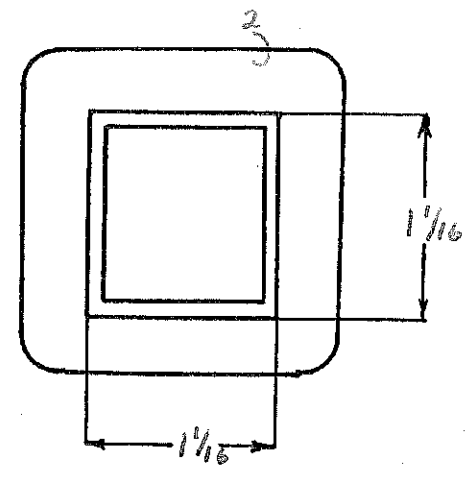
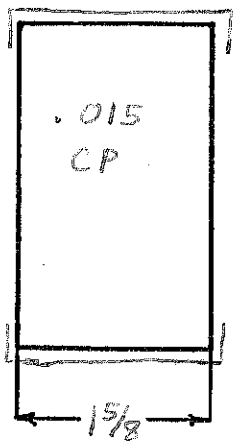
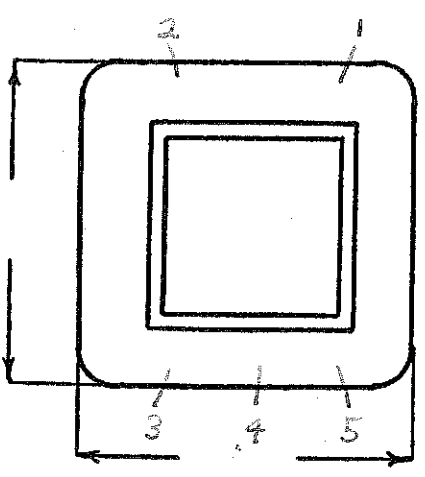
Winding	1-2 <i>Pri</i>	3-4-5 <i>fil</i>				
Turns	660	48				
Taps	-	24				
Wind. Lgth.	1 3/8	1 3/8				
Wire Size	# 24	# 14				
T. P. L.	60-11L	16-3L				
Finish	93%	77%				
Type Lead	# 22 P.B.	w.o. sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	60#	1L010CP				
Test Volt.	1500	2500				
Wrapper	1L003CA 1L015K 2L005GA	1L003CA 1L007GA 2L005GA				

TUBE 5L 010 GK + 1L003 CA IMPREGNATION Varnish

CORE 1/16 x 1/16 GA. 24 GRADE D100 STACK 2x2

MOUNTING AA

wn = 85%



DESIGNED BY S. BABCOCK

DATE 3-31-49

DESIGN AND TEST DATA

Rating:

Sec VA = 60
Pri VA = 79
I_p = 675 ma.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	5.58	7.43				
Resistance 25° c	8.03	.0765				
Pounds Copper	.383	.374				
Copper Density	598	513				
Ratio Volts	117	7.51				
Test to Ground	1500	2500				

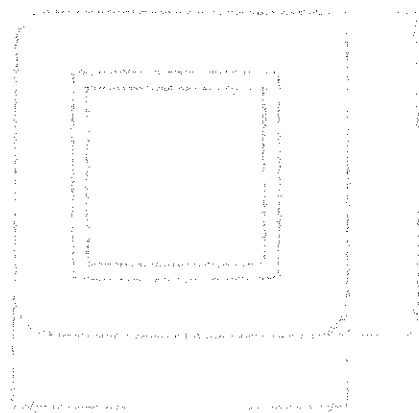
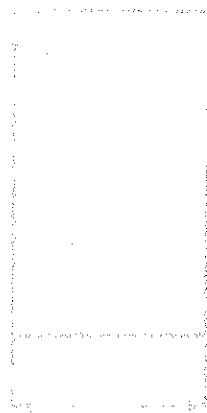
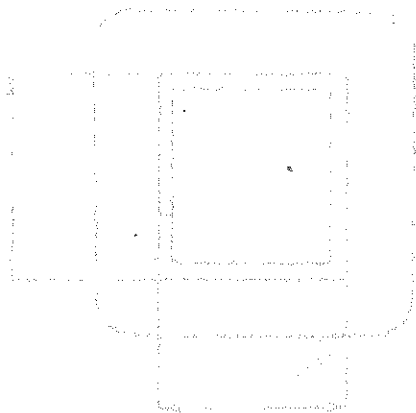
Iron Induction 12.5 Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

- 1-2 Black
- 3-4-5 Brown
- 4 - Blue



POWER
 230 V @ 50/60 Hz
 TO
 750 V @ 100 MA DC
 5V @ 3A
 6.3V CT @ 5A

Ewing & McDonald

AVAIL TEST QMA WAREHOUSE

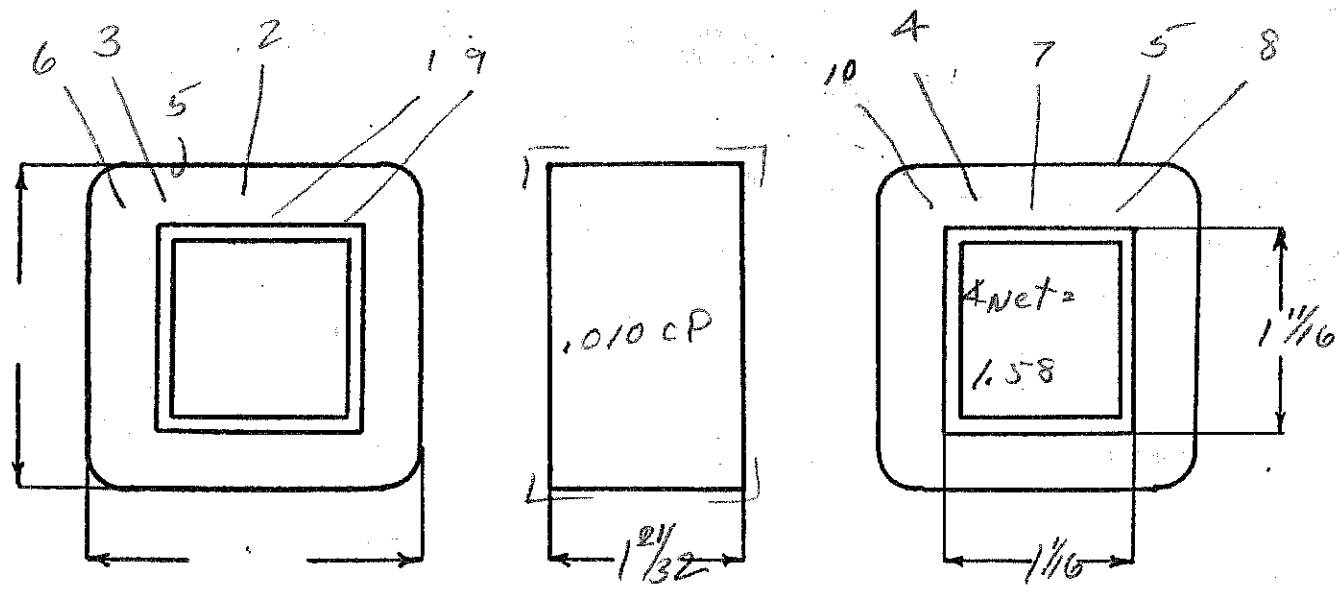
SPEC. NO. P-653-A-230V

Winding	1-2-3 SEC	SHIELD	4-5 PRI	6-7-8 FIL #1	9-10 FIL #2		
Turns	2760	1	776	24	19		
Taps	1380	-	-	12	-		
Wind. Lgth.	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ⁷ / ₁₆	7/8		
Wire Size	#33	.002 cush.	#25	#16	#18		
T. P. L.	173-16L	1	78-11L	24-1L	19-1L		
Finish	92%	-	92%	88%	91%		
Type Lead	#22 Dulac	sil. Br.	#22 Dulac	w.o. Green Sl.	w.o. yellow Sl.		
Lead Lgth.	9" cut 15"	3	9" cut 15"	9" cut 13"	9" cut 13"		
Layer Insul.	Double 16#	-	40#	-	-		
Test Volt.	2500	-	1500	1500	2000		
Wrapper	1L007VC	1L007VC	2L0056A	2L0056A	2L0056A		

TUBE 7L0076W + 7L003VP IMPREGNATION VARNISH

CORE 1¹/₁₆ x 1¹/₁₆ GA. 24 GRADE D STACK 2x2

MOUNTING A



REDESIGNED BY F. Frazer

DATE 5-5-47

DESIGN AND TEST DATA

Rating:

$$I_{sec} (RMS) = 9 \times 100 = 900 \text{ MA}$$

$$E_{sec} VA = 94.3$$

$$PRI VA = 122$$

$$I_p = 531 \text{ MA}$$

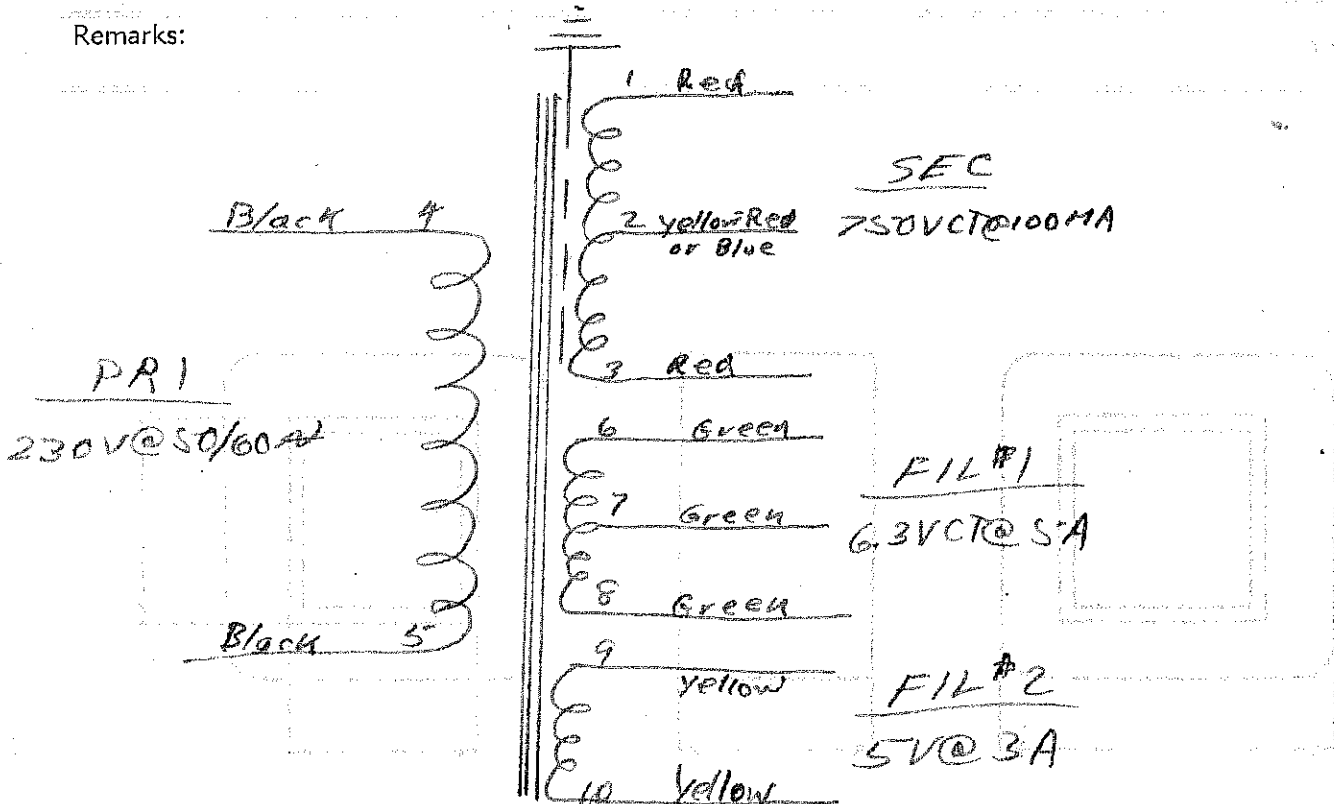
Winding	1-2-3 SEC	4-5 PRI	6-7-8 FIL #1	9-10 FIL #2		
Mean Turn	6.45	8.01	9.27	9.69		
Resistance 25° c	314	17.2	.093	.114		
Pounds Copper	.231	.513	.180	.087		
Copper Density	557	604	517	542		
Ratio Volts	410-410	230	3.56-3.56	5.64		
Test to Ground	2500	1500	1500	2000		

Iron Induction 13.1 Kg @ 50 Cycles

Exciting Current 100 Milliampers @ 230 volts 60 cycles on 4-5

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

Remarks:



POWER TRANSFORMER

120V @ 60A

TO

750V CT @ 100 MA

5V @ 3A

6.3V CT @ 5A

Moviola

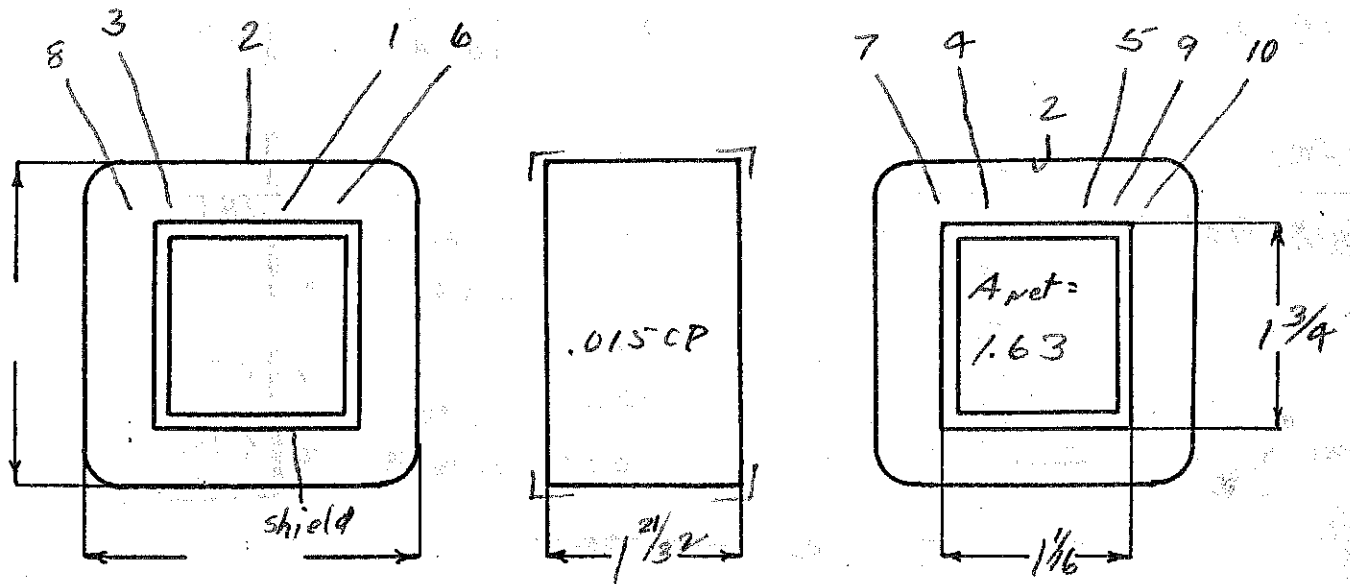
SPEC. NO. P-653-C

Winding	1-2-3 SEC	SHIELD	4-5 PRI	6-7 FIL#1	8-9-10 FIL#2		
Turns	2600	1	396	18	22		
Taps	1300	-	-	-	11		
Wind. Lgth.	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ¹⁵ / ₃₂	1 ¹ / ₄	1 ¹ / ₄		
Wire Size	#34	.002 CU SH.	#22	#18 HF	#16		
T. P. L.	187-142	1	50-82	18-12	22-12		
Finish	88%	-	90%	62%	92%		
Type Lead	Sil. Br. TO Lug	Sil. Br.	W.O. TO Lug	W.O. TO Lug	W.O. TO Lug		
Lead Lgth.	3"	3"	3"	3"	3"		
Layer Insul.	Double 16#	-	50#	-	-		
Test Volt.	2500	-	1500	2000	1500		
Wrapper	1L007VC	1L007VC	2L0056A	2L0056A	2L0056A		

TUBE 7L0076K + 1L003VP IMPREGNATION VARNISH

CORE 1¹/₁₆ x 1³/₄ GA. 24 GRADE D STACK 2 x 2

MOUNTING C - 2³/₄" rad pl. #6 screws



DESIGNED BY F. Frazer
From P-653-A

DATE 1-11-49

DESIGN AND TEST DATA

Rating:

SEC VA = 84
 PRI VA = 113
 I_p = 943 MA

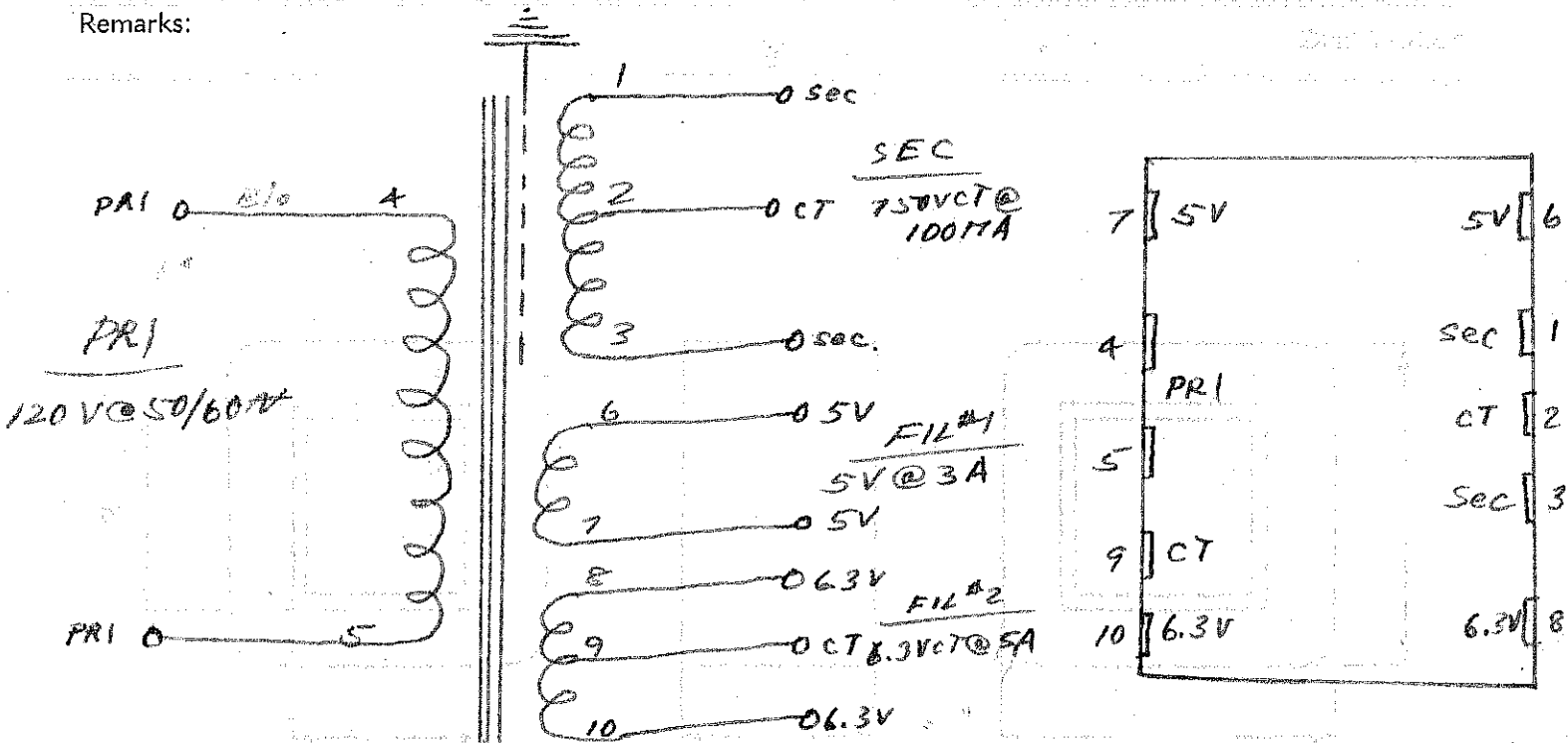
Winding	1-2-3 SEC		4-5 PRI	6-7 FIL #1	8-9-10 FIL #2		
Mean Turn	6.46		7.96	9.28	9.63		
Resistance 25° c	372		433	.0905	.0725		
Pounds Copper	.172		.52	.0696	.14		
Copper Density	662		680	541	517		
Ratio Volts	394-394		120	5.45	3.3-3.3		
Test to Ground	2500		1500	2000	1500		

Iron Induction 13.0 Kg @ 50 Cycles

Exciting Current 188 milliamperes @ 120 volts 60 cycles on 4-5

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

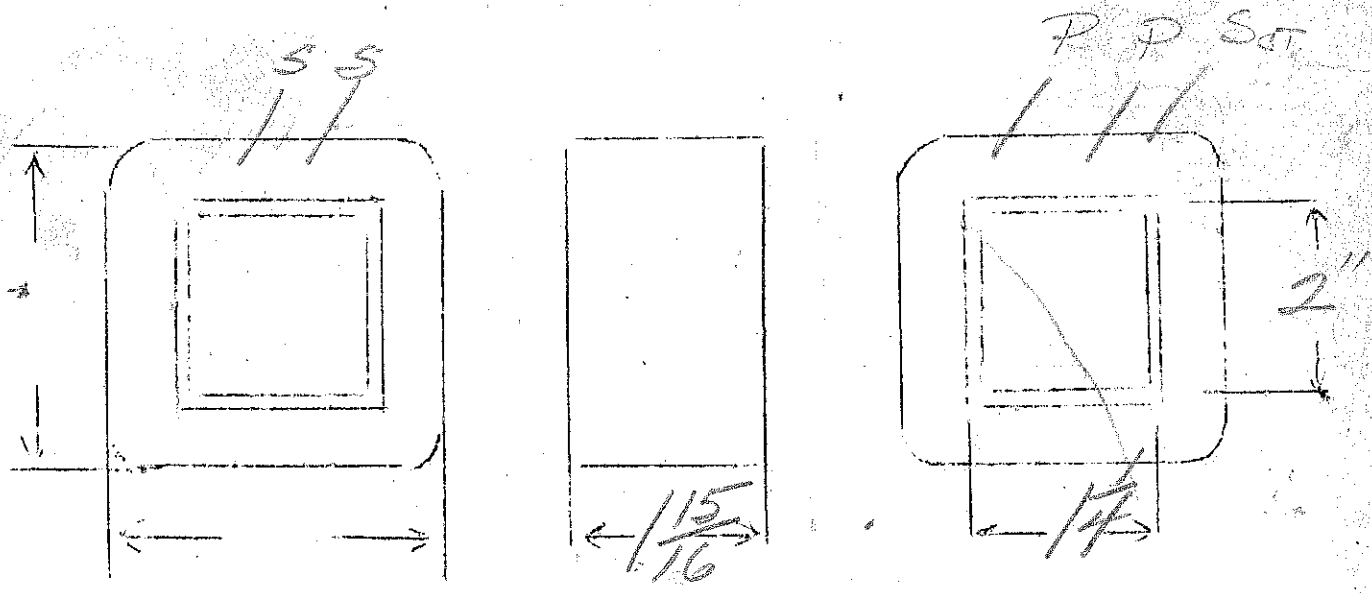
Remarks:



EP - 117V - 25W
 ES - 750V - 100MA
 EF - 5V - 3amp
 EF - 6.3V.C.T. - 1.6A.
 EF - 6.3V - 3.5A.

SPEC. NO. 653-25N

Winding	SEC	SHIELD	PRI	open F ₁	Wile F ₂	Plus F ₃
Turns	3200	180	460	22	27	27
Taps	1600		—		14	
Wind. Lgth.	1.75	1.75	1.75			
Wire Size	#32	#32	#22	#18	#20	#17
T.P.L.	180-18		58-9			
Kind Term.	#20 Pwr Br	silver	#20 Pwr Br	WIPE ON		
Term. Lgth.	9	3	9	9	9	9
Layer Insul.	double 16#		50#	—	—	—
Wrapper	110076C	110076C	210076A	210076A	210076A	
TUBE	74007			IMPREGNATION		VARNISH
CURE	1/4 x 2					



3821. NO.

Winding

Turns

Lead

Wind Lead

Wire Size

W.P.I.

Lead/Frame

Turns/Frame

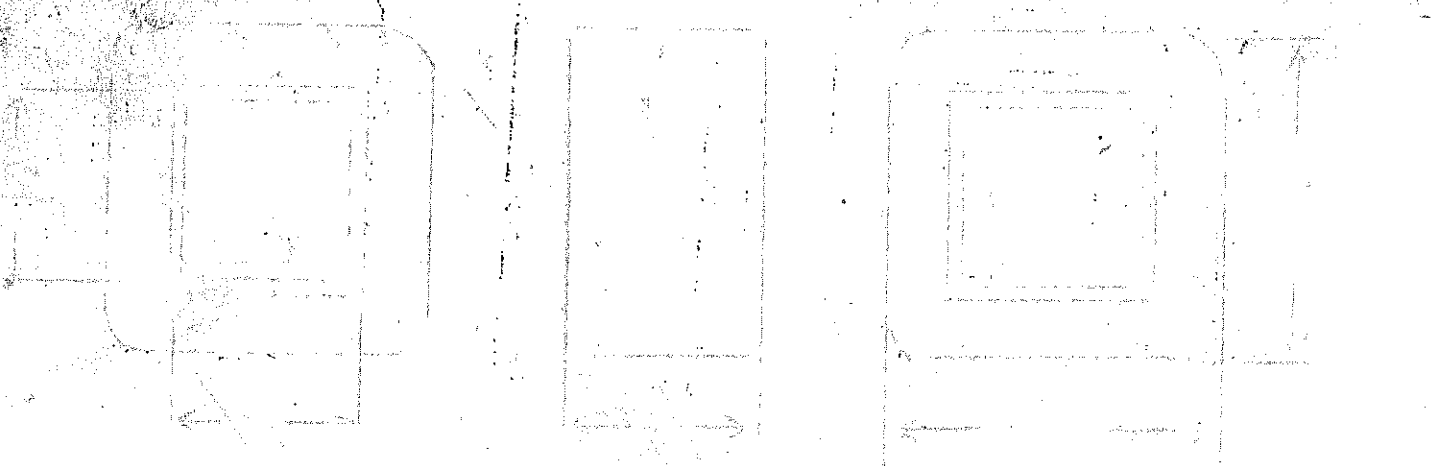
Layer/Frame

Winding

Wire

Turns

WINDING INFORMATION



POWER

STACK

115 volts @ 50/60 cycles to
 750 Volts CT @ 100 Ma.,
 5 volts @ 3 amps, 6.3 volts CT @ 5 amps

SPEC. NO. **P653-A**

Winding	1-2-3 Sec.	Shield	4-5 Pri.	6-7-8 Fil. #1	9-10 Fil. #2		
Turns	2760	1	388	24	19		
Taps	1380			.12			
Wind. Lgth.	1 15/32	1 15/32	1 7/16	1 7/16	1 7/16		
Wire Size	#33	.002" sh. stack	#22	#16	#18		
T. P. L.	173-16L	1-1L	49-8L	24-1L	19-1L		
Finish	92%		91%	88%	-		
Type Lead	#22 Dulac	Sil. Br.	#20 Pr. Br.	Sleeve W.O.	Sleeve W.O.		
Lead Lgth.	Cut 14" Case 8"	3"	Cut 14" Case 8"	Cut 12"	Cut 12"		
Layer Insul.	Double #20	-	Single #40	-	-		
Test Volt.	2500 V	-	1250 V	1500 V	2000 V		
Wrapper	1L005VC 1L007VG	1L005VC 1L007VG	2L005GA	2L007GA	2L005GA		

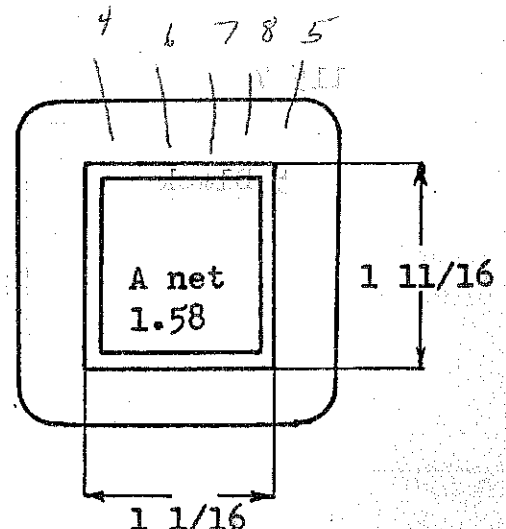
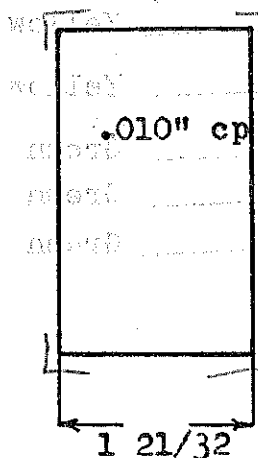
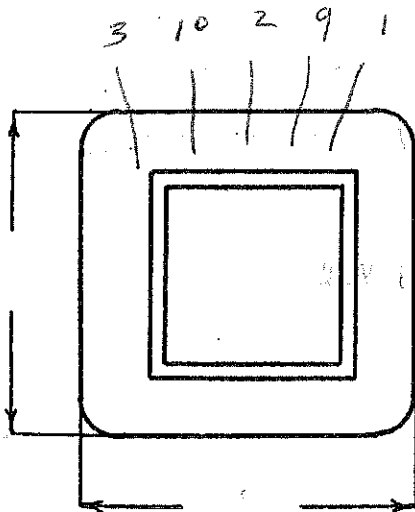
TUBE 7L007GK / 1L003VE IMPREGNATION Varnish

