

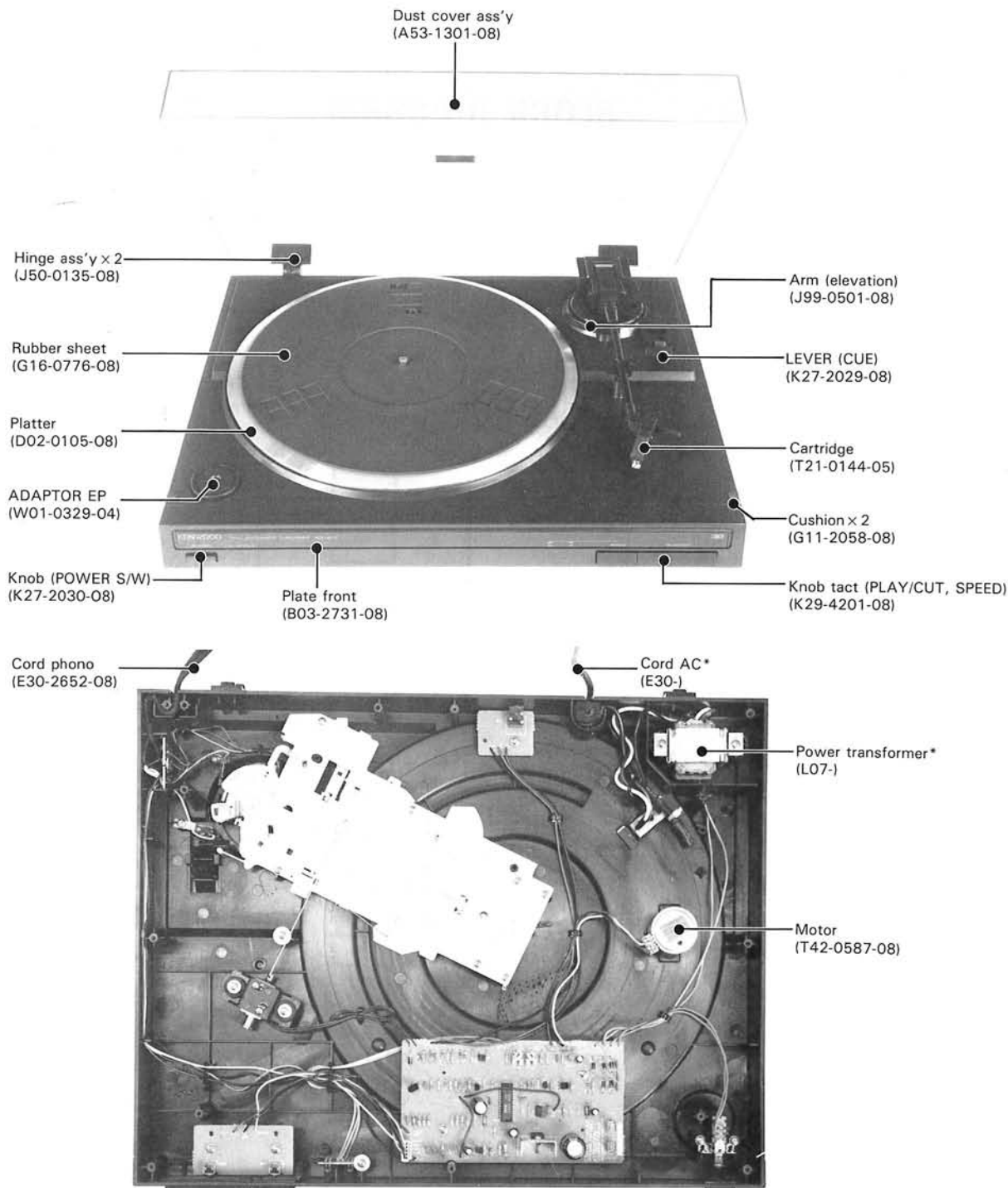
FULL AUTOMATIC TURNTABLE

KD-491F

SERVICE MANUAL

KENWOOD

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B51-4280-00(T) 3530

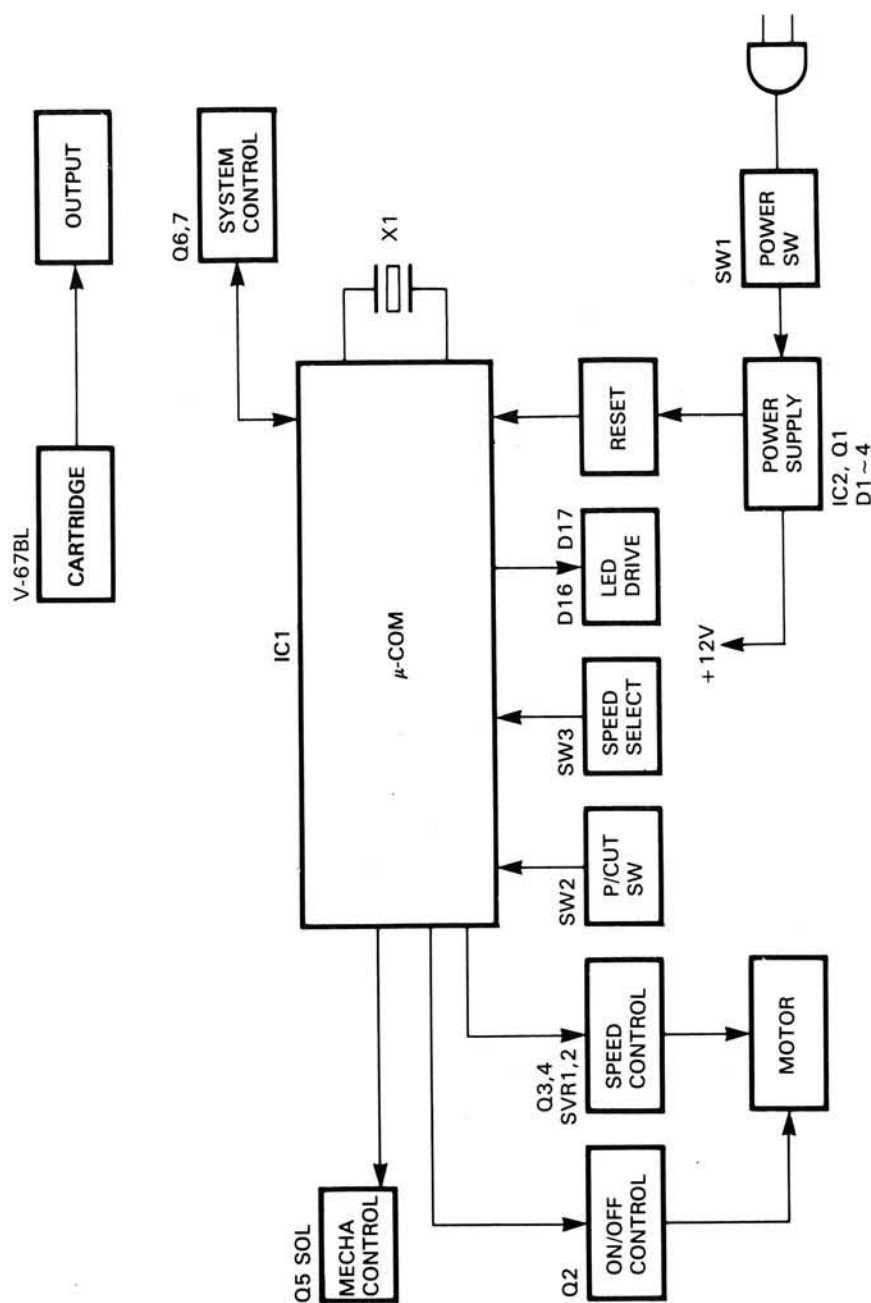


* Refer to parts list on page 20.

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BLOCK DIAGRAM



CIRCUIT DESCRIPTION

EXPLANATION of TERMINALS (LM6416F)

PIN NO	PORT NAME	I/O	FUNCTION DESCRIPTION	REMARKS
1	M.SPEED	O	33/45 CONTROL H:33 L:45	
2	M.CONT.	O	MOTOR ON/OFF H:OFF L:ON	
3	BUSY IN	I	SYSTEM CONTROL INPUT	
4	DATA IN	I	SYSTEM CONTROL INPUT	
5	EX	—		
6	X	—		
7	SPEED	I	SPEED CONTROL	
8	RST	I	RESET	
11	45 LED	O	45 LED CONTROL H:OFF L:ON	
12	33 LED	O	33 LED CONTROL H:OFF L:ON	
14	Vss	—	GND	
19	PL 1	O	PLUNGER CONTROL H:OFF L:ON	
20	VDD	I	+5V	
21	REST.	I	REST SW (SW5) H:OFF L:ON	
22	P/C	I	PLAY/CUT (SW2) H:OFF L:ON	
23	—	—	—	
24	CUE	I	CUE (SW4) H:OFF L:ON	
25	PL2	O	PLUNGER CONTROL H:OFF L:ON	
26	—	—	—	
27	BUSY OUT	O	SYSTEM CONTROL OUTPUT	
28	DATA OUT	O	SYSTEM CONTROL OUTPUT	

MECHANISM DESCRIPTION

Auto Play Operation

1. Without record (auto-in)

The auto size cam (677) is fixed at the position shown in Fig. 1-1 by the boss (d) of the set lever (668).

