GRUNDIG SERVICE MANUAL

VIDEO

D Btx * 32700 #

Ergänzung zu den Service Manuals
Supplement to the Service Manuals
Supplemento del Manuale di Servizio

VS 520 PAL/ VPS/ GB/ E (Sach-Nr./ Part No./ No. ordine 72010-501.72)
VS 520 SP, VS 530 PAL/ VPS/ E/ SP (Sach-Nr./ Part No./ No. ordine 72010-502.95)
VS 540 PAL / VPS (Sach-Nr./ Part No./ No. ordine 72010-501.70)
VS 540 PAL / VPS / GB / E (Sach-Nr./ Part No./ No. ordine 72010-501.71)
VS 550 PAL / E / GB, MVS 550 (Sach-Nr./ Part No./ No. ordine 72010-502.75)

D

Die eingangs genannten Videorecorder werden mit überarbeiteten Laufwerken bestückt. Diese bedingen elektrische Änderungen in den Schaltplänen.
Das neue Laufwerk wird mit gleichzeitig neuer Motorsteuerplatte in die laufende Serie einfliesen. Ab welcher Gerätenummer umgestellt wurde, ist aus der Tabelle auf Seite 2 erkennbar.
Diese Ergänzung enthält den mechanischen Teil, Schaltpläne und Platinenabbildungen die sich gegenüber den oben genannten Service Manuals geändert haben. Die Bausteinbestückung der Geräte und die Sach-Nummern der einzelnen Bausteine entnehmen Sie bitte der Ersatzteilliste.

T... with a revised mechanics. This requires electrical changes in the circuit layout.
The new mechanics is fitted at the same time with a new Motor Control Panel used current series. The table on page 2 gives the Serial Number from which the conversion has been carried out.
This Supplement contains details of the mechanical parts, circuit diagram and panel illustration which differ when compared to that given in the Service Manuals.
Please refer to the Spare Parts List for the modules fitted to the machine and for the Part Numbers of the individual modules.

I

Per i suddetti videoregistratori sono previste meccaniche rielaborate il cui impiego comporta anche modifiche elettriche negli schemi.
La nuova meccanica viene inserita nella attuale serie di apparecchi e presenta anche una piastra comando motore rinnovata. Da quale numero di matricola è stata introdotta la modifica, è riportato nella tabella di pagina 2.
Questo supplemento contiene la sezione meccanica come anche schemi e piastre che rispetto ai suddetti Service Manuals sono stati variati. Riguardo ai moduli e relativo N° di ordinazione vedere la lista ricambi.

Übersicht der Laufwerk - Umstellung

Die nachfolgende Tabelle enthält die Geräte-Nummern, ab den die aufgelisteten Videorecorder mit dem neuen Laufwerk bzw. Motorsteuerplatte bestückt sind.

Overview of the Mechanics-Conversion

The following table contains a list of Video Recorder Serial Numbers, from which the new mechanics and/or Motor Control Panel has been fitted.

Introduzione della modifica

La sequente tabella indica da quale numero di matricola sono state introdotte le modifiche (meccanica e piastra comando motore) nei videoregistratori sopraelencati.

Geräte-Type Model type Modello type	Gerätenummer Machine Number. Numero di matricola
VS 520 GB	107700
VS 530 VPS	140984
VS 530 PAL	124590
VS 530 E	104100
VS 530 SP	102400
MVS 530	101500
VS 540 PAL	117500
VS 540 E	107700
VS 550 E-VPS	117500
VS 550 PAL	110400
VS 550 GB	100500
MVS 550	102000

Zuordnung Videorecorder - Service Manual

Aus der nachfolgenden Tabelle ist ersichtlich, welches Service Manual zu dieser Ergänzung Sie für den Service an den einzelnen Geräten benötigen.

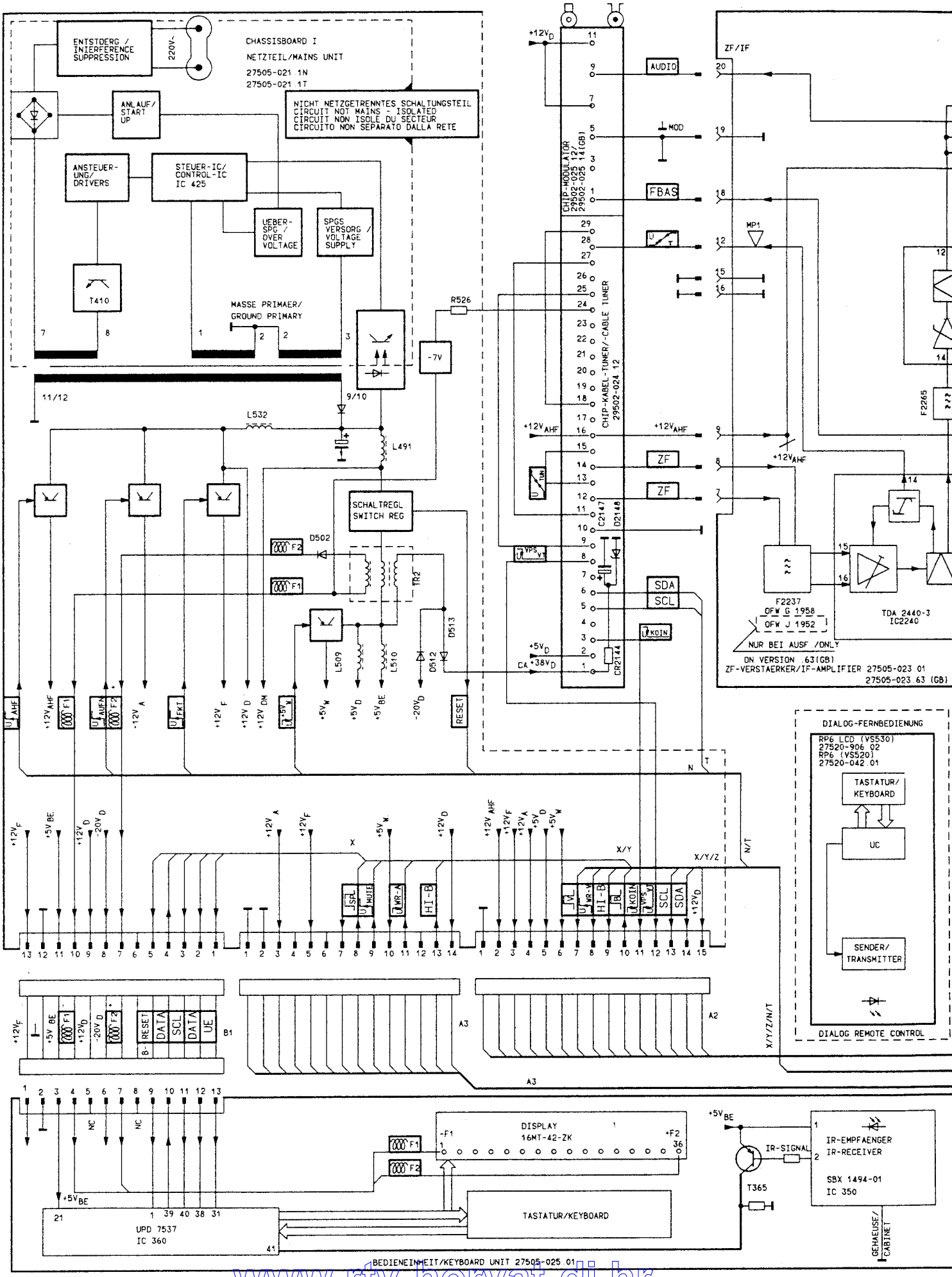
Cross reference Video Recorder - Service Manual

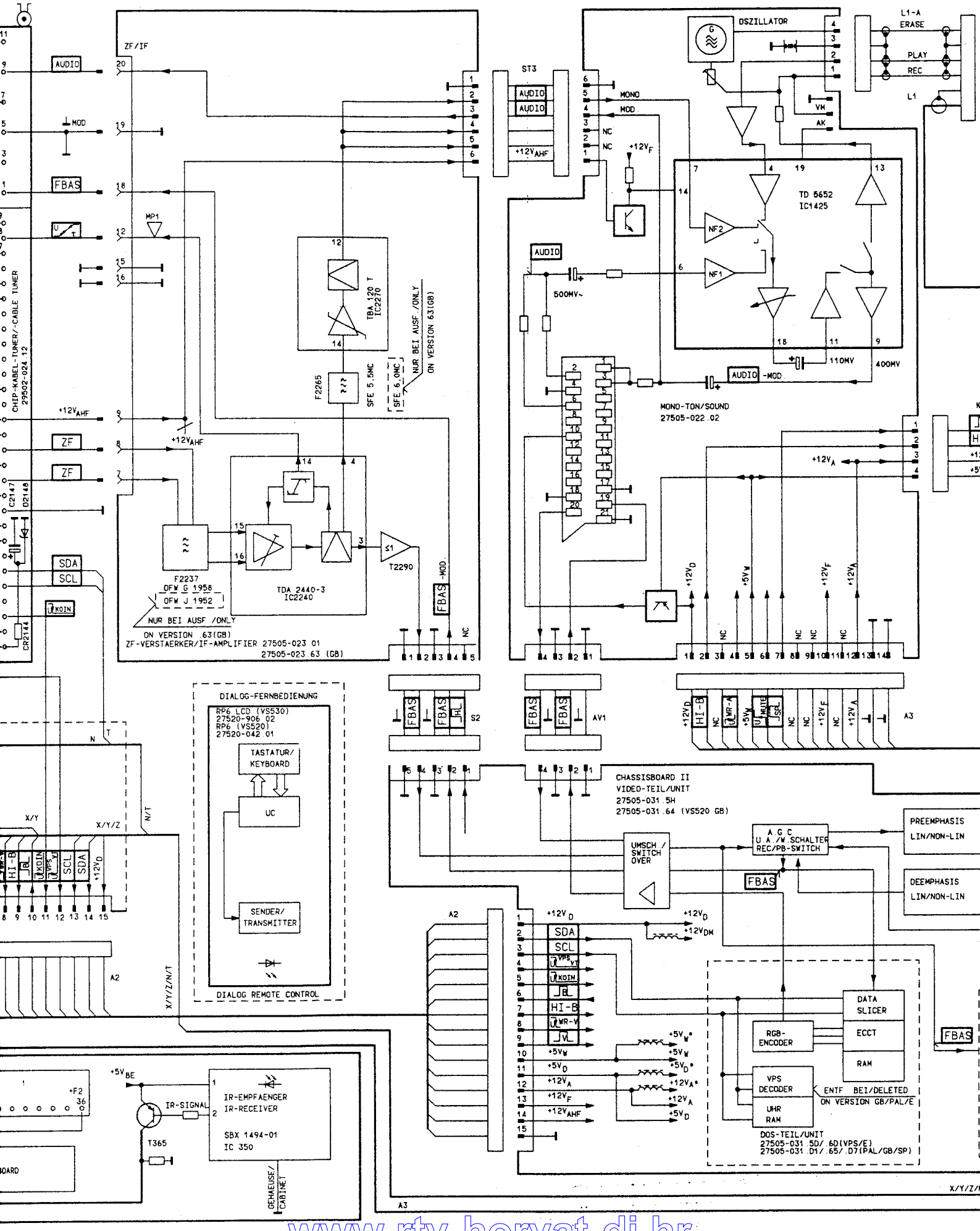
The Service Manual required with this supplement for a particular model is indicated in the following table.

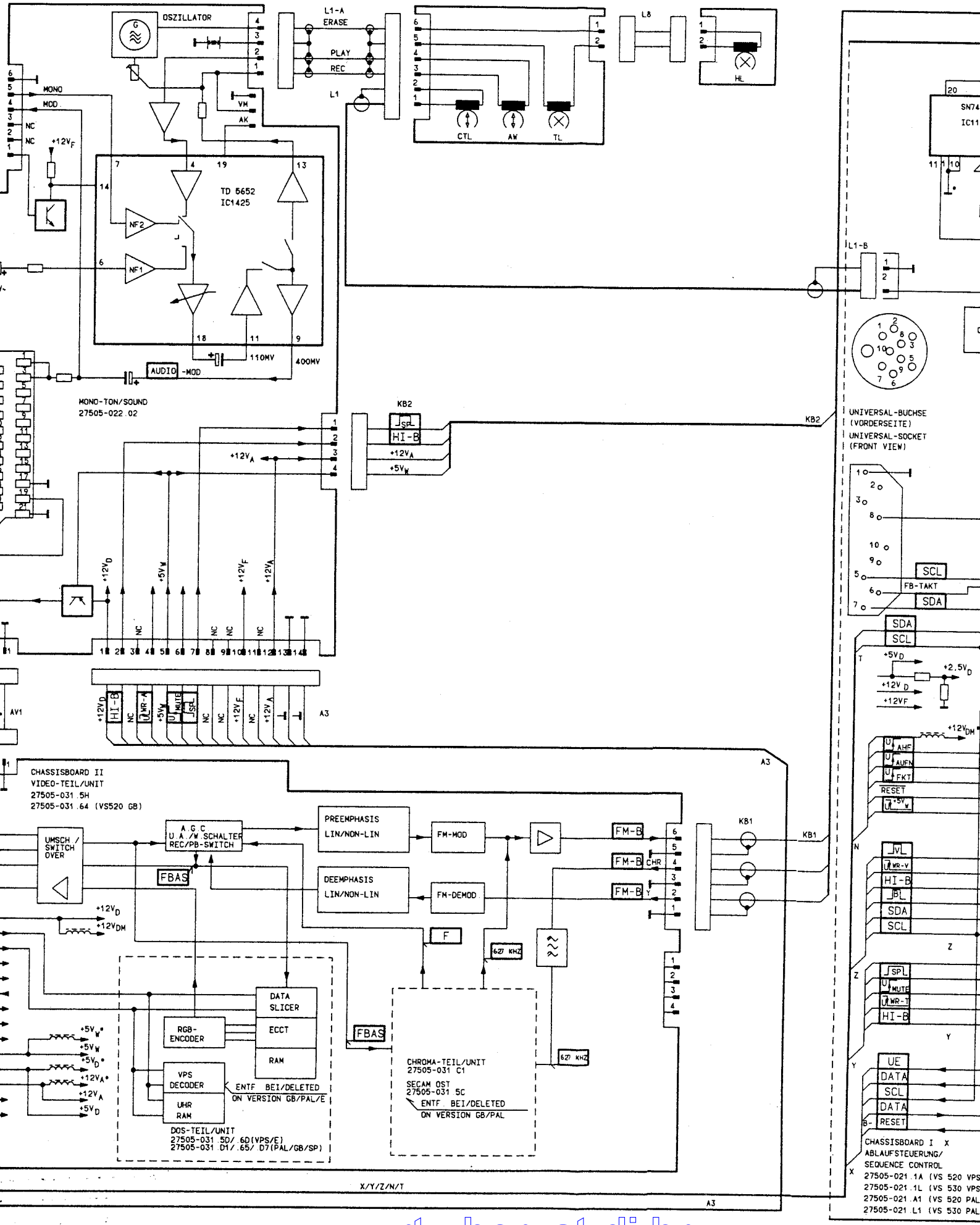
Abbinamento dei Service Manual ai videoregistratori

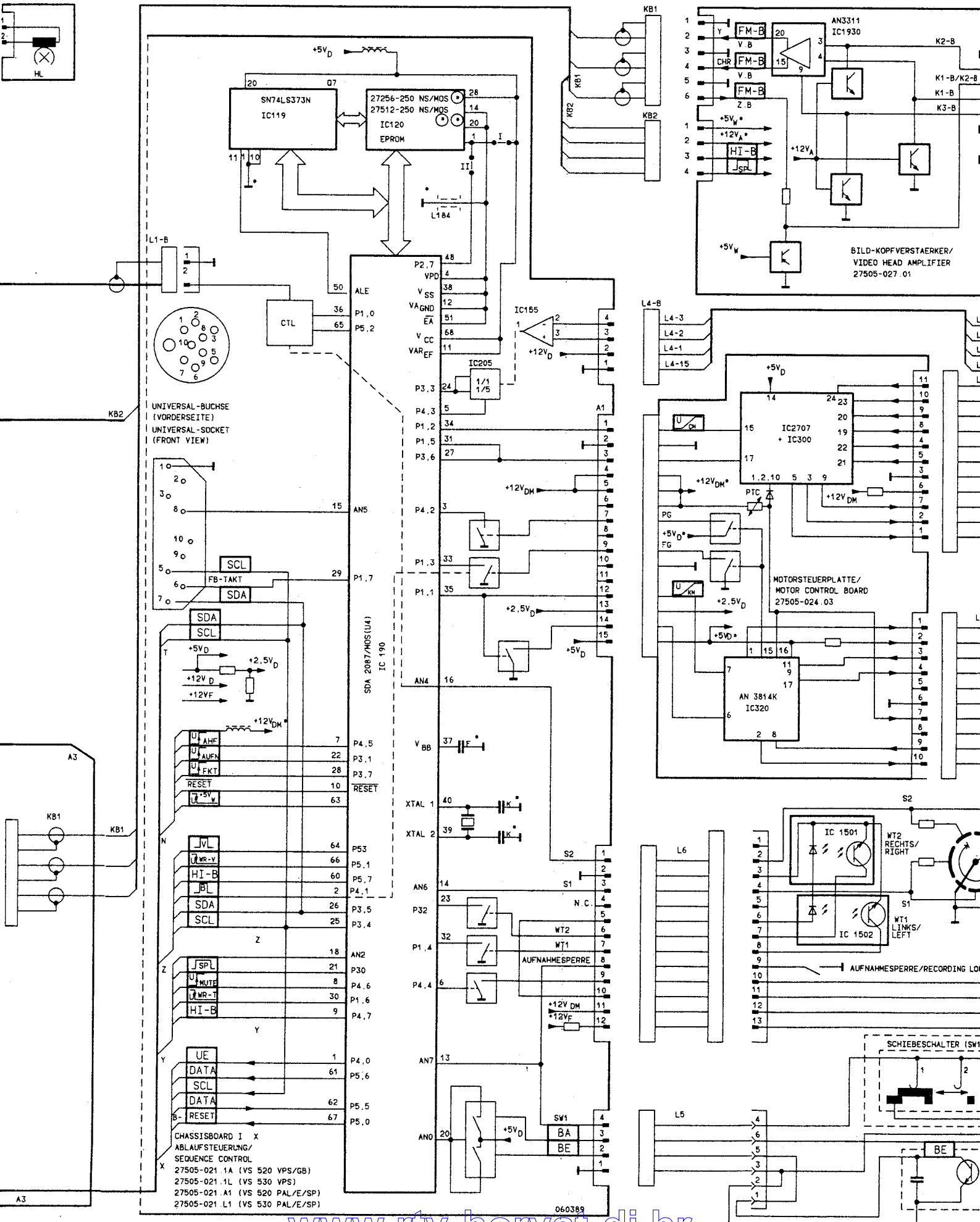
Dalla seguente tabella si desume quale Service Manual è necessario per effettuare interventi nei singoli apparecchi.

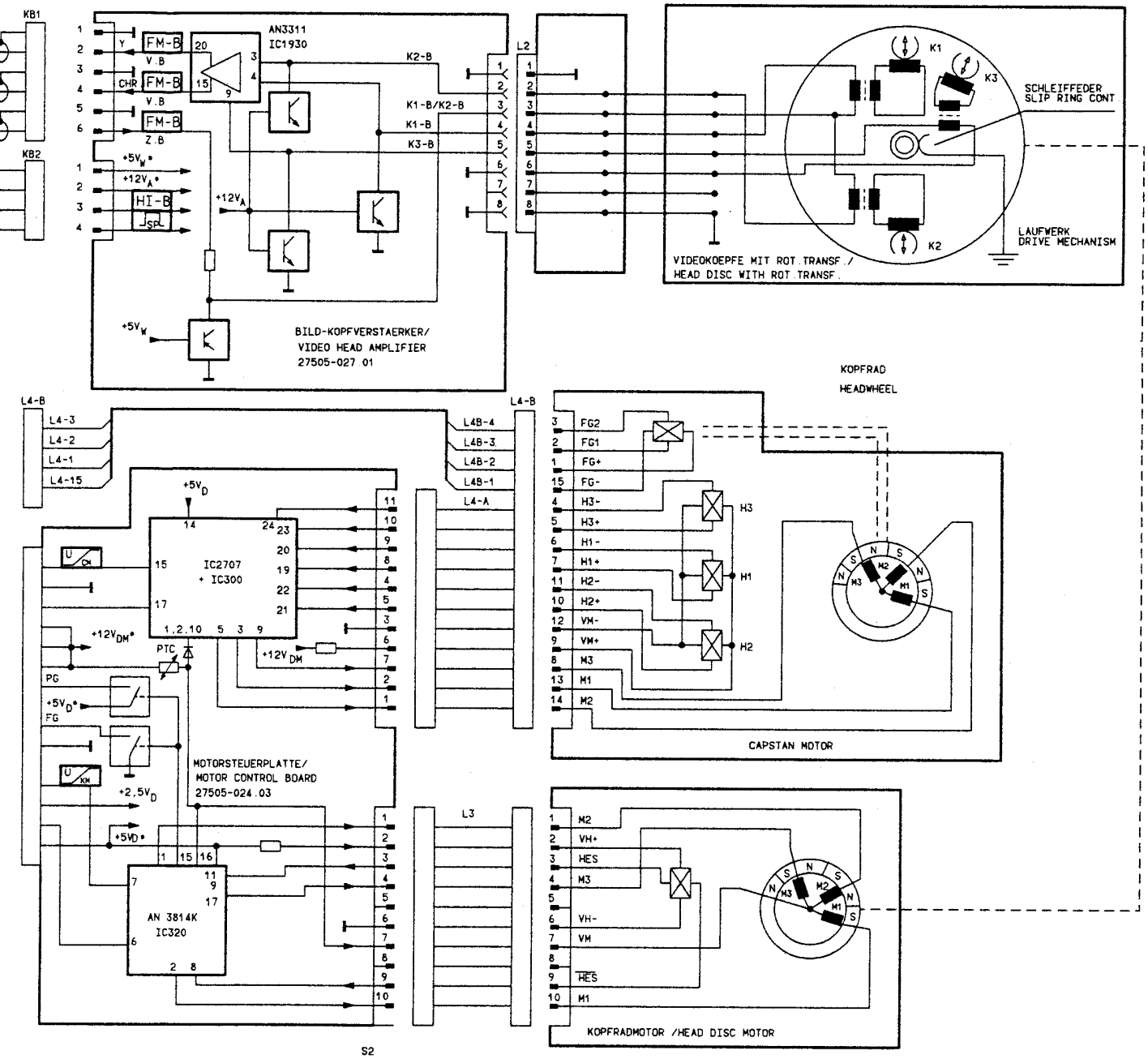
Service Manual Manuale di Servicio	Geräte-Type/ Model type/ Modello type					
	VS 520	VS 530	MVS 530	VS 540	VS 550	MVS 550
VS 520 PAL/VPS/GB/E (72010-501.72)	PAL/VPS/GB/E SP					
VS 520 SP, VS 530 PAL/VPS/E/SP (72010-502.95)	SP	PAL/VPS/E SP	•			
VS 540 PAL/VPS (72010-501.70)	PAL/VPS SP	PAL/VPS SP	•	PAL/VPS		
VS 540 PAL/VPS/GB/E (72010-501.71)	PAL/VPS/GB/E SP	PAL/VPS/E SP	•	PAL/VPS/GB/E		
VS 550 PAL/E/GB, MVS 550 (72010-502.75)					PAL/E/GB	•







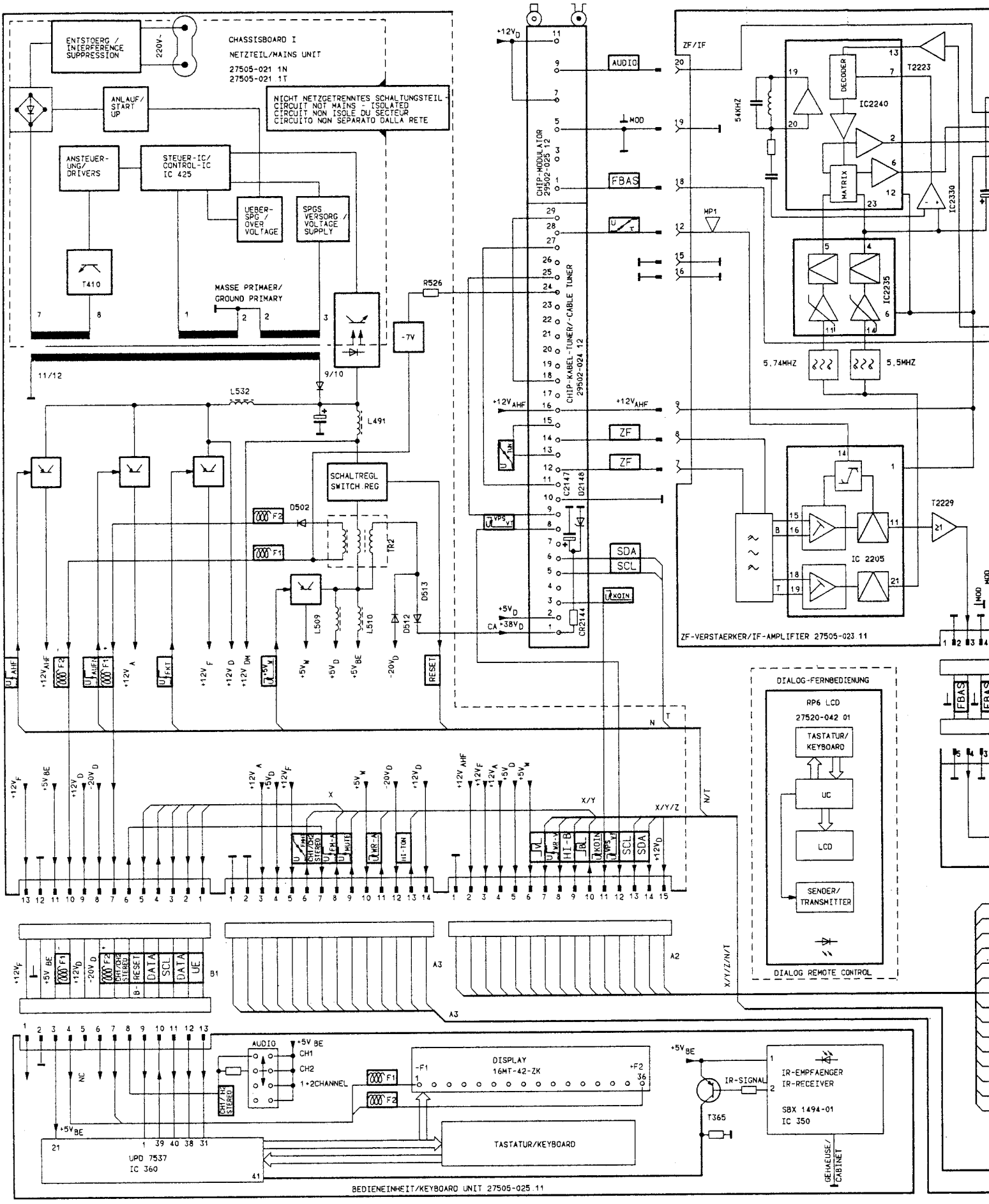




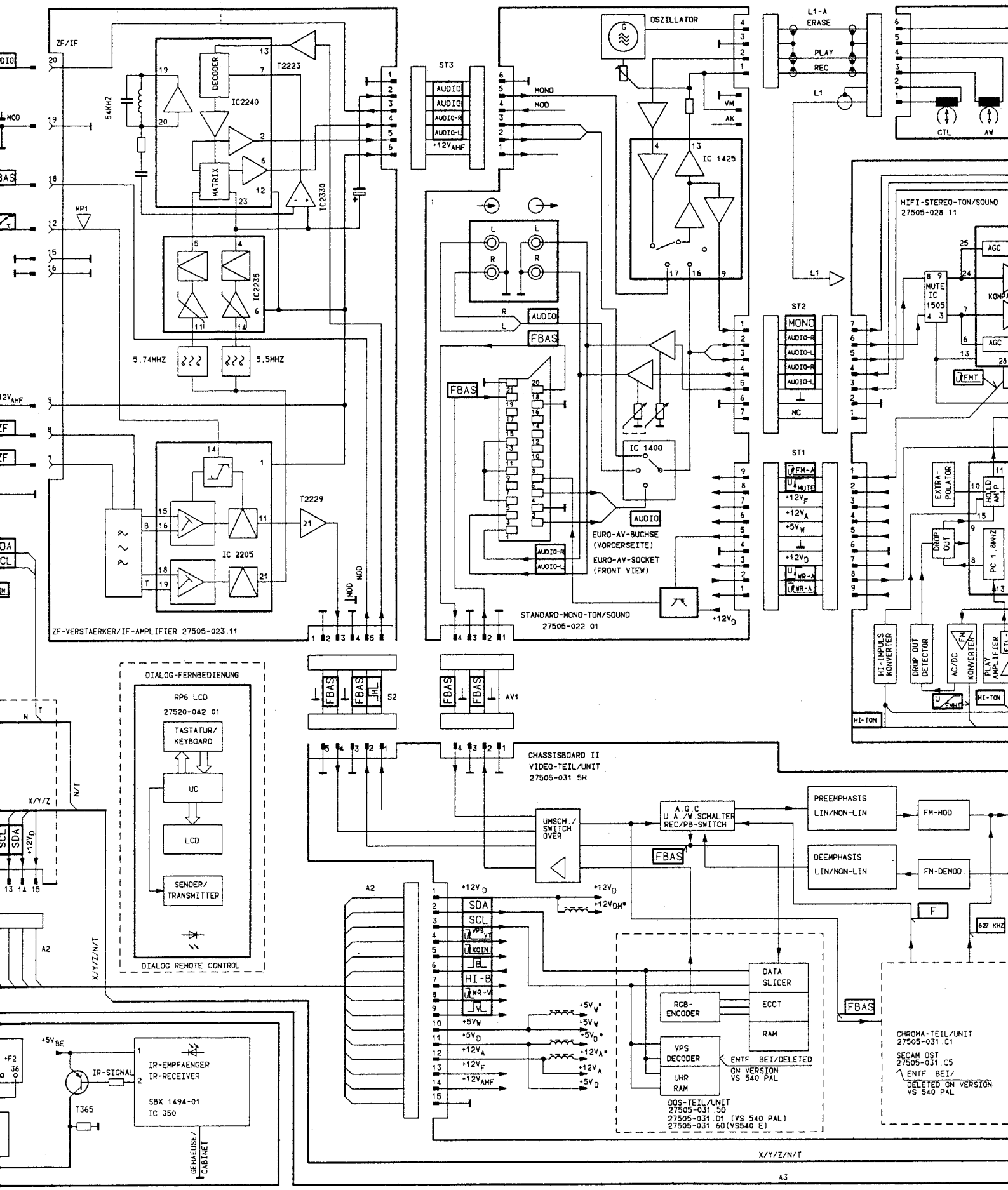
27505-021.A1/ L1
IC 120: ⊙⊙ 27512-250 NS: Brücke I offen, Brücke II geschlossen
Jumper I not connected, jumber II connected
Ponte I aperto, ponte II chiuso
(VS 520 PAL/E/SP, VS 530 PAL/E/SP)

27505-021.1A/ 1L
IC 120: ⊙ 27256-250 NS: Brücke II offen, Brücke I geschlossen
Jumper II not connected, jumber I connected
Ponte II aperto, ponte I chiuso
(VS 520 VPS/GB, VS 530 VPS)

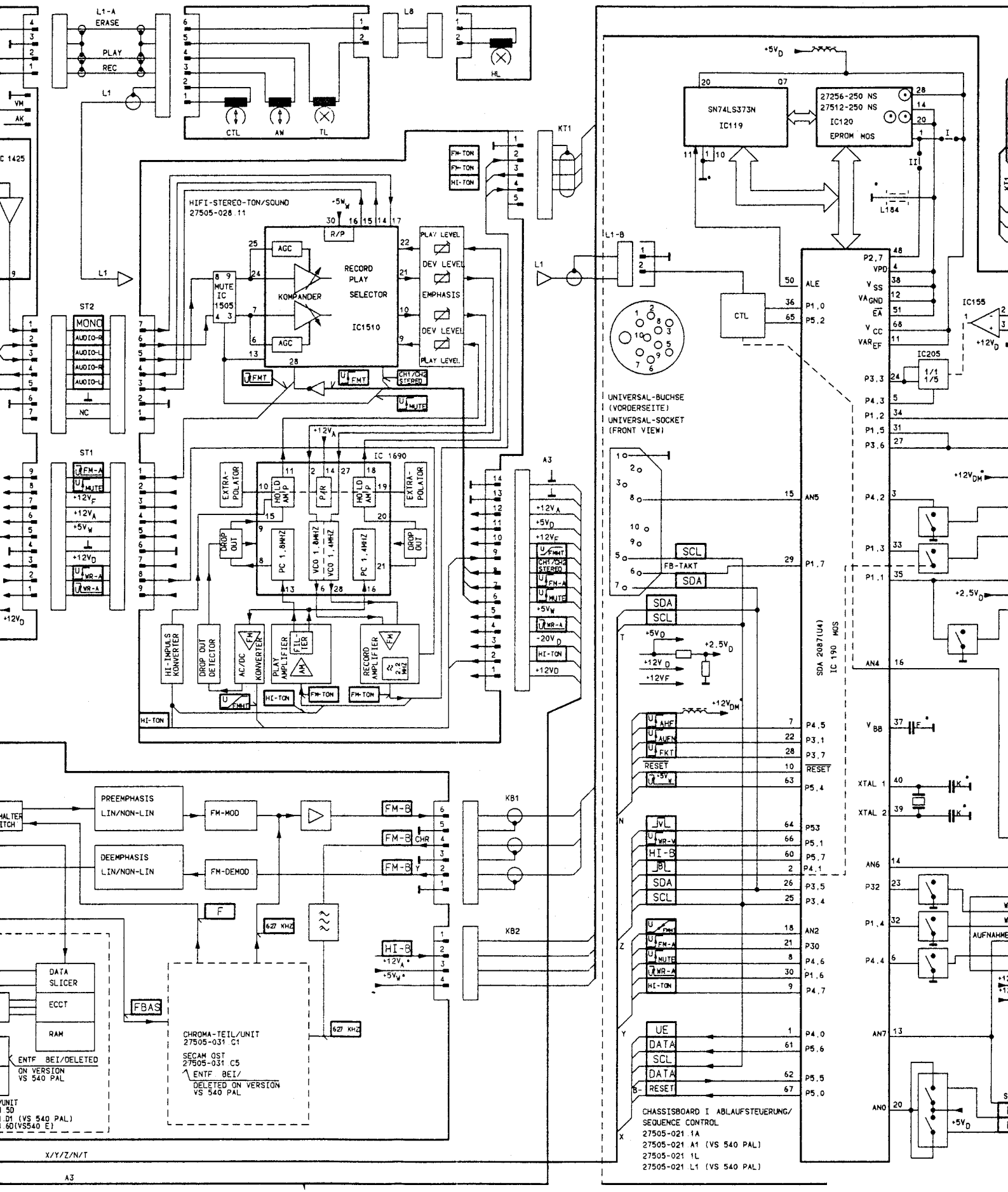
Blockschaltplan
Block circuit diagram
Schema elettrico a blocchi
(VS 520..., VS 530...)

