TRANSFORMER ASSEMBLY FABRICATION PROCEDURE

REV	DESCRIPTION	BY	DATE
A	INITIAL RELEASE	HDH	23MAY96
B	REVISED TO SHOW -04,-05,-06 TRANSFORMERS	PCB	03OCT98
C	TRANSFORMER SHIELD	PCB	16FEB98

1) INSTALL ITEM 1, BOBBIN, ON ITEM 20, FIXTURE. USE EXACTO KNIFE TO REMOVE ANY MOLDING FLASH FROM WINDING AREA ON BOBBIN. EVEN A SMALL AMOUNT OF UNEVENNESS ON THE WINDING SURFACE WILL MAKE IT DIFFICULT TO MAKE THE TURNS LIE EVENLY. USE THE TIP OF THE EXACTO KNIFE TO SCRIBE A SERIAL NUMBER ON THE TOP OF THE BOBBIN IN THE AREA SHOWN IN FIGURE 2. USING ITEM 9, LAP SOLDER AN 8 CM LONG PIECE OF #26 BUS WIRE TO PIN 4 OF ITEM 1 AS SHOWN IN FIGURE 2.

2) REMOVE BOBBIN FROM FIXURE AND WASH THREE TIMES WITH ITEM 8, USING A TRIMMED ACID BRUSH TO MAKE SURE ALL SOLDER FLUX IS REMOVED. BLOW DRY WITH OIL-FREE COMPRESSED AIR AND RE-INSTALL BOBBIN ON ITEM 20, INSURING THAT HOLE IN END CAP IS ALIGNED WITH THE V-SLOT IN THE BOBBIN. INSTALL ITEM 20 ON ITEM 14, COIL WINDING MACHINE, AND POSITION ON WORK BENCH IN FIELD OF VIEW OF ITEM 15, MICROSCOPE. POSITION THE EQUIPMENT SO THAT THE OPERATOR CAN COMFORTABLY VIEW THE FIXTURE WITH BOBBIN THRU THE MICROSCOPE.

3) REMOVE THE SUPPLY SPOOL OF ITEM 5 FROM ITS PROTECTIVE BOX. CAREFULLY EXAMINE THE OUTER SURFACE OF THE WIRE ON THE SPOOL FOR ANY SIGN OF DAMAGE TO THE WIRE. REJECT SPOOL IF DAMAGED. MOUNT THE SPOOL ON ITEM 17 AND WIND APPROX 90 TURNS ONTO ITEM 19. SECURE ENDS OF WIRE ON ITEM 19 AND ON THE SUPPLY SPOOL USING A SHORT STRIP OF ITEM 10. MOUNT ITEM 19 ON THE BASE OF ITEM 16. THREAD THE WIRE THRU ITEM 16, AND POSTION THE ASSEMBLY ON A TABLE ABOUT 160 CM BEHIND THE BENCH WITH ITEMS 14 AND 15. SEE FIGURE 3.

