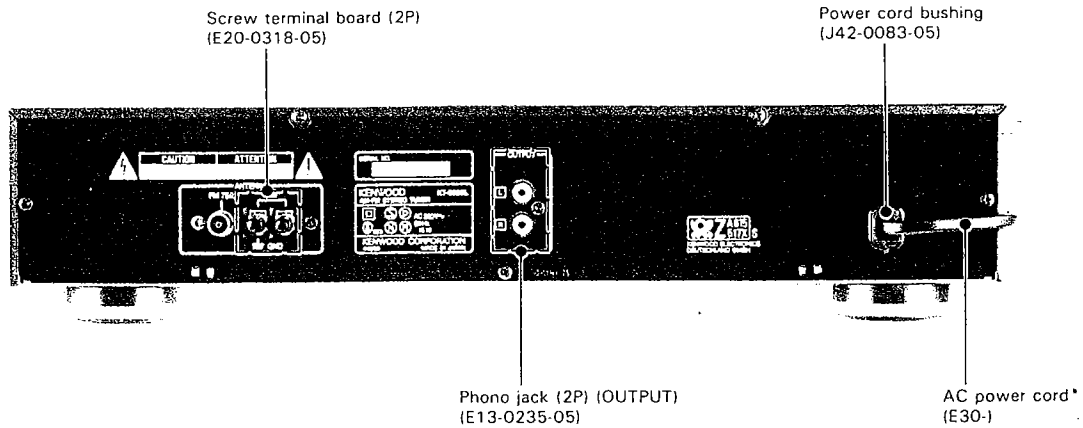
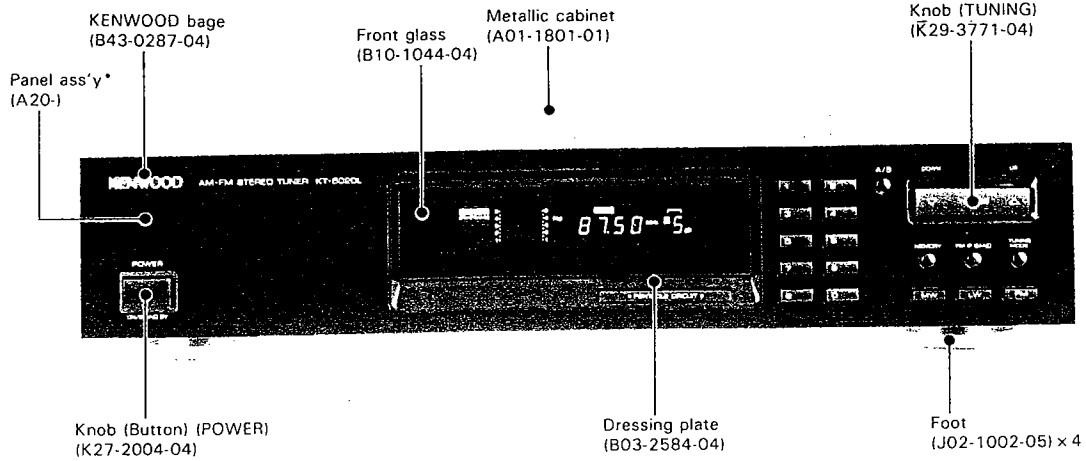


# KT-5020/5020L

## SERVICE MANUAL

# KENWOOD

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B51-3961-00(T)1800



\* Refer to Parts List on page  
Photo is KT-5020L

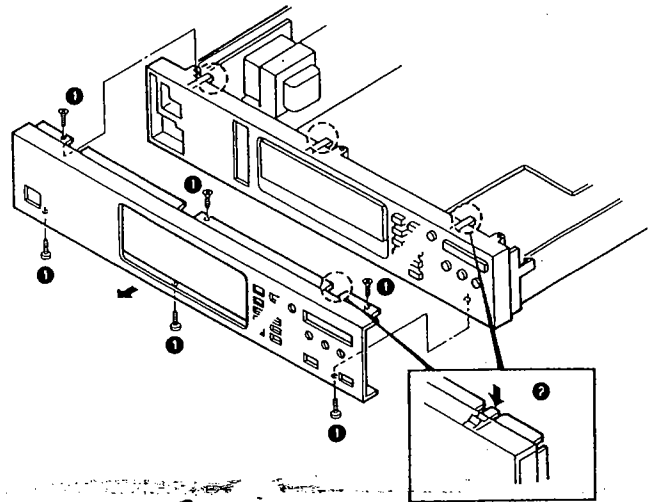
# KT-5020/5020L

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## DISASSEMBLY FOR REPAIR

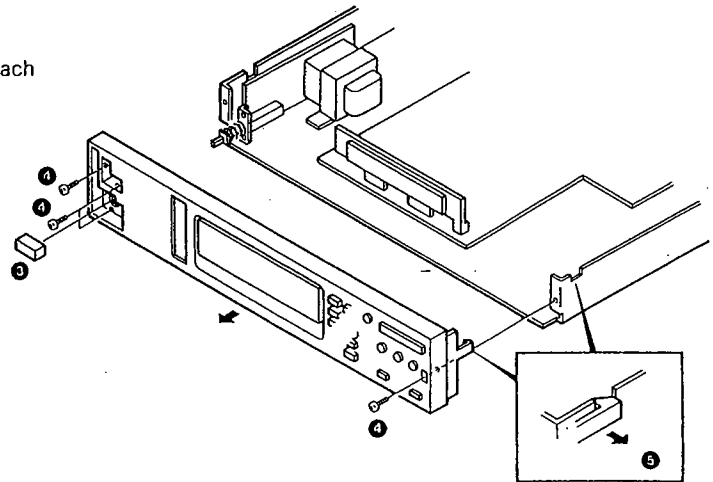
1. Remove the six screws (❶).
2. Undo the three catches (❷), and detach the front panel.



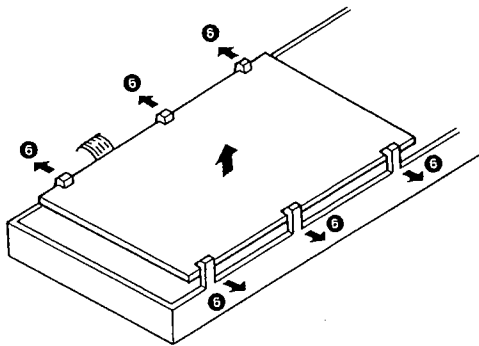
# KT-5020/5020L

## DISASSEMBLY FOR REPAIR

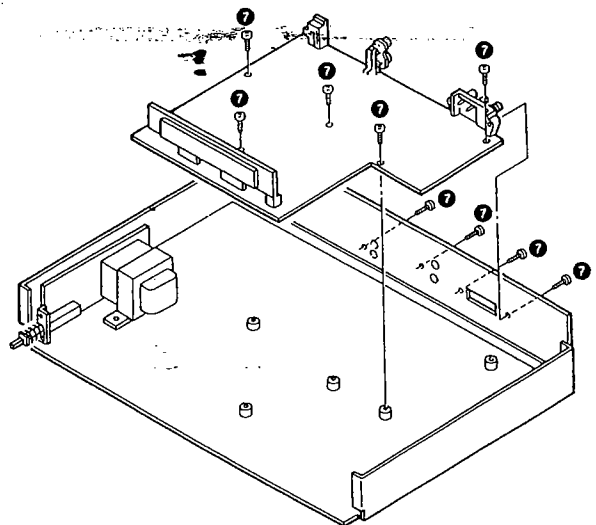
3. Detach the knob (3).
4. Remove the four screws (4).
5. Undo the two catches (5) at the both sides, and detach the sub panel.