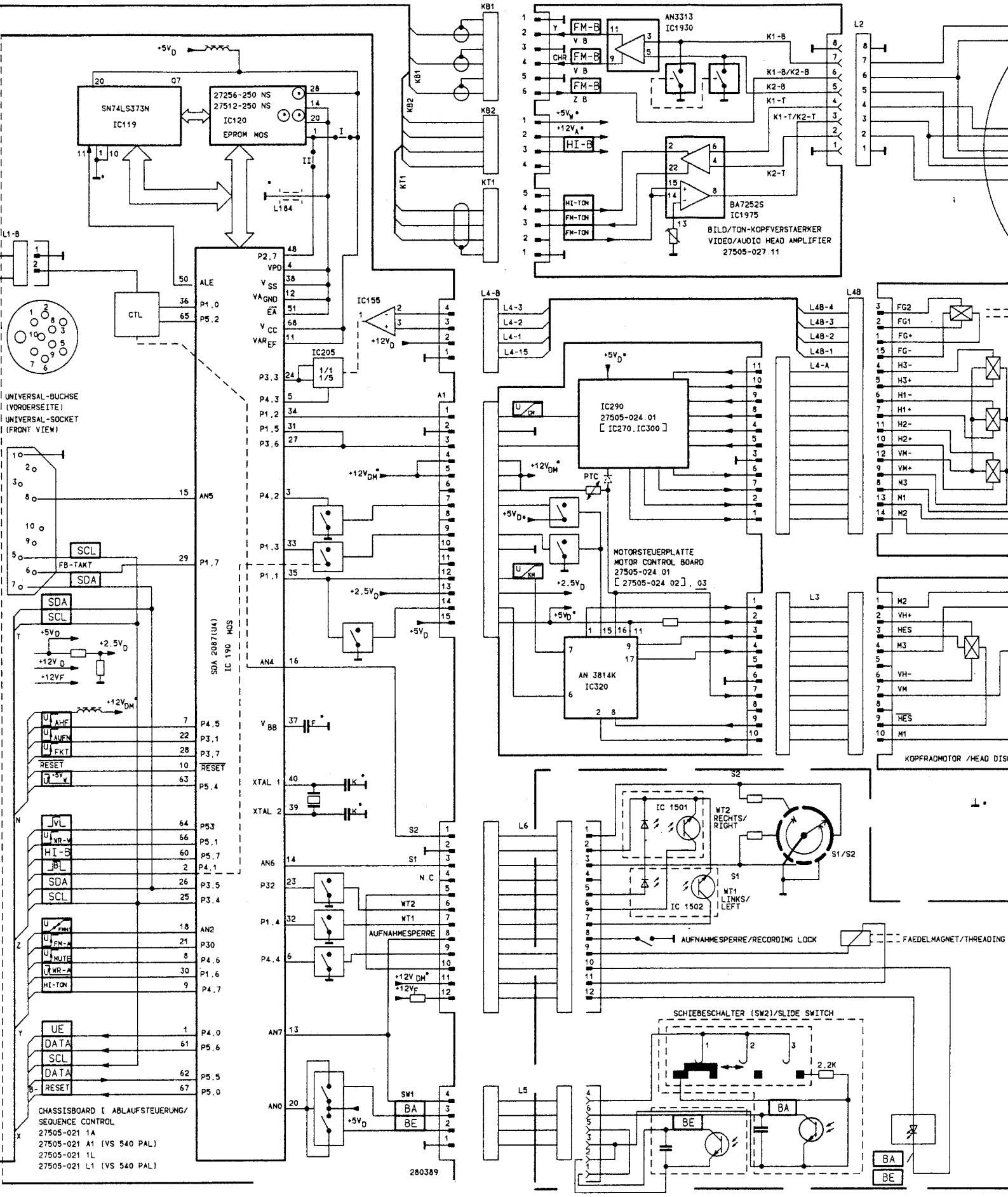


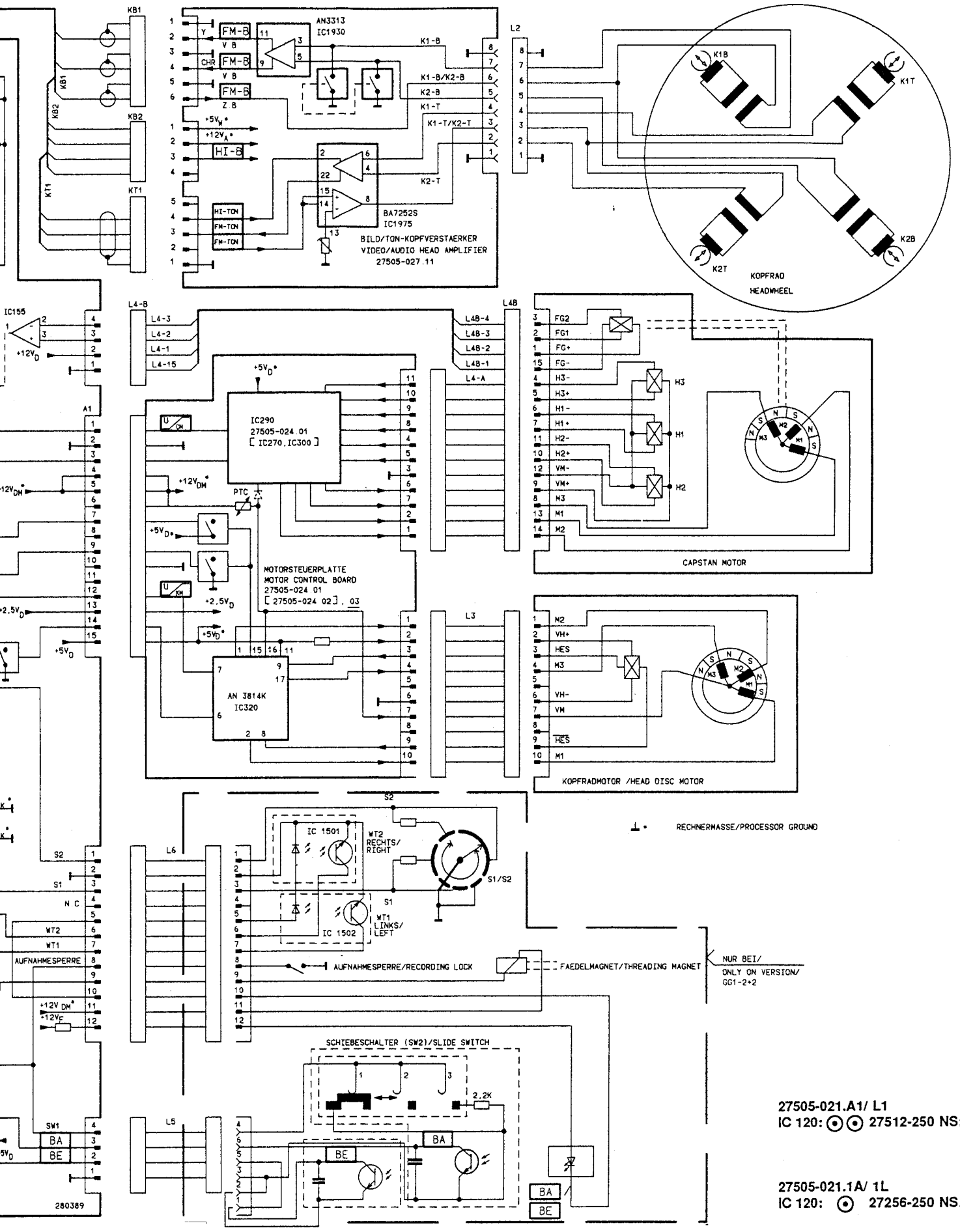
Blockschaltplan
Block circuit diagram
Schema elettrico a blocchi
(VS 540...)



chaltplan
ircuit diagram
a elettrico a blocchi
...)

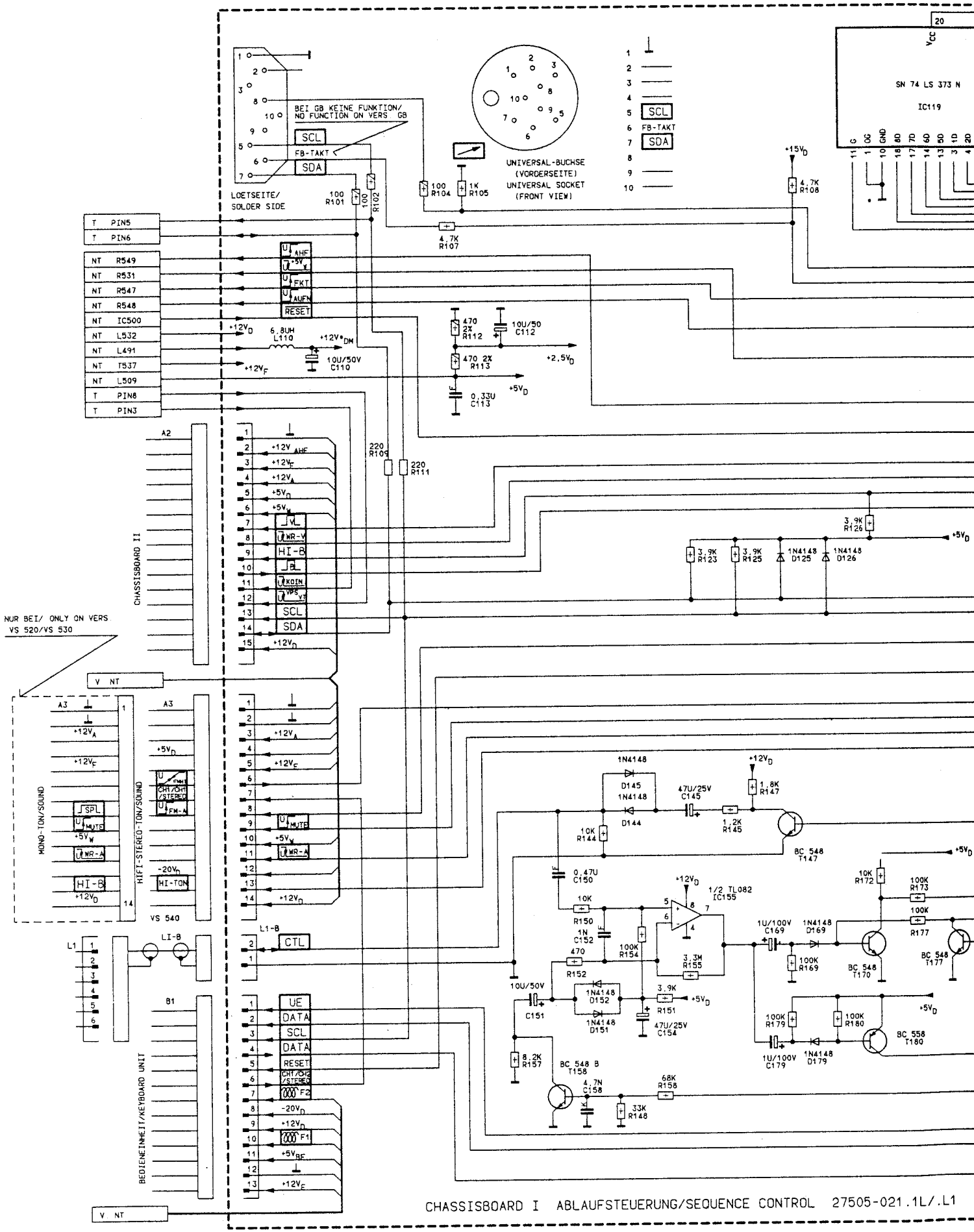


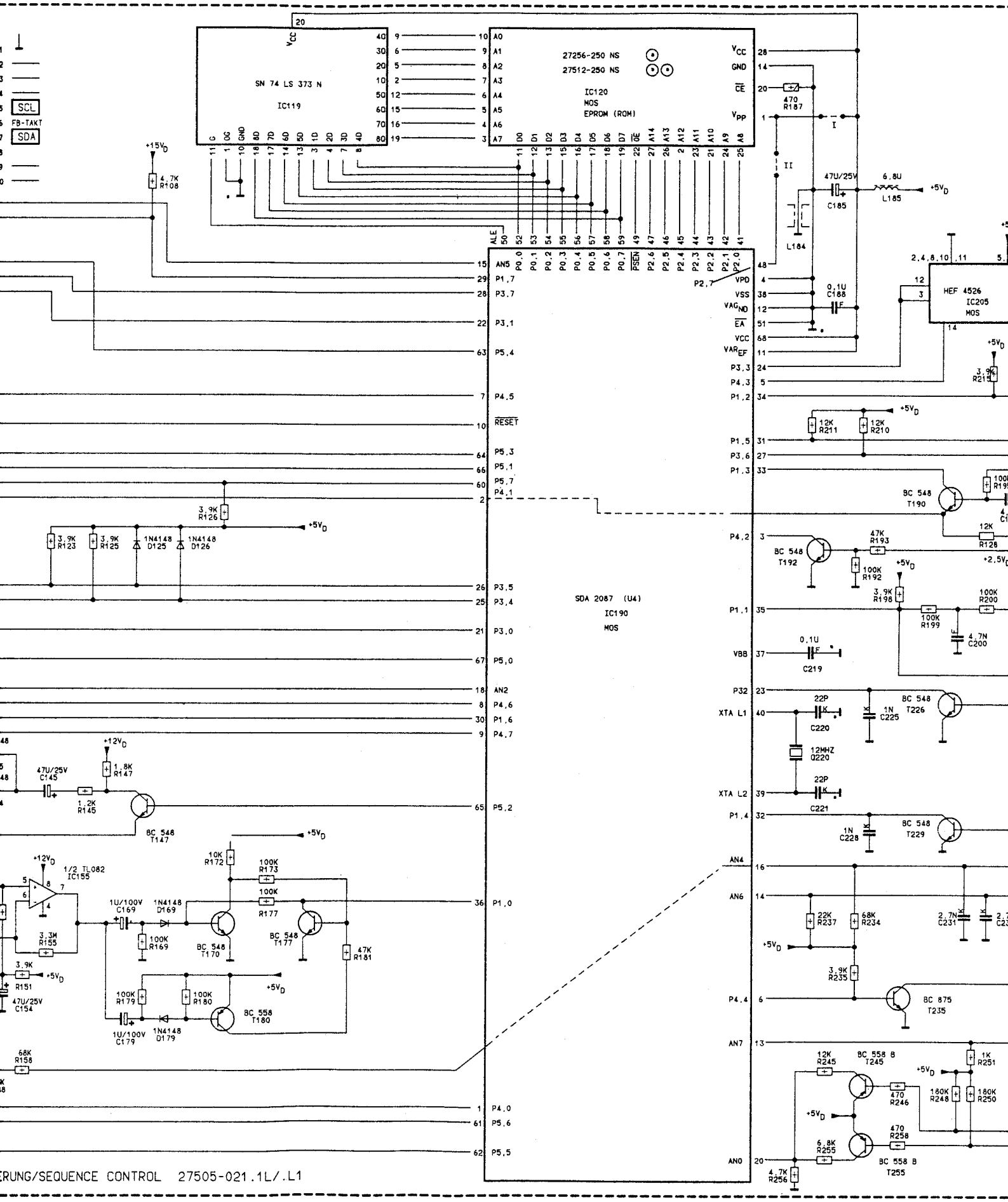


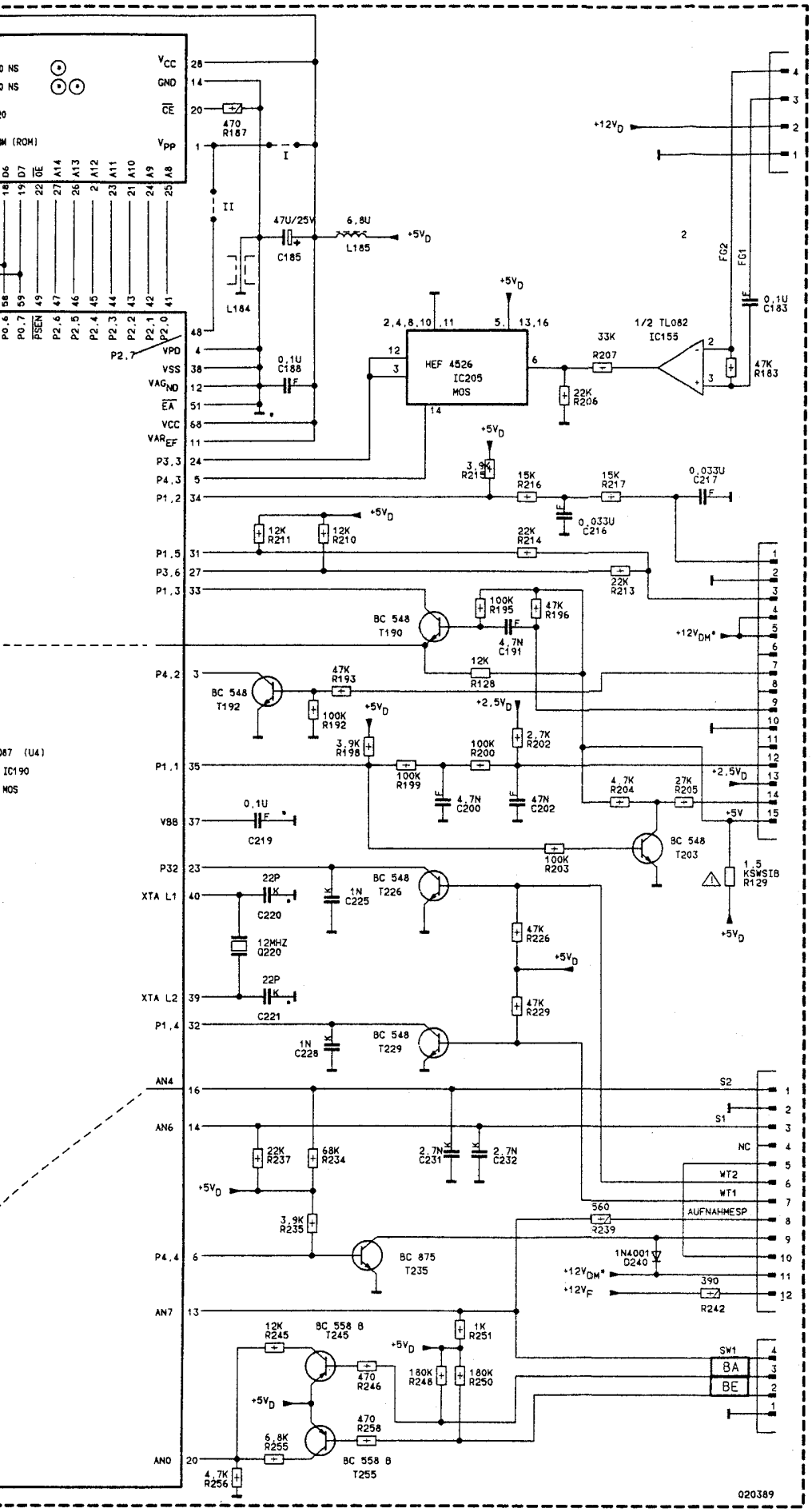


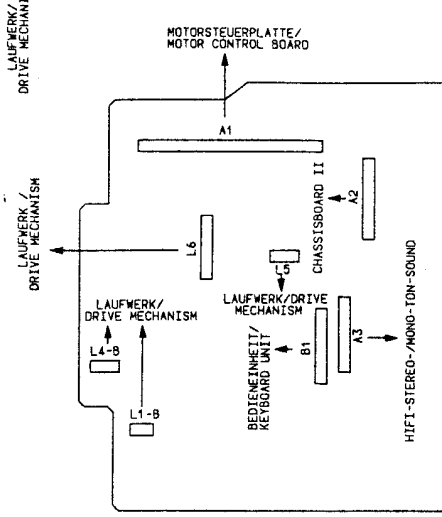
27505-021.A1/ L1
IC 120: ⊙⊙ 27512-250 NS: Brücke I
Jumper I
Ponte I

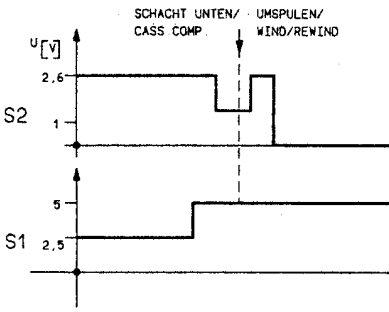
27505-021.1A/ 1L
IC 120: ⊙ 27256-250 NS: Brücke II
Jumper II
Ponte II

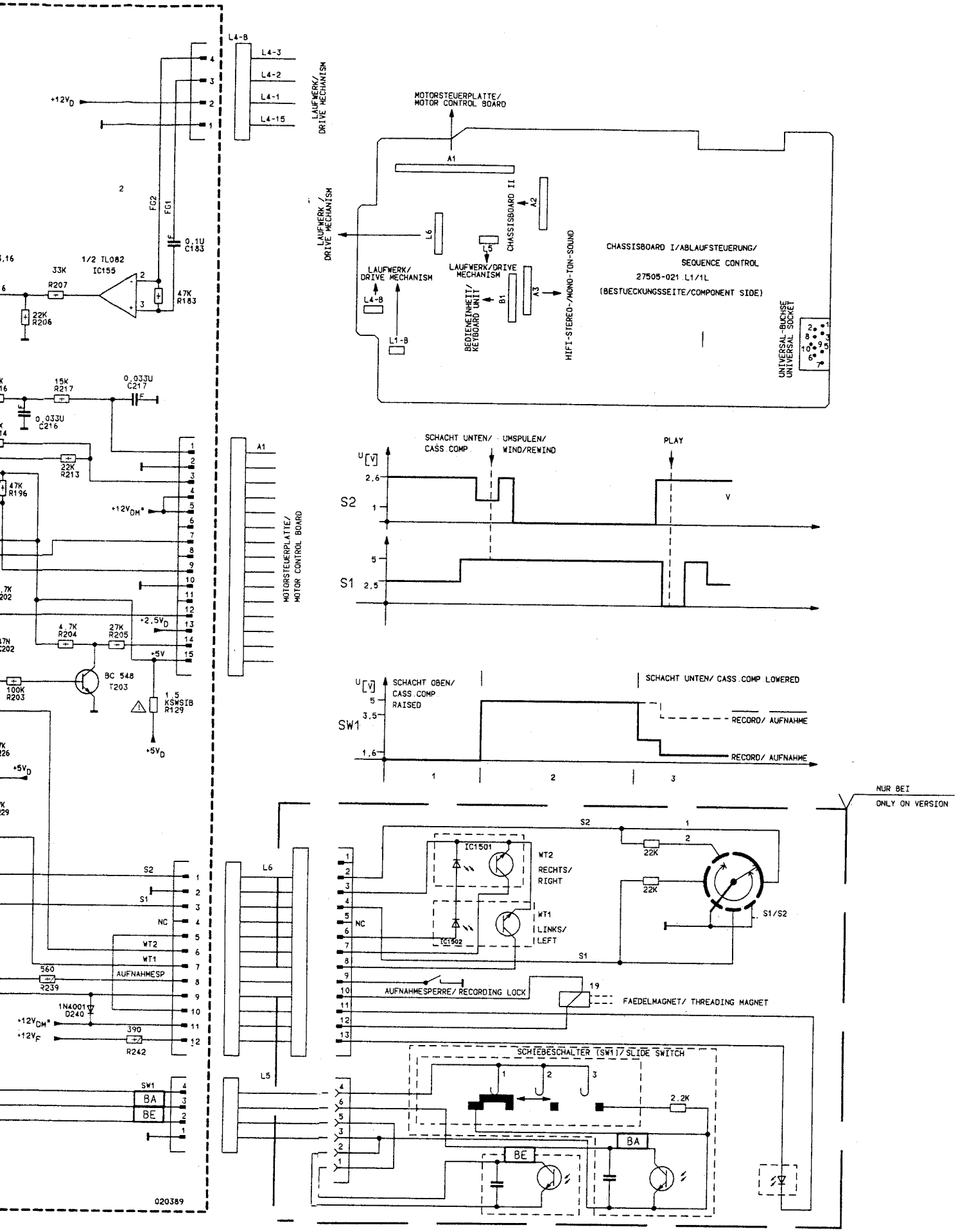








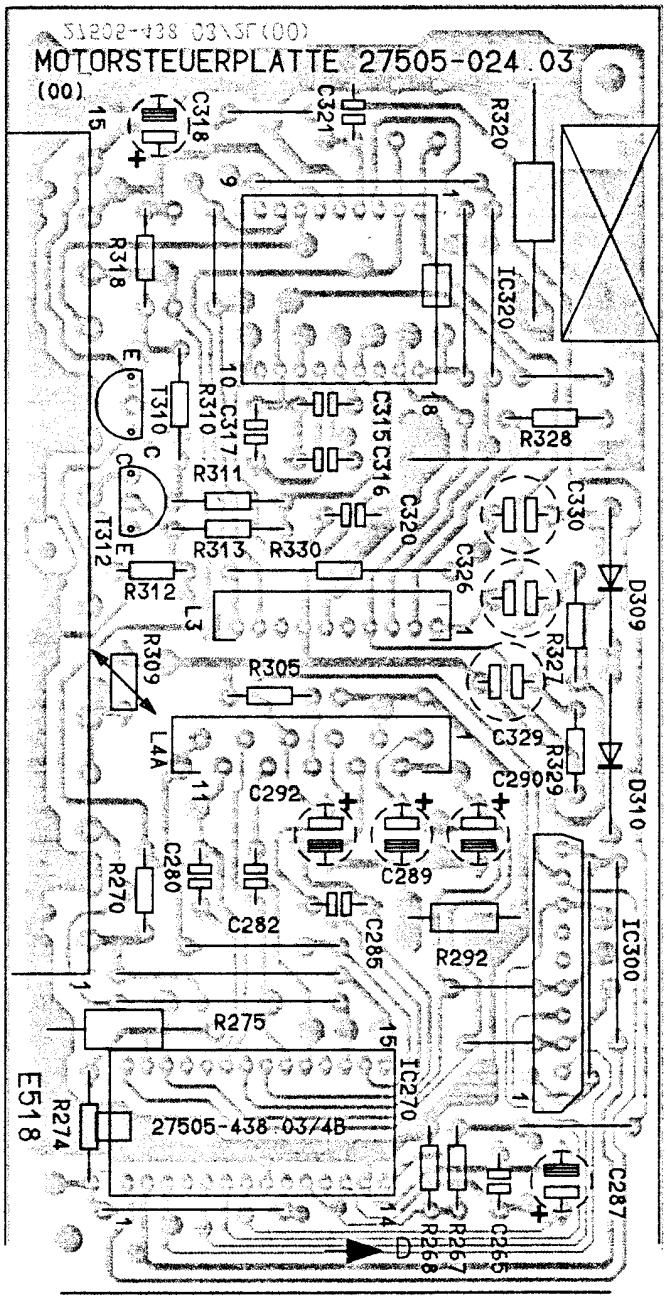


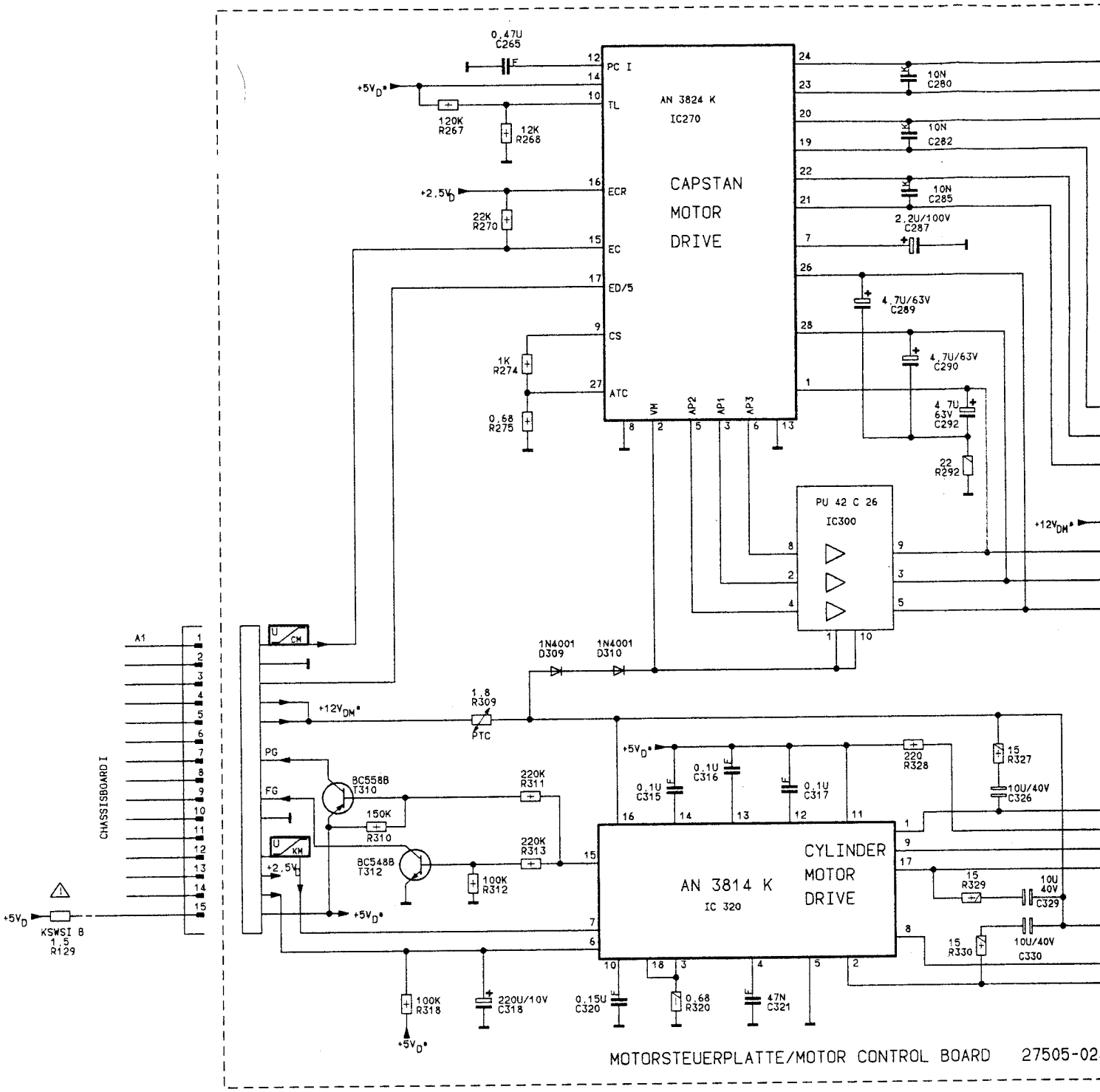


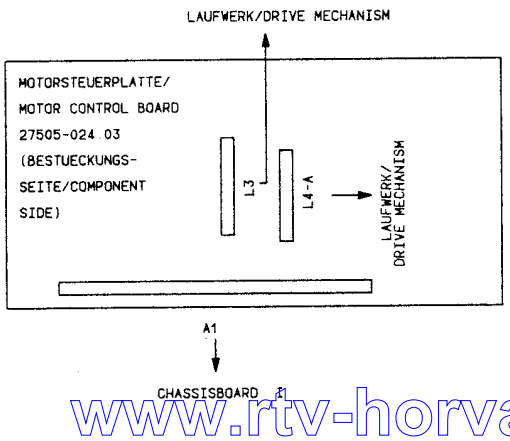
Ablaufsteuerung
Sequence control
Comando funzioni
(VS 520..., VS 530..., VS 540...)