4) ROTATE THE SHAFT OF ITEM 14 SO THAT THE V-SLOT IN THE BOBBIN AND PIN 1 IS POINTING DIRECTLY UPWARD. RESET THE TURNS COUNTER. THREAD THE FREE END OF THE #37 WIRE THRU THE V-SLOT AND PULL THRU ABOUT 30 CM. WRAP ABOUT 3 TURNS AROUND THE POST ON THE END CAP OF ITEM 20, AND SECURE IT WITH A SHORT PIECE OF ITEM 10. CUT OFF THE EXCESS WIRE. USE ITEM 11 TO APPLY A SIDE FORCE TO THE RIGHT TO KEEP THE WIRE AGAINST THE RIGHT FLANGE OF THE BOBBIN, AND WIND ON ONE TURN. MAKE SURE THAT AT THE POINT WHERE THE WIRE EXITS THE BOBBIN IT LAYS DOWN AGAINST THE BOBBIN SO THAT THE LAST TURN ON THE SECOND LAYER WILL GO OVER, NOT ALONG SIDE OF THE FIRST TURN OF THE FIRST LAYER. CONTINUE TO ADD WIRE TO THE FIRST LAYER, ALWAYS KEEPING A SIDE FORCE ON THE WIRE USING ITEM 11, SO THAT THE TURNS LIE AGAINST EACH OTHER. KEEP A TENSION OF APPROX 20 GRAMS ON THE WIRE AS IT IS WOUND. THE FIRST LAYER WILL TAKE A NUMBER TURNS AS SHOWN IN THE TABLE BELOW. AS THE LAST TURN IS PUT ON, USE ITEM 11 TO PUSH THE WIRE FLAT ONTO THE BOBBIN SO THAT THERE IS NO GAP BETWEEN THE TURNS ON THE FIRST LAYER. THEN CONTINUE TO ADD ADDITIONAL TURNS, ALLOWING THE WIRE TO RIDE UP AND START THE SECOND LAYER. AS THE SECOND LAYER STARTS, USE ITEM 11 TO APPLY A SIDE FORCE TO THE LEFT TO KEEP THE TURNS CLOSELY PACKED. THESE "TURN OVERS" AT THE END OF EACH ROW ARE THE MOST CRITICAL PART OF THE WINDING TASK. ANY GAPS IN THE LAYER WILL PREVENT THAT LAYER FROM HAVING THE REQUIRED NUMBER OF TURNS, AND WILL ADDITIONALLY CAUSE A GROWING GAP TO APPEAR ON EVERY LAYER ABOVE. RECORD THE ACTUAL NUMBER OF TURNS ON EACH LAYER IN THE TABLE ON PAGE 4.

PRIMARY TURNS		SEC	TICKLER
DASH NO.	N1	N3	N2
-01	40	600 #37	2#34
-02	28	600 #37	2#34
-03	30	600 #37	2#34
-04	16	324 #34	1 #34
-05	18	324 #34	1 #34
-06	17	324 #34	1 #34

NOTES:

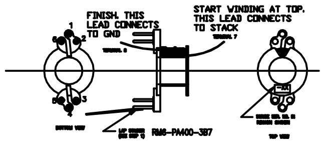

FIGURE 2

VIEW OF BOBBIN

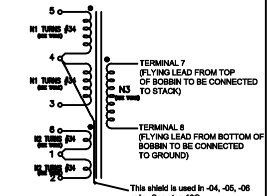

FIGURE 1

ELECTRICAL SCHEMATIC

ITEM NO.	REQ'D	PART NO.	DESCRIPTION	MANUFACTURER
24	A/R		TAPE, COPPER FOIL, .001in, .5 INCH WIDE	SCOTCH
23	A/R		TAPE, MYLAR, .0005in, .25 INCH WIDE	SCOTCH
22	A/R	TX-609	CLEAN ROOM WIPE	TEXWIPE
21	A/R	STS 24	TUBING, TEFLON	ICO-RALLY
20		A0180A	FIXTURE, HV TRANSFORMER WINDING	UCB
19		A0181A	FIXTURE, WIRE SPOOL	UCB
18		A0182A	FIXTURE, BOBBIN, SIDEWAYS MOUNT	UCB
17		A0183A	FIXTURE, WIRE SUPPLY SPOOL	UCB
16		MODEL 3000	WIRE TENSIONER	AZONIC
15		STEREOZOOM 4	MICROSCOPE, X7 TO X30 ZOOM	CAMBRIDGE
14		4A	COIL WINDING MACHINE	INNES INSTRU
13		1430	OVEN, VACUUM, W/ ROT FEEDTHRU	VWR
12	A/R		STRIPPING SOLUTION, HAPT	
11		A0185A	TOOL, WIRE GUIDING, DELRIN	UCB
10	A/R	PT422 02233GU	TAPE, TEFLON, 1/4"	PERMACEL
9	A/R	QQ-S-571-E-WRAP-3	SOLDER, SN62PB36AG02 (2% SILVER)	KESTER
8	A/R		ETHEL ALCOHOL, 95%, NOT DENATURED	
7	A/R	SCOTCHCAST 280	TWO PART UNFILLED EPOXY	3M
6	A/R	MPD-313-008, PG. 8	STAKING COMPOUND PER GSFC SPEC	GSFC
5	A/R		MAGNET WIRE, #37 HAPT	
4	A/R		MAGNET WIRE, #34 HAPT	
3	2	991-255-00 / C1812-11	CLIP, RETAINING, FOR CORE	PHILIPS/MAGNETICS
2	1 PR.	RM6-PA400-3B7 / RG41812-25	CORE, FERRITE (-01.-02,-03 / .04,-05,-06)	PHILIPS/MAGNETICS
1	1	RM6-PCB1-6 / PCB1812-61	BOBBIN	PHILIPS/MAGNETICS

