

# MAINTENANCE MANUAL

## HUNTRON TRACKER



MODEL HTR 1005 B  
MODEL HTR 1005 B E  
MODEL HTR 1005 B J

HUNTRON TRACKER

INITIAL CHECK PROCEDURE

1. Remove test probes attached to front of handle.
2. Plug power cord into PROPER A.C. supply.
3. Push ON button. Red light in center of Huntron name should light.
4. Adjust brightness control to mid-point in range.
5. Adjust horizontal and vertical centering controls to mid-point in range. Scope display should be visible on the face of the CRT.

With the unit ON, the scope display will be as follows:

- LOW button actuated - Diagonal line.
- MED button actuated - Horizontal line.
- HIGH button actuated - Horizontal line.

6. Insert probe banana plugs:

- RED plug in RED socket on front panel
- BLACK plug in BLACK socket on front panel

7. Perform SHORT test:

FIRST-extend the steel working point of the probe to desired length. Hold the body of the probe in right hand with point away from body. Grasp plastic tip of the probe just ahead of the collar and turn it counter-clock-wise to release lock. Push electrode forward by using the flex wire lead at rear of probe body. Re-set lock by turning the probe tip in a clock-wise direction.

NOTE: The length of the electrode is coated with an insulative material that offers 1 KV protection to the user. The short test may only be carried out by touching the sharpened portion of the electrodes together.

## 7. SHORT test- (continued)

SECOND-A valid short test will result in a vertical line on the CRT display in ALL THREE IMPEDANCE RANGES - LOW, MED AND HIGH.

TESTING MAY NOW COMMENCE IN ACCORDANCE WITH THE INSTRUCTIONS FOUND IN THE OPERATING MANUAL AND THE SUPPLEMENTARY PUBLICATION, PROBING.

MAINTENANCE

A regular program of simple maintenance will prolong the working life and appearance of this test unit.

1. DO NOT leave the non-test image on the CRT for extended periods of time. This will result in permanent etching of the trace pattern on the tube coating.  
TURN BRIGHTNESS CONTROL DOWN IF THE UNIT IS NOT TO BE USED FOR SEVERAL MINUTES AND YOU DO NOT WISH TO TURN THE POWER OFF.
2. Switch contacts may require cleaning occasionally. This can be done with any standard lubricator such as LPS-1 or WD-40.
3. Case and lens will hold a first class appearance if cleaned from time to time with a sponge and mild detergent solution. Dry and buff with a soft cloth for a lustre finish.

DIS-ASSEMBLY FOR INTERNAL ACCESS

THE FOLLOWING STEPS SHOULD BE FOLLOWED IF ACCESS TO THE INTERIOR OF THE HUNTRON TRACKER IS REQUIRED FOR FIELD REPAIR OF COMPONENTS OR TO ADJUST THE DISPLAY TRIMMERS.

POWER SELECT SWITCH IS ALSO REACHED IN THIS MANNER TO SET 220/240 VOLT UNITS TO PROPER SETTING.

1. UN-PLUG TEST UNIT FROM POWER SOURCE!
2. Place unit on it's back so that the four small feet are pointed upward.
3. Remove the four case closure screws (01-1019) that you will find inside the recessed centers of the four instrument feet.

DIS-ASSEMBLY FOR INTERNAL ACCESS - (continued)

4. Place closure screws and feet where they will not become lost.
5. CAREFULLY turn unit over to it's normal operating position.
6. Top can now be removed from the side panels by pulling the two apart gently, working at each of the four corners alternately until the top come free.

FIT TOLERANCES ON THE CASE ARE QUITE CLOSE, SO PATIENCE IS SUGGESTED IN PLACE OF FORCE.

PLEASE NOTICE THAT THE TOPE FEEDS INTO A SLOT IN THE SIDE PANEL.....WHILE THE FRONT AND BACK PANELS EACH SEAT IN A SHALLOW GROOVE IN THE TOP SECTION...THESE ALIGNMENTS MUST BE CORRECT IF THE CASE IS TO BE RE-ASSEMBLED PROPERLY.

INTERNAL CONTROL ADJUSTMENTS

A. FOCUS AND ASTIGMATISM

Controls: Focus.....R-44  
 Astigmatism control.....R-42  
 REFER TO INTERNAL LAYOUT-PAGE 6

To adjust the focus and astigmatism:

1. Turn unit ON.
2. Push MED button in.
3. Place a known good diode across the test leads with clips.
4. Alternately adjust focus and astigmatism controls for sharpest line in both horizontal and vertical directions.

B. HORIZONTAL AND VERTICAL DEFLECTION

Controls: HIGH.....R-3, R-7  
 MED.....R-9, R-13  
 LOW.....R-19, R-21  
 REFER TO INTERNAL LAYOUT-PAGE 6

HORIZONTAL AND VERTICAL DEFLECTION - continued

To adjust for vertical and horizontal scope response in the three impedance positions:

1. HIGH - With test leads OPEN, adjust R-7 for full horizontal deflection. With test leads SHORTED, adjust R-3 for full vertical deflection.
2. MED - With test leads OPEN, adjust R-13 for full horizontal deflection. With test leads SHORTED, adjust R-9 for full vertical deflection.
3. LOW - With test leads OPEN, adjust R-19 and R-21 alternately to obtain a 45 degree diagonal line on the scope.