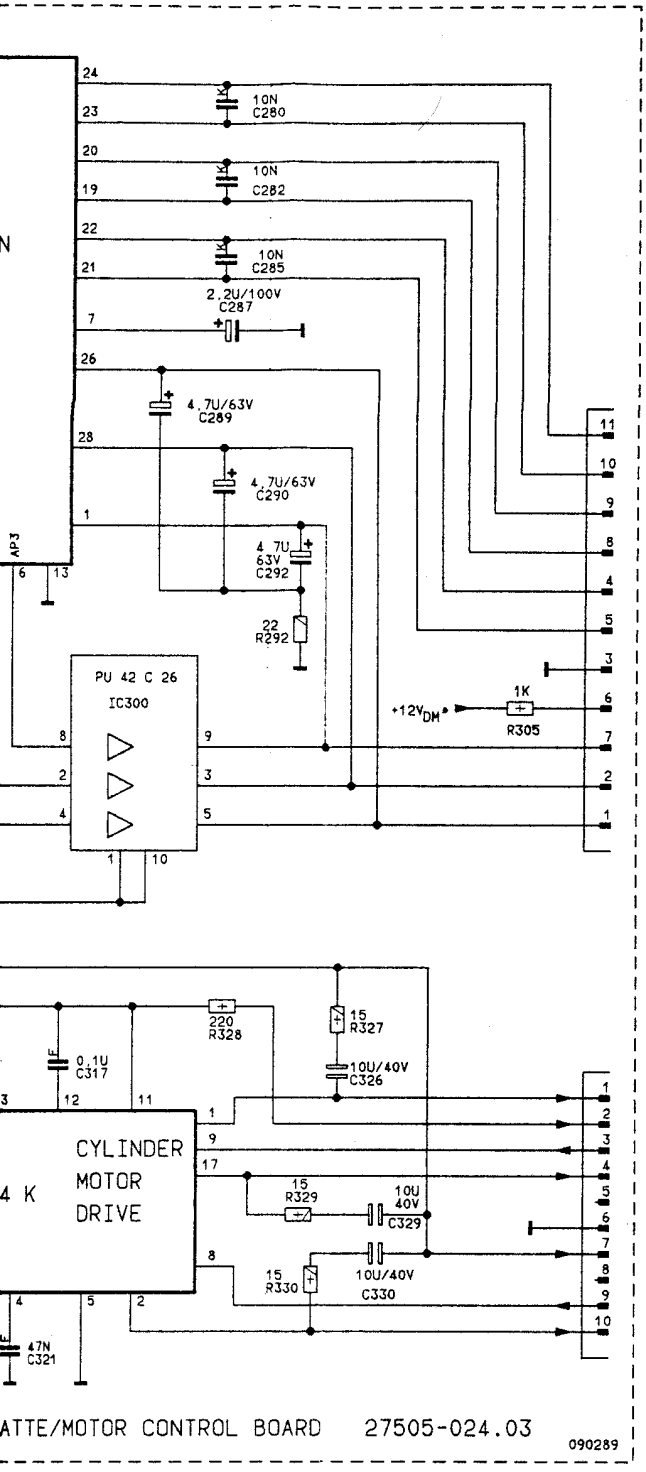
Motorsteuerplatte
Motor control board
Piastra comando motore

Ansicht von der Bestückungsseite
View of components side
Vistra dal lato saldature
Vue cote composants
Vistra por la parte de los componentes









ATTE/MOTOR CONTROL BOARD 27505-024.03

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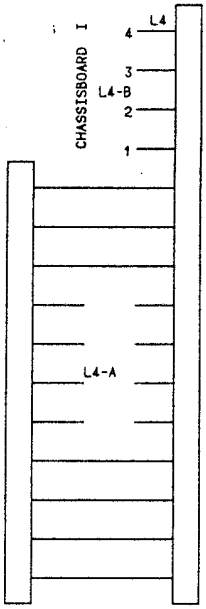
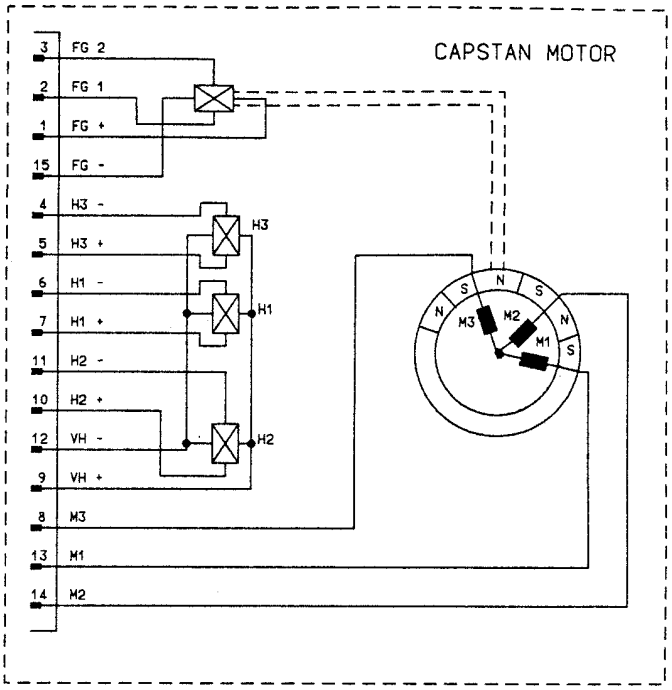
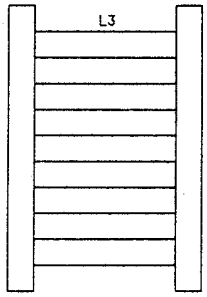
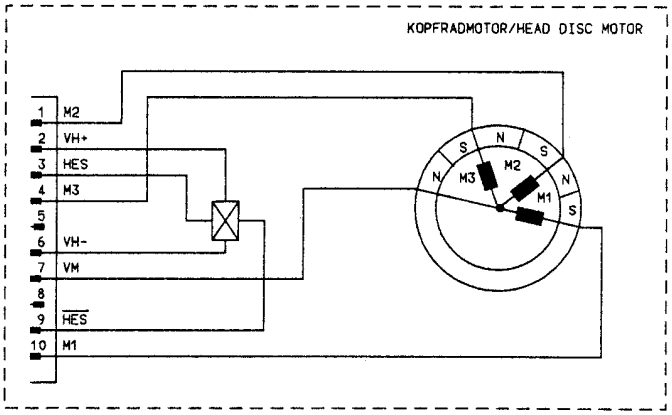




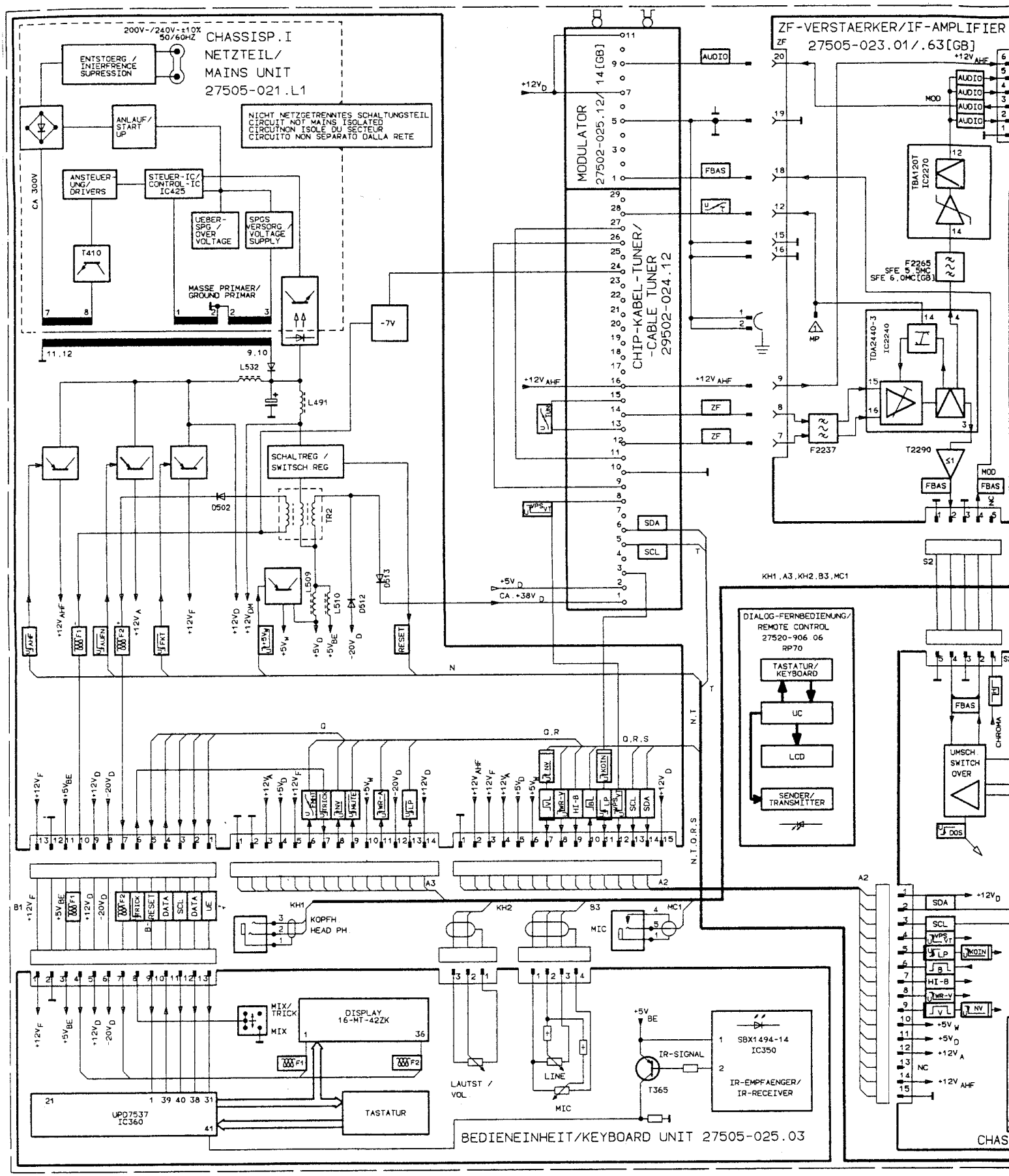


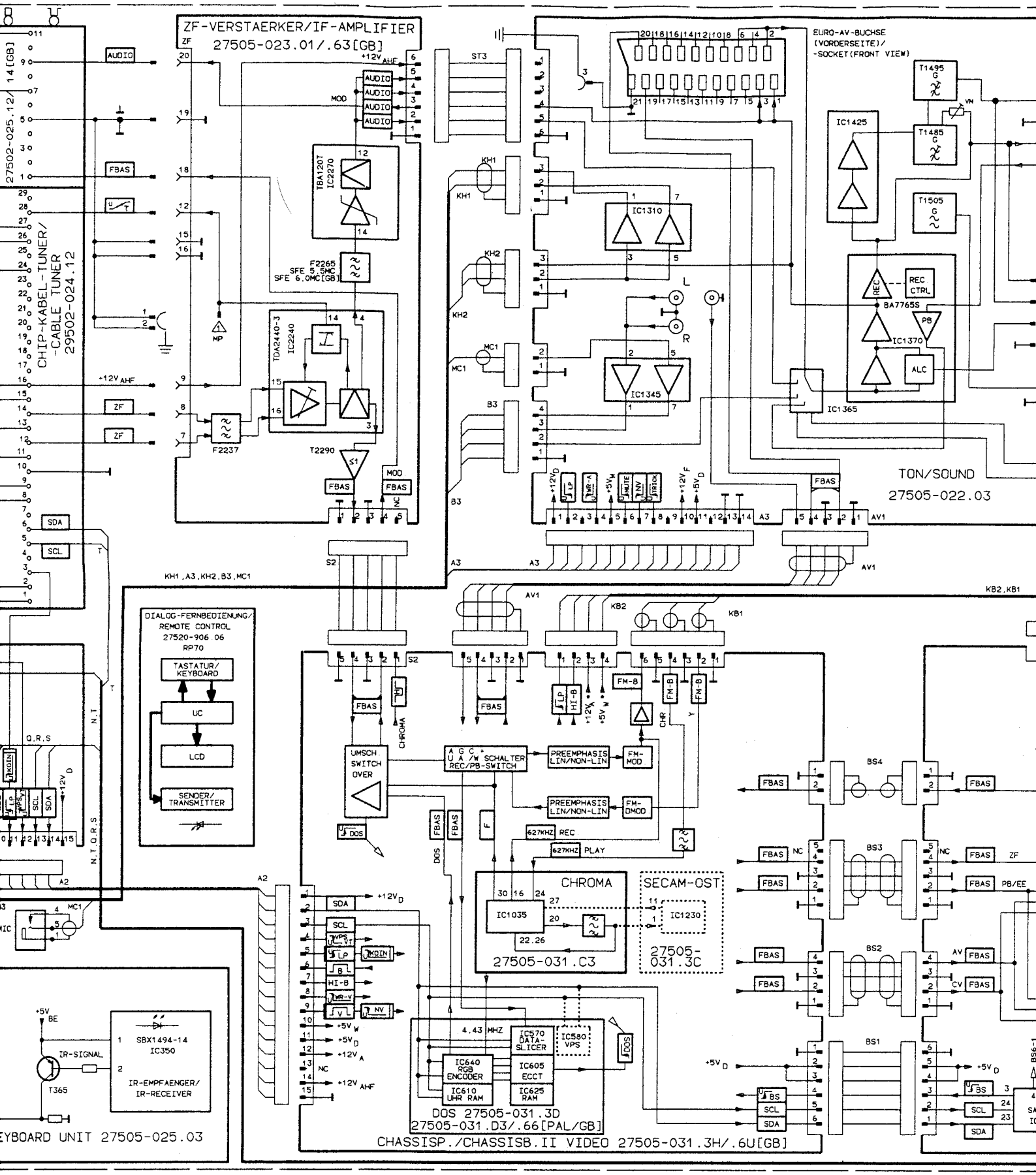


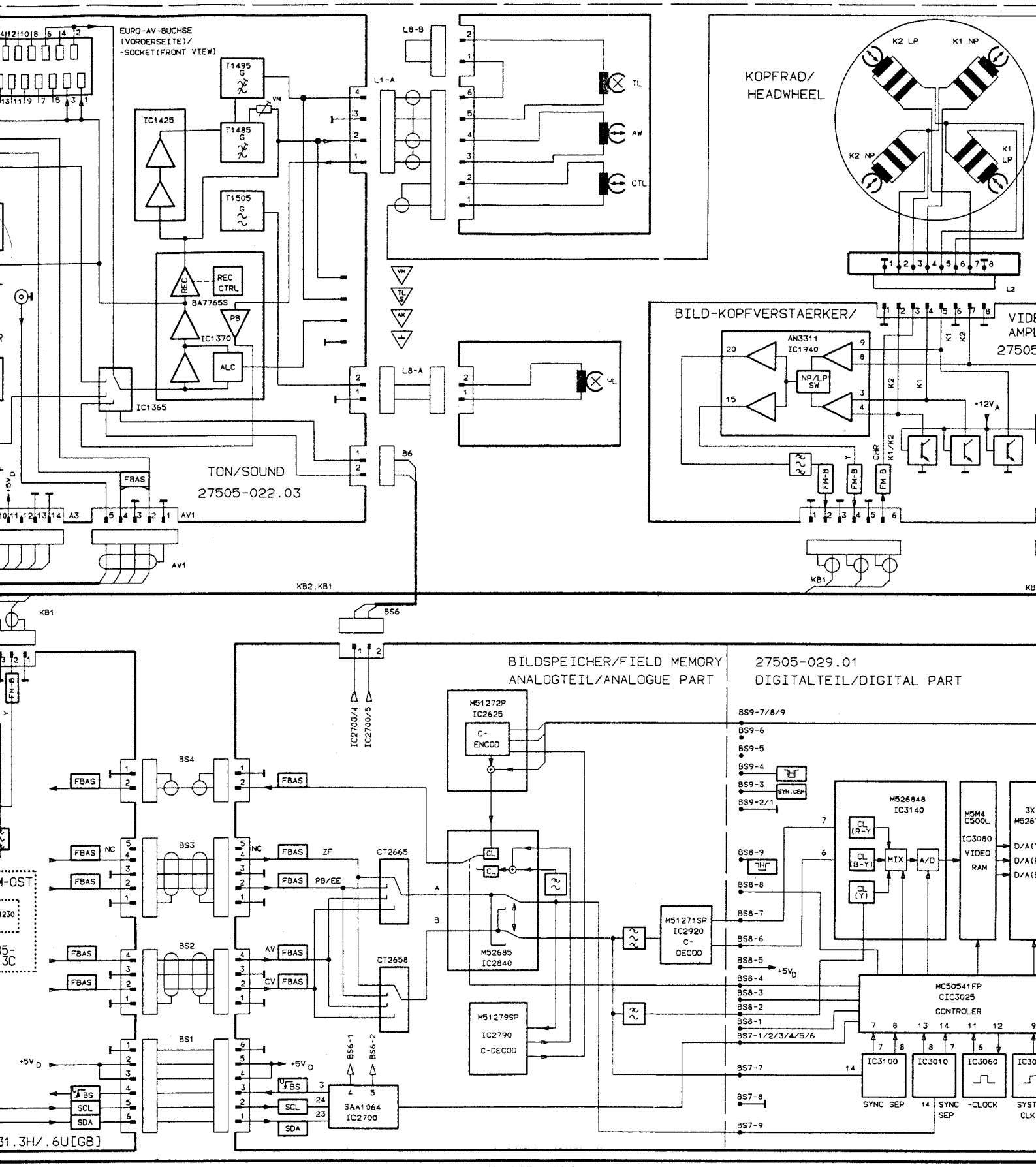
VS	LAUFWERK	
VS520/530	27123-007.02	GG1-3
VS540	27123-007.01	GG1-2+2
VS550	27123-007.05	GG1-4

VS520/530/540/550

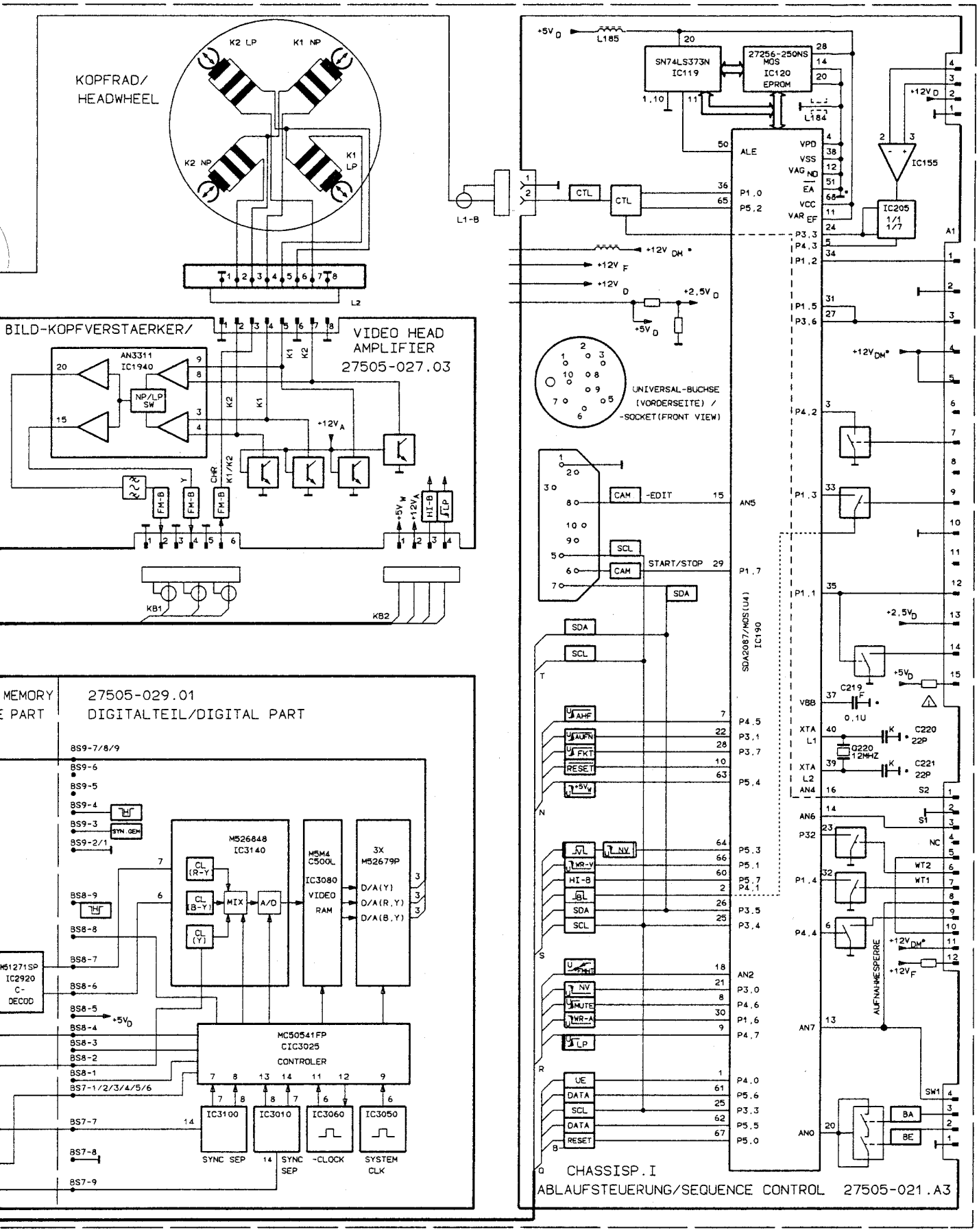
Motorsteuerplatte
Motor control board
Piastra comando motore







---------- ENTFAELLT BEI PAL U. GB
DELETED ON VERSION PAL



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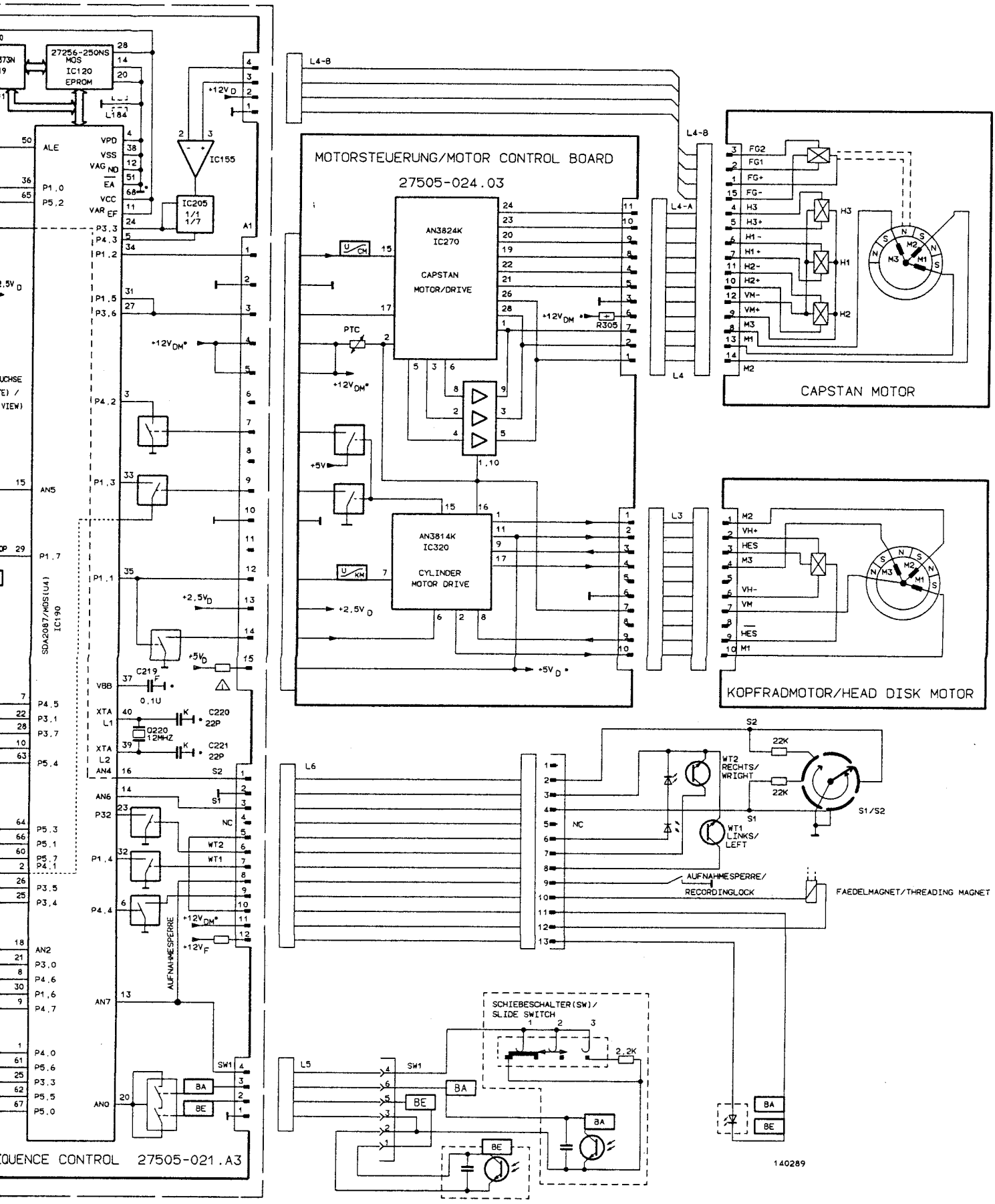
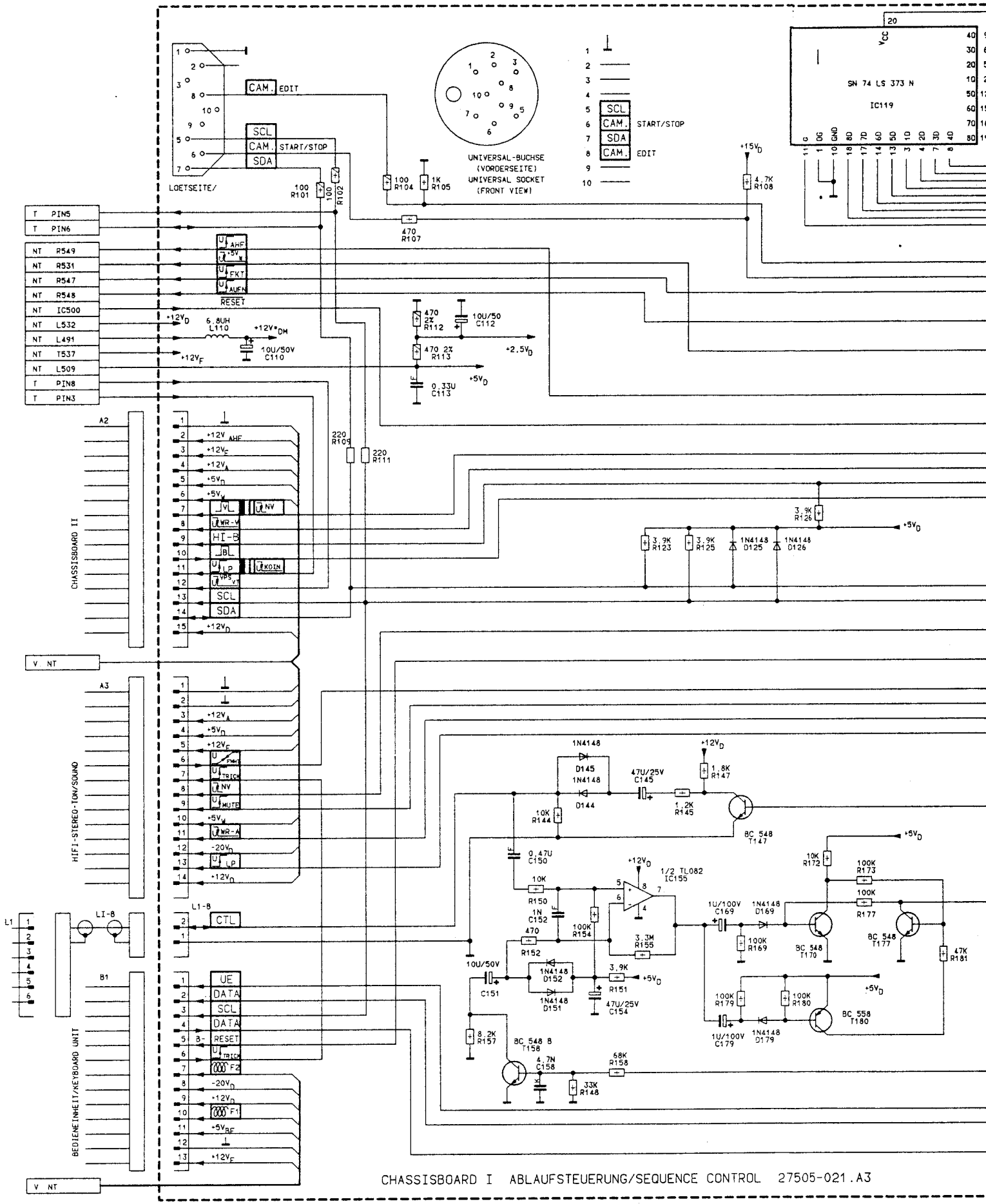
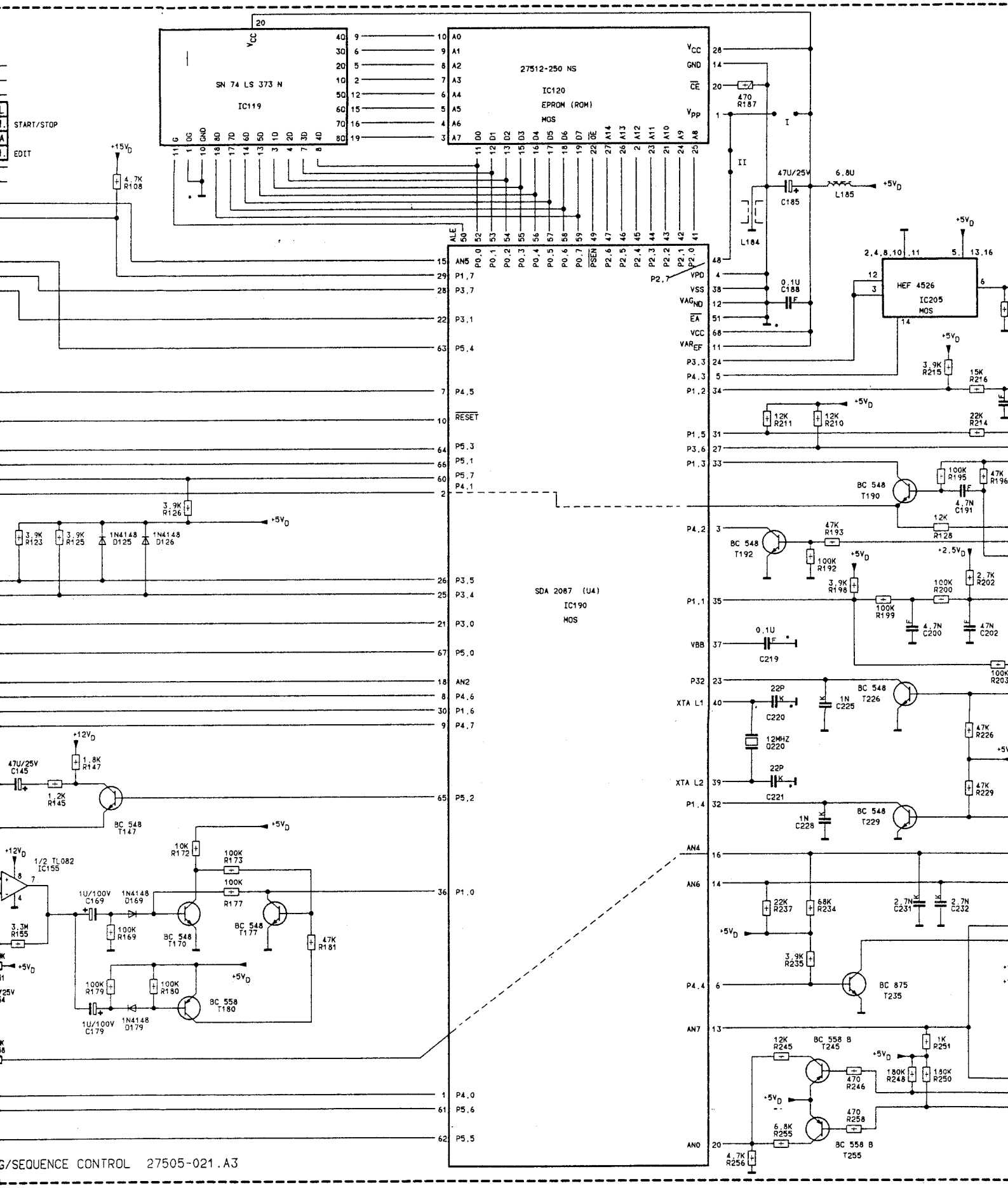


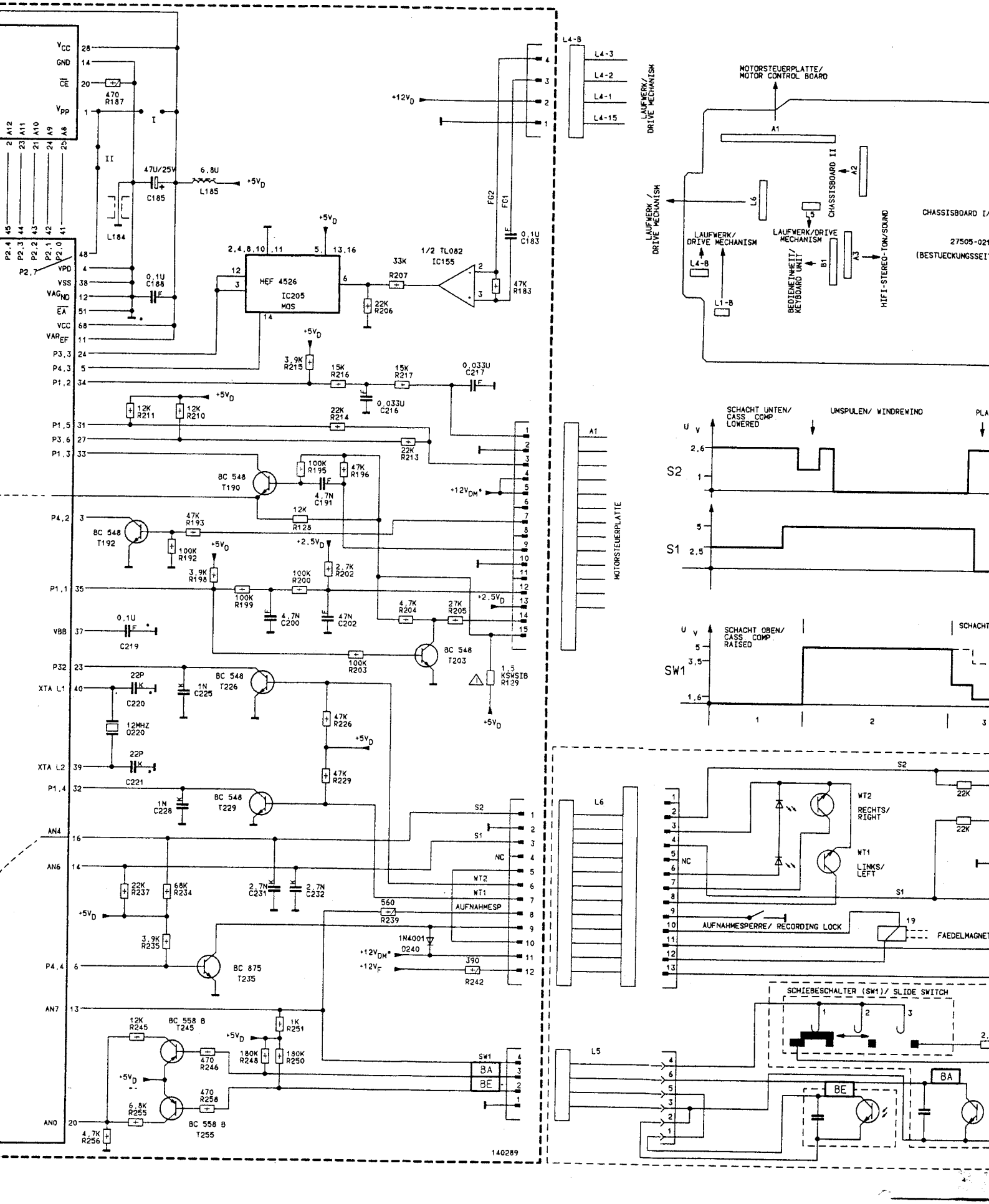
Blockschaltplan
Block circuit diagram
Schema elettrico a blocchi
(VS 550...)