LIST OF MATERIALS

TITLE: HVPS TRANSFORMER ASSEMBLY

THIS DWG MADE ON AUTOCAD REV 12

FILE NAME: WINDSPEC

DWG. NO. 8179 REV. C

DRAWN BY: H. HEETDERKS 23 MAY, 1996 SHEET 1 OF 4

FOR -01,-02,-03

5) NOTE THAT LAYERS 12 AND 13 HAVE FEWER THAN THAN THE FULL NUMBER OF TURNS ON THEM. THIS IS SO THAT LAYER 13 WILL FINISH EXACTLY AT THE BOTTOM FLANGE OF THE BOBBIN. IF THE FULL NUMBER OF TURNS IS PUT ON LAYER 12, THEN LAYER 13 WILL REACH THE TOTAL 600 TURNS WITH SPACE FOR ABOUT 8 TURNS REMAINING. THIS WILL FORCE THE LAST TURN TO CROSS AT AN ANGLE, WHICH WILL GIVE LESS MARGIN AGAINST A SHORT CIRCUIT TO THE PRIMARY WINDING WHICH WILL BE PUT ON NEXT.

6) AFTER REACHING THE FINAL TURN, ROUTE THE WIRE THRU THE SLOT BETWEEN PINS 1 AND 6, AND WRAP APPROX 3 TURNS AROUND THE BODY OF THE WINDING FIXTURE. SECURE IT IN PLACE WITH ITEM 10, AND CUT OFF THE EXCESS WIRE. THIS WIRE IS THE GROUND SIDE OF THE HIGH VOLTAGE SECONDARY. BE VERY CAREFUL TO AVOID ANY BENDING OF THESE WIRES IN THE FOLLOWING OPERATIONS, PARTICULARLY AT THE POINT WHERE THE WIRE EMERGE FROM THE BOBBIN.

7) REMOVE AND DISCARD THE UNUSED WIRE FROM ITEM 17, AND USE THE PROCEDURE OF STEP 3) TO WIND APPROX 10 TURNS OF ITEM 4 ONTO ONE SIDE OF THE REEL OF ITEM 17. THEN WIND ANOTHER 10 TURNS ON THE OTHER SIDE OF THE REEL. THREAD THE TWO WIRE ENDS TOGETHER THRU THE MECHANISM OF ITEM 16 SO AS TO PROVIDE TWO WIRES WHICH WILL BE WOUND TOGETHER BIFILAR.

8) ROTATE THE FIXTURE ITEM 20 SO THAT PIN 4 IS DIRECTLY UPWARD AND RESET THE TURNS COUNTER. THREAD THE BIFILAR (TWO WIRES TOGETHER) #34 WIRE THRU THE SLOT BETWEEN PINS 3 AND 4, WIND APPROX 3 TURNS AROUND THE BODY OF ITEM 20, AND SECURE WITH ITEM 10. WIND THE PRIMARY AS SHOWN IN THE TABLES ON PAGE 4

9) FOLLOWING THE LAST TURN, BRING THE BIFILAR WIRES OUT THRU THE SLOT BETWEEN PINS 3 AND 4, WIND APPROX 3 TURNS AROUND THE BODY OF ITEM 20, AND SECURE WITH ITEM 10. CUT OFF THE EXCESS WIRE.