CORE 1 1/16 x 1 11/16 A. 24 GRADE D STACK 2 x 2

MOUNTING A

T. P. V. - 3.38

Window - .581 / .656 = 88.5%



DESIGNED BY

F. FRAZEE

DATE

5-47

DESIGN AND TEST DATA

Rating: I sec (RMS) = $.9 \times 100 = 90$

L Sec. VA = 943
 Pri. VA = 122
 Ip = 1.06A

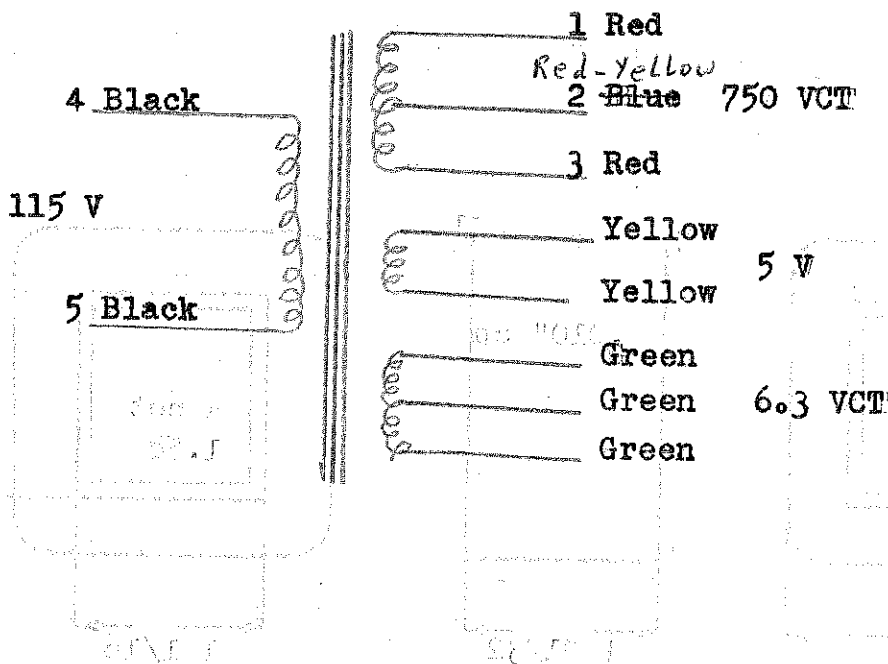
Winding	Sec.	Shield	Pri.	Fil. #1	Fil. #2		
Mean Turn	6.45	-	8.01	9.27	9.69		
Resistance 25° c	314	-	4.31	.093	.114		
Pounds Copper	.231	-	.514	.180	.087		
Copper Density	557		606	517	542		
Ratio Volts	410-0-410	-	115 V	3.65-0-3.65	5.6 V		
Test to Ground	2500 V	-	1250 V	1500 V	2000 V		

Iron Induction 13.1 kg @ 50 Cycles

Exciting Current 195 milliamperes @ 115 volts 60 cycles on 4-5

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

Remarks:



POWER

STOCK

115 volts @ 50/60 cycles to
 750 Volts CT @ 100 Ma.,
 5 volts @ 3 amps, 6.3 volts CT @ 5 amps

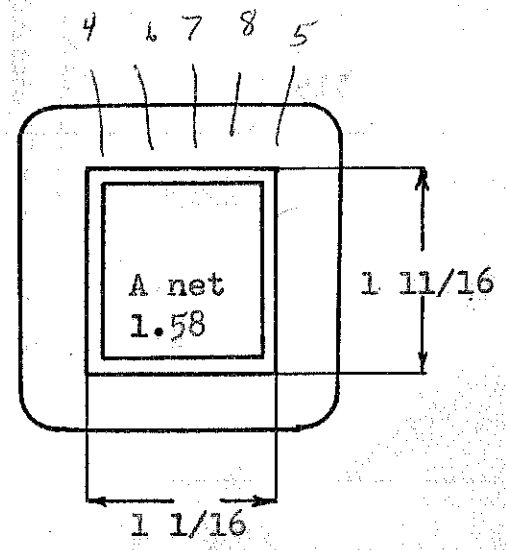
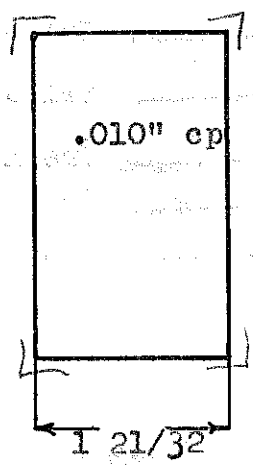
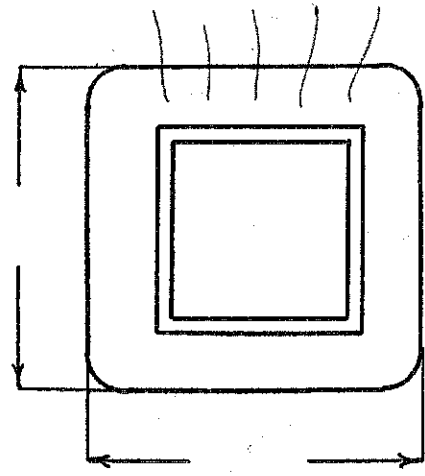
SPEC. NO. P653-A

Winding	1-2-3 Sec.	Shield	4-5 Pri.	6-7-8 Fil. #1	9-10 Fil. #2		
Turns	2760	1	388	24	19		
Taps	1380	-	-	12	-		
Wind. Lgth.	1 15/32	1 15/32	1 7/16	1 7/16	1 7/16		
Wire Size	#33	.002" sh. stack	#22	#16	#18		
T. P. L.	173-16L	1-1L	49-8L	24-1L	19-1L		
Finish	92%	-	91%	88%	-		
Type Lead	#22 Dulac	Sil. Br.	#20 Pr. Br.	Sleeve W.O.	Sleeve W.O.		
Lead Lgth.	Cut 14" Case 8"	3"	Cut 14" Case 8"	Cut 12"	Cut 12"		
Layer Insul.	Double #16	-	Single #40	-	-		
Test Volt.	2500 V	-	1250 V	1500 V	2000 V		
Wrapper	1L007VG	1L007VG	2L005GA	2L005GA	2L005GA		
TUBE	7L007GK / 1L003VE			IMPREGNATION		Varnish	

CORE 1 1/16 x 1 11/16 A. 24 GRADE D STACK 2 x 2

MOUNTING A

T. P. V. - 3.38
 Window - .581 / .656 = 88.5%



DESIGNED BY F. Frazer

DATE 5-47

DESIGN AND TEST DATA

Rating: I sec (RMS) = $.9 \times 100 = 90$

L Sec. VA = 943
 Pri. VA = 122
 Ip = 1.06A

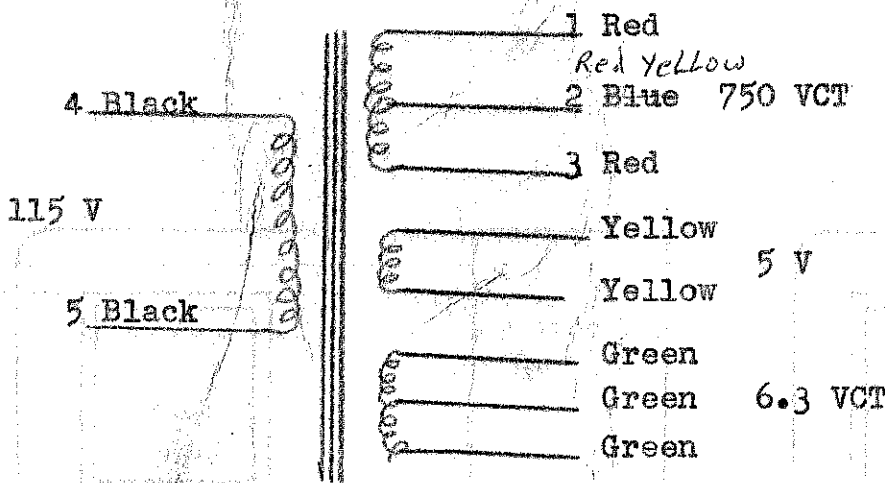
Winding	Sec.	Shield	Pri.	Fil. #1	Fil. #2		
Mean Turn	6.45	-	8.01	9.27	9.69		
Resistance 25° c	314		4.31	.093	.114		
Pounds Copper	.231		.514	.180	.087		
Copper Density	557		606	517	542		
Ratio Volts	410-0-410		115 V	3.65-0-3.65	5.6 V		
Test to Ground	2500 V	-	1250 V	1500 V	2000 V		

Iron Induction 13.1 kg @ 50 Cycles

Exciting Current 195 milliamperes @ 115 volts 60 cycles on 4-5

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

Remarks:



120V - 60 Cycle
 750V CT @ 100 Ma.
 5V @ 3A
 6.3V CT @ 5A

SPEC. NO. I-858

Winding	Sec.	Shield	Pri.	# 1 5V	# 2 6.3V		
Turns	5% - 2800	101	596	9% - 12	10 1/2% - 22		
Taps CT	1300	-	-	-	1 1/2		
Wind. Lgth.	1-15/32"	1-15/32"	1-15/32"	1-15/32"	1-15/32"	=	1.46375"
Wire Size	#34	.001" Cu. Sheet	#28	#18	#16		
T. P. L.	187 - 14L	1	50 - 8L	18 - 1L	23 - 1L		
Finish Pitch	83%	-	90%	51%	82%		
Type Lead	#28 Dulac	Sil. Br.	#20 Pr. Br.	W. O. Sleeve	W. O. Sleeve		
Lead Lgth.	9"	3"	9"	9"	9"		
Layer Insul.	2L 16/0	-	1L 50/5	-	-		
Test Volt.	2500V	-	-	-	-		
Wrapper	1L .007" VC	1L .007" VC	2L .005" GA	2L .005" GA	2L .005" GA		

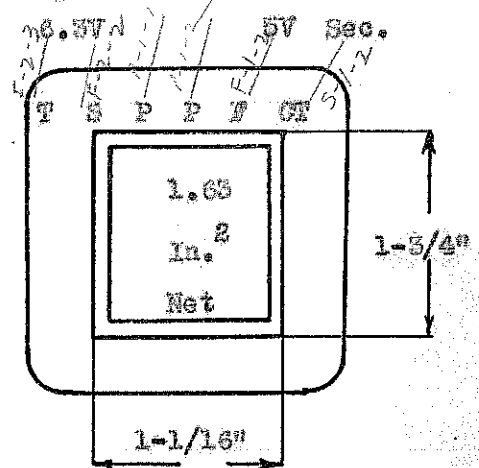
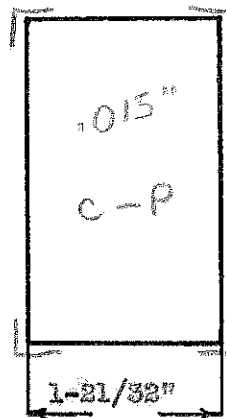
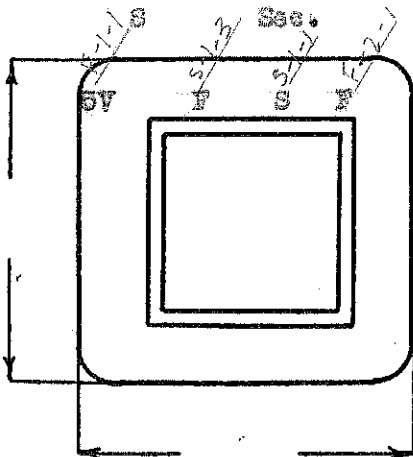
TUBE 7L - .007" GK IMPREGNATION VARNISH

CORE 1-1/16" x 1-3/4" GA. 24 GRADE D STACK 2 x 2

MOUNTING "A" ON LEADS

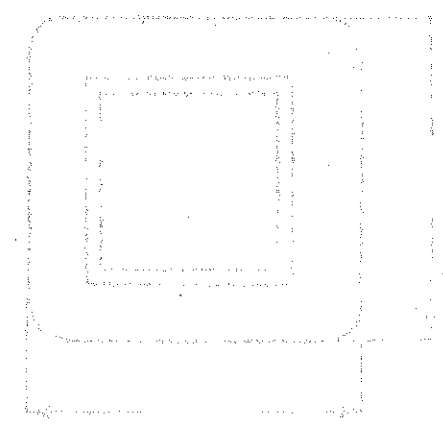
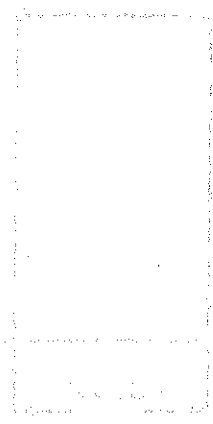
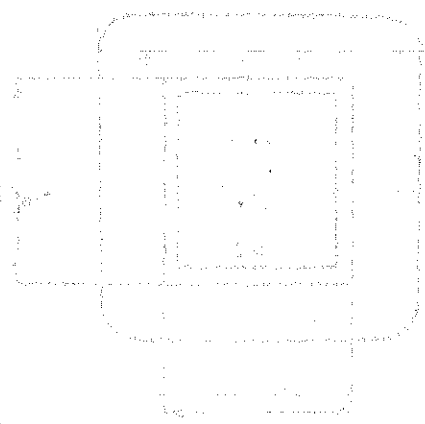
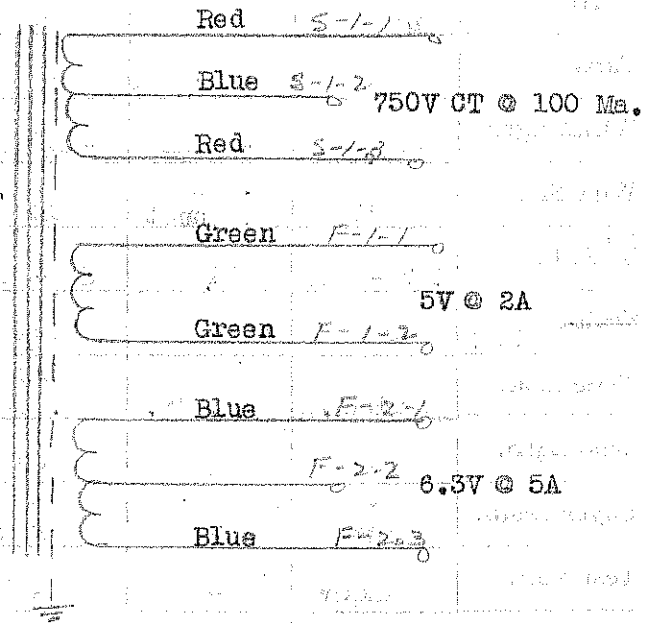
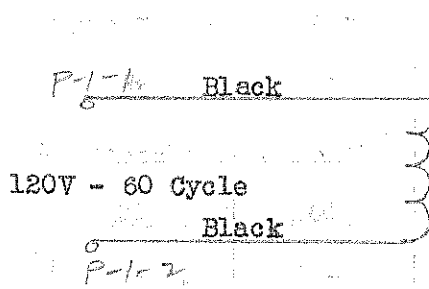
Cu = 662 - 680 - 541 - 517
 Fe = 69.7 @ 60 Cycle
 TPV = 3.5
 Wire Net = 0.476" (0.470")

Sec. VA = 84
 Pri. VA = 115
 Pri. I = 943 Ma.
 Efficiency = 83%
 COS φ = 90%



DESIGNED BY H. W. S.

DATE 7 - 28 - 41



Filament

New Stock

117 V @ 50/60~ to

7.5 V ct @ 15A

SPEC. NO. F 654

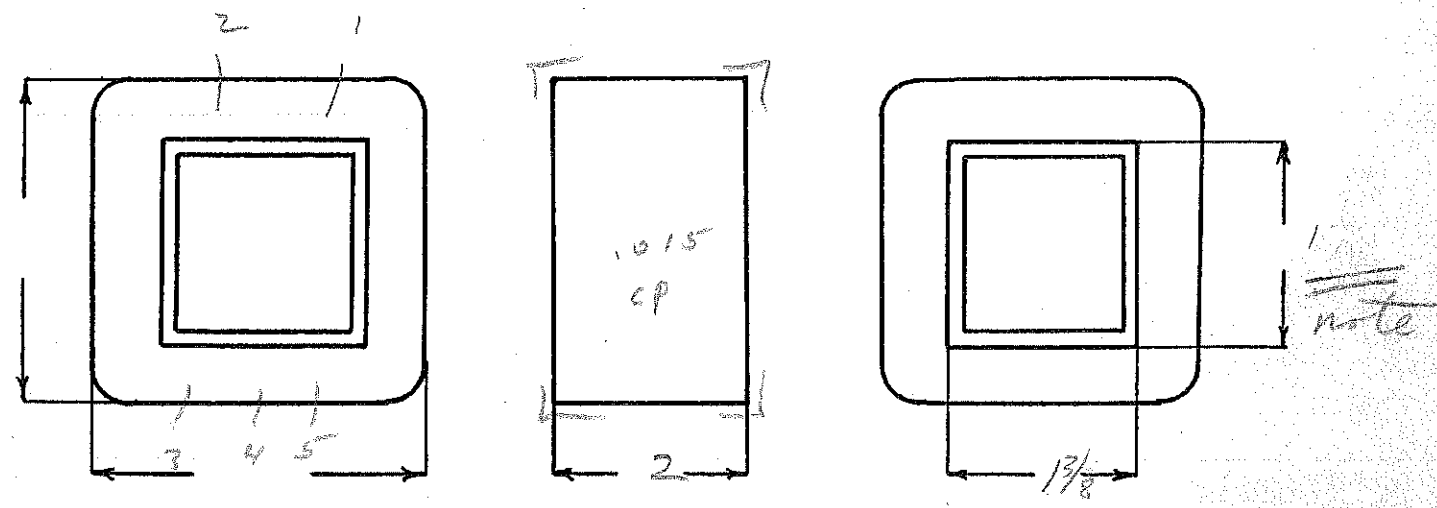
Winding	1-2 PRI	3-4-5 SEC				
Turns	530	38				
Taps	—	19				
Wind. Lgth.	1 3/4	1 3/4				
Wire Size	#21	#12				
T. P. L.	53-10L	19-2L				
Finish	91%	90%				
Type Lead	#20 P.B.	W.O. CLEAR				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	50#	12015CP				
Test Volt.	1500	2500				
Wrapper	12015CP	320054A				

TUBE 52010 CK IMPREGNATION Varnish

CORE 1 3/8 x 1/8 GA. 24 GRADE D STACK 2X2

MOUNTING A

W = 85%



DESIGNED BY S. Babcock

DATE 3-31-49

DESIGN AND TEST DATA

Rating: _____

Sec VA = 112
 Pri VA = 143
 IP = 1.23 a

Winding	Pri	Sec				
Mean Turn	6.44	8.41				
Resistance 25° c	3.72	.043				
Pounds Copper	.705	.53				
Copper Density	658	548				
Ratio Volts	117	7.53				
Test to Ground	150°	250°				

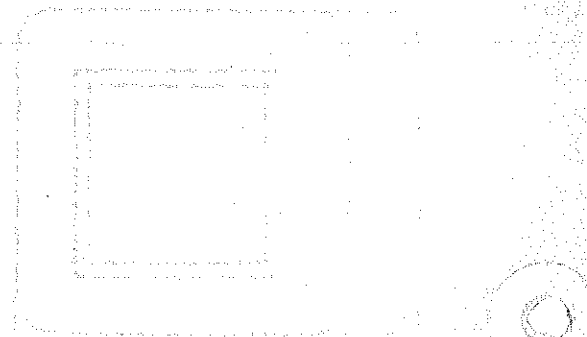
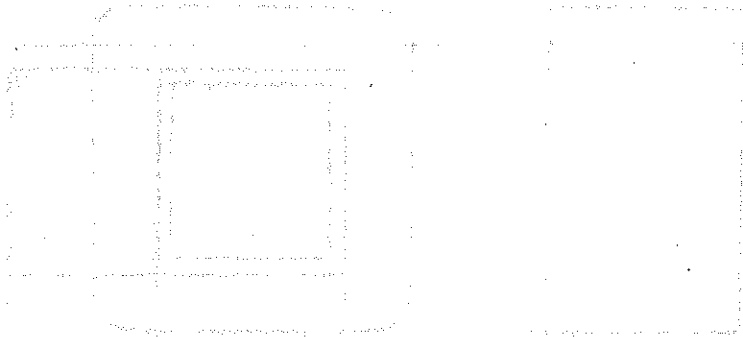
Iron Induction 12 V @ 5° Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
 3-4-5 Brown



Filament

New stock

117 V @ 50/60 ~ to

7.5 V C.T. @ 15a

SPEC. NO. F 654

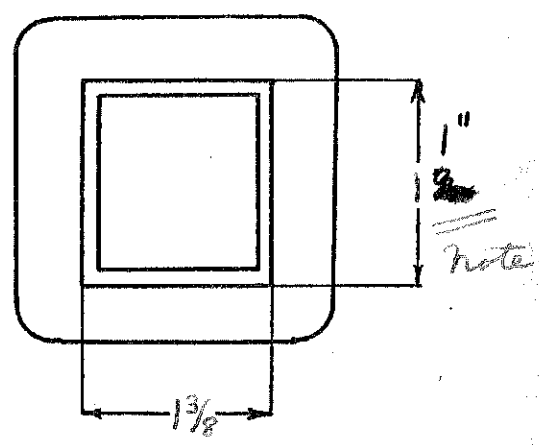
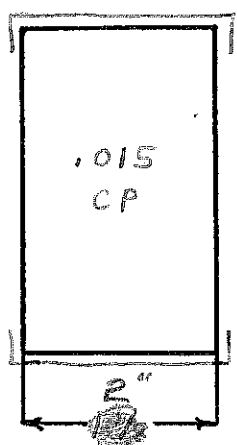
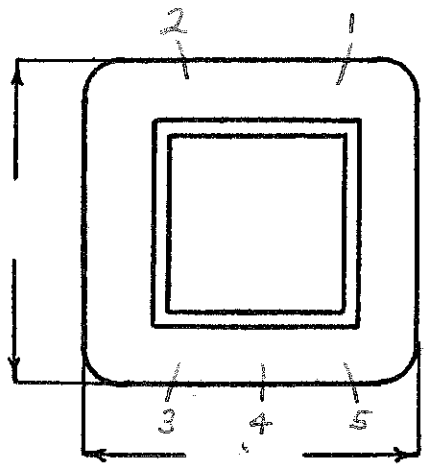
Winding	1-2 <i>Pri</i>	3-4-5 <i>Sec</i>				
Turns	530	38				
Taps	—	19				
Wind. Lgth.	1 3/4	1 3/4				
Wire Size	# 21	# 12				
T. P. L.	53-10L	19-2L				
Finish <i>Pitch</i>	91%	90%				
Type Lead	# 20 P.B.	w. o. sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	50#	1L015CP				
Test Volt.	1500	2500				
Wrapper	1L015CP	3L005GA				

TUBE 5L010 BK + 1L001CA IMPREGNATION Varnish

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

MOUNTING AA

wn = 85%



DESIGNED BY S. BABCOCK

DATE 3-31-49

DESIGN AND TEST DATA

Rating:

Sec VA = 112.5

Pri VA = 143.8

I_p = 1.23 a.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>6.44</i>	<i>8.41</i>				
Resistance 25° c	<i>3.72</i>	<i>.043</i>				
Pounds Copper	<i>.705</i>	<i>.53</i>				
Copper Density	<i>658</i>	<i>548</i>				
Ratio Volts	<i>117</i>	<i>7.53</i>				
Test to Ground	<i>1500</i>	<i>2500</i>				

Iron Induction *12 Kg.* @ *50* Cycles

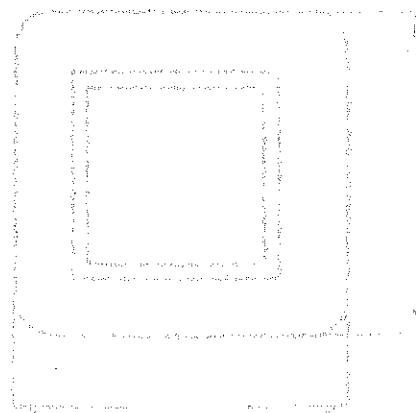
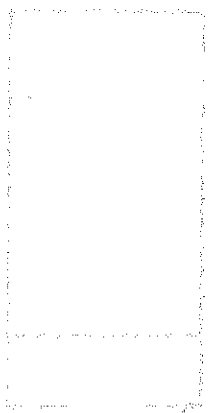
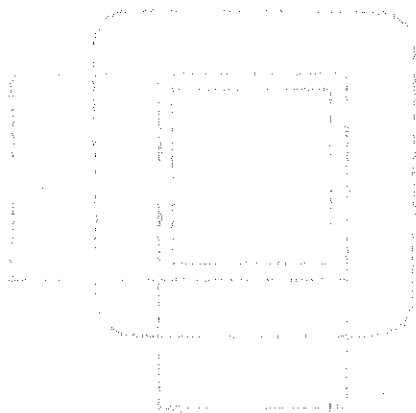
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Brown



115/230V - 60 Hz
 750VCT @ 125ma
 5V @ 3A
 6.3V CT @ 5 Amp.
 2.5V CT @ 4 Amp.

Stock

NEW NUMBER: 827

SPEC. NO. P-654

Winding	Sec	Shield	Pri #1	Pri #2	6.3V F ₂	5V F ₁	2.5V F ₃
Turns	2960	1	426	426	26 (10%)	20 (9%)	10 (8.1%)
Taps	1480 (9%)	-	-	-	13	-	5
Wind. Lgth.	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	← 1 3/4" →	1 3/4"
Wire Size	#32	Cu Shield	#24	#24	#16	#18	#17
T. P. L.	185-16L	1	71-6L	71-6L	26-1L	20-1/2L	10-1/2L
Finish	Platn 91%	-	86%	86%	78%	48%	27%
Type Lead	#20 Dulac	#24 Solid	#20 P.V.	#20 P.V.	W.O. SMOKE	W.O. SMOKE	W.O. SMOKE
Lead Lgth.	9"	3"	9"	9"	9"	9"	9"
Layer Insul.	2L 14#6	-	12 50#6	12 50#6	-	-	-
Test Volt.	2500V	-	-	-	-	← ONE LAYER →	-
Wrapper	1L 007VC	1L 007VC	2L 0056A	2L 0056A	2L 0056A	2L 0056A	2L 0056A

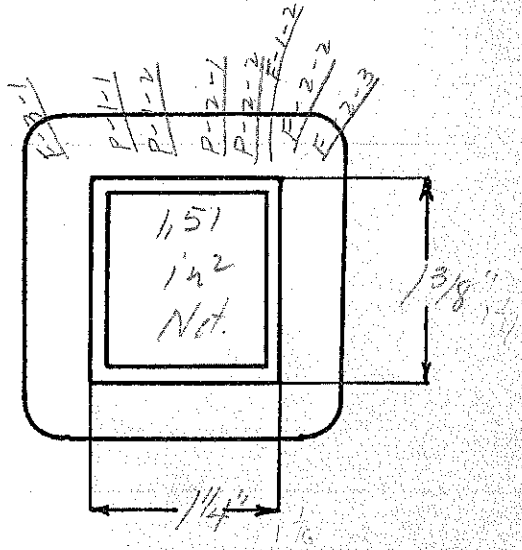
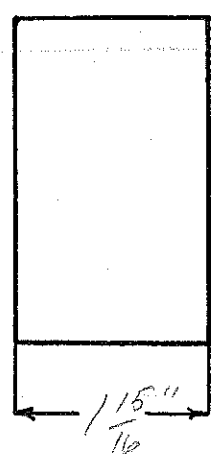
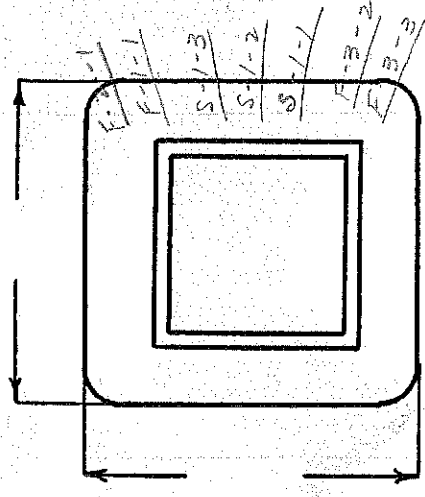
TUBE 7L-007 GK IMPREGNATION Double = Varnish

CORE 1/4" x 1 3/8" E-I GA. 24 GRADE D STACK 2 x 2

MOUNTING "A"

Cu = 833-665-665-517-541-512
 Fe = 67 @ 60 Hz; 80.5 @ 50 Hz
 TPV = 3.7
 Wire Wt. = 0.553 (0.544)

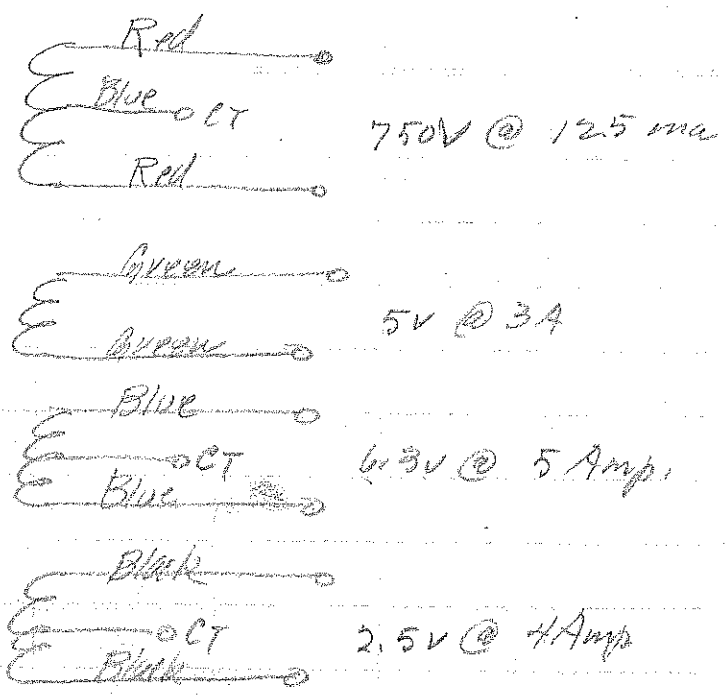
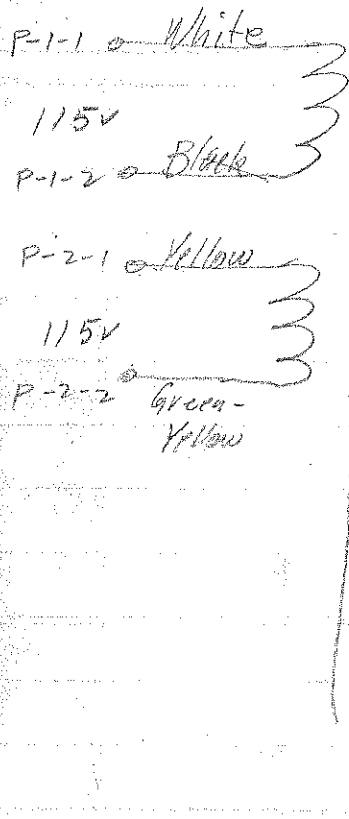
Σ Spc VA = 104 λ = 8.5
 P_{ri} VA = 140 cos θ = 90
 P_{ri} I = 609 ma



DESIGNED BY NLR

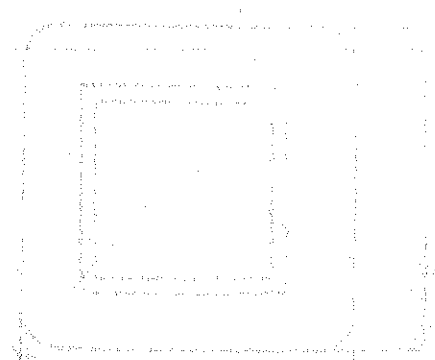
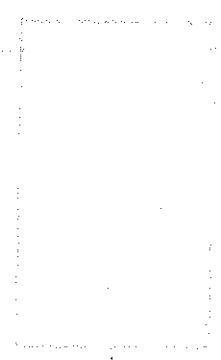
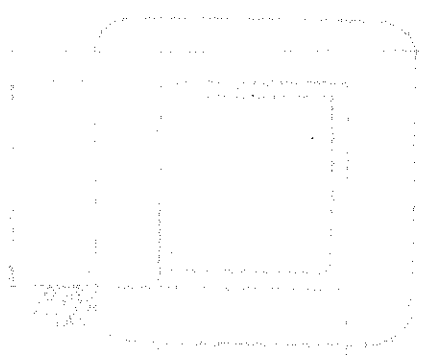
DATE 2-10-42

0406



Single Winder: 1K-007 VC over and under F₁ & F₃ and down between.