6. Undo the six catches (6), and disconnect the board.

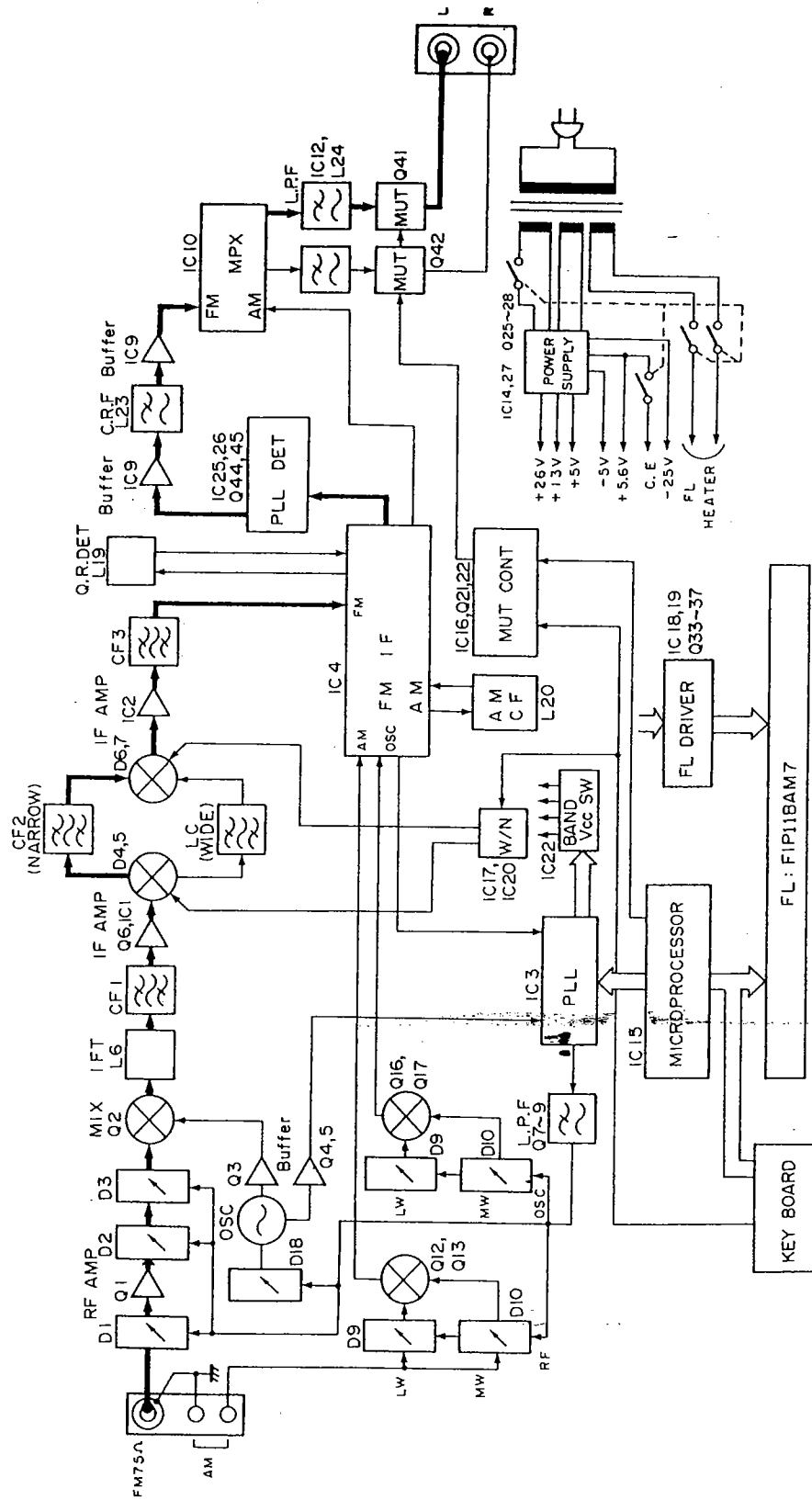


7. Remove the nine screws (7), and disconnect the board.



# KT-5020/5020L

## BLOCK DIAGRAM



# KT-5020/5020L

## CIRCUIT DESCRIPTION

Tuner unit (X05-3790-11: KT-5020) (X05-3792-71: KT-5020L)

Ref.No.	Name	Use and Function	Operation/Condition/Compatibility
IC1,2	BA401	FM IF amplifier	
IC3	LM7001	PLL IC	
IC4	LA1266	FM/AM IF control and detection	IF amplification, AM detection and FM control
IC5	M5218P	1/2 (pins 5-7): S-curve output	
		2/2 (pins 1-3): Inverting amplifier	
IC6	M5223P	1/2 (pins 5-7): Noise amplifier	
		2/2 (pins 1-3): SM conversion	
IC7,8,23, 24	$\mu$ PC78L10J	3-component regulator	
IC9	M5218P	1/2 (pins 1-3): Buffer amplifier	L23 input impedance matching
		2/2 (pins 5-7): Buffer amplifier	L23 output impedance matching
IC10	LA3401	FM MPX	
IC12	NJM4560D	Output post amplifier	
IC13	M5223P	1/2 (pins 1-3): S-meter com- parator	When the IF S-meter voltage is higher than the reference voltage, turns OFF for normal operation. When under a weak electric field, turns ON to operate Q18.
		2/2 (pins 5-7): Buffer amplifier	S-meter lighting
IC14	M5223P	+ 5 V and + 13 V regulated vol- tage error amplifier	
IC15	$\mu$ PD7538AC-045	Microprocessor	
IC16	$\mu$ PD4069UBC	Mute control	
IC17	M5223P	WIDE/NARROW selection driver	
IC18	LB1241	FL driver	
IC19	LB1433N	S-meter driver	
IC20	$\mu$ PD4013BC	WIDE/NARROW selection	
IC21	M5223P	T-meter comparator	
IC22	LA7910	FM/AM power selection	
IC25	$\mu$ PC1163HA	FM IF amplifier	
IC26	NJM4560D	PLL detection control	
IC27	$\mu$ PC7805HF	3-component regulator	
Q1		FM RF amplifier	
Q2		FM mixer	
Q3		FM OSC buffer	
Q4		FM OSC	
Q5		FM OSC buffer	
Q6		FM IF amplifier	
Q7-11		PLL LPF	
Q12,13		LW/MW Select SW	
Q16,17		LW/MW Select SW	
Q18		L-ch/R-ch signal blend	When under a weak electric field, turns ON for L-ch/R-ch signal blend.
Q19		T-meter control	When in the AM mode, turns ON to prevent the lighting of the T-meter in its either side.
Q20		Signal detection	At the time of scanning, when a signal is sensed and input, makes the microprocessor's SD pin "H" to stop scanning.
Q21, 22		Mute circuit	
Q25-28		Constant voltage power tran- sistor	