C. CRT ADJUST

Controls: Tilt.....R-61  
 90 degree adjust.....R-62  
 REFER TO INTERNAL LAYOUT-PAGE 6

To adjust for display "tilt":

With test leads OPEN and the unit in the HIGH or MED positions, adjust R-61 to achieve a straight and horizontal line.

To adjust for 90 degree display:

Clip a known good diode across the test leads. With the unit in HIGH or MED positions adjust the display as closely as possible to a 90 degree format. You will note the angle presented can range from 65 degrees to about 120 degrees.

RE-ASSEMBLY - POWER OFF!!!!

1. Place top so that it will feed into side panel slots making sure front/rear panels enter proper grooves.
2. Apply UNIFORM pressure to the top to seat it in side panels. It should enter side panels about  $\frac{1}{4}$ ". Be sure that front/rear panels have seated in grooves provided on the under-side of the top section.
3. CAREFULLY TURN CASE OVER and replace four feet and closure screws.
4. Return unit to operational position, connect power and run through initial check procedure to be sure unit is fully aligned and ready to operate.



01-1001 CASE TOP COVER (1)

01-1004 CASE BACK PANEL (1)

01-1005 CASE FRONT PANEL (1)

01-1003 CASE SIDE  
EXPANDER (2)

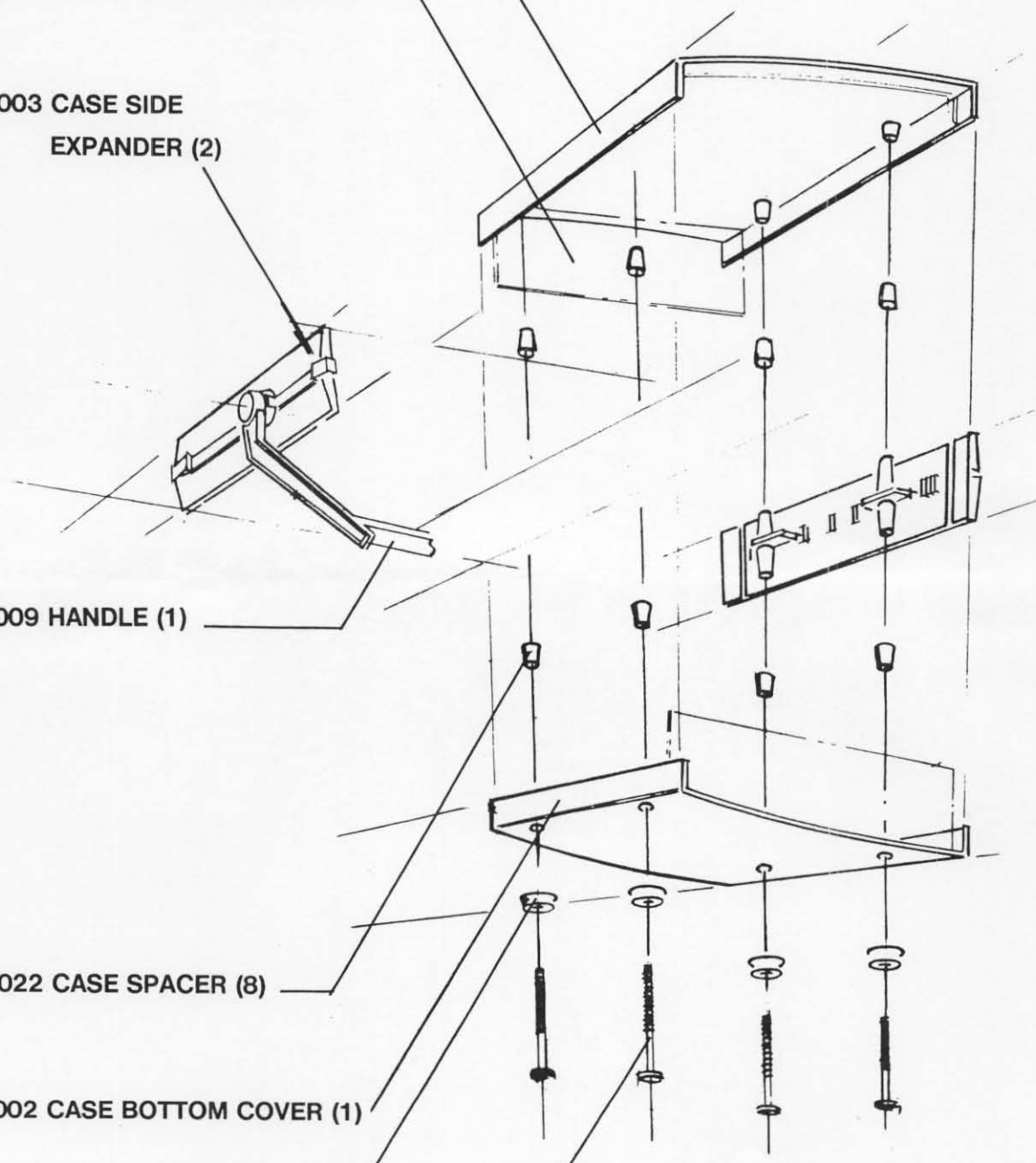
01-1009 HANDLE (1)