By the hook (669) of the tonearm feed cam (664), the boss (a) on the tonearm feed (658) is pushed to move the tonearm. Without a record on the platter, since (676) and (677) hit against each other at point (c), the hook (669) rotates by the protrusion (b) to come off with the boss (a), in which state the tonearm does not move. (Fig. 1-2)

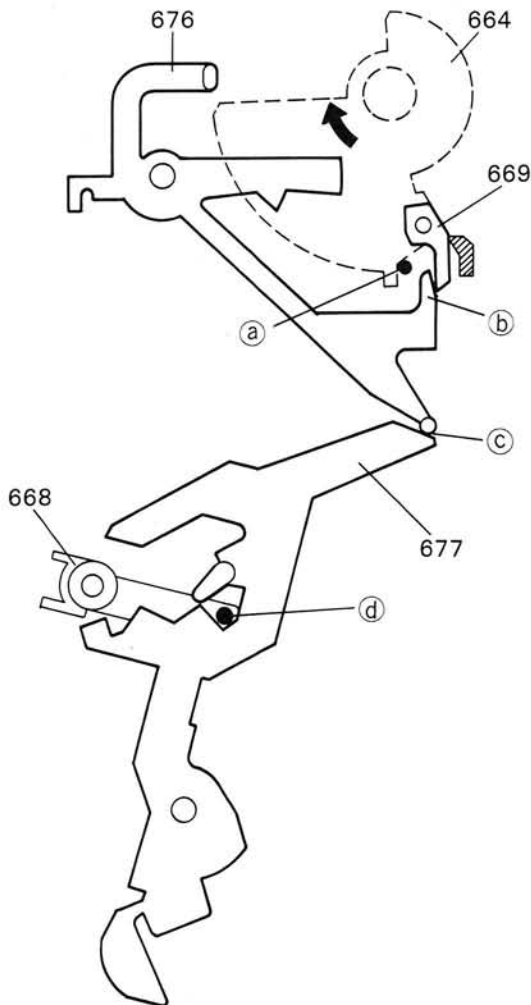


Fig. 1-1

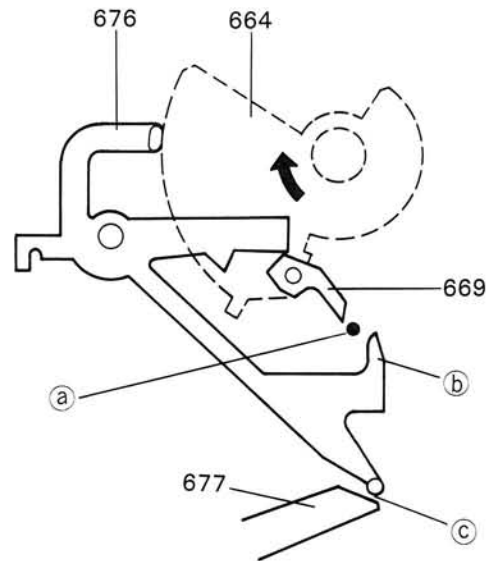


Fig. 1-2

MECHANISM DESCRIPTION

2. For 17-cm record lead-in

The auto size cam (677) is fixed at the position shown in Fig. 2-1 by the boss (d) of the set lever (668).

By the hook (669) of the tonearm feed cam (664), the boss (a) on the tonearm feed (658) is pushed to move the tonearm. With a 17-cm record, since (676) and (677) hit against each other at point (g), the hook (669) moves the boss (a) without hitting against (f) and hits against the section (h) of (676) so that the tonearm stops motion at the 17-cm record auto lead-in position. (Fig. 2-2)

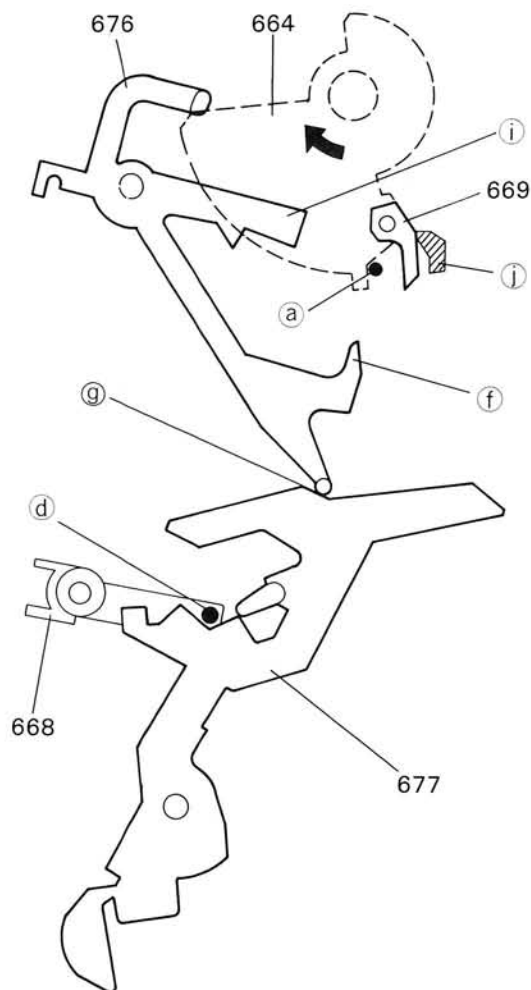


Fig. 2-1

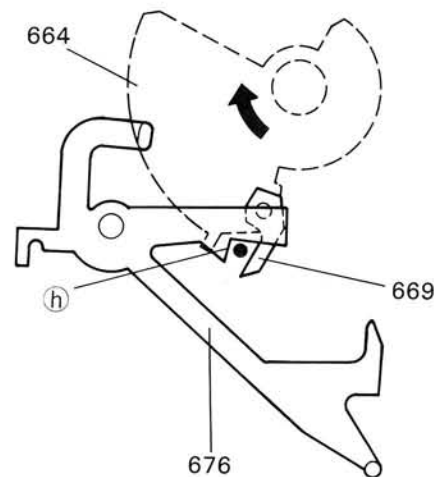


Fig. 2-2

MECHANISM DESCRIPTION

3. For 30-cm record auto-in

The auto size cam (677) is fixed at the position shown in Fig. 3-1 by the boss (d) of the set lever (668).

With a 30-cm record, since the auto-in cam (676) stays by the boss (i), the hook (669) of the tonearm feed cam (664) pushes to move the boss (a) to stop at point (i), which point refers to the 30-cm record auto-in position. (Fig. 3-2)

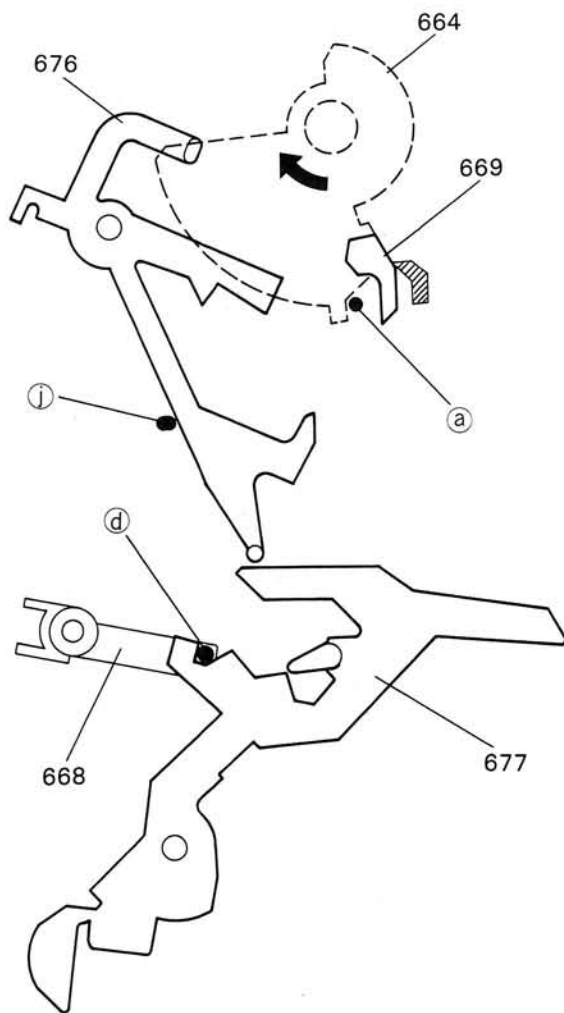


Fig. 3-1

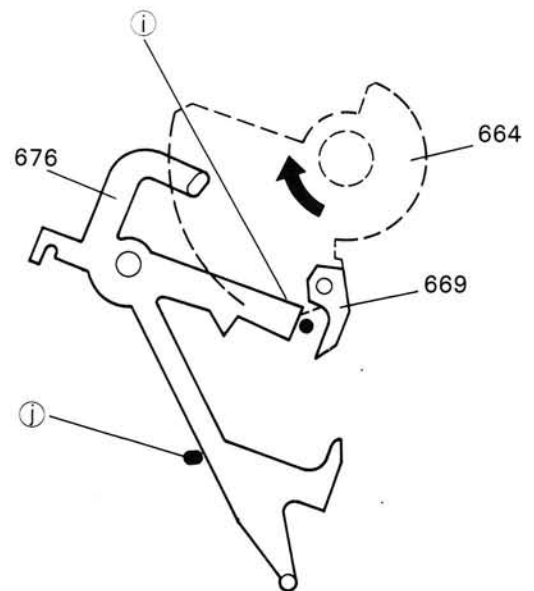


Fig. 3-2

MECHANISM DESCRIPTION

Auto-in, then Auto Return

Situation (Fig. 4) refers to the stop mode.

The TT gears and the motion gear (670) are engaged with each other so that the cycle plate (661) starts to move in the direction of arrow B.

Thus, the tonearm feed cam (664) rotates in the direction of arrow A.