# KT-5020/5020L

## CIRCUIT DESCRIPTION

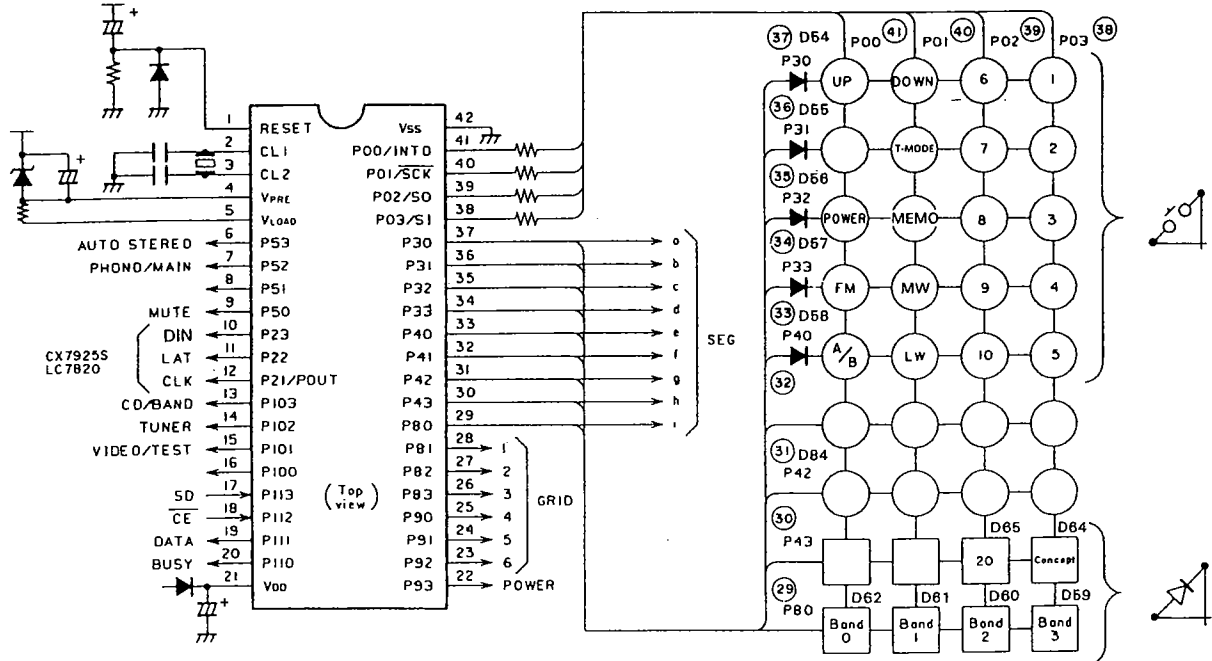
Ref.No.	Name	Use and Function	Operation/Condition/Compatibility
Q31		Switch	When in the AM mode, turns ON so that WIDE/NARROW selection is not accepted.
Q32		Switch	When in the AM mode, turns ON to display "FM IF BAND".
Q33-37		S-meter FL driver	
Q38, 39		Switch	In response to the microprocessor operation, controls the display of other portion of FL than by the microprocessor.
Q40		Switch	Frequency step selection (M type only)
Q41, 42		Switch	AF output ON/OFF under control of Q22
Q43		Microprocessor C.E. and reset control	With power OFF, turns ON to make C.E. into 0 V.
Q44, 45		VCO	PLL detection 10.7 MHz VCO
Q46		FM compulsory MONO	In manual scanning or detuning, when under a weak electric field, turns ON to put IC10 into the MONO operation.
Q47		Constant current FET	

# KT-5020/5020L

## CIRCUIT DESCRIPTION

IC15:  $\mu$ PD7538AC-045  
Microprocessor IC

Terminal connection diagram & keymatrix connection



### Functions of diodes and switches

Destination Type	Set Switches B3 B2 B1B0	Band	Receiving Frequency Range	Inter-Channel Space	Intermediate Frequency	PLL IC3(LM7001)				Auto Tuning
						PLL Reference Frequency	PLL Input Terminal	PLL Output		
								B02 (P8)	B03 (P9)	
J	0 0 0 0	FM	76.0 MHz ~ 90.0 MHz	100 kHz	- 10.75 MHz	25 kHz	FMIN	H	L	○
		AM	531 kHz ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz	AMIN	L	H	○
K, M1	1 0 0 0	FM	87.5 MHz ~ 108.0 MHz	100 kHz	+ 10.7 MHz	50 kHz	FMIN	H	L	○
		AM	530 kHz ~ 1610 kHz	10 kHz	+ 450 kHz	10 kHz	AMIN	L	H	○
M2	1 <sup>a</sup> 1 0 0	FM	87.5 MHz ~ 108.0 MHz	50 kHz	+ 10.7 MHz	50 kHz	FMIN	H	L	○
		AM	531 kHz ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz	AMIN	L	H	○
E	1 1 <sup>b</sup> 1 1	FM	87.5 MHz ~ 108.0 MHz	50 kHz	+ 10.7 MHz	50 kHz	FMIN	H	L	○
		MW	531 kHz ~ 1602 kHz	9 kHz	+ 450 kHz	9 kHz	AMIN	L	H	○
		LW	153 kHz ~ 281 kHz	1 kHz	+ 450 kHz	1 kHz	AMIN	H	H	<sup>b</sup>

0: Without diode

1: With diode

\*a) The KT-5020 of types M, U and UE, are modified into types E or K by replacing the rear panel inter-channel space with the CHANNEL SPACE SW (S21), and by adding a diode (D61) for BAND 2.

Before changing the setting of this switch, first turn the POWER switch OFF.

If the setting of the switch is changed with the POWER switch ON, the channel spacing will not be changed.

\*b) With the KT-5020L (type E), a diode (D60) is added for BAND 1, to allow for manual tuning in LW mode only.