Multi-Winder: Primaries may be continuous winding of 12 layers if an extra turn is provided for brazing on leads.



230V @ 50/60 Hz
 TO
 750V CT @ 125MA DC
 6.3V CT @ 5A
 5V @ 3A
 2.5V CT @ 4A

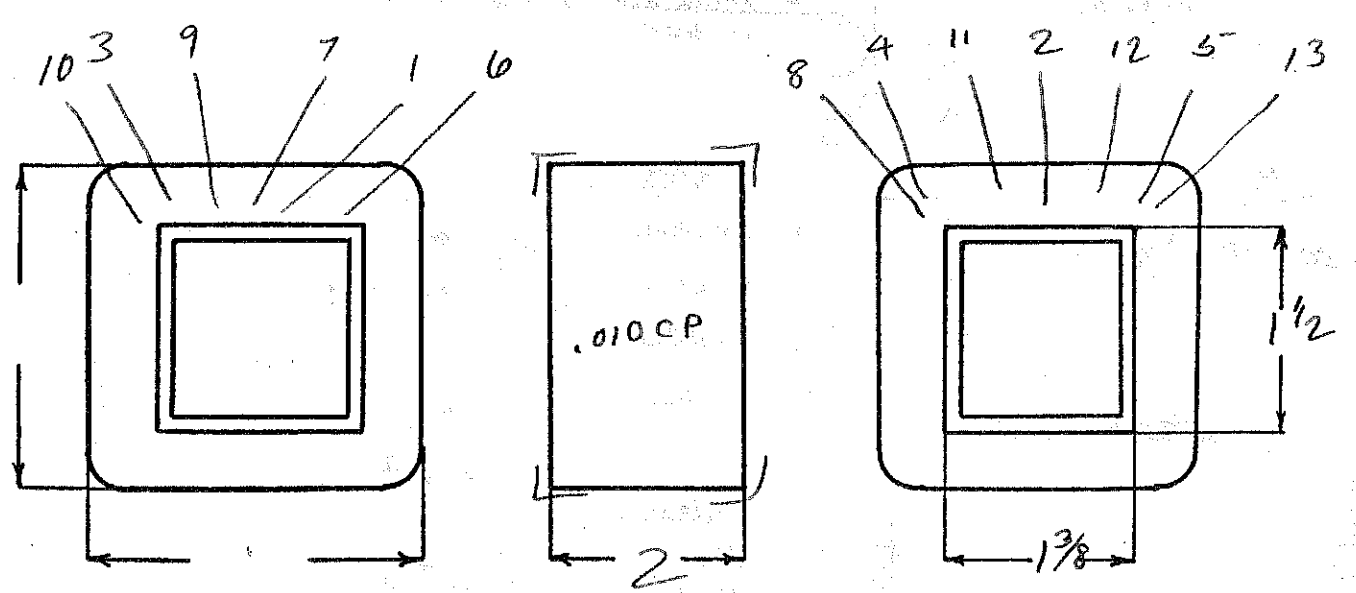
SPEC. NO. P-654-A-230V

Winding	1-2-3	SHIELD	4-5	6-7-8	9-10	11-12-13
	SEC		PRI	FIL #1	FIL #2	FIL #3
Turns	2520	1	703	22	17	9
Taps	1260	-	-	11	-	5
Wind. Lgth.	1 3/4	1 3/4	1 3/4	1 3/4	← 1 3/4 →	
Wire Size	#32	.002 C.W.S.H.	#24	#16	#18	#17
T. P. L.	180-14L	1	71-10L	22-1L	17-1/2L	9-1/2L
Finish	90 1/2%	-	86%	66%	wind in one layer with 3/8" betw. Filaments	
Type Lead	#20 Dulac	sil. Br.	#20 Pr. Br.	W.O. Green Sl.	W.O. yellow sleeve	W.O. Blue sleeve
Lead Lgth.	9" cut 16"	3"	9" cut 16"	9" cut 14"	9" cut 14"	9" cut 14"
Layer Insul.	Double 14#	-	50#	-	-	-
Test Volt.	2500	-	1500	1500	2000	1500
Wrapper	1L007VC	1L007VC	2L007GA	2L007GA	← 2L007GA →	

TUBE 7L0076K + 2L003 VP IMPREGNATION VARNISH

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

MOUNTING A



REDESIGNED BY F. Frazer

DATE 5-5-47

DESIGN AND TEST DATA

Rating: $I_s (RMS) = 9 \times 125 = 113 MA$

$\Sigma Sec VA = 126.2$
 $PRI VA = 161$
 $I_p = 703 MA$

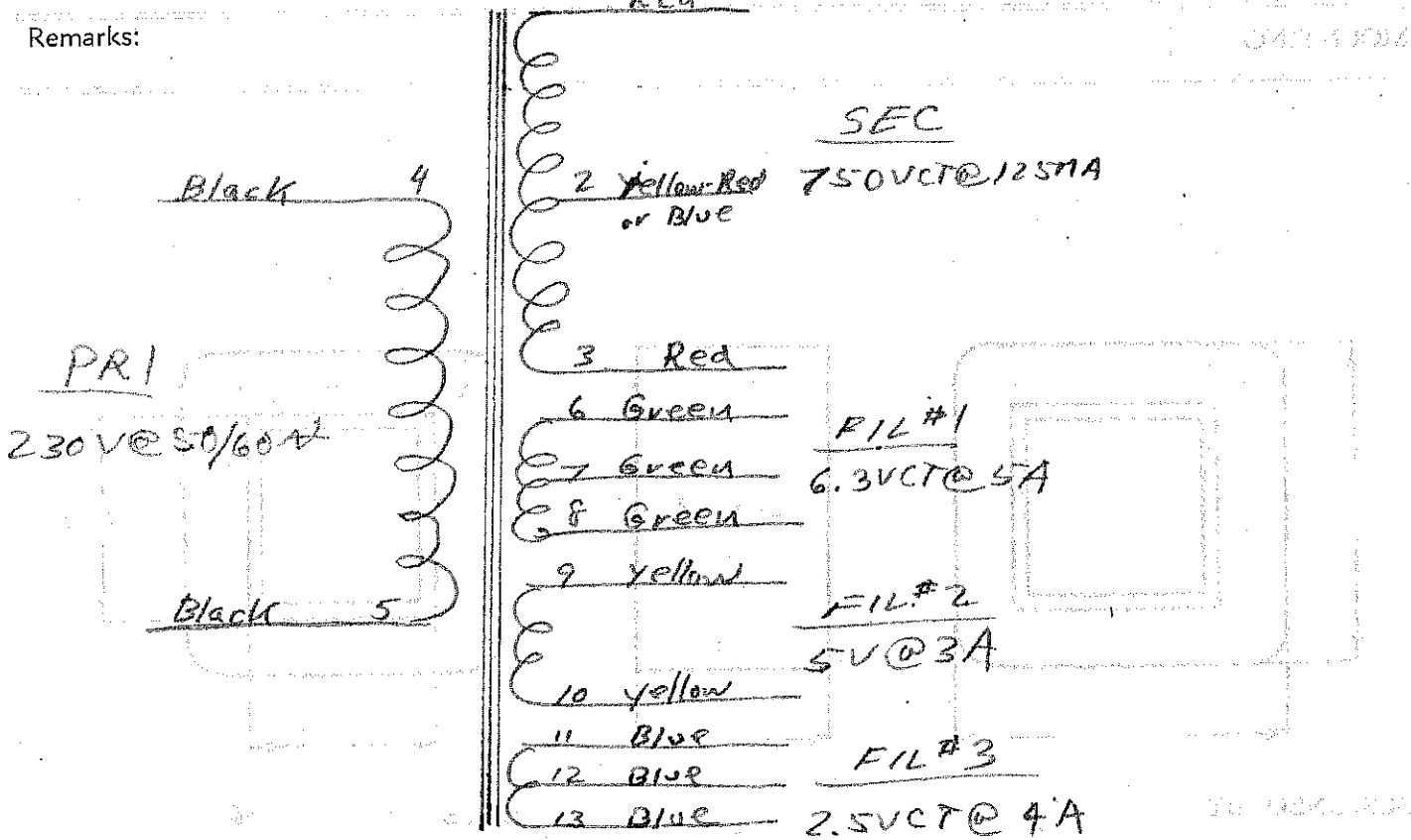
Winding	1-2-3 SEC	4-5 PRI	6-7-8 FIL #1	9-10 FIL #2	11-12-13 FIL #3
Mean Turn	6.69	8.24	9.55	10.02	10.02
Resistance 25° c	236	12.7	.092	.111	.066
Pounds Copper	.281	.600	.178	.085	.080
Copper Density	560	575	517	542	512
Ratio Volts	412-412	230	2.6-3.6	5.56	1.31-1.63
Test to Ground	2500	1500	1500	2000	1500

Iron Induction 12.6 Kg @ 50 Cycles

Exciting Current 110 milli amperes @ 230V volts 60 cycles on

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

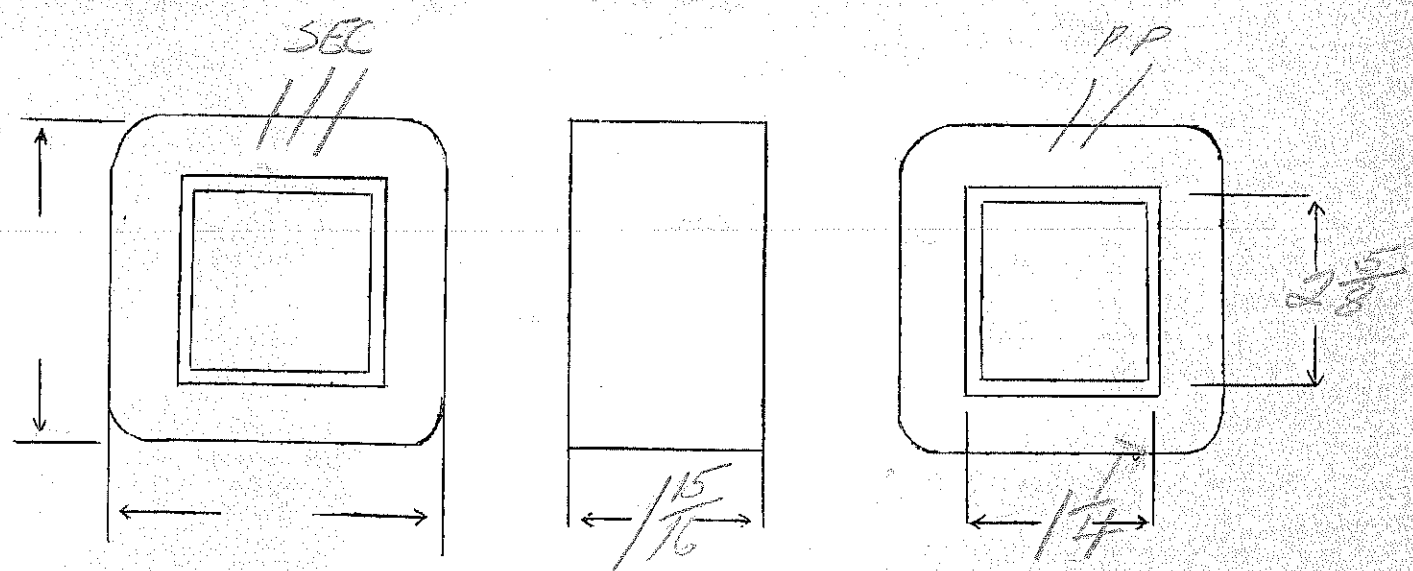
Remarks:



$E_1 = 110VCT - 12.5mA$ $E_2 = 25VCT - 4amp$
 $E_3 = 750VCT - 12.5mA$ $E_3 = 6.3VCT - 5amp$
 $E_1 = 5V - 3amps$

SPEC. NO. 654-25 N

Winding	SEC	SHIELD	PRI	F1	F2	E3
Turns	2350	148	340	16	8	20
Taps	1175	-	-	-	4	10
Wind. Lgth.	1.75	1.75	1.75	-	-	-
Wire Size	#31	#31	#22	#18	#17	#15
T.P.L.	148-16	148	60-6	-	-	-
Kind Term.	#20 en Br	20a	#20 en Br	WIRE ONLY		
Term. Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	double 16#	-	50#	-	-	-
Test Volt.	2500	-	1250	-	-	-
Wrapper	1007VC	1007VC	20076A	20076A	-	20076A
TUBE	7007	IMPREGNATION			VARNISH	
CORE	1 1/2 x 2 3/8	PRIMARY V.A.				
MOUNTING	optional					



DESIGNED BY DWW

DATE 12/29/56

E_p - 115-25v
 E_s - 500V CT. - 200 ma
 E_{F1} - 5V - 3A
 E_{F2} - 6.3V CT. - 2A
 E_{F3} - 6.3V CT. - 5A

F_2
 F_3 } Fou-stuom.

3.55

SPEC. NO.

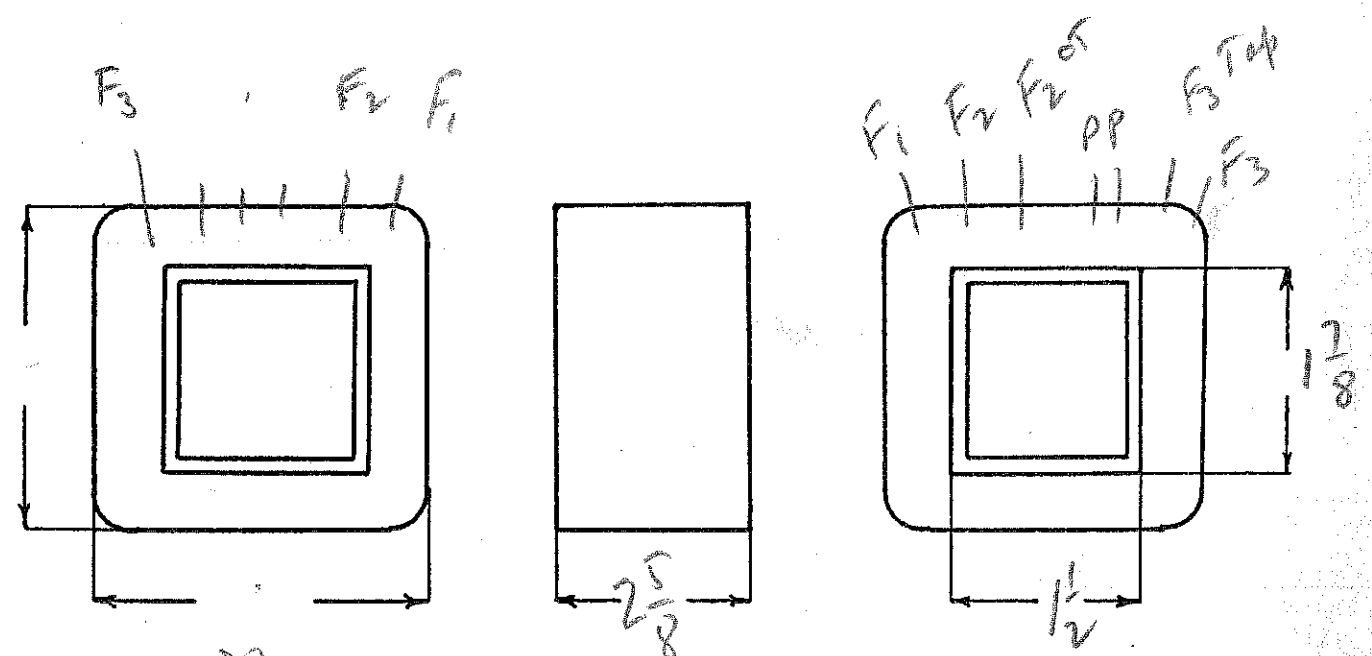
656-25

Winding	SEC	SHIELD	PR1	F ₁	F ₂	F ₃
Turns	3200	165	410	20	26	26
Taps	1600				13	13
Wind. Lgth.	2 1/4					
Wire Size	#29		#20	#18	#20	#16
T. P. L.	165-20		60-7			
Finish						
Type Lead	A = #20 Pan Bol.	W.O.	#20 Pan Bol.	W.O.	W.O.	W.O.
Lead Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	double 16#		50#			
Test Volt.						
Wrapper	2V 007VC	1V 007VC	2V 0076A			2V 0076A

TUBE _____ IMPREGNATION _____

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

MOUNTING A



DESIGNED BY *John* from 56-25v.

DATE

12/9/39

Power Transformer

S T O C K

120V @ 60 Cycle to
800V CT @ 200 Ma.
5V @ 3 Amp.
6.3V CT @ 2 Amp.
6.3V CT @ 5 Amp.

SPEC. NO. P-656-A

Replaced by 10766

Winding	Secondary	Shield	Primary	Fil. #3 6.3V	Fil. #2 6.3V	Fil. #1 5V	
Turns	2180	1	312	18	18	14	
Taps	1090	-	-	9	9	-	
Wind. Lgth.	1-3/4"	1-3/4"	1-3/4"	1-3/4"	- 1-3/4"	-	= 1.75"
Wire Size	#30	.001" Cu. Sheet	#20	2 - #19	#20	#18	
T. P. L.	137 - 16L	1	45 - 7L	18 - 1L	18 - 1/2L	14 - 1/2L	NOTE: PULL
Ratio Pitch	85%	-	86%	78%	35%	(33 1/2%	DOWN 1L .007"
Type Lead	#22 Dulac	#25 Solid	#20 Pr. Br.	W. O. Sleeve	W. O. Sleeve	W. O. Sleeve	VC BETWEEN
Lead Lgth.	9"	3"	9"	9"	9"	9"	WINDINGS.
Layer Insul.	2L 20#G	-	1L 50#G	-	-	-	
Test Volt.	2500V	-	1500	1500V	1450V ONE	2000V LAYER	
Wrapper	1L .007" VC	1L .007" VC	2L .005" GA	2L .005" GA	2 - L .005" GA	L GA	

cut 12

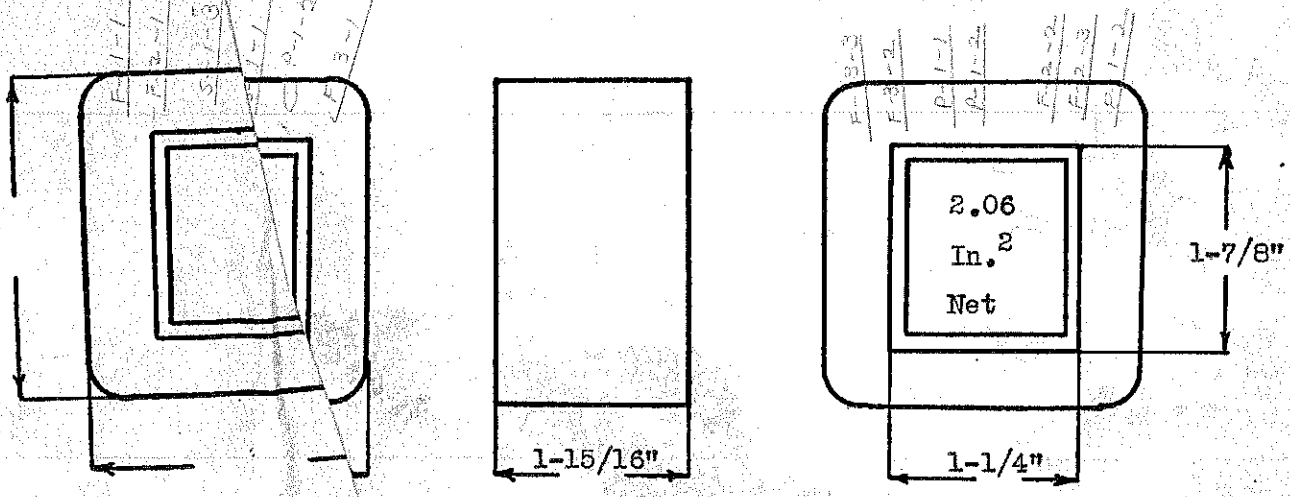
TUBE	7L - .007" GK	IMPREGNATION	VARNISH
------	---------------	--------------	---------

CORE 1 1/4" x 1 7/8" E & GA. 24 GRADE D STACK 2 x 2

MOUNTING "A" - Leads

Cu = 835 - 6 - 515 - 542 - 511
Fe = 70 @ 60 cle
TPV = 2.6
Wire Net = 0.1 (0.533")

Sec. VA = 139
Pri. VA = 186
Pri. I = 1.55 Amp.
Efficiency = 83%
COS θ = 90%



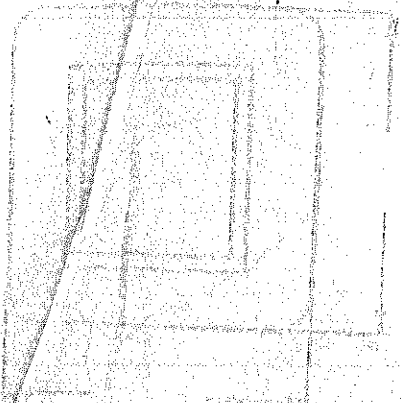
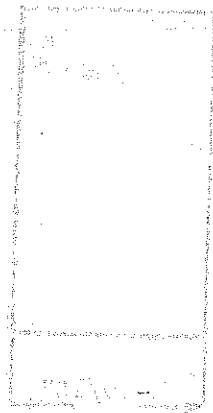
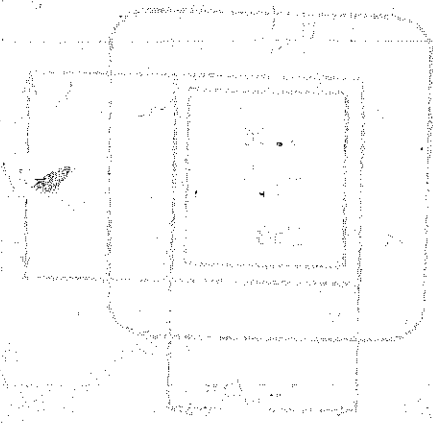
Re-DESIGNED BY HWS

DATE 12-26-41

#P-656-A

P-1-1 Black
 120V Primary @ 60 Cycle
 P-1-2 Black

Red S-1-1
 Blue S-1-2 CT 800V CT @ 200 Ma.
 Red S-1-3
 Green F-1-1
 Green F-1-2 5V @ 3 Amp.
 Blue F-2-1
 Blue F-2-2 CT 6.3V CT @ 2 Amp.
 Blue F-2-3
 Yellow F-3-1
 Yellow F-3-2 CT 6.3V CT @ 5 Amp.
 Yellow F-3-3



210-230-250V - 60~

Stock

800VCT @ 200ma

5V @ 3Amp

6.3V CT @ 2Amp.

6.3V CT @ 5Amp.

SPEC. NO. P-656 - 250V

Winding	Sec	Shield	Pri	F1	F2	F3
Turns	1940	1	565	9 12	15	15
Taps	970	-	520 475	-	7	7
Wind. Lgth.	1 3/4"	1 3/4"	1 3/4"	← 3/4" →	1 3/4"	
Wire Size	#29	001 Cu Sheet	#23	#18	#20	2-#19
T. P. L.	122-16h	1	68-9L	12-1/2h	15-1/2h	15-1h
Finish	85%	-	90%	20%	20%	60%
Type Lead	#22 Dulse	#25 Solid	#22 Pr. Fil.	W/O Sleeve	W/O Sleeve	W/O Sleeve
Lead Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	2L 16#9	-	1L 50#9	-	-	-
Test Volt.	2500V	-	-	← ONE LAYER →		-
Wrapper	1L 007VC	1L 007VC	2L 0056A	2L 0056A		2L 0056A

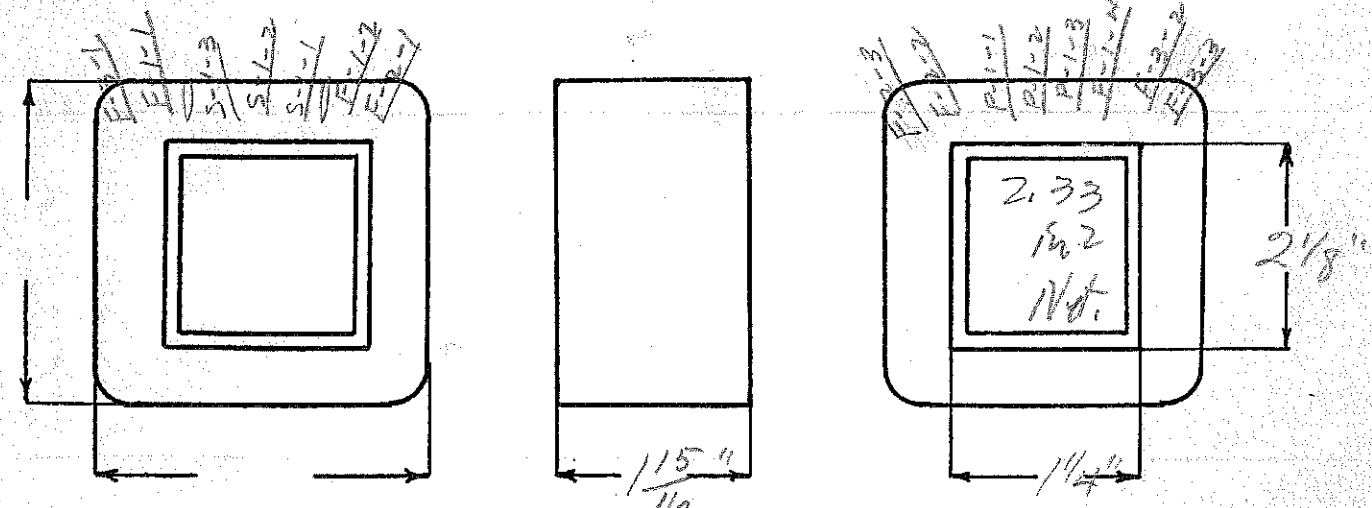
TUBE	7L-0076K	IMPREGNATION	Double VARNISH
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CORE	1/4" x 2 1/2" E & D	GA.	24	GRADE	D	STACK	2A2
------	---------------------	-----	----	-------	---	-------	-----

MOUNTING "A" - Leads.

