

## **1. Function of Each Semiconductor or Active Device**

### **SCANNER UNIT**

#### **Modulator PCB R-716**

U4	+7V Regulator
U5	+12V Regulator
U7	+5V Regulator
U1	NAND Gate
U2	Multiplexer
Q1 Q2 Q4 Q5	FET Gate Driver
Q3	FET
Q7	Switching

#### **IF Amplifier PCB R-715**

U1 – U4	Variable Gain Amplifier
U5	Video Detector
Q1	Video Buffer
D3 – D10	RF Switch
U6	Negative Voltage Converter
U7	NOT Gate
U8	CDS
U9	OP Amplifier
Q3 Q5	FET
D1	Rectifier

#### **Bearing Signal Generator PCB R-713**

IC1	Photo-Coupler
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#### **Chassis Mounted Parts**

M360	Magnetron
CR360	3Port Circulator
FE360	MIC Frequency Converter With Limiter

## **DISPLAY UNIT**

### **Power Supply PCB R-595**

U2	+5V Regulator
U6	+5V Regulator
U9	+12V Regulator
U11	-5V Regulator
U7 U8 U13	Voltage control OP Amplifier
U12	NOT Gate
U10	Hex Inverter
U3	Low/Over Voltage Protection
Q1 Q2	Switch FET
U4	Switching
D1	Rectifier

### **Main CPU PCB R-654**

U3	Main CPU
U8 U12	Synchronous DRAM
U9	Flash Memory
U13	Codec With Headphone Driver & SPDIF Output
U20	Audio Amplifier
U17 U18	Digital Potentiometers
U7	PROM
U4	FPGA
U11 U14 U29	Transceiver
U15 U19 U21 U22	Comparator
U16	Multi / Demultiplexers
U2	A/D Converter
U24	RS-232C Driver/Receivers
U5	NOT Gate
U10	+1.2V Regulator
U25	+2.5V Regulator
U26	+3.3V Regulator
U31 U32	Transceiver
U23	Voltage Detector

## **PART LIST**

### **1. CPU PCB(R-654)**

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
EMI Filter	SMD	HB-1T3216-122	37	EA	FL1,FL10,FL11,FL12,FL13,FL14,FL15,FL16,FL17,FL18,FL19,FL2,FL20,FL21,FL22,FL23,FL24,FL25,FL26,FL27,FL28,FL29,FL3,FL30,FL31,FL32,FL33,FL34,FL35,FL36,FL37,FL4,FL5,FL6,FL7,FL8,FL9
IC	SMD	AD5206BR50	2	EA	U17,U18
IC	SMD	AD7812YR	1	EA	U2
IC	SMD	AU1100	1	EA	U3
IC	SMD	E28F128	1	EA	U9
IC	SMD	K4S561632C-TC	2	EA	U12,U8
IC	SMD	KIA7029AF	1	EA	U23
IC	SMD	LM4871M	1	EA	U20
IC	SMD	LP3891EMR-1.2	1	EA	U10
IC	SMD	MAX232	1	EA	U24
IC	SMD	NE521	4	EA	U15,U19,U21,U22
IC	SMD	SPX1117M-ADJ	1	EA	U25
IC	SMD	SPX1587AT-3.3	1	EA	U26
IC	SMD	STAC9752T	1	EA	U13
IC	SMD	XC3S400-4TQ144-C	1	EA	U4
IC	SMD	XCF02S	1	EA	U7
IC	SMD	74HC04	3	EA	U1,U5,U6
IC	SMD	74HC245	3	EA	U11,U14,U29