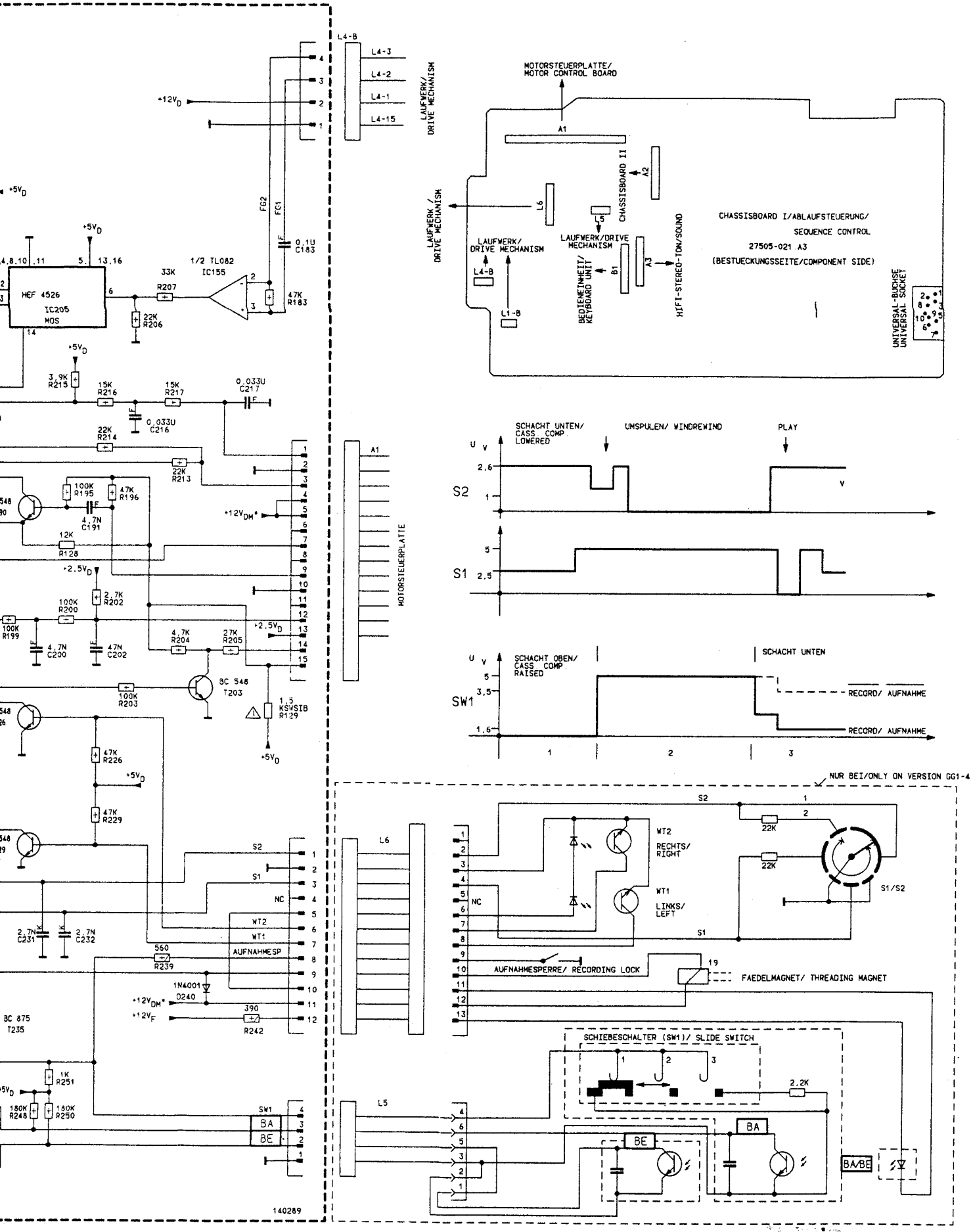


Ablaufsteuerung
Sequence control
Comando funzioni
(VS 550...)



ufsteuerung
ence control
ando funzioni
50...)





Mechanischer Teil

Hinweise:
- Die in Klammern angegebenen Zahlen sind mit den Positionsnummern in den Explosionszeichnungen und Ersatzteillisten identisch.
- Justagemarkierungen:

(a) kleine Markierungslöcher
(b) große Markierungslöcher
(c) Bezugsmarkierung im Laufwerk
(d) Markierungsnasen

Mechanical Section

Notes:
- The numbers quoted in brackets are the same as the position numbers given in the Exploded Diagrams and Spare Parts Lists.
- Alignment marks:

(a) Small marked holes
(b) Large marked holes
(c) Reference mark in the mechanics
(d) Marked lugs

Parte Meccanica

Note:
- I numeri fra parentesi sono identici ai numeri di posizione degli esplosi meccanici e delle liste ricambi.
- Punti di regolazione:

(a) fori di piccole dimensioni
(b) fori di grandi dimensioni
(c) punti di riferimento nella meccanica
(d) naselli

INHALTSVERZEICHNIS

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1. Mech. Funktionsablauf im Laufwerk

Das Flußdiagramm Fig. 1 zeigt den Zusammenhang zwischen Antrieb und den wichtigen Funktionen des Laufwerks. Aus den Pfeilrichtungen in Abbildung Fig. 2 ist die Drehrichtung der Zahnräder im Laufwerk während des Einfädelns ersichtlich.

Symbolerklärung:
○ Funktionsablauf
( ) Positionsnummer in den Explosionszeichnungen und in der Ersatzteilliste

(1) (133) Capstanrotor
(132) Antriebsriemen
(2) (137) Riemenscheibe
(3) (119) Antriebsrad
(4) (116) Kupplungsscheibe
(5) (113) Steuerrad
(6) (115) Planetenrad
(7) (120) Ringrad
(8) (112) Kurvenrad
(9) (65) Zwischenrad
(10) (114) Zwischenrad
(11) (111) Kurvenrad
(12) (142) Ladekurvenrad
(13) (141) Zahnsegment
(14) (138) Laderad (T)
(15) (143) Laderad (S)

Die Umschaltung zwischen Cassettenschachtsteuerung und Fädelbetrieb erfolgt durch den Sperrhebel (110).

1. Sequence of Mechanical Functions

The Flow Chart 1 shows the connection between the drive and the important functions of the mechanics. The direction of rotation of the gear wheels during the tape loading processis indicated by arrows in Fig. 2.

Explanations of symbols:
○ Sequence of operations
( ) Position numbers in the Exploded Diagrams and in the Spare Parts List.

(1) (133) Capstan Rotor
(132) Drive Belt
(2) (137) Drive Belt Pulley
(3) (119) Drive gear
(4) (116) Clutch disk
(5) (113) Drive gear
(6) (115) Planet gear
(7) (120) Ring gear
(8) (112) Sub cam gear
(9) (65) Intermediate gear
(10) (114) Intermediate gear
(11) (111) Cam gear
(12) (142) Loading Cam gear
(13) (141) Toothed segment
(14) (138) Loading gear (T)
(15) (143) Loading gear (S)

The switch-over between the cassette compartment drive and the loading mode is carried out by the locking lever (110).

1. Sequenza delle operazioni meccaniche

Il diagramma di flusso (fig. 1) mostra l'interdipendenza tra complesso meccanico e funzioni più importanti. Le frecce riportate in fig. 2 indicano il senso di rotazione delle ruote dentate nella meccanica durante il caricamento del nastro.

Simboli:
○ sequenza di funzionamento
( ) numero di posizione negli esplosi e nella lista ricambi.

(1) (133) Rotore capstan
(132) Cinghia di trazione
(2) (137) Puleggia cinghia
(3) (119) Puleggia di trazione
(4) (116) Disco frizione
(5) (113) Ruota di comando
(6) (115) Ingranaggio satellite
(7) (120) Ruota ad anello
(8) (112) Ruota a camme
(9) (65) Ruota intermedia
(10) (114) Ruota intermedia
(11) (111) Ruota a camme
(12) (142) Ruota di caricamento
(13) (141) Segmento dentato
(14) (138) Ruota di caricamento (T)
(15) (143) Ruota di caricamento (S)

La commutazione tra comando vano cassetta e funzioni di caricamento/scaricamento del nastro avviene per mezzo della leva di bloccaggio (110).

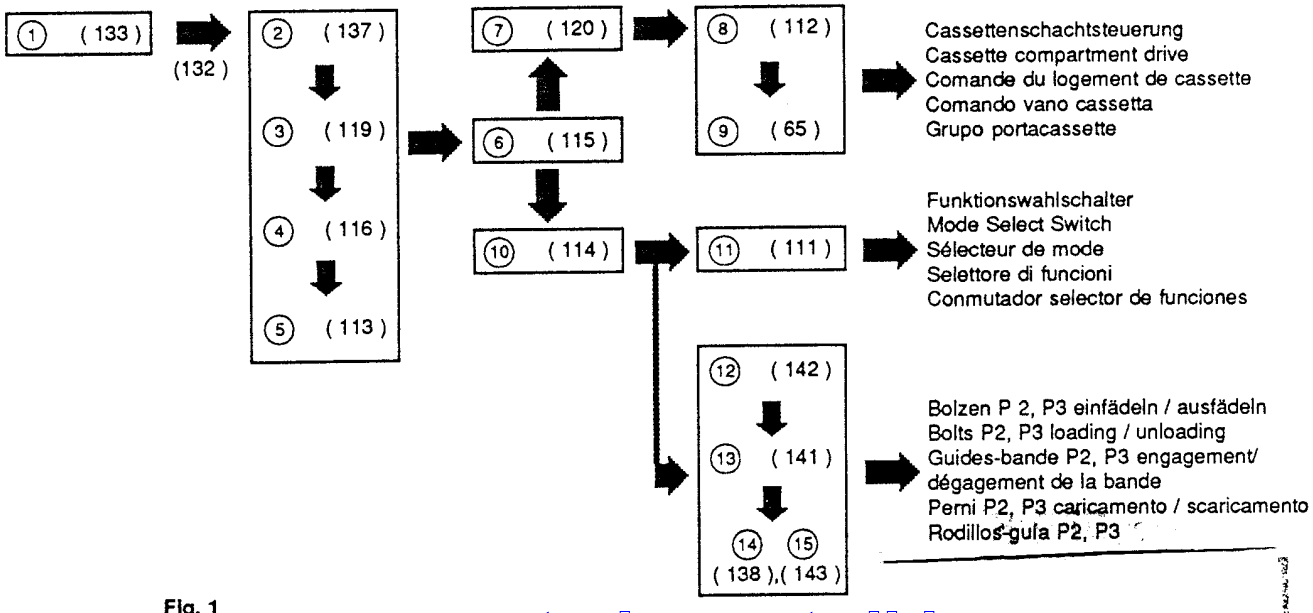


Fig. 1

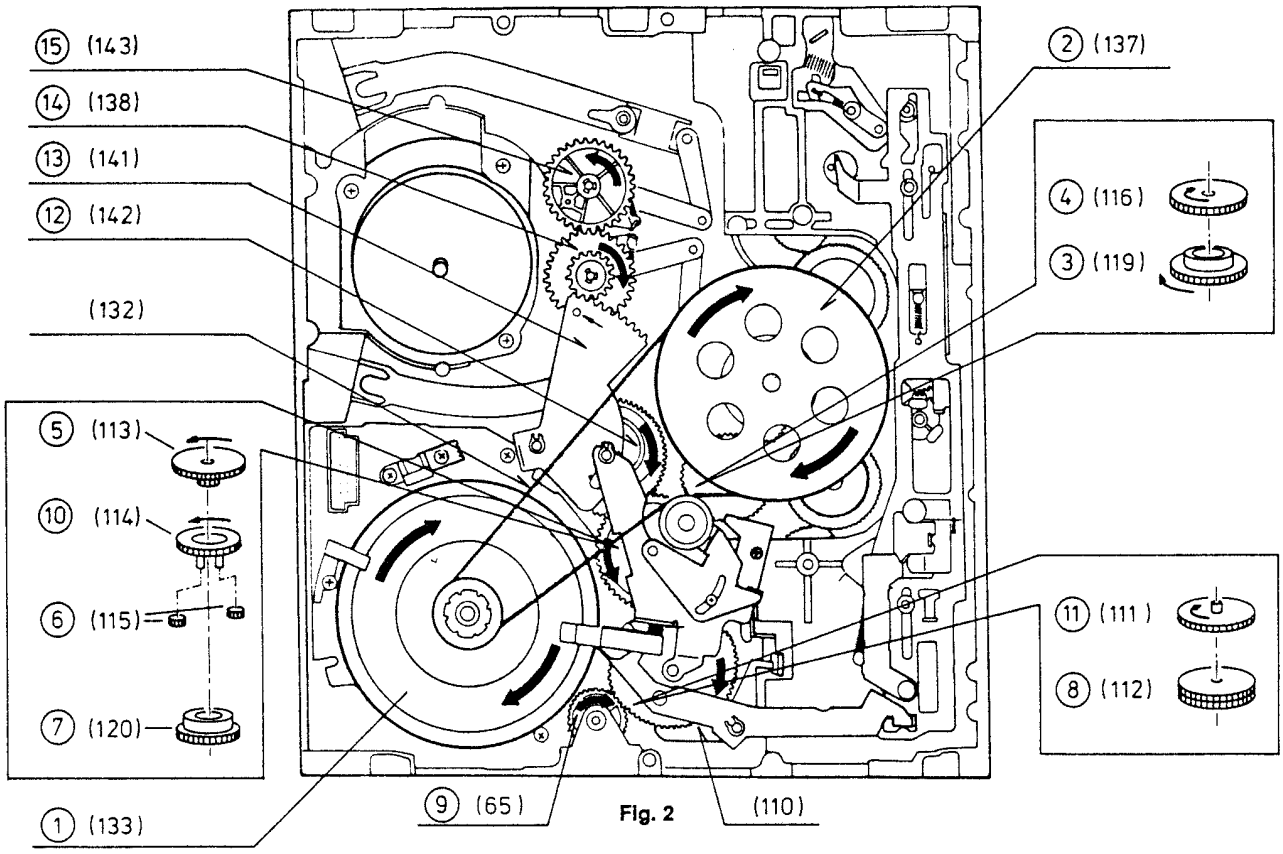


Fig. 2

2. Absenken des Cassettenschachtes von Hand (ohne Cassette)

- Netzstecker ziehen.
- Riemenscheibe (137) ca. 3 Umdrehungen im Uhrzeigersinn drehen.
- Sicherungshebel (P) ausrasten (Fig. 3).
- Riemenscheibe (137) um eine Umdrehung weiterdrehen.
- Hebel (Q) nach unten drücken und Sicherungshebel (P) erneut ausrasten.
- Cassettenschacht durch Weiterdrehen der Riemenscheibe (137) vollständig absenken

2. Lowering the Cassette Compartment by Hand (without cassette)

- Disconnect the machine from mains.
- Rotate the drive belt pulley (137) approx. 3 revolutions in the clockwise directions.
- Release the locking lever (P) (Fig. 3).
- Rotate the drive belt pulley (137) by one more revolution.
- Push the lever (Q) down and release the locking lever (P) once again.
- Lower the cassette compartment fully by rotating the drive belt pulley (137) further in a clockwise direction.

2. Abbassamento manuale del vano cassetta (senza cassetta)

- Staccare la spina di rete.
- Ruotare la puleggia della cinghia (137) di 3 giri circa in senso orario.
- Sbloccare la leva di sicurezza (P) (fig. 3).
- Ruotare ancora di 1 giro la puleggia (137)
- Premere verso il basso la leva (Q) e sbloccare nuovamente la leva (P).
- Ruotare ulteriormente la puleggia (137) in senso orario fino ad abbassare completamente il vano cassetta.

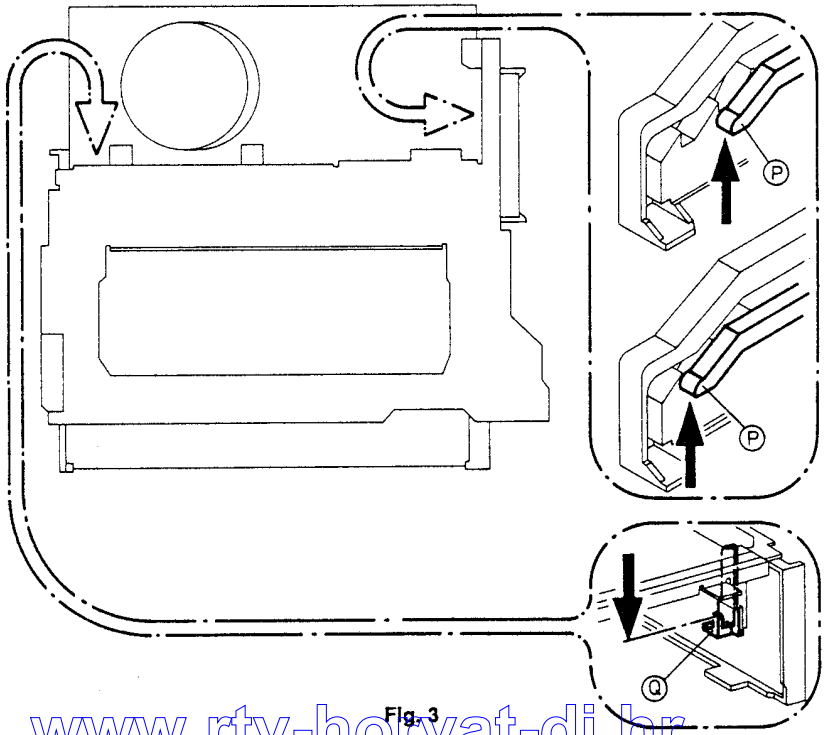


Fig. 3

3. Cassettenauswurf von Hand

a) Netzstecker ziehen
b) Umstellhebel (122) durch Drücken in Pfeilrichtung (Fig. 4) ausrasten.
c) Capstanrotor langsam gegen den Uhrzeigersinn drehen, bis die Kupplungsscheibe (116) einrastet.
d) Schritte b) und c) wiederholen bis die Cassette ausgeworfen wird.

3. Ejecting the Cassette by Hand

a) Disconnect the machine from the mains.
b) Disengage the change-over lever (122) by pressing it in the direction of the arrow (Fig. 4).
c) Rotate the capstan rotor slowly anti-clockwise until the clutch disk (116) locks.
d) Repeat steps b) and c) until the cassette is ejected.

3. Estrazione manuale della cassetta

a) Staccare la spina di rete.
b) Sbloccare la leva (122) premendola nella direzione indicata (fig.4).
c) Girare il rotore capstan lentamente in senso antiorario finchè il disco frizione (116) è bloccato.
d) Ripetere le operazioni b) e c) finchè la cassetta viene espulsa.

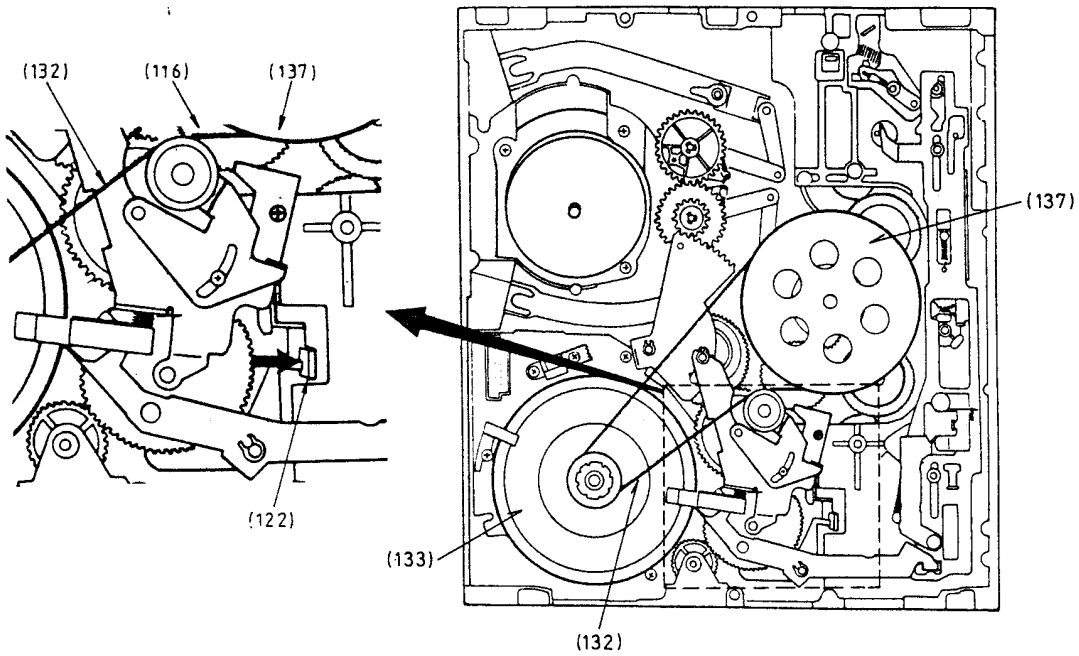


Fig. 4

4. Beobachten des Bewegungsablaufes im Laufwerk

Der Capstanmotor arbeitet sowohl als Fädelmotor als auch als Cassettenschachtantrieb. Da die Phasenbeziehung zwischen den Laufwerk- und den Cassettenschachtfunktionen sehr wichtig ist, sollten diese bei Störungen des Ablaufs bei ausgebautem Cassettenschacht beobachtet werden. Dies ist vor allem bei Wiedergabe und den Umspulvorgängen empfehlenswert.

- Netzstecker ziehen.
- Cassettenschacht ausbauen (s. Kap. 5).
- Umstellhebel (122) in Pfeilrichtung drücken (Fig. 4) und Rotor des Capstanmotors solange im Uhrzeigersinn drehen bis die STOP-Position (Fig. 5) erreicht ist. Die STOP-Position ist mit der Position "Umspulen" identisch. Deshalb drehen sich der Aufwickel- und der Abwickelteller abhängig von der Drehrichtung des Capstanrotors.
- Netz anschließen. Service-Funktion "Bedienung ohne Cassette" eingeben. Jede Funktion ist nun aufrufbar.

5. Ausbau des Cassettenschachts (Fig. 6)

- 2 Schrauben "A" herausdrehen.
- Cassettenschacht durch Drehen des Capstanrotors (133) im Uhrzeigersinn soweit bewegen, bis die 2 Schrauben "B" entfernt werden können.
- Steckverbindung P1508 abziehen und Cassettenschacht herausnehmen.

6. Einbau des Cassettenschachtes

- Umstellhebel (122), Fig. 4, oder Kern der Spule (66), Fig. 7, in Pfeilrichtung drücken, um die Verriegelung zu öffnen.

4. Observing the sequence of movements in the machine

The Capstan Motor operates as the loading motor and also as the drive for the cassette compartment. The relationship between the mechanics and the cassette compartment functions is very important, and must be checked as this can be upset with the cassette compartment removed. It is recommended that this is checked before all playback and winding processes are attempted.

- Disconnect the machine from mains.
- Remove the cassette comp. (see para 5).
- Depress the change-over lever (122) in the direction of the arrow (Fig.4) and turn the rotor of the capstan motor in the clockwise direction until the STOP-position (Fig. 5) is reached. The STOP-position is identical to the "Winding" position. Therefore the drive of the take-up or the winding spool carrier depends on the direction of the rotation of the capstan motor.
- Reconnect the machine to mains. Feed in the Service-Function "Operation without Cassette". All functions can now be called up.

5. Removing the Cassette Compartment (Fig.6)

- Remove the 2 screws "A"
- Rotate the capstan rotor (133) to move the cassette compartment so that it is possible to remove the 2 screws "B".
- Pull out the plug-type connector P1508 and remove the cassette compartment.

6. Refitting the Cassette Compartment

- Press the change-over lever (122), Fig. 4, or the core of the solenoid (66), Fig. 7, in the

4. Osservazione dei movimenti meccanici

Il motore capstan serve sia come unità di caricamento del nastro che come dispositivo di comando del vano cassetta. Poichè la relazione di fase tra le funzioni della meccanica e quelle del vano cassette è molto importante, esse vanno controllate in caso di disturbi nei movimenti quando il vano è smontato. Ciò è raccomandabile sopratutto in riproduzione ed in avvolgimento veloce.

- Estrarre la spina di rete.
- Smontare il vano cassette (v. cap. 5).
- Premere in direzione della feeccia la leva (122) -fig. 4- e girare il rotore capstan in senso orario finchè èraggiunta la pos. STOP (fig. 5). La leva (122) deve essere sbloccata ad ogni rotazione. La pos. STOP è uguale a quella di avvolgimento veloce. Pertanto, i piattelli avvolgente e svolgente girano dipentemente al verso di rotazione del rotore capstan.
- Collegare la spina di rete. Immettere la funzione di servizio "Impiego senza cassetta". Ora è richiamabile qualsiasi funzione.

5. Smontaggio del vano cassetta (Fig. 6)

- Svitare le due viti "A".
- Ruotando il senso orario il rotore capstan (133) muovere il vano cassetta finchè si possono allontanare anche le due viti "B".
- Staccare il connettore P 1508 ed infine togliere il vano cassette.

6. Montaggio del vano cassette

- Premere in direzione della freccia la leva (122), fig. 4, o il nucleo della bobina (66), fig. 7, per aprire il dispositivo di bloccaggio.

- Capstanrotor entgegen dem Uhrzeigersinn drehen bis die Mechanik die Stellung "Auswerfen" erreicht hat (Endanschlag).
- Lage des Markierungslochs (a) oder der Markierungsnase (d) des Zwischenrades (65) merken (Fig. 8) und Capstanrotor entgegen dem Uhrzeigersinn drehen bis das Zwischenrad (65) eine Umdrehung gemacht hat.
- Cassettenschacht (202) soweit verschieben, bis der 2. Zahn der Zahnstange (224) über dem rechtwinkligen Loch "C" liegt (Fig. 9).
- 2 Schrauben "D" herausdrehen und Abdeckplatte (201) entfernen, sodaß die Zahnstange (224) und das Zwischenrad (65) beim Einbau zu sehen sind.
- Cassettenschacht so in das Laufwerk einsetzen, daß der 2. Zahn der Zahnstange (224) in der 5. Zahnlücke des Zwischenrades (65) eingreift (Fig. 10). Gegebenenfalls Cassettenschacht geringfügig verschieben.
- Abdeckplatte (201) montieren und die 6 Schrauben in der Reihenfolge "D", "A", "B" eindrehen (Fig. 6, Fig. 9)
- Steckverbindung P 1508 kontaktieren

Hinweis:
Falls die Schachtfunktionen nicht richtig ausgeführt werden, Einbau wiederholen.

direction of the arrow to disengage the lever.
- Rotate the capstan rotor in the anti-clockwise direction until the mechanics reaches the "Eject" position (end stop).
- Note the position of the marking hole (a) or the marking lug (d) on the intermediate gear (65), Fig. 8, and rotate the capstan rotor in the anti-clockwise direction until the intermediate gear (65) makes one complete revolution.
- Move the cassette compartment (202) so that the 2nd tooth of the toothed rack (224) is positioned over the right ancled hole "C" (Fig. 9).
- Remove the 2 screws "D" and remove the top plate (201) so that the toothed rack (224) and the intermediate gear (65) can be seen during assembly.
- Insert the cassette compartment into the mechanics so that the 2nd tooth of the toothed rack (224) engages with the 5th tooth space of the intermediate gear (65) (Fig. 10). If necessary move the cassette by a small amount.
- Fit the top plate (201) and tighten the 6 screws in the sequence "D", "A", "B" (Fig.6, Fig.9).
- Reconnect the plug connector P1508.

Note: If the functions of the cassette compartment are not carried out correctly, repeat the assembly procedure.

- Ruotare in senso antiorario il rotore capstan finchè la meccanica ha raggiunto la posizione prevista per l'espulsione (battuta finale).
- Annotare la posizione del foro (a) o del nasello (d) della ruota intermedia (65), fig. 8. Girare il rotore capstan in senso antiorario finchè la ruota intermedia (65) ha compiuto un giro.
- Inserire il vano cassetta (202) in modo che il 2° dente della cremagliera (224) risulti sopra il foro "C" (fig. 9).
- Svitare le due viti "D" e togliere la piastra di copertura (201) in modo da rendere visibili la cremagliera (224) e la ruota intermedia (65) durante il montaggio.
- Inserire il vano cassetta nella meccanica in modo che il 2° dente della cremagliera (224) ingrani in corrispondenza del dente della ruota intermedia (65) indicato in fig. 10. Even. te muovere leggermente il vano cassetta.
- Montare la piastra di copertura (201) e fissare le sei viti "D", "A" e "B" (figg. 6 e 9).
- Collegare il connettore P 1508.

Nota:
Se le funzioni del vano non vengono eseguite correttamente, ripetere le varie operazioni di montaggio.

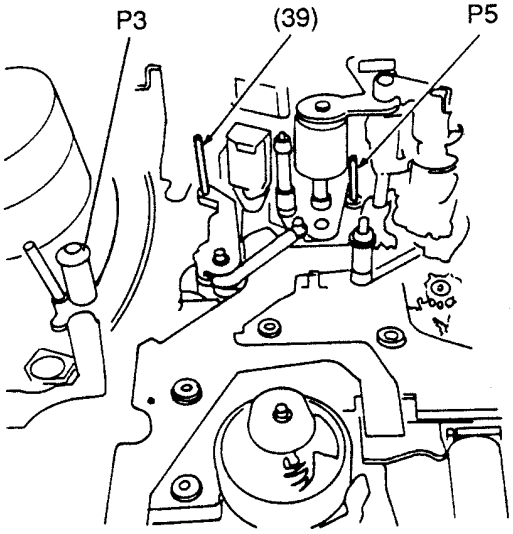


Fig. 5

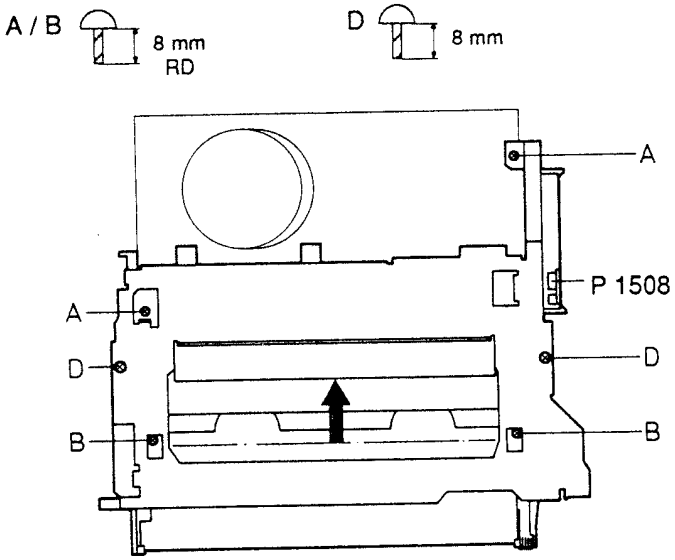


Fig. 6

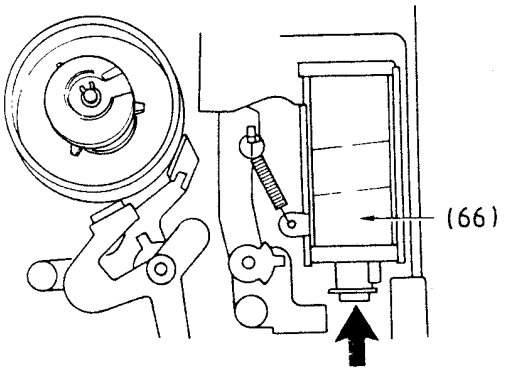


Fig. 7

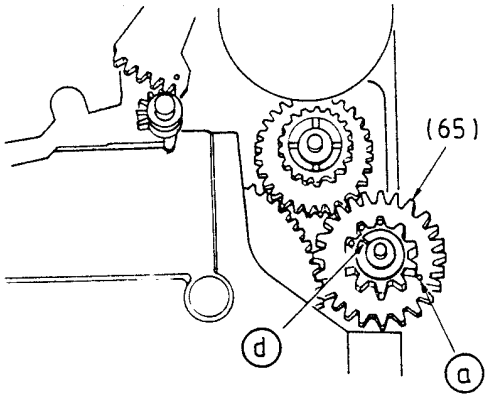


Fig. 8

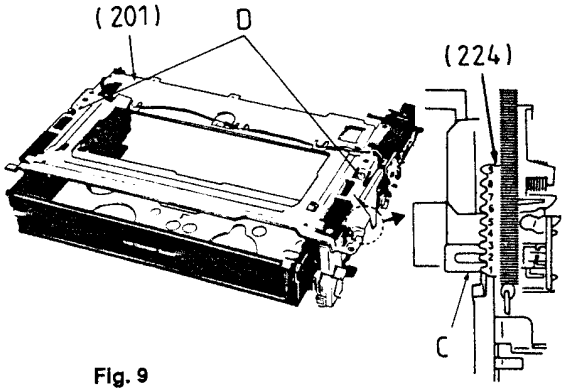


Fig. 9

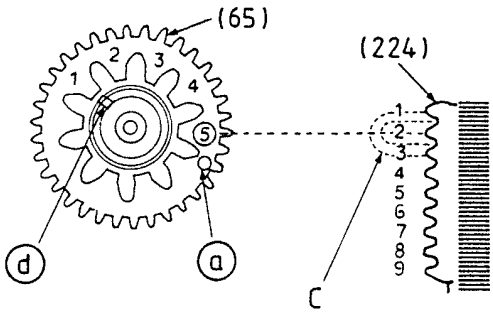


Fig. 10

7. Arbeiten am Bandtrommelbaustein

7.1 Austausch der Kopfscheibe (7)

Servicemittel: Kopfscheibenabzieher

Achtung:

- Die Kopfscheibe sitzt sehr fest auf der Antriebsachse. Arbeiten Sie deshalb mit äußerster Sorgfalt und berühren Sie die Videoköpfe nicht!
- Wenn sich nach dem Einbau die weißen Flächen "M" (Fig. 14) nicht decken, erfolgt die Wiedergabe vorher durchgeführter Aufnahmen in Schwarz / Weiß!