Cu = 1050-575-542-512-515.
 Fe = 71 @ 60~
 TPV = 2.26
 Wire Net. = 0.542" (0.534")

Σ Sec VA = 139 T = 83
 Pri VA = 186 Posa = 90
 Pri I = 885ma

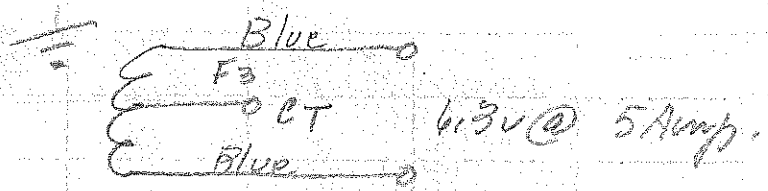
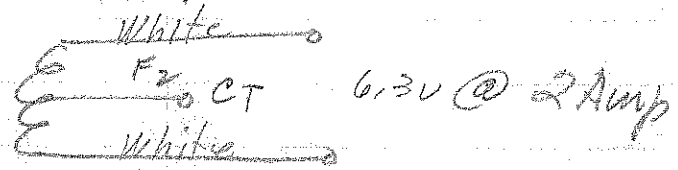
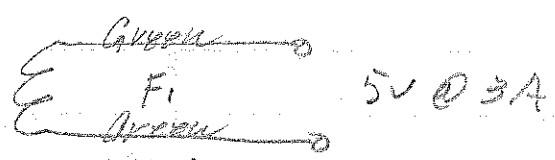
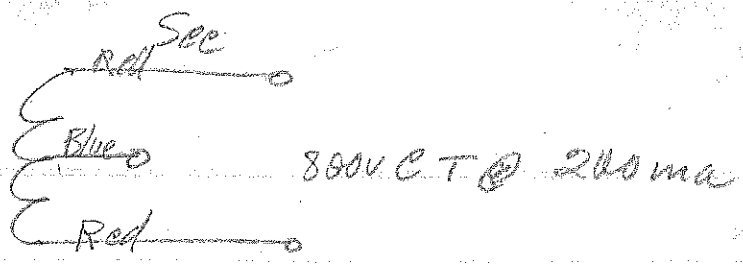


DESIGNED BY *NWR*

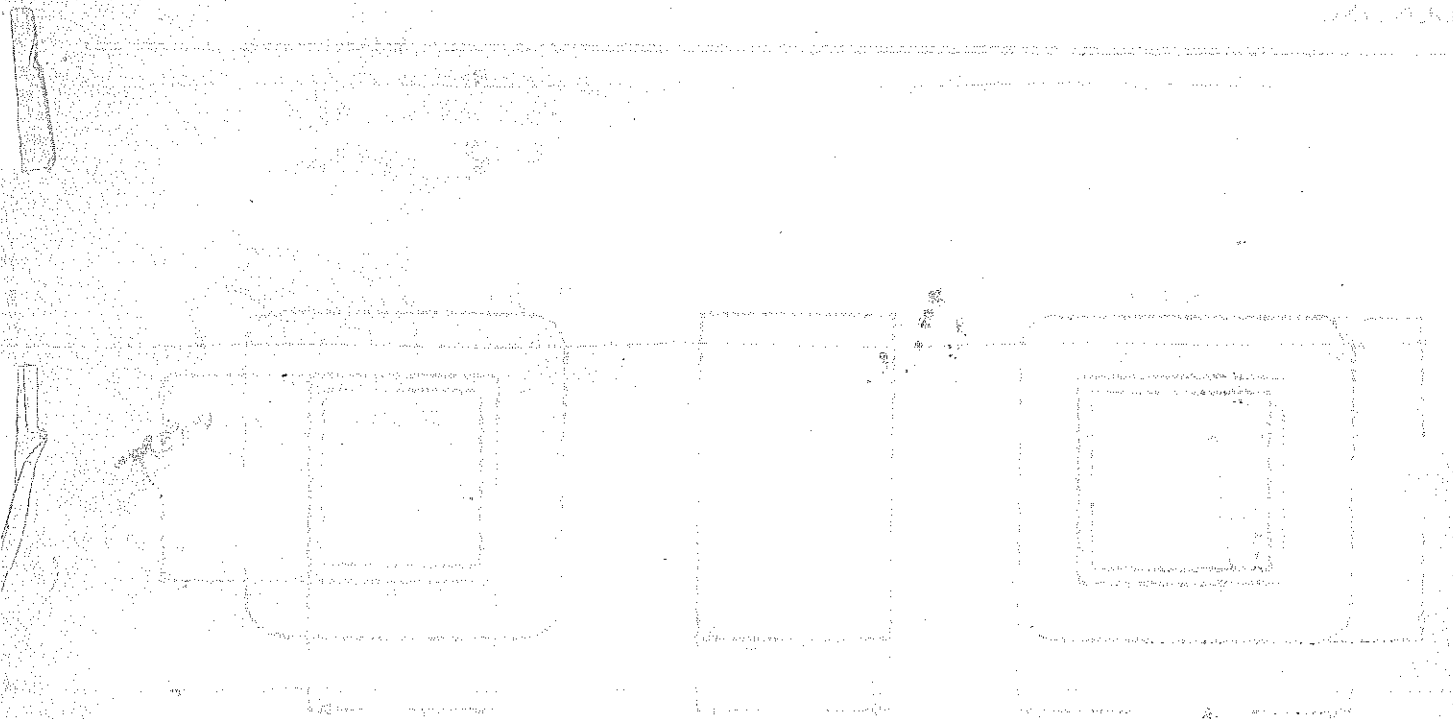
DATE 2-24-42

044V

350 Pot
 250 BLACK
 230 Green
 210 Yellow
 0 WHITE



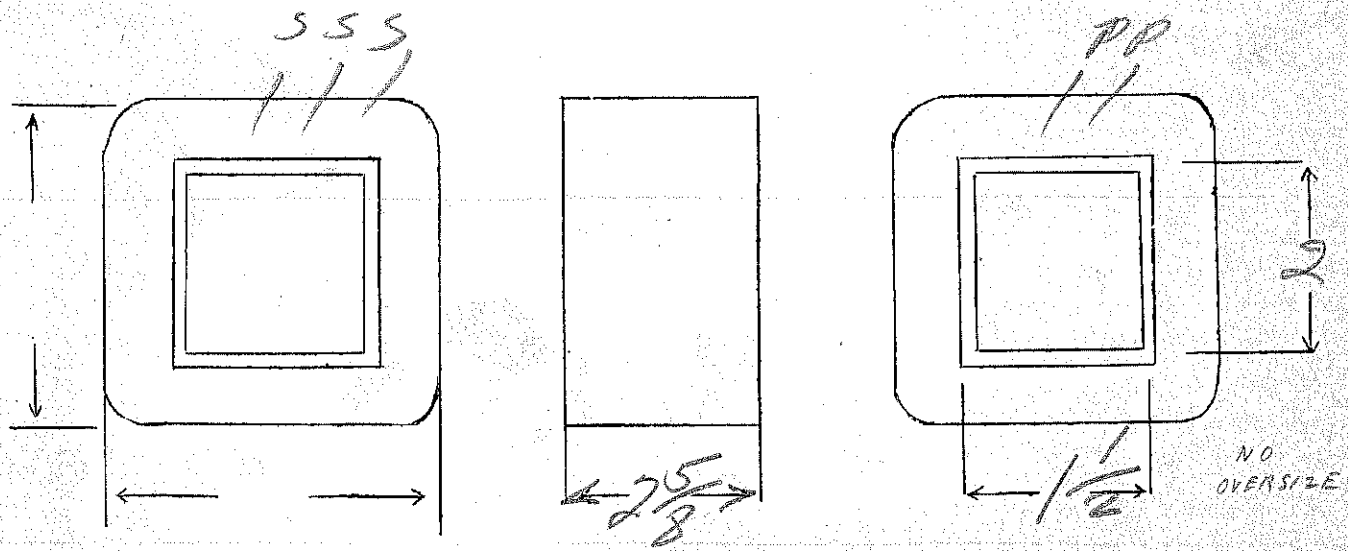
Note: Angle Winder - 1K-007 VC over & under
 between F1 & F2.



Ep - 120V
 Es - 1000VCT. - 250mA
 Ef1 - 5V - 3amp
 Ef2 - 6.3V - CT. - 2amp
 Ef3 - 6.3V - 3amp
 328 SPEC. NO. P657-25N

Winding	SEC	SHIELD	PRI	F1	F2	F3
Turns	3640		390	18	23	23
Taps	1820					12
Wind. Lgth.	2 3/8	2 3/8				
Wire Size	#28	#28	#19	#19	#17	#19
T.P.L.	155-24		7L			
Kind Term.	#20 PP	WO	#20 PP	WIRED ONLY		
Term. Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	double 20#		005K			
Test Volt.						
Wrapper	21007VC	1007VC	21005GA		21005GA	21005EA

TUBE 9LD07 IMPREGNATION VARNISH
 CORE 1/2 x 2 PRIMARY V.A.
 MOUNTING A - sheet metal covers - leads not bottom



DESIGNED BY *JW*

DATE 6/24/37

$E_p - 230V$
 $E_s - 1000VCT - 250Ma.$
 $E_f - 6.3VCT - 2Amp$
 $E_f - 6.3V - 3Amp$

1.75

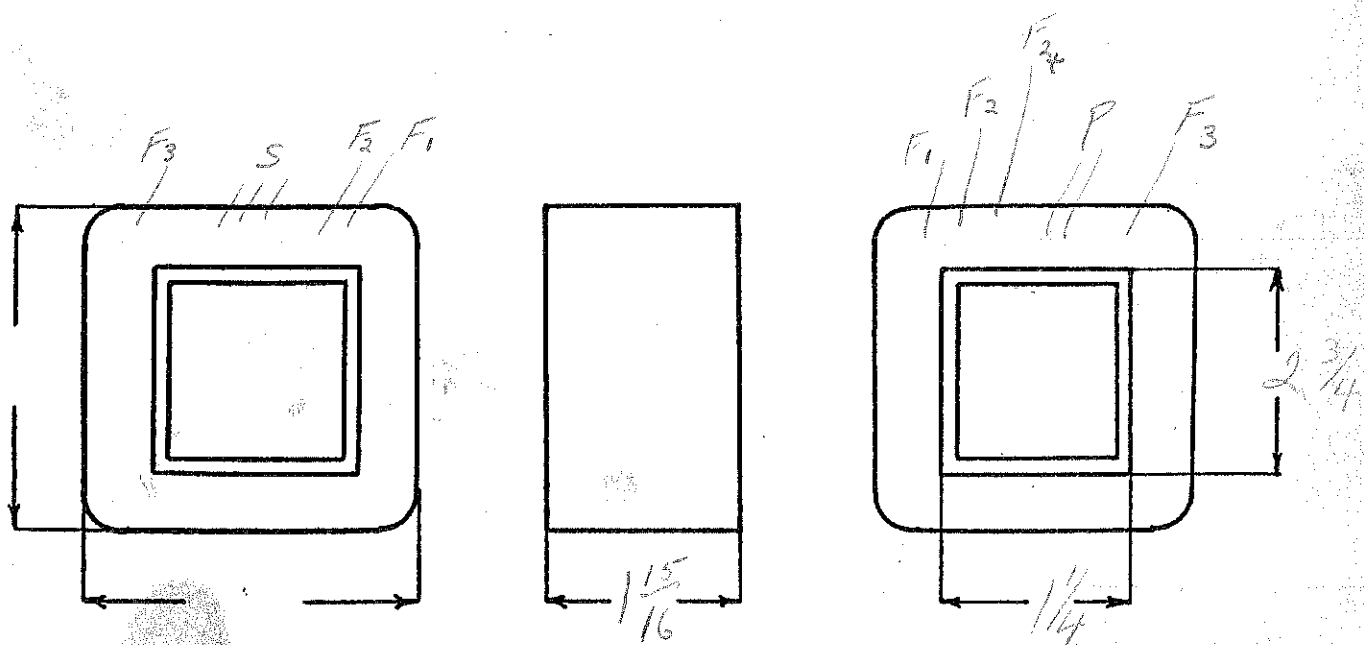
SPEC. NO. P657-230V

Winding	Sec	Shield	Pri	Green F1	White F2	Blue F3
Turns	1880	118	402	10	12	12
Taps	940				6	
Wind. Lgth.	1 3/4	1 3/4	1 3/4			
Wire Size	#28	#28	#22	#18	#20	#17
T. P. L.	118-16		59-7		10	
Finish						
Type Lead	#20 Pa Bo	W.O.	#20 Pa Bo	Wire Only		
Lead Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	Double 20#		50#			
Test Volt.	A Standard					
Wrapper	2L007VC	2L007GA	2L007GA			2L007GA

TUBE 7L007GK + 1L007VC IMPREGNATION Double Varnish

CORE 1/4 x 2 3/4 GA. 24 GRADE D STACK 2x2

MOUNTING A



DESIGNED BY JCG

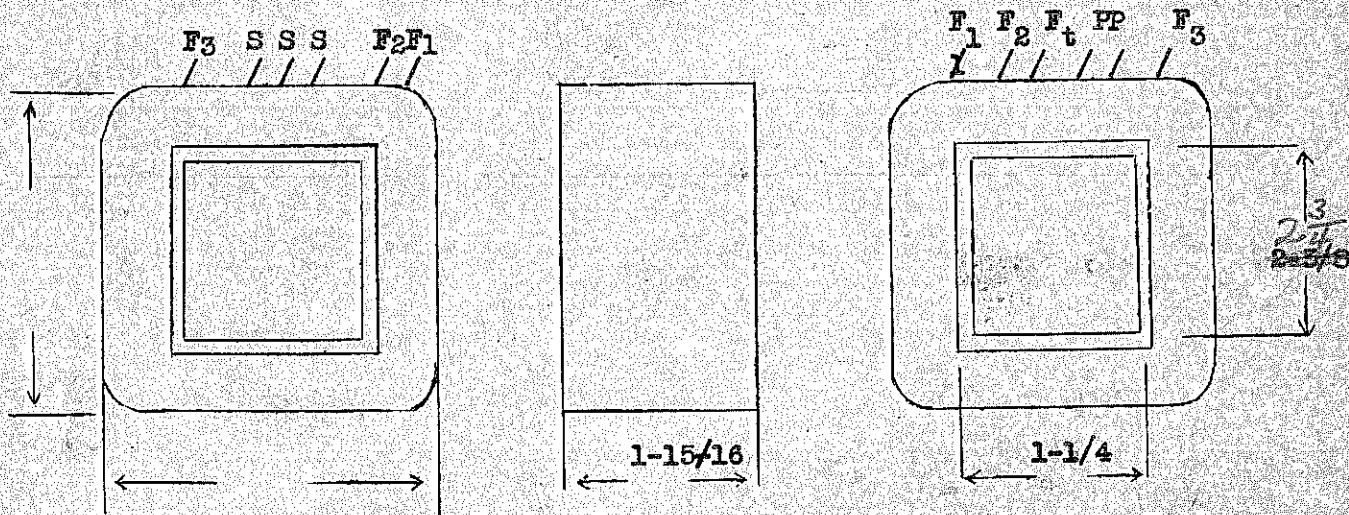
DATE 2-7-39

Ep - 120V.
 Es - 1000V.C.T. - 250 Ma.
 Ef - 5V. - 3 Amps.
 Ep - 6.3V.C.T. - 2 Amps.
 Ef - 6.3 V.C.T. 3 Amps.

SPEC. NO. P657

Winding	SEC.	SHIELD	PRI.	F ₁	F ₂	F ₃
Turns	1880	118	210	10	12	12
Taps	940				6	6
Wind. Lgth.	1.75	1.75	1.75			
Wire Size	#28	#28	#19	#18	#20	#17
T.P.L.	118-16		42-5	5 L		
Kind Term.	#20 Par. Br.	W.O.	WIRE ONLY			
Term. Lgth.	9"	3"	9"	9"	9"	9"
Layer Insul.	Double 20#		50#			
Test Volt.						
Wrapper	2L007VC	2L007GA	2L007GA			2L007GA

TUBE	7L007 & 1L007VC	IMPREGNATION	VARNISH
CORE	1-1/4 x 2-5/8 ^{2 3/4}	PRIMARY V.A.	
MOUNTING	A		



DESIGNED BY

G.W.

DATE

6-24-37

Power

Stock

115 V @ 50/60 Hz

1000 V @ 250 mA

5V @ 3A

6.3V ct @ 2A 6.3V ct @ 3A

SPEC. NO.

P657

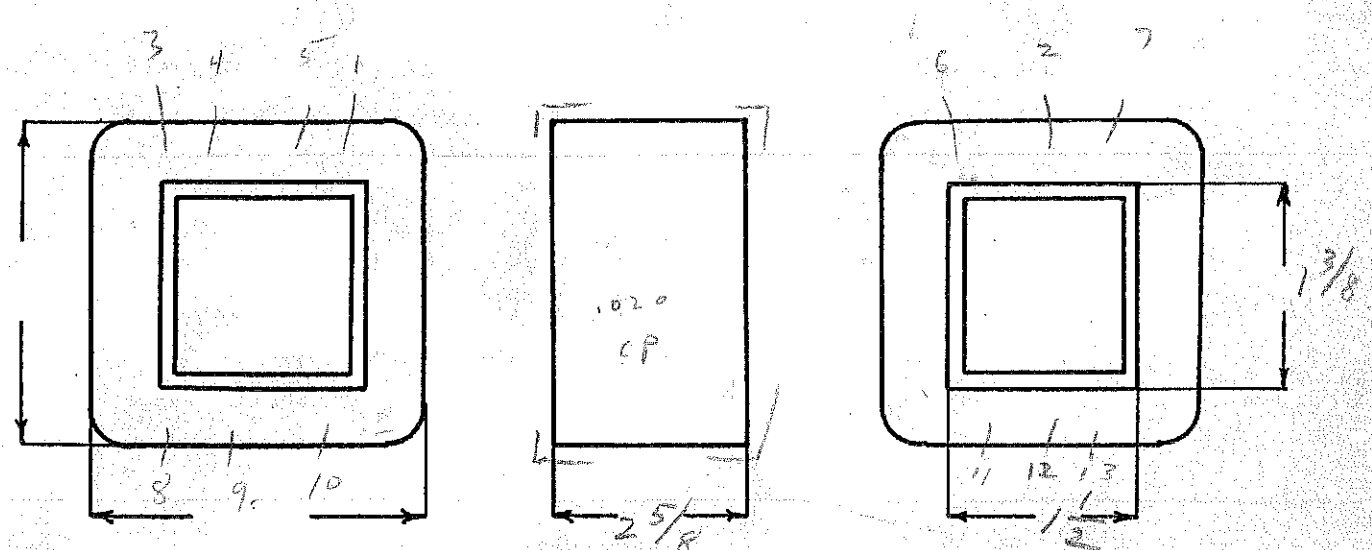
Winding	1-2-3 Sec	Shield	4-5 Pri	6-7 FIL	8-9-10 FIL	11-12-13 FIL	
Turns	3670	1	390	19	24	24	
Taps	1835	—	—	—	12	12	Label W
Wind. Lgth.	2 1/4	2 1/4	2 1/4	2 1/4	— 2 1/4	—	
Wire Size	#29	.001 cm	#19	#18	#20	#18	
T. P. L.	167-22L	—	49-8L	19-11	24-1/2L	24-1/2L	
Finish	91%	—	87%	36%	17%	45%	
Type Lead	#22 Dulac	Sil Br	#18 P8	Yellow W.O. Sleeve	Brown	Green	
Lead Lgth.	cut 14"	3"	cut 14"	cut 14"	—	—	
Layer Insul.	Double 20 #	—	50 #	—	—	—	
Test Volt.	3000	—	1500	2500	1500	1500	
Wrapper	12007VE 12005VE	12005VE	260076A	260076A	260076A	260076A	

TUBE 740, 106K + 120000516 IMPREGNATION Varnish

CORE 1/2 x 1 3/8 GA. 24 GRADE D STACK 2x2

MOUNTING AA

Wm = 85%



Re-DESIGNED BY S. Babcock from 1/4" diam.

DATE 2-17-49

DESIGN AND TEST DATA

Rating:

$$I_s = 250 \times .707 = 176.5 \text{ ma}$$

$$Sec VA = 171.3$$

$$Pri VA = 216$$

$$I_p = 1.88 \text{ a}$$

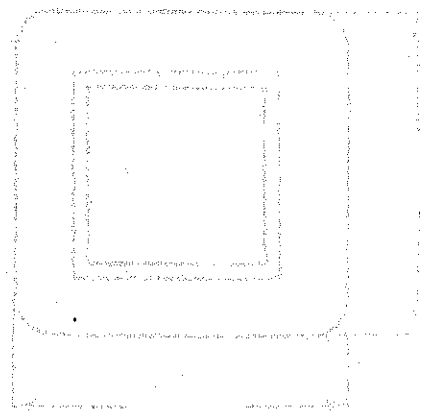
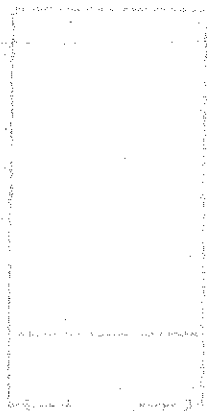
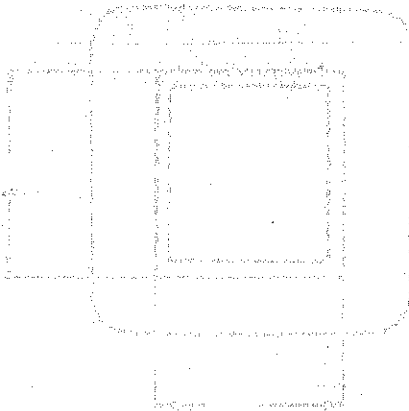
Winding	S.P.C.	P.I.	FIL	FIL	FIL	
Mean Turn	7.46	9.91	11.35	11.92	12.02	
Resistance 25° c	.190	.264	.117	.247	.1565	
Pounds Copper	.89	.127	.0895	.0748	.12	
Copper Density	717	685	542	511	542	
Ratio Volts	1000	115	5.01	6.27	6.30	
Test to Ground	3000	1500	2500	1500	1500	

Iron Induction 11.4 kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:



3007 75 Ω to

25000

100000 Ω guide

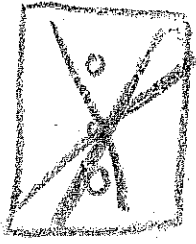
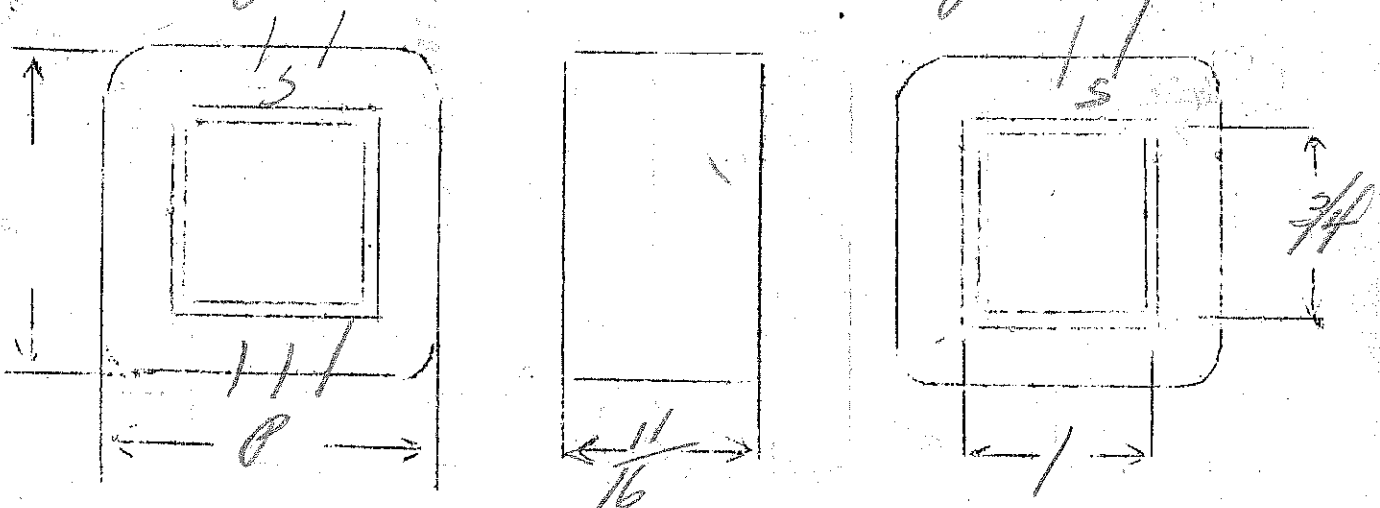
30-10,000 Ω

SPEC. NO.

658

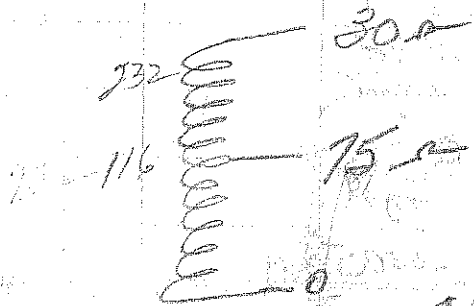
Winding	SEC	PR1				
Turns	6750	232				
Taps	—	116				
Wind. Lgth.	1/2"	1/4"				
Wire Size	#39	#24				
T.P.L.	118-58	58-4				
Kind Term.	fil Br	WIRE ONLY				
Term. Lgth.	6"	6"				
Layer Insul.	16#	40#				
Wrapper	3L003VP SHIELD 2L005GA	2L005GA				
TUBE	7L007		IMPREGNATION		WAX	
CURE	1x 3/4	29 Ga "A" grade audio 2x2				

sec - two sections - reverse assembly - all leads out.
 Primary wound over secondary



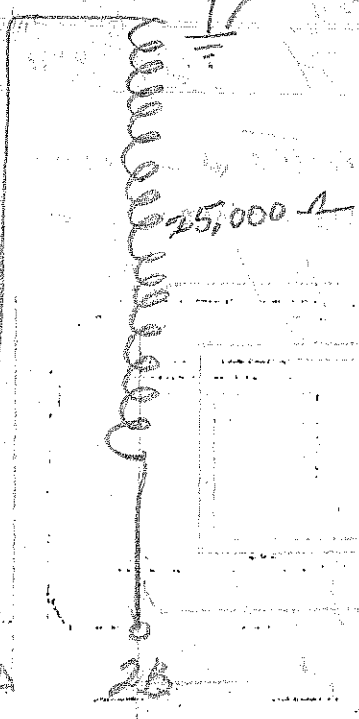
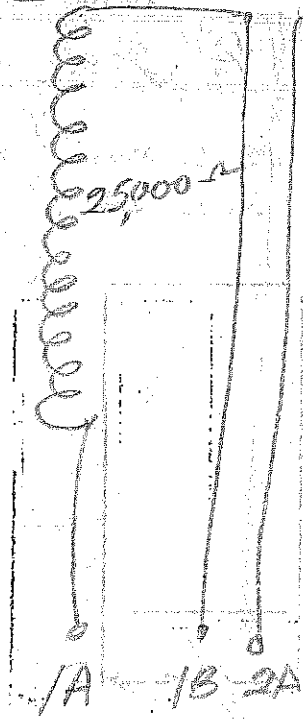
WINDING
 3007
 39/24
 47 50

30 - 55 - 166
25,000 - 224 - 6750



shield

030	02B
075	02A
00	01B
658	01A



10,000 ohm Pri to 500-333-250-200-125-50 ohm.