IC	SMD	74LVC16245A	2	EA	U31,U32
IC	SMD	4053	1	EA	U16
LED	SMD	SML-210VTT86(R)	1	EA	CR1
Variable Resistor	SMD	10K	1	EA	VR1
Array Resistor	SMD	2K7	1	EA	RA3
Array Resistor	SMD	4K7	1	EA	RA1
Array Resistor	SMD	10K	2	EA	RP1,RA2
Resistor	SMD	0	4	EA	R143,R144,R21,R38
Resistor	SMD	1K	7	EA	R131,R2,R23,R3,R4,R73,R85
Resistor	SMD	1M	2	EA	R1,R5
Resistor	SMD	1K2	1	EA	R95
Resistor	SMD	2K	2	EA	R74,R89
Resistor	SMD	2K7	1	EA	R16
Resistor	SMD	4K7	4	EA	R142,R157,R44,R6
Resistor	SMD	8K2	1	EA	R82
Resistor	SMD	10K	8	EA	R109,R110,R14, R24, R7,R70,R71,R96
Resistor	SMD	20K	1	EA	R26
Resistor	SMD	33	2	EA	R10,R8
Resistor	SMD	47	2	EA	R27,R68
Resistor	SMD	47K	1	EA	R25
Resistor	SMD	56	1	EA	R88
Resistor	SMD	100	12	EA	R108,R111,R112,R123,R124,R125,R126,R127,R128,R129,R36,R37

Resistor	SMD	100K	9	EA	R11,R12,R13,R130,R15,R19,R20,R72,R9
Resistor	SMD	270	1	EA	R65
Resistor	SMD	300	1	EA	R67
Resistor	SMD	390	1	EA	R69
Resistor	SMD	470	1	EA	R81
Resistor	SMD	560	1	EA	R83
Resistor	SMD	820	1	EA	R86
Inductor	SMD	HH-1M2012-601	2	EA	L11,L12
Inductor	SMD	HU-1M5750-401JT	1	EA	L2
Inductor	SMD	1.2UH	2	EA	L6,L7
Inductor	SMD	FLBLM18PG181SN1D	20	EA	L1,L13,L14,L15,L16,L23,L24,L25,L26,L27,L28,L29,L3,L30,L31,L32,L33,L34,L4,L5
Inductor	SMD	SB-1280-470	1	EA	L10
Connertor	SMD	DF9B-31P-1V	1	EA	CN4
Connertor	SMD	53261-0290	1	EA	CN3
Capacitor	SMD	6.8N	18	EA	C124,C128,C166,C167,C168,C170,C204,C205,C206,C207,C22,C26,C53,C55,C56,C57,C85,C86
Capacitor	SMD	10N	13	EA	C20,C78,C89,C91, C241,C242,C243,C244,C245,C246,C247,C248,C7
Capacitor	SMD	15N	12	EA	C123,C125,C127,C165,C203,C23,C24,C25,C52,C54,C84,C87
Capacitor	SMD	0.1U	51	EA	C1,C13,C105,C106,C109,C136,C138,C139,C140,C141,C142,C143,C144,C145,C157,C162,C163,C2,C219,C220,C221,C222,C228,C229,C29,C3,C32,C33,C35,C38,C4,C43,C44,C45,C46,C49,C51,C63,C64,C65,C67,C68,C69,C70,C71,C72,C79,C80,C81,C83,C92

Capacitor	SMD	22P	2	EA	C6,C93
Capacitor	SMD	27P	2	EA	C14,C15
Capacitor	SMD	33P	2	EA	C8,C95
Capacitor	SMD	100P	1	EA	C195
Capacitor	SMD	330P	2	EA	C5,C94
Capacitor	SMD	390P	1	EA	C41
Capacitor	SMD	820P	2	EA	C39,C40
Capacitor	SMD	1U	9	EA	C121,C130,C208,C210,C218,C58,C59, C27,C34
Capacitor	SMD	10U	1	EA	C12
AL Capacitor	SMD	MVG50VC1MD56TP	3	EA	C16,C36,C62
AL Capacitor	SMD	MVG16VC10MD56TP	3	EA	C11, C47,C61
AL Capacitor	SMD	MVG16VC220MF80TP	1	EA	C10
AL Capacitor	SMD	MVG35VC220MH10TP	1	EA	C9
AL Capacitor	SMD	MVG16VC470MH10TP	1	EA	C173
Tantal Capacitor	SMD	T1/25	1	EA	C17
Tantal Capacitor	SMD	T4.7/16	5	EA	C19, C191,C192,C48,C50
Tantal Capacitor	SMD	T10/16	24	EA	C18,C66,C82,C88,C90,C129,C171,C194,C21,C211,C212,C214,C215,C216 ,C217,C230,C30,C31,C37,C60,C73,C74,C75,C76
Tantal Capacitor	SMD	T100/16	2	EA	C42, C150
Transistor	SMD	KRC101S	2	EA	Q2,Q4
Transistor	SMD	KTA1661	1	EA	Q1
Transistor	SMD	KTC3880	2	EA	Q3,Q6
X-tal	DIP	12MHz(ATS)	1	EA	X1

