

Compact disc player unit MKH 300

Service
Service
Service

Hoott bij
TS 6901 - families

Service Manual

COMPACT
disc
DIGITAL AUDIO

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(S) Varning!

Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

(DK) Advarsel!

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

(SF) Varoitus!

Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä.

CLASS 1
LASER PRODUCT

4822 725 23341

SERVICING HINTS

In the set chip components have been applied.
For disassembly and assembly of chip components see the figure below.

The disc should always rest properly on the turntable.
To achieve this a disc hold-down has been mounted in a bracket of the tray mechanism.
If the tray mechanism has to be disassembled for servicing, a separate disc hold-down should be used.
(See drawing "Service disc hold-down")

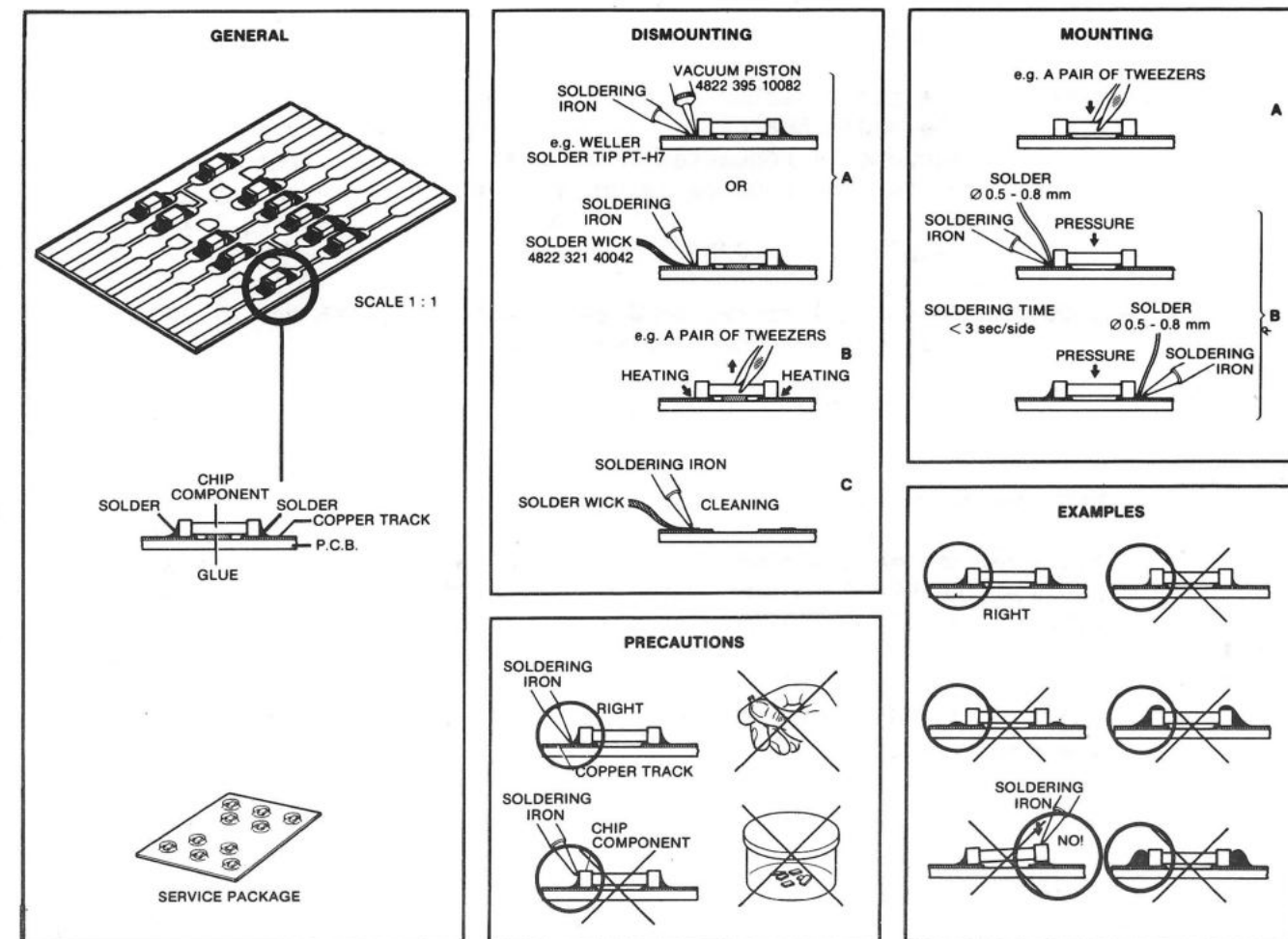
The set can function normally then.
Code number of the disc hold-down is 4822 462 50383.

When the tray mechanism has been disassembled, the tray switch must be activated immediately after pressing the play button in order to ensure normal operation.

To avoid electric shock during servicing, it is recommended to mount an insulation cover over the mains leads on the servo & decoder panel. See drawing MDA 02548. The cover can be ordered under codenumber 4822 444 60655.

SERVICE TOOLS

Audio signals disc	4822 397 30184
Disc without errors (test disc 5) + disc with DO errors, black spots and fingerprints (test disc 5A)	4822 397 30096
Disc 65 min 1 kHz without pause	4822 397 30155
Max. diameter disc(58.0 mm)	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204
Service cable (4p)	4822 321 21284
Service flexfoil (14p)	4822 322 40066
Service connector (14p)	4822 267 50676
Green LED CQY G11	5322 130 32182
Insulation cover	4822 444 60655



27 012C12

A-1

CS 38 390

SERVICE INFORMATION

This chapter describes the service loop with the related error codes and the repair alignment procedure.

A set of commands are available to test the operation of the player during servicing. There are totally 5 service modes.

To activate the service loop, press the SEARCH », REPEAT and PAUSE keys simultaneously while switching the power on.

Pressing SKIP » will increment the mode.

Pressing « SKIP will decrement the mode.

Pressing PLAY/REPLAY in mode 3 will initiate mode 4.

Service mode 0 The software version number appears on the display.