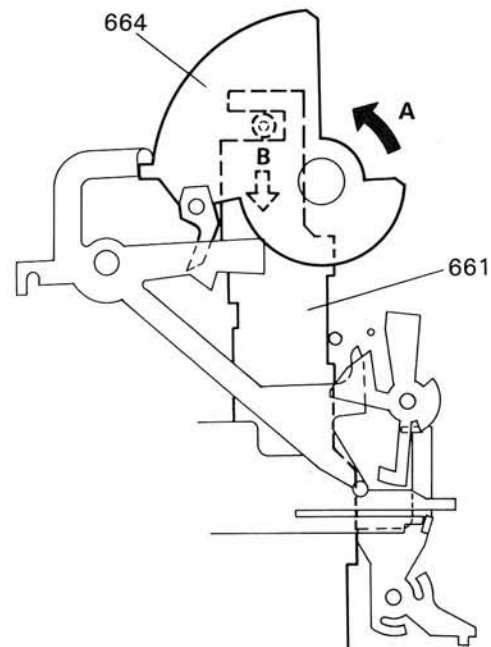


Fig. 4

Further, the cycle plate (661) moves downwards and go off with the discrimination lever (667), at which time the discrimination lever (667) is pulled by the spring (680) to hold the switch lever (662) as shown in Fig. 5.

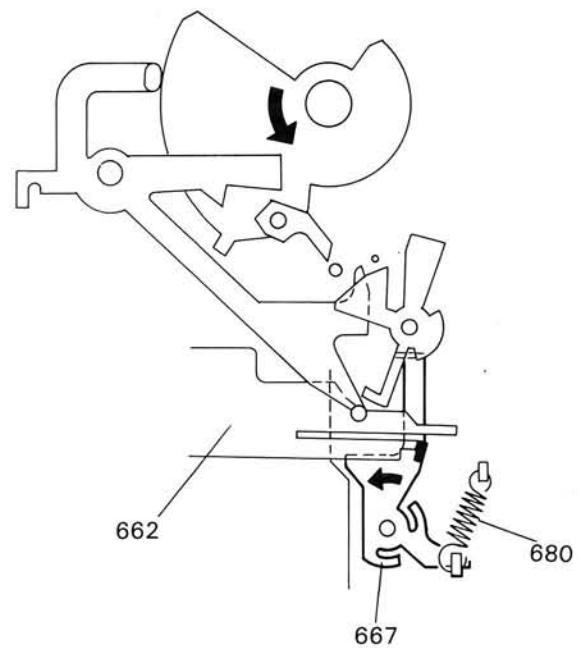


Fig. 5

MECHANISM DESCRIPTION

Where the cycle plate (661) almost lowers down fully, the auto-in cam (676) goes to the end of the tonearm feed cam (664) to rotate in the direction of arrow A.

At this time, the hook (669) also hits against the boss (i) to rotate in the direction of arrow B. (Fig. 6)

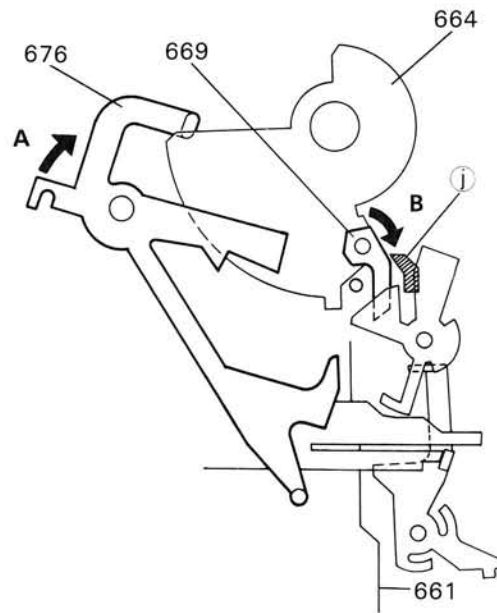


Fig. 6

When the cycle plate (661) starts to rise, the tonearm feed cam (664) rotates in the direction of arrow A.

By the boss (a) on the tonearm feed (658), the manual lever (675) turns in the direction of arrow B and stops at the position shown in Fig. 7.

At this time, the boss (k) of the auto-in cam (676) passes inside the tonearm feed cam (664).

The boss (a) on the tonearm feed (658) boss hits against the auto-in cam (676) to determine the auto-in position.

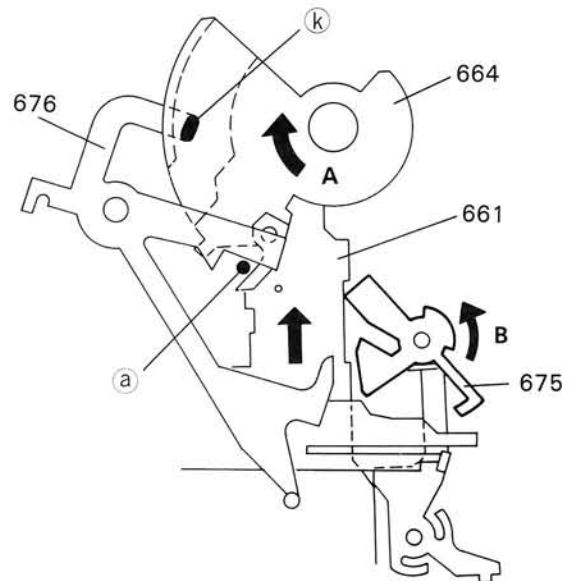


Fig. 7

MECHANISM DESCRIPTION

The cycle plate (661) and the discrimination lever (667) hit against each other. The switch lever (662) is thereby released from its holding to move in the direction of arrow A to fix the manual lever (675) at the position shown in Fig. 8.

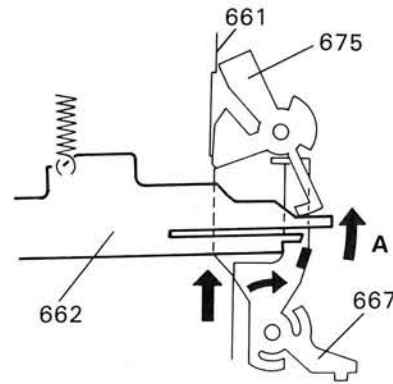


Fig. 8

The auto-in cam (676), after passing inside the tonearm feed cam (664), rotates in the direction of arrow A with the cycle plate (661) almost raised up fully, to the situation shown in Fig. 9, in which situation the play mode is given.

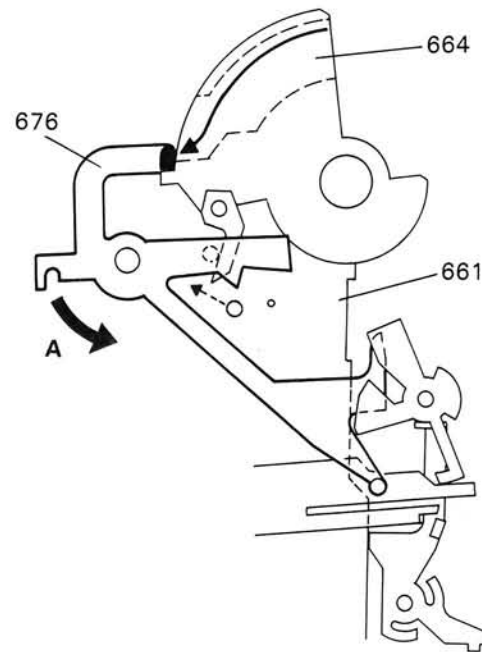


Fig. 9

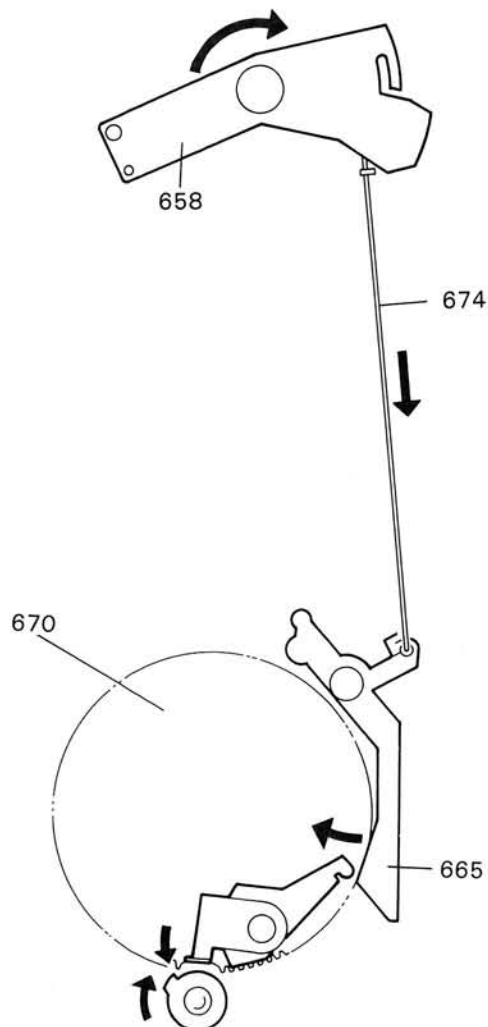


Fig. 10

Due to the motion of the tonearm, the tonearm feed (658) also rotates and pushes the slide link (674) where the end of the record is reached.

In this connection, the return lever (665) also rotates to push the reset lever on the motion gear (670) so that the guide cam and the TT gear are engaged with each other to let the motion gear assy (670) rotate. (Fig. 10)

MECHANISM DESCRIPTION

Tonearm Return from play mode

By the protrusion (①) of the tonearm feed cam (664), the tonearm starts to return. (Fig. 11)

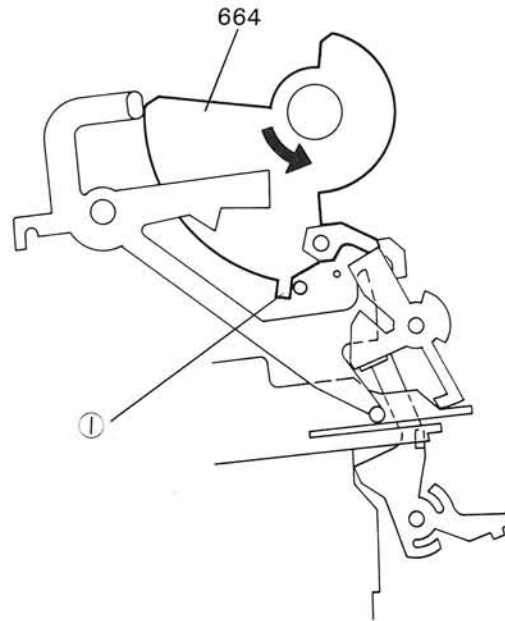


Fig. 11

By the boss (Ⓜ) on the tonearm feed (658), the manual lever R (675) rotates in the direction of an arrow to lower the switch lever (662) in the direction of arrow A.