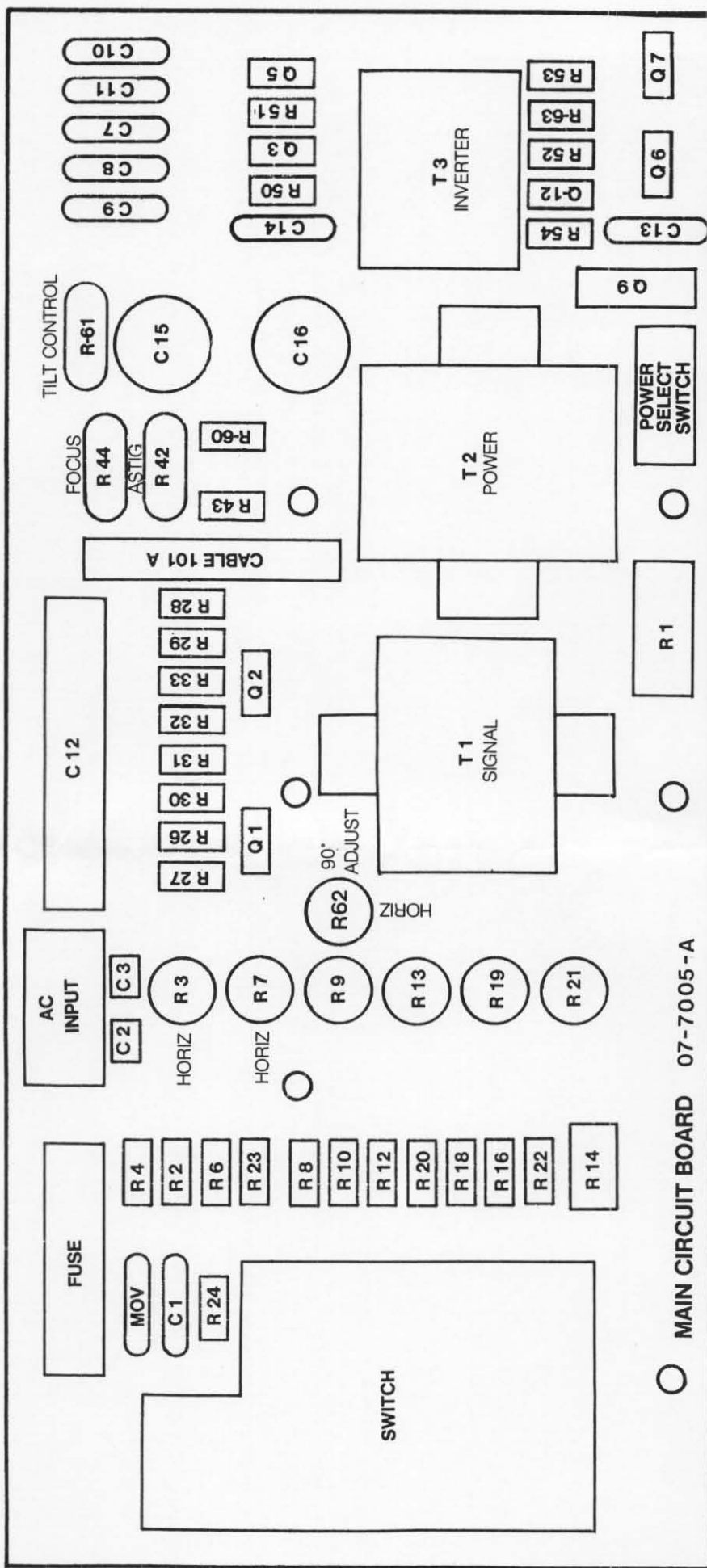
01-1022 CASE SPACER (8)

01-1002 CASE BOTTOM COVER (1)

01-1020 CASE FEET

01-1019 CASE CLOSURE SCREWS (4)