X-tal	DIP	24.576MHZ(ATS)	1	EA	X3
X-tal	DIP	32.768KHz(FORK)	1	EA	X2
X-tal	DIP	33.792MHz(HC)	1	EA	X5
X-tal	DIP	41.779MHz(HC)	1	EA	X4
Diode	SMD	1N4148	1	EA	D3
Capacitor	DIP	470/25	1	EA	C28
Connector	DIP	A1-14PA-2.54DSA	1	EA	CN1
Connector	DIP	A2-03PA	2	EA	CN10,CN15
Connector	DIP	A4-6PA-2DSA	1	EA	CN9
Connector	DIP	HIF3FB-20PA-2.54DSA	1	EA	CN12
Connector	DIP	HIF3FB-26PA-2.54DSA	2	EA	CN5,CN7
Connector	DIP	5267-02A	1	EA	CN8
Connector	DIP	5267-08A	1	EA	CN6
Connector	DIP	35312-0510	1	EA	CN2

## 2. POWER SUPPLY PCB(R-595)

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
IC	SMD	LM358A	3	EA	U13,U7,U8
IC	SMD	TL494	1	EA	U4
IC	SMD	TLP181	2	EA	U1,U5
IC	SMD	ULN2003	1	EA	U12
IC	SMD	MM74HC14	1	EA	U10
IC	SMD	KIA78L05	1	EA	U2
Tantal Capacitor	SMD	1/25	1	EA	C19
Tantal Capacitor	SMD	2.2/16	1	EA	C36
Tantal Capacitor	SMD	10/16	3	EA	C17, C35,C51
Tantal Capacitor	SMD	10/35	1	EA	C53
Tantal Capacitor	SMD	47/16	1	EA	C24
Tantal Capacitor	SMD	100/16	1	EA	C46
AL Capacitor	SMD	MVG35VC100MH10TP	1	EA	C30
AL Capacitor	SMD	MVG50VC10ME56TP	2	EA	C14,C15
AL Capacitor	SMD	MVG50VC100MJ10TP	3	EA	C27,C40,C44
Transistor	SMD	KRC101S	2	EA	Q13,Q6
Transistor	SMD	KTA1661	4	EA	Q3,Q4,Q5,Q8
LED	SMD	SML-210MTT86(G)	1	EA	LED2
LED	SMD	SML-210VTT86(R)	1	EA	LED1
Diode	SMD	KDZ18V	1	EA	D9



Diode	SMD	KDZ20V	1	EA	D8
Diode	SMD	SFPL-64	4	EA	D2,D3,D6,D7
Diode	SMD	CDSN4148	5	EA	D15,D17,D18,D20,D21
Resistor	SMD	4K7(1%)	1	EA	R17
Resistor	SMD	47K(1%)	1	EA	R5
Resistor	SMD	10	1	EA	R8
Resistor	SMD	1K	3	EA	R28,R38,R54
Resistor	SMD	10K	11	EA	R1,R16,R20,R21,R26,R45,R46,R53,R56,R58,R60
Resistor	SMD	15K	1	EA	R40
Resistor	SMD	100K	1	EA	R39
Resistor	SMD	2K2	2	EA	R9,R10
Resistor	SMD	12K	1	EA	R29
Resistor	SMD	5.6K	1	EA	R37
Resistor	SMD	56K	1	EA	R42
Resistor	SMD	150	2	EA	R22,R23
Resistor	SMD	15	1	EA	R14
Resistor	SMD	1K5	1	EA	R57
Resistor	SMD	22	1	EA	R15
Resistor	SMD	1K5	1	EA	R57
Resistor	SMD	22	1	EA	R15
Resistor	SMD	3K9	1	EA	R24
Resistor	SMD	4K7	6	EA	R19,R25,R34,R41,R87,R88