Display : "P110"

Service mode 1 The focus servo start-up procedure is continuously activated. The SI output generates pulses of 10 msec at a rate of 1 Hz.

Display : "0001"

Service mode 2 The focus and disc drive motors are started (SI is low and SSM is high impedance).

Display : "0002"

Service mode 3 The radial motor is started ("play" current on DAC). The audio channel is released (MUTE and AM are high) and subcode is requested once (QRA=low pulse). The track loss correction routine is not working.

Display : "0003"

Service code 4 The normal operation mode is entered, with the exception that error codes are shown on the display.

For example Display : "Er02"

Note : Radial arm moving

After switching the power on, the radial arm is pulled inward. Pressing SEARCH » in service mode 0, 1 or 2 will move the arm outward. Pressing « SEARCH in service mode 0, 1 or 2 will move the arm inward.

Initiating mode 2 by pressing « SKIP while in mode 3 will set the radial motor off.

ERROR CODES

Permanent errors

- 01 = No RD
- 02 = Focus error, no TL (Track loss) pulse at start-up.
- 03 = Radial start error, minimum eccentricity point not found.
- 04 = Too many TL pulses in play.
- 05 = TL error when recovering from TL in play, TL stays low for more than 50 ms.
- 06 = TL error during jump, no TL pulse during 0.5 sec.
- 07 = Subcoding error, no valid subcode within 3 sec.
- 08 = TOC (Table of contents) error, out of lead-in while reading TOC.

Permanent software debug errors

- 20 = Stack check error, stack overflow = hang-up.

Temporary errors

- 30 = NEXT TRACK key operated during the last track with REPEAT turned off.
- 31 = PREV TRACK key operated during the last track with REPEAT turned off.
- 32 = INDEX selected before a track has been selected.
- 33 = The selected index number does not exist on this disc.
- 34 = Programme review requested while no programme is present.
- 35 = The programme memory is full.
- 36 = The programmed track is not existing on this disc.
- 37 = The selected track is not existing on this disc.
- 40 = 10 key when programmed or no valid track selection.
- 41 = Track selected while programmed.
- 60 = End of the SEARCH » motion.
- 61 = End of the « SEARCH motion.

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

ESD



F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

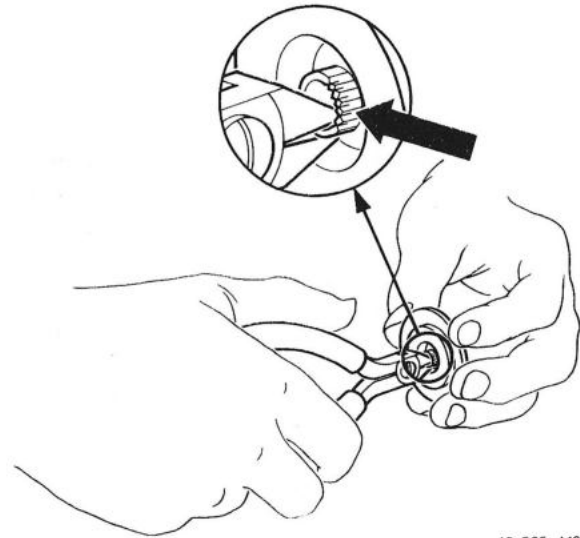
NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