(non-hum bucking type)

SPEC. NO. H-659

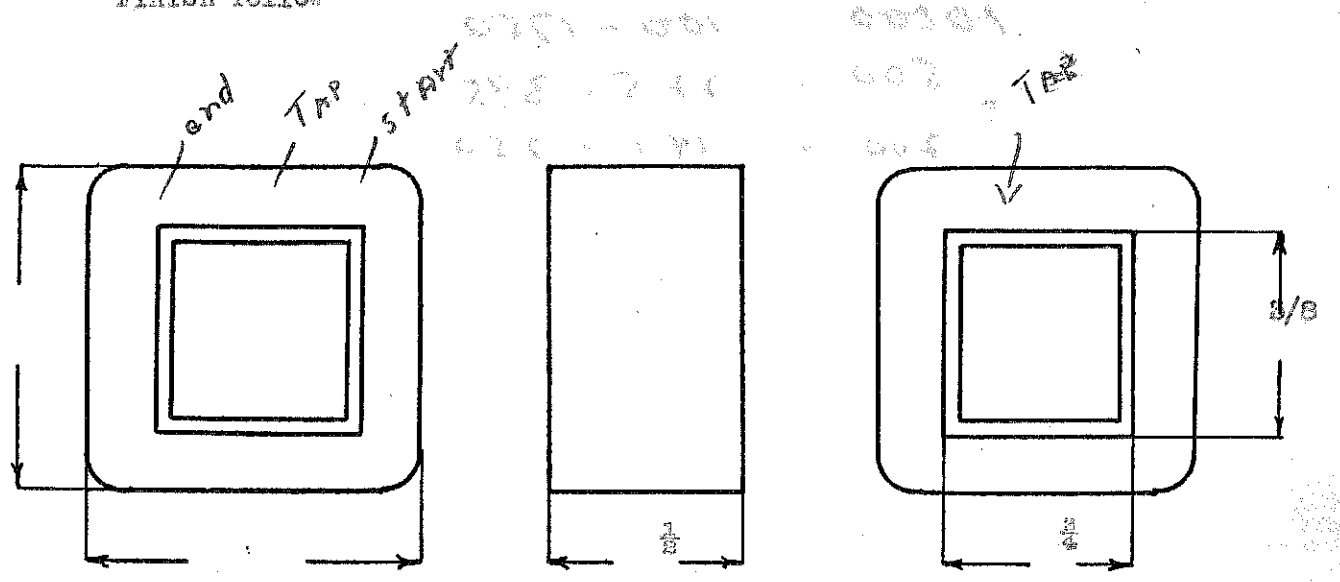
Winding	8 Coils					
	PRI	SEC				
Turns	1750	235				
Taps		245				
Wind. Lgth.	3/8	3/8				
Wire Size	#38	#21				
T. P. L.	76-25	55				
Finish	Sil. Br.					
Type Lead						
Lead Lgth.	6"	6"				
Layer Insul.	10#	20#				
Test Volt.						
Wrapper	1L.005VC 6L.01	2L.0050A				

TUBE 4L.007 IMPREGNATION VARNISH

CORE GA. 29 GRADE Mulfetal STACK 1 x 1

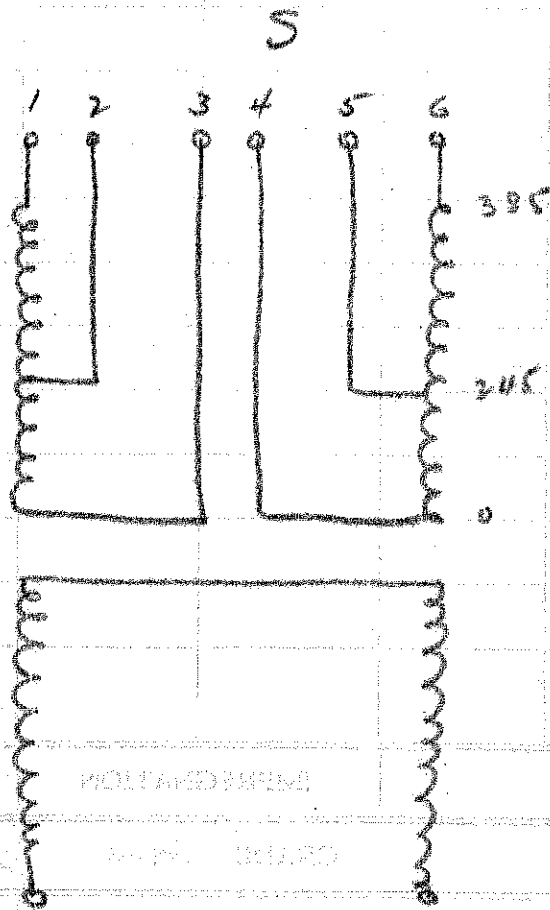
MOUNTING HA - Heavy copper shield over coil.

Sec - Start Red 17 - E 16 - I
 Tap Blue
 Finish Yellow

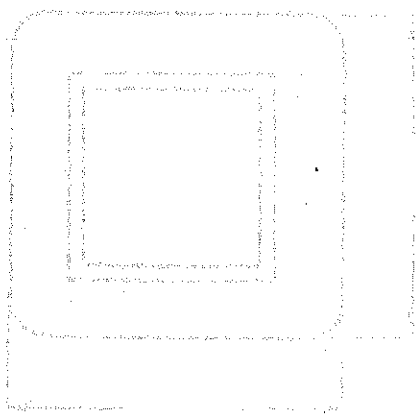
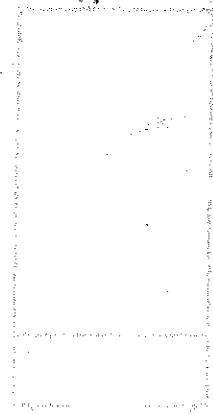
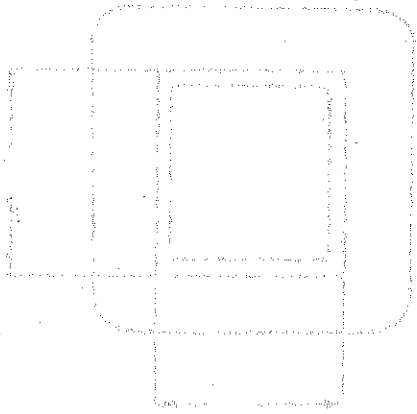


DESIGNED BY GW

DATE 5/11/50



- 10000 - 100 - 1750
- 500 - 22.5 - 395
- 200 - 14.1 - 250



FILAMENT

New STOCK

~~107-115-122~~ 117 volts @ 50/60 cycles
10 volts CT @ 5 Amps

F660
~~B754~~

SPEC. NO.

Winding	1-2-3 Pri.		5-6-7 Sec.	34-5		
Turns	520	507	48			
Taps	456-490		24			
Wind. Lgth.	1 1/4		1" (center)			
Wire Size	#25		#16			
T. P. L.	57 - 31 ⁹		16 - 3L			
Finish	88%		84%			
Type Lead	#22 W.O.P.B		W.O.			
Lead Lgth.	cut 14" 3		cut 14" 3			
Layer Insul.	40#		1L007GA			
Test Volt.	1500	.210	2500	.171		
Wrapper	3L005GA		3L005GA			

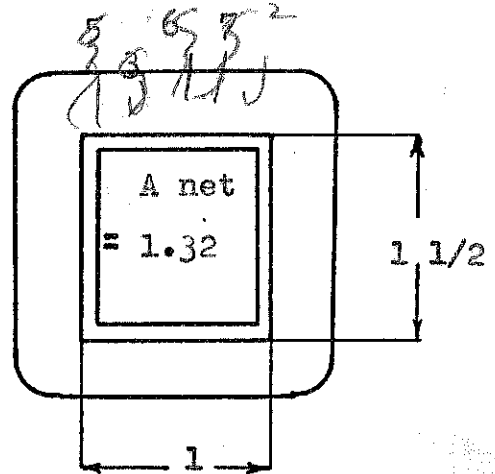
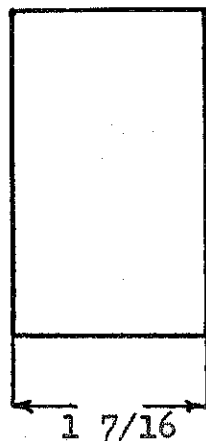
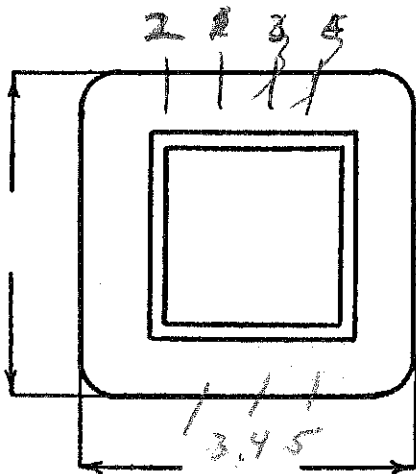
TUBE 5L007GK IMPREGNATION Varnish

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

MOUNTING ~~BA~~ - Primary legs to Right

Use Super Lugs

T. P. U. - 4.25
Window - $456/50 = 91.2\%$



DESIGNED BY S. W. B.

DATE

DESIGN AND TEST DATA

Rating:

Sec. VA = 50
 Pri. VA = 66
 Pri. I = 616 Ma.

Winding	Pri.	Sec.				
Mean Turn	6.04	7.69				
Resistance 25° c	8.65	.130				
Pounds Copper	.258	.251				
Copper Density	520	517				
Ratio Volts	107-115 122	10.02 on 107 volts				
Test to Ground	1500	2500				

Iron Induction 12.4 @ 50 Cycles

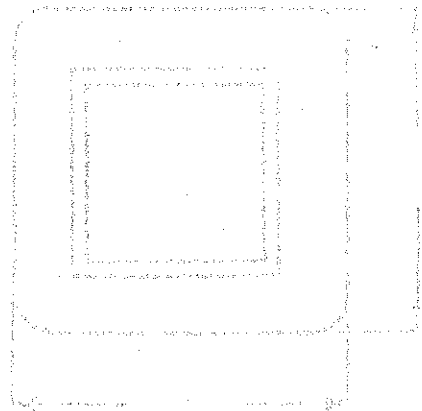
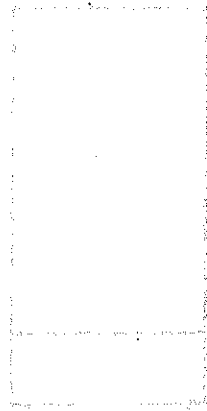
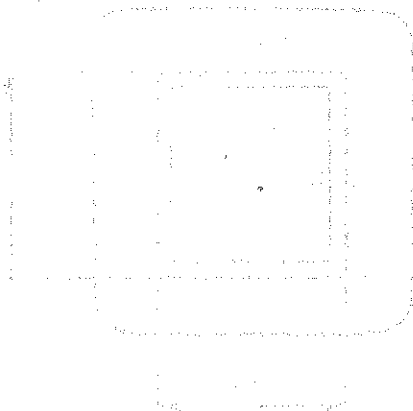
Exciting Current 113 Ma. amperes @ 115 volts 60 cycles on 1-3

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

Remarks:

1-2 Black

3-4-5 yellow



Filament

New stock

117 V @ 50/60 ~ to

10 V C.T. @ 5a

SPEC. NO. **F 660**

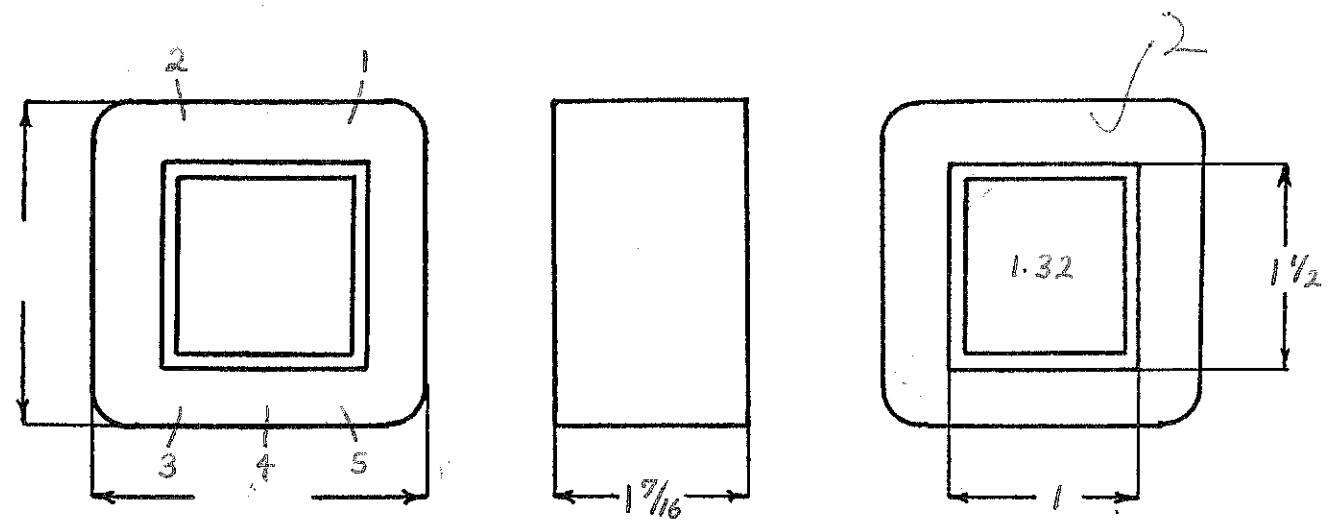
Winding	1-2 Pri	3-4-5 Fil				
Turns	507	48				
Taps	—	24				
Wind. Lgth.	1 1/4	1" (center)				
Wire Size	# 25	# 16				
T. P. L.	57-9L	16-3L				
Finish Pitch	8870	8470				
Type Lead	# 22 P.B.	w. o. bleve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	40#	1L0076A				
Test Volt.	1500	2500				
Wrapper	1L015K 3L0056A	1L003CA 2L0056K 3L0056A				

TUBE 5L0076K + 1L002CA IMPREGNATION Varnish

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

MOUNTING AA

mm = 9170



DESIGNED BY S.W.B.

DATE

DESIGN AND TEST DATA

Rating:

Sec VA = 50
Pri VA = 66
Ip = 616 ma.

Winding	Pri	Sec				
Mean Turn	6.04	7.69				
Resistance 25° c	8.65	.130				
Pounds Copper	.258	.251				
Copper Density	520	517				
Ratio Volts	117	10.02				
Test to Ground	1500	2500				

Iron Induction 12.4 Kg @ 50 Cycles

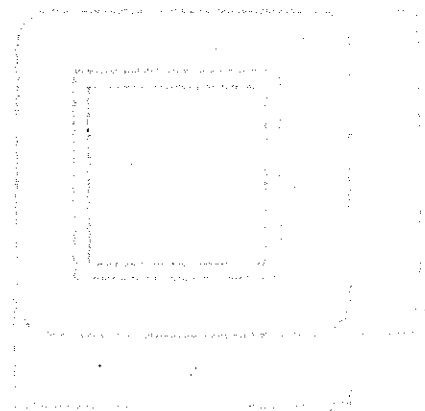
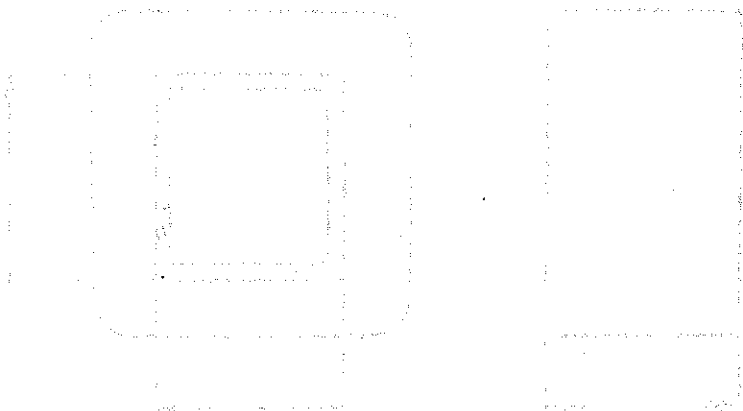
Exciting Current 113 milliamperes @ 115 volts 60 cycles on 1-2

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

Remarks:

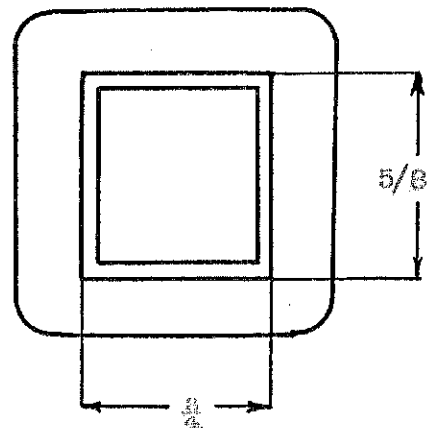
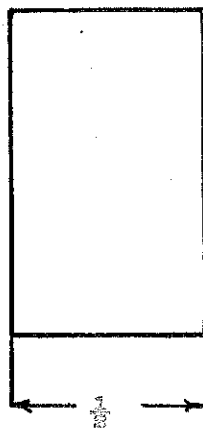
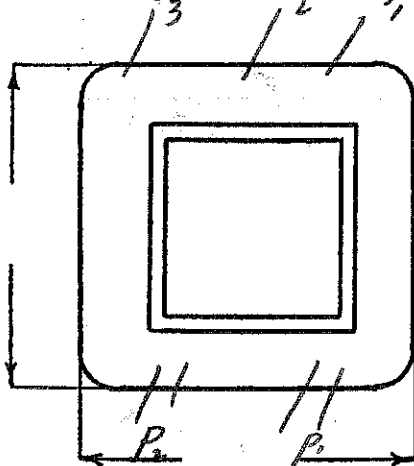
1-2 Black

3-4-5 Yellow



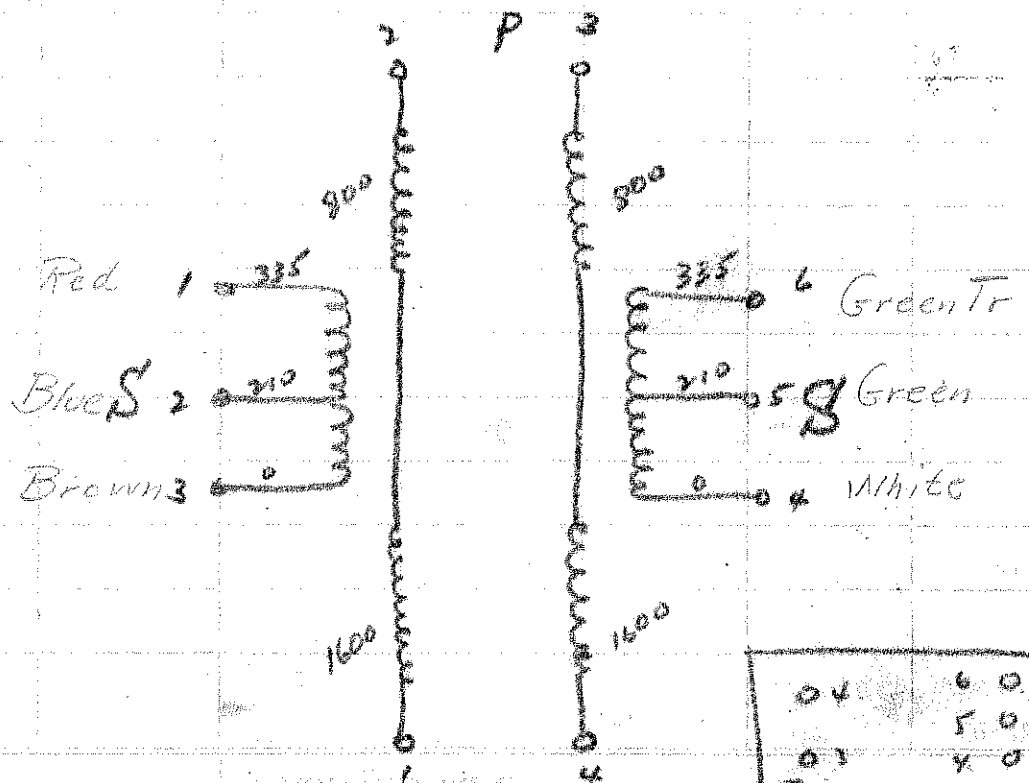
Winding	2 Coils					
	P	S	P			
Turns	1600	335	800			
Taps		210				
Wind. Lgth.	7/8	3/8				
Wire Size	#30	#31	#30			
T. P. L.	85-19	85-10	85-10			
Finish						
Type Lead	<i>Par. Br.</i>					
Lead Lgth.	6"	6"	6"			
Layer Insul.	16#	30#	16#			
Test Volt.						
Wrapper	1L.003VP 2L.01	1L.003VP 2L.01	2L.005GA			
TUBE	4L.007		IMPREGNATION			
CORE	GA. 39		GRADE	Mu Metal	STACK	2 x 2
MOUNTING	BA					

Primary - Black Sec₂ over
Sec₁ St - Brown St - White
Tap - Blue Tap - Green
Finish 5 Red 5 Finish - Green Tr.



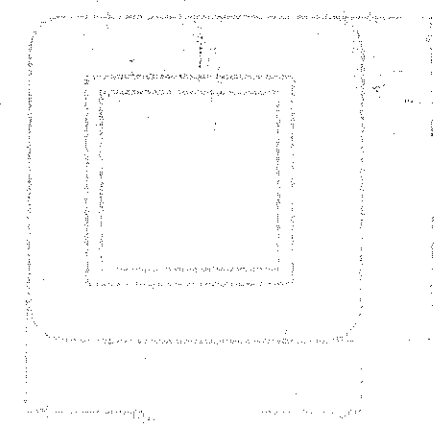
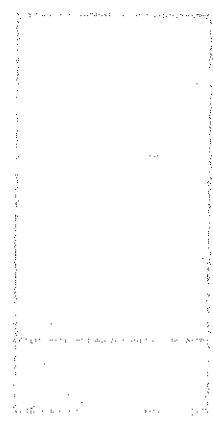
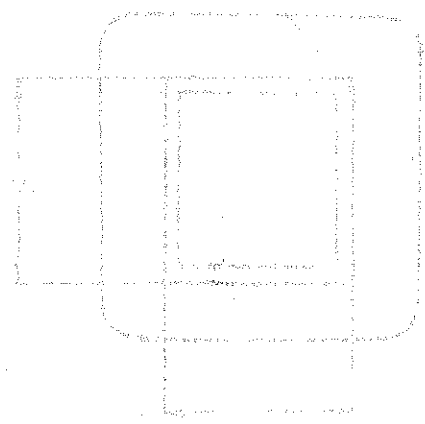
DESIGNED BY

DATE



Reverse Assembly

04	60
10	50
01	40
02	30
03	20
05	10



filament

New stock

117 V @ 50/60 ~ to

10V C.T. @ 10a.

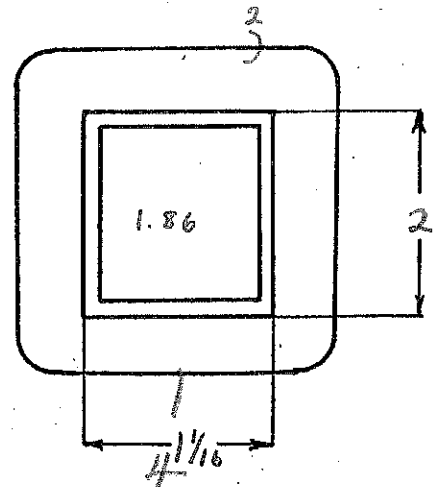
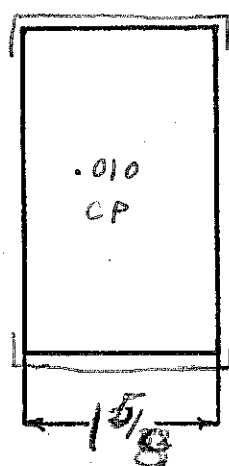
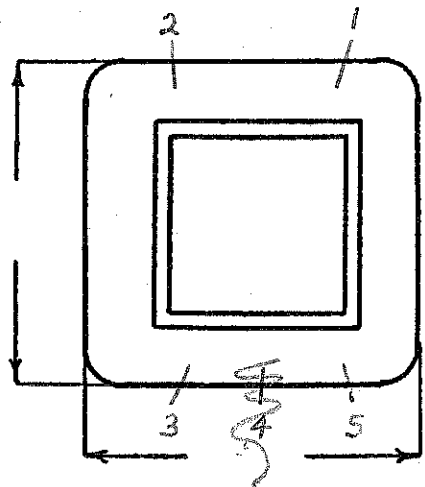
SPEC. NO. F 662

Winding	1-2 Pri	3-4-5 fil				
Turns	337	32				
Taps	—	16				
Wind. Lgth.	1 3/8	1 3/8				
Wire Size	# 21	# 12				
T. P. L.	38 - 9L	16 - 2L				
Finish Pitch	83%	95%				
Type Lead	# 20 P.B.	w. o. sleeve				
Lead Lgth.	cut 14"	cut 14"				
Layer Insul.	50#	1L015CP 1L007CA				
Test Volt.	1250	2500				
Wrapper	1L005CA 1L015CP	3L005CA 2L007GA				

TUBE ~~8L010GK~~ + 1L002CA IMPREGNATION Varnish

CORE 1 1/16 x 2 GA. 24 GRADE D STACK 12 x 2

MOUNTING AA



DESIGNED BY S. BABCOCK

DATE 10-13-47

DESIGN AND TEST DATA

Rating:

Sec VA = 100

Pri VA = 128

I_p = 1.195a.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>7.565</i>	<i>9.425</i>				
Resistance 25° c	<i>2.89</i>	<i>.0407</i>				
Pounds Copper	<i>.55</i>	<i>.502</i>				
Copper Density	<i>678</i>	<i>653</i>				
Ratio Volts	<i>117</i>	<i>10.4</i>				
Test to Ground	<i>1250</i>	<i>2500</i>				

Iron Induction *13.0kg* @ *50* Cycles

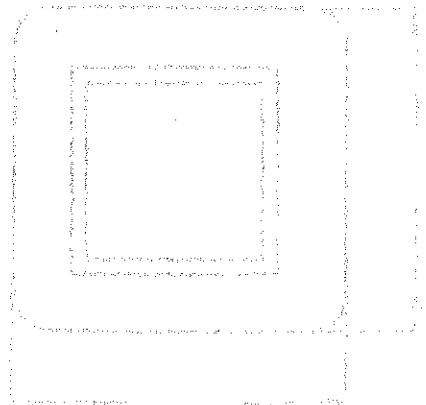
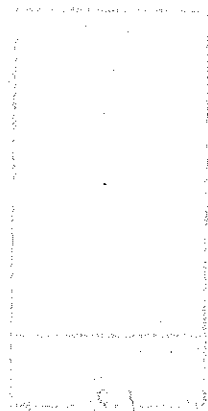
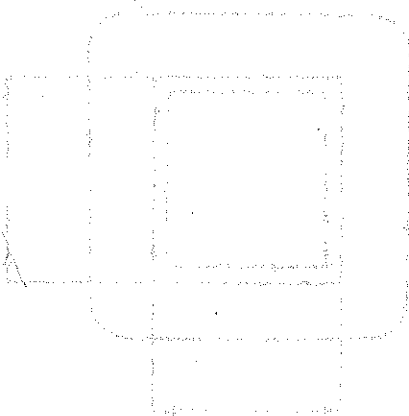
Exciting Current *150* *W* amperes @ *117* volts 60 cycles on

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

Remarks:

1-2 Black

3-4-5 Yellow



FILAMENT

New STOCK

~~107-115-122V~~ @ 50/60 cycles
to
10V CT @ 10 amps

F 662
SPEC. NO. ~~E-755~~

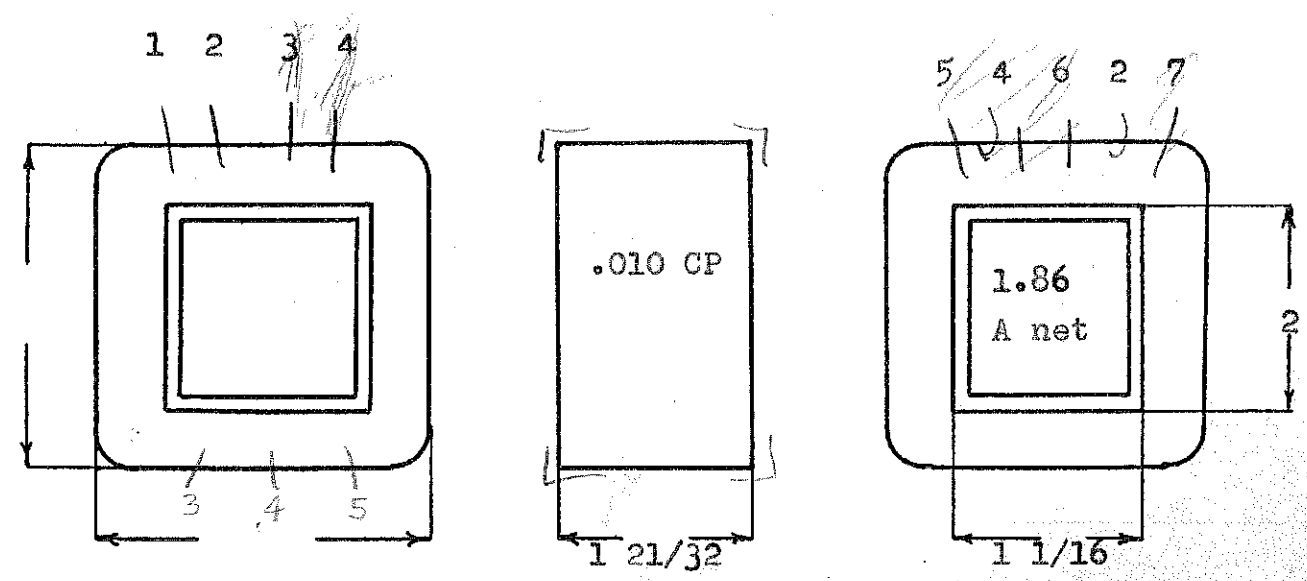
Winding		Pri.		Fl.			
Turns		308 337		32			
Taps		308 331		16			
Wind. Lgth.		1-15/32 3/8		1 15/32 3/8			
Wire Size		#21		#12			
T. P. L.	38	44 -9L		16-2L			
Finish	83%	95%		95%			
Type Lead		#20 W. 0. K.B.		W. 0.			
Lead Lgth.		cut 14" 3"		3" cut 14"			
Layer Insul.		50#		1L007GA			
Test Volt.		1250		2500			
Wrapper		.292 3L005GA		.180 3L005GA			

TUBE 7L007GK IMPREGNATION Varnish

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

MOUNTING A - Lugs - Use Super Lugs - Primary lugs to Right.

83%



DESIGNED BY S. Babcock

DATE 10-13-47

DESIGN AND TEST DATA

Rating:

Sec. VA = 100
 Pri. VA = 128
 Ip = 1.195a. max.