MAIN CIRCUIT BOARD 07-7005-A

PARTS LIST

DRAWING REFERENCE SEQUENCE

DWG. REF. NO.	PART NOMENCLATURE					HUNTRON PART NUMBER
R-1	6 K Ohm	5	Watt	Resistor	02-2008	
R-2	3.3 M Ohm	$\frac{1}{2}$	Watt	Resistor	02-2028	
R-3	5 M Ohm			Hor. Mt. Trim Pot.	02-2035	
R-4	18 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2010	
R-5	10 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2009	
R-6	680 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2022	
R-7	1 M Ohm			Hor. Mt. Trim Pot.	02-2034	
R-8	1 M Ohm	$\frac{1}{2}$	Watt	Resistor	02-2024	
R-9	5 M Ohm			Hor. Mt. Trim Pot.	02-2035	
R-10	18 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2010	
R-12	100 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2017	
R-13	1 M Ohm			Hor. Mt. Trim Pot.	02-2034	
R-14	10 Ohm	1	Watt	Resistor	02-2000	
R-16	220 Ohm	$\frac{1}{2}$	Watt	Resistor	02-2003	
R-18	22 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2011	
R-19	1 M Ohm			Hor. Mt. Trim Pot.	02-2034	
R-20	22 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2011	
R-21	1 M Ohm			Hor. Mt. Trim Pot.	02-2034	
R-22	100 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2017	
R-23	100 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2017	
R-24	2.2 M Ohm	$\frac{1}{2}$	Watt	Resistor	02-2026	
R-25	330 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2020	
R-26	3.6 M Ohm	$\frac{1}{2}$	Watt	Resistor	02-2029	
R-27	22 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2011	
R-28	22 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2011	
R-29	3.6 M Ohm	$\frac{1}{2}$	Watt	Resistor	02-2029	
R-30	180 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2018	
R-31	1 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2004	
R-32	1 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2004	
R-33	180 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2018	
R-34	470 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2021	
R-35	470 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2021	
R-36	100 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2017	
R-38	470 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2021	
R-39	470 K Ohm	$\frac{1}{2}$	Watt	Resistor	02-2021	
R-40	500 K Ohm	$\frac{1}{2}$	Watt	Resistor-Var. Ctr.	02-2037	
R-41	500 K Ohm	$\frac{1}{2}$	Watt	Resistor-Var. Ctr.	02-2037	



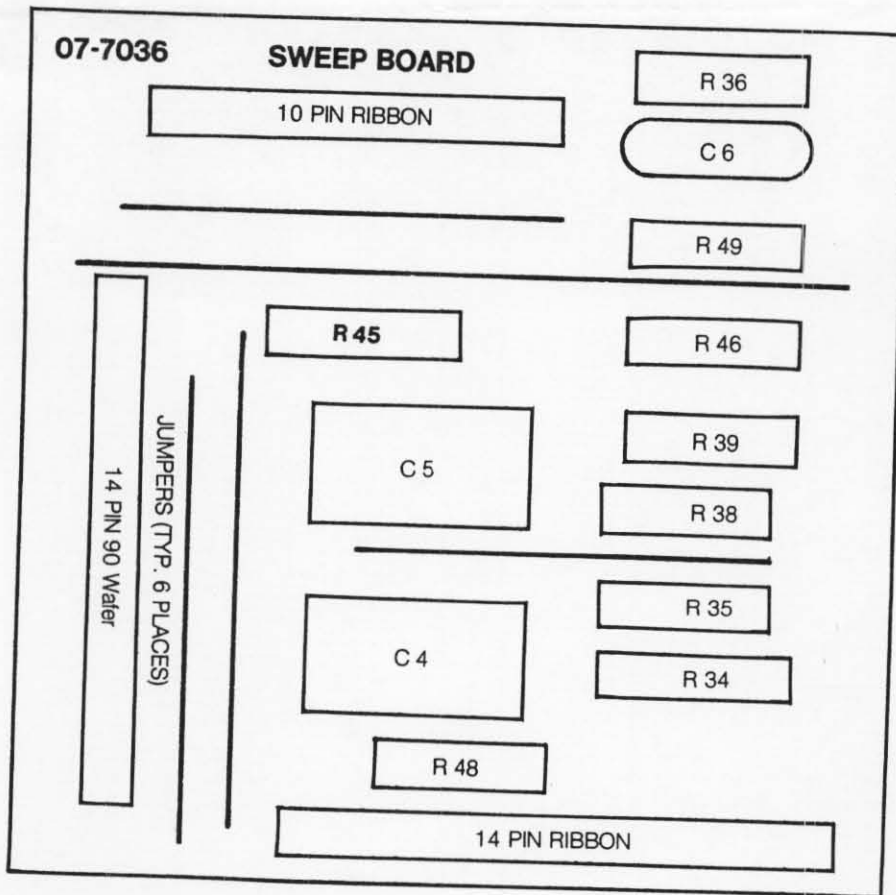
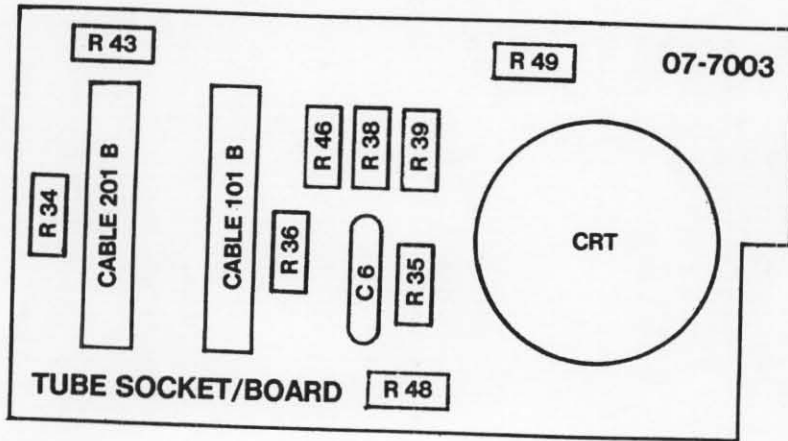
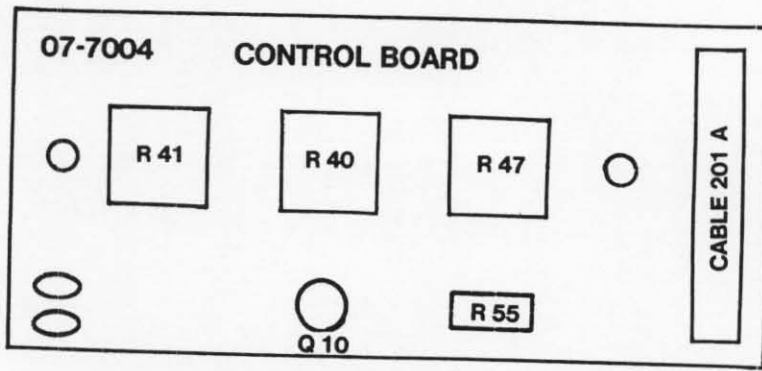
## PARTS LIST