Ausbau:

- Schrauben "F", "H" herausdrehen und Erdungsfeder (5) entfernen (Fig. 11 / Fig. 12).
- Kopfscheibenanschlüsse "K" entlöten, Außenring der Kopfscheibe (7) leicht anwärmen (z.B. Fön) und Kopfscheibe (7) vorsichtig abziehen (Fig. 12).
  Gegebenenfalls Kopfscheiben-Abziehvorrichtung verwenden (Fig.13). Hierzu die Abziehvorrichtung in den Gewindelöchern "L" der Kopfscheibe befestigen und den Handgriff im Uhrzeigersinn drehen bis die Kopfscheibe von der Achse abgezogen ist.

Einbau:

- Kopfscheibe (7) so auf die Antriebsachse stecken, daß sich die weißen Flächen "M" decken (Fig. 14).
- Schrauben "H" eindrehen und Erdungsfeder (5) montieren.
- Kopfscheibenanschlüsse "K" anlöten.

7. Working on the Tape Drum Module

7.1 Replacing the Head Wheel (7)

Service Aid: Head Wheel Extractor

Attention:

- The Head Wheel is fitted very tightly onto the drive shaft. Therefore, when carrying out service work be very careful and especially ensure that the video heads are not touched!
- If, after reassembly, the white areas "M" (Fig.14) do not coincide, previous recordings on the tape will be reproduced on playback in black and white!

Removing:

- Remove the screws "F" and "H" and then the earthing spring (5) (Fig.11/12).
- Unsolder the head wheel connections "K". Warm up the outer ring of the head wheel (e.g. Hairdryer) and pull the head wheel (7) off carefully.
- If necessary use the head wheel extractor (Fig.13). For this locate the extractor into the holes "L" drilled in the head wheel and rotate the handle in the clockwise direction until the head wheel is pulled off the shaft.

Refitting:

- Fit the head wheel (7) onto the shaft so that the white areas "M" coincide (Fig.14).
- Refit the screws "H" and the earthing spring (5) with screw "F".
- Resolder the head wheel connections "K".

7. Interventi sull´unità tamburo nastro

7.1 Sostituzione della ruota testine (7)

Attrezzatura: chiave spec. per ruota testine

Attenzione:

- La ruota testine risulta fortemente vincolata al perno di guida. Procedere quindi con cautela e non toccare le testine video!
- Se dopo il montaggio le superfici bianche "M" (fig. 14) non risultano sovrapposte, le immagini precedentemente registrate vengono riprodotte in bianco / nero!

Smontaggio:

- Svitare le viti "F" e "H" (figg. 11 e 12). Togliere la molla di massa (5).
- Aprire i punti di saldatura "K" e riscaldare leggermente con un phon l´anello esterno della ruota testine (7). Sollevare attentamente la ruota testine (7) -(fig. 12). Eventualmente impiegare la chiave speciale illustrata in fig. 13, fissandola nei fori "L" e ruotandola in senso orario fino a staccare la ruota testine dal perno.

Montaggio:

- Inserire la ruota testine (7) nel perno di guida in modo che le superfici bianche "M" risultino coincidenti (fig. 14).
- Fissare le viti "H".
- Saldare i collegamenti "K" della ruota testine.

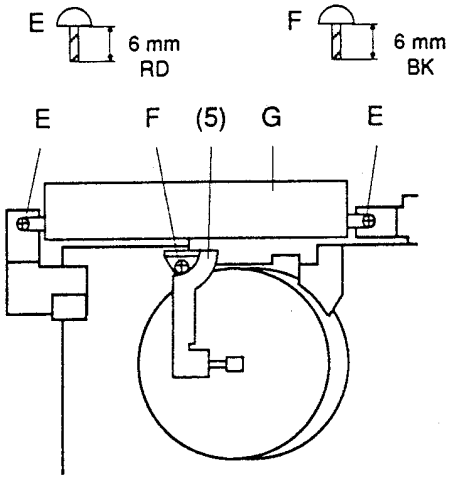


Fig. 11

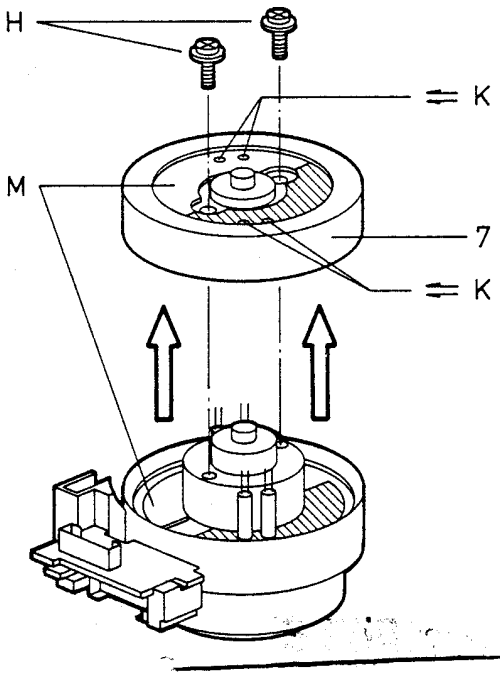


Fig. 12

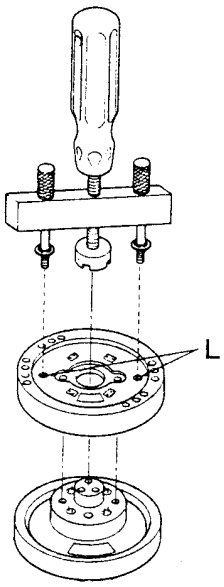


Fig. 13

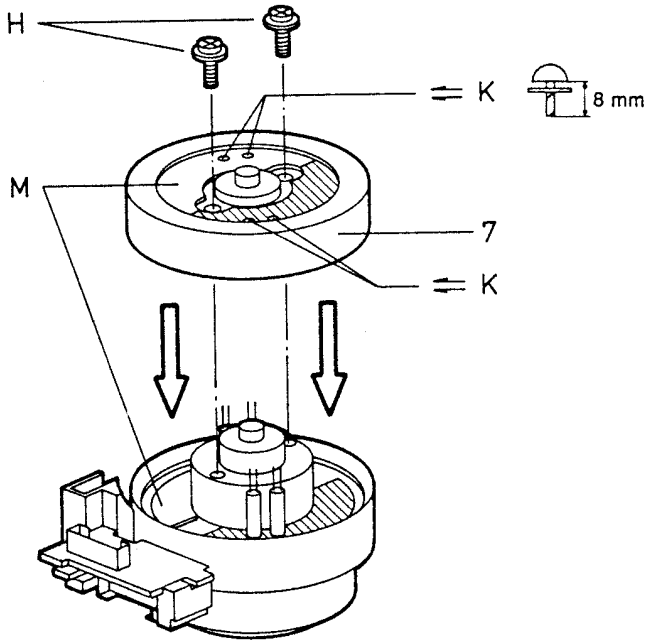


Fig. 14

7.2. Reinigen der Kopfscheibe

- Kopfscheibe festhalten und Videoköpfe mit einem Reinigungsstäbchen in Bandlaufrichtung vorsichtig abreiben (Fig.15).

7.2. Cleaning the Head Wheel

- Hold the head wheel stationary and clean the video heads with a cleaning stick in the direction of the tape direction very carefully (Fig.15).

7.2. Pulizia della ruota testine

- Tenere ferma la ruota testine e con un bastoncino detergente pulire attentamente le testine video nel verso di scorrimento del nastro (Fig.15).

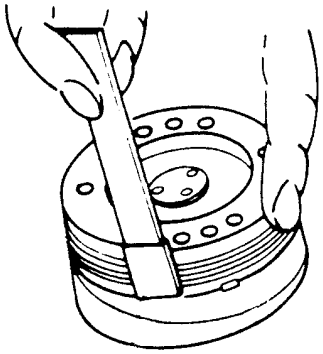


Fig. 15

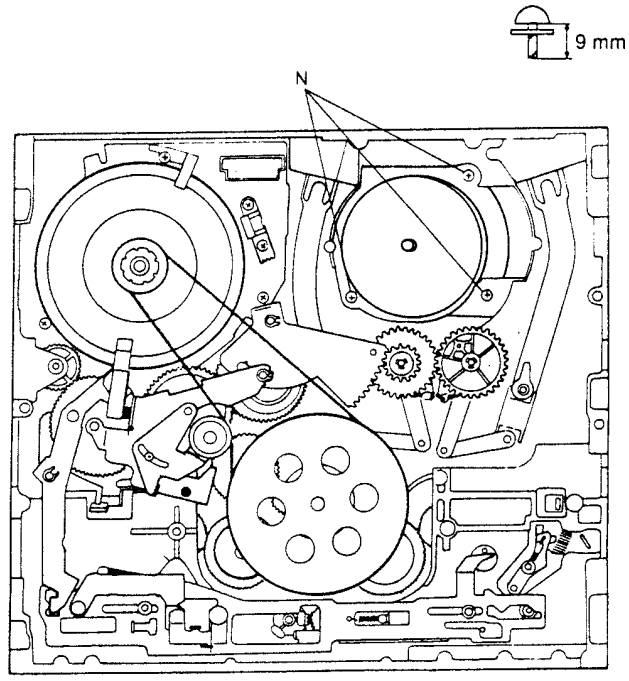


Fig. 16

7.3 Austausch des Bandtrommelbausteins

Ausbau des Bandtrommelbausteins (6)

- 3 Schrauben "E" und "F" herausdrehen (Fig. 11).
- Kopfverstärker "G" und Erdungsfeder (5) entfernen.
- Steckverbindungen lösen.
- 3 Schrauben "N" entfernen (Fig. 16) und Bandtrommelbaustein (6) vorsichtig aus dem Laufwerk ziehen.

Einbau des Bandtrommelbausteins (6)

- Bandtrommelbaustein (6) ins Laufwerk stecken und 3 Schrauben "N" eindrehen (Fig. 16).
- Erdungsfeder (5) mit Schraube "F" befestigen (Fig. 11).

7.3 Replacing the Tape Drum Module

Removing the Tape Drum Module (6)

- Remove the 3 screws "E" and "F" (Fig. 11).
- Remove the head amplifier "G" and the earthing spring (5).
- Loosen the plug connectors.
- Remove the 3 screws "N" (Fig. 16) and pull the Tape Drum Module (6) carefully out of the mechanics.

Refitting the Tape Drum Module (6)

- Place the Tape Drum Module (6) into the mechanics and tighten the 3 screws "N" (Fig. 16).
- Refit the earthing spring (5) with the screw "F" (Fig. 11).
- Reconnect the Head Amplifier "G" and the

7.3 Sostituzione del tamburo nastro (6)

Smontaggio

- Svitare le tre viti "E" e "F" (fig. 11).
- Togliere l'amplificatore delle testine "G" e la molla di masse (5).
- Staccare il connettori.
- Togliere le tre viti "N" (fig. 16) ed estrarre il tamburo nastro (6) dalla meccanica.

Montaggio

- Inserire il tamburo nastro (6) nella meccanica ed avvitare le tre viti "N" (fig. 16).
- Fissare la molla di massa (5) con la vite "F" (fig. 11).
- Collegare l'amplificatore testine "G" ed il connettori che sono stati precedentemente staccati.

- Kopfverstärker "G" und Steckverbindungen kontaktieren.
- 2 Schrauben "E" eindrehen.
- Bandlauf- / Kompatibilitätseinstellung prüfen (Kap. 8.7)

8. Mechanische Einstellungen
8.1 Einstellen der Antriebsriemenspannung

Meßmittel: Kontaktor (0,1N - 1N)

- Schraube "U" lösen (Fig. 17).
- Kontaktor am Punkt "V" ansetzen und Spannrollenhebel (108) in Pfeilrichtung "V" drücken.
- Zeigt die Skala des Kontaktors 0,4 N ± 0,05 N (Einstellwert) an, Schraube "U" anziehen.

plug connectors.
- Refit the 2 screws "E".
- Check the Tape Transport/Compatibility Adjustment (para 8.7)

8. Mechanical Adjustments
8.1 Adjusting the Drive Belt Tension

Service Aid: Tension gauge (0.1N - 1N)

- Loosen the screw "U" (Fig. 17)
- Fit the Tension Gauge to point "V" and press the tension roller lever (108) in the direction of the arrow "V".
- When the Tension Gauge indicates 0.4 N ± 0.05 N (Specified Value), tighten the screw "U".

- Avvitare le due viti "E".
- Controllo scorrimento nastro / compatibilità secondo il capitolo 8.7.

8. Regolazioni meccaniche
8.1 Regolazione della tensione della cinghia

Attrezzatura: Dinamometro (0,1N - 1N)

- Allentare la vite "U" (fig. 17).
- Accostare il dinamometro al punto "V" e premere la leva di pressione (108) verso "V".
- Se il valore segnato sul dinamometro è 0,4 N ± 0,05 N, riavvitare la vite "U".

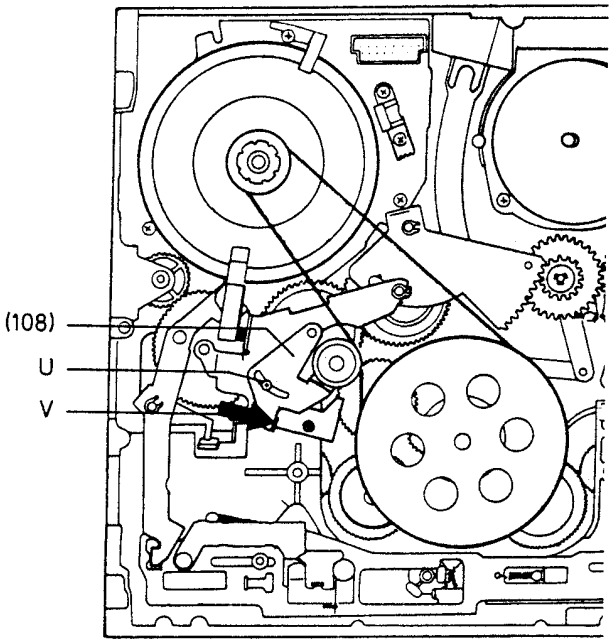


Fig. 17

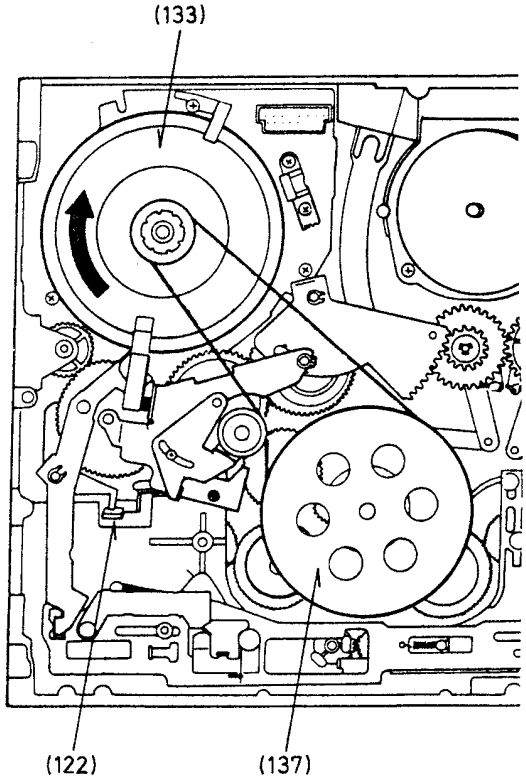


Fig. 18

8.2 Lageeinstellung des Bandzugfühlers

Meßmittel:
Referenzplatte
Sechskantstiftschlüssel 2mm

- Gerät vom Netz trennen
- Cassettenschacht ausbauen (Kap. 5)
- Umstellhebel (122) drücken und Capstanrotor (133) im Uhrzeigersinn drehen bis der Einfädelvorgang abgeschlossen ist (Fig. 18).
- Referenzplatte auflegen
- Exzenter "W" der Bremsbandbefestigung mit dem Sechskantstiftschlüssel so einstellen, daß der Bandzugbolzen "X" gerade die Referenzplatte berührt (Fig. 19).
- Referenzplatte entfernen und Capstanrotor (133) solange entgegen dem Uhrzeigersinn drehen, bis ausgefädelt ist.
- Cassettenschacht einbauen (Kap. 6).

8.2 Adjustment of the Tape Tension Sensor position

Service Aid:
Tension post adjustment plate
Hexagon Wrench (Allen Key) 2mm

- Disconnect the recorder from the mains.
- Remove the cassette compartment (para 5)
- Press the change-over lever (122) and rotate the capstan rotor (133) in the clockwise direction until the loading in process is completed (Fig. 18)
- Fit the Tension Post Adjustment Plate.
- Adjust the cam "W" on the brake band securing point with the hexagon wrench so that the tape tension bolt "X" just touches the Tension Post Adjustment Plate (Fig. 19).
- Remove the Tension Post Adjustment Plate and rotate the capstan rotor (133) in the anticlockwise direction until the mechanics unloads.
- Refit the cassette compartment (para 6).

8.2 Regolazione della leva tendinastro

Attrezzatura:
piastra di riferimento
chiave esagonale da 2 mm

- Staccare l´apparecchio dalla rete.
- Smontare il vano cassette (cap. 5).
- Premere la leva (122) e ruotare in senso orario il rotore capstan (133) finchè la fase di caricamento del nastro è conclusa (fig. 18).
- Inserire la piastra di riferimento.
- Mediante la chiave esagonale regolare l´eccentrico "W" del freno nastro finchè il perno "X" sfiora la piastra di riferimento (fig. 19).
- Togliere la piastra di riferimento e ruotare in senso antiorario il rotore capstan (133) finchè il nastro è scaricato.
- Rimontare il vano cassette (cap. 6).

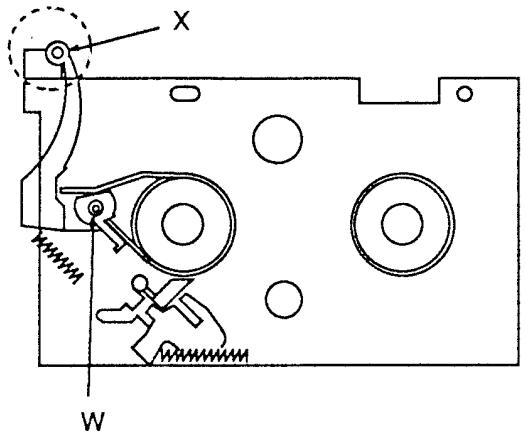


Fig. 19

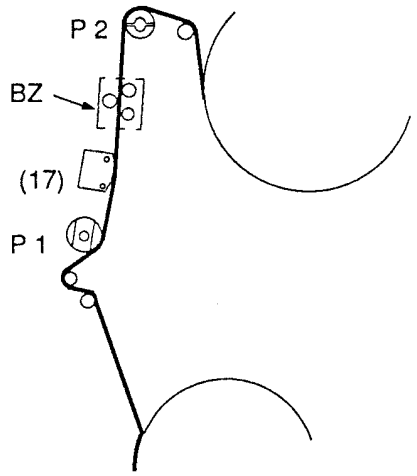


Fig. 20

8.3 Messen und Einstellen des Bandzuges

Meßmittel:
Bandzugmesser, A/W-Cassette E 120

- A / W-Cassette E 120 vom Bandanfang an abspielen
- Nach ca. 20 Sekunden den Bandzugmesser "BZ" nach Fig.20 in den Bandlauf einfügen.
- Weicht der abgelesene Bandzug vom Sollwert 0,2N ... 0,25N ab, den Bandzug durch Umhängen der Feder (12) auf den Sollwert einstellen (Fig. 21).

Hinweis: Während der Messung müssen die Fühler des Bandzugmessers guten Kontakt zum Band haben. Messung mehrmals wiederholen.

8.3 Measuring and Adjusting the Tape Tension

Service Aids:
Tape tension meter
Record / Playback cassette E120

- Playback the R/P Cassette E120 from the beginning.
- After about 20 seconds fit the Tape Tension Meter "BZ" as shown in Fig. 20.
- If the measured value is different from the specified value of 0.2N ... 0.25N, relocate the spring (12) to obtain the specified value (Fig. 21).

Note: When making measurements, ensure that the probes of the meter are in good contact with the tape. Repeat this measurement several times.

8.3 Misura e regolazione della tensione del nastro

Attrezzatura:
misuratore di tensione, cassetta A/W - E 120

- Riprodurre questa cassetta dall´inizio.
- Dopo ca. 20 sec., accostare il misuratore "BZ" al nastro che scorre come indicato in fig. 20.
- Se il valore misurato si scosta da quello nominale (0,2N ... 0,25N), correggere la tensione del nastro spostando in un´altra tacca la molla (12) , fig. 21.

Nota: Accertarsi che i sensori del misuratore di tensione siano perfettamente a contatto col nastro. Ripetere più volte questa misura.

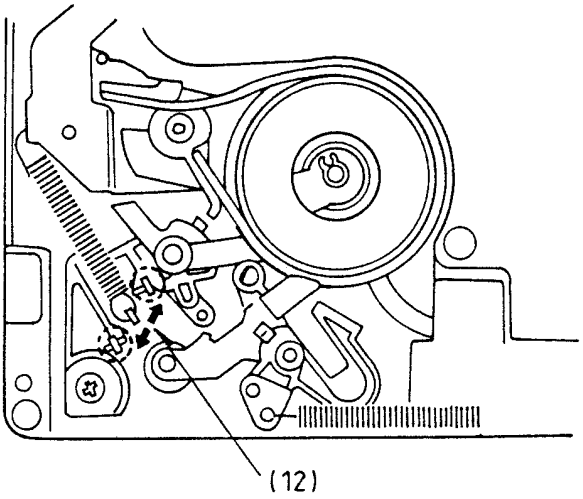


Fig. 21

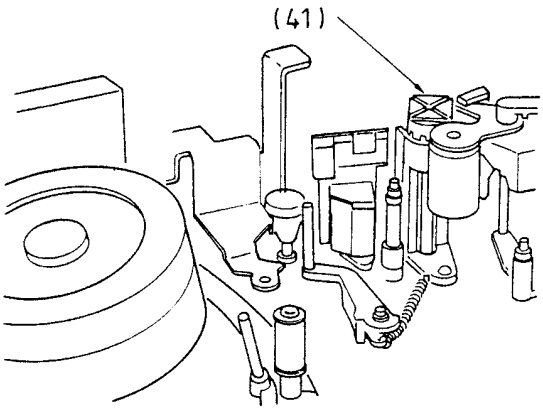


Fig. 22

8.4 Einstellen des Capstanrotors (133)

Meßmittel:
Höhenmeßuhr, Höhenlehre

- Einstellschraube (41) ,Fig. 22, soweit herausdrehen,bis sich Capstanstator (135) und -rotor (133) gerade berühren.
- Höhenlehre "Y" auf den Capstanrotor (133) legen und Höhenmeßuhr nach Abbildung Fig. 23 auf dem geschliffenen Laufwerkrand positionieren. Skala der Höhenmeßuhr auf Null stellen.
- Mit der Einstellschraube (41) Abstand zwischen Capstanrotor (133) und -stator (135) auf 0,5 mm...0,55 mm einstellen (Fig. 24).

8.4 Adjusting the Capstan Rotor (133)

Service Aids:
Dial Height Gauge, Height Gauge

- Loosen the adjustment screw (41), Fig. 22, until the capstan stator (135) just touches the rotor (133).
- Place the Height Gauge "Y" onto the capstan rotor (133) and the Dial Height Gauge as shown in Fig. 23 onto the smooth area on the edge of the mechanics. Set the pointer of the Dial Height Gauge to zero.
- With the adjustment screw (41) adjust the distance between the capstan rotor (133) and the stator (135) to 0.5mm...0.55mm (Fig. 24).

8.4 Regolazione del rotore capstan (133)

Attrezzatura:
misuratore dell´altezza, spessore

- Svitare la vite di regolazione (41), fig. 22, finchè lo statore (135) sfiora il rotore (133).
- Appoggiare lo spessore "Y" sul rotore (133) ed il misuratore d´altezza sulla meccanica come indicato in fig. 23. Regolare lo strumento a "0".
- Regolare la vite (41) finchè tra il rotore (133) e lo statore (135) risulta una distanza di 0,5 mm...0,55 mm (fig. 24).

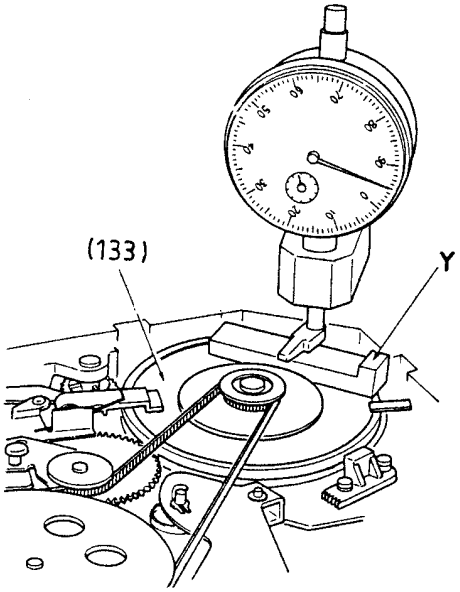


Fig. 23

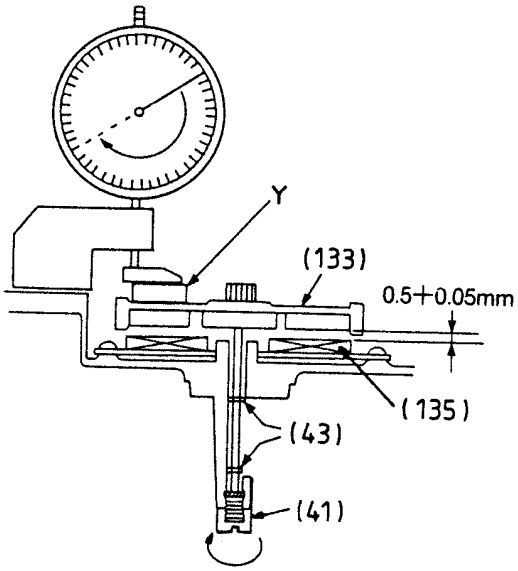


Fig. 24

8.5 Höheneinstellung der Wickelteller

Meßmittel:
Einstellplatte, Höhenmeßuhr
- Cassettenschacht ausbauen (Kap. 5).
- Einstellplatte auf die Wickelteller legen.
- Höhenmeßuhr so auf die Einstellplatte legen, daß der Meßfuß der Höhenmeßuhr im ausgearbeiteten Teil der Einstellplatte aufsitzt (Fig. 25).
- Skala der Höhenmeßuhr auf Null stellen
- Höhe der Wickelteller (14), (71) messen (Fig. 26).
- Wenn der gemessene Wert mehr als ± 0,2 mm vom eingestellten Nullwert der Skala abweicht, Wickeltellerhöhe durch Austauschen der Unterlegscheiben einstellen. Folgende Unterlegscheiben sind lieferbar:

8.5 Height Adjustment of the Spool Carries

Service Aid:
Post Adjustment Plate, Dial Height Gauge
- Remove the cassette compartment (para 5)
- Place the Post Adjustment Plate onto the spool carrier.
- Place the Dial Height Gauge onto the Post Adjustment Plate so that the measuring probe of the Dial Height Gauge locates into the cut-out provided on the Post Adjustment Plate (Fig. 25).
- Set the pointer of the Dial Hight Gauge to zero.
- Measure the height of the spool carrier (14), (71)- (Fig. 26).
- If the measured value differs from the zero Value of the pointer by more than ±0.2mm, readjust the spool carrier height by replacing the shim washer. The following shim washers are available:

8.5 Regolazione dell´altezza dei piatti di avvolgimento

Attrezzatura:
piastra di regolazione, misuratore d´altezza
- Smontare il vano cassette (cap. 5).
- Accostare al piatto la piastra di regolazione.
- Appoggiare il misuratore sulla piastra di regolazione in modo che il sensore del misuratore stesso tocchi la parte intagliata della piastra (fig. 25).
- Tarare il misuratore per il valore "0".
- Misurare l´altezza dei piatti di avvolgimento (14) e (71), fig. 26
- Se la differenza del valore misurato è superiore a 0,2 mm rispetto al valore "0" regolato sul misuratore, ritoccare l´altezza del piatto utilizzando le rondelle qui elencate:

Unterlegscheibe / Washer / Rondella	Sachnummer / Part Number / No. ordine
0,2 mm	75 986 - 208 . 21
0,3 mm	75 986 - 208 . 22
0,5 mm	75 986 - 208 . 23

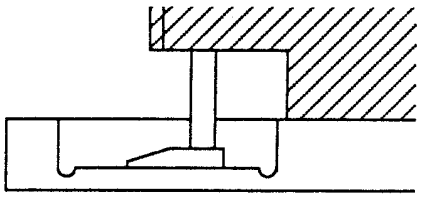


Fig. 25

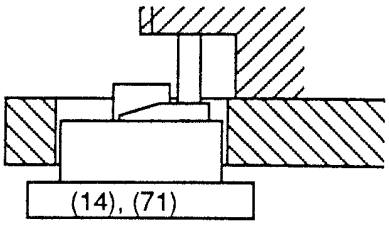


Fig. 26

8.6 Statische Höheneinstellung der Bandbolzen P2,P3 und P5

Meßmittel:
Einstellplatte, Höhenmeßuhr
Einstellschraubendreher
Vorbereitung:
- Cassettenschacht ausbauen (Kap. 5)
- Einstellplatte nach Abbildungen Fig. 27 / 30 auf die Wickelteller legen.

8.6 Static Height Adjustment of Tape Bolts P2, P3 and P5

Service Aids:
Post Adjustment Plate, Dial Height Gauge
Post Adjustment screw driver
Preparations:
- Remove the cassette compartment (para 5)
- Place the Post Adjustment Plate onto the spool carrier as shown in Fig. 27 / 30.

8.6 Regolazione statica dell´altezza dei perni guidanastro P2, P3 e P5

Attrezzatura:
piastra di regolazione, misuratore d´altezza, cacciavite
Preparativi:
- Smontare il vano cassette (cap. 5).
- Applicare al piatto la piastra di regolazione (vedi figg. 27 e 30).

8.6.1 Bandführungsbolzen P2, P3

- Höhe der Bandführungsbolzen P2,P3 so einstellen, daß der untere Führungsbund unter der Oberkante der Einstellplatte liegt (Fig. 28)
- Höhenmeßuhr nach Abbildung Fig. 29 plazieren und Bandführungsbolzen soweit hochdrehen, bis der untere Führungsbund gerade den Meßfühler der Höhenmeßuhr berührt (Fig. 29).
- Schraube "Z" nicht lösen! Sie dient zur Neigungseinstellung der Führungsbolzen P2, P3.

8.6.1 Tape Guide Bolts P2, P3

- Adjust the height of the Tape Guide Bolts P2, P3 so that the lower guide collar lies below the upper edge of the Post Adjustment Plate (Fig. 28).
- Place the Dial Height Gauge as shown in Fig. 29 and adjust to raise the hight of the Tape Guide Bolts so that the lower guide collar just touches the measuring probe of the Dial Hight Gauge (Fig. 29).
- Do not loosen screw "Z"! This screw is only for adjusting the tilt of the Guide Bolts P2, P3.