At this time, the cam (669) on the tonearm feed cam (664) enters the situation shown in Fig. 12 by the boss (①).

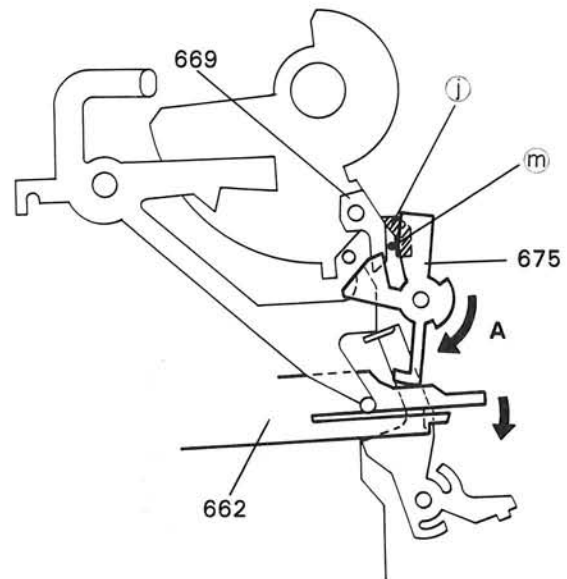


Fig. 12

MECHANISM DESCRIPTION

When the cycle plate (661) starts to rise, the tonearm feed cam (664) rotates in the direction of arrow A.

At this time, the discrimination lever (667) is positioned as shown in Fig. 13. Thus, the cam (669) on the tonearm feed cam (664) hits against the protrusion (n) of the auto-in cam (676) and the boss (a) on the tonearm feed (658) does not hit, so that the tonearm does not move and stays at the return position.

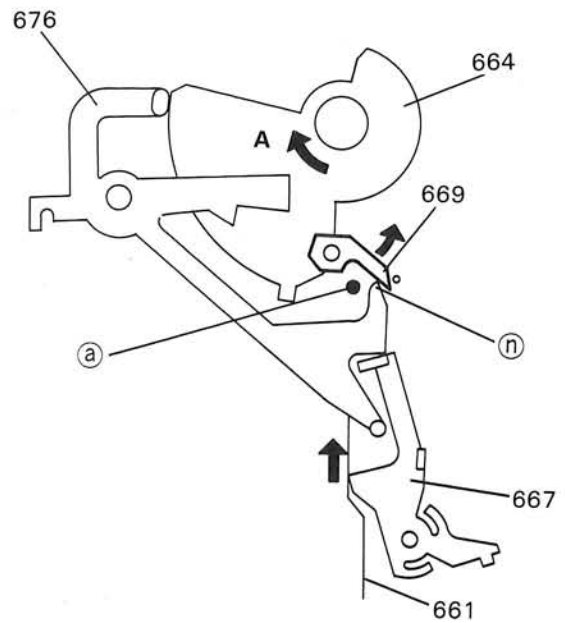


Fig. 13

The situation with the cycle plate (661) raised up fully refers to the tonearm stop position. (The TT gear and the motion gear are disengaged from each other.)

In this situation, as shown in Fig. 14, the manual lever R (675) is in contact with the switch lever (662), and the cycle plate (661) presses against the discrimination lever (667).

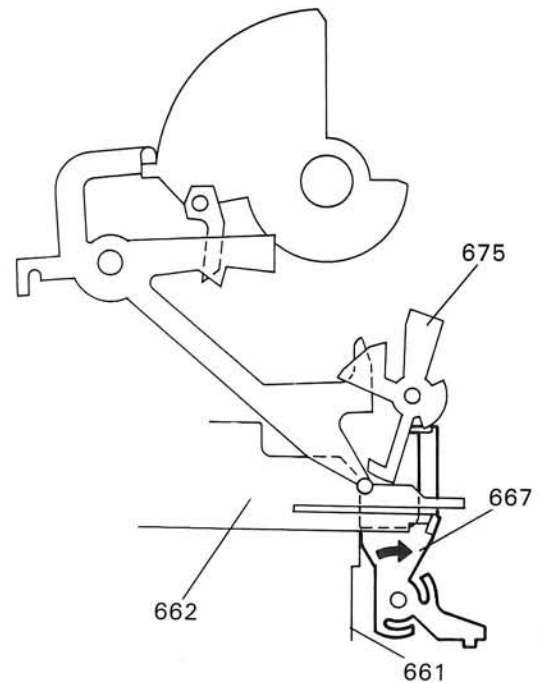


Fig. 14

MECHANISM DESCRIPTION

Tonearm Up/Down Motion

The up/down motion of the tonearm is dealt with by the cueing cam (673). When the tonearm is automatically led in, its up/down motion is made by the control of (673) by the tonearm feed cam (664).

When the tonearm is manually led in, the section indicated by arrow (A) is operated by the cue knob to control the up/down motion of the tonearm.

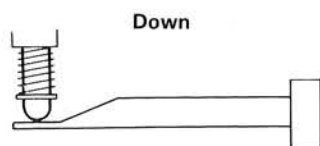
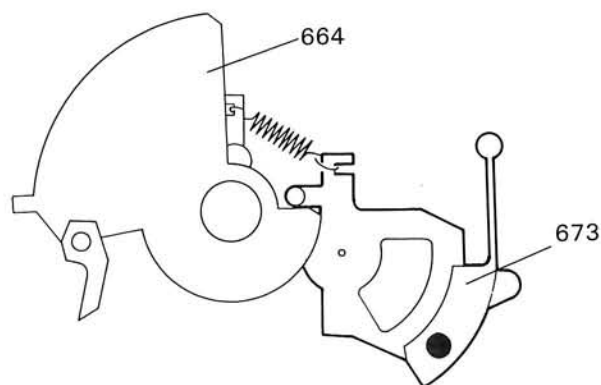


Fig. 15

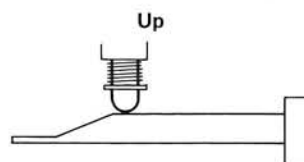
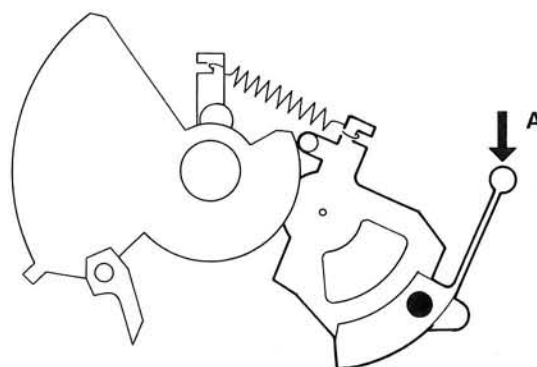
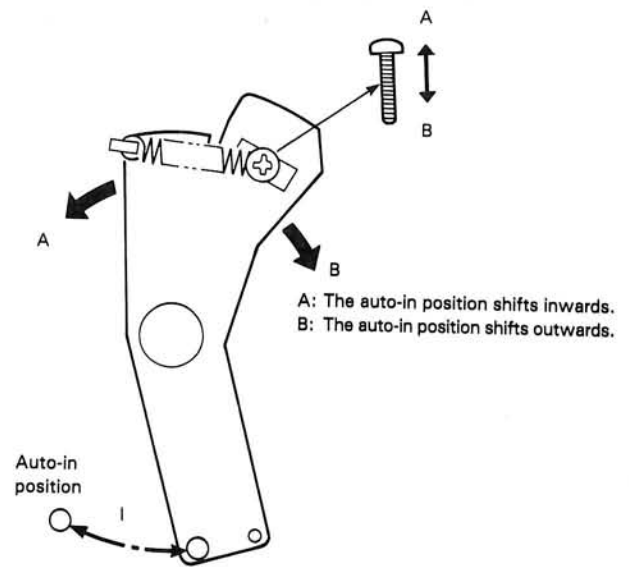
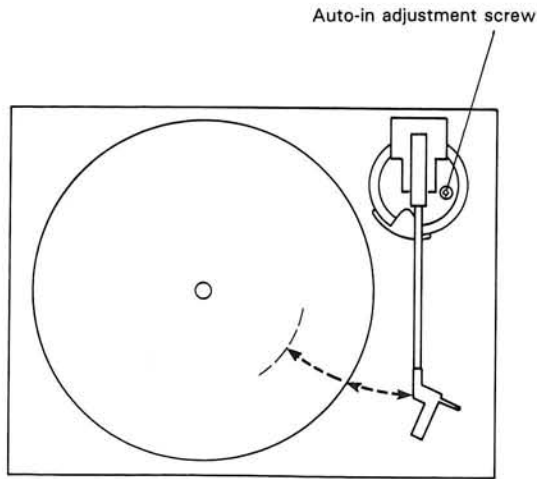


Fig. 16

ADJUSTMENT

1. Auto-in adjustment

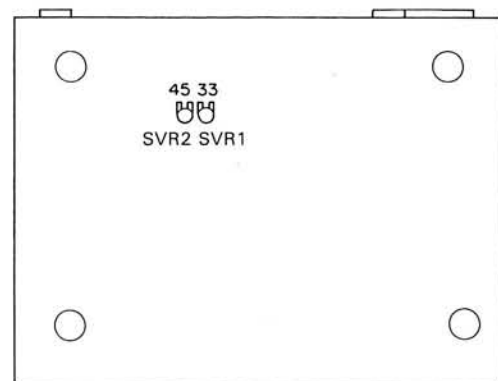
Turn the auto-in adjustment screw to adjust the traveling distance of the tonearm when it is automatically led in.