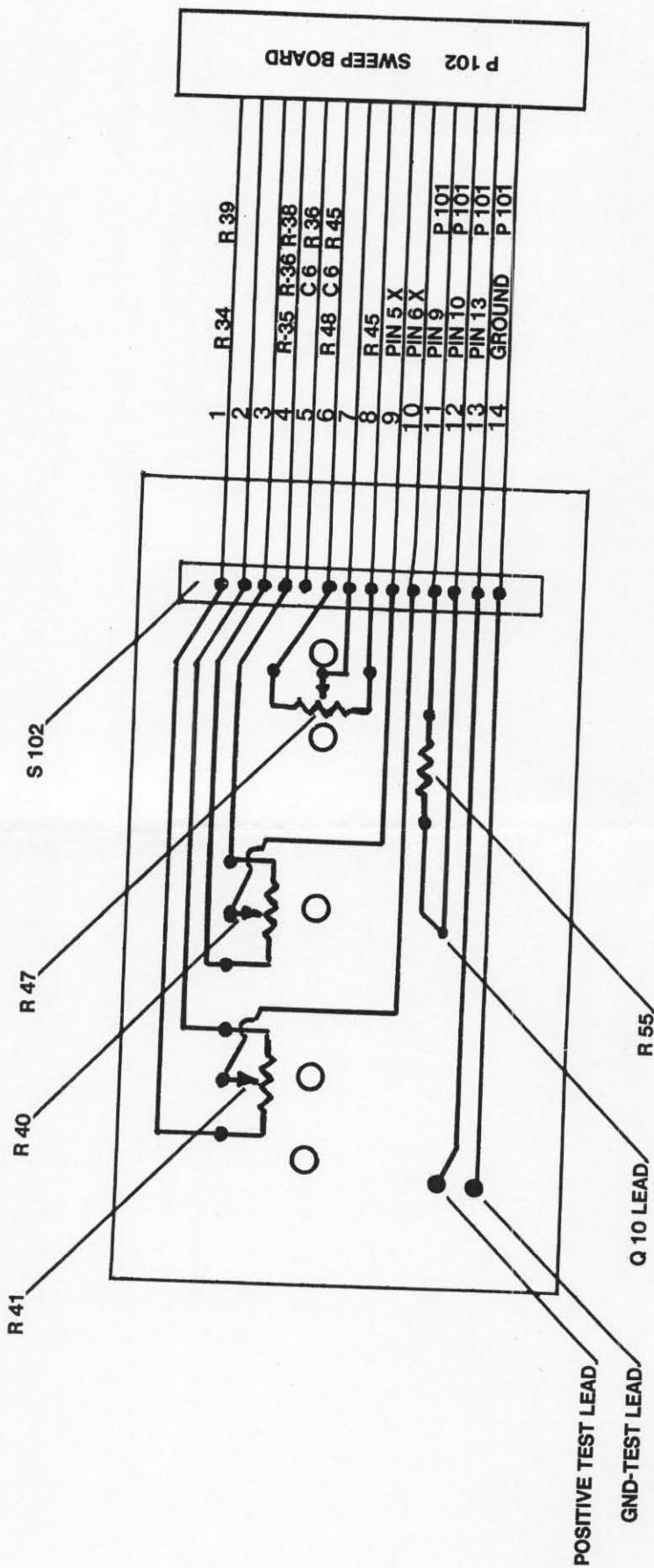
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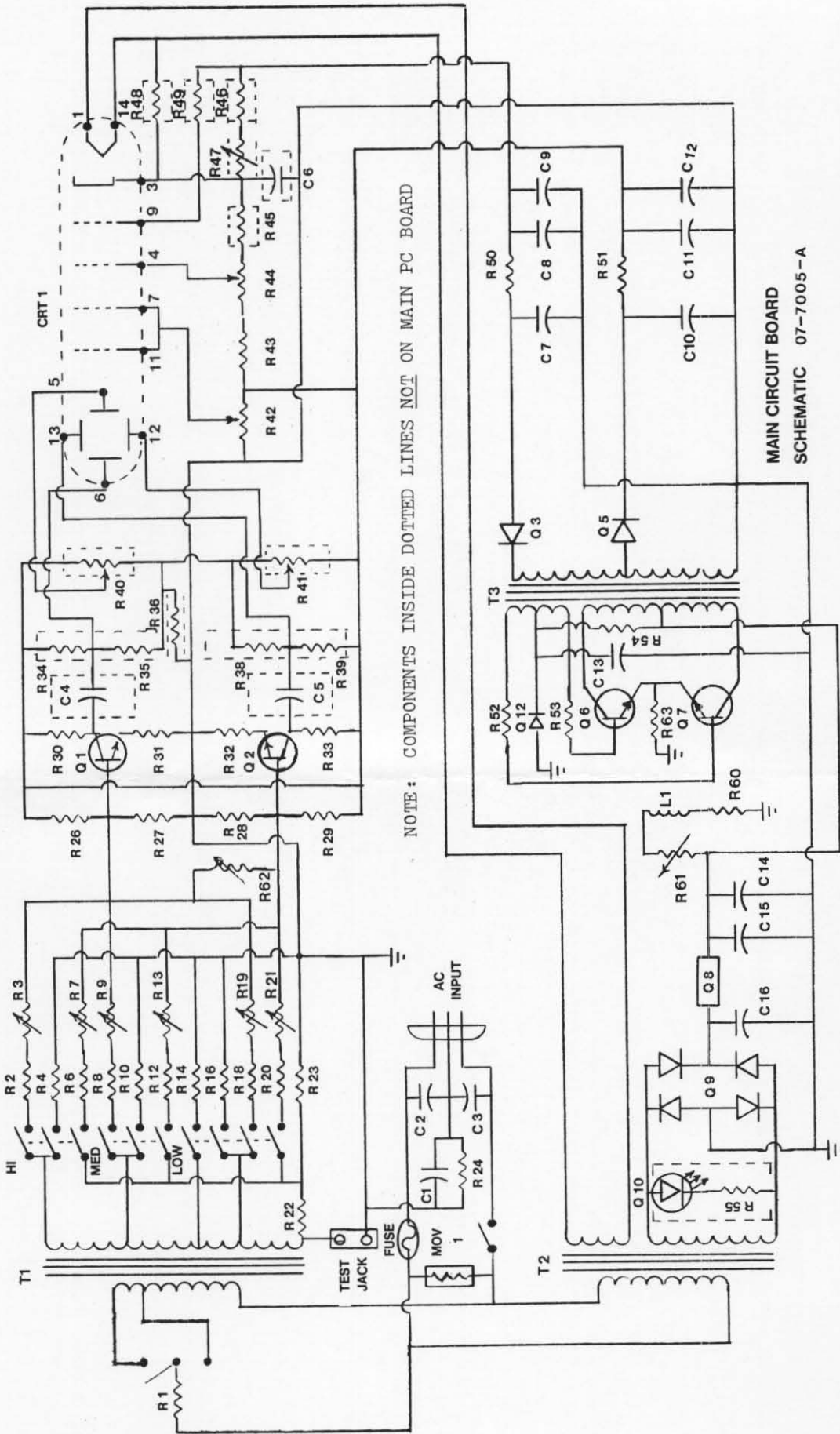
DWG. REF. NO.	PART NOMENCLATURE		HUNTRON PART NUMBER
R-42	1 M Ohm	Vert Mt. Trim Pot.	02-2033
R-43	680 K Ohm $\frac{1}{2}$	Resistor	02-2022
R-44	1 M Ohm	Vert Mt. Trim Pot.	02-2033
R-45	47 K Ohm $\frac{1}{2}$	Resistor	02-2013
R-46	4.7 K Ohm $\frac{1}{2}$	Resistor	02-2007
R-47	50 K Ohm $\frac{1}{2}$	Resistor-Var. Ctr.	02-2036
R-48	2.2 M Ohm $\frac{1}{2}$	Resistor	02-2026
R-49	1.5 M Ohm $\frac{1}{2}$	Resistor	02-2025
R-50	100 K Ohm $\frac{1}{2}$	Resistor	02-2017
R-51	10 K Ohm $\frac{1}{2}$	Resistor	02-2009
R-52	68 Ohm $\frac{1}{2}$	Resistor	02-2001
R-53	68 Ohm $\frac{1}{2}$	Resistor	02-2001
R-54	1.8 K Ohm $\frac{1}{2}$	Resistor	02-2060
R-55	220 Ohm $\frac{1}{2}$	Resistor	02-2003