SERVICE DISC HOLDDOWN

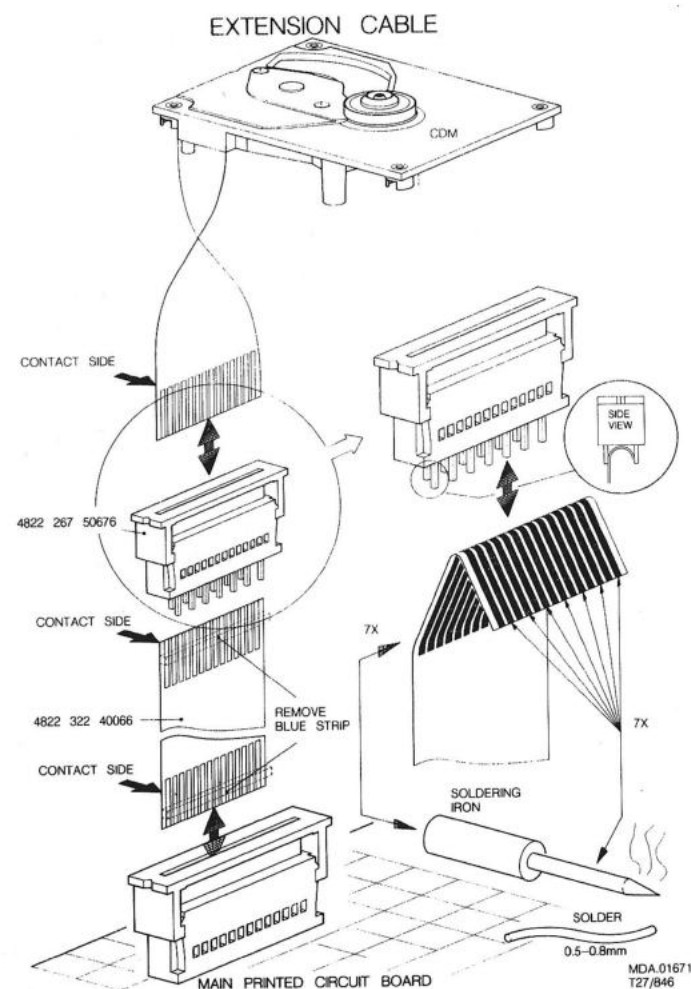


42 565 A12

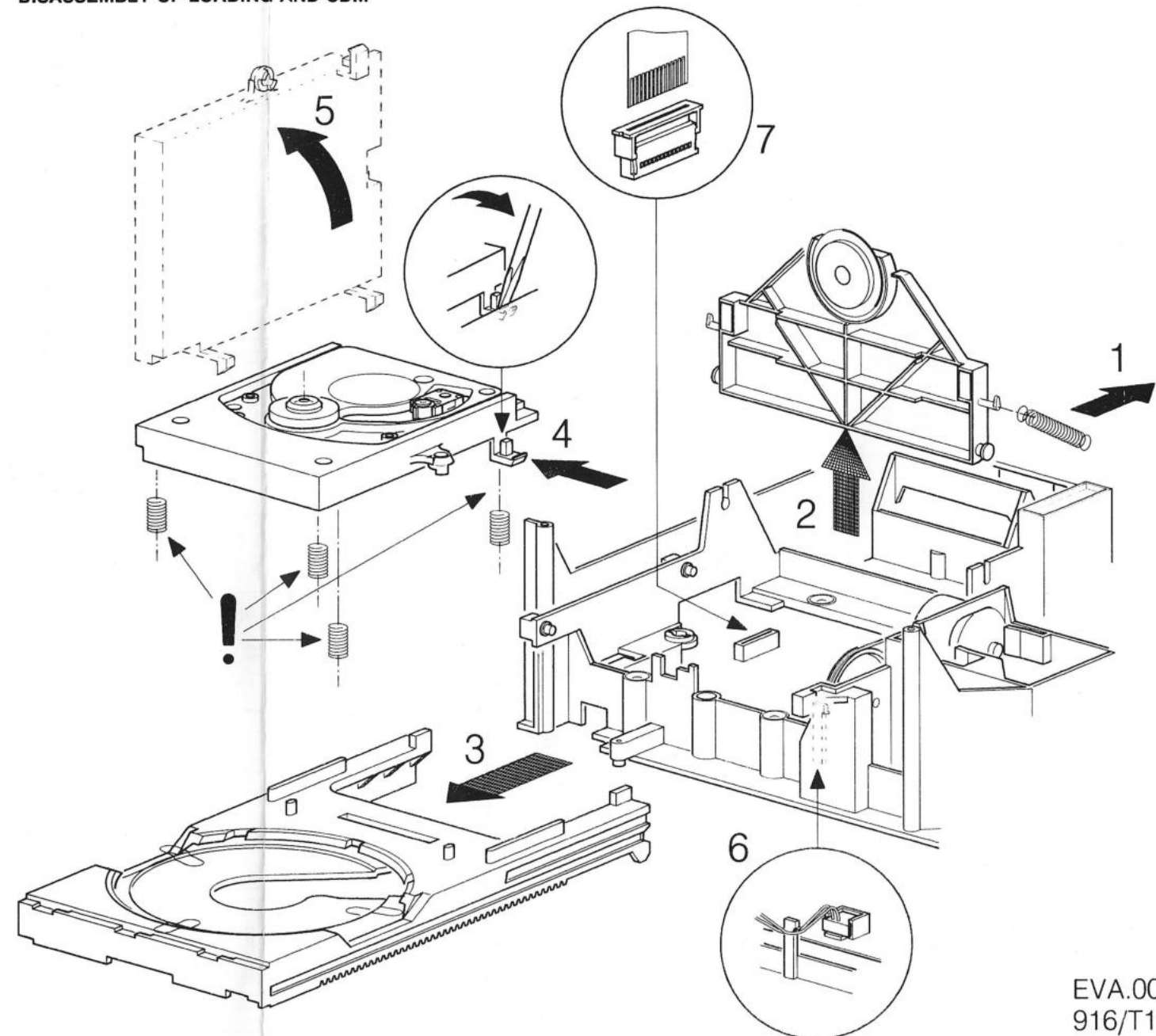
Compose a service Disc hold-down in the following way

- Cut in the most inner ring of a disc hold-down (4822 462 50383) with small and sharp nippers, see fig. above.
- Enlarge the diameter of the innermost ring slightly with the hind part of a pencil or ballpoint, so that it jams onto the turntable with sufficient force.
- If the jamming force decreases after certain time of use, the diameter has to be enlarged with a pencil or ballpoint again.