2. Speed adjustments

Turn SVR1 (33 RPM) and SVR2 (45 RPM) to adjust.

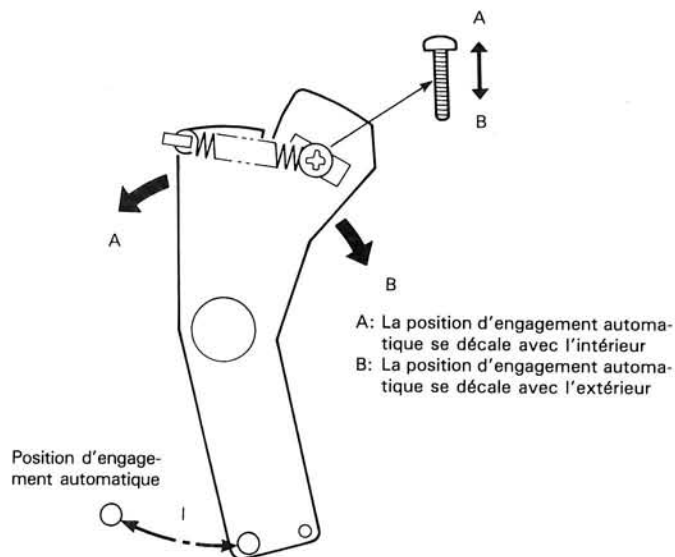
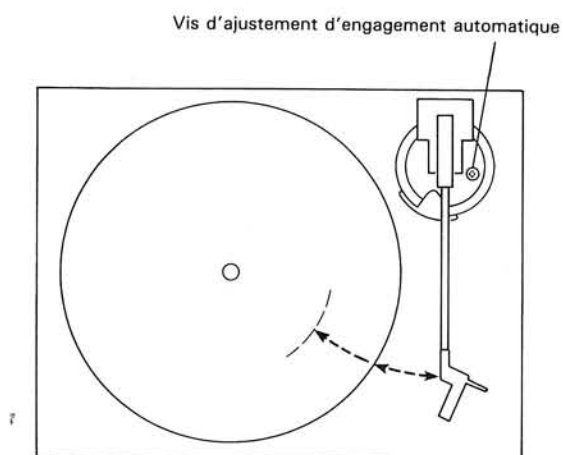
At first, perform the 33 RPM adjustment by SVR1, then the 45 RPM adjustment by SVR2.



REGLAGES

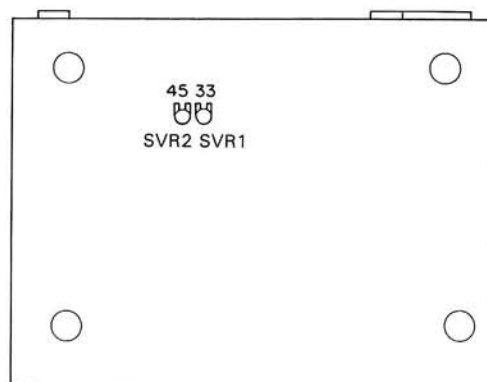
1. Ajustement de l'engagement automatique

Tourner la vis d'ajustement d'engagement automatique pour régler la distance de déplacement du bras de lecture quand il est automatiquement engagé.



2. Ajustements de la vitesse

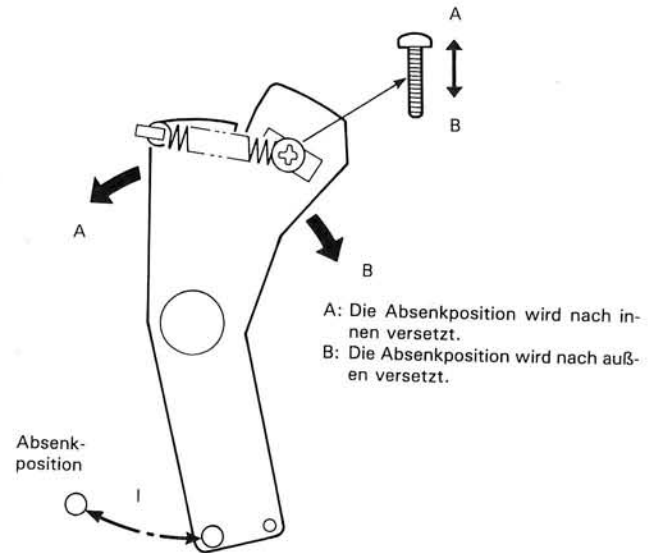
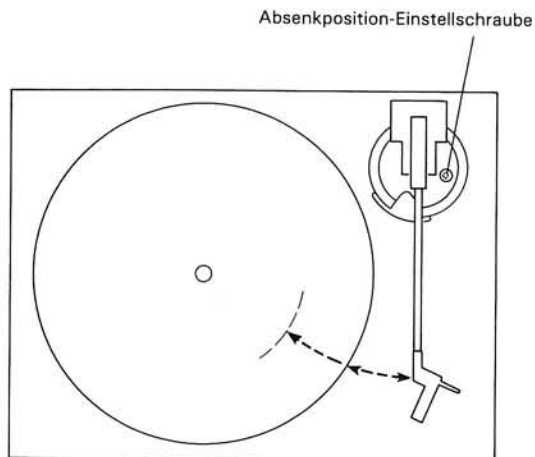
Tourner SRV1 (33 tours) et SRV2 (45 tours) pour ajuster. D'abord effectuer l'ajustement des 33 tours avec SRV1 puis l'ajustement des 45 tours avec SRV2.



ABGLEICH

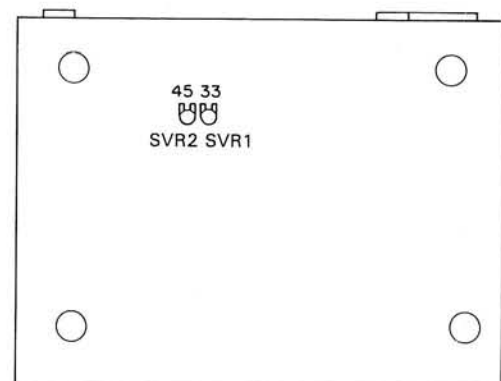
1. Einstellung der Absenkposition

Die Bewegungsentfernung des Tonarms bis zum automatischen Absenken durch Drehen der Absenkposition-Einstellschraube einstellen.