R-60	220 Ohm $\frac{1}{2}$	Resistor	02-2003
R-61	5 K Ohm $\frac{1}{2}$	Vert Mt. Trim Pot.	02-2057
R-62	500 K Ohm $\frac{1}{2}$	Hor. Mt. Trim Pot.	02-2058
R-63	5.1 Ohm $\frac{1}{2}$	Resistor	02-2064
MOV	115 V 10	Varistor-Met. Ox.	02-2038
FUSE	$\frac{1}{4}$ AGC	Fuse	02-2041
FUSE	$\frac{1}{4}$ 3AGC	Fuse	02-2042
FUSE	250 V 1/8 AMP	Fuse	02-2063 (E model units)
MOV	250 V	Varistor-Met. Ox.	02-2061 (E model units)
R-1	15 K Ohm 1	Resistor	02-2062 (E model units)
C-1	.02 Mfd 1 KV	Capacitor	03-3004
C-2	.001 Mfd 1 KV	Capacitor	03-3015
C-3	.001 Mfd 1 KV	Capacitor	03-3015
C-4	1 Mfd 250 V	Capacitor	03-3020
C-5	1 Mfd 250 V	Capacitor	03-3020
C-6	.1 Mfd 500 V	Capacitor	03-3007
C-7	.01 Mfd 3 KV	Capacitor	03-3004
C-8	.02 Mfd 1 KV	Capacitor	03-3004
C-9	.02 Mfd 1 KV	Capacitor	03-3004
C-10	.02 Mfd 1 KV	Capacitor	03-3004