# KT-5020/5020L

## CIRCUIT DESCRIPTION

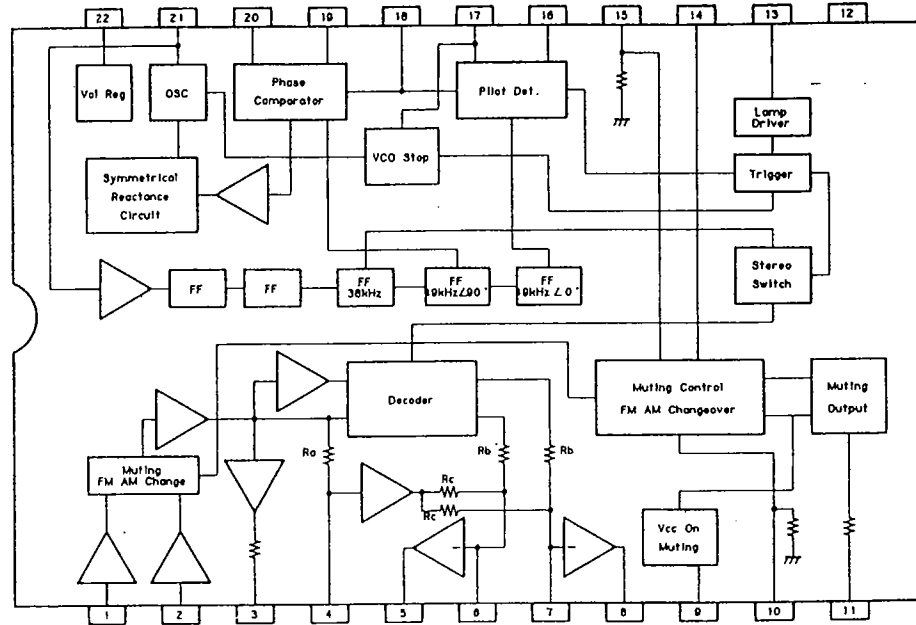
### Port allocation

Terminal NO.	Symbol	I/O Mode	Active Mode	Name	Function
1	RESET	I	H		Reset signal
2	CL 1	—	—		Clock
3	CL 2	—	—		Clock
4	VPRE	—	—		Power supply for FL display pre-driver
5	VLOAD	—	—		Power supply for FL display driver (—30V)
6	P 53	O	H	AUTO STEREO	MONO/STEREO key to control Stereo :L. Mono :H
7	P 52	O	H		
8	P 51	O	H		
9	P 50	O	H	MUTE	Muting signal
10	P 23	O	H	DIN	DATA output for PLL IC (LM7001)
11	P 22	O	H	LAT	LAT output for PLL IC (LM7001)
12	P21/POUT	O	H	CLK	CLK output for PLL IC (LM7001)
13	P103	O	H		
14	P102	O	H		
15	P101	O	H	TEST	Input port: TEST pin (H)
16	P100	O	H		
17	P113	I	H	SD	Station detection pin for auto tuning mode
18	P112	I	L	CE	Back up detection pin
19	P111	I/O	H	DATA	Serial signal DATA pin
20	P110	I/O	H	BUSY	Serial signal BUSY pin
21	VDD	—	—	VDD	Power supply input pin (+ 5V)
22	P 93	O	H		Power pin
23	P 92	O	H	G6	FL display digit control pin: GRID 6
24	P 91	O	H	G5	FL display digit control pin: GRID 5
25	P 90	O	H	G4	FL display digit control pin: GRID 4
26	P 83	O	H	G3	FL display digit control pin: GRID 3
27	P 82	O	H	G2	FL display digit control pin: GRID 2
28	P 81	O	H	G1	FL display digit control pin: GRID 1
29	P 80	O	H	i	Key strobe signal output. FL display segment output: i
30	P 43	O	H	h	Key strobe signal output. FL display segment output: h
31	P 42	O	H	g	Key strobe signal output. FL display segment output: g
32	P 41	O	H	f	Key strobe signal output. FL display segment output: f
33	P 40	O	H	e	Key strobe signal output. FL display segment output: e
34	P 33	O	H	d	Key strobe signal output. FL display segment output: d
35	P 32	O	H	c	Key strobe signal output. FL display segment output: c
36	P 31	O	H	b	Key strobe signal output. FL display segment output: b
37	P 30	O	H	a	Key strobe signal output. FL display segment output: a
38	P03/SI	I	H		Key return signal input
39	P02/SO	I	H		Key return signal input
40	P01/SCK	I	H		Key return signal input
41	P00/INTO	I	H		Key return signal input
42	V <sub>SS</sub>	—	—	V <sub>SS</sub>	GND



## CIRCUIT DESCRIPTION

IC10: LA3401  
FM MPX  
Block diagram



### Terminal description

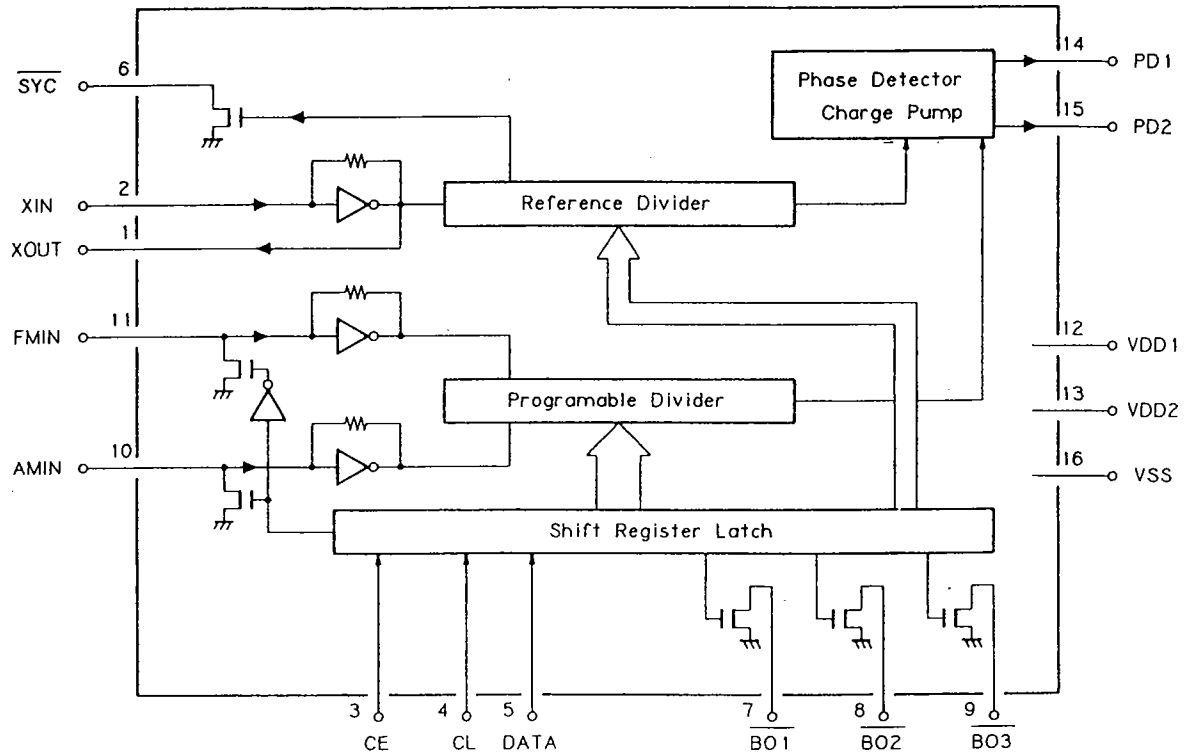
Pin no.	Voltage	Pin name	Remarks
1	3.3	AM input	Input resistance: 20kohms
2	3.3	FM input	Input resistance: 20kohms
3	3.3	Composite amp output	Output resistance: 1kohm
4	3.3	Separation adjustment	
5	3.3	Post amp output	L output
6	3.3	Post amp input	Negative (-) input
7	3.3	Post amp input	Negative (-) input
8	3.3	Post amp output	R output
9	3.3	Vcc ON muting	
10	—	AM/FM select	Input resistance: 80kohms
11	—	(Muting output) Not used	
12	0	GND	
13	—	Stereo indicator	Open collector
14	0 or 4.9	Select mute	Grounded by the capacitor having 0.01 $\mu$ F or more capacitance
15	—	(Muting) Not used	Input resistance: 80 kohms
16	2.7	Pilot sync detect filter	
17	2.7	Pilot sync detect filter, VCO STOP	
18	2.7	PLL input	
19	2.7	Loop filter	
20	2.7	Loop filter	
21	—	OSC	
22	VCC	Power supply	