8.6.1 Perni guidanastro P2, P3

- Regolare l´altezza dei perni P2 e P3 in modo che il collare inferiore si trovi sotto lo spigolo superiore della piastra di regolazione (fig. 28).
- Applicare il misuratore come mostra la fig. 29 e ruotare verso l´alto i perni guidanastro in modo che il collare inferiore sia a contatto col sensore del misuratore d´altezza (fig. 29).
- Non allentare la vite "Z"! Essa serve per la regolazione dell´inclinazione dei perni di guida P2 e P3.

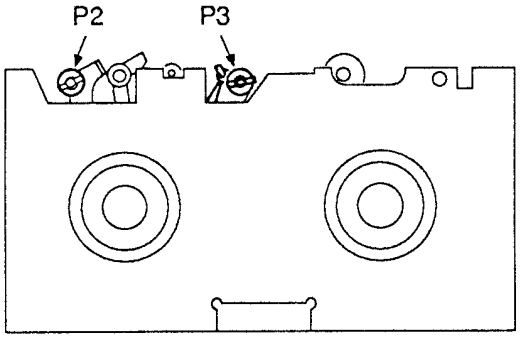


Fig. 27

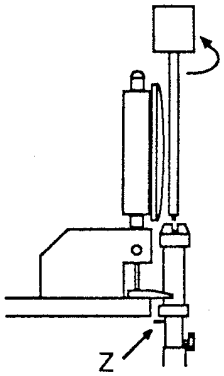


Fig. 28

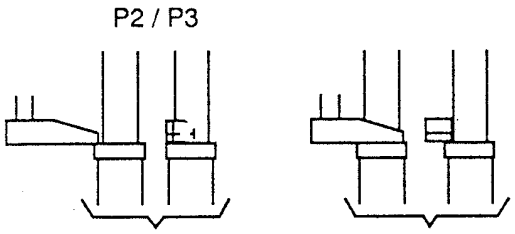


Fig. 29

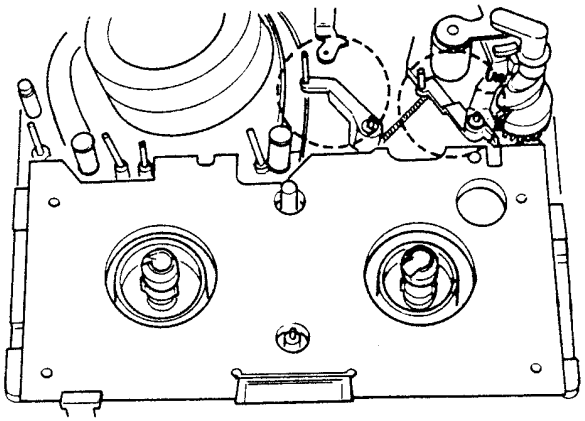


Fig. 30

8.6.2 Bandauszugsbolzen P5

Hinweis: Einstellmutter (52) des Bandauszugsbolzens P5 nur zu Justagezwecken verdrehen!

- Capstanrotor soweit entgegen dem Uhrzeigersinn drehen, bis die in Abbildung Fig. 30 gezeigte Laufwerkstellung erreicht ist.
- Höhenmeßuhr nach Abbildung Fig. 31 auf die Einstellplatte stellen und Skala auf "Null" eichen.
- Höhenmeßuhr nach Abbildung Fig. 32 am unteren Führungsbund des Bandauszugsbolzens P5 auflegen und mit der Einstellmutter (52) die Anzeige der Höhenmeßuhr auf 0,03mm ± 0,01mm einstellen.

8.6.2 Tape Pull-Out Bolt P5

Note: The Adjustment Nut (52) on the Tape Pull-out Bolt P5 must be turned for adjustment purposes only!

- Rotate the capstan rotor in the anti-clockwise direction until the mechanics reaches the position shown in Fig. 30.
- Place the Dial Height Gauge onto the Post Adjustment Plate as shown in Fig. 31 and adjust the pointer to zero.
- Place the Dial Height Gauge as shown in Fig. 32 onto the lower guide collar of the Tape Pull-out Bolt P5 and adjust the nut (52) until the pointer of the Dial Height Gauge indicates 0.03mm ± 0.01mm.

8.6.2 Perno nel punto d´uscita del nastro P5

Nota: Svitare il dado (52) del perno P5 solo per motivi di regolazione!

- Ruotare il senso antiorario il rotore capstan finchè viene raggiunta la posizione della meccanica riprodotta in fig. 30.
- Applicare il misuratore sulla piastra di regolazione (vedi fig. 31) ed azzerare la sua scala.
- Accostare il misuratore al collare inferiore del perno P5 (fig. 32) e ruotare il dado (52) finchè il misuratore indica l´altezza prevista (0,03 mm ± 0,01 mm).

8.6.3 Kontrolle der statischen Höheneinstellung

- Cassettenschacht einbauen (Kap. 6).
- A / W - Cassette wiedergeben.
- Prüfen, ob das Band an den Bolzen P1, P2, P3, P4 und P5 ohne zu bördeln läuft (Fig. 33...Fig. 35).
- Gegebenenfalls Höhenjustage Kap 8.6.1 und 8.6.2 wiederholen.
- Dynamische Einstellung der Bandführungsbolzen P2, P3 prüfen (Kap. 8.7.1)

8.6.3 Checking the Static Height Adjustment

- Refit the cassette compartment (para 6).
- Playback a record / playback cassette.
- Check that the tape runs past the Bolts P1, P2, P3, P4 and P5 without crinkling (Fig. 33 ... Fig. 35).
- If necessary, repeat the height adjustment as described in paras 8.6.1 and 8.6.2.
- Check the Dynamic Adjustment of the Tape Guide Bolts P2, P3 (para 8.7.1).

8.6.3 Controllo della regolazione statica dell´altezza

- Montare il vano cassette (cap. 6).
- Riprodurre una cassetta A/W.
- Controllare se il nastro scorre senza piegarsi lungo i perni P1, P2, P3, P4 e P5 (figg. 33 ... 35).
- Eventualmente ripetere la regolazione dell´altezza come ai capitoli 8.6.1 e 8.6.2.
- Controllare la regolazione dinamica dei perni guidanastro P2 e P3 (cap. 8.7.1).

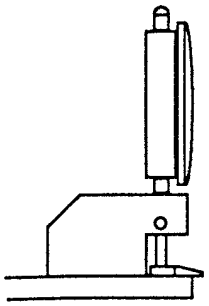


Fig. 31

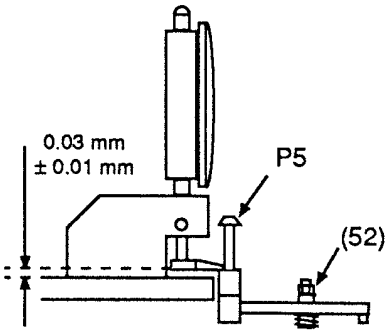


Fig. 32

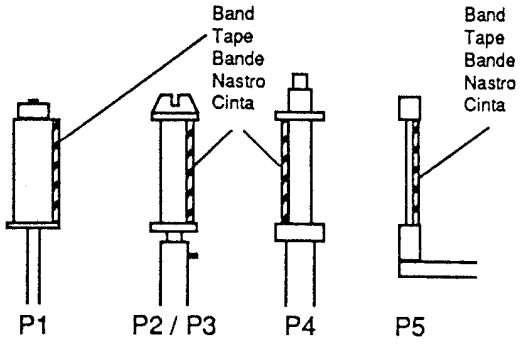


Fig. 33

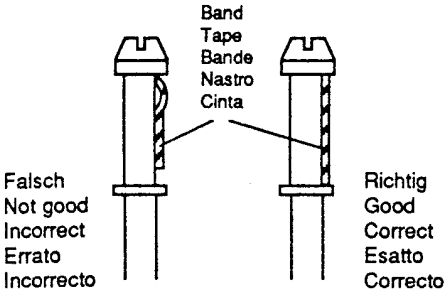


Fig. 34

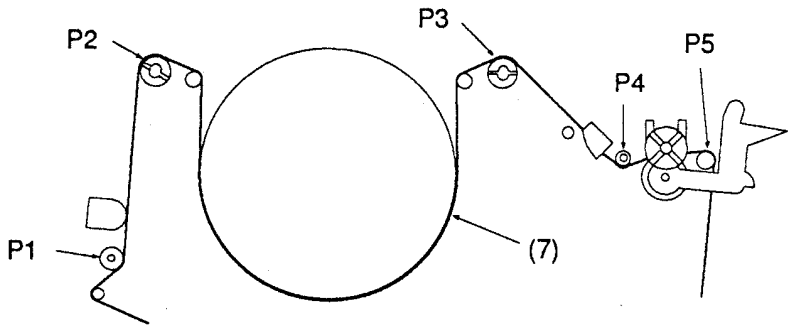


Fig. 35

8.7 Bandlaufeinstellung / Kompatibilitätseinstellung

Diese Einstellungen sind grundsätzlich nach Tausch des Audio-/Synchronkopfes (A/C), der Andruckrolle oder nach Justage der Bolzen P2, P3, P5 durchzuführen bzw. zu überprüfen. Dabei muß folgende Reihenfolge eingehalten werden:

8.7.1 Dyn. Einstellung der Bolzen P2, P3
8.7.2 Einstellen der Neigung des A/C -Kopfes
8.7.3 Höheneinstellung des A/C-Kopfes
8.7.4 Azimut-Einstellung des A/C-Kopfes
8.7.5 Einstellen der horizontalen Lage des A/C-Kopfes

8.7.1 Dynamische Einstellung der Bolzen P2, P3

Meßmittel: Testcassette, Oszilloskop

- Oszilloskop nach Abbildung Fig. 36 anschließen:
  Tastkopf 1 an Video TP 1
  Tastkopf 2 an Video TP 2
- Testcassette wiedergeben (Tracking in Mittelstellung)
- Falls sich Hüllkurven wie die Beispiele "A" und "B" in Abbildung Fig. 37 zeigen, Hüllkurve mit dem Einlauf-Bandführungsbolzen P2 nach Abbildung Fig. 37 - "E" einstellen.
- Falls sich Hüllkurven wie die Beispiele "C" oder "D" in Abbildung Fig. 37 zeigen, Hüllkurve mit Auslauf-Bandführungsbolzen P3 nach Abbildung Fig. 37 - "E" einstellen.
- Trackingeinstellung nach "+" und "-" variieren. Dabei sollen die Hüllkurvenränder parallel zusammenlaufen (Fig. 38).
- Tracking auf maximale Hüllkurvenamplitude einstellen. Diese muß folgende Grenzwerte einhalten (Fig. 39):
  V1 / V ≥ 0,7 ; V2 / V ≥ 0,8
- Gegebenenfalls Einstellung wiederholen.

8.7 Tape Transport Adjustment / Compatibility Adjustment

These adjustments must be carried out or checked in every case after every replacement of the A/C head, the Pressure Roller or after adjusting the Bolts P2, P3, P5. The following sequence must be adhered to:

8.7.1 Dynamic adjustment of the Bolts P2, P3
8.7.2 Tilt adjustment of the A/C Head
8.7.3 Height adjustment of the A/C Head
8.7.4 Azimuth adjustment of the A/C Head
8.7.5 Horizontal position adjustment of the A/C Head

8.7.1 Dynamic adjustment of the Bolts P2, P3

Service Aids: Test Cassette, Oscilloscope

- Connect the oscilloscope as shown in Fig. 36: Test Probe 1 to video TP 1
  Test Probe 2 to video TP 2
- Playback the test cassette (tracking to mid setting).
- If the FM envelopes are displayed as shown in examples "A" and "B" in Fig.37 adjust with the Run-in Tape Guide Bolt P2 so that the FM envelopes are as shown in Fig. 37 - "E".
- If the FM envelopes are displayed as shown in example "C" or "D" in Fig. 37, adjust with the Run-out Tape Guide Bolt P3 so that the FM envelopes are as shown in Fig. 37 - "E".
- Vary the Tracking in the "+" and "-" directions. When doing so the FM envelope should show parallel converging lines (Fig. 38).
- Adjust the tracking to obtain maximum FM envelope amplitude. This must produce the following basic values (Fig. 39):
  V1 / V ≥ 0.7 ; V2 / V ≥ 0.8
- If not obtained repeat these adjustments.

8.7 Regolazioni di scorrimento del nastro/ Controllo compatibilità

Queste regolazioni devono essere effettuate o controllate generalmente quando la testina audio e sincronismo (A/C) o il rullo preminastro vengono sostituiti oppure dopo la regolazione dei perni P2, P3 e P5. In questi casi si raccomanda di rispettare la sequenza qui riportata:

8.7.1 Regolazione dinamica dei perni guida nastro P2, P3
8.7.2 Regolazione dell´inclinazione della testina A/C
8.7.3 Regolaz. dell´altezza della testina A/C
8.7.4 Regolazione azimutale della testina A/C
8.7.5 Regolaz. orizzontale della testina A/C

8.7.1 Regolazione dinamica dei perni guidanastro P2, P3

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l´oscilloscopio come indicato in fig. 36: sonda 1 al punto TP 1
  sonda 2 al punto TP 2
- Riprodurre la cassetta campione (tracking in pos. centrale).
- Se l´inviluppo (FM dal nastro) si presenta come negli esempi A e B della fig. 37, effettuare una regolazione con l´aiuto del perno P2 all´ingresso del nastro finchè risulta come nell´esempio E.
- Se l´inviluppo è invece uguale agli esempi C o D (fig. 37), regolare il perno P3 all´uscita del nastro in modo ottenere l´oscillogramma dell´esempio E.
- Variare in direzione "+" e "-" la regolazione tracking. Durante questa operazione, i bordi dell´inviluppo devono scorrere quasi parallelamente (fig. 38).
- Col regolatore tracking ottenere la massima ampiezza dell´inviluppo. Essa deve corrispondere ai seguenti valori limite (fig. 39):
  V1 / V ≥ 0,7 ; V2 / V ≥ 0,8
- Se questi valori non vengono raggiunti, occorre ripetere la regolazione.

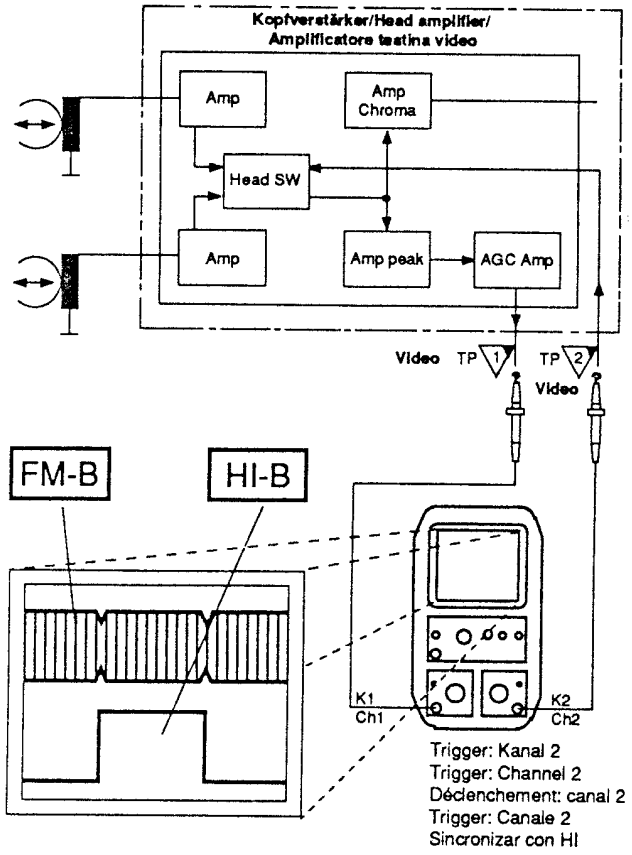


Fig. 36

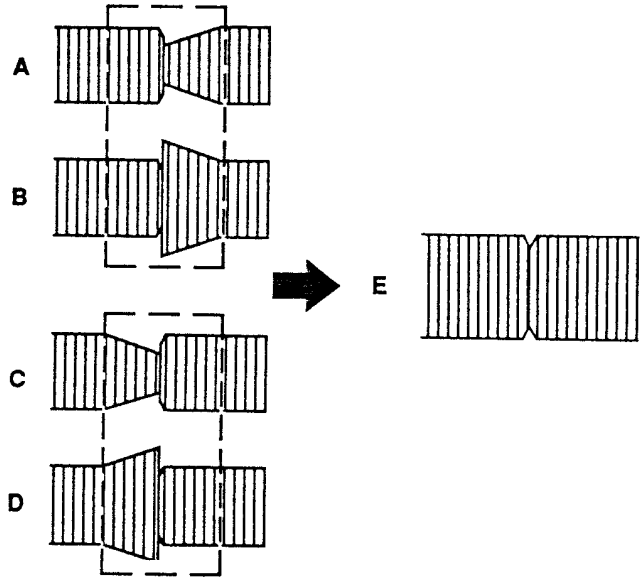


Fig. 37

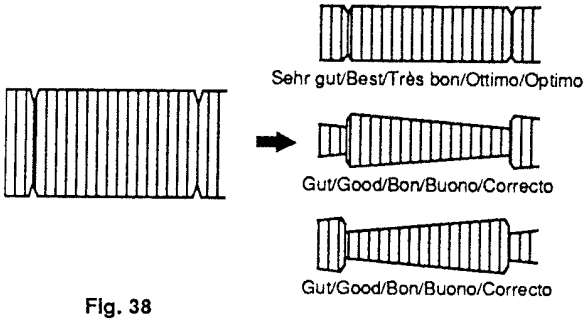


Fig. 38

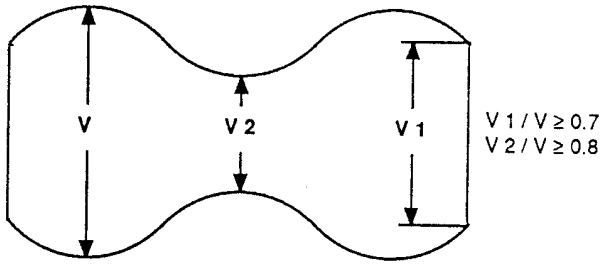


Fig. 39

8.7.2 Einstellen der Neigung des A/C-Kopfes

- Unbespielte Cassette vom Bandanfang an wiedergeben.
- Neigung des A/C-Kopfes (34) mit Schraube "A1" (Fig. 40 / 41) so einstellen, daß das Band bei manueller Bandzugerhöhung leicht sichtbar, jedoch ohne zu bördeln am unteren Führungsbund des Bandlaufbolzens P4 aufliegt.
- Höheneinstellung des A/C-Kopfes prüfen (Kap. 8.7.3)

8.7.2 Tilt Adjustment of the A/C Head

- Playback an un-used cassette from the beginning.
- Adjust the tilt of the A/C head (34) with the screw "A1" (Fig. 40 / 41) so that the tape, whilst manually increasing the tape tension, just touches the lower collar of the Tape Guide Bolt P4 without crinkling.
- Check the height adjustment of the A/C Head (para 8.7.3)

8.7.2 Regolazione dell'inclinazione della testina A/C

- Riprodurre dall'inizio una cassetta non registrata.
- Con la vite "A1" (fig. 40 / 41) regolare l'inclinazione della testina A/C in modo che aumentando manualmente la tensione del nastro, lo stesso scorra senza piegature lungo il collare inferiore del perno P4.
- Controllare l'altezza della testina A/C (cap. 8.7.3).

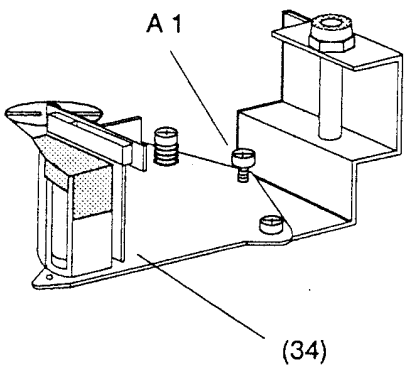


Fig. 40

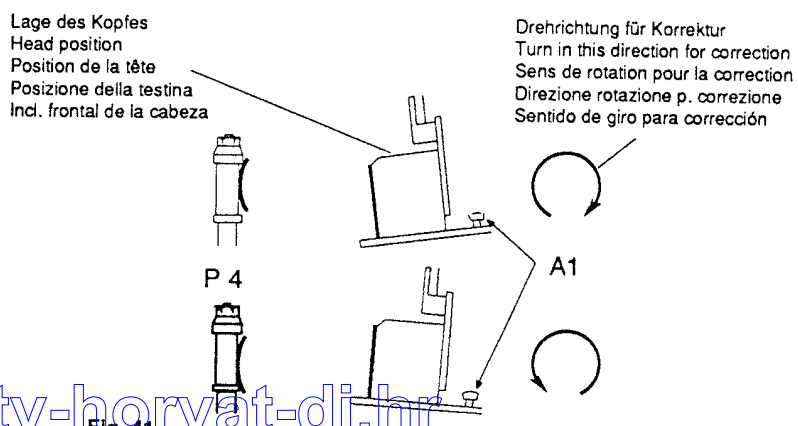


Fig. 41

8.7.3 Höheneinstellung des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Testcassette wiedergeben
- mit Mutter (35) den unteren Rand des Synchronkopfes mit dem unteren Rand des Bandes zur Deckung bringen (Fig. 42).

Kontrolle:

- Tastkopf des Oszilloskops an EURO-AV-Buchse, Kontakt 1
- 6,3 kHz- Signal der Testcassette wiedergeben
- mit Mutter (35) maximale Ausgangsspannung einstellen (Fig. 43).

8.7.3 Height adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Playback the Test Cassette.
- Turn the nut (35) so that the bottom edge of the Sync Head coincides with the lower edge of the tape (Fig. 42).

CHECK:

- Connect a test probe from the Oscilloscope to contact 1 of the EURO-AV Socket.
- Playback the 6.3 kHz signal from the Test Cassette.
- Adjust the nut (35) to obtain maximum output voltage (Fig. 43).

8.7.3 Regolazione dell'altezza della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Riprodurre la cassetta campione.
- Ruotare il dado (35) finchè il bordo inferiore della testina di sincronismo viene coperto dal bordo inferiore del nastro (fig. 42).

Controllo:

- Collegare l'oscilloscopio alla presa Scart, contatto 1.
- Riprodurre la parte a 6,3 kHz della cassetta campione.
- Con il dado (35) regolare per la massima tensione d'uscita (fig. 43).

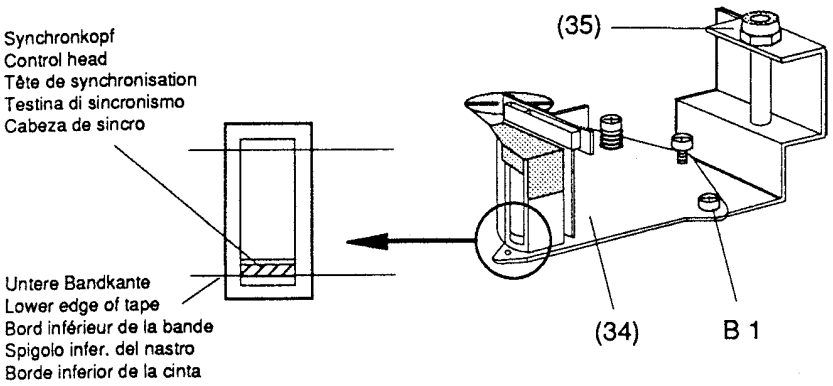


Fig. 42

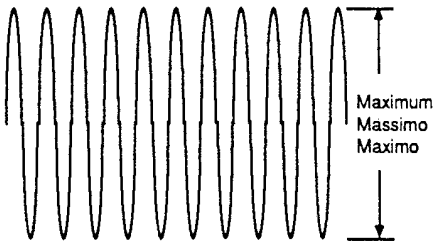


Fig. 43

8.7.4 Azimuteinteilung des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Tastkopf des Oszilloskops an EURO-AV-Buchse, Kontakt 1.
- 6,3 kHz-Audiosignal der Testcassette wiedergeben.
- mit Schraube "B1" maximalen Ausgangspegel einstellen (Fig. 42, Fig. 43).

8.7.4 Azimuth adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Connect a test probe from the Oscilloscope to contact 1 of the EURO-AV Socket.
- Playback the 6.3 kHz signal from the Test Cassette.
- Adjust the screw "B1" to obtain maximum output voltage (Fig. 42, Fig. 43).

8.7.4 Regolazione azimutale della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l'oscilloscopio alla presa Scart, contatto 1.
- Riprodurre la parte a 6,3 kHz contenuta nella cassetta campione.
- Regolare la vite "B1" per il massimo livello d'uscita (figg. 42 e 43).

8.7.5 Einstellen der horizontalen Lage des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Oszilloskop nach Abbildung Fig. 36 anschließen
- Testcassette wiedergeben (Tracking in Mittelstellung)
- Hüllkurve (FM vom Band) mit Mutter (36) auf maximale Amplitude einstellen (Fig. 44, Fig. 45).

8.7.5 Horizontal position adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Connect the Oscilloscope as shown in Fig. 36.
- Playback the Test Cassette (tracking to mid setting).
- Set the envelopes (FM Tape) to maximum amplitude (Fig. 44, Fig. 45) with the nut (36).

8.7.5 Regolazione orizzontale della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l'oscilloscopio come indicato in fig. 36.
- Riprodurre la cassetta campione (tracking in pos. centrale).
- Regolare l'inviluppo (FM dal nastro) sulla massima ampiezza mediante il dado (36) - figg. 44 e 45.

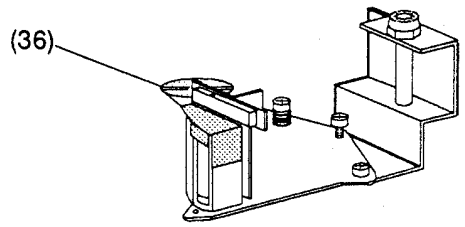


Fig. 44

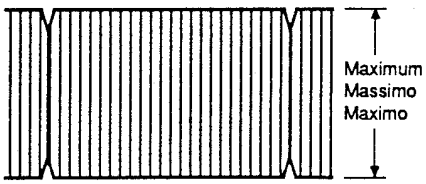


Fig. 45

9. Hinweise zu Reparaturen in der Antriebsmechanik

Dieses Laufwerk ist durch den Funktionswahlschalter (55) sehr eng mit der Ablaufsteuerung verknüpft. Die Beziehung zwischen Funktionswahlschalter und den Kurvenrädern bestimmt alle weiteren mechanischen Funktionsabläufe. Falls Hebel, Zahnräder, Rollen usw. nicht exakt eingebaut sind, können deshalb Laufwerksblockaden, bzw. Schäden im Laufwerk oder in der Elektronik auftreten.

9. Notes on Repairing the Drive Mechanism

This Drive Mechanism is very closely coupled with the Sequence Control by means of the Mode Select Switch (56). The relationship between the Mode Select Switch and the Cam Gears determines all the sequences of the other mechanical operations. If, therefore, the levers, gears and rollers etc, are not correctly fitted, the drive mechanism may fail to work and damage may occur within the mechanics or electronic circuits.

9. Nota di riparazione nella meccanica

Questa meccanica è fortemente vincolata al modulo comando funzioni per mezzo del selettore di funzioni (55). Il rapporto esistente tra il selettore di funzioni e le ruote a camme determina tutti gli altri movimenti meccanici. Pertanto, se leve, ruote dentate o rulli ecc. sono stati montati erroneamente, la meccanica può bloccarsi oppure possono verificarsi danni alle parti meccaniche o elettriche.

Die Abbildungen Fig. 46 / 47 zeigen das Laufwerk in der Bezugsposition "STOP" und die dabei auftretende Anordnung der Markierungslöcher. Die Bezugsposition "STOP" ist identisch mit der Laufwerkstellung "Umspulbetrieb". Diese entspricht der 2. Raststellung des Kupplungsrades (116), wenn diese Laufwerkstellung durch Drehen des Capstanrotors von Hand angefahren wird.
Der Austausch von Bauteilen in der Antriebsmechanik darf nur in dieser Laufwerkstellung erfolgen.

The illustrations Fig. 46 / 47 show the drive mechanism in the reference position "STOP" and the resulting alignment of the marking holes. The reference position "STOP" is identical to the mechanical position during "WINDING MODE". This corresponds to the second locking position of the clutch disc (116), when this mechanical position is reached by rotating the capstan rotor by hand.
Replacement of components in the drive mechanism must only be carried out with the mechanics set to this position.

Le figure 46 / 47 mostrano la meccanica in situazione di Stop e le rispettive posizioni dei fori di riferimento. Questa posizione di Stop è uguale a quella di avvolgimento veloce e corrisponde alla seconda tacca di arresto del disco frizione (116) che si ottiene ruotando manualmente il rotore capstan.
La sostituzione dei componenti della meccanica può avvenire soltanto nella situazione di Stop.

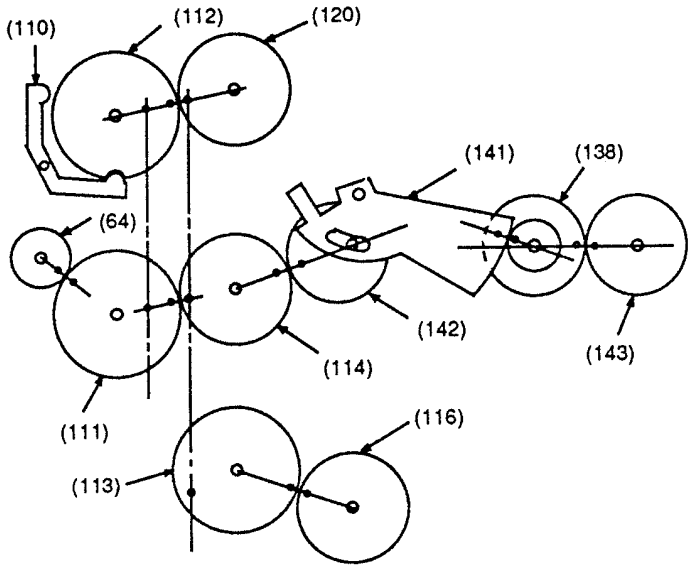


Fig. 46

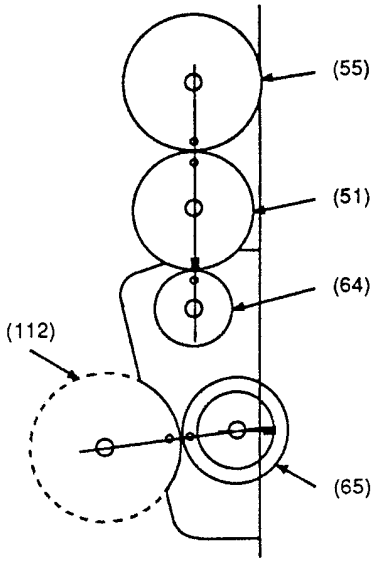


Fig. 47

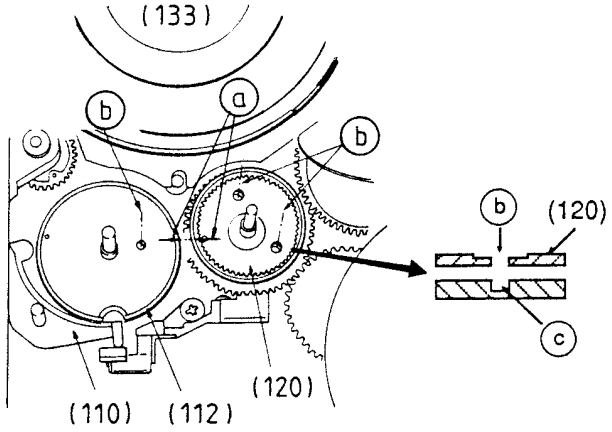


Fig. 48

9.1 Kurvenrad (112), Ringrad (120), Sperrhebel (110)

- Ringrad (120) so einbauen, daß die Markierungslöcher (b) im Ringrad mit den Markierungslöchern (c) im Laufwerkchassis übereinstimmen (Fig. 48).
- Kurvenrad (112) so einbauen, daß das Markierungsloch (b) mit dem Markierungsloch (c) im Laufwerk übereinstimmt und das Markierungsloch (a) dem Markierungsloch (a) des Ringrades (120) gegenübersteht.
- Sperrhebel (110) einsetzen.

9.1 Sub Cam Gear (112), Ring Gear (120), Locking Lever (110)

- Fit the ring gear (120) so that the marked holes (b) in the Ring Gear lines up with the marked holes (c) in the mechanical chassis (Fig. 48).
- Fit the Sub Cam Gear (112) so that the marked hole (b) lines up with the marked hole (c) in the mechanics and that the marked hole (a) faces towards the marked hole (a) on the Ring Gear (120).
- Fit the Locking Lever (110).

9.1 Ruota a camme (112), ruota ad anello (120), leva di bloccaggio (110)

- Inserire la ruota (120) con i fori (b) che coincidano con quelli (c) del telaio (fig. 48).
- Inserire la ruota (112) in modo che il foro (b) coincida con quello (c) della meccanica ed il foro (a) sia alla stessa altezza di quello (a) ruota ad anello (120).
- Applicare la leva di bloccaggio (110).

9.2 Kurvenrad (111), Untersetzungszahnrad (64)

- Untersetzungszahnrad (64) von der Oberseite des Laufwerks einsetzen (Fig. 49).
- Kurvenrad (111) so auf das Kurvenrad (112) stecken, daß sich die Markierungslöcher (a) des Kurvenrades (111) und des Untersetzungszahnrads (64) gegenüberstehen. Gleichzeitig müssen die Markierungslöcher (b) der Kurvenräder (111) und (112) genau übereinander liegen (Fig. 48 / 49).

9.2 Cam Gear (111), Reduction Toothed Gear (64)

- Fit the Reduction Toothed Gear (64) from the top of the mechanics (Fig. 49)
- Fit the Cam Gear (111) onto the Sub Cam Gear (112) so that the marked holes (a) on the Cam Gear (110) and the Reduction Gear (64) are aligned towards each other. In this position the marked holes (b) on the Cam Gears (111) and (112) must lie accuratly over each other (Fig. 48 / 49).