SERVICE FOIL FOR CDM

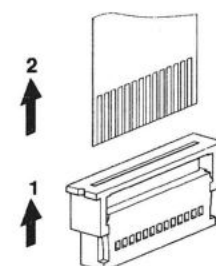


DISASSEMBLY OF LOADING AND CDM

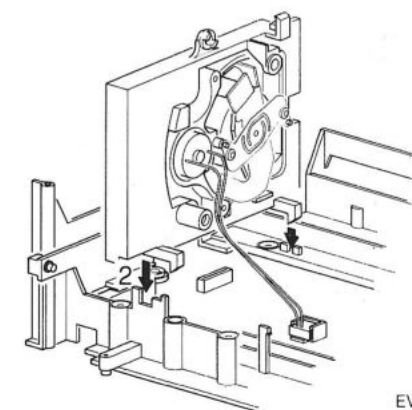


EVA.00846
916/T19

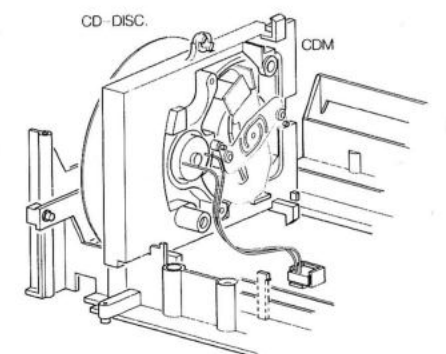
PLAY SERVICE POSITION



MDA.01408
T26/B22

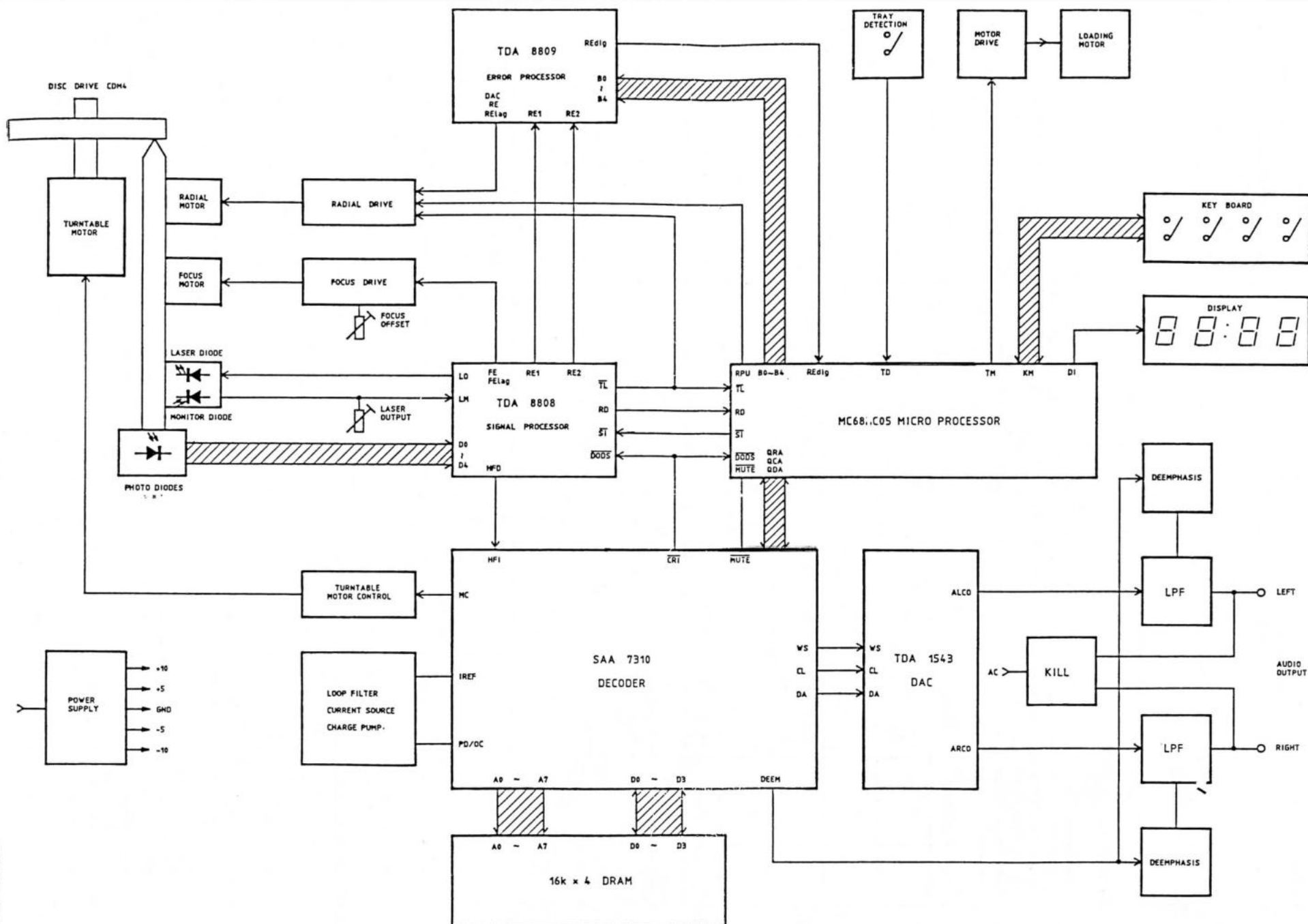


EVA.00848
916/T19

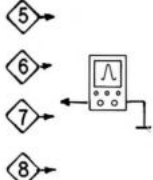


EVA.00849
916/T19

BLOCK DIAGRAM



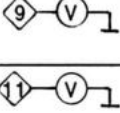
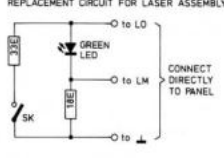
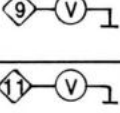
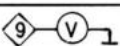
CHECK OF THE PHOTODIODES

STEP	SIGNAL	MODE				REMARKS
1	D2 D1 D3 D4	Power off		--	Signal $5 \approx 6 \approx 7 \approx 8$	Signal depends on Distance lens $\leftrightarrow$ IR LED of remote control

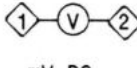
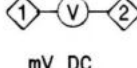
CHECK OF LASER SUPPLY

The laser, the laser supply plus the monitor diode form a feedback system.

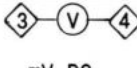
A defect in the laser supply may result in the destruction of the laser. If in the case, the laser is replaced, (=complete D.C.M. unit) the new laser will also become defective. However, it is impossible to check and repair a feedback system if a link is missing. For this reason the laser supply can be checked with the replacement circuit for laser assembly.

STEP	SIGNAL	MODE				REMARKS
1	LO LM	Service position 2 SK 		$1.8 < V < 2.3$ $170 < mV < 220$		 REPLACEMENT CIRCUIT FOR LASER ASSEMBLY CONNECT DIRECTLY TO PANEL The feedback system sees it that the same amount of current flows through the LED. When SK is open and when the SK is closed the LED emits little light.
2	LO LM	Service position 2 SK 		$1.8 < V < 2.3$ $170 < mV < 220$		
3	LO	Power on		$0V \pm 0.2V$		