# KT-5020/5020L

## CIRCUIT DESCRIPTION

IC3: LM7001  
PLL frequency synthesizer

Block diagram



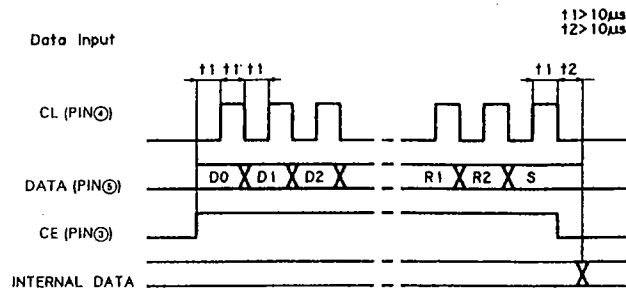
Terminal description

Pin no.	Pin name	I/O	Function
1	XOUT	O	Crystal oscillator (7.2 MHz).
2	XIN	I	
3	CE	I	
4	CL	I	Data input.
5	DATA	I	
6	SYC	I/O	Clock for controller (400 kHz).
7	BO1	O	Band data output. BO1 can be used as a time base output (8 Hz)
8	BO2	O	
9	BO3	O	
10	AMIN	I	Local oscillator signal input.
11	FMIN	I	
12	VDD1		Power supply. VDD2 for back-up.
13	VDD2		
14	PDD1	O	Charge pump output.
15	PD2	O	
16	VSS		Power supply.

# KT-5020/5020L

## CIRCUIT DESCRIPTION

### Data input



←Input at D0

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	T0	T1	B0	B1	B2	TB	R0	R1	R2	S
----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	----	----	----	----	----	----	----	----	----	---

- (1) D0(LSB)~D13(MSB): Dividing ratio data  
 FMIN uses D0 - D13 and AMIN uses D4 - D13.

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----

1	0	1	0	0	0	0	0	0	1	0	1	1	1	→ FMIN dividing ratio=14853
LSB													MSB	
X	X	X	X	0	0	0	0	0	1	0	1	1	1	→ AMIN dividing ratio=928
				LSB									MSB	

- (2) T0, T1 For LSI checking (0,0):

- (3) B0~B2: Band data  
 Time base data

Input				Output		
B0	B1	B2	TB	B01	B02	B03
0	0	0	0	*	*	*
0	0	1	0	0	0	1
0	1	0	0	0	1	0
0	1	1	0	0	1	1
1	0	0	0	1	0	0
1	0	1	0	1	0	1
1	1	0	0	1	1	0
1	1	1	0	1	1	1
0	0	0	1	TB	*	*
X	1	0	1	TB	1	0
X	0	1	1	TB	0	1
X	1	1	1	TB	1	1
1	0	0	1	TB	0	0

\$ : Determined by R0~R2  
 X : don't care.  
 TB: 8 Hz

- (4) R0~R2: Reference frequency data

R0	R1	R2	fref	B01	B02	B03
0	0	0	100 kHz	1	1	0
0	0	1	50	1	1	0
0	1	0	25	1	1	0
0	1	1	5	0	0	1
1	0	0	10	1	0	1
1	0	1	9	1	0	1
1	1	0	1	0	1	1
1	1	1	5	0	0	1

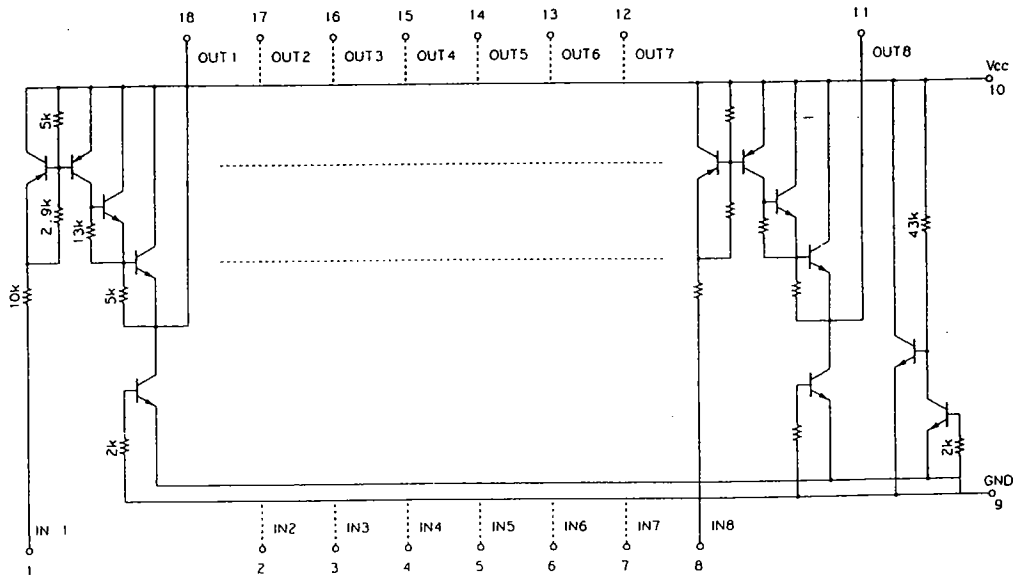
- (5) S: Divider selection data  
 '1' : FMIN, '0' : AMIN