10A) USED FOR -01 ONLY:
THE FINAL WINDING IS THE 2 TURN BIFILAR BASE DRIVE. PREPARE FOR THIS BY THREADING THE BIFILAR SUPPLY WIRE UNDERNEATH THE END OF THE PRIMARY WHICH WAS BROUGHT OUT IN STEP 9). THEN CONTINUE THIS 1/2 A TURN AROUND THE BOBBIN AND BRING THE ENDS OUT THRU THE SLOT BETWEEN PINS 1 AND 6. WRAP THE WIRE ENDS APPROX 3 TURNS AROUND THE FIXTURE BODY AND SECURE WITH ITEM 10. THE BASE DRIVE WINDING SHOULD LIE ALONG THE BOTTOM FLANGE FOR THE FIRST 1/2 TURN, THEN CROSS OVER TO THE TOP WITH 1/2 A TURN ALONG THE TOP FLANGE. THEN CROSS BACK AND EXIT THRU THE SLOT BETWEEN PINS 1 AND 6. NOTE THAT THE CROSS OVER OCCURS OVER THE PART OF THE PRIMARY WHICH IS ONLY 2 TURNS DEEP.

10B) USED FOR -02 AND -03:
THE FINAL WINDING IS THE 2 TURN BASE DRIVE. BRING THE BIFILAR SUPPLY WIRE THRU THE SLOT BETWEEN PINS 1 AND 6, WRAP THE WIRE APPROX 3 TURNS AROUND THE FIXTURE BODY AND SECURE WITH ITEM 10. WRAP THE BIFILAR WIRES APPROX 1/2 A TURN ALONG THE BOTTOM FLANGE, THEN ACROSS THE BOBBIN AND ALONG THE TO FLANGE FOR ABOUT 1/2 A TURN. THEN CROSS BACK AND EXIT THRU THE SLOT BETWEEN PINS 1 AND 6. WRAP APPROX 3 TURNS AROUND THE FIXTURE BODY AND SECURE WITH ITEM 10.

10C) USED FOR -04, -05, -06
MEASURE AROUND THE FINISHED COIL. CUT A PIECE OF ITEM 24 (FOIL) APPROXIMATELY 3MM WIDE AND LONG ENOUGH TO ENCIRCLE THE COIL + A FEW MILLIMETERS. PLACE A PARTIAL WRAP OF ITEM 23 AROUND THE EDGES TO PREVENT THEM FROM CUTTING THROUGH THE MAGNET WIRE INSULATION. TAKE THE WRAPPED PIECE OF FOIL AND ATTACH A SHORT PIECE OF ITEM 23 TO ONE END. AFFIX A SMALL MYLAR PIECE TO THE FOIL STICKY SIDE TO STICKY SIDE, THEN ATTACH THE FOIL, STICKY SIDE UP, TO THE COIL USING THE MYLAR TAPE. CONTINUE TO WRAP THE FOIL AROUND THE COIL UNTIL IT OVERLAPS ITSELF, BUT IS INSULATED FROM TOUCHING ITSELF BY THE MYLAR PIECE HOLDING THE FAR END TO THE COIL. TAKE ANOTHER SMALL PIECE OF MYLAR TAPE AND TAPE THE LOOSE END OF THE FOIL TO ITSELF, MAINTAING ELECTRICAL ISOLATION. WRAP ONE TURN OF ITEM 4 BIFILAR (TWO WIRES HELD TOGETHER) AROUND THE COIL ON TOP OF THE STICKY FOIL AND CONNECT AS IN FIGURE 1. TAKE A NARROW PIECE OF FOIL AND APPLY IT ON TOP OF THE TWO WIRES ALL THE WAY AROUND EXCEPT FOR A SMALL GAP. SOLDER THIS TOP PIECE OF FOIL TO THE BOTTOM PIECE IN ONE PLACE. MAKE A CONNECTION FROM THE FOIL SHIELD TO PIN 4 OF THE BOBBIN.