9.2 Ruota a camme (111), ruota dentata (64)

- Inserire la ruota dentata (64) dalla parte superiore della meccanica (fig. 49).
- Incastrare la ruota (111) in quella (112) in modo che i fori (a) delle ruote (111) e (64) risultino coincidenti. Contemporaneamente i fori (b) delle ruote (111) e (112) devono trovarsi sovrapposti (fig. 48 / 49).

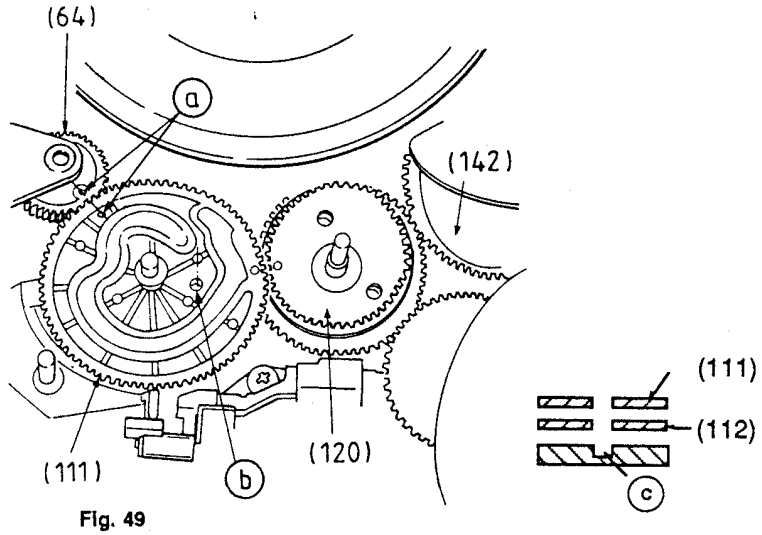


Fig. 49

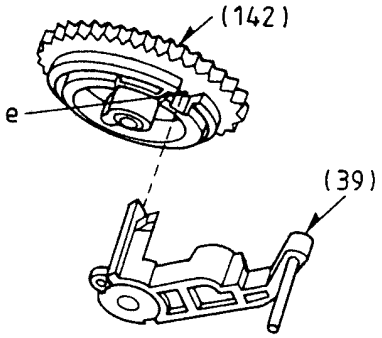


Fig. 50

9.3 Ladekurvenrad (142), Zwischenrad (114)

- Ladekurvenrad (142) so einbauen, daß der Hilfsladehebel (39) in die Aussparung "e" eingreift (Fig. 50).
- Zwischenrad (114) auf das Ringrad (120) stecken. Die Markierungslöcher (a) des Zwischenrades (114) und des Kurvenrades (111), sowie die Markierungslöcher (b) des Zwischenrades (114) und des Ladekurvenrades (142) müssen gegenüberstehen. Gleichzeitig müssen das Markierungsloch (b') des Zwischenrades (114), das Markierungsloch (b) des Ringrades (120) und das Markierungsloch (c) im Laufwerkchassis übereinanderliegen (Fig. 51).

9.3 Loading Cam Gear (142), Intermediate Gear (114)

- Fit the Loading Cam Gear (142) so that the Sub Loading Lever (39) engages with the cut out "e" (Fig. 50).
- Fit the Intermediate gear (114) onto the Ring Gear (120). The marked holes (a) on the Intermediate Gear (114) and the Cam Gear (111) and the marked the holes (b) on the Intermediate Gear (114) and the Loading Cam Gear (142) must be aligned towards each other. Simultaneously the marked hole (b') on the Intermediate Gear (114), the marked hole (b) on the Ring Gear (120) and the marked hole (c) on the mechanical chassis must lie accurately over each other (Fig. 51).

9.3 Ruota di caricamento (142), ruota intermedia (114)

- Montare la ruota (142) in modo che la leva (39) si agganci nella fessura "e" (fig. 50).
- Incastrare la ruota (114) nella ruota ad anello (120). I fori (a) delle ruote (114) e (111) così come quelli (b) delle ruote (114) e (142) devono risultare esattamente allineati. Contemporaneamente il foro (b') della ruota (114), il foro (b) della ruota (120) ed il foro (c) del telaio devono sovrapporsi (fig. 51).

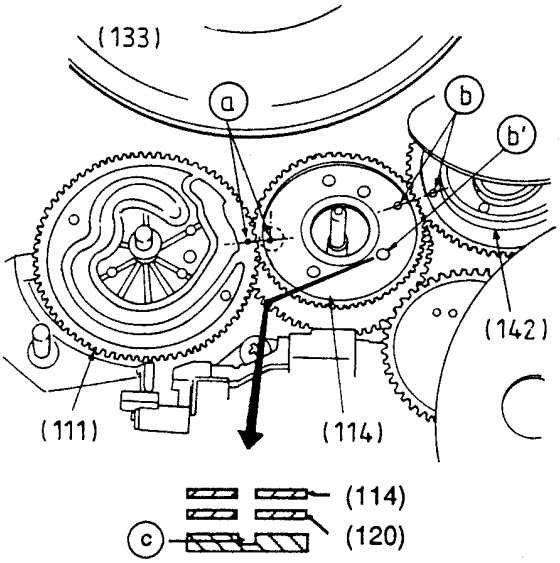


Fig. 51

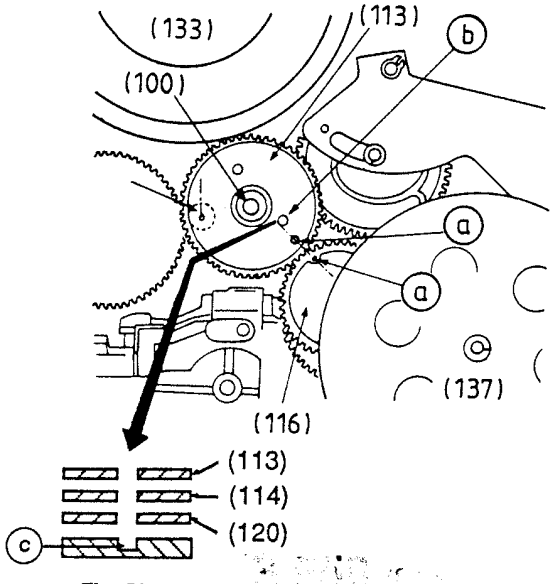


Fig. 52

9.4 Steuerrad (113)
- Steuerrad (113) so auf das Zwischenrad (114) stecken, daß das Markierungsloch (a) des Steuerrades (113) dem Markierungsloch (a) des Kupplungsrades (116) gegenübersteht und die Markierungslöcher (b) des Steuerrades (113), (b') des Zwischenrades (114), (b) des Ringrades (120) und (c) des Laufwerks übereinanderliegen (Fig. 52).
- Sicherungsring (100) montieren.

9.5 Hauptsteuerschieber (103), Steuerhebel (109)
- Hauptsteuerschieber (103) einsetzen und mit den Sicherungsringen (100) befestigen (Fig. 53).
- Steuerhebel (109) so einbauen, daß dessen Steuerbolzen "f" in die Steuerkurve des Kurvenrades (111) eingreift.
- Greifringe " X " montieren.

9.4 Drive Gear (113)
- Fit the Drive Gear (113) onto the Intermediate Gear (114) so that the marked hole (a) on the Drive Gear (113) is aligned towards the marked hole (a) on the Clutch Disk (116), and the marked holes (b) on the Drive Gear (113), marked hole (b') on the Intermediate Gear (114), marked hole (b) on the Ring Gear (120) and the marked hole (c) on the mechanics lie accurately over each other (Fig. 52).
- Fit the Securing Ring (100).

9.5 Main Control Lever (103), Control Lever (109)
- Fit the Main Control Lever (103) and secure with the securing ring (100) (Fig. 53)
- Fit the Control Lever (109) so that the Drive Bolt "f" engages with the cam curve of the Cam Gear (111)
- Fit the Grip Ring "X".

9.4 Ruota di comando (113)
- Appoggiare la ruota (113) su quella intermedia (114) con il foro (a) alla stessa altezza del foro (a) della frizione (116) e con i fori (b) delle ruote (113), (b') (114) e (b) (120) e (c) del telaio perfettamente sovrapposti (fig. 52).
- Montare l'anello di sicurezza (100)

9.5 Cursore (103) Leva di comando (109)
- Infine montare il cursore (103) e fissarlo con gli anelli (100) (fig. 53).
- Inserire la leva (109) in modo che il perno " f " della stessa entri nell'apposita guida della ruota (111).
- Applicare due grower " X ".

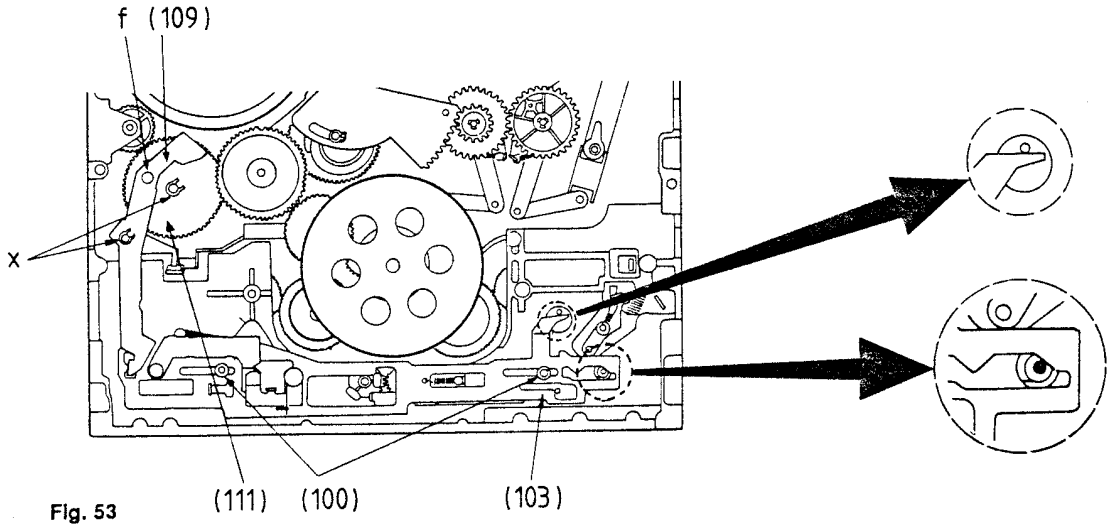


Fig. 53

9.6 Laderäder (138,143), Zahnsegment (141), Bremshebel (105), Spannrollenhebel (108)
- Bandführungsbolzen P2, P3 in Stellung "STOP" bringen.
- Laderäder (138, 143) so einsetzen, daß sich die Markierungslöcher (b) gegenüberstehen (Fig. 54).
- Zahnsegment (141) nach Fig. 54 einbauen. Das Markierungsloch (b) des Zahnsegments (141) muß sich gegenüber der Markierungsnase (d) des Laderades (138) befinden.
- Bremshebel (105) und Greifringe "X" montieren.
- Spannrollenhebel (108) einbauen.
- Antriebsriemen spannen (Kap. 8.1)

9.7 Zwischenrad (65)
Hinweis: Bevor Sie das Zwischenrad einbauen, müssen sich alle Zahnräder in den bisher beschriebenen Positionen befinden.
- Zwischenrad (65) nach Abbildung Fig. 55 einsetzen. Die Markierungslöcher (a) des Zwischenrades (65) und des Kurvenrades (112) müssen sich gegenüberstehen.

9.8 Funktionswahlschalter (55), P5-Zahnsegment (50)
- Funktionswahlschalter (55) einsetzen, Schraube "g" eindrehen und Kontakte "h" anlöten (Fig. 56).
- P5-Zahnsegment (50) nach Abbildung Fig. 56 einsetzen. Das Markierungsloch (a) des P5-Zahnsegments (50) muß dem 1. Zahn des Zahnsegments des P5-Hebels (53) gegenüberstehen.

9.6 Loading Gears (138,143), Toothed Segment (141), Brake Lever (105), Tension Roller Lever (108)
- Set the Tape Guide Bolts P2 and P3 into the "STOP" position.
- Fit the Loading Gears (138, 143) so that the marked holes (b) are aligned towards each other (Fig. 54).
- Fit the Toothed Segment (141) as shown in Fig. 54. The marked hole (b) on the Toothed Segment (141) must be aligned towards the marked lug (d) on the Loading Gear (138).
- Fit the Brake Lever (105) and the Grip Ring "X".
- Fit the Tension Roller Lever (108).
- Adjust the tension of the drive belt (para 8.1)

9.7 Intermediate Gear (65)
Note: Before fitting the Intermediate Gear make sure that all other gears are in the positions described earlier.
- Fit the Intermediate Gear (65) as shown in Fig. 55. The marked holes (a) on the Intermediate Gear (65) and the Cam gear (112) must be aligned towards each other.

9.8 Mode Select Switch (55), P5 Toothed Segment (50)
- Fit the mode select switch (55), tighten the screw "g" and solder the contacts "h" (Fig. 56).
- Fit the P5 Toothed Segment (50) as shown in Fig. 56. The marked hole (a) on the P5 Toothed Segment (50) must be aligned towards the first tooth of the Tooth Segment on the P5 Lever (53).

9.6 Ruote di caricamento (138, 143), segmento dentato (141), leva di frenata (105), leva rullo tensore (108)
- Regolare i perni di guida P2, P3 in posizione di nastro scaricato.
- Inserire le ruote (138, 143) in modo che i fori (b) risultino coincidenti (fig. 54).
- Montare il segmento dentato (141) come indicato in fig. 54. Il foro (b) di questo segmento deve trovarsi alla medesima altezza del nasello (d) della ruota (138).
- Montare la leva (105) e (108) e le grower "X".
- Montare la leva (108).
- Regolare la tensione della cinghia (cap. 8.1).

9.7 Ruota intermedia (65)
Nota: Prima di montare la ruota intermedia, tutte le ruote dentate devono trovarsi nelle posizioni precedentemente indicate.
- Inserire la ruota intermedia (65) come indicato dalla figura 55. I fori (a) delle ruote (65) e (112) devono risultare allineati.

9.8 Selettore di funzioni (55), segmento dentato P5 (50)
- Inserire il selettore di funzioni (55), fissare la vite "g" e saldare i contatti "h" (fig. 56).
- Posizionare il segmento dentato di P5 (50) corrispondentemente alla fig.56. Il foro (a) di questo segmento deve coincidere con il 1ª dente del segmento della leva P5 (53).

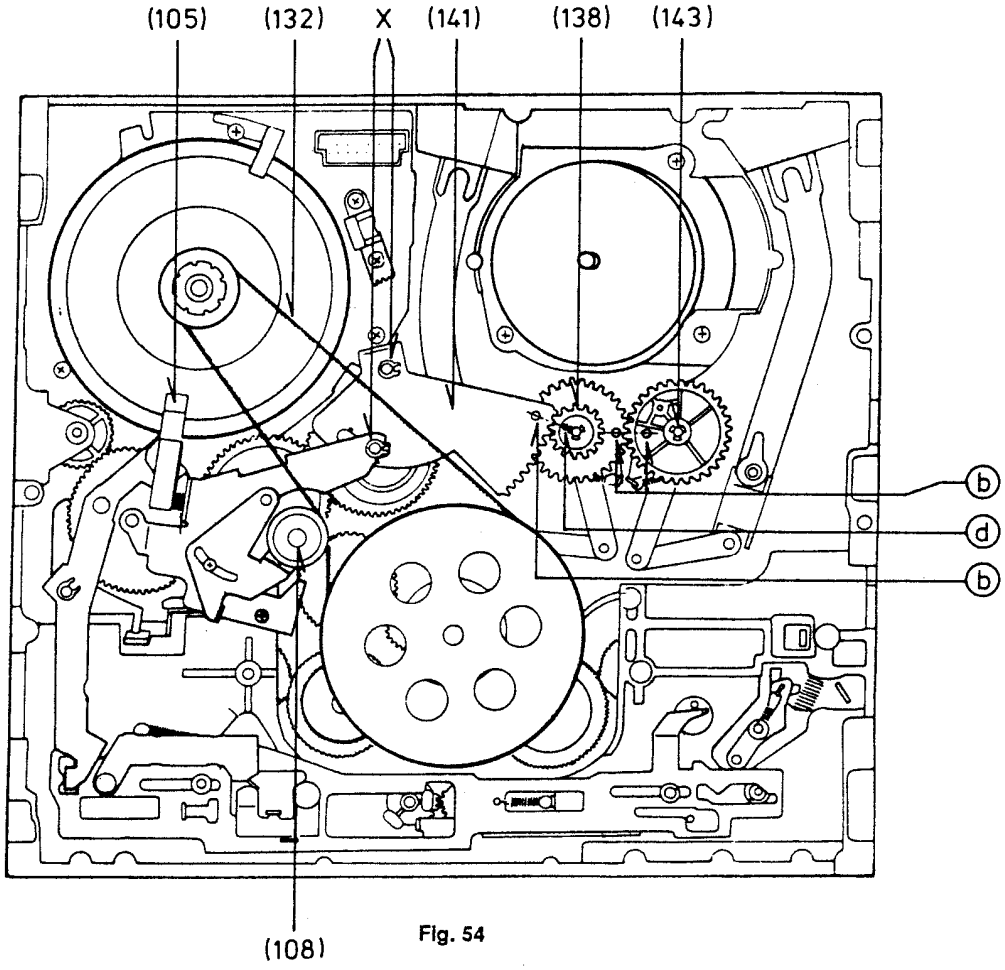


Fig. 54

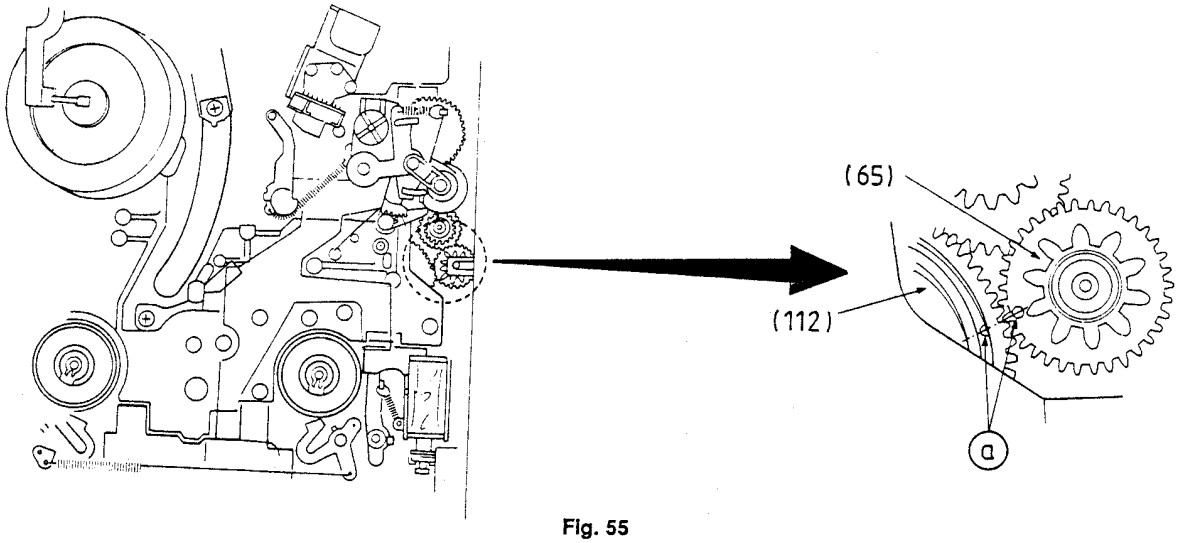


Fig. 55

9.9 Rollenhebelantrieb (51), Andruckrolleneinheit (45)

- Rollenhebelantrieb (51) so einsetzen, daß die Ecke " i " des P5-Hebels (53) in der Aussparung des Rollenhebelantriebs liegt (Fig. 57). Die Markierungsnase (d) am Zahnrad des Rollenhebelantriebs und das Markierungsloch (a) des Untersetzungszahnrads (64) müssen gegenüberstehen. Außerdem müssen die Markierungslöcher (b) des Funktionswahlschalters (55) und des Zahnrades des Rollenhebelantriebs (51) gegenüberstehen.
- Andruckrolleneinheit (45) und Sicherungskappe (44) einbauen.

9.9 Roller Lever Drive (51), Pressure Roller Assembly (45)

- Fit the Roller Lever Drive (51), so that the corner "i" of the P5 Lever (53) lies in the cut out on the Roller Lever Drive (Fig.57). The marked nose (d) on the toothed gear of the Roller Lever Drive and the marked hole (a) on the Reduction Toothed Gear (64) must be aligned towards each other. In addition, the marked holes (b) on the Mode Select Switch (55) and on the tooth gear of the Roller Lever Drive (51) must be aligned towards each other.
- Fit the Pressure Roller Assembly (45) and the Securing Cap (44).

9.9 Leva rullo (51), rullo preminastro (45)

- Applicare la leva (51) in modo che lo spigolo "i" della leva P5 (53) si trovi nell´ incavo della leva rullo (51) (fig. 57). Il nasello (d) sulla ruota dentata della leva ed il foro (a) della ruota (64) devono essere alla medesima altezza. Inoltre anche i fori (b) del selettore di funzioni (55) e della ruota dentata della leva (51) devono risultare coincedenti.
- Montare il rullo preminastro (45) ed il cappuccio (44).

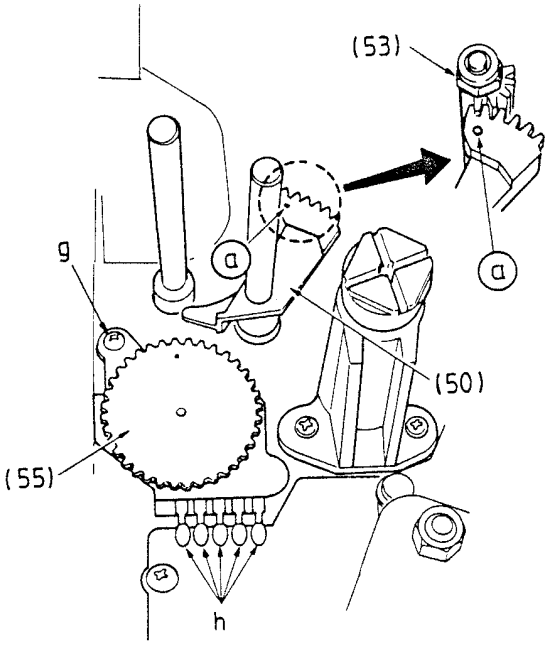


Fig. 56

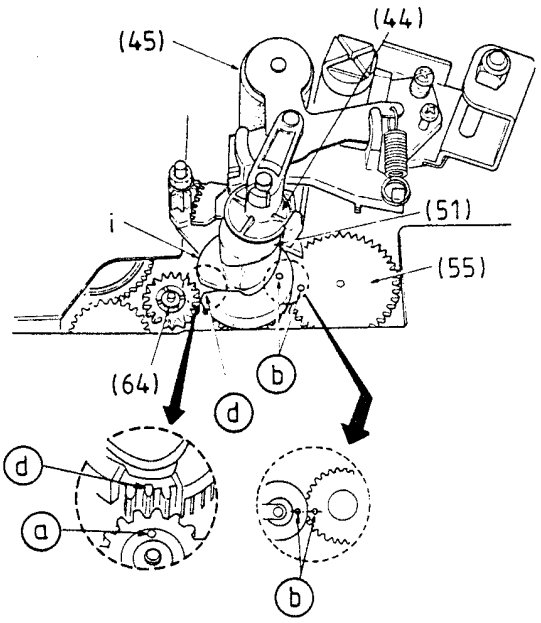
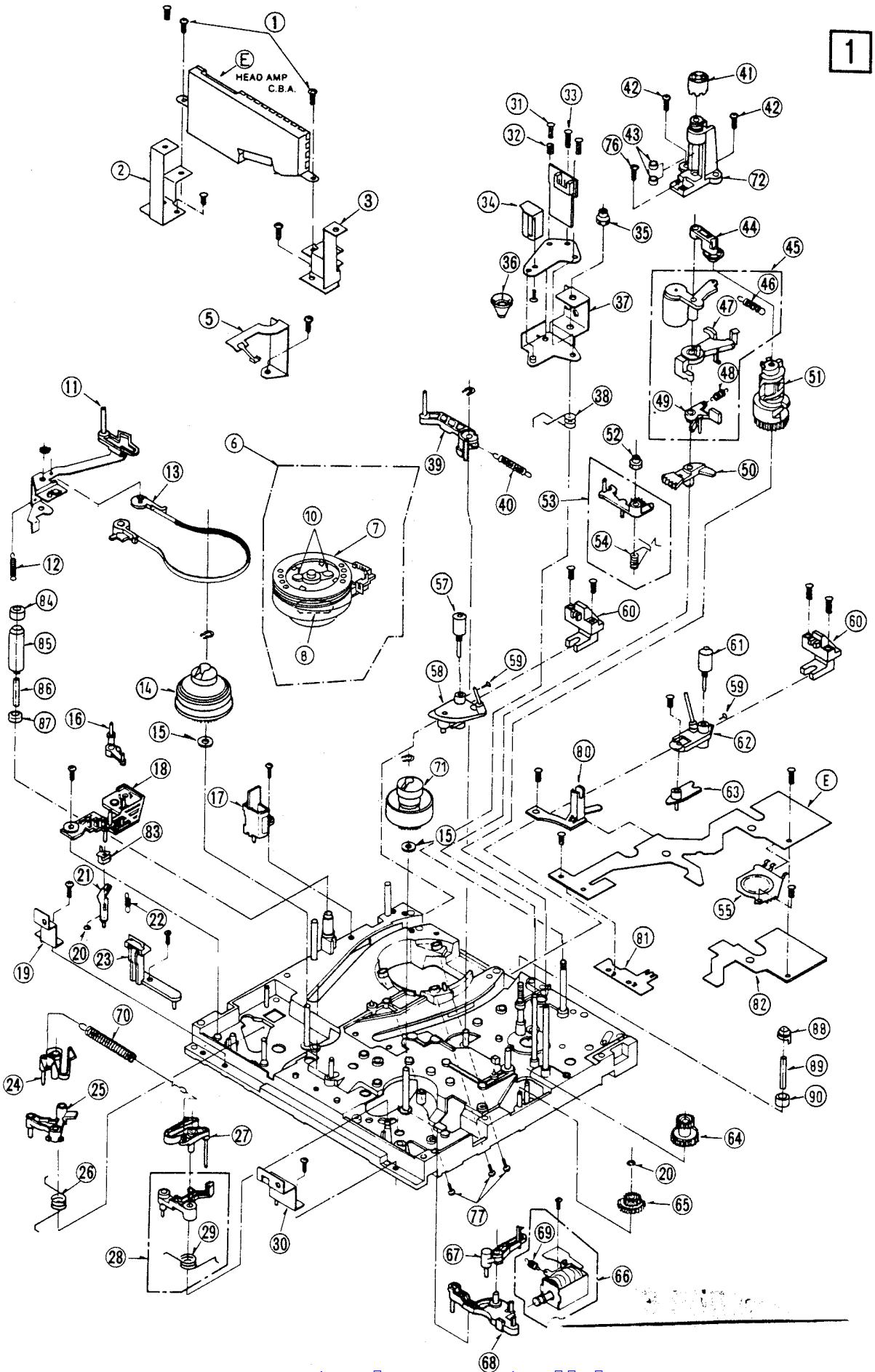
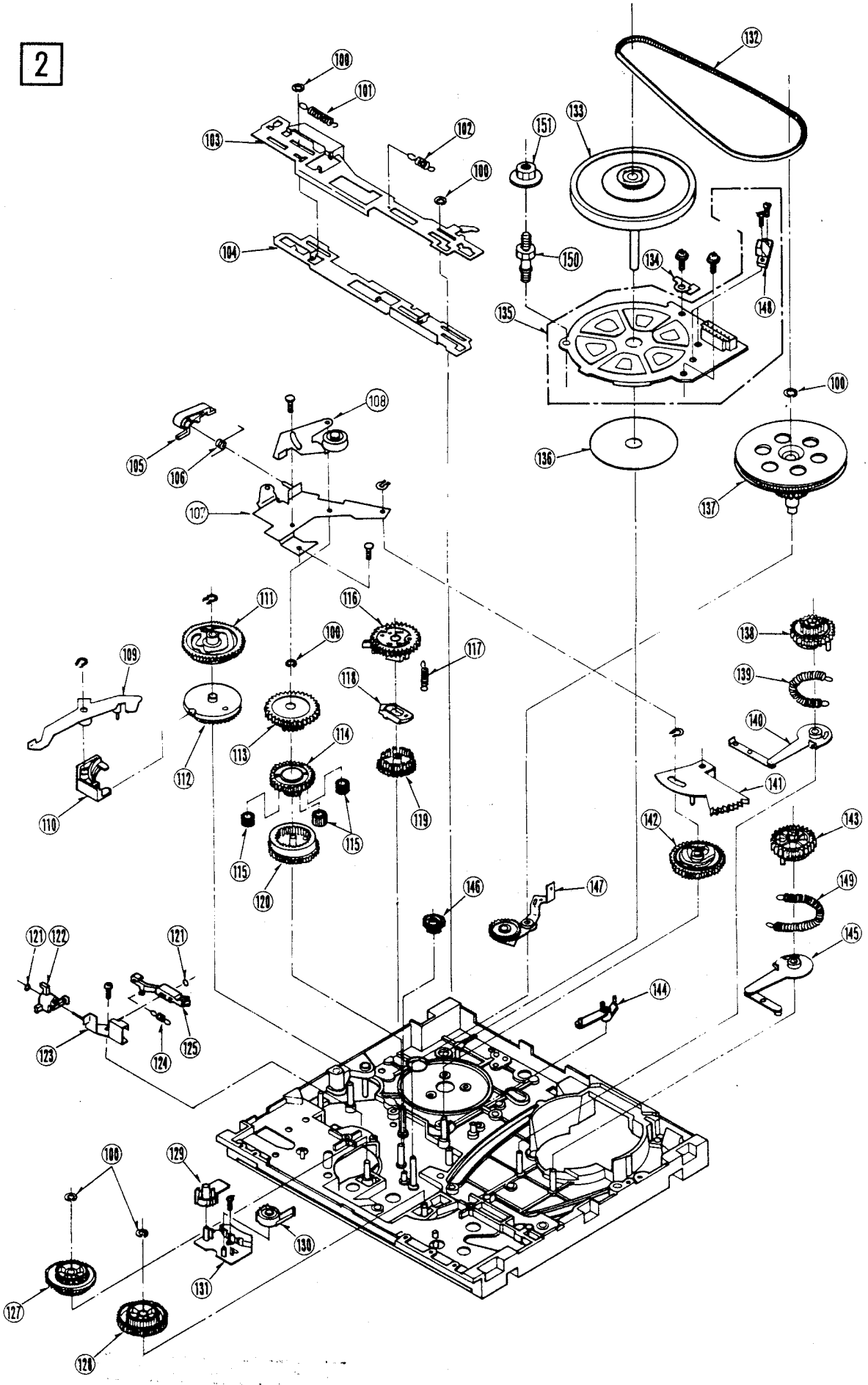
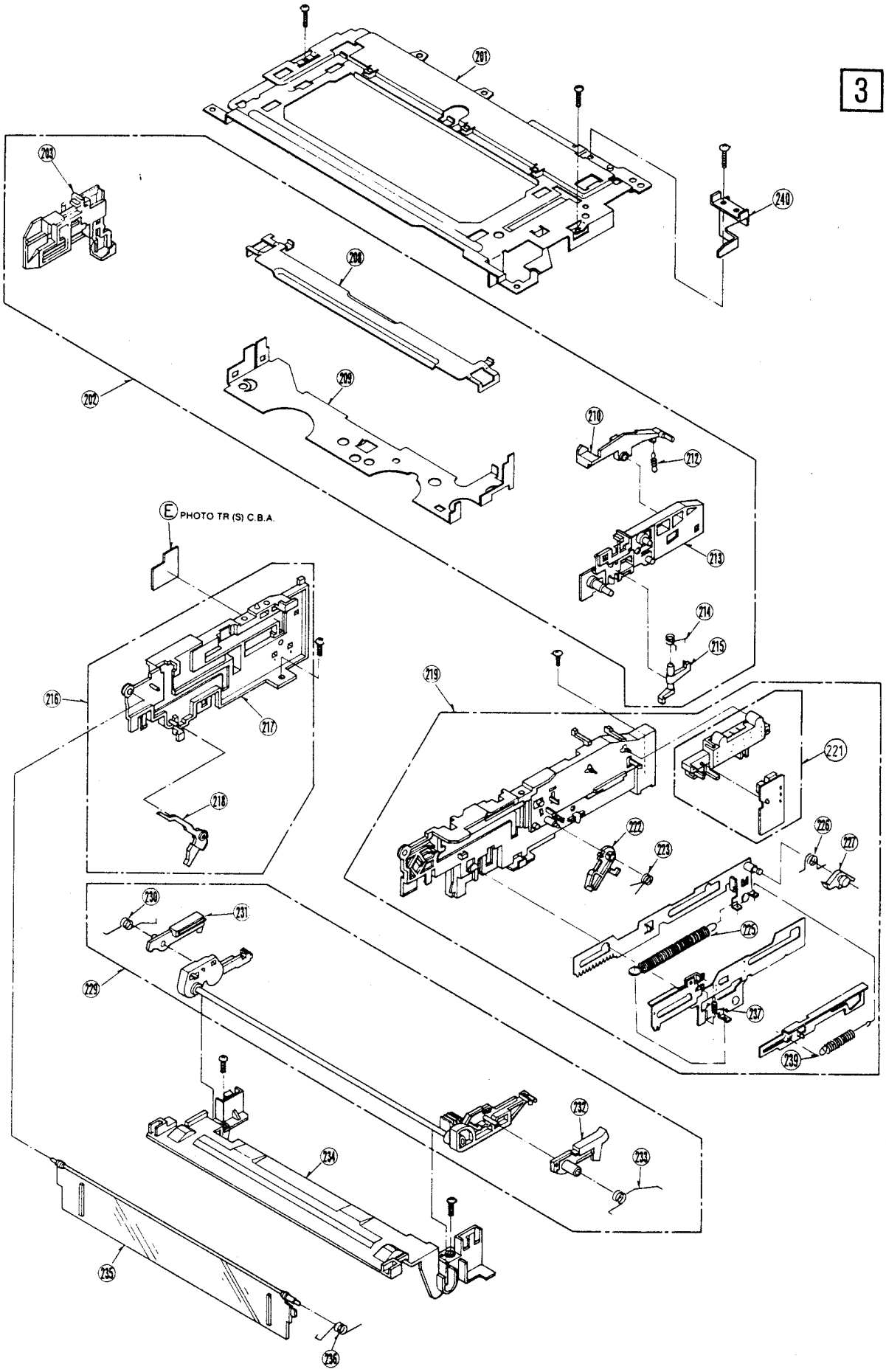


Fig. 57

1







GRUNDIG SERVICE MANUAL

VIDEO

(D) Btx * 32700 #

VS 520 PAL / VPS / GB / E

(D)

Ergänzung zu den Service Manuals

VS 540 PAL / VPS

Sach-Nr. 72010 - 501.70

Die Modelle VS 520 PAL/VPS/GB/E sind Mono-Ton-Videorecorder, bei denen gegenüber VS 540 PAL/VPS/GB/E folgende Bausteine geändert sind:

- Bedieneinheit — Sach.-Nr. 27505 - 025.01
- Bild - Kopfverstärker — Sach.-Nr. 27505 - 027.01
- Chassisplatte I (nur geändertes EPROM) — Sach.-Nr. 27505 - 021.02/.04/.63
- Chassisplatte II (GB) (nur geändertes IC 605) — Sach.-Nr. 27505 - 031.65
- Fernbedienung RP 6 (VS 520 PAL / VPS) — Sach.-Nr. 27520 - 039.01
- Mono - Ton — Sach.-Nr. 27505 - 022.02
- ZF - Verstärker — Sach.-Nr. 27505 - 023.01/.63

Die Bausteinbestückung der Geräte entnehmen Sie bitte der Ersatzteilliste.