PARTS LIST  
DRAWING REFERENCE SEQUENCE

DWG. REF. NO.	PART NOMENCLATURE	HUNTRON PART NUMBER
C-11	.1 Mfd 500 V Capacitor	03-3007
C-12	10 Mfd 450 V Capacitor	03-3012
C-13	10 Mfd 25 V Capacitor	03-3011
C-14	.1 Mfd 100 V Capacitor	03-3006
C-15	470 Mfd 35 V Capacitor	03-3014
C-16	470 Mfd 35 V Capacitor	03-3014
Q-1	MPS A42 Transistor	05-5003
Q-2	MPS A42 Transistor	05-5003
Q-3	2 Amp 5000V Rectifier-FM-50	04-4005
Q-5	2 Amp 5000V Rectifier-FM-50	04-4005
Q-6	MJE 240 Transistor	05-5000
Q-7	MJE 240 Transistor	05-5000
Q-8	1 Amp 12 V Regulator	05-5002
Q-9	1 Amp 100 V Diode bridge	04-4004
Q-10	1 Amp 1000V Diode-Light emit.	04-4000
Q-12	1 Amp 1000V Diode	04-4003
T-1	Transformer	06-6014
T-1	Transformer	06-6012 (E Model units)
T-2	Transformer	06-6015
T-2	Transformer	06-6013 (E Model units)
T-3	Transformer	06-6004
T-3	Transformer	06-6004 (E Model units)
CRT-1	Toshiba 85DB1 Cathode ray tube	07-7025
	Main	
	Tube socket	07-7005-A revised
	Control	07-7003
	Sweep	07-7004
	A.C. Input	07-7036
	Four button	07-7010
	Switch	07-7006
L-1	Rotation coil	07-7012