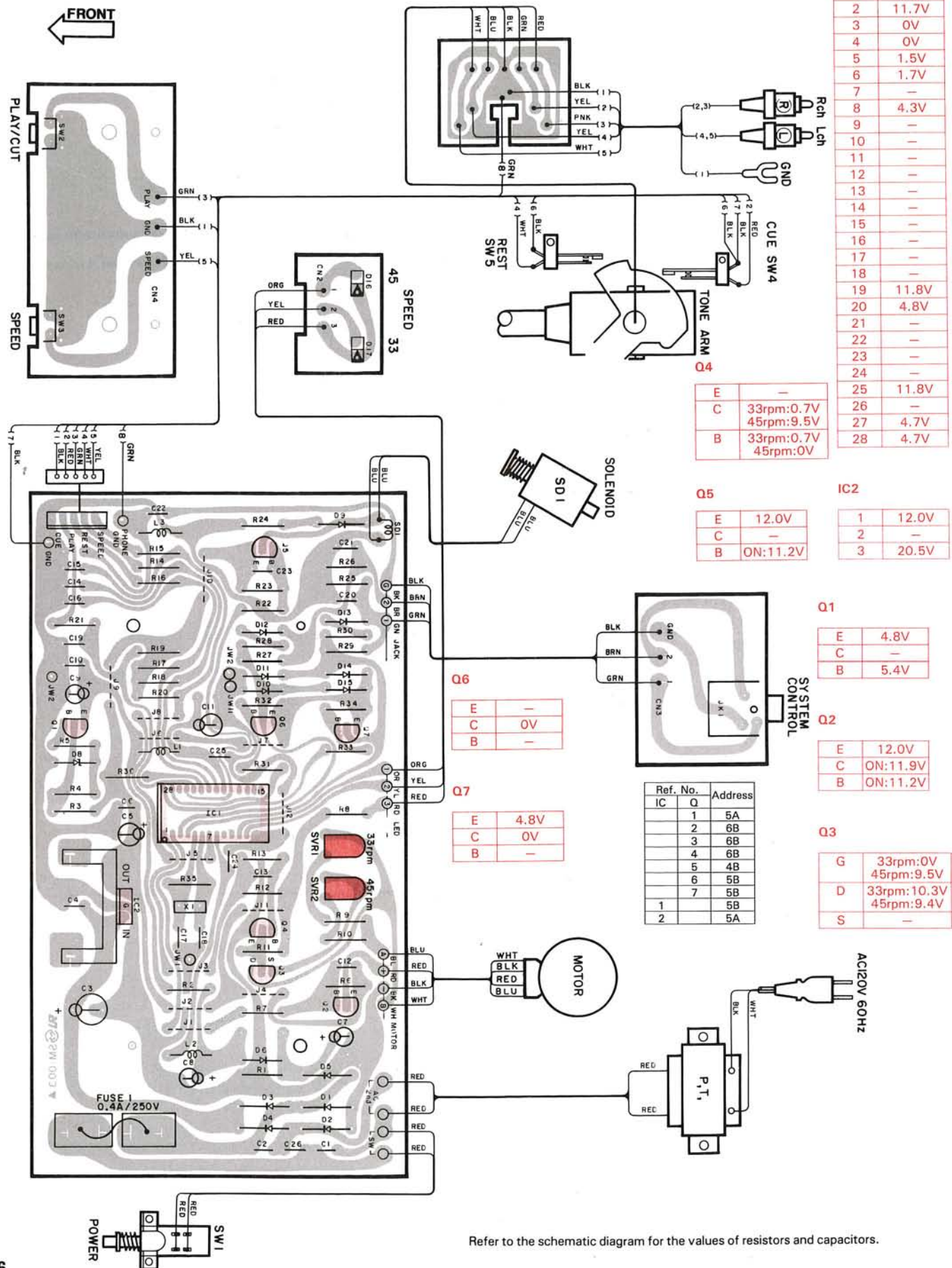


2. Drehzahl-Einstellung

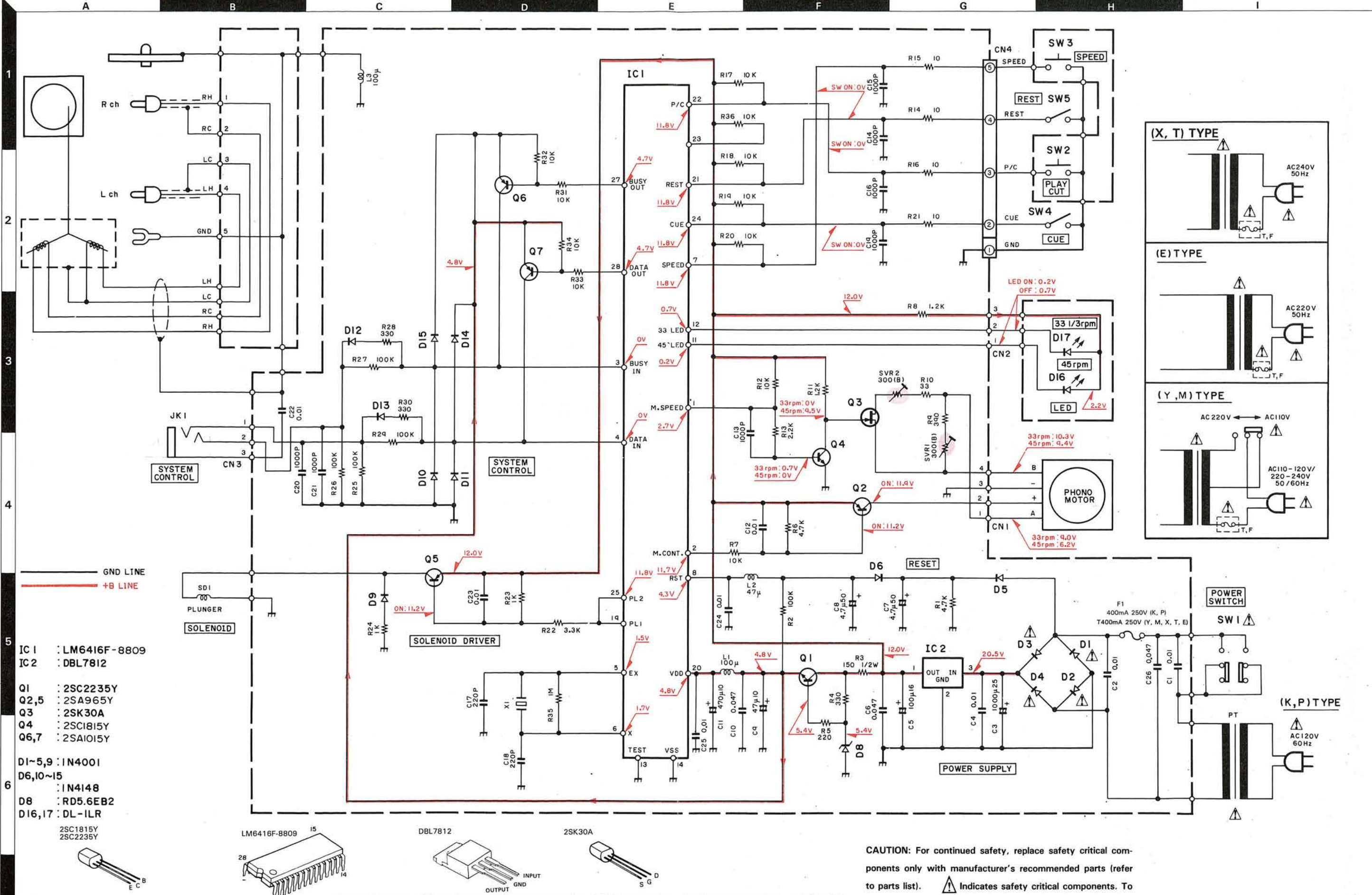
Für die Einstellung SVR1 (33 Upm) und SVR2 (45 Upm) drehen. Zuerst die Einstellung für 33 Upm mit SVR1 und dann die für 45 Upm mit SVR2 durchführen.



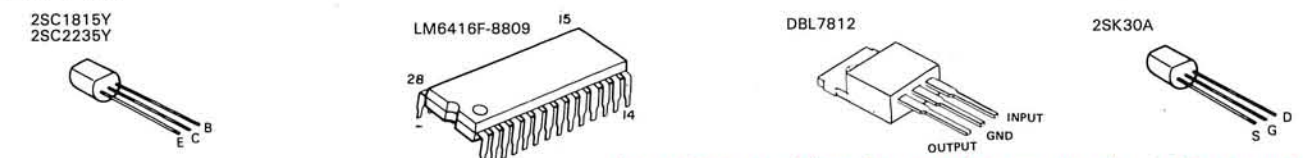
PC BOARD (Component side view)



Refer to the schematic diagram for the values of resistors and capacitors.



- IC 1 : LM6416F-8809
 IC 2 : DBL7812
- Q1 : 2SC2235Y
 Q2,5 : 2SA965Y
 Q3 : 2SK30A
 Q4 : 2SC1815Y
 Q6,7 : 2SA1015Y
- D1~5,9 : 1N4001
 D6,10~15 : 1N4148
 D8 : RD5.6EB2
 D16,17 : DL-ILR



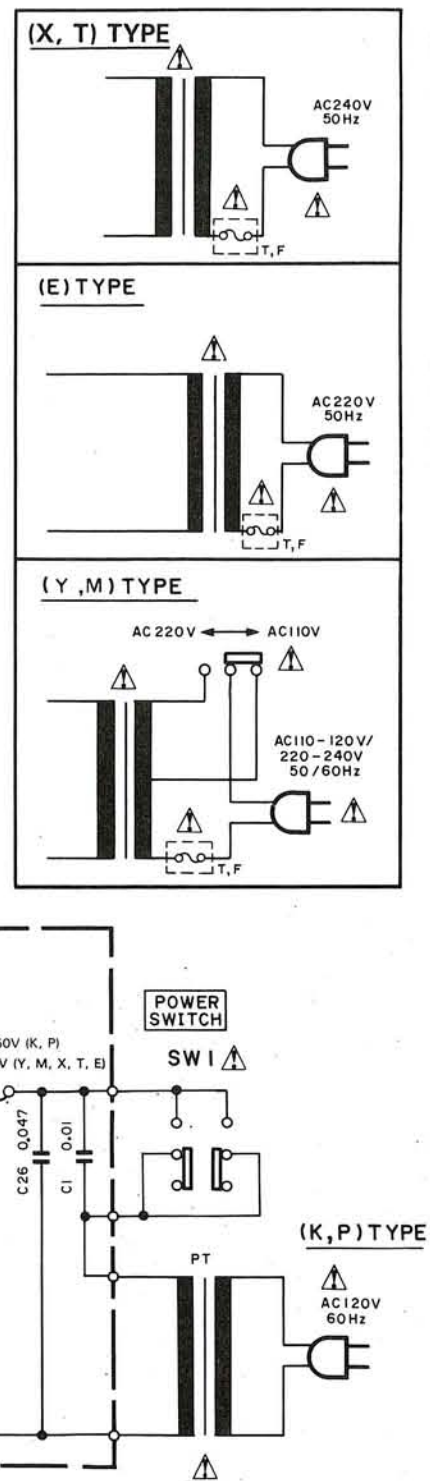
DC voltages are as measured with a high impedance voltmeter at 33-1/3 r.p.m. mode. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance, près de 33-1/3 r.p.m. en mode de lecture. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