ADJUSTMENT OF LASER CURRENT

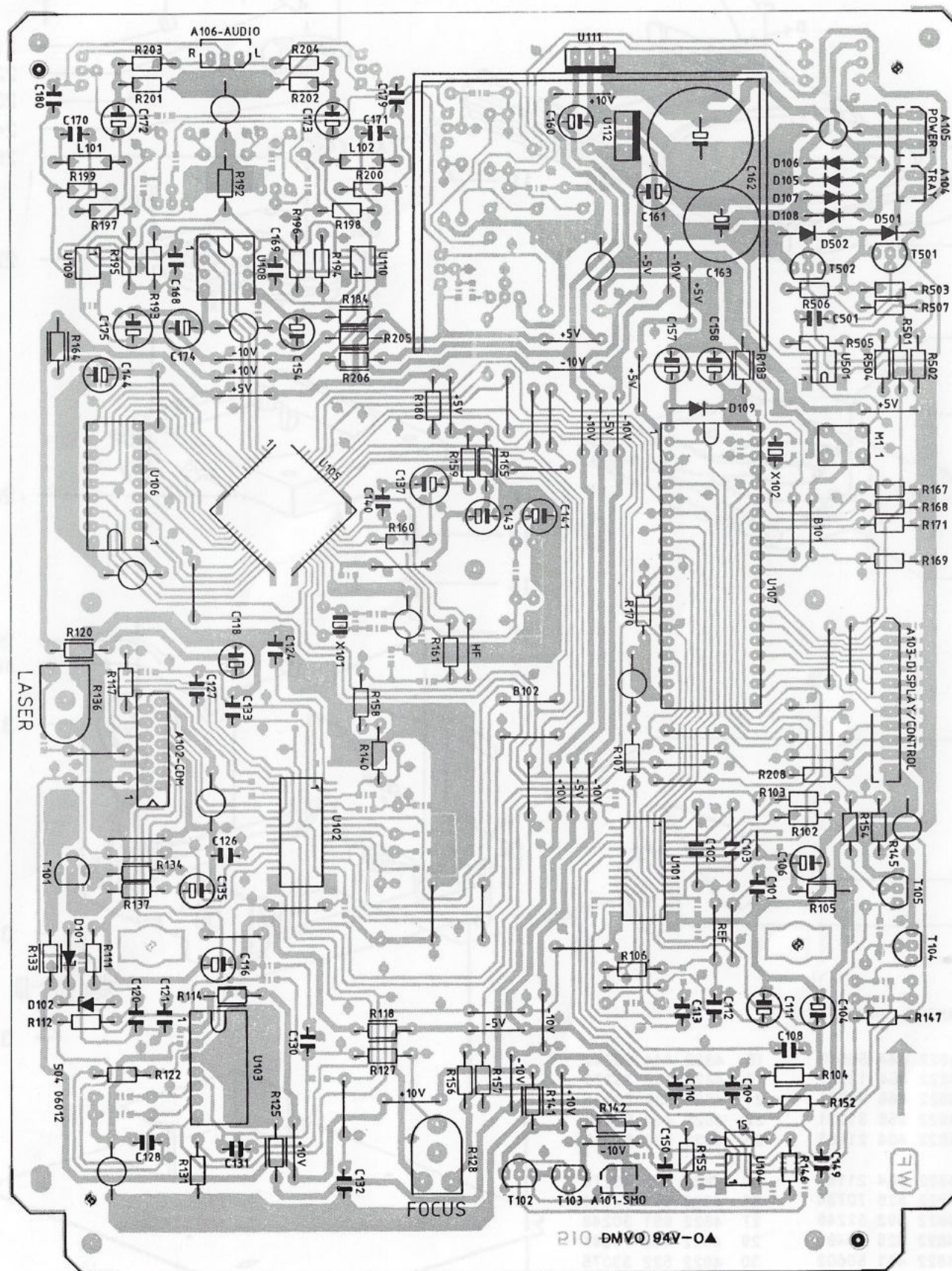
STEP	SIGNAL	MODE				REMARKS
1	--	Power off	--	--	--	Check if flex-foil is properly connected
2	--	Power off		R136	$1K\Omega \pm 10\%$	Pre adjustment ohmic value
3	--	Power off	--	R128	--	Set to mid-position
4	Laser current voltage across R116	Test disc 5A Play	 mV DC	--	$\geq 15 \text{ mV}$	If $< 15 \text{ mV}$ then go to step 3 and set R128 to 1/4 or 3/4. Try again.
5	Laser current voltage across R116	Test disc 5A Play	 mV DC	R136	50 mV	--

ADJUSTMENT OF FOCUS-OFFSET

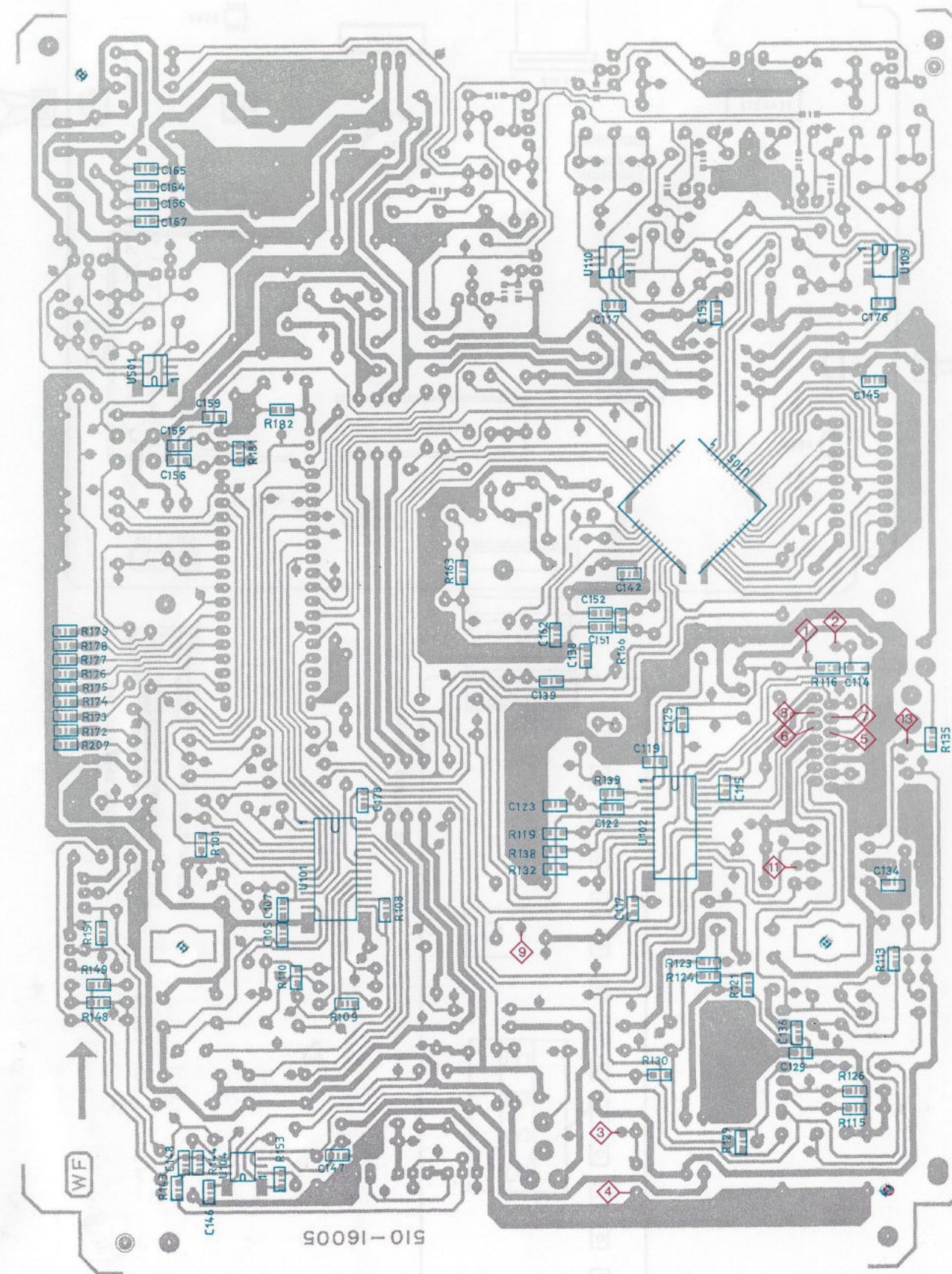
STEP	SIGNAL	MODE				REMARKS
1	--	Power off	--	R128	--	Set to mid-position
2	FE-FAG voltage across C132	Play Test disc 5A Track 1	 mV DC	R128	$400 \text{ mV} \pm 40 \text{ mV}$	Fine adjustment