Resistor	SMD	47K	5	EA	R30,R31 ,R33,R43,R61
Resistor	SMD	3K3	1	EA	R36
Resistor	SMD	560	1	EA	R18
Resistor	SMD	6K8	1	EA	R52
Resistor	SMD	8K2	1	EA	R35
Capacitor	SMD	1000P	1	EA	C26
Capacitor	SMD	0.1U	21	EA	C11,C16,C18,C20,C21,C22,C23,C28,C3,C31,C33,C34,C37,C38, C39,C41,C43,C45,C47,C52,C54
Capacitor	SMD	4700P	1	EA	C25
EMI Filter	SMD	HB-1T3216-122	54	EA	FL10,FL11,FL12,FL13,FL14,FL15,FL16,FL17,FL18,FL19,FL20, FL21,FL25,FL26,FL27,FL28,FL29,FL3,FL30,FL31,FL32,FL33,FL34, FL35,FL36,FL37,FL38,FL39,FL4,FL40,FL41,FL42,FL43,FL44,FL45,FL46, FL47,FL48,FL49,FL5,FL50,FL51,FL52,FL53,FL54,FL55,FL56,FL57,FL58 FL59,FL6,FL60,FL61,FL62,FL7,FL8,FL9
Inductor	SMD	EPC13	1	EA	L2
FET	DIP	IRF540	2	EA	Q1,Q2
IC	DIP	LM2575-5	1	EA	U11
IC	DIP	LM2576-ADJ	2	EA	U6,U9
Diode	DIP	FMU-34S	2	EA	D4, D1
IC	DIP	PIC12F675-I/P	1	EA	U3
Transistor	DIP	2SD880	1	EA	Q7
Diode	DIP	31V (1N4752)	1	EA	D5
Diode	DIP	1N5822	3	EA	D10,D16, D19

Variable Resistor	DIP	GF06P200R	1	EA	VR1
Variable Resistor	DIP	GF06P102K	1	EA	VR3
Variable Resistor	DIP	GF06P502K	1	EA	VR2
Capacitor	DIP	470/25	1	EA	C32
Capacitor	DIP	220/35	1	EA	C42
Capacitor	DIP	1000/50	2	EA	C10,C2,C55
Capacitor	DIP	1000/50(LXV)	1	EA	C9
Capacitor	DIP	0.001/100V (2A/102J)	3	EA	C7,C8, C29
Capacitor	DIP	0.0022/100V(2A/222K)	1	EA	C1
Capacitor	DIP	0.01/100V (2A/103J)	4	EA	C4,C5, C49,C50
Capacitor	DIP	0.1/630V(2J104)	4	EA	C12,C13,C48,C6
Resistor	DIP	4.7K $\Omega$ 1/4W	2	EA	R3,R4
Resistor	DIP	560 $\Omega$ 1W	1	EA	R6
Resistor	DIP	1K $\Omega$ 2W	1	EA	R11
Resistor	DIP	10 $\Omega$ 2W	2	EA	R12,R13
Resistor	DIP	30 $\Omega$ 2W	1	EA	R7
Connector	DIP	HIF3FB-20PA- 2.54DSA	1	EA	CN13
Connector	DIP	HIF3FB-26PA- 2.54DSA	1	EA	CN11
EMI Filter	DIP	CFI06B1H104	1	EA	FL24
Coil	DIP	1A150uH	1	EA	
Coil	DIP	1A470uH(TORID)	1	EA	L5

Coil	DIP	L470uH(DRUM)	1	EA	L6
Coil	DIP	20mm (KM-05)	1	EA	LF1
Coil	DIP	220U	1	EA	L1
Coil	DIP	V-404-25	1	EA	L3
Transformer	DIP	EI-3329A(T2)	1	EA	T1
Connector	DIP	5267-02A	1	EA	CN16
Connector	DIP	5267-05A	1	EA	CN9
Connector	DIP	5267-08A	1	EA	CN14
Connector	DIP	5267-12A	1	EA	CN4
Connector	DIP	5273-02	3	EA	CN1,CN6,CN7
Connector	DIP	SCN16-4R	2	EA	CN3
Connector	DIP	SCN20-3R	1	EA	CN2
Connector	DIP	SDBB-25S	1	EA	CN12