11) WRAP APPROX 2 TURNS OF ITEM 10 AROUND THE BODY OF THE BOBBIN SO AS TO HOLD ALL WINDINGS IN PLACE. THEN IN REVERSE ORDER TO THAT IN WHICH THEY WERE PUT ON, REMOVE THE TAPE SECURING THE ENDS OF EACH WINDING AND UNWRAP THE WIRE ENDS FROM AROUND THE FIXTURE BODY. STRAIGHTEN THE WIRES AND TRIM THE PRIMARY AND BASE DRIVE WIRES TO 3 CM LONG, AND THOSE FROM THE HV SECONDARY TO 5 CM. THEN SCRAPE ENOUGH INSULATION FROM THE END 2 MM OF THE PRIMARY AND BASE DRIVE WINDINGS TO MAKE CONTACT WITH AN OHM METER. DETERMINE WHICH PAIRS OF WIRES HAVE ELECTRICAL CONTINUITY, AND MARK THEM BY PUTTING A RIGHT ANGLE BEND 1 MM FROM THE END OF EACH SIDE OF ONE OF THE WINDING, WHILE DOING NOTHING TO THE ENDS OF THE OTHER WINDING. THEN ROUTE AND DRESS THE WIRES AS SHOWN IN FIGURE 4.

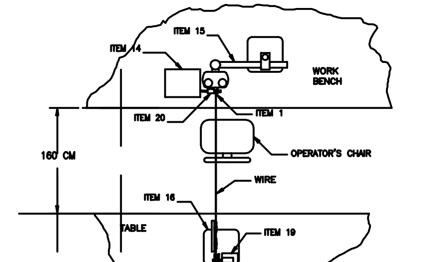

FIGURE 3

SET UP OF WORK AREA

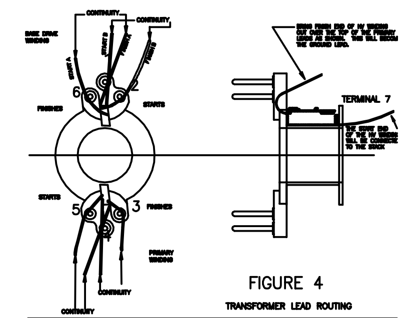

FIGURE 4

TRANSFORMER LEAD ROUTING

TITLE: HVPS TRANSFORMER ASSEMBLY

THIS DWG MADE ON AUTOCAD REV 12

FILE NAME:

DWG. NO. 8179 REV. C

DRAWN BY: H. HEETDERKS 23 MAY, 1996 SHEET 2 OF 4

12) BEND THE PRIMARY AND BASE DRIVE LEADS DOWN ALONG SIDE THE INSULATOR SO THAT THEY WILL REMAIN IN POSITION WHEN THE TAPE IS REMOVED FROM THE BODY. THEN CAREFULLY REMOVE THE TAPE. MAKE SURE THAT THE BASE DRIVE WINDING STAYS IN PLACE.

13) USE THE #26 BUS WIRE ATTACHED IN STEP 1) TO HANG THE BOBBIN IN A 120 DEG C. OVEN FOR 2 HOURS TO ANNEAL THE INSULATION ON THE MAGNET WIRE.

14) APPLY AN APPROX 1MM LAYER OF ITEM 6 TO EACH OF THE 6 PINS ON ITEM 1. THIS WILL PREVENT POTTING MATERIAL FROM GETTING ON THE PINS AT THE NEXT STEP AND WILL BE EASIER TO REMOVE PROIR TO SOLDERING. AVOID BRIDGING BETWEEN THE PINS.

15) ATTACH A 15 CM LONG PIECE OF #18 BUS WIRE TO THE ROTATING FEED THRU SHAFT INSIDE ITEM 13, OVEN. HANG THE BOBBIN(S) FROM THIS WIRE. (SEE FIGURE 5). SET THE OVEN TEMPERATURE TO 60 DEG C. PREPARE 75 GRAMS OF ITEM 7 IN A 250 ML BEAKER, AND PLACE THE BEAKER IN THE OVEN BELOW THE BOBBIN(S).