# KT-5020/5020L

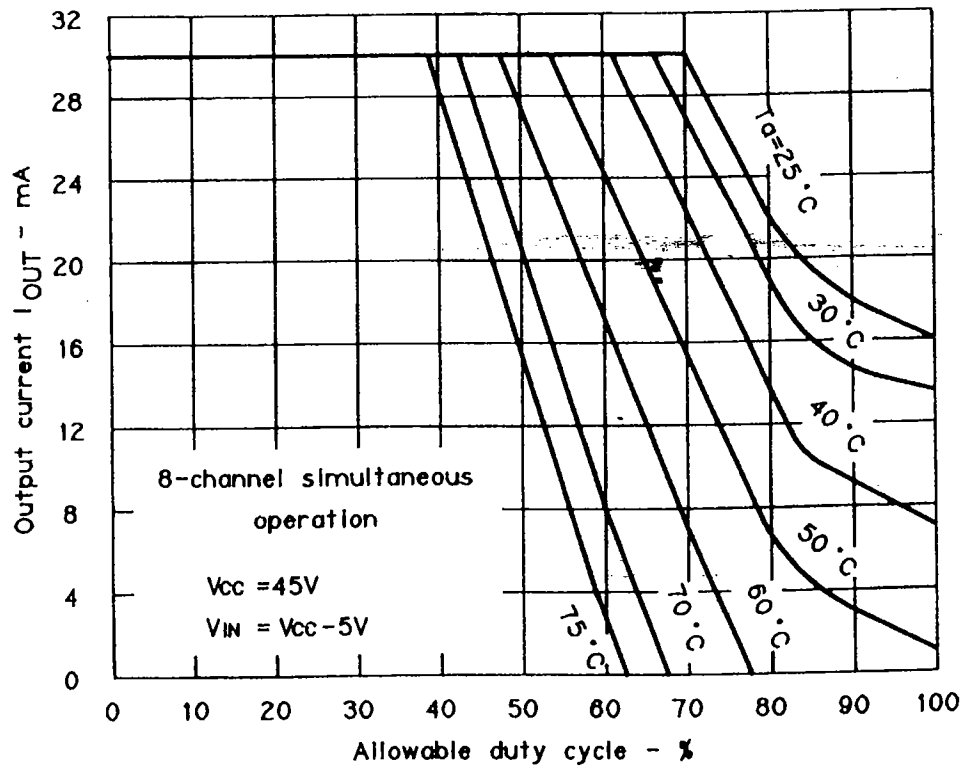
## CIRCUIT DESCRIPTION

IC18: LB1241  
FL driver IC

Equivalent block diagram



$I_{OUT}$  - duty cycle



## ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
<b>FM SECTION</b> Unless otherwise specified, the individual switches should be set as following: SELECTOR: FM TUNING MODE: AUTO IF BAND: WIDE							
1	BAND EDGE (1)	-	Connect a DC voltmeter between TP5 and TP8(GND).	87.5MHz	L7	3.0±0.1V	(a)
2	BAND EDGE (2)	-	Connect a DC voltmeter between TP5 and TP8(GND).	108.0MHz	TC1	23.0±0.1V	(a)
Repeat alignments 1 and 2 several times.							
3	DISCRIMINATOR	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a DC voltmeter between TP7 and TP8.	98.0MHz	L19	0±10mV	(b)
4	PLL DETECTOR	(A) 98.0MHz 0 dev 100dBμ(ANT input)	Connect a DC voltmeter between TP9 and TP10.	98.0MHz	L22	0±50mV	(c)
5	RF ALIGNMENT	(A) 98.0MHz 1kHz, ±75kHz dev	(B)	98.0MHz	L1,2,3	Maximum amplitude and symmetry of the oscilloscope display.	
6	STOP LEVEL	(A) 98.0MHz 1kHz, ±75kHz ST 14dBμ(ANT input)	-	98.0MHz	VR1	To the position so that the lowest level of the S meter lights.	
7	SEPARATION (1) R to L	(C) 98.0MHz R: 1kHz, ±68.25kHz dev Pilot: ±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR3	Minimum crosstalk.	
8	SEPARATION (2) L to R	(C) 98.0MHz L: 1kHz, ±68.25kHz dev Pilot: ±6.75kHz dev 80dBμ(ANT input)	(B)	98.0MHz	VR3	Minimum crosstalk.	
Repeat steps 7 and 8 so that the channel separation from right to left channel and vice versa is the same.							
<b>AM-MW SECTION</b> Keep the AM loop antenna installed. SELECTOR: AM (KT-5020) or MW (KT-5020L) TUNING MODE: AUTO							
(1)	BAND EDGE (1)	-	Connect a DC voltmeter between TP5 and TP6(GND).	530kHz (531kHz)	L16	1.5±0.1V	(d)
(2)	BAND EDGE (2)	-	Connect a DC voltmeter between TP5 and TP6(GND).	1610kHz (1602kHz)	TC3	8.0±0.1V	(d)
Repeat alignments (1) and (2) several times.							
(3)	RF ALIGNMENT (1)	(D) 630kHz 1kHz, 30% mod	(B)	630kHz	L18	Maximum amplitude and symmetry of the oscilloscope display.	
(4)	RF ALIGNMENT (2)	(D) 1440kHz 1kHz, 30% mod	(B)	1440kHz	TC5	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments (3) and (4) several times.							
<b>AM-LW SECTION (KT-5020L only)</b> Keep the AM loop antenna installed. SELECTOR: LW TUNING MODE: AUTO							
(5)	BAND EDGE (1)	-	Connect a DC voltmeter between TP5 and TP6(GND).	153kHz	L15	1.5±0.1V	(d)
(6)	BAND EDGE (2)	-	Connect a DC voltmeter between TP5 and TP6(GND).	281kHz	TC2	8.0±0.1V	(d)
Repeat alignments (5) and (6) several times.							
(7)	RF ALIGNMENT (1)	(D) 162kHz 1kHz, 30% mod	(B)	162kHz	L17	Maximum amplitude and symmetry of the oscilloscope display.	
(8)	RF ALIGNMENT (2)	(D) 270kHz 1kHz, 30% mod	(B)	270kHz	TC4	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments (7) and (8) several times.							

# KT-5020/5020L

## REGLAGES

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF							
Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: SELECTEUR:FM TUNING MODE:AUTO IF BAND:WIDE							
1	BORD DE BANDE (1)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	87,5kHz	L7	3,0±0,1V	(a)
2	BORD DE BANDE (2)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	108,0MHz	TC1	23,0±0,1V	(a)
Répéter les points 1 et 2 plusieurs fois.							
3	DISCRIMINATEUR	(A) 98,0MHz 0 dév 100dBμ(Entrée ANT)	Relier un voltmètre CC entre les TP7 et TP8.	98,0MHz	L19	0±10mV	(b)
4	DETECTEUR PLL	(A) 98,0MHz 0 dév 100dBμ(Entrée ANT)	Relier un voltmètre CC entre les TP9 et TP10.	98,0MHz	L22	0±50mV	(c)
5	ALIGNEMENT HT	(A) 98,0MHz 1kHz.±75kHz dév	(B)	98,0MHz	L1,2,3	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
6	NIVEAU D'ARRET	(A) 98,0MHz 1kHz, ±75kHz ST 14dBμ(Entrée ANT)		98,0MHz	VR1	Sur la position ou le niveau la plus basse du compteur S s'allume.	
7	SEPARATION (1) D → G	(C) 98,0MHz 1kHz.±68,25kHz dév Selection : R Pilote:±6,75kHz dév 80dBμ(Entrée ANT)	(B)	98,0MHz	VR3	Diaphonie minimale.	
8	SEPARATION (2) G → D	(C) 98,0MHz 1kHz.±68,25kHz dév Selection : L Pilote:±6,75kHz dév 80dBμ(Entrée ANT)	(B)	98,0MHz	VR3	Diaphonie minimale.	
Répéter les étapes 7 et 8 pour que la séparation des canaux provenant des canaux de droite et de gauche et vice versa soient identiques.							
SECTION MA Laisser l'antenne bouche MA installée. SELECTEUR: AM (KT-5020) ou MW (KT-5020L) TUNING MODE: AUTO							
(1)	BORD DE BANDE (1)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	530kHz (531kHz)	L16	1,5±0,1V	(d)
(2)	BORD DE BANDE (2)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	1610kHz (1602kHz)	TC3	8,0±0,1V	(d)
Répéter les points (1) et (2) plusieurs fois.							
(3)	ALIGNEMENT HT (1)	(D) 630kHz 1kHz.30% mod	(B)	630kHz	L18	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(4)	ALIGNEMENT HT (2)	(D) 1440kHz 1kHz.30% mod	(B)	1440kHz	TC5	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
Répéter les points (3) et (4) plusieurs fois.							
SECTION GO (KT-5020L seulement) Laisser l'antenne bouche MA installée. SELECTEUR:LW TUNING MODE:AUTO							
(5)	BORD DE BANDE (1)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	153kHz	L15	1,5±0,1V	(d)
(6)	BORD DE BANDE (2)	-	Relier un voltmètre CC entre les TP5 et TP6(GND).	281kHz	TC2	8,0±0,1V	(d)
Répéter les points (5) et (6) plusieurs fois.							
(7)	ALIGNEMENT HT (1)	(D) 162kHz 1kHz.30% mod	(B)	162kHz	L17	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(8)	ALIGNEMENT HT (2)	(D) 270kHz 1kHz.30% mod	(B)	270kHz	TC4	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
Répéter les point (7) et (8) plusieurs fois.							