Winding	Pri.	Fl.			
Mean Turn	7.565	9.425			
Resistance 25° c	2.89	.0407			
Pounds Copper	.55	.502			
Copper Density	678	653			
Ratio Volts	107-115 122	10.40			
Test to Ground	1250	2500			

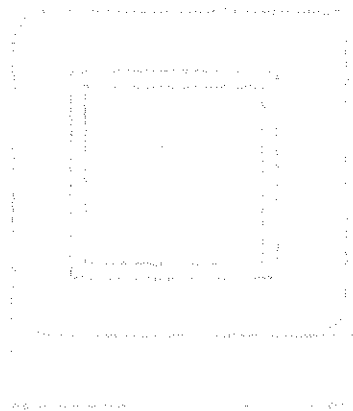
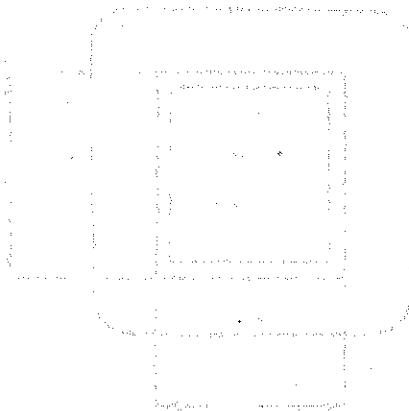
Iron Induction 13.0 @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
3-4-5 Yellow



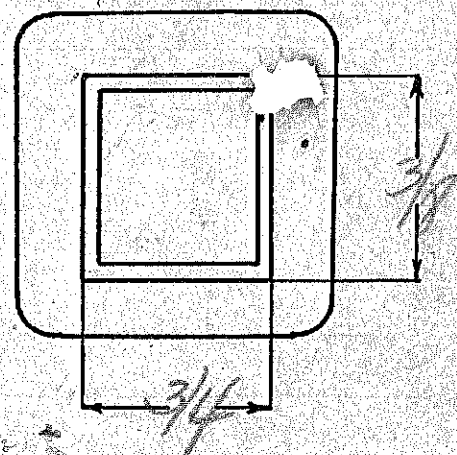
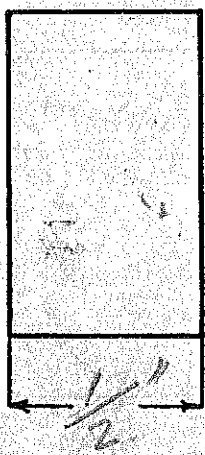
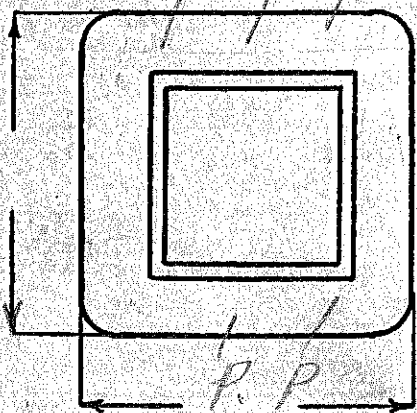
PP603 to PPAB 2A3, 42, 606, 2

P: 1/2 S = 3.0 m 5.0

2 Coils

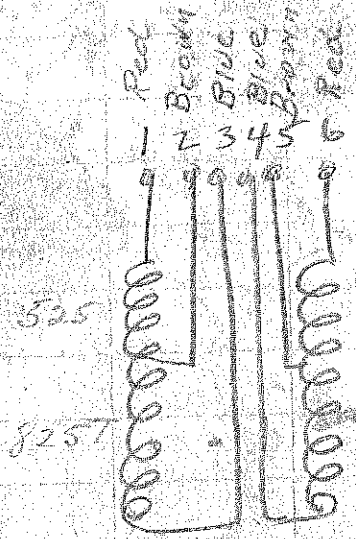
SPEC. NO. H665

Winding	P	S				
Turns	2000	1350				
Taps	—	825				
Wind. Lgth.	3/8	3/8				
Wire Size	#39	#35				
T. P. L.	87-23	55-25				
Finish						
Type Lead	#22	Par 181				
Lead Lgth.	6"	6"				
Layer Insul.	16#	20#				
Test Volt.						
Wrapper	11005VP	11005BA				
TUBE	42007		IMPREGNATION		Varnish	
CORE	GA. 24		GRADE muntal		STACK 1X1	
MOUNTING	HA					

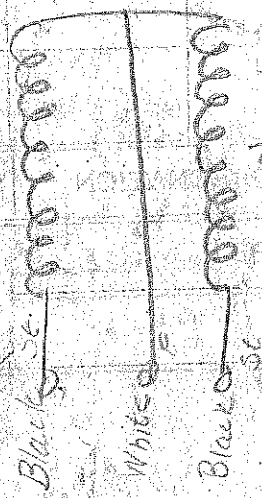


DESIGNED BY

DATE



1333 T
 Key 800



2000

PP 2A3 (4000r) to 3-6-9-15-500r

SPEC. NO. 670

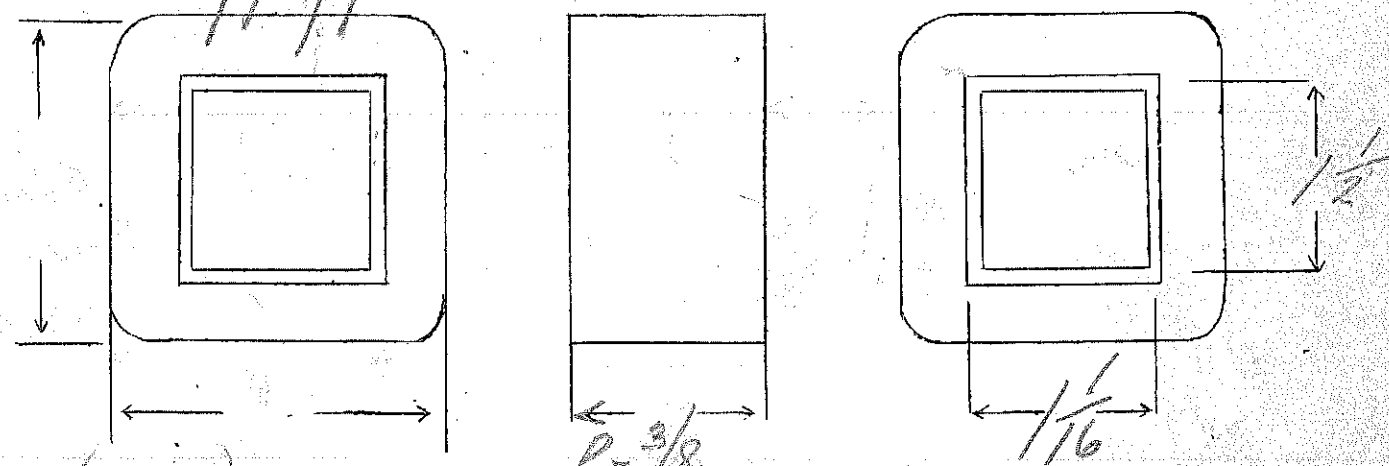
SEC

Winding	P ₁	P ₂	Continuous winding			
Turns	694	694	830	38	55	77
Taps	—	—	—	—	25	—
Wind. Lgth.	1/4"	1/4"	3/4	—	—	—
Wire Size	#33	#33	#29	#22	#21	#20
T.P.L.	29-24	29-24	56-15	25-15	23-25	20-4
Kind Term.	sil braid		WIPE ONLY			
Term. Lgth.	6"	6"	6"	6"	—	—
Layer Insul.	30#	30#	40#	50#	50#	50#
Test Volt.	2500	2500	—	—	—	—
Wrapper	21007VC 21007A	21007BA	—	—	—	21005GA
TUBE	72007		IMPREGNATION		Wax	
CORE	1/16 x 1/2		2x2 29ka annealed		PRIMARY V.A.	
MOUNTING	HA2					

- 0
- 13 3.2
- 2 44
- 3 55
- 4 71
- 5 42
- 6

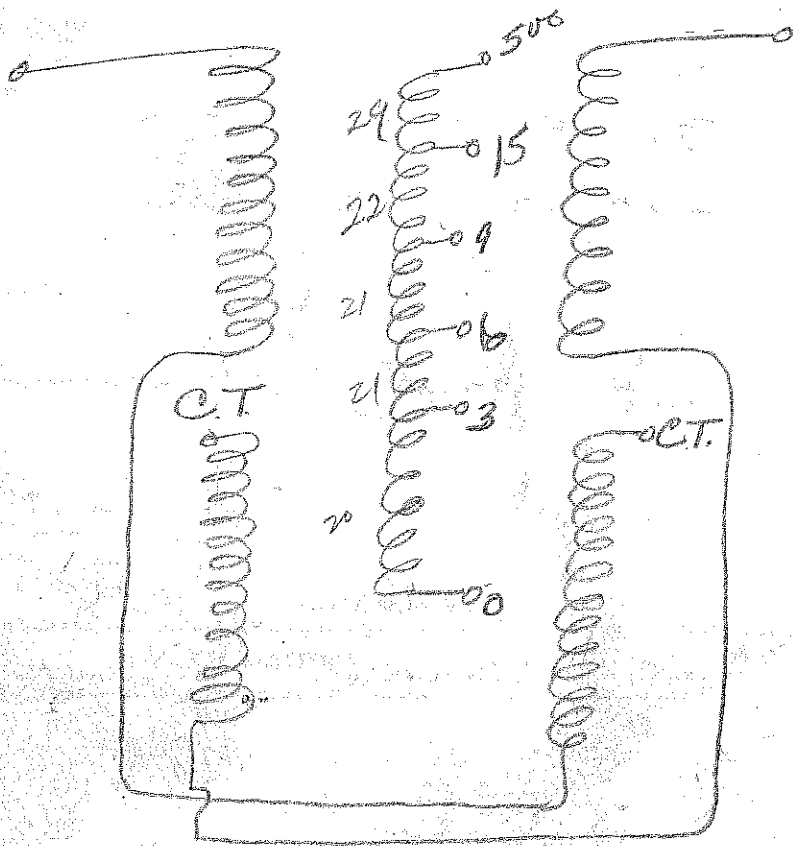
end of sec is start

Reverse Assembly



DESIGNED BY *[Signature]*

DATE 11-3-36



P*	*	*
	6	9
CT*	*	x
	3	15
P*	*	x
	0	500

P to P

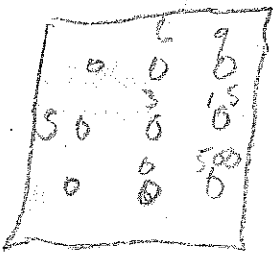
- 0 - 3 = 3.2 V
- 0 - 6 = 4.4 V
- 0 - 9 = 5.5 V
- 0 - 15 = 7.1 V
- 0 - 500 = 42.0 V

PP2A3 (4000N) to 3-6-9-15-50r

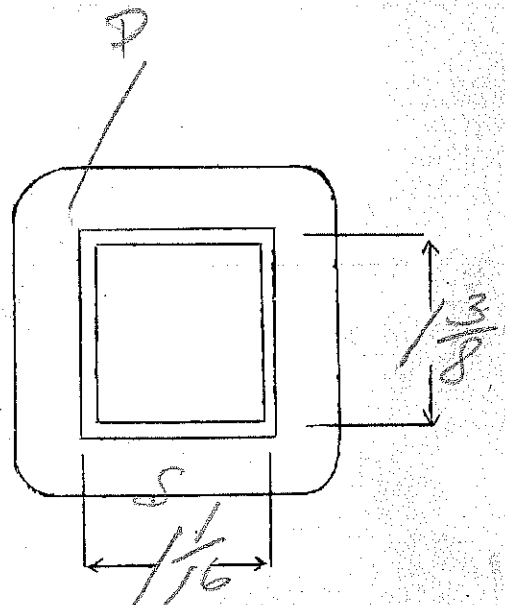
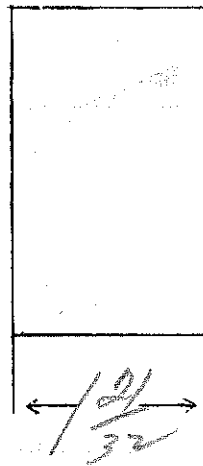
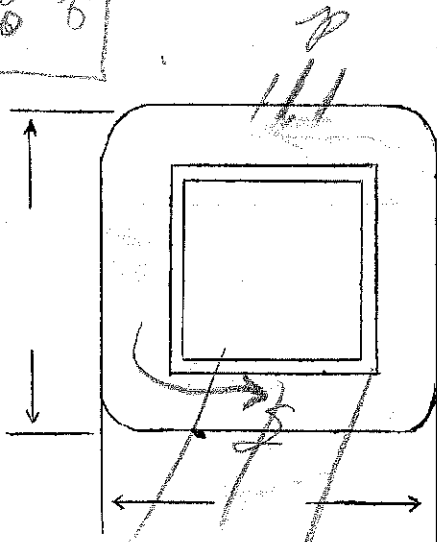
SPEC. NO.

670

	Continuances					
Winding	SEC	SEC	PRI	SEC	SEC	
Turns	690	32	2360	46	65	
Taps			1180	21		
Wind. Lgth.	115/32					
Wire Size	#28	#22	#32	#21	#20	
T.P.L.	99-7	12	150-16			
Kind Term.	W.O.		SILP	WIPE	ONLY	
Term. Lgth.	3"	✓	✓	✓	✓	
Layer Insul.	30#		30#			
Test Volt.			2500			
Wrapper		FL. Mt. 14001V	34005GA		24005GA	
TUBE	7607		IMPREGNATION		VARNISH	
CORE	1/16 x 1 3/8 -29 GA- 2X2			PRIMARY V.A.		
MOUNTING	HA2					



end of sec is start

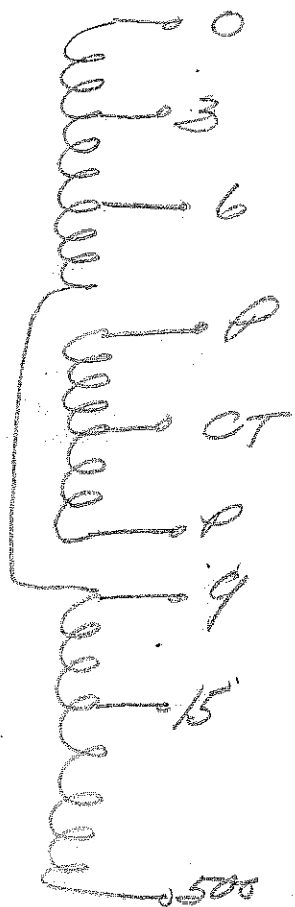


gw

3/16/38

DESIGNED BY

DATE



filament

new stock

117 V @ 50/60 ~ to

2.5 V C.T. @ 10a.

2.5 V C.T. @ 5a.

2.5 V C.T. @ 5a.

SPEC. NO. F 670

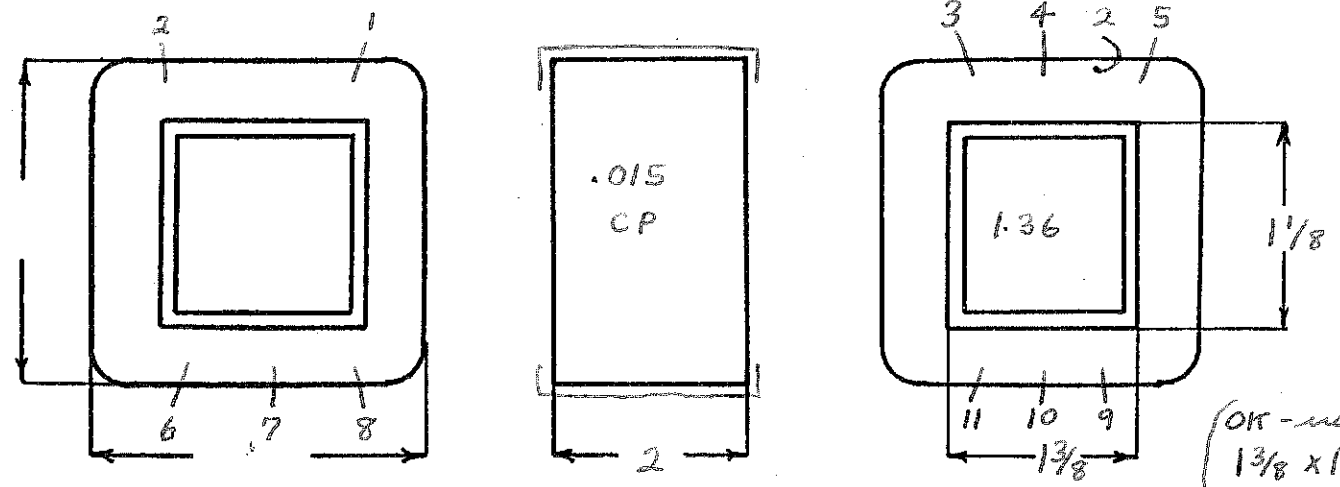
Winding	1-2 Pri	3-4-5 fil #1	6-7-8 fil #2	9-10-11 fil #3			
Turns	514	12	12	12			
Taps	—	6	6	6			
Wind. Lgth.	1 5/8	1" (center)	3/4" center	3/4" center			
Wire Size	# 24	# 13	# 16	# 16			
T. P. L.	65-9L	12-1L	12-1L	12-1L			
Finish Pitch	85%	89%	91.5%	91.5%			
Type Lead	# 22 P.B.	w. o. sleeve	w. o. sleeve	w. o. sleeve			
Lead Lgth.	cut 9"	cut 9"	cut 9"	cut 9"			
Layer Insul.	50#	—	—	—			
Test Volt.	1250	6000	6000	6000			
Wrapper	2L007VC 2L007GA	2L007VC 2L007GA	2L007VC 2L007GA	2L007VC 2L007GA			

TUBE 7L007GK IMPREGNATION Varnish

CORE 13/8 x 1/8 GA. 24 GRADE D STACK 2x2

MOUNTING BB-leads, HS 15

wn = 81%



DESIGNED BY S.W.B.

DATE 5-3-47

DESIGN AND TEST DATA

Rating:

Sec VA = 50
Pri VA = 67
I_p = 627 ma.

Winding	Pri	Til #1	Til #2	Til #3			
Mean Turn	6.16	7.56	8.24	8.84			
Resistance 25° c	6.90	.0176	.0402	.0406			
Pounds Copper	.337	.136	.074	.078			
Copper Density	645	518	517	517			
Ratio Volts	117	2.57	2.54	2.52			
Test to Ground	1250	6000	6000	6000			

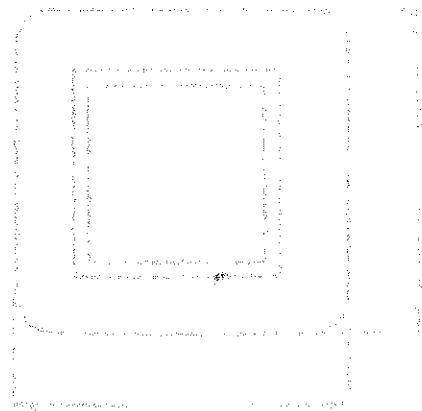
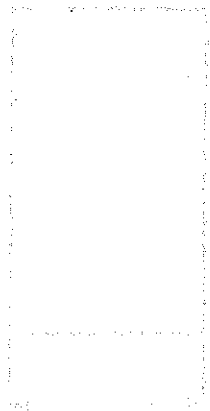
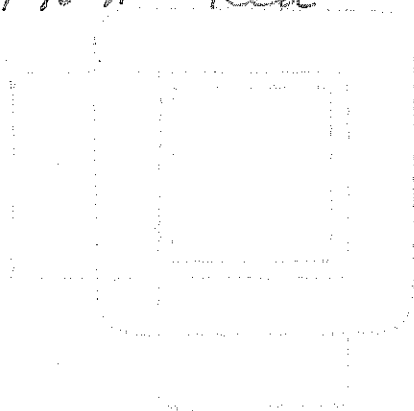
Iron Induction 12.2 Tg @ 50 Cycles

Exciting Current 113 milli amperes @ 115 volts 60 cycles on 1-2

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

Remarks:

- 1-2 Black
- 3-4-5 yellow
- 6-7-8 green
- 9-10-11 Red



FILAMENT

New STOCK

107 ~~115~~ ¹¹⁷ volts @ 50/60 cycles
 2.5V CT @ 10A, 2.5V CT @ 5A,
 2.5V CT @ 5 Amps

SPEC. NO.

F 670
~~J 3320~~

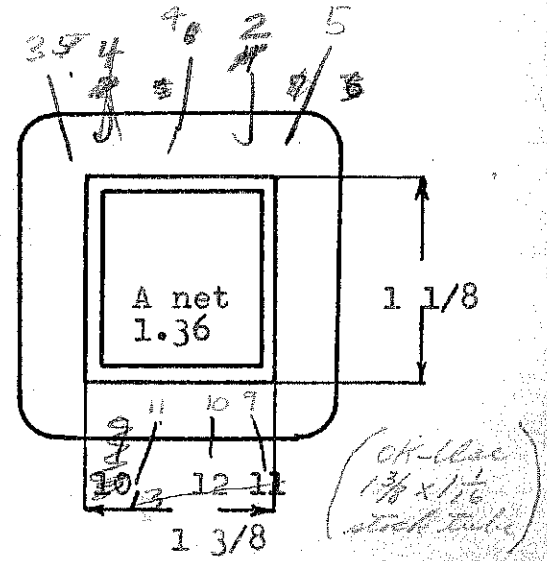
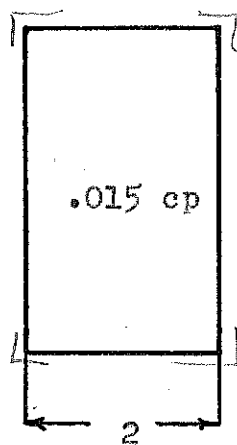
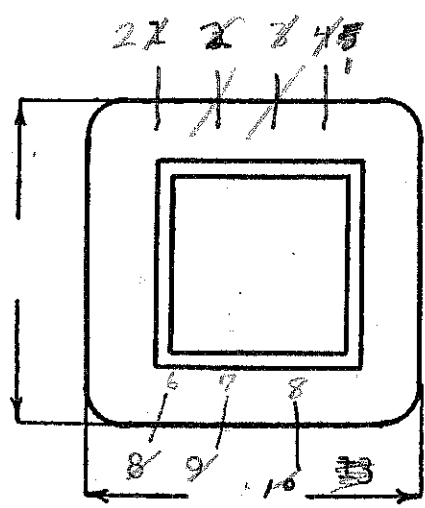
Winding	1-2-3-4 Pri.	5-6-7 3-4-5 Fil #1	8-9-10 6-7-8 Fil #2	11-12-13 9-10-11 Fil #3
Turns	514	12	12	12
Taps	 	6	6	6
Wind. Lgth.	1 5/8"	1" center	3/4" center	3/4" center
Wire Size	#24	#13	#16	#16
T. P. L.	65-9L	12-1L	12-1L	12-1L
Finish	85%	89%	91.5%	91.5%
Type Lead	#22 W.O. to lug P.B.	W.O. to lug P.B.	W.O. to lug P.B.	W.O. to lug P.B.
Lead Lgth.	cut 3" 9"	cut 3" 9"	cut 3" 9"	cut 3" 9"
Layer Insul.	50#	--	--	--
Test Volt.	1250	6000	6000	6000
Wrapper	2L007VC 2L007GA	2L007VC 2L007GA	2L007VC 2L007GA	2L007VC 2L007GA

TUBE 7L007GK IMPREGNATION Varnish

CORE 1 3/8 x 1 1/8 GA. 25 GRADE D STACK 2x2

MOUNTING BB Leads PHS 15 Primary Lugs to Right

T. P. V. - 4.2 Use Super Lugs on Fil #1 Note: Lugs of adjacent filament windings to be spaced at least 3/4"
 Window - 566/688 = 81% T Lugs on Fil #2, #3



DESIGNED BY S.W.B.

DATE 5-3-47

DESIGN AND TEST DATA

Rating:

Sec VA = 50

Pri VA = 67

Pri I = 627 Ma.

Winding	Pri.		Fil #1		Fil #2		Fil #3
Mean Turn	6.16		7.56		8.24		8.84
Resistance 25° c	6.90		.0176		.0402		.0406
Pounds Copper	.337		.136		.074		.078
Copper Density	645 max.		518		517		517
Ratio Volts	107-115 122		2.57		2.54		2.52
Test to Ground	1250		6000		6000		6000

Iron Induction 12.2 kg @ _____ Cycles

Exciting Current 113 milli amperes @ 115 volts 60 cycles on 1-3

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

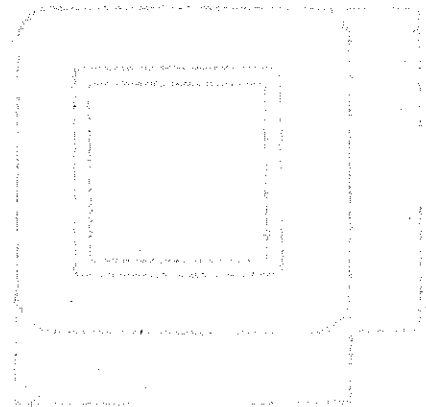
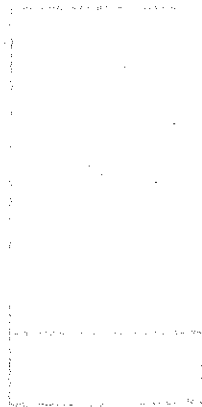
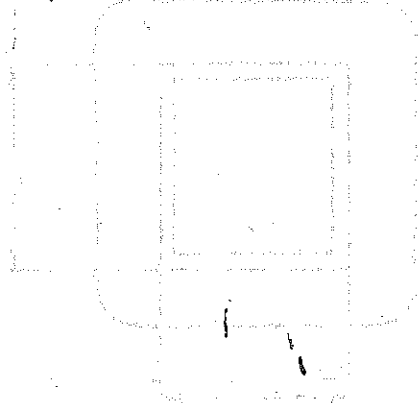
Remarks:

1-2 Black

3-4-5 yellow

6-7-8 green

9-10-11 Red

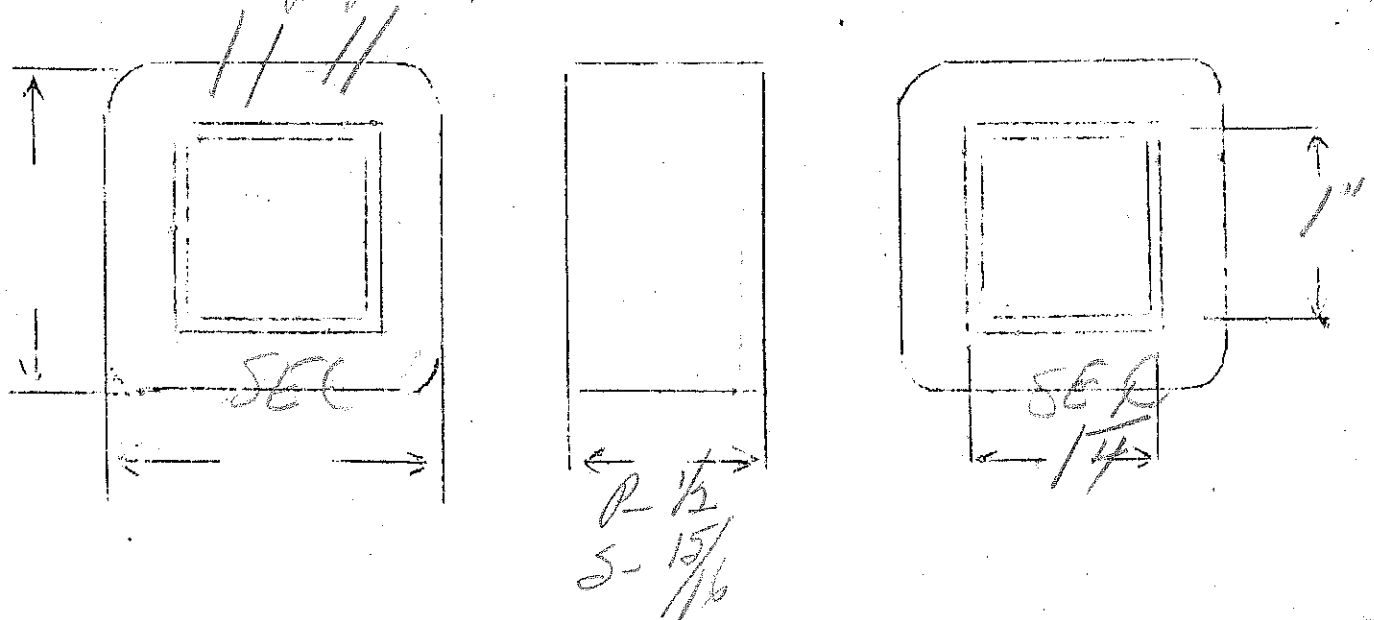


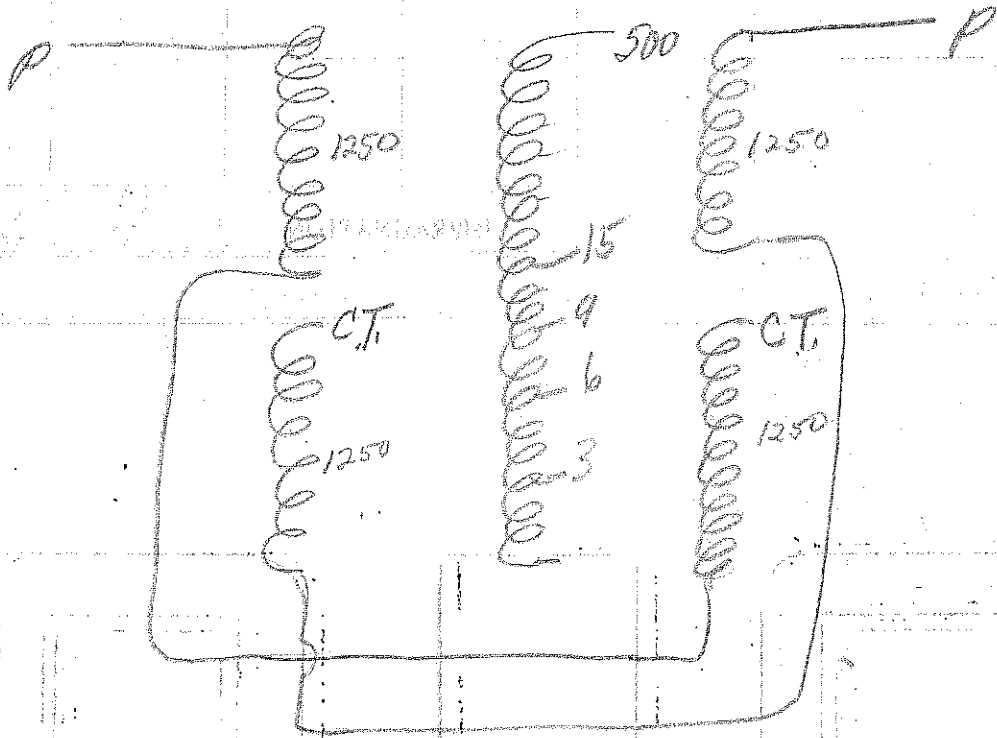
PP 2B6 or 6B5 plates (10,000 Ω)
to 3, 6, 9, 15, and 500 Ω