16) TURN ON THE VACUUM PUMP, CLOSE THE VENT VALVE, AND DEGAS THE MIXED POTTING AND THE BOBBIN(S) FOR 15 MINUTES. THEN SLOWLY ROTATE THE FEED THRU SO AS TO DROP THE BOBBIN(S) INTO THE BEAKER. CONTINUE PUMPING FOR ANOTHER 10 MINUTES.

17) VENT THE OVEN AND LEAVE AT ATMOSPHERIC PRESSURE FOR 10 MINUTES. THEN PUMP AGAIN FOR 15 MINUTES AND VENT.

18) REMOVE THE BOBBIN(S) FROM THE BEAKER AND HANG IN A 65 DEG C. OVEN. AFTER ONE HOUR USE A Q-TIP TO WICK OFF EXCESS POTTING MATERIAL FROM THE BOBBIN. LEAVE THE BOBBIN(S) IN THE OVEN FOR 23 MORE HOURS AT 65 DEG C. TO FULLY CURE THE POTTING.

19) MOUNT THE BOBBIN ON ITEM 18 MOUNTED ON ITEM 14. VIEW THE ASSEMBLY THRU ITEM 15.

20) USE A TWEEZER TO REMOVE THE STAKING FROM THE BOBBIN PINS. THEN RE-FORM THE PRIMARY AND BASE WINDING LEADS STRAIGHT OUT ALONG THE PINS TO WHICH THEY WILL BE ATTACHED AS SHOWN IN FIGURE 4. SLIDE A 1.5 CM LONG PIECE OF ITEM 21 ALONG EACH OF THE 8 PRIMARY AND BASE DRIVE LEADS AND POSITION IT 1 MM FROM THE POINT WHERE THE WIRE CROSSES THE BOBBIN INSULATOR AS SHOWN IN FIGURE 6. PUT 2 ML OF ITEM 12 INTO A 10 ML BEAKER AND DIP THE END OF A GLASS STIRRING ROD INTO THE STRIPPER AND TOUCH IT TO THE FAR END OF EACH PIECE OF ITEM 21 TO ALLOW THE STRIPPER TO BE WICKED INTO THE TUBE AND ALONG THE WIRE TO BE STRIPPED. BE EXTREMELY CAREFUL TO NOT ALLOW THE STRIPPER TO WICK ONTO ANY PART OF THE BOBBIN. THE STRIPPER WILL TAKE 3 TO 15 MINUTES TO SOFTEN THE INSULATION. DOING ONE LEAD AT A TIME, REMOVE THE TUBE AND WIPE OFF THE INSULATION USING A SMALL PIECE OF ITEM 22 AND A PAIR OF TWEEZERS. PINCH THE CLEAN WIPE WITH THE TWEEZER AND DRAW IT AWAY FROM THE BOBBIN. AFTER ALL LEADS ARE STRIPPED, CLEAN OFF THE EXCESS STRIPPER BY SQUIRTING IT WITH ITEM 8 WHILE BRUSHING THE AREA WITH AN ACID BRUSH. REMOVE THE BOBBIN FROM THE FIXTURE AND RINSE IN ITEM 8 AND DRY WITH OIL-FREE COMPRESSED AIR.

21) REPLACE THE BOBBIN ON ITEM 18 AND CLEAN ANY POTTING FROM THE PINS AND THE LEADS. WRAP EACH LEAD AROUND THE PIN TO WHICH IT IS TO CONNECT. LEAVE A SMALL GAP BETWEEN WRAPS TO FACILITE INSPECTION OF THE SUBSEQUENT SOLDERING. TRIM OFF THE PART OF THE LEAD WHICH WAS NOT STRIPPED. THE WRAPPED WIRE SHOULD NOT EXTEND MORE THAN 3 MM FROM THE BOTTOM OF THE PIN. SOLDER THE WIRES USING AN AMPLE AMOUNT OF ITEM 9 TO INSURE THAT ALL BARE COPPER IS COVERED. THEN WICK OFF THE SOLDER AND RE-SOLDER USING THE MINIMUM AMOUNT TO GET A GOOD NASA QUALITY SOLDER JOINT.