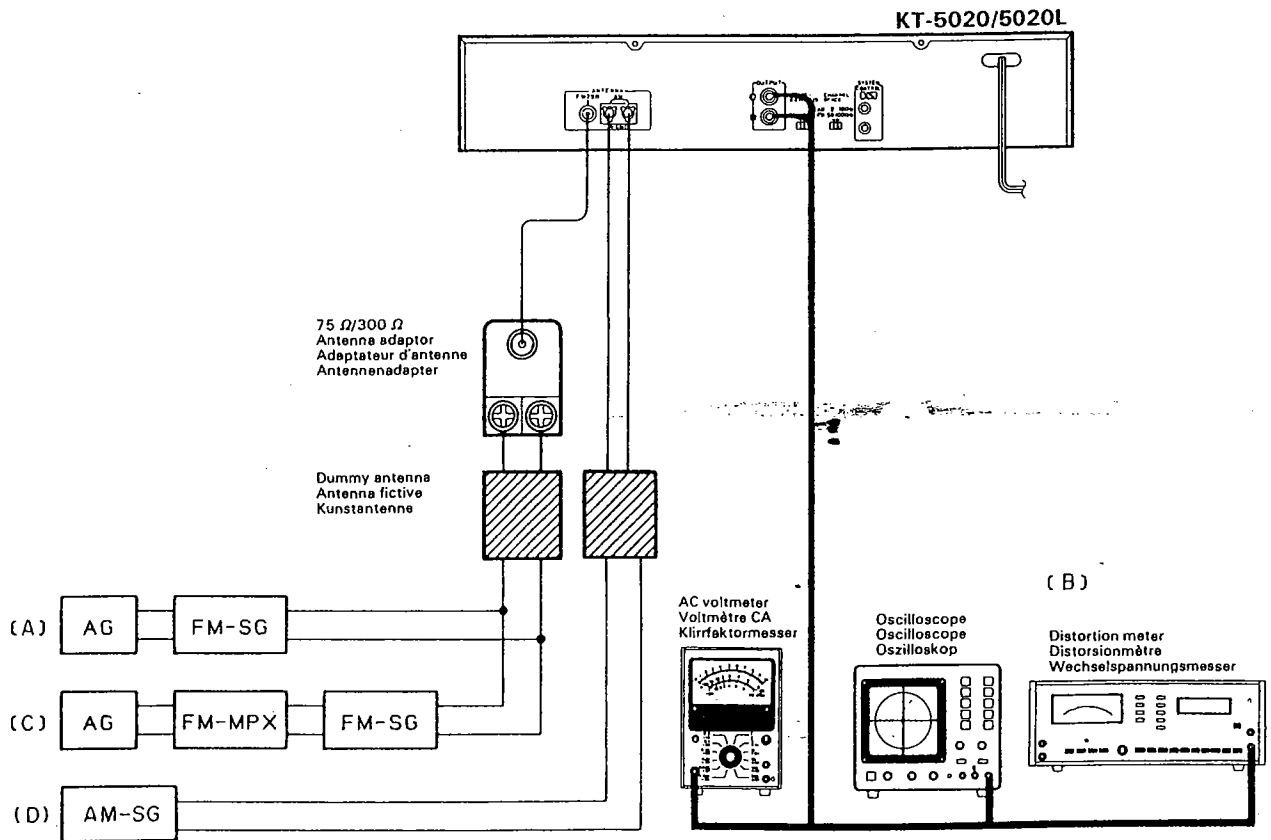
## ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
<b>UKW - EMPFANGSABTEILUNG</b> Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SELECTOR: FM TUNING MODE: AUTO IF BAND: WIDE							
1	BANDKANTE (1)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	87,5MHz	L7	3,0±0,1V	(a)
2	BANDKANTE (2)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	108,0MHz	TC1	23,0±0,1V	(a)
Abstimmungen 1 und 2 mehrere Male wiederholen.							
3	DISKRIMINATOR	(A) 98,0MHz 0 Hub 100dBμ(Ant Eingang)	Einen Gleichspannungsmesser zwischen TP7 und TP8 anschließen.	98,0MHz	L19	0±10mV	(b)
4	PLL-DETEKTOR	(A) 98,0MHz 0 Hub 100dBμ(Ant Eingang)	Einen Gleichspannungsmesser zwischen TP9 und TP10 anschließen.	98,0MHz	L22	0±50mV	(c)
5	EMPFANGSBEREICH-ABSTIMMUNGEN	(A) 98,0MHz 1kHz, ±75kHz Hub	(B)	98,0MHz	L1, 2, 3	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
6	HALT PEGEL	(A) 98,0MHz 1kHz, ±75kHz ST 14dBμ(Ant Eingang)	-	98,0MHz	VR1	Auf die Position, so daß der niedrigste Pegel des S-Meters leuchtet.	
7	STEREO KANAL TRENnung (1) R → L	(C) 98,0MHz 1kHz, ±68,25kHz Hub Wähler: R Pilotten: ±6,75kHz Hub 80dBμ(Ant Eingang)	(B)	98,0MHz	VR3	Minimal Übersprechen.	
8	STEREO KANAL TRENnung (2) L → R	(C) 98,0MHz 1kHz, ±68,25kHz Hub Wähler: L Pilotten: ±6,75kHz Hub 80dBμ(Ant-Eingang)	(B)	98,0MHz	VR3	Minimal Übersprechen.	
Die Schritte 7 und 8 wiederholen, so daß die Kanaltrennung vom rechten zum linken Kanal und umgekehrt die gleiche ist.							
<b>MW - EMPFANGSABTEILUNG</b> Die MW-Rahmenantenne angebracht lassen. SERECTOR: AM (KT-5020) oder MW (KT-5020L) TUNING MODE: AUTO							
(1)	BANDKANTE (1)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	530kHz (531kHz)	L16	1,5±0,1V	(d)
(2)	BANDKANTE (2)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	1610kHz (1602kHz)	TC3	8,0±0,1V	(d)
Abstimmungen (1) und (2) mehrere Male wiederholen.							
(3)	HF-ABGLEICH (1)	(D) 630kHz 1kHz, 30% mod	(B)	630kHz	L18	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(4)	HF-ABGLEICH (2)	(D) 1440kHz 1kHz, 30% mod	(B)	1440kHz	TC5	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen (3) und (4) mehrere Male wiederholen.							