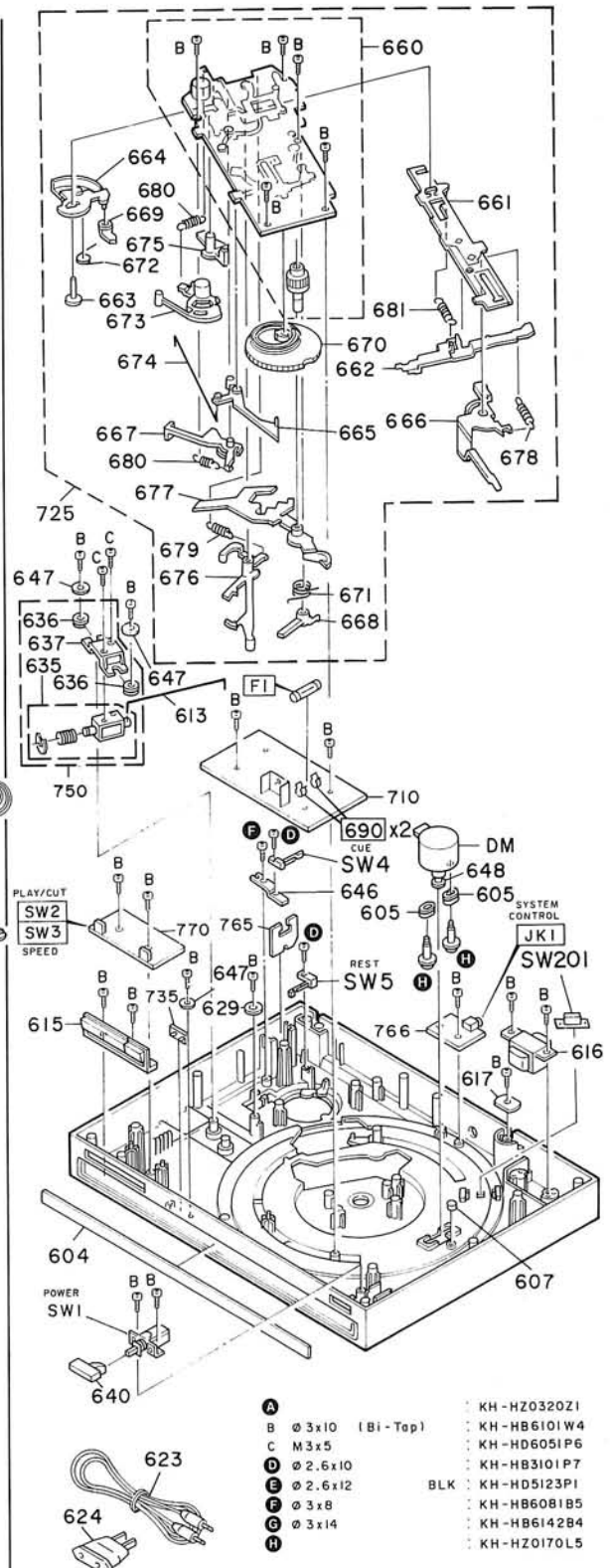
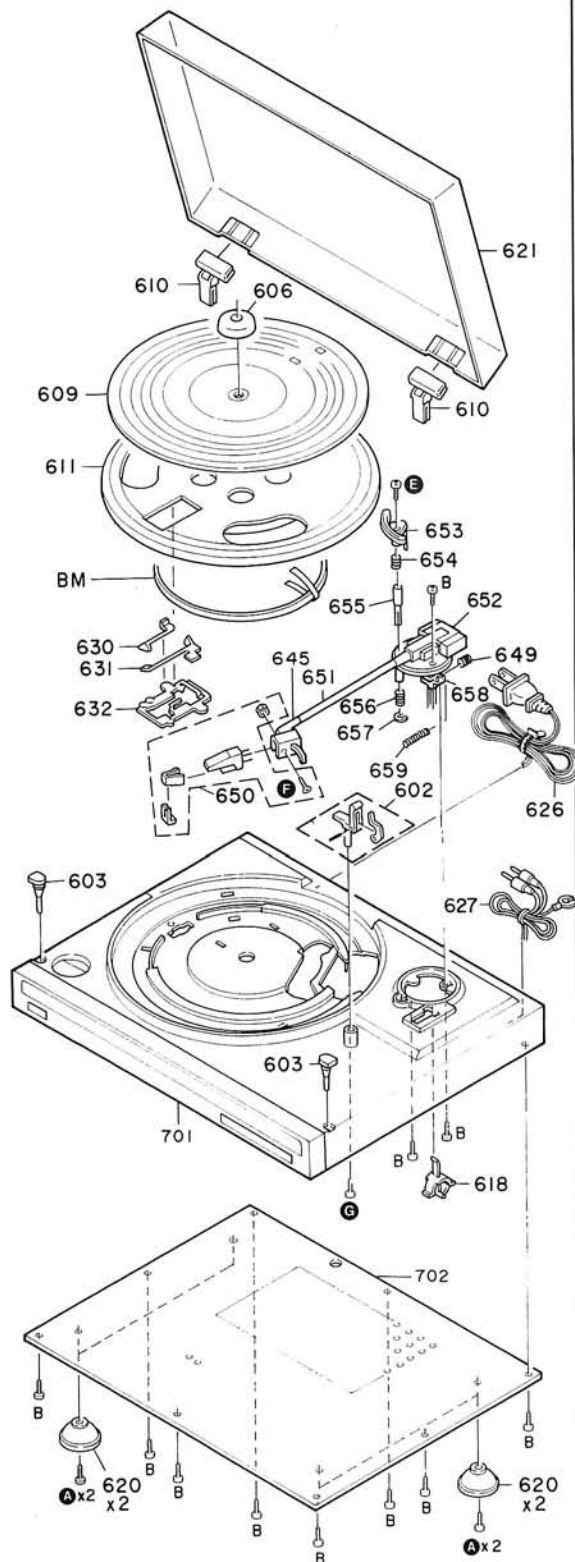
Die angegebenen Gleichspannungswerte wurden bei 33-1/3 r.p.m. in der Wiedergabe mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Y21-3240-10



EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

※ New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
KD-491F						
602	2A		J19-3416-08	ARM STAND ASSY		
603	2A		G11-2059-08	CUSHION		
604	3B	*	B03-2731-08	PLATE FRONT		
605	2B		G11-2058-08	CUSHION		
606	1A		W01-0329-04	ADAPTOR EP		
607	3B		G11-2063-08	CUSHION MOTOR A		
609	1A		G16-0776-08	RUBBER SHEET		
610	1A		J50-0135-08	HINGE ASSY		
611	1A		D02-0105-08	PLATTER		
613	2B		D10-3142-08	LINK (START/CUT)		
△ 615	2B		K29-4201-08	KNOB TACT (PLAY/CUT, SPEED)	KP	
△ 616	2B	*	L07-0338-08	POWER TRANSFORMER	E	
△ 616	2B		L07-0339-08	POWER TRANSFORMER	TX	
△ 616	2B		L07-0340-08	POWER TRANSFORMER	MY	
△ 616	2B		L07-0341-08	POWER TRANSFORMER		
617	2B		J19-3414-08	STOPPER CORD		
618	3A		K27-2029-08	LEVER (CUE)		
620	3A		J02-1065-08	FOOT RUBBER		
621	1A		A53-1301-08	DUST COVER ASSY		
623	3B		E30-2629-05	SYNCHRO CORD		
△ 624	3B		E03-0115-05	AC PLUG ADAPTOR	M	
△ 626	2A		E30-2645-08	CORD AC	KPY	
△ 626	2A		E30-2646-08	CORD AC	X	
△ 626	2A		E30-2647-08	CORD AC	ME	
△ 626	2A		E30-2648-08	CORD AC	T	
627	2A		E30-2652-08	CORD PHONO		
629	2B		N19-1261-08	WASHER PLAIN		
630	2A		J19-3420-08	SENSOR B		
631	2A		J19-3421-08	SENSOR A		
632	2A		J19-3422-08	HOLDER SENSOR		
635	2B		T94-0222-08	SOLENOID		
636	2B		G11-2064-08	CUSHION RUBBER A		
637	2B		J19-3423-08	HOUSING SOLENOID		
640	3B		K27-2030-08	KNOB (POWER S/W)		
645	2A		W03-4274-08	HEAD SHELL		
646	2B		J19-3424-08	B.K.T (LEAF S/W)		
647	2B		N19-1262-08	WASHER PLAIN		
648	2B		D15-0317-08	PULLEY (MOTOR)		
649	2A		G01-3364-08	SPRING ADJUST		
650	2A		T21-0144-05	CARTRIDGE (V-67BL)		
651	2A		D10-3143-08	PIPE, ARM		
652	2A		J19-3419-08	HOLDER PIPE		
653	2A		J99-0501-08	ARM (ELEVATION)		
654	2A		G01-3301-08	SPRING (ADJUST(E/V))		
655	2A		D21-1653-08	SHAFT (ELEVATION)		
656	2A		G01-3358-08	SPRING (ELEVATION)		
657	2A		N29-0207-04	E-RING		
658	2A		D10-3145-08	ARM FEED		
659	2A		G01-3367-08	SPRING ANTI		
660	1B		A10-2853-08	UNIT PLATE ØSR		
661	1B		D10-3146-08	CYCLE PLATE ØSR		
662	1B		D10-3147-08	SWITCH LEVER		
663	1B		D19-0265-08	FEED CAM STUD		