SPEC. NO. 671

	<i>Continuous</i>						
Winding	PR1	PR1.2		SEC			
Turns	1250	1250		950	75	38	88
Taps					45		
Wind. Lgth.	5/16	5/16		13/16			
Wire Size	#35	#35		#30	#23	#21	#19
T.P.L.	4/6-30	4/6-30		68-14	32	16	452
Kind Term.	Silver braid			SILVER	WIRE ONLY		
Term. Lgth.	6"	6"		6"	6"	6"	6"
Layer Insul.	30 #	30 #					
Wrapper	1600 TVC 52 Alum	210073A					
TUBE	72007			IMPREGNATION		VARNISH	
CURE	1 1/4 X 1			2x2	29 1/2	anneal	

over - 2 sets of primary coils





FILAMENT

New STOCK

117
115 volts @ 50/60 cycles

to 5 volts @ 3 amps, 6.3 volts CT @ 4 Amps

SPEC. NO. ~~F757~~ F672

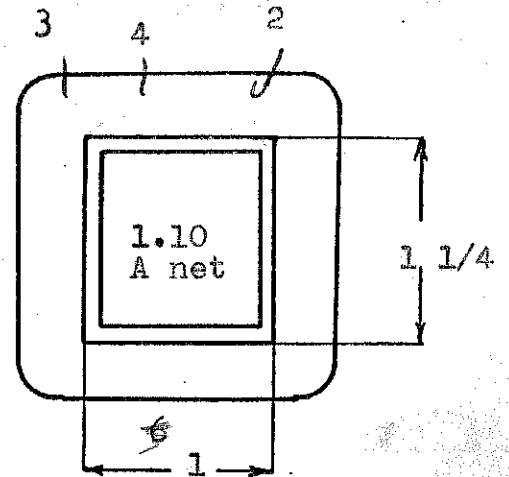
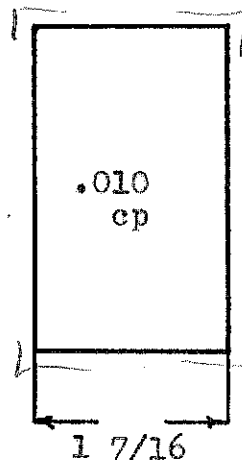
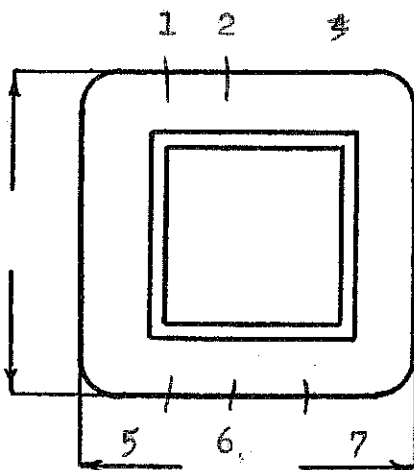
Winding	1-2 Pri.	3-4 Fil #1	5-6-7 Fil #2
Turns	6 12	30	38
Taps	---	--	19
Wind. Lgth.	1 1/4	1 1/4	1 1/4
Wire Size	#26	#18	#17
T. P. L.	68-9L	28-1L	19-2L
Finish	92%	93%	85%
Type Lead	W.O. #22 P.P.	W.O. sleeve	W.O. sleeve
Lead Lgth.	3" cut 12"	3" cut 12"	3" cut 12"
Layer Insul.	40#	40#	1L005GA
Test Volt.	1250	2500	2500
Wrapper	.171 3L005GA	.042 3L005GA	.099 3L005GA

TUBE 7L007GK IMPREGNATION Varnish

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

MOUNTING ~~B.A.~~

T. P. V. — 5.75
window — .416 / .50 = 83.2%



DESIGNED BY S. W. B.

DATE

DESIGN AND TEST DATA

Rating:

Sec. VA = 40.2

Pri. VA = 53.5

Ip = 465 Ma.

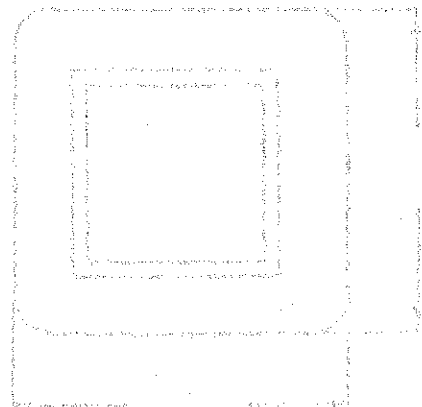
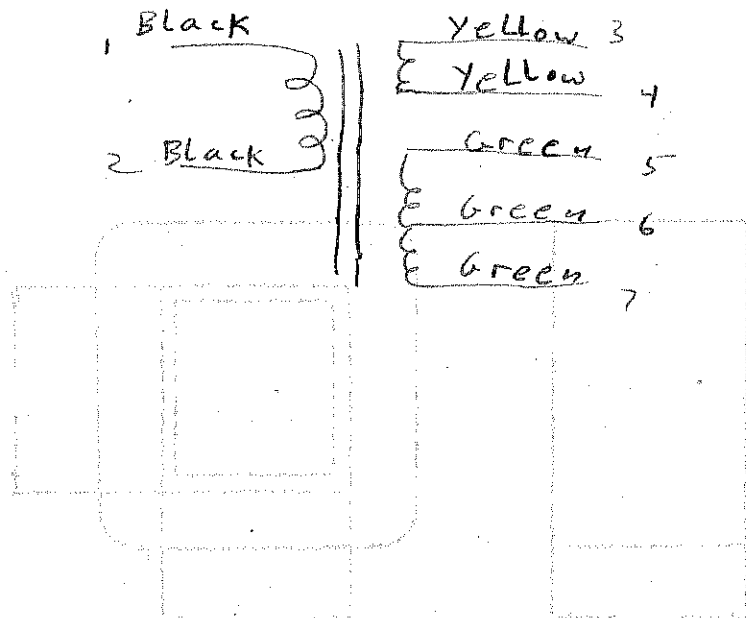
Winding	Pri.		Fil #1		Fil #2	
Mean Turn	5.50		6.53		7.15	
Resistance 25° c	11.5		.110		.122	
Pounds Copper	.214		.089		.149	
Copper Density	546		542		513	
Ratio Volts	115		5.11		6.40	
Test to Ground	1250		2500		2500	

Iron Induction 12.1 kg @ 50 Cycles

Exciting Current 71 milli amperes @ 115 volts 60 cycles on 1-2

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

Remarks:



Filament

new stock

117V @ 50/60 ~ to

5V @ 3a

6.3V C.T. @ 4a

ALAC TEST QMA M51880

SPEC. NO. F 672

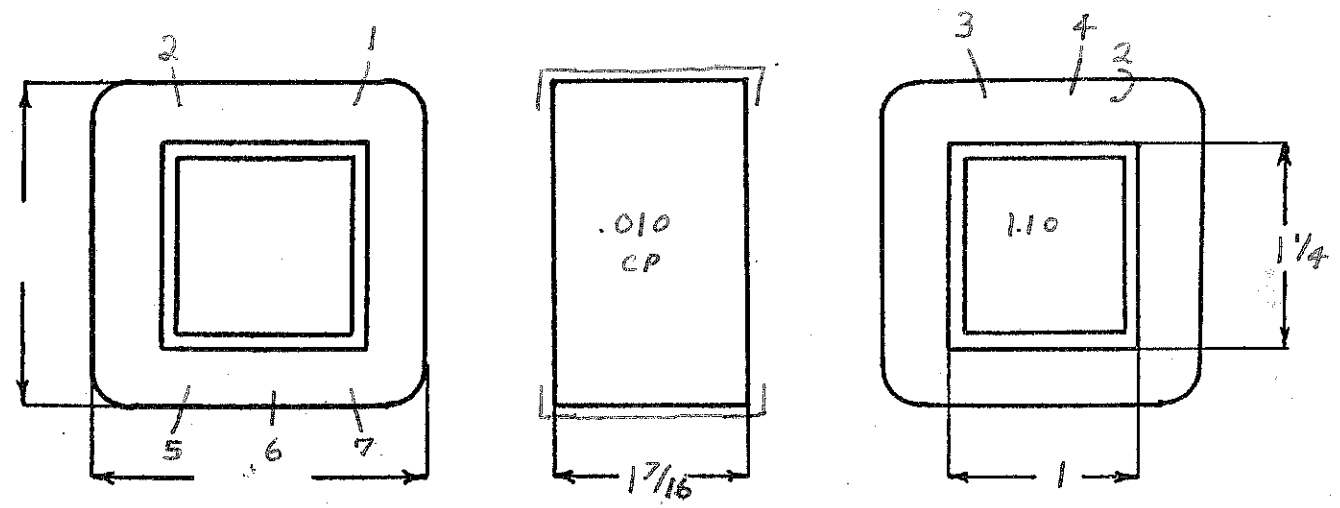
Winding	1-2 Pri	3-4 Fil #1	5-6-7 Fil #2			
Turns	612	30	38			
Taps	-	-	19			
Wind. Lgth.	1 1/4	1 1/4	1 1/4			
Wire Size	#26	#18	#17	Wind 2 turns on		
T. P. L.	68-9L	³⁰ 28 -1L	19-2L	first layer of		
Finish	92%	95% 100%	85%	fil #2		
Type Lead	#22 P.B.	w.o. sleeve	w.o. sleeve			
Lead Lgth.	cut 12"	cut 12"	cut 12"			
Layer Insul.	40#	40#	1L0056A			
Test Volt.	1250	2500	2500			
Wrapper	1L003CA 1L007GA 3L0056A	1L003CA 1L007GA 3L0056A	1L003CA 1L007GA 3L0056A			

TUBE 7L007GH + 1L003CA IMPREGNATION Varnish

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

MOUNTING AA

wn = 83%



DESIGNED BY S.W.B.

DATE

DESIGN AND TEST DATA

Rating:

Sec VA = 40.2

Pri VA = 53.5

I_p = 465 ma.

Winding	Pri	Trail #1	Trail #2				
Mean Turn	5.50	6.53	7.15				
Resistance 25° c	11.5	.110	.122				
Pounds Copper	.214	.089	.149				
Copper Density	546	542	513				
Ratio Volts	115	5.11	6.40				
Test to Ground	1250	2500	2500				

Iron Induction 12.1 kg @ 50 Cycles

Exciting Current 71 milli amperes @ 115 volts 60 cycles on 1-2

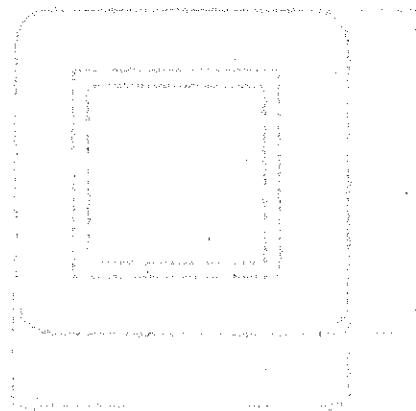
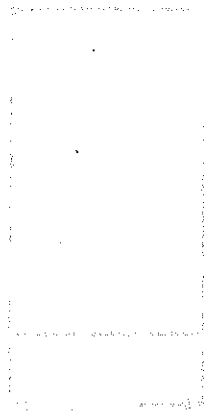
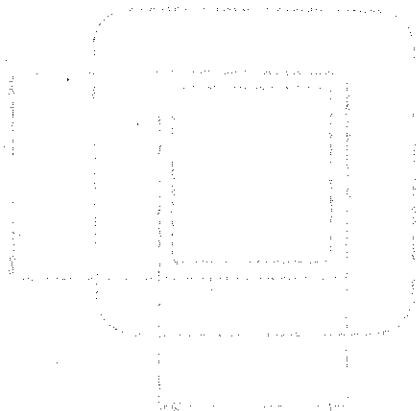
Induced Test: Apply _____ Volts at _____ Cycles _____ on _____ with _____ grounded

Remarks:

1-2 Black

3-4 Yellow

5-6-7 Green



PP 42 AB Trade Connected
to 5-6-9-15-500Ω Voicecoil

8000 Ω P-P load - 18watts audio output
2H 31 Ma.

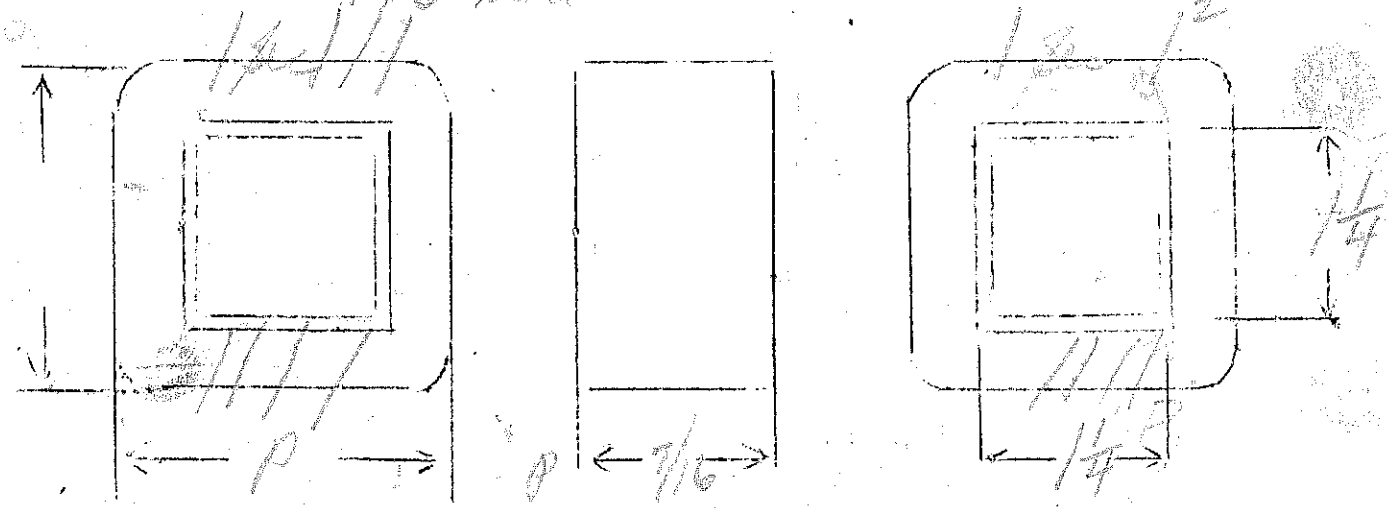
SPEC. NO.

075

		Continuous					
Winding	PRI	PRI	SEC				
Turns	1200	1200	992	77	38	93	
Taps	—	—		47			
Wind. Lgth.	9/32	9/32	13/16				
Wire Size	#34	#34	#29	#22	#20	#19	
T.P.L.	36-34	36-34	62-16	3L	2L	5L	
Kind Term.	sil. braid						
Term. Lgth.	4"	4"					
Layer Insul.	20#	30#	20#	50#	50#	50#	
Wrapper	10076A 3L	20076A				20076A	
TUBE	7/007		IMPREGNATION			VARNISH	
CURE	1/4 x 1/4		2x2	296A A			

2 pri coils

note that end of sec is common
3 4 5 6-start

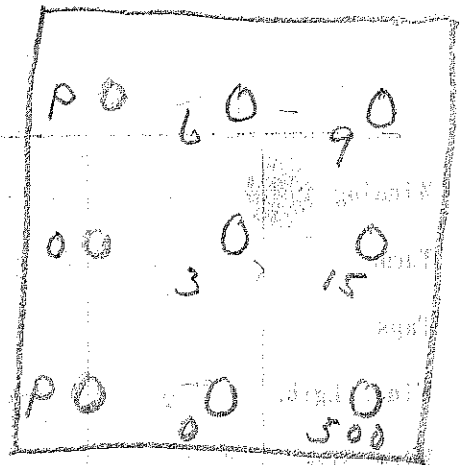


Sec 13/16

Reverse assembly

on a one turn basis

- 3 Ω - 1.732
- 6 Ω - 2.45
- 9 Ω - 3.0
- 15 Ω - 3.88
- 500 Ω - 224
- 8000 Ω - 90



$i^2 = \frac{18}{3} = 6 \quad i = 2.45 \text{ amp}$

$i^2 = \frac{18}{6} = 3 \quad i = 1.73 \text{ amp}$

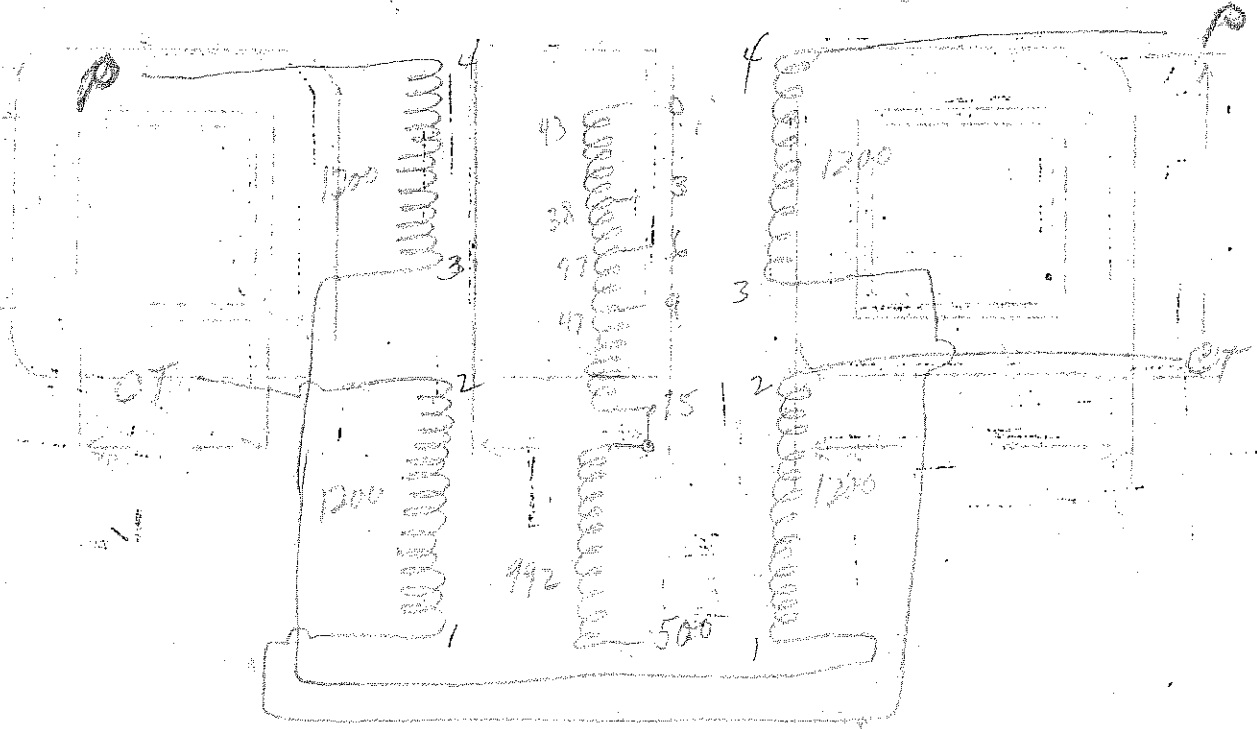
$i^2 = \frac{18}{9} = 2 \quad i = 1.41 \text{ amp}$

$i^2 = \frac{18}{15} = 1.2 \quad i = 1.1 \text{ amp}$

$i^2 = \frac{18}{500} = 0.036 \quad i = 0.19 \text{ amp}$

2
3 to 1

Reverse assembly



Filament

New Stock

117 ~~117~~ @ 1000

AT&T TEST QMA NO. 1010

F680

12V @ 1A ; 12V @ 1A

SPEC. NO. see 8634

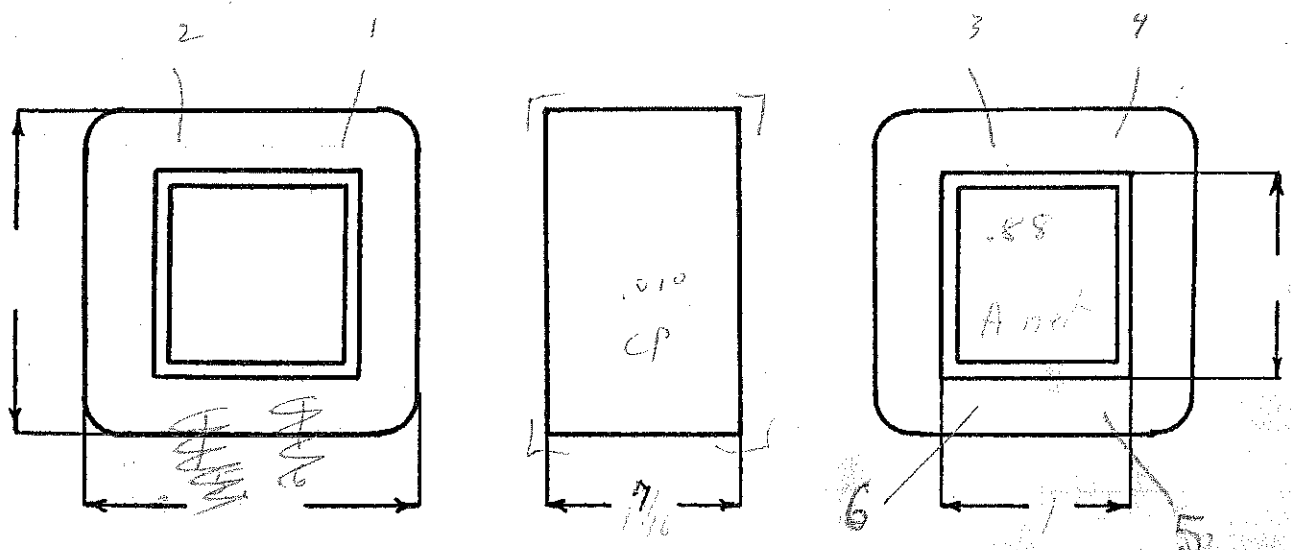
Winding		1-2 P11		3-4 P11		5-6 P11	
Turns		720 720		88 88		88 88	
Taps		—		—		—	
Wind. Lgth.		1 1/4		1 1/4		1 1/4	
Wire Size		# 28		# 28		# 28	
T. P. L.		78-10L		48-2L		48-2L	
Finish		87%		86%		90%	
Type Lead		5-0 #22 to logs P.B.		5-0 #22 to logs P.B.		5-0 #22 to logs P.B.	
Lead Lgth.		cut 9" 3		cut 9" 3		cut 9" 3	
Layer Insul.		30 #		30 #		30 #	
Test Volt.		1500		2000		2500	
Wrapper		.15 1L010VC		.053 1L010VC		.103 1L010VC	

TUBE 7L007 6K 1000 1000 IMPREGNATION V. a. m. 1000 1000

CORE 1X1 GA. 2 1/4 GRADE 1000 STACK 20X12000

MOUNTING D - Leads

wn = 68%



DESIGNED BY S. Babcock

DATE 10-26-47

DESIGN AND TEST DATA

Rating:

Sec VA: 24

Pr VA: 33

$I_p = 287 \text{ ma}$

Winding		Pr		FIL		FIL	
Mean Turn		4.92		5.78		6.28	
Resistance 25° c		20.9		.92		1.00	
Pounds Copper		.155		.0695		.0755	
Copper Density		557		509.3		509.3	
Ratio Volts		115		12.0		12.0	
Test to Ground		1500		7500		7500	

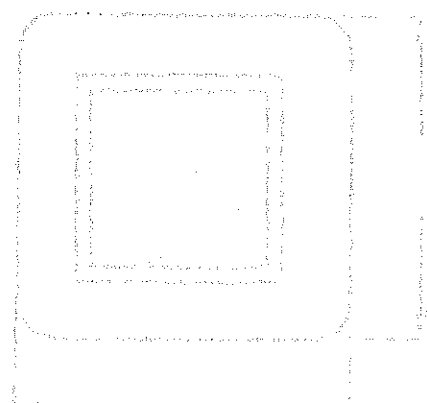
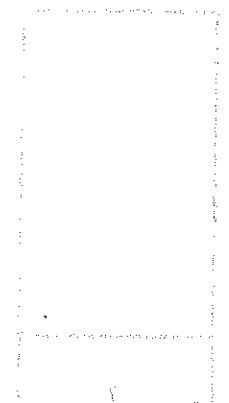
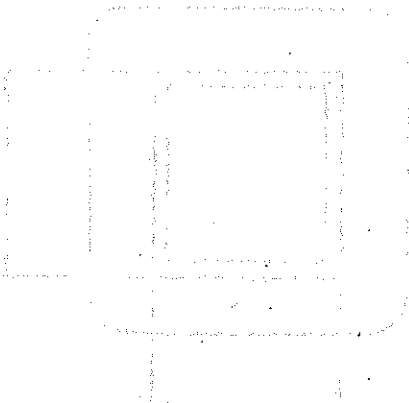
Iron Induction 11.9 @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

- 1-2 Black
- 3-4 Green
- 5-6 Brown



Filament

New Stock

117 V @ 50/60 v to

12V @ 1a.

12V @ 1a.

SPEC. NO. F 680

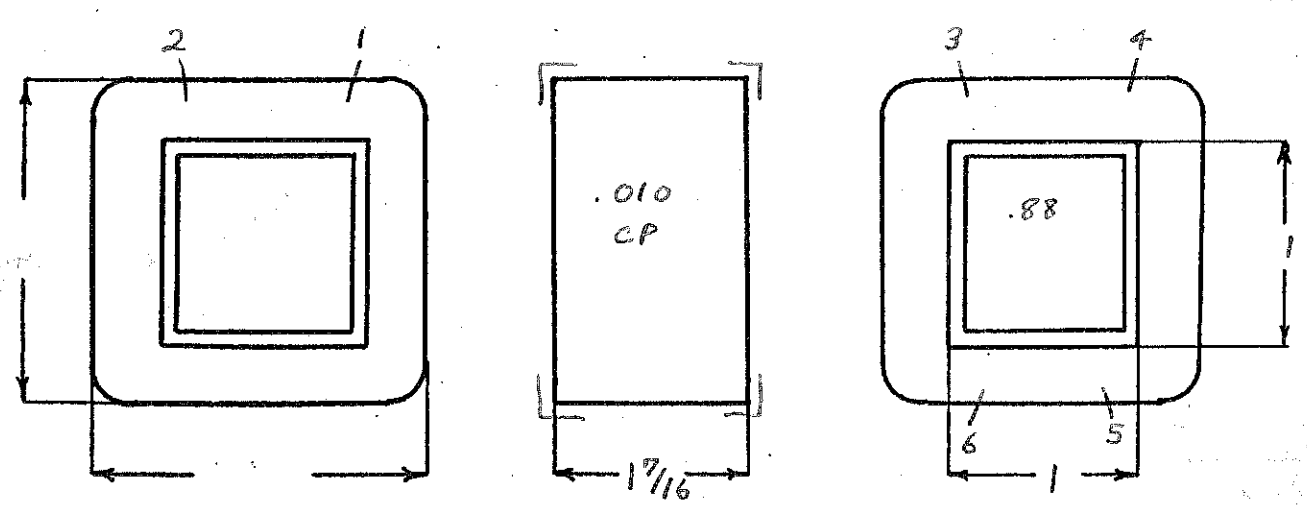
Rev 8634

Winding	1-2 Pri	3-4 Fil	5-6 Fil				
Turns	780	88	88				
Taps	—	—	—				
Wind. Lgth.	1 1/4	1 1/4	1 1/4				
Wire Size	#28	#23	#23				
T. P. L.	78-10L	44-2L	44-2L				
Finish Pitch	8770	8670	8670				
Type Lead	#22 P.B.	#22 P.B.	#22 P.B.				
Lead Lgth.	cut 9"	cut 9"	cut 9"				
Layer Insul.	30#	50#	50#				
Test Volt.	1500	2500	2500				
Wrapper	2L003CA 1L50# 1L010VC	2L003CA 1L50# 1L010VC	2L007GA				

TUBE 7L007 GK+1L003CA IMPREGNATION Varnish

CORE 1 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D-Leads



DESIGNED BY S. BABCOCK

DATE 10-21-47.