# KT-5020/5020L

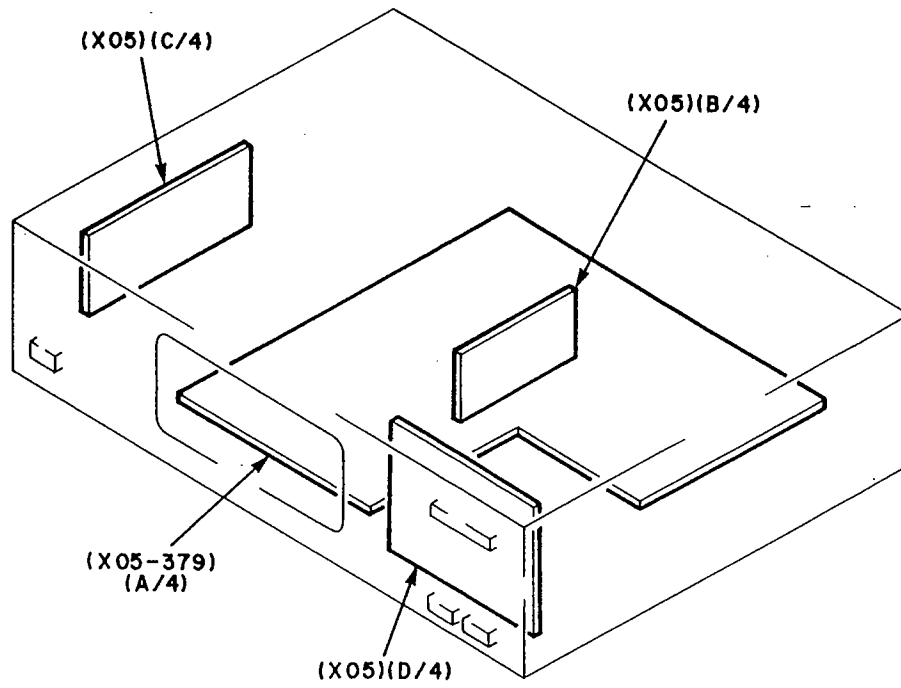
## ABGLEICH

LW-EMPfangSABTEILUNG (nur KT-5020L) Die MW-Rahmenantenne angebracht lassen. SELECTOR:LV TUNING MODE:AUTO							
(5)	BANDKANTE (1)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	153kHz	L15	1,5±0,1V	(d)
(6)	BANDKANTE (2)	-	Einen Gleichspannungsmesser zwischen TP5 und TP6(GND) anschließen.	281kHz	TC2	8,0±0,1V	(d)
Abstimmungen (5) und (6) mehrere Male wiederholen.							
(7)	HF-ABGLEICH (1)	(D) 162kHz 1kHz, 30% mod	(B)	162kHz	L17	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
(8)	HF-ABGLEICH (2)	(D) 270kHz 1kHz, 30% mod	(B)	270kHz	TC4	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen (7) und (8) mehrere Male wiederholen.							





## PC BOARD LAYOUT



# KT-5020/5020L

## VOLTAGE TABLES

### TUNER UNIT (X05-3790-11)

IC1, 2

5	13V
---	-----

IC4

1-3	FM: 2.5V AM: (1V)
4	0V
5-7	10V
8	10V/0V (7.5V/0V)
9	4V (3.5V)
10	1.8V
11	1.8V (1.2V)
12	3.8V (3.0V)
13	9V
14,15	1.4V
16,17	-
18	2.5V (1.2V)
19	1.6V (2.0V)
20	0V (10V)
21-23	4V (3.5V)
24	3.2V (2.2V)

IC5

1,2	-
3	13V
4	-
5	13V
6	4V (3.5V)
7	-
8	13V

IC6,9,12,13,14

8	13V
---	-----

IC7

IN	13V
OUT	10V
GND	-

IC8

IN	13V
OUT	-
GND	-

IC10

13	ST: 0.5V MONO: 4V
----	----------------------

IC15

4	-5V
5	-24V

IC17

1	W: 0.6V N: 11.5V
2-6	-
7	W: 11.5V N: 0.6V
8	13V

IC21

8	13V
---	-----

IC22

9	13V
---	-----

IC23

1	10V
---	-----

IC26

1	5.6V
2	-
3	5.6V
4	-
5	5.6V
6	-
7	5.6V
8	13V

IC27

OUT	5.6V
IN	-
GND	11.5V

Q1

G1	3V
G2	-
D	5.6V
S	-

Q14

E	-
C	-
B	10V

Q25, 28

E	13V
C	-
B	-

Q26

E	5V
C	-
B	-

Q27

E	27V
C	26V
B	-

### TUNER UNIT (X05-3792-71)

IC1, 2

5	13V
---	-----

IC4

1-3	FM: 2.5V AM: (1V)
4	0V
5-7	10V
8	10V/0V (7.5V/0V)
9	4V (3.5V)
10	1.8V
11	1.8V (1.2V)
12	3.8V (3.0V)
13	9V
14,15	1.4V
16,17	-
18	2.5V (1.2V)
19	1.6V (2.0V)
20	0V (10V)
21-23	4V (3.5V)
24	3.2V (2.2V)

IC5

1,2	-
3	13V
4	-
5	13V
6	4V (3.5V)
7	-
8	13V

IC6,9,12,13,14

8	13V
---	-----

IC7

IN	13V
OUT	10V
GND	-

IC8

IN	13V
OUT	-
GND	-

IC10

13	ST: 0.5V MONO: 4V
----	----------------------

IC15

4	-5V
5	-24V

IC17

1	W: 0.6V N: 11.5V
2-6	-
7	W: 11.5V N: 0.6V
8	13V

IC21

8	13V
---	-----

IC22

9	13V
---	-----

IC23

1	10V
---	-----

IC26

1	5.6V
2	-
3	5.6V
4	-
5	5.6V
6	-
7	5.6V
8	13V

IC27

OUT	5.6V
IN	-
GND	11.5V

Q1

G1	3V
G2	-
D	5.6V
S	-

Q14

E	-
C	-
B	10V

Q16,17

G	-
D	-
S	4V (3.5V)

Q25, 28

E	13V
C	-
B	-

Q26

E	5V
C	-
B	-

Q27

E	27V
C	26V
B	-

PC BOARD (Component side view) (KT-5020)

TUNER UNIT (X05-3790-11) (A/4)

TUNER UNIT (X05-3790-11) (B/4)

TUNER UNIT (X05-3790-11)

Ref. No.	Address
1	1D
2	1E
3	1F
4	1F
5	1F
6	2D
7	2E
8	2E
9	2E
10	4D
11	4D
12	4D
13	4D
14	4G
15	4G
16	4G
17	5C
18	5C
19	5C
20	5C
21	5C
22	5C
23	5C
24	5C
25	5C
26	5C
27	5C
28	5C
29	5C
30	5C
31	5C
32	5H
33	5H
34	5H
35	5H
36	5H
37	5H
38	5H
39	5H
40	5H
41	5C
42	5C
43	5C
44	5C
45	5C
46	6D
47	6D