NOTE: COMPONENTS INSIDE DOTTED LINES NOT ON MAIN PC BOARD

MAIN CIRCUIT BOARD SCHEMATIC 07-7005-A



PARTS LIST  
PART NUMBER SEQUENCE

PART NUMBER	PART NAME	PART NOMENCLATURE	SCHEMATIC-DRAWING REFERENCES		
01-1089	Case assembly complete	HTR 1000 A	Exploded view drawings		
01-1001	Case top cover		"		
01-1002	Case bottom cover		"		
01-1003	Case side expander		"		
01-1004	Case rear panel		"		
01-1005	Case front panel		"		
01-1009	Case handle		"		
01-1010	Case handle cap		"		
01-1019	Case closure screws		"		
01-1022	Case spacers		"		
01-1020	Case feet		"		
01-1037	Warranty card		"		
01-1039	Operating manual		"		
01-1040	PROBING-Series One		"		
01-1041	Maintenance Manual		"		
02-2000	Resistor	10 Ohm	1	Watt	R-14
02-2001	Resistor	68 Ohm	$\frac{1}{2}$	Watt	R-52, R-53
02-2003	Resistor	220 Ohm	$\frac{1}{2}$	Watt	R-16, R-55, R-60
02-2004	Resistor	1 K Ohm	$\frac{1}{2}$	Watt	R-31, R-32
02-2006	Resistor	3.3K Ohm	$\frac{1}{2}$	Watt	Obsolete
02-2007	Resistor	4.7K Ohm	$\frac{1}{2}$	Watt	R-46
02-2008	Resistor	6 K Ohm	5	Watt	R-1
02-2009	Resistor	10 K Ohm	$\frac{1}{2}$	Watt	R-51
02-2010	Resistor	18 K Ohm	$\frac{1}{2}$	Watt	R-4, R-10
02-2011	Resistor	22 K Ohm	$\frac{1}{2}$	Watt	R-18, R-20, R-27, R-28
02-2013	Resistor	47 K Ohm	$\frac{1}{2}$	Watt	R-45
02-2017	Resistor	100 K Ohm	$\frac{1}{2}$	Watt	R-12, R-22, R-23, R-36, R-50
02-2018	Resistor	180 K Ohm	$\frac{1}{2}$	Watt	R-30, R-33
02-2020	Resistor	330 K Ohm	$\frac{1}{2}$	Watt	R-25 (superceded by R-62)
02-2021	Resistor	470 K Ohm	$\frac{1}{2}$	Watt	R-34, R-35, R-38, R-39
02-2022	Resistor	680 K Ohm	$\frac{1}{2}$	Watt	R-6, R-43
02-2024	Resistor	1 M Ohm	$\frac{1}{2}$	Watt	R-8
02-2025	Resistor	1.5 M Ohm	$\frac{1}{2}$	Watt	R-49
02-2026	Resistor	2.2 M Ohm	$\frac{1}{2}$	Watt	R-24, R-48
02-2028	Resistor	3.3 M Ohm	$\frac{1}{2}$	Watt	R-2
02-2029	Resistor	3.6 M Ohm	$\frac{1}{2}$	Watt	R-26, R-29

PARTS LIST  
PART NUMBER SEQUENCE

PART NUMBER	PART NAME	PART NOMENCLATURE	SCHEMATIC-DRAWING REFERENCES
02-2033	Vert. Mt. Trim Pot.	1 M Ohm	R-42, R-44
02-2034	Horiz. Mt. Trim Pot	1 M Ohm	R-7, R-13, R-19, R-21
02-2035	Horiz. Mt. Trim Pot	5 M Ohm	R-3, R-9
02-2036	Var. control resistor	50 K Ohm $\frac{1}{2}$ Watt	R-47
02-2037	Var. control resistor	500 K Ohm $\frac{1}{2}$ Watt	R-40, R-41
02-2038	MOV Varistor	115 V 10 Watt	MOV (metal oxide varistor)
02-2041	Fuse	$\frac{1}{4}$ AGC	F-1
02-2042	Fuse	$\frac{1}{4}$ 3AGC	F-1
02-2044	Fuse Clip		F-1
02-2057	Vert. MT. Trim Pot	5 K Ohm $\frac{1}{2}$ Watt	R-61
02-2058	Horiz. Mt. Trim Pot	500 K Ohm $\frac{1}{2}$ Watt	R-62
02-2061	MOV Varistor	250 V (E model units)	MOV (E Model units)
02-2063	Fuse	1/8 amp. 250 Volt	F-1
02-2062	Resistor	15 K Ohm 1 Watt	R-1
02-2060	Resistor	1.8 K Ohm $\frac{1}{2}$ Watt	R-54
02-2064	Resistor	5.1 Ohm $\frac{1}{2}$ Watt 5%	R-63
03-3003	Capacitor	.01 Mfd 3KV	C-7
03-3004	Capacitor	.02 Mfd 1KV	C-1, C-8, C-9, C-10
03-3006	Capacitor	.1 Mfd 100V	C-14
03-3007	Capacitor	.1 Mfd 500V	C-6, C-11
03-3011	Capacitor	10 Mfd 25V	C-13
03-3012	Capacitor	10 Mfd 450V	C-12
03-3014	Capacitor	470 Mfd 35V	C-15, C-16
03-3015	Capacitor	.001 Mfd 1KV	C-2, C-3
03-3020	Capacitor	1 Mfd 250V	C-4, C-5
04-4000	Diode	Light emitting diode	Q-10
04-4003	Diode	1000V 1 amp.	Q-12
04-4004	Diode Bridge	100V 1 amp.	Q-9
04-4005	Rectifier, FM-50	5000V 2 amp.	Q-3, Q-5
05-5000	Transistor, MJE 240	80V 4 amp.	Q-6, Q-7
05-5001	Transistor, MJE 340	300V $\frac{1}{2}$ amp.	Q-1, Q-2
05-5002	Regulator	12V 1 amp.	Q-8
05-5003	Transistor, MPS A42	Deflection amplifier	Q-1, Q-2