22) CLEAN THE ASSEMBLY USING THE PROCEDURE USED IN STEP 20).

23) CHECK THAT THERE IS NOT EXCESS POTTING ON THE BOBBIN BY FITTING IT INTO A PAIR OF ITEM 2 AND VERIFING THAT THE BOBBIN CAN MOVE IN THE CORE WHEN THE TWO CORE HALVES ARE PRESSED TOGETHER. REMOVE THE BOBBIN FROM THE CORE AND PLACE TWO 3 MM DIAMETER BALLS OF ITEM 6 INSIDE EACH CORE HALF. SEE FIGURE 7. ASSEMBLE THE BOBBIN INTO THE CORE WITH THE HALF OF THE CORE WHICH IS LABLED ON THE TOP. ATTACH THE CORE HALVES TOGETHER USING TWO OF ITEM 3. PRACTICE DOING THIS WITH AN EMPTY CORE BEFORE ATTEMPTING IT WITH A FLIGHT TRANSFORMER WITH WET STAKING MATERIAL. SET THE COMPLETED TRANSFORMER WITH ITS PINS STUCK INTO A PIECE OF .100 INCH GRID VECTOR BOARD TO INSURE THAT THE PINS ON THE BOBBIN ARE ALIGNED WITH THE PINS ON THE MOUNTING CLIPS. PUT THE ASSEMBLY IN A 65 DEG C. OVEN FOR 2 HOURS TO CURE THE STAKING COMPOUND.

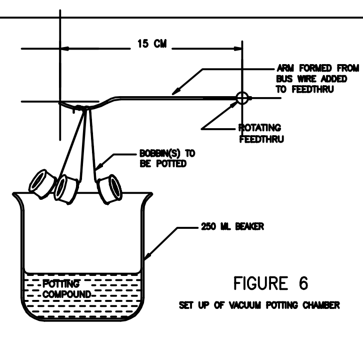

FIGURE 6

SET UP OF VACUUM POTTING CHAMBER

FIGURE 7

SHOWS STAKING IN CORE HALVES

TITLE: HVPS TRANSFORMER ASSEMBLY

THIS DWG MADE ON AUTOCAD LT RELEASE 3

FILE NAME:

DWG. NO. 8179 REV. C

DRAWN BY: H. HEETDERKS 23 MAY, 1996 SHEET 3 OF 4

WINDING TABLES FOR SECONDARY

DASH NO: -01, 02, 03

LAYER NUMBER	DESIGN CUM. TURNS	DESIGN TURNS ON LAYER	ACTUAL CUM. TURNS	TRANSFORMER SERIAL NO.
1	47	47		
2	93	46		
3	140	47		
4	187	47		OPERATOR
5	223	46		
6	280	47		
7	326	46		
8	372	46		
9	419	47		DATE
10	466	47		
11	512	46		
12	557	45		
13	600	43		

DASH NO: -04, 05, 06

LAYER NUMBER	DESIGN CUM. TURNS	DESIGN TURNS ON LAYER	ACTUAL CUM. TURNS	TRANSFORMER SERIAL NO.
1	36	36		
2	72	36		
3	108	36		
4	144	36		OPERATOR
5	180	36		
6	216	36		
7	252	36		
8	288	36		
9	324	36		DATE

WINDING TABLES FOR PRIMARY

DASH NO: -01

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	16	16
2	16	32
3	8	40

DASH NO: -02

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	15	15
2	13	28

DASH NO: -03

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	16	16
2	14	30

DASH NO: -04

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	9	9
2	7	16

DASH NO: -05

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	10	10
2	8	18

DASH NO: -06

LAYER NUMBER	TURNS THIS LAYER	CUM. TURNS
1	9	9
2	8	17

TITLE: HVPS TRANSFORMER ASSEMBLY

THIS DWG MADE ON AUTOCAD LT RELEASE 3

FILE NAME:

DWG. NO. 8179 REV. C

DRAWN BY: H. HEETDERKS 23 MAY, 1996 SHEET 4 OF 4