### 3. Soft Key PCB(R-598)

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
LED	SMD	SML-210MTT86(G)	59	EA	CR1,CR10,CR12,CR13,CR14,CR15,CR16,CR17,CR18,CR19,CR2,CR20,CR21,CR22,CR23,CR24,CR25,CR26,CR27,CR28,CR29,CR3,CR30,CR31,CR32,CR33,CR34,CR35,CR36,CR37,CR38,CR39,CR4,CR40,CR41,CR42,CR43,CR44,CR45,CR46,CR47,CR48,CR49,CR5,CR50,CR51,CR52,CR53,CR54,CR55,CR56,CR57,CR58,CR59,CR6,CR61,CR7,CR8,CR9
LED	SMD	SML-210VTT86(R)	1	EA	CR11
Switch	SMD	0840 SW_SKHMPWE010	30	EA	SW1,SW10,SW11,SW12,SW13,SW14,SW15,SW16,SW17,SW18,SW19,SW2,SW20,SW21,SW22,SW23,SW24,SW25,SW26,SW27,SW28,SW29,SW3,SW30,SW4,SW5,SW6,SW7,SW8,SW9
Resistor	SMD	2K	1	EA	R5
Resistor	SMD	100	3	EA	R1,R2,R3,R4
Resistor	SMD	680	1	EA	R17
Resistor	SMD	330	12	EA	R10,R11,R12,R13,R14,R15,R16,R6,R7,R8,R9
Capacitor	SMD	0.1U	4	EA	C1,C3,C5,C7
Tantal Capacitor	SMD	10/16	4	EA	C2,C4,C6,C8
Connector	DIP	HIF3FB-26PA- 2.54DSA	1	EA	CN2
Volume	DIP	CSPN-0905-20sp	4	EA	CN1,CN3,CN4,CN5

#### 4. IF AMPLIFIER PCB(R-715)

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
IC	SMD	CA3130	1	EA	U9
IC	SMD	ICL7660SCBA-T	1	EA	U6
IC	SMD	SA5219	4	EA	U1,U2,U3,U4
IC	SMD	14069	1	EA	U7
FET	SMD	3SK195	2	EA	Q3,Q5
Transistor	SMD	KTC3875	4	EA	Q2,Q4,Q6,Q7
Transistor	SMD	KTA1661	1	EA	Q1
Transistor	SMD	MMBT2907ALT1	1	EA	Q8
EMI Filter	SMD	HB-1T3216-122	8	EA	FL1,FL2,FL3,FL4,FL5,FL6,FL7,FL9
AL Capacitor	SMD	MVG16VC100MF60TP	1	EA	C73
AL Capacitor	SMD	MVG16VC470MH10TP	1	EA	C74
AL Capacitor	SMD	MVG35VC10MD36TP	2	EA	C4,C50
AL Capacitor	SMD	MVG16VC22MD56TP	1	EA	C10
AL Capacitor	SMD	MVG50VC22MD56TP	1	EA	C2
AL Capacitor	SMD	MVG16VC47MD56TP	2	EA	C46,C81
AL Capacitor	SMD	MVG25VC100MDF80	1	EA	C12
Variable Resistor	SMD	PVG3A102A01R00	1	EA	VR5
Variable Resistor	SMD	PVG3A103A01R00	3	EA	VR2,VR3,VR4
Variable Resistor	SMD	PVG3A503A01R00	1	EA	VR1
Variable Capacitor	SMD	TZC3P120PA310R00	1	EA	VC2