DESIGN AND TEST DATA

Rating:

$Sec VA = 24$
 $Pri VA = 33$
 $I_p = 287 ma.$

Winding	<i>Pri</i>	<i>Sec</i>	<i>Sec</i>			
Mean Turn	4.92	5.78	6.28			
Resistance 25° c	20.9	.92	1.00			
Pounds Copper	.155	.0695	.0755			
Copper Density	557	509.5	509.5			
Ratio Volts	115	12.0+	12.0+			
Test to Ground	1500.	2500	2500			

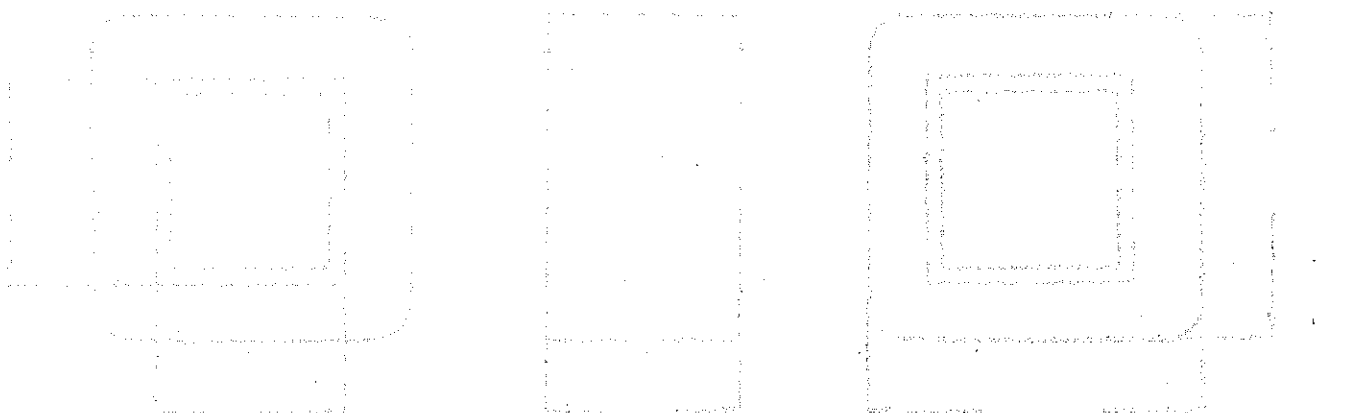
Iron Induction 11.9 @ 50 Cycles

Exciting Current 44 m.a. amperes @ 117 volts 60 cycles on 1-2

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

Remarks:

- 1-2 Black
- 3-4 Green
- 5-6 Brown



Filament

New Stock

117V @ 50/60 Hz

12V @ 50

12V @ 50

SPEC. NO. F 682

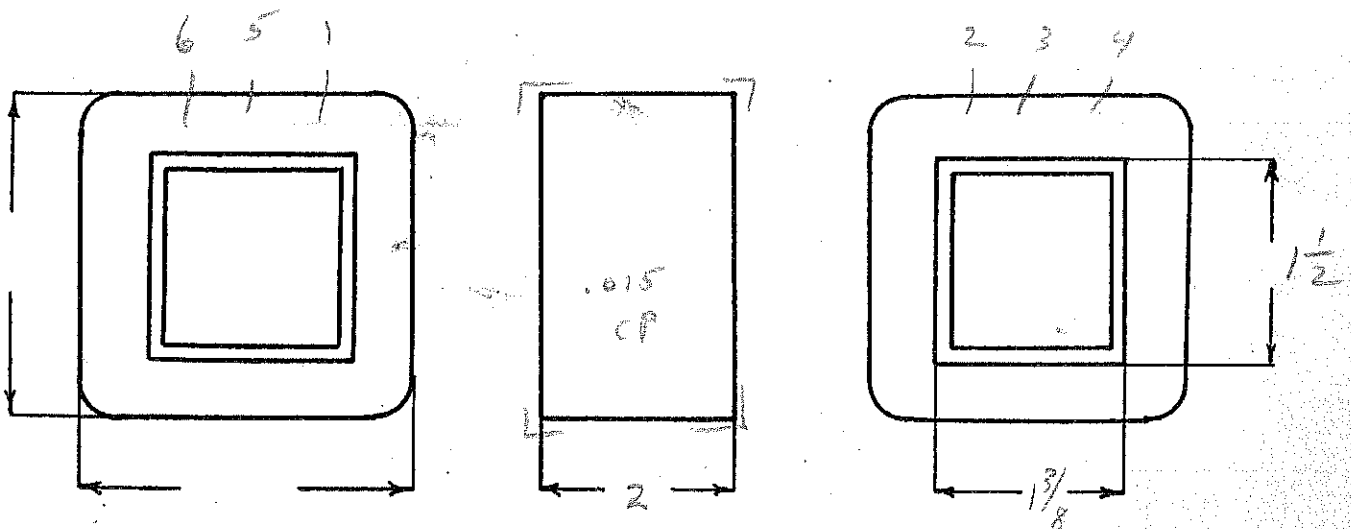
Winding	1-2 Pri	3-4 Fil	5-6 Fil				
Turns	375	42	42				
Taps	—	—	—				
Wind. Lgth.	1 3/4	1 3/4	1 3/4				
Wire Size	# 21	# 16	# 16				
T. P. L.	54-76	21-24	21-24				
Finish	92%	63%	63%				
Type Lead	w.o. sleeve	w.o. sleeve	w.o. sleeve				
Lead Lgth.	cut 15"	cut 14"	cut 14"				
Layer Insul.	50#	1L010CP	1L010CP				
Test Volt.	1500	2500	2500				
Wrapper	1L010CP	3L0076A	3L0076A				

TUBE 5L0106K IMPREGNATION Varnish

CORE 1 3/8 x 1 1/2 GA. 24 GRADE D STACK 2X2

MOUNTING A

wm = 81%



DESIGNED BY S. Babcock

DATE 4-15-49

DESIGN AND TEST DATA

Rating:

Sec VA = 1
 POUVA = 1
 Ip = 1.31a

Winding	PRI	FIL	FIL				
Mean Turn	6.95	8.29	9.29				
Resistance 25° c	2.83	.119	.133				
Pounds Copper	.538	.23	.257				
Copper Density	618	517	517				
Ratio Volts	117	12.1	12.0				
Test to Ground	1500	2500	2500				

Iron Induction 12 Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black
 3-4 Green
 5-6 Brown

filament

New stock

117 V @ 50/60 ~ To

12 V @ 5a

12 V @ 5a

SPEC. NO. F 682

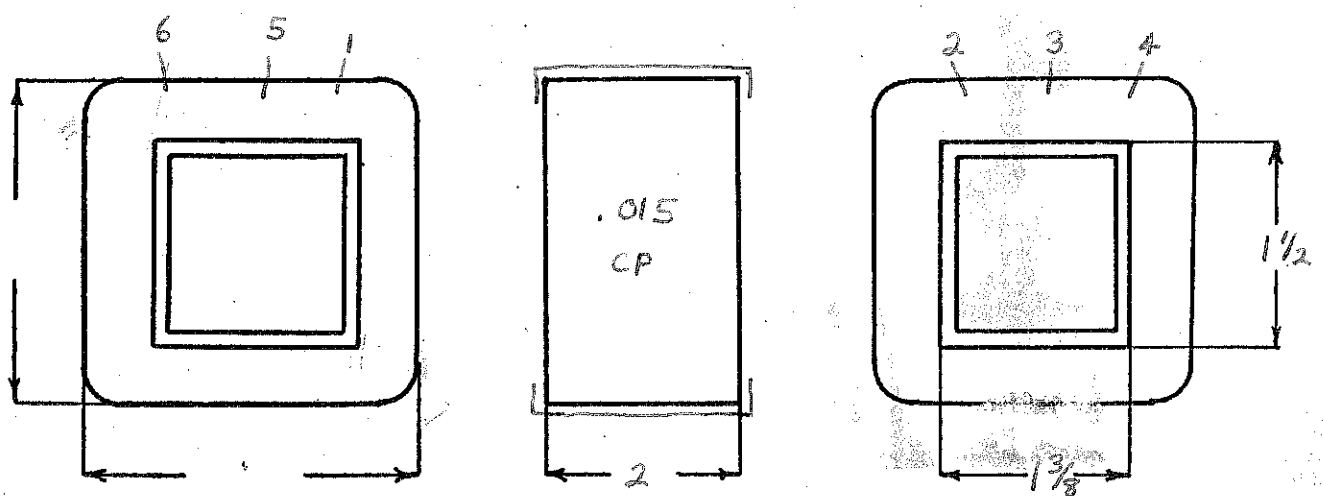
Winding	1-2 Pri	3-4 Fil	5-6 Fil		Pri	Sec	
Turns	375	42	42		1-54	1-21	
Taps	-	-	-		2-108	2-42	
Wind. Lgth.	1 3/4	1 3/4	1 3/4		3-162		
Wire Size	#21	#16	#16		4-216		
T. P. L.	54-7L	21-2L	21-2L		5-270		
Finish Pitch	92%	63%	63%		6-324		
Type Lead	w. o. sleeve	w. o. sleeve	w. o. sleeve		7-375		
Lead Lgth.	cut 15"	cut 14"	cut 14"				
Layer Insul.	80#	1L010CP	1L010CP				
Test Volt.	1500	2500	2500				
Wrapper	1L020K 1L010CP	1L020K 3L007GA	2L007GA				

TUBE 5L010 GK+1L0012CA IMPREGNATION Varnish

CORE 1 3/8 x 1 1/2 GA. 24 GRADE D STACK 2x2

MOUNTING A

wn = 81%



DESIGNED BY S. BABCOCK

DATE 4-15-49

DESIGN AND TEST DATA

Rating:

Sec VA = 120
Pri VA = 153.5
I_p = 1.31a

Winding	Pri	Tail	Tail			
Mean Turn	6.95	8.29	9.29			
Resistance 25° c	2.83	.117	.133			
Pounds Copper	.538	.23	.257			
Copper Density	618	517	517			
Ratio Volts	117	12.1	12.0			
Test to Ground	1500	2500	2500			

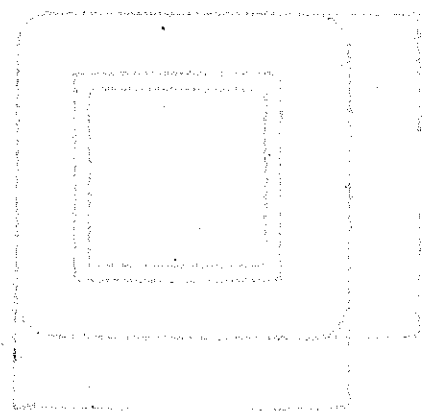
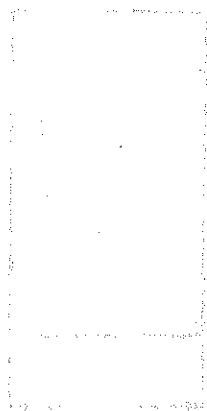
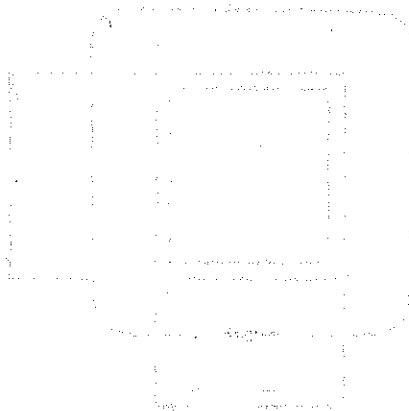
Iron Induction 12 Kg @ 50 Cycles

Exciting Current 30 ma amperes @ 37.5 volts 60 cycles on Pri

Induced Test: Apply 117 Volts at 60 Cycles on Sec with grounded

Remarks:

- 1-2 Black
- 3-4 Green
- 5-6 Brown



Filament

New Stock

117V @ 50/60 ~ to

24V ct @ 700 mA

SPEC. NO. F 684
22-8631

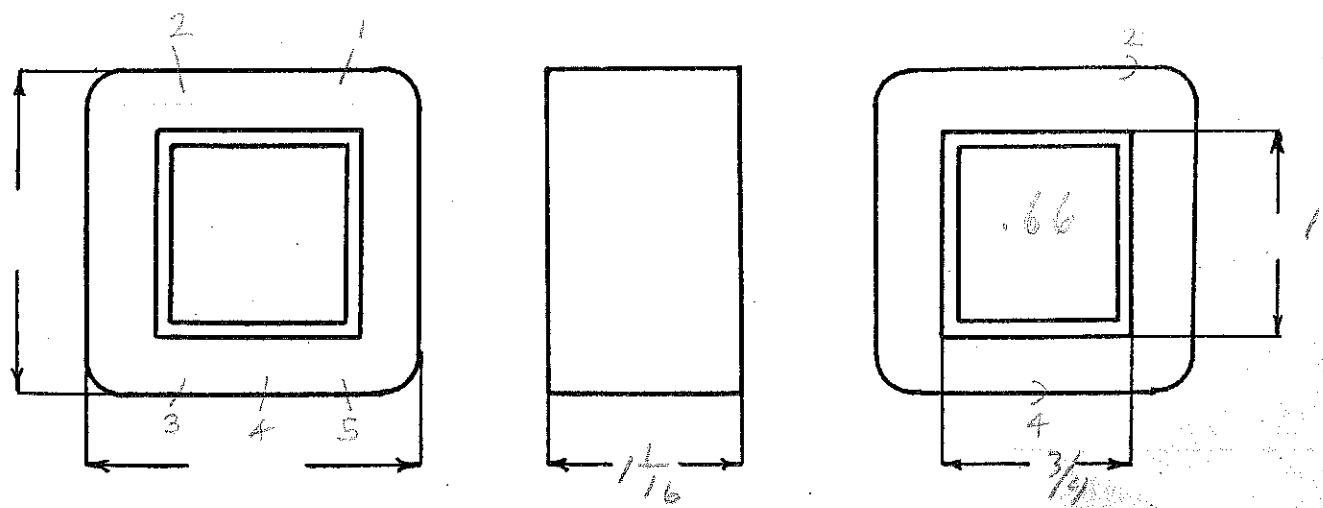
Winding	1-2 Pri	3-4-5 Sec				
Turns	880	210				
Taps	—	105				
Wind. Lgth.	7/8	7/8				
Wire Size	# 30	# 25				
T. P. L.	68-132	35-66				
Finish	88%	90%				
Type Lead	# 22 P. B.	# 22 P. B.				
Lead Lgth.	cut 10"	cut 10"				
Layer Insul.	30#	40#				
Test Volt.	1500	1250				
Wrapper	12005V6	220056A				

TUBE 4L0106K IMPREGNATION Varnish

CORE 3/4 X 1 GA. 24 GRADE D STACK 2 X 2

MOUNTING D - Leads

wn = 92%



DESIGNED BY S. Babcock

DATE 10-13-47

DESIGN AND TEST DATA

Rating:

Sec VA = 16
 Pri VA = 23
 Ip = 208 ma

Winding	Pri	Sec				
Mean Turn	4.42	5.45				
Resistance 25° c	35.0	3.15				
Pounds Copper	.104	.094				
Copper Density	483	458				
Ratio Volts	117	24				
Test to Ground	1500	1250				

Iron Induction 13.6Kg @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1-2 Black

3-4-5 Green

117 V @ 50/60 ~ to
24V C.T. @ 700ma.

New stock

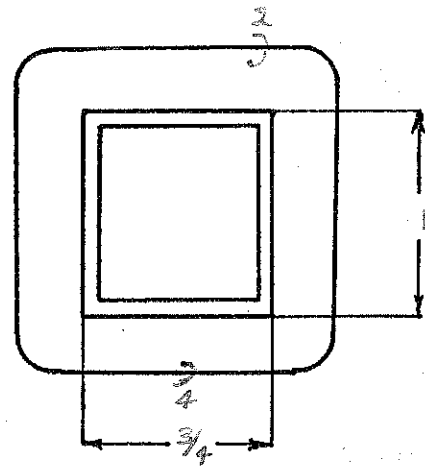
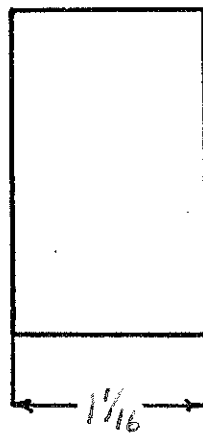
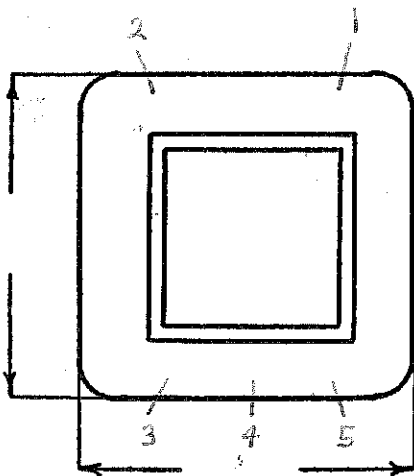
SPEC. NO. F 684

Winding	1-2 Pri	3-4-5 Sec				
Turns	880	210				
Taps	-	105				
Wind. Lgth.	7/8	7/8				
Wire Size	#30	#25				
T. P. L.	68-13L	35-6L				
Finish	88%	90%				
Type Lead	#22 P.B.	#22 P.B.				
Lead Lgth.	cut 10"	cut 10"				
Layer Insul.	30#	40#				
Test Volt.	1500	1250				
Wrapper	3L0012CA 1L40# 1L005YC	2L005GA				

TUBE 5L010GH + 1L0012CA IMPREGNATION Varnish

CORE 3/4 x 1/4 GA. 24 GRADE D STACK 2x2

MOUNTING D-Leads



DESIGNED BY S. BABCOCK

DATE 10-13-47

DESIGN AND TEST DATA

Rating:

Sec VA = 16.8
Pri VA = 23.9
I_p = 208 ma.

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.42</i>	<i>5.45</i>				
Resistance 25° c	<i>35.0</i>	<i>3.15</i>				
Pounds Copper	<i>.104</i>	<i>.094</i>				
Copper Density	<i>483</i>	<i>458</i>				
Ratio Volts	<i>117</i>	<i>24</i>				
Test to Ground	<i>1500</i>	<i>1250</i>				

Iron Induction *13.6 kg* @ *50* Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

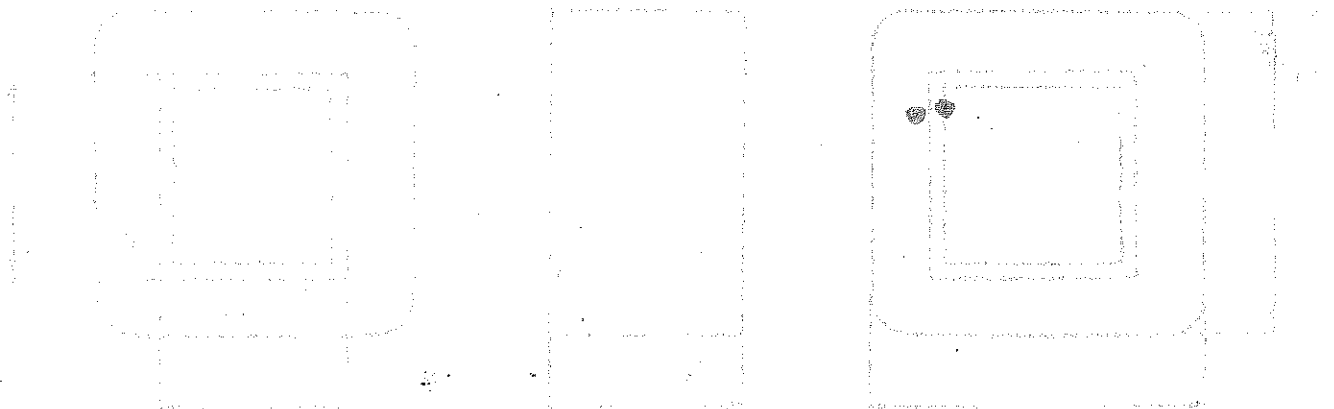
Induced Test: Apply _____ Volts at _____ Cycles _____ on _____ with _____ grounded

Remarks:

1-2 Black

3-4-5 Green

4 Green-white



Belt Ranging

New

17V @ 1600 RPM

24V @ 1200 RPM

Intermittent

SPEC. NO.

F-686

SEE 9652

Winding	1-2 PRI	3-4 SEC					
Turns	1070	396					
Taps	—	—					
Wind. Lgth.	1 1/16	1 1/16					
Wire Size	#29	#25					
T. P. L.	77-146	50-62					
Finish	88% Pitch	90% Pitch				82.0	
Type Lead	#14 TYPER	#14 TYPER					
Lead Lgth.	8"	8"					
Layer Insul.	30 #	40 #					
Test Volt.	1500	1000					
Wrapper	1605VC	2L0056A					

TUBE

40.1.0.6K

IMPREGNATION

VARNISH

CORE

7/8 x 3/4 GA. 24

GRADE

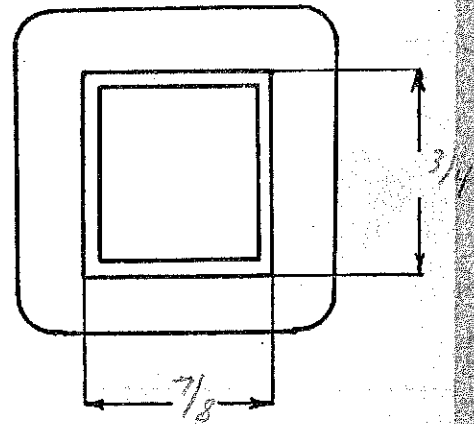
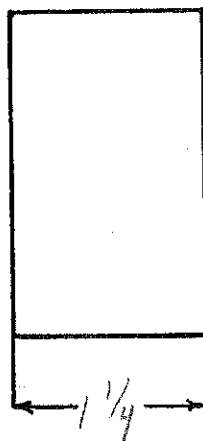
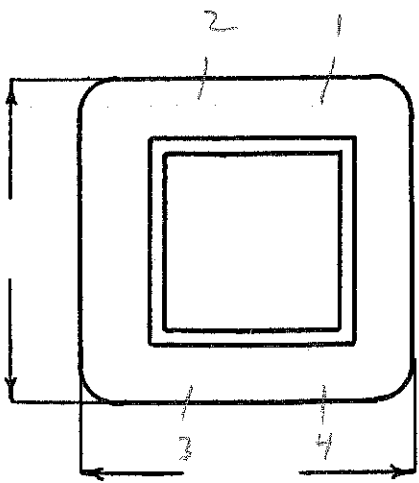
D

STACK

12X12

MOUNTING

wn = 86%



DESIGNED BY

F. Frazer

DATE

10-23-46

DESIGN AND TEST DATA

Rating: _____

Sec VA = 25
 Pri VA = 37
 $I_p = 316$ mm
 $I_s = 104$ a

Winding	Pri	Sec				
Mean Turn	4.22	5.5°				
Resistance 25° c	31.5	4.51				
Pounds Copper	.147	.134				
Copper Density	401	308				
Ratio Volts	117	24				
Test to Ground	1500	1000				

Iron Induction 13.2 K @ 50 Cycles

Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks: _____

1 - white
 2 - 3 - 4 - Black



Bell Ringing

New stock

117 V @ 50/60 ~ to

24 V @ 1a. Intermittent

SPEC. NO. **F 686**

SEE 9652

Winding	1-2 Pri	3-4 Sec				
Turns	1070	296				
Taps	—	—				
Wind. Lgth.	1'16	1'16				
Wire Size	# 29	# 25				
T. P. L.	77-14L	50-6L				
Finish	88%	90%	WO TOLUGS			
Pitch						ATTACH TYPED
Type Lead	# 14 Type R	# 14 Type R				LEAD AFTER
Lead Lgth.	3"	3"		#26 TC TOLUGS		STACKING
Layer Insul.	30#	40#				
Test Volt.	1500	1000				
Wrapper	HL003CA HL005VC	2L005GK 2L005GA				

TUBE ^{2L 006} 5L 007 GK HL 0012 CA IMPREGNATION Varnish

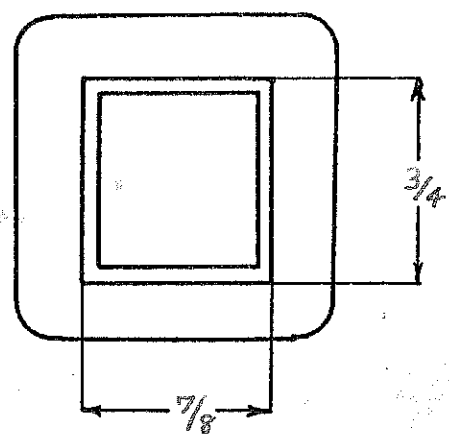
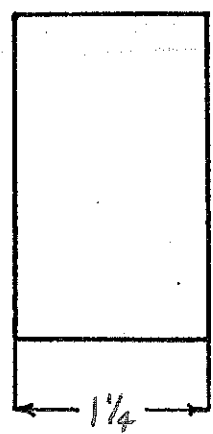
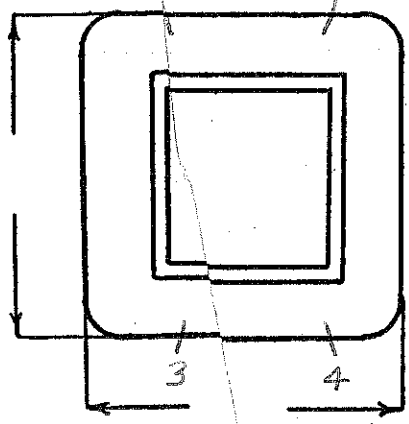
CORE 7/8 x 3/4 GA. 24 GRADE D STACK 2x2

MOUNTING S

mn = 86%

Hadley decal with "F 686"

Zinc Chromate Primer
Black Lacquer



DESIGNED BY F. RAZEE

DATE 10-23-46

DESIGN AND TEST DATA

Rating:

Sec VA = 25
Pri VA = 37
I_p = 316 ma
I_s = 1.04 a

Winding	<i>Pri</i>	<i>Sec</i>				
Mean Turn	<i>4.22</i>	<i>5.50</i>				
Resistance 25° c	<i>31.5</i>	<i>4.51</i>				
Pounds Copper	<i>.147</i>	<i>.134</i>				
Copper Density	<i>401</i>	<i>308</i>				
Ratio Volts	<i>117</i>	<i>32.4</i> <i>24</i>				
Test to Ground	<i>1500</i>	<i>1000</i>				

Iron Induction *13.2 kg* @ *50* Cycles

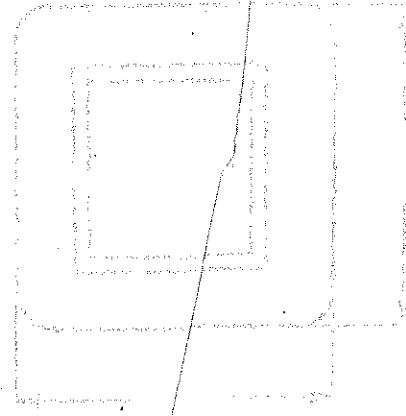
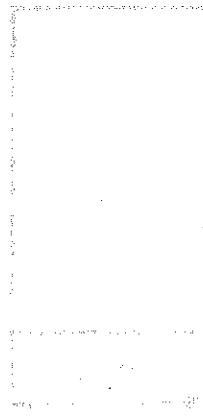
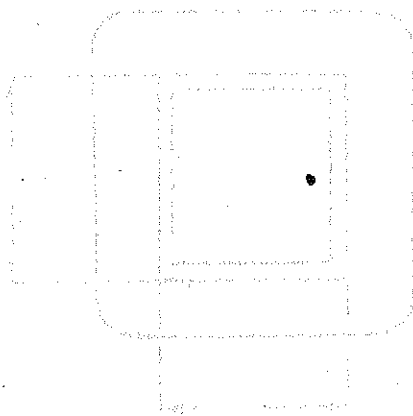
Exciting Current _____ amperes @ _____ volts 60 cycles on _____

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

Remarks:

1 - white

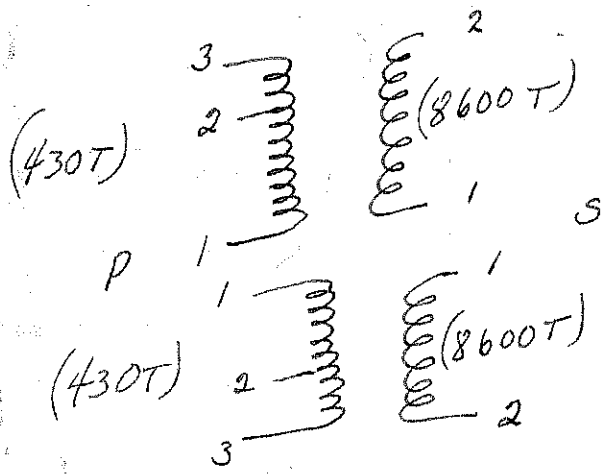
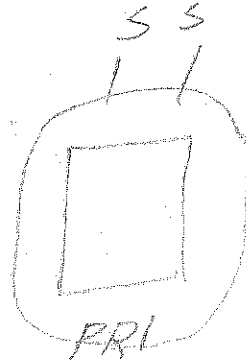
2-3-4 Black



Pri. two windings 125 ohm tap at 50 ohm to be used Spec # 699
 in series or parallel to obtain 500,200, 125 or
 50 ohms. Sec two 50,000 ohm windings to give 200,000
 ohms in series.

	Sec.	Pri
Turns	8600	430
Taps	-	273
Wind Length	1/2	1/2
Wire size	41	29
Turns per layer	149-58	38-12
Kind term	sil br	wire only
Length	3	3
Layer ins	16#	30#
Wrapper		
Tube	71 007	2L005GA
Core	1 x 7/8	29 ga annealed 2x2

LL 007 VC
 4L GL.



Made up in reverse assembly



Supply diagram as per