COMPONENTS LAYOUT

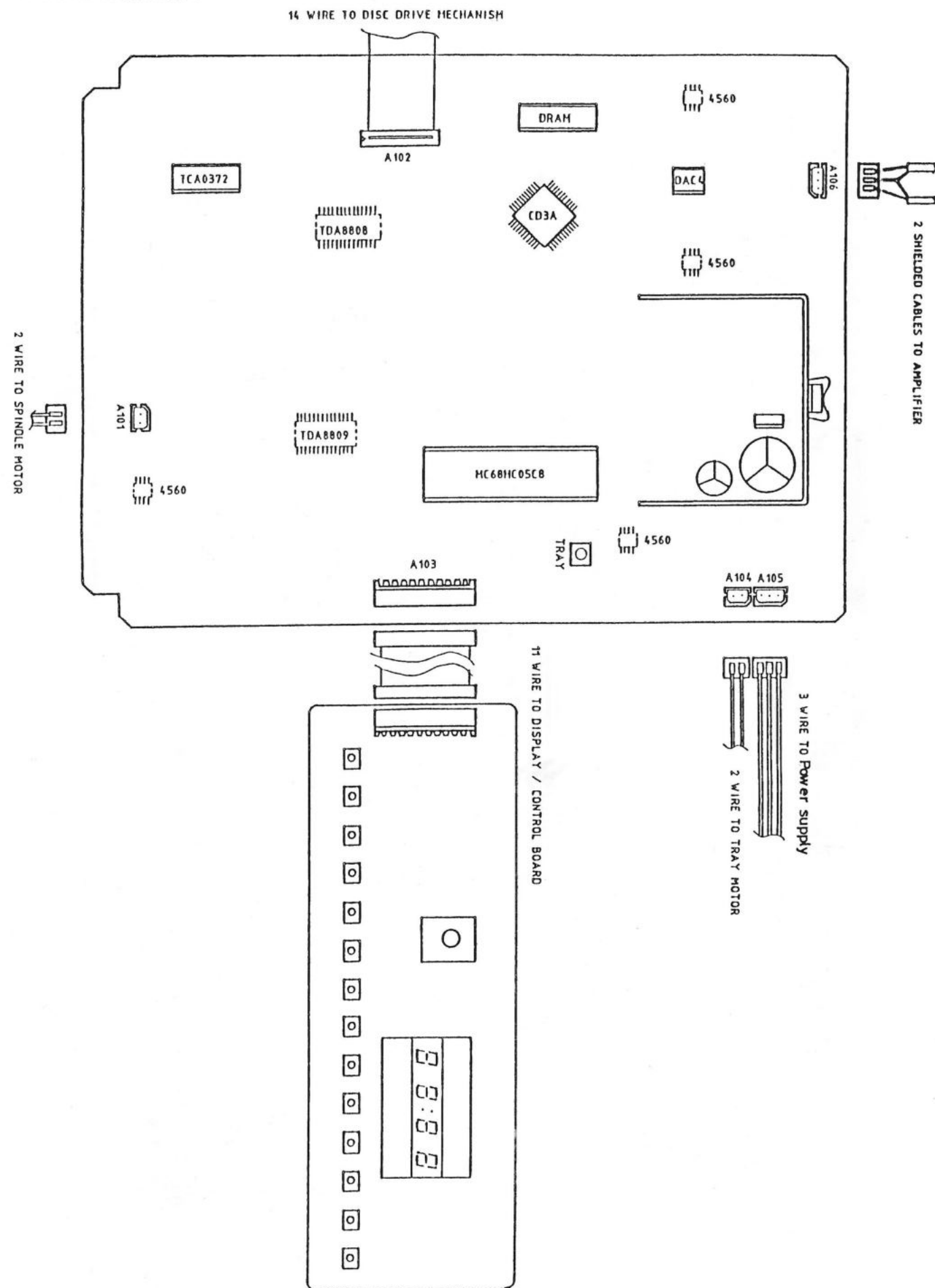
COMPONENT SIDE



COPPER TRACK SIDE

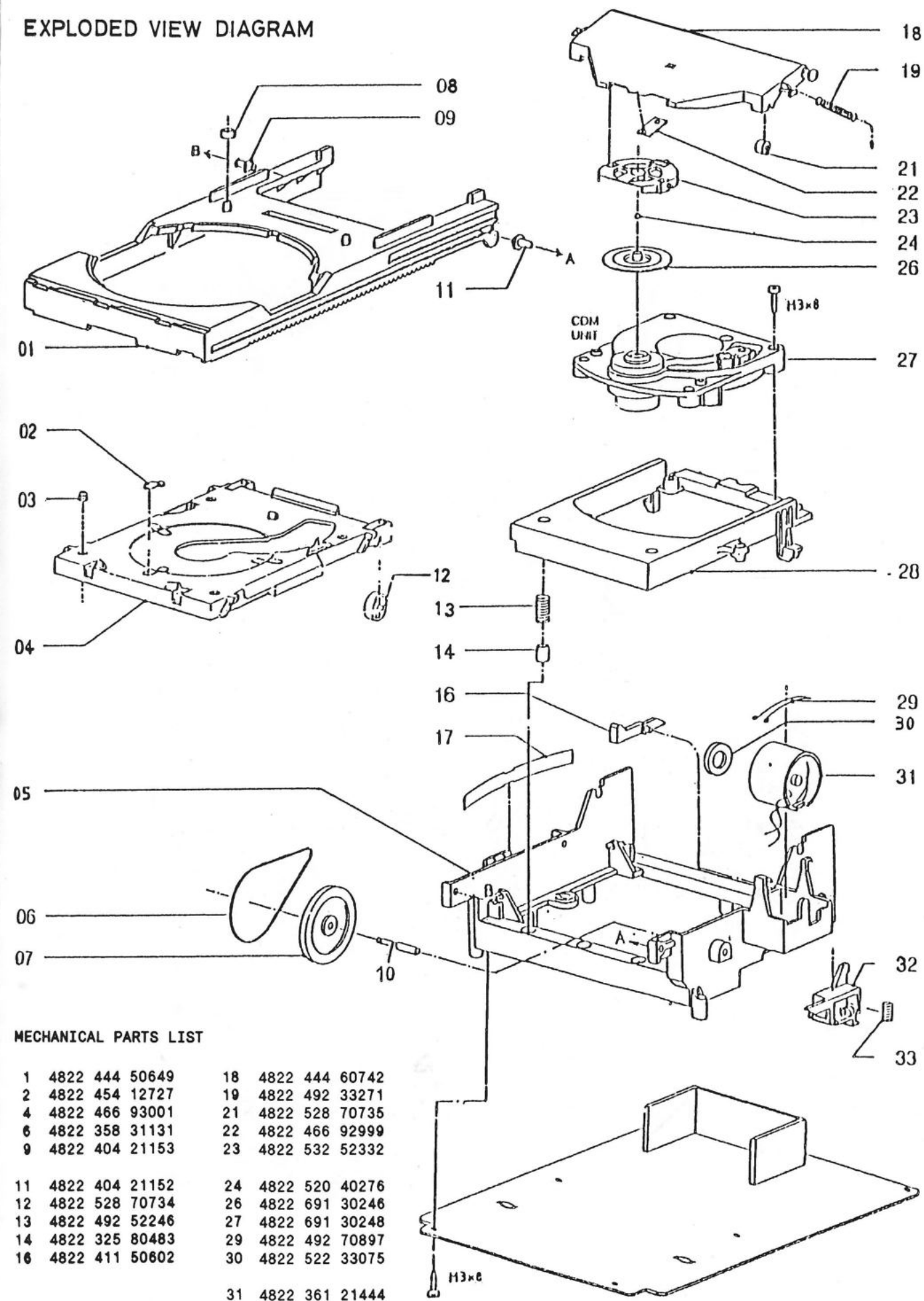


WIRING DIAGRAM



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EXPLODED VIEW DIAGRAM



MECHANICAL PARTS LIST

1	4822	444	50649	18	4822	444	60742
2	4822	454	12727	19	4822	492	33271
4	4822	466	93001	21	4822	528	70735
6	4822	358	31131	22	4822	466	92999
9	4822	404	21153	23	4822	532	52332
11	4822	404	21152	24	4822	520	40276
12	4822	528	70734	26	4822	691	30246
13	4822	492	52246	27	4822	691	30248
14	4822	325	80483	29	4822	492	70897
16	4822	411	50602	30	4822	522	33075
				31	4822	361	21444
				32	4822	404	10844
				33	4822	492	52245

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ELECTRICAL PARTS LIST

- IC -				- Diodes -			
U101	4822	209	73235	TDA8809T/C2	D101,102	4822	130 32862 Zener HZ7C2
U102	4822	209	73234	TDA8808T/C3	D105-108	4822	130 30684 1N4002
U103	4822	209	72587	TCA0372-DP2	D109	4822	130 30621 1N4148
U104,109	4822	209	83357	NJM4560M	D501,502	4822	130 30621 1N4148
U110,501	4822	209	83357	NJM4560M			
U105	4822	209	61759	SAA7310GP	- Potmeter -		
U106	4822	209	70422	μ PD41416-20	R128	4822	100 11725 Potm.trim 22k
U107	4822	209	63879	ZC99685P/P110	R136	4822	100 11726 Potm.trim 4k7
U108	4822	209	73366	TDA1543			
U111	5322	209	86518	MC7805ACT	- Miscellaneous -		
U112	4822	209	11079	MC79M05CT	L101,102	4822	157 50975 Inductor 1mH
- Transistors -				M101	4822	276 13093 Tact switch	
T101,102	4822	130	40958	BC338-25	X101	4822	242 80247 Cry'l 11.2896MHz
T501,502	4822	130	40958	BC338-25	X102	4822	242 80248 Resonator 4MHz
T104,105	4822	130	44197	BC558B			