Variable Capacitor	SMD	TZC3P200A310R00	3	EA	VC1,VC3,VC4
Diode	SMD	KDS114E	8	EA	D10,D3,D4,D5,D6,D7,D8,D9
Diode	SMD	KDV251S	1	EA	D2
Diode	SMD	CDSN4148	2	EA	D1,D11
Inductor	SMD	1U	1	EA	L2
Inductor	SMD	0.12U	1	EA	L13
Inductor	SMD	0.22U	2	EA	L15,L29
Inductor	SMD	0.27U	6	EA	L18,L26,L28, L19,L22,L23
Inductor	SMD	0.33U	12	EA	L1,L3,L4,L5, L10,L11,L12,L25,L6,L7,L8,L9
Inductor	SMD	0.47U	1	EA	L24
Inductor	SMD	68N	1	EA	L27
Inductor	SMD	0.82U	5	EA	L14,L16,L17, L20,L21
Resistor	SMD	0	1	EA	R15
Resistor	SMD	100	2	EA	R14,R7
Resistor	SMD	1K	7	EA	R12,R13, R20,R29,R30,R31,R6
Resistor	SMD	10K	2	EA	R10,R9
Resistor	SMD	100K	1	EA	R22
Resistor	SMD	15K	4	EA	R1,R2,R3,R5
Resistor	SMD	150K	1	EA	R23
Resistor	SMD	22K	2	EA	R24,R25
Resistor	SMD	27K	2	EA	R18,R19
Resistor	SMD	330	1	EA	R21

Resistor	SMD	33K	2	EA	R26,R27
Resistor	SMD	3K9	1	EA	R32
Resistor	SMD	470	2	EA	R33,R8
Resistor	SMD	680	1	EA	R28
Resistor	SMD	68K	2	EA	R16,R17
Resistor	SMD	6K8	1	EA	R11
Capacitor	SMD	3P	1	EA	C48
Capacitor	SMD	5P	3	EA	C70,C71,C72
Capacitor	SMD	56P	3	EA	C55
Capacitor	SMD	8P	1	EA	C6
Capacitor	SMD	10P	1	EA	C14
Capacitor	SMD	100P	4	EA	C18,C19,C63,C76
Capacitor	SMD	1000P	6	EA	C37,C38,C43,C57, C53, C58
Capacitor	SMD	12P	1	EA	C17
Capacitor	SMD	20P	1	EA	C36
Capacitor	SMD	3300P	17	EA	C1,C11,C20,C21,C22,C3,C30,C35,C40, C45,C51,C52C64,C66,C69
Capacitor	SMD	47P	1	EA	C33
Capacitor	SMD	5600P	1	EA	C75
Capacitor	SMD	0.01U	3	EA	C44,C54, C7
Capacitor	SMD	0.1U	28	EA	C13,C16,C34,C39,C41,C42,C47,C5,C59,C60,C61,C62,C77,C78, C79,C80,C15,C23,C24,C26,C27,C28,C31,C32,C56,C67,C68,C9
Capacitor	SMD	1U	4	EA	C25,C29,C49,C8
IC	DIP	M5169P	1	EA	U5



Thermistor	DIP	5K	1	EA	RH1
<b>Resistor</b>	DIP	220Ω 1W	1	EA	R4
Transformer	DIP	712E	1	EA	T1
Transformer	DIP	712F	2	EA	T2, T3
Transformer	DIP	712G	2	EA	T4, T5
Connector	DIP	SMW250-13	1	EA	CN2
CDS	DIP	MCD725-PLC05	1	EA	U8

## 5. MODULATOR PCB(R-716)

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
IC	SMD	TLP181	2	EA	PC1,PC2
IC	SMD	TL494	1	EA	U6
IC	SMD	MC4051BDR	1	EA	U2
IC	SMD	MC4093	2	EA	U1,U3
Tantal Capacitor	SMD	T10/16	1	EA	C36
Tantal Capacitor	SMD	T47/16	1	EA	C33
Tantal Capacitor	SMD	T100/16	1	EA	C25
AL Capacitor	SMD	MVG16VC470MH10TP	2	EA	C21,C29
AL Capacitor	SMD	MVG25VC47MF56TP	1	EA	C11
AL Capacitor	SMD	MVG35VC100MH10TP	3	EA	C19,C27,C4
AL Capacitor	SMD	MVG50VC10ME56TP	1	EA	C34
AL Capacitor	SMD	MVG50VC100MH10TP	1	EA	C39
Transistor	SMD	KTA1504	1	EA	Q4
Transistor	SMD	KTA1661	2	EA	Q5,Q8
Transistor	SMD	KTC3875	1	EA	Q1
Transistor	SMD	KTC4373	4	EA	Q10,Q11,Q2,Q6
LED	SMD	SML-210MTT86(G)	2	EA	LED1,LED2
Diode	SMD	SFPL-64	6	EA	D10,D11,D13,D17,D8,D9
Diode	SMD	CDSN4148	8	EA	D20,D3,D4,D5,D6,D7
Resistor	SMD	4.7	1	EA	R7