E: Scandinavia & Europe K: USA P: Canada W: Europe

Y: PX(Far East, Hawaii) T: England M: Other Areas

Y: AAFES(Europe) X: Australia

△ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
664	1B		D12-0131-08	ARM FEED CAM		
665	1B		D10-3148-08	RETURN LEVER		
666	1B		D10-3149-08	START LEVER		
667	1B		D10-3150-08	DISCRIMINATION LEVER		
668	2B		D10-3151-08	SET LEVER		
669	1B		D10-3152-08	FEED RATCHET		
670	1B		D13-0933-08	MOTION GEAR SUSS		
671	2B		G01-3368-08	TORSION SPRING		
672	1B		G01-3369-08	FEED RATCHET SPRING		
673	1B		D12-0132-08	CUEING CAM		
674	1B		D10-3153-08	SLIDE LINK		
675	1B		D10-3154-08	MANUAL LEVER R		
676	2B		D12-0133-08	AUTO-IN CAM R		
677	2B		D12-0134-08	AUTO SIZE CAM		
678	1B		G01-3370-08	SPRING STR		
679	2B		G01-3371-08	SPRING		
680	1B		G01-3372-08	SPRING SCC(X2)		
681	1B		G01-3373-08	SPRING SWITCH		
BM	2A		D16-0318-08	BELT DRIVING		
DM	2B		T42-0587-08	MOTOR		
SW1	3B		S70-0001-08	S/W PUSH(POWER)		
SW4 ,5	2B		S74-0003-08	S/W LEAF(CUE,REST)		
SW201	3B		S62-0005-08	S/W (VOLTAGE SELECTOR)	MY	
A	3A		N09-2831-08	SCREW FOOT		
B	2B, 3A		N09-2422-08	SCREW TAP WPH		
C	2B		N09-2827-08	SCREW PH		
D	2B		N09-2821-08	SCREW TAP PH		
E	1A		N09-2819-08	SCREW PH		
F	2B		N09-2830-08	SCREW TAP BH		
G	3A		N09-2828-08	SCREW TAP BH		
H	2B		N09-2824-08	SCREW (MOTOR SETTING)		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	Y	
-			B46-0095-03	WARRANTY CARD	Y	
-			B46-0096-13	WARRANTY CARD	X	
-			B46-0121-03	WARRANTY CARD	P	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-13	WARRANTY CARD	T	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	YT	
-		*	B60-0445-08	INSTRUCTION MANUAL(ENGLISH)	KYXT	
-		*	B60-0446-08	INSTRUCTION MANUAL(ENG,FRENCH)	P	
-		*	B60-0447-08	INSTRUCTION MANUAL(E,F,G,I,D)	E	
-		*	B60-0448-08	INSTRUCTION MANUAL(E,S,C)	M	
-		*	H10-3840-08	POLYSTYRENE FOAMED FIXTURE		
-			H25-0232-04	P.E BAG-MANUAL		
-			H25-0641-08	P.E BAG-SET		
-			H25-0645-08	P.E BAG-PLATTER		
-		*	H50-0059-08	ITEM CARTON CASE(KD-491FC)	K	
-		*	H50-0060-08	ITEM CARTON CASE(KD-491F)	PMYXTE	
ELECTRIC UNIT						
D16 ,17			DL-1LR	LED		
C1 ,2			CK45FF1H103J	CERAMIC 0.010UF J		

E: Scandinavia & Europe K: USA P: Canada W: Europe

Y: PX(Far East, Hawaii) T: England M: Other Areas

Y: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

※ New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C3			CE04KW1E102J	ELECTRØ 1000UF 25WV		
C4			CK45FF1H103J	CERAMIC 0.010UF J		
C5			CE04KW1C101J	ELECTRØ 100UF 16WV		
C6			CK45FF1H473J	CERAMIC 0.047UF J		
C7 , 8			CE04KW1H4R7J	ELECTRØ 4.7UF 50WV		
C9			CE04KW1A470J	ELECTRØ 47UF 10WV		
C10			CK45FF1H473J	CERAMIC 0.047UF J		
C11			CE04KW1A471J	ELECTRØ 470UF 10WV		
C12			CK45FF1H103J	CERAMIC 0.010UF J		
C13 -16			CK45FF1H102J	CERAMIC 1000PF J		
C17 ,18			CK45FF1H221J	CERAMIC 220PF J		
C19 -21			CK45FF1H102J	CERAMIC 1000PF J		
C22 -25			CK45FF1H103J	CERAMIC 0.010UF J		
C26			CK45FF1H473J	CERAMIC 0.047UF J		
690	2B		J13-0078-08	FUSE CLIP		
△ F1	2B		F50-0009-08	FUSE(250V 0.4A)	KP	
△ F1	2B		F50-0010-08	FUSE(250V T0.4A)	YMXTE	
L1			L90-0023-08	COIL (100UH)		
L2			L90-0024-08	COIL (47UH)		
L3			L90-0023-08	COIL (100UH)		
X1			L78-0283-08	RESONATOR, CERAMIC(CSB400P)		
R3			RD14BB2H151J	RD 150 J 1/2W		
SVR1,2			R12-0119-08	SEMI FIXED (3000HM B)		
SW2 ,3	2B		S70-0002-08	S/W TACT(PLAY/CUT, SPEED)		
△ D1 -5			1N4001	DIODE		
D6			1N4148	DIODE		
D8			RD5.6EB2	ZENER DIODE		
D9			1N4001	DIODE		
D10 -15			1N4148	DIODE		
IC1			LM6416F-8809	IC(MICROPROCESSOR)		
IC2			DBL7812	IC(VOLTAGE REGULATOR/+12V)		
Q1			2SC2235Y	TRANSISTOR		
Q2			2SA965Y	TRANSISTOR		
Q3			2SK30A	FET		
Q4			2SC1815Y	TRANSISTOR		
Q5			2SA965Y	TRANSISTOR		
Q6 ,7			2SA1015Y	TRANSISTOR		

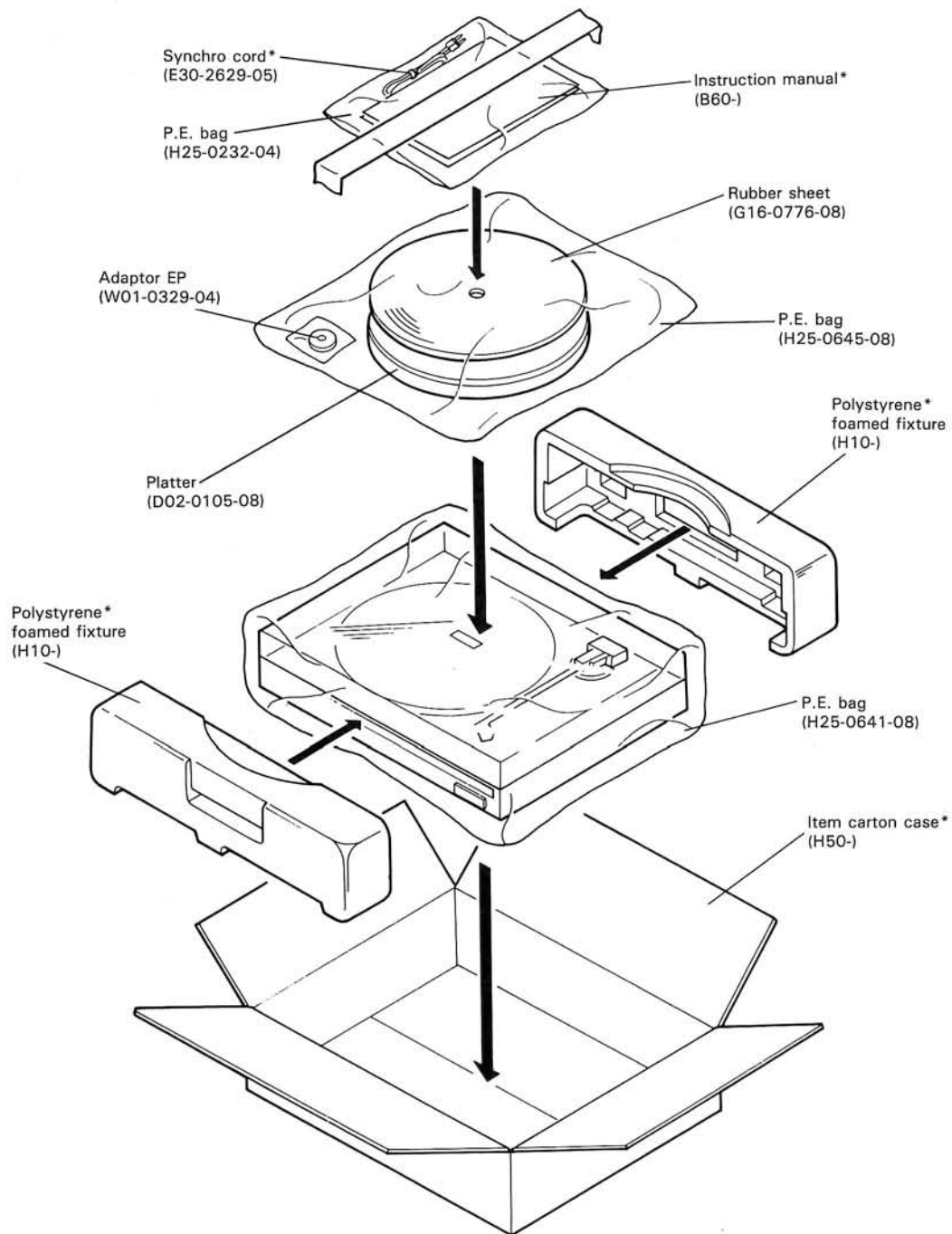
E: Scandinavia & Europe K: USA P: Canada W: Europe

Y: PX(Far East, Hawaii) T: England M: Other Areas

Y: AAFES(Europe) X: Australia

△ indicates safety critical components.

PACKING



*Refer to parts list on page 20.

KD-491F

SPECIFICATIONS

Motor and Turntable

Drive System Belt-drive system
Motor DC Servo Motor
Turntable Platter 30.1 cm (11-7/8") diameter
0.31 kg (0.68 lb) weight
Speeds 2 speeds, 33-1/3 and 45 rpm
Wow & Flutter 0.05% (WRMS)
S/N (Rumble) DIN: 68 dB (Weighted)

Tonearm

Type Static-Balanced Straight
Tonearm
Effective Tonearm Length 222 mm (8-3/4")
Overhang 16 mm (5/8")

Cartridge

Furnished Cartridge T4P MM cartridge (V-67BL)
Frequency Response 20 ~ 20,000 Hz
Output Voltage 2.5 mV
(1,000 Hz, 5 cm/sec)
Load Impedance 47 k Ω
Stylus N-67BL with 0.6 mil diamond
Optimum Tracking Force 1.25 grams
Compliance 7×10^{-6} cm/dyne

Miscellaneous

Power Consumption 6 W
Dimensions W: 440 mm (17-5/16")
H: 106 mm (4-3/16")
With Dust Cover
95 mm (3-3/4")
Without Dust Cover
D: 390 mm (15-3/8")
With Dust Cover
348 mm (13-11/16")
Without Dust Cover
Weight (Net) 3.4 kg (7.5 lb)

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

KENWOOD poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

KENWOOD strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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