Chip Capacitors case 1206 3.2 x 1.6 x 1.1 mm 63 V									
NPO $\pm 5 \%$					X7R $\pm 10 \%$				
4822	122	32479	1.0 pF	4822	122	31961	68 pF	4822	122 32597 6.8 nF
4822	122	32079	3.3 pF	4822	122	31765	100 pF	4822	122 32442 10 nF
4822	122	32081	3.9 pF	4822	122	31767	150 pF	4822	122 31782 15 nF
4822	122	32082	4.7 pF	4822	122	31965	220 pF	4822	122 31759 18 nF
4822	122	32507	6.8 pF	4822	122	31771	390 pF	4822	122 31797 22 nF
4822	122	31971	10 pF	4822	122	31727	470 pF	4822	122 31981 33 nF
4822	122	31769	18 pF	4822	122	31746	1.0 nF	4822	122 32542 47 nF
4822	122	32482	22 pF	5322	122	33816	2.2 nF	4822	122 32891 68 nF
4822	122	31756	33 pF	5322	122	33897	3.3 nF	4822	122 32838 82 nF
4822	122	31772	47 pF	4822	122	31784	4.7 nF	4822	122 33496 100 nF

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden. für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

Chip Resistors		case 0805 2 x 1.25 x 1.1 mm		0.1 W $\pm 5\%$	
4822 051 20008	0 R	4822 051 20439	43 R	4822 051 20202	2.0 k
4822 051 20108	1.0 R	4822 051 20479	47 R	4822 051 20222	2.2 k
4822 051 20118	1.1 R	4822 051 20519	51 R	4822 051 20242	2.4 k
4822 051 20128	1.2 R	4822 051 20569	56 R	4822 051 20272	2.7 k
4822 051 20138	1.3 R	4822 051 20629	62 R	4822 051 20302	3.0 k
4822 051 20158	1.5 R	4822 051 20689	68 R	4822 051 20332	3.3 k
4822 051 20168	1.6 R	4822 051 20759	75 R	4822 051 20362	3.6 k
4822 051 20188	1.8 R	4822 051 20829	82 R	4822 051 20392	3.9 k
4822 051 20208	2.0 R	4822 051 20919	91 R	4822 051 20432	4.3 k
4822 051 20228	2.2 R	4822 051 20101	100 R	4822 051 20472	4.7 k
4822 051 20248	2.4 R	4822 051 20111	110 R	4822 051 20512	5.1 k
4822 051 20278	2.7 R	4822 051 20121	120 R	4822 051 20562	5.6 k
4822 051 20308	3.0 R	4822 051 20131	130 R	4822 051 20622	6.2 k
4822 051 20338	3.3 R	4822 051 20151	150 R	4822 051 20682	6.8 k
4822 051 20368	3.6 R	4822 051 20161	160 R	4822 051 20752	7.5 k
4822 051 20398	3.9 R	4822 051 20181	180 R	4822 051 20822	8.2 k
4822 051 20438	4.3 R	4822 051 20201	200 R	4822 051 20912	9.1 k
4822 051 20478	4.7 R	4822 051 20221	220 R	4822 051 20103	10 k
4822 051 20518	5.1 R	4822 051 20241	240 R	4822 051 20113	11 k
4822 051 20568	5.6 R	4822 051 20271	270 R	4822 051 20123	12 k
4822 051 20628	6.2 R	4822 051 20301	300 R	4822 051 20133	13 k
4822 051 20688	6.8 R	4822 051 20331	330 R	4822 051 20153	15 k
4822 051 20758	7.5 R	4822 051 20361	360 R	4822 051 20163	16 k
4822 051 20828	8.2 R	4822 051 20391	390 R	4822 051 20183	18 k
4822 051 20918	9.1 R	4822 051 20431	430 R	4822 051 20203	20 k
4822 051 20109	10 R	4822 051 20471	470 R	4822 051 20223	22 k
4822 051 20119	11 R	4822 051 20511	510 R	4822 051 20243	24 k
4822 051 20129	12 R	4822 051 20561	560 R	4822 051 20273	27 k
4822 051 20139	13 R	4822 051 20621	620 R	4822 051 20303	30 k
4822 051 20159	15 R	4822 051 20681	680 R	4822 051 20333	33 k
4822 051 20169	16 R	4822 051 20751	750 R	4822 051 20363	36 k
4822 051 20189	18 R	4822 051 20821	820 R	4822 051 20393	39 k
4822 051 20209	20 R	4822 051 20911	910 R	4822 051 20433	43 k
4822 051 20229	22 R	4822 051 20102	1.0 k	4822 051 20473	47 k
4822 051 20249	24 R	4822 051 20112	1.1 k	4822 051 20513	51 k
4822 051 20279	27 R	4822 051 20122	1.2 k	4822 051 20563	56 k
4822 051 20309	30 R	4822 051 20132	1.3 k	4822 051 20623	62 k
4822 051 20339	33 R	4822 051 20152	1.5 k	4822 051 20683	68 k
4822 051 20369	36 R	4822 051 20162	1.6 k	4822 051 20753	75 k
4822 051 20399	39 R	4822 051 20182	1.8 k	4822 051 20823	82 k
				4822 051 20913	91 k
				4822 051 20104	100 k
				4822 051 20114	110 k
				4822 051 20124	120 k
				4822 051 20134	130 k
				4822 051 20154	150 k
				4822 051 20164	160 k
				4822 051 20184	180 k
				4822 051 20204	200 k
				4822 051 20224	220 k
				4822 051 20244	240 k
				4822 051 20274	270 k
				4822 051 20304	300 k
				4822 051 20334	330 k
				4822 051 20364	360 k
				4822 051 20394	390 k
				4822 051 20434	430 k
				4822 051 20474	470 k
				4822 051 20514	510 k
				4822 051 20564	560 k
				4822 051 20624	620 k
				4822 051 20684	680 k
				4822 051 20754	750 k
				4822 051 20824	820 k
				4822 051 20914	910 k
				4822 051 20105	1.0 M
				4822 051 20125	1.2 M
				4822 051 20155	1.5 M
				4822 051 20185	1.8 M
				4822 051 20225	2.2 M
				4822 051 20245	2.4 M
				4822 051 20275	2.7 M
				4822 051 20335	3.3 M
				4822 051 20395	3.9 M
				4822 051 20475	4.7 M
				4822 051 20565	5.6 M
				4822 051 20685	6.8 M
				4822 051 20755	7.5 M
				4822 051 20825	8.2 M
				4822 051 20106	10 M