Resistor	SMD	100	1	EA	R35
Resistor	SMD	1K	8	EA	R14,R15,R22,R28,R39,R54,R55,R57
Resistor	SMD	10K	6	EA	R16,R17,R23,R26,R29,R32
Resistor	SMD	12K	1	EA	R38
Resistor	SMD	150	2	EA	R30,R9
Resistor	SMD	1K5	3	EA	R56,R8
Resistor	SMD	200	1	EA	R10
Resistor	SMD	22	1	EA	R24
Resistor	SMD	2K2	1	EA	R11
Resistor	SMD	2K7	1	EA	R37
Resistor	SMD	330	4	EA	R12,R13,R34
Resistor	SMD	3K9	1	EA	R20
Resistor	SMD	470	1	EA	R2
Resistor	SMD	4K7	1	EA	R1
Resistor	SMD	680	1	EA	R6
Resistor	SMD	6K8	2	EA	R31
Resistor	SMD	820	1	EA	R4
Resistor	SMD	8K2	1	EA	R27,R36
Resistor	SMD	82K	1	EA	R33
Capacitor	SMD	1000P	1	EA	C41
Capacitor	SMD	0.1U	14	EA	C12,C17,C20,C22,C26,C28,C30,C31,C32,C35,C37,C40,C5,C8
Capacitor	SMD	200P	1	EA	C1

Capacitor	SMD	300P	1	EA	C3
Capacitor	SMD	360P	1	EA	C7
Capacitor	SMD	470P	1	EA	C10
Capacitor	SMD	47N	1	EA	C38
IC	DIP	LM2576-ADJ	2	EA	U4,U5
IC	DIP	MC7805	1	EA	U7
FET	DIP	IRF540	1	EA	Q7
FET	DIP	2SK2837	1	EA	Q3
Diode	DIP	FR306	1	EA	D2
Diode	DIP	HVR-1X-40B	1	EA	D1
Diode	DIP	1N5822	2	EA	D12,D18
Diode	DIP	5.1V(1N4733)	1	EA	D19
Diode	DIP	91V (1N4763)	3	EA	D14,D15,D16
Capacitor	DIP	10/450(NHA)	2	EA	C14,C23
Capacitor	DIP	470/50(NXB)	2	EA	C13,C16
Capacitor	DIP	M0.01 [103]	1	EA	C18
Capacitor	DIP	2.2uF/630V (MF225K)	2	EA	C48,C6
Capacitor	DIP	0.1/630V	2	EA	C15,C24
Capacitor	DIP	M0.1	1	EA	C9
Variable Resistor	DIP	GF06P200R	2	EA	VR1,VR2
Variable Resistor	DIP	GF06P500R	1	EA	VR7
Variable Resistor	DIP	GF06P102K	4	EA	VR3,VR5,VR6,VR8

Variable Resistor	DIP	GF06P202K	1	EA	VR4
Resistor	DIP	0.2Ω 1W	1	EA	R25
Resistor	DIP	4.7Ω 1W	1	EA	R18
Resistor	DIP	4.7KΩ 1/4W	1	EA	R19
Resistor	DIP	200KΩ 1W	1	EA	R21
Resistor	DIP	470Ω 1W	1	EA	R3
Resistor	DIP	100Ω 2W	1	EA	R5
Fuse	DIP	250V2A L=20mm	1	EA	FUSE1
relay	DIP	ATM203(TN2-12)	1	EA	RY1
EMI Filter	DIP	BFW7550R2	2	EA	FL1,FL7
EMI Filter	DIP	CFI06B1H104	6	EA	FL2,FL3,FL4,FL5,FL6,FL8
Coil	DIP	470uH(Drum)	1	EA	L4
Coil	DIP	10uH	1	EA	L2
Coil	DIP	150uH	2	EA	L3,L5
Line Filter	DIP	KM-04	1	EA	L1
Transformer	DIP	T-711B	1	EA	T2
Transformer	DIP	T-711J	1	EA	T1
Connector	DIP	35312-0210	1	EA	CN3
Connector	DIP	35312-0410	1	EA	CN4
Connector	DIP	35312-0510	1	EA	CN5
Connector	DIP	35313-1010	1	EA	CN2

## 6. SENSOR PCB(R-713)

NAME	TYPE	DESCRIPTION	QTY	SET	REFERENCE NO.
IC	DIP	GP1A53HR	1	EA	IC1
Resistor	SMD	6K8	1	EA	R59
Connector	DIP	35312-0310	1	EA	CN6

## CHAPTER 1. TROUBLE SHOOTING

### 1-1 Display power off

- Connect power cable and check R-595 PCB LED1, LED2 which is ON.
- Check input power DC10~36V on the Display.
  - ① **OFF** : Check fuse and power cable connection, reverse wire-connection, smashed, short, power-ground..etc.
  - ② **ON** : Check the operating voltage 12V, 5V, -5V.  
Otherwise check U6, U9, U11 IC and surround circuit shortage.

### 1-2 Display no repeat

- ① Check the connection of R-654 PCB CN4 Connector.
- ② Check LCD INVERTER.

### 1-3 No image on the Display

- ① Check Scanner R-716 PCB LED1, LED2.
  - OFF : Check surrounding circuits(short) connected Display, Q7 parts.
  - ON : Check operating power 12V, 7V, 5V at modulator.
- ② Check if Trigger Pulse input at the 5th pin in Scanner R-716 CN2.
- ③ Check Motor running.
- ④ Check if Bearing Sensor input at the 4<sup>th</sup> pin in Scanner R-716 PCB CN5.
  - If no Pulse, Change IC1 Bearing Sensor.
- ⑤ Check Magnetron, Front End(MIC).
  - Magnetron : Check the short in green, yellow cable.(about 2Ω in standard)
  - Front End(MIC) : "IF" output, Check frequency 60MHz.

### 1-4 Poor Sensitivity

- Reset Tune(Refer to Manual 4-22 Tune Set)
- Check status of Magnetron, Front End.

### 1-5 Miscellany

- ① Image trouble partly on the display caused by unmatched the position between Bearing Sensor and Encoder. → Adjust the position.

## CHAPTER 2. ADJUSTMENT PROCEDURES

### 2-1 Test Equipment

NO	EQUIPMENT	GRADE AND RANGE
1	DC power supply	Output voltage : 10 ~ 36V DC Current capacity : 5A or more
2	Signal Generator	Frequency range : 5 ~ 22GHz
3	Pulse Generator	수신 Pulse 발생기
4	RF Peak Power Meter	Pulse Power 측정
5	Tester	DC Voltage, Currency, Ohmmeter
6	Oscilloscope	Measuring range : 0.01–20 V

### 2-2 IF Amplifier

- ① Adjust Band Width(BW) in range.
  - 0.125 ~ 3NM : T2, T3
  - 6 ~ 36NM : T4, T5
- ② Adjust noise slice
  - Adjust T1, Reduce the noise of signal.
- ③ Adjust STC Level
  - Adjust VR4, VR5, Set proper level.
- ④ Adjust Tune Level
  - Adjust VC1, VC2 then level of Tune Bar.

### 2-3 Modulator

- ① Adjust Scanner Power
  - 7V : VR5
  - 12V : VR6
  - 330V : VR7
- ② Adjust Transmitting Pulse Width
  - Short : VR1
  - Middle : VR2
  - Long : VR3
  - Very Long : VR4