Grundlage für den Service an den Videorecordern VS 520 PAL / VPS / GB / E sind die Service Manuals VS 540 PAL / VPS (Sach-Nr. 72010 - 501.70) oder VS 540 PAL / VPS / GB / E (Sach-Nr. 72010 - 501.71).

Inhaltsverzeichnis

(GB)

Supplement to the Service Manuals

VS 540 PAL / VPS / GB / E

Part No. 72010 - 501.71

The models VS 520 PAL/VPS/GB/E are monophonic video recorders and differs from the VS 540 PAL/VPS/GB/E in the following modules:

- Keyboard unit — Part No. 27505 - 025.01
- Head amplifier (Video) — Part No. 27505 - 027.01
- Chassis board I (with altered EPROM) — Part No. 27505 - 021.02/.04/.63
- Chassis board II (GB) (with altered IC 605) — Part No. 27505 - 031.65
- Remote control RP 6 (VS 520 PAL / VPS) — Part No. 27520 - 039.01
- Mono sound — Part No. 27505 - 022.02
- IF amplifier — Part No. 27505 - 023.01/.63

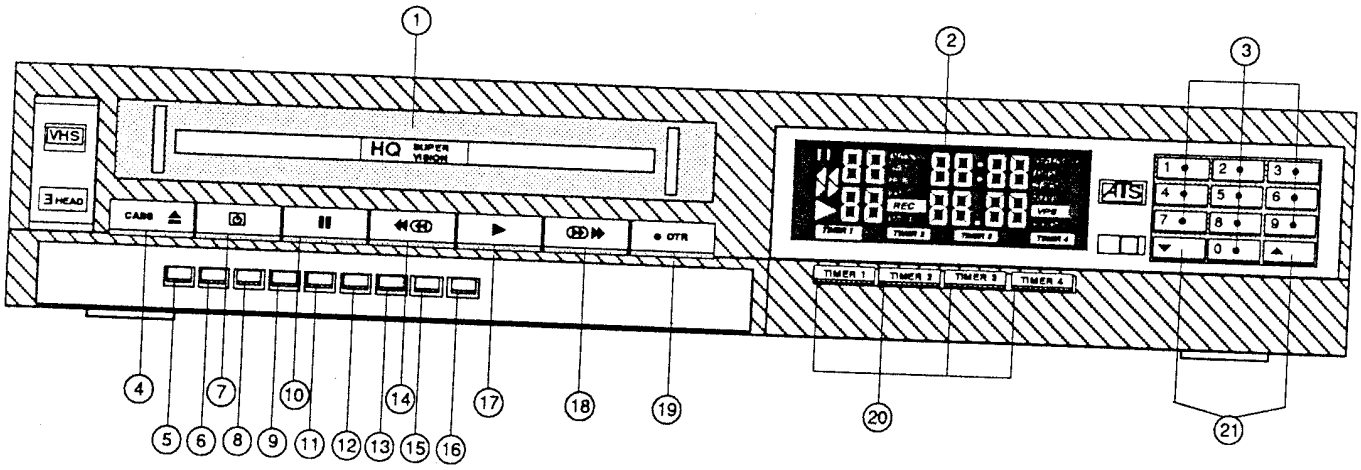
Information on the individual modules (PCBs) used for the recorders is given in the spare parts list.

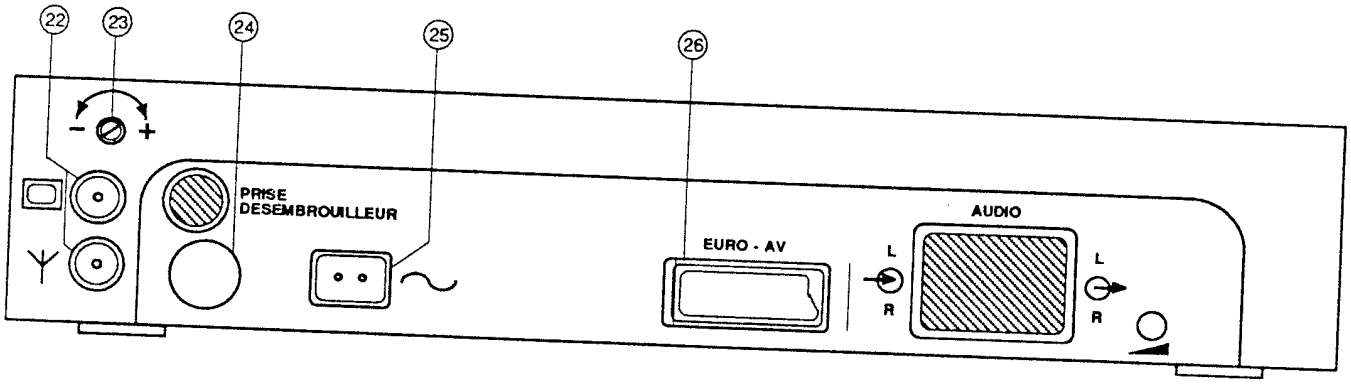
The Service Manuals VS 540 PAL / VPS (Part No. 72010 - 501.70) or VS 540 PAL / VPS / GB / E (Part No. 72010 - 501.71) form the basis for repair of models VS 520 PAL / VPS / GB / E.

List of contents

Bedienelemente des Videorecorders

General notes on the Videorecorder





① **Cassettenfach**

② **Anzeigefeld**
wird bei STAND-BY und TIMER-Bereitschaft auf verminderte Helligkeit geschaltet.

③ **Ziffern-Tasten**
Damit lassen sich eingeben: Uhrzeit, Programm, Datum, Start- und Stopzeit für Schaltuhraufnahmen, Kanalzahl, Codezahlen, Ziellauf, Gesamtspielzeit nicht normgerechter Cassetten.

④ **Cassettenauswurf**

⑤ **Sendersuchlauf-Taste**
Bestätigt die eingegebenen Programmplätze. Startet den Sendersuchlauf.

⑥⑧ **Spurlage / Feinabstimm-Tasten**
Bei Wiedergabe: Zum Verbessern der Ton- und Bildqualität fremdbespielter Cassetten.
Beim Programmeinstellen: Zum Feinabstimmen der Programme.

⑦ **STOP / STAND BY-Taste**
Beendet jede Lauffunktion und Pause.
Bei Stop: Nochmaliges Drücken schaltet den Recorder in Bereitschaft. Uhrzeit wird mit verminderter Helligkeit angezeigt.

⑨ **Norm-Taste**
Ohne Funktion

⑩ **Pause-Taste**
Bei Wiedergabe: - Standbild. Mehrmaliges drücken optimiert das Standbild und schaltet es schrittweise fort.
Bei Aufnahme: Zum Unterbrechen der Aufzeichnung.

⑪ **Speicher-Taste**
Zum Speichern der Kanal- und Codezahlen.

① **Cassette compartment**

② **Display**
is dimmed on STAND-BY and TIMER stand-by

③ **Numbered keys**
are provided to enter the time, programmes (TV stations), date, start and stop times for preprogrammed recordings, channel number, code numbers, GO TO tape position, total tape capacity of non-standard cassettes.

④ **Cassette eject key**

⑤ **Station finder key**
to confirm the entered programmes (TV stations). To start the station finder.

⑥⑧ **Tracking / fine tuning keys**
in playback mode: to improve the sound and picture quality of prerecorded cassettes.
For fine tuning of programmes (TV stations) during adjustment.

⑦ **STOP / STAND-BY key**
stops each of the drive functions and pause. Pressing this key a second time causes the recorder to switch to stand-by. Time is indicated at reduced brightness.

⑨ **TV-standard selection key**
not operative.

⑩ **Pause key**
in playback mode: freeze frame. Pressing the key repeatedly optimises the still picture quality and advances the recording frame by frame.
in record mode: to interrupt recording.

⑪ **Store key**
to store channel and code numbers.

⑫ **Uhr-Taste**
Startet die Uhrzeit nach einer Korrektur. Blendet die Uhrzeit in das Anzeigefeld ein.

⑬ **Datum-Taste**
Bestätigt das Datum nach einer Korrektur. Blendet das Datum und die Uhrzeit in das Anzeigefeld ein.

⑭ **Rücklauf- / Bildsuchlauf-Taste**
Aus Stellung Stop: Zum schnellen Rückspulen des Bandes.
Aus Stellungen Wiedergabe und Pause: 5 - oder 8 - fache Geschwindigkeit rückwärts, ohne Ton.

⑮ **Umschalt-Taste des elektronischen Zählwerks**
Schaltet um zwischen Stunden - / Minuten-Anzeige und 4-stelliger Bandlängenanzeige

⑯ **Ziellauf-Taste**
Zum schnellen Vor- und Rückspulen des Bandes an eine bestimmte Bandstelle mit anschließender Wiedergabe. Ziellaufzeit dreistellig in Stunden und Minuten eingeben.

⑰ **Wiedergabe-Taste**

⑱ **Vorlauf - / Bildsuchlauf-Taste**
Aus Stellung Stop: Zum Schnellen Vorspulen des Bandes.
Aus Stellungen Wiedergabe und Pause: 5- oder 8- fache Geschwindigkeit vorwärts, ohne Ton.

⑲ **Aufnahme-Taste**
Startet die Aufnahme. Bestätigt die Ausschaltzeit einer Sofortaufnahme.

⑳ **Timer-Tasten 1 . . . 4**
Zum Aufrufen der 4 Vorwahlspeicher, zum Bestätigen der eingegebenen Vorwahlspeicherdaten und zum Kontrollieren und Korrigieren der Vorwahlspeicherdaten nach der Programmierung.

㉑ **Programmwahl - Tasten**
▲ Ruft Programmplatz 1 bzw. nächst höheren Programmplatz auf. Dazu Taste ▲ wiederholt drücken.
▼ Ruft Programmplatz AV bzw. nächst niedrigeren Programmplatz auf. Dazu Taste ▼ wiederholt drücken.
Taste ▲ oder ▼ gedrückt halten, schaltet die Programmplätze laufend weiter.

㉒ **Antennen-Buchsen**

㉓ **Kanaleinsteller**
Der Ausgangskanal des Recorders ist auf Kanal 36 eingestellt. Mit dem Kanaleinsteller können Sie diese Einstellung nach + oder - verändern.

㉔ **Universal-Buchse**

㉕ **Netzanschluß**

㉖ **Euro-AV-Buchse**
Zum Anschließen von Fernsehgerät, Videorecorder, Satelliten-Empfänger etc.

⑫ **Clock key**
to start the clock after the time has been corrected. To indicate the time.

⑬ **Date key**
for confirmation after the date has been corrected. To indicate date and time in the display.

⑭ **Rewind / reverse picture search key**
in stop mode: for fast rewinding of the tape
in playback and pause modes: for playing back the tape in reverse direction without sound at 5 or 8 times normal speed.

⑮ **Switchover key of the electronic counter**
for changing between the display of hours/minutes and 4-digit tape position.

⑯ **GO TO key**
for fast winding or rewinding of the tape to a definite position and subsequently playback. Enter the 3-digit GO TO time in hours and minutes.

⑰ **Playback key**

⑱ **Fast forward / picture search key**
in stop mode: for fast winding of the tape.
in playback and pause modes: for playing back the tape in forward direction without sound at 5 or 8 times normal speed.

⑲ **Record key**
to start recording. To confirm the stop time of an immediate recording.

⑳ **Timer keys 1 . . . 4**
to call up the 4 preselection stores; to confirm the entered preprogramming data and to check and correct the stored data.

㉑ **Programme (TV station) selection keys**
▲ Calls up programme position 1 or steps upwards to the next position. For this purpose press ▲ repeatedly.
▼ Calls up programme position AV or steps downwards to the next position. For this purpose press ▼ repeatedly.
Keeping the key ▲ or ▼ depressed causes the programme positions to be stepped through continuously.

㉒ **Aerial sockets**

㉓ **Channel adjustment**
The recorder output channel is preset to channel 36. The channel number can be increased or reduced by turning the control in plus or minus direction, respectively.

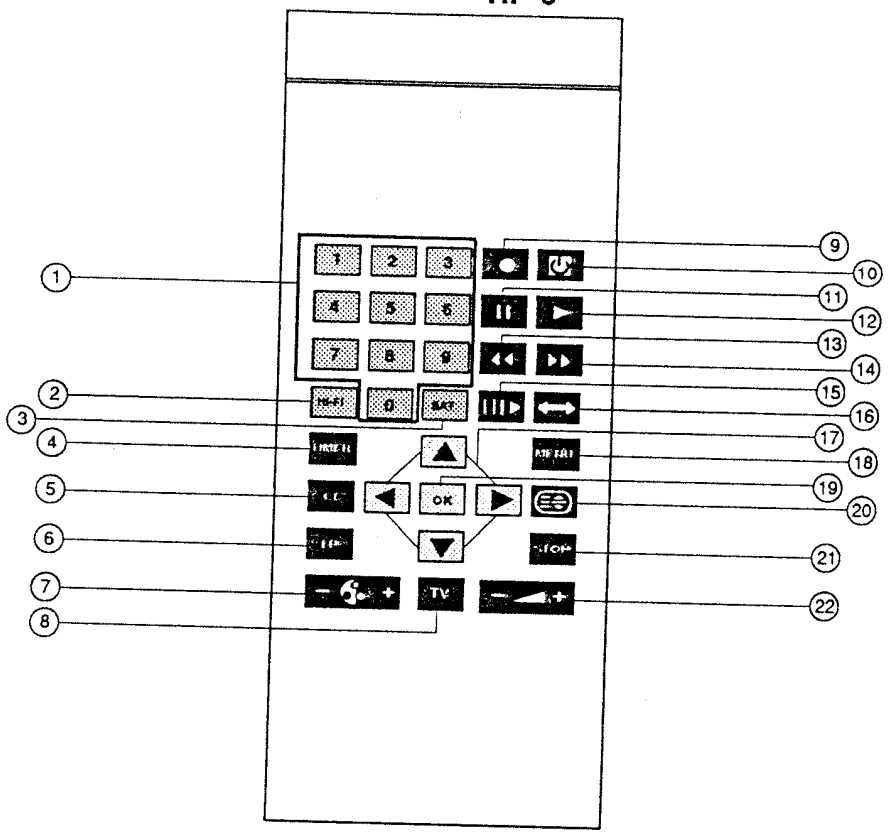
㉔ **Universal socket**

㉕ **Mains connection**

㉖ **EURO-AV socket**
for connection of a TV set, video recorder, satellite receiver, and so on.

Bedienelemente der Fernbedienung RP 6

General notes on the Remote Control RP 6



1. TV - Funktionen

(8) **TV-Taste**
Taste (8) schaltet das GRUNDIG Fernsehgerät (mit 10 bit Telepilot) von Bereitschaft auf **AV** oder **A.V** . Sie schaltet um zwischen **AV**- und **A.V**-Programmplatz.
- Mit den Zifferntasten (1) Fernsehprogramm ein- oder zweistellig eingeben, danach Taste (8) drücken.
- Taste (8) drücken und gedrückt halten, schaltet das Fernsehgerät in Bereitschaft
- Taste (8) noch einmal drücken schaltet das Fernsehgerät auf **AV** oder **A.V**.

(22) **Laustärke**
(7) **Farbkontrast**

2. Programm- und Laufwerkfunktionen

(1) **Ziffern - Tasten**
Damit lassen sich die Programmnummer, Ziellaufzeit und die Ausschaltzeit für Sofort (ORT)-Aufnahmen eingeben.

(17) **Programmwahl-Tasten**
▲ ruft Programmplatz 1 auf bzw. schaltet auf den nächst höheren Programmplatz.
▼ ruft Programmplatz AV auf bzw. schaltet auf den nächst niedrigeren Programmplatz .
Taste ▲ oder ▼ gedrückt halten, schaltet die Programmplätze laufend weiter.

(9) **Aufnahme-Taste**
Längeres Drücken startet die Aufnahme.
1. Ein- oder mehrmaliges Drücken bestätigt die Ausschaltzeit einer Sofortaufnahme (30 Minuten - Intervalle).
2. Mit den Ziffern-Tasten (1) Ausschaltzeit eingeben, danach mit Taste (9) bestätigen.

(13) **Umspul -Taste rückwärts**
Wiedergabe: Einmal drücken 5-fache Geschwindigkeit, ohne Ton.
Zweimal drücken 8-fache Geschwindigkeit, ohne Ton.
Bei Stop / Standby: Schneller Bandrücklauf.

(12) Wiedergabe - Taste

1. TV control functions

(8) **TV button**
Button (8) is provided to switchover the GRUNDIG TV receiver (with 10 bit Telepilot) from standby to **AV** or **A.V** and to change between **AV** and **A.V** programme position.
- Enter a one or two-digit television programme on the numbered keyboard (1) then press button (8).
- Press button (8) and keep it depressed to switch the TV receiver to standby mode.
- Press button (8) once again to switch the TV receiver to **AV** or **A.V**.

(22) **Volume control**
(7) **Colour contrast control**

2.Programme selection and drive functions

(1) **Numbered buttons** to enter the number of the programme, the go-to tape time and the stop time of a manual recording (ORT).

(17) **Programme selection buttons**
▲ is provided to call up programme position 1 and to step upwards to the next position.
▼ is used to call up programme position AV and to step down to the next position.
Keeping button ▲ or ▼ depressed causes the programme positions to be stepped through continuously.

(9) **Record button**
Press this button for some time to start recording.
1. This button is pressed once or several times to confirm the stop time of a manual recording (in intervals of 30 minutes).
2. Enter the stop time by means of the numbered buttons (1), then confirm it with button (9).

(13) **Rewind button**
From playback: Press once to rewind the tape at 5 times normal speed without sound. Press twice to rewind the tape at 8 times normal speed without sound.
From stop / standby: Fast rewind.

(12) **Playback button**

(14) **Umspul -Taste vorwärts**
Wiedergabe: Einmal drücken 5-fache Geschwindigkeit, ohne Ton.
Zweimal drücken 8-fache Wiedergabegeschwindigkeit, ohne Ton.
Bei Stop / Standby: Schneller Bandvorlauf

(11) **Pause -Taste**
Bei Wiedergabe: Standbild. Mehrmaliges Drücken schaltet es schrittweise fort.

(16) **Zielauf -Taste**
Mit den Ziffern-Tasten (1) gewünschte Bandstelle dreistellig (in Stunden und Minuten) eingeben, danach Taste (16) drücken.

(17) **Tracking -Tasten** ◀ ▶

(10) **STOP und STANDBY -Taste**

(2) (3) (6) **Ohne Funktion**

(15) **Zeitlupe**

(9) **Aufnahme-Taste**

3. Timer-Funktionen

(4) **TIMER-Taste**
Zur Timervorwahl und zum Bestätigen der Daten.

(1) **Ziffern-Tasten**
Damit lassen sich eingeben: Programm, Datum, Start- und Stopzeit für TIMER-Aufnahmen.

(17) **Cursor-Tasten**
◀ ▶ Zum Anwählen der Timer-Plätze.

4. Text Programming

(18) **MENÜ-Taste**
Schaltet auf Text-Programming und zurück auf das Fernsehprogramm.

(19) **OK-Taste :** Bestätigt Eingaben.

(1) **Ziffern-Taste**
Damit lassen sich eingeben:
Programm, Datum, Start- und Stopzeit, Videotext-Seiten sowie die Angaben der Dialogzeile.

(5) **Lösch-Taste** : Zum Löschen von Daten.

(17) ▲ **Cursor-Taste**
Zum Anwählen der einzelnen Programmplätze 39 . . . 1, eines TIMER - Platzes, einer »täglichen« Aufzeichnung, von VPS, der gewünschten Sprachversion und der zu ändernden Daten.

(17) ▼ **Cursor-Taste**
Zum Anwählen der einzelnen Programmplätze 1 . . . 39, der TIMER-Plätze, einer »wöchentlichen« Aufzeichnung, der gewünschten Sprachversion und zum Löschen von VPS.

(17) ◀ **Cursor-Taste**
Zum Anwählen der Programmplätze 1 . . . 20, von Buchstaben / Zeichen und der zu ändernden Daten zum TIMER programmieren. Schaltet um auf Sonderkanäle.

(17) ▶ **Cursor-Taste**
Zum Anwählen der Programmplätze 21. . . 39 und von Buchstaben / Zeichen.

(20) **Groß / Klein -Taste**
Vergrößert den Bildschirminhalt und schaltet auf normale Größe zurück.

(21) **STOP-Taste:** VT STOP

(14) **Forward wind button**
From playback: Press once to wind the tape in forward direction at 5 times normal speed without sound.
Press twice to wind the tape in forward direction at 8 times normal speed without sound.
From stop / standby: Fast forward run.

(11) **Pause button**
On playback: Still picture. Frame by frame advance when pressing the button repeatedly.

(16) **Go-to button**
Enter the desired 3-digit tape position (in hours and minutes) by means of the numbered buttons (1) , then push button (16) .

(17) **Tracking buttons** ◀ ▶

(10) **STOP and STANDBY button**

(2) (3) (6) **No function assigned**

(15) **Slow motion**

(9) **Record button**

3. Timer functions

(4) **TIMER button**
For timer selection and confirmation of the programmed data.

(1) **Numbered buttons**
These buttons allow to enter: the programme, date, start and stop time for TIMER controlled recordings.

(17) **Cursor buttons**
◀ ▶ For selection of the Timer places

4. Text programming

(18) **MENUE button**
Switches over to text programming and back to the TV programme.

(19) **OK button:** To confirm the input data.

(1) **Numbered buttons**
These buttons allow to enter: the programme, date, start and stop time, teletext pages, and data into the dialog line.

(5) **Clear button:** For clearing entered data.

(17) ▲ **Cursor button**
For selection of individual programme positions 39 . . . 1, a TIMER location, a "daily" recording, VPS, the desired language, and of data to be changed.

(17) ▼ **Cursor button**
For selection of individual programme positions 1 . . . 39, TIMER locations, a "weekly" recording, the desired language, and to clear VPS.

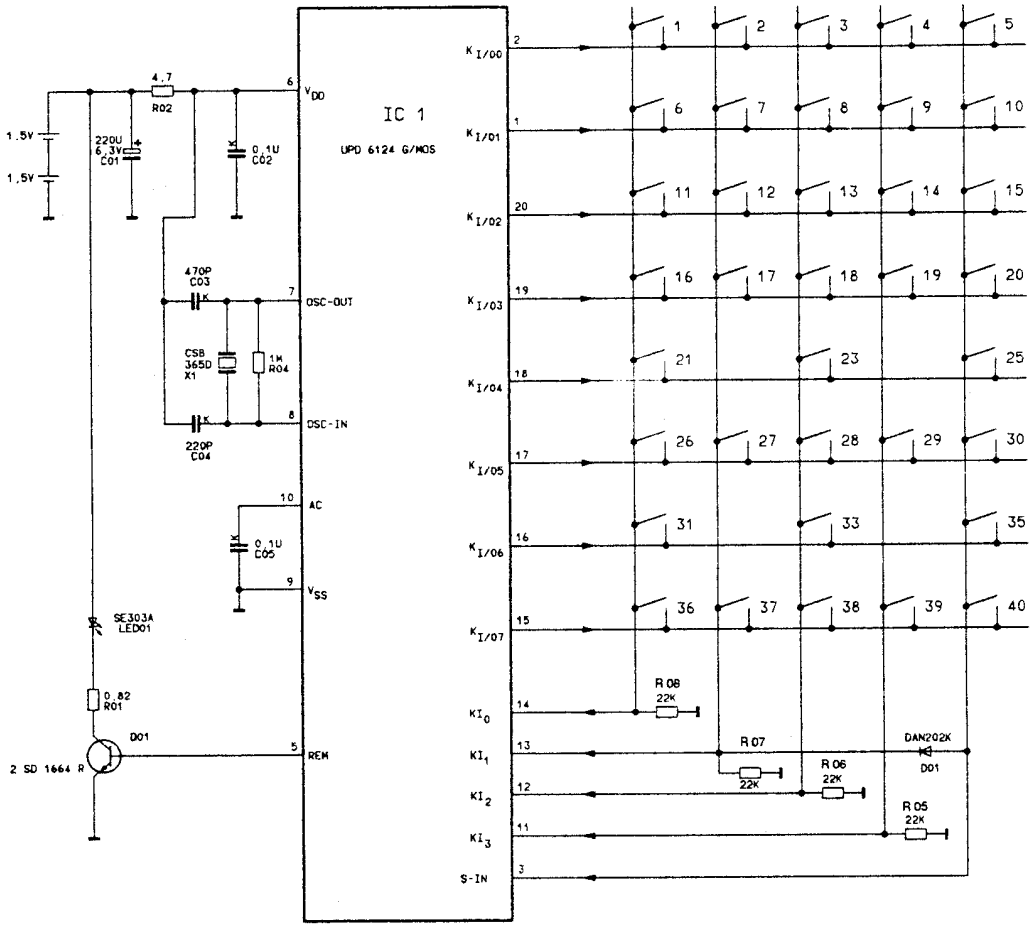
(17) ◀ **Cursor button**
For selection of programme positions 1 . . . 20, letters / characters and data which are to be changed for programming the TIMER. Switches over to special channels.

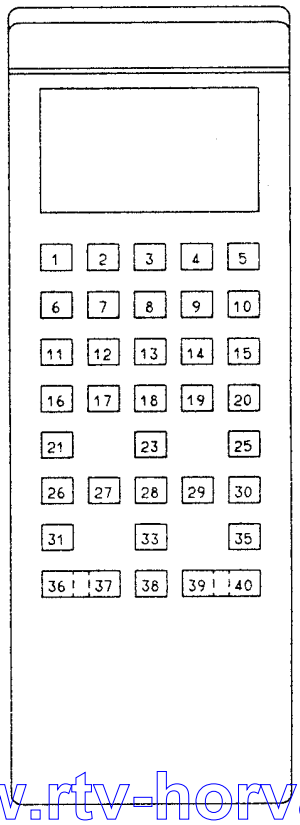
(17) ▶ **Cursor button**
For selection of programme positions 21 . . . 39, and of letters / characters.

(20) **Enlarge / normal size switchover button**
To enlarge the picture contents and to switch back to normal size.

(21) **STOP button:** VT STOP.

Fernbedienung RP 6
Remote control RP 6





Korrekturen und Ergänzungen

Bitte korrigieren bzw. ergänzen Sie die folgenden Seiten in den Service Manuals VS 540 PAL / VPS (Sach.-Nr. 72010 - 501.70) und VS 540 PAL / VPS / GB / E (Sach.-Nr. 72010 - 501.71):

Seite 3:

Service - Funktionen

Um die Service - Funktionen zu aktivieren, müssen Sie die beiden Service -Testpunkte auf der Bedieneinheit (**s. S. 31**) kurzzeitig verbinden. Im Display erscheint links neben der Uhranzeige eine »0«. Die gewünschte Service - Funktion geben Sie mit einer der nachfolgend beschriebenen Bedientasten ein.

Seite 4

Code - nummer	Funktion	Anzeige im Display
8546	50 Hz - Bildwechselfrequenz	—
8547 *	100 Hz - Bildwechselfrequenz	—

* Soll der Videorecorder an ein FFS-Gerät (z.B. Color 70 / 390 / 7 Text) mit 100 Hz Bildablenkung angeschlossen werden, müssen Sie die Codenummer "8547" eingeben. Anschließend Speichertaste "M" drücken. Löschen dieser Funktion erfolgt über die Codenummer "8546" und Speichertaste "M".

Seite 10:

U KM — Steuerspannung Kopfradmotor / Control voltage, head-wheel motor / Tension de commande moteur tambour de têtes / Tensione di comando motore ruota testine / Tension de mando del motor del volante de cabezas

CTL — Synchronimpuls / Sync pulse / Impulsion Synchro / Impulso di sincronismo / Impulsos de sincronismo

Seite 21:

Servicehinweise

1. Entfernen der Gehäuseteile

Beim Abnehmen der Frontplatte kann der Tonwahlschalter beschädigt werden, wenn folgender Ablauf nicht eingehalten wird:

a.) Schrauben der oberen Rasthaken entfernen.
b.) Unteren Rasthaken der Frontplatte vom Gehäuseunterteil lösen.
c.) Linken und rechten Rasthaken vom Gehäuse lösen.
d.) Obere drei Rasthaken aushängen und Frontplatte parallel nach vorne abnehmen.

16. Austauschen der Chassisplatte II bzw. des Uhr-RAMS (IC 610)

Im Uhr - Ram auf der Chassisplatte II ist der Sollwert des Kopfrad -Lagengeberimpulses abgelegt. Deshalb ist nach dem Austausch der Chassisplatte II oder des IC 610 immer der Sollwert des Kopfrad - Lagengeberimpulses gemäß den **"Service - Funktionen — Taste 6" (Seite 3)** einzulesen.

Seite 37:

C 477: Dieser Kondensator (8452-297-385) fällt unter die VDE-Sicherheitsrichtlinien. Bitte ergänzen Sie im Schaltplan des Netzteiles die Position C 477 mit folgendem Symbol ⚠

Seite 42:

5. Kopfservo

Die Kopfservoregelung ...
Die FG-Impulse werden durch T 312 ausgekoppelt, durch **T 190** phasengedreht und über **Pin 33** dem µC zugeführt. Die Auskopplung der PG-Impulse erfolgt durch T 310. Anschließend gelangen sie, durch **T 192** phasengedreht an **IC 190-(3)**.
Bei Aufnahme arbeitet der Transistor T 190 als ODER-Stufe. Er verknüpft die an der Basis anstehenden **FG-Impulse** mit den am Emitter anstehenden Bildimpulsen. Beide Signale ...

Corrections and additions

Please correct or add on the following pages of the Service Manuals VS 540 PAL / VPS (part no. 72010 - 501.70) and VS 540 PAL / VPS / GB / E (part no. 72010 - 501.71):

Page 3:

Service Functions

To activate the service functions, it is necessary to connect the 2 service points on the keyboard unit temporarily (**see page 31**). A »0« appears on the left in the display next to the clock indicator. The required service function is then input using one of the keyboard buttons referred to in the table below.

Page 4:

Code - number	Function	Display shows
8546	50 Hz Field frequency	—
8547 *	100 Hz Field frequency	—

* The code number "8547" must be entered and stored with button "M" when connecting the video recorder to a colour television receiver (eg. Color 70 - 390 / 7 Text) operating on a vertical sweep rate of 100 Hz. To clear this mode enter code number "8546" and press button "M".

Page 10:

SP — Standbild / Still picture / Arrêt sur image / Fermo immagine/ Imagen parada

U CM — Steuerspannung Capstanmotor / Control voltage, capstan motor / Tension de commande moteur cabestan / Tensione di comando motore capstan / Tension de mando del motor del capstan

Page 21:

Service instructions

1.Removal of the cabinet

When removing the front of the cabinet keep to the following sequence of steps; otherwise, the sound select switch may be damaged:

a.) Undo the screws of the upper hooks.
b.) Release the lower hook of the front panel from the cabinet bottom.
c.) Disengage the left and right hooks from the cabinet.
d.) Release the three upper hooks and remove the cabinet front by withdrawing it uniformly.

16. Replacement of Chassis Board II or clock RAM (IC 610)

The headwheel-position-sensor pulse level is stored in the clock RAM on the chassis board II. Therefore, when replacing the chassis board II or IC 610, the specified level of the headwheel-position-sensor pulse must be entered as described under section **"Service Functions — button 6"** on page 3.

Page 37:

C 477: This capacitor (8452-297-385) is subject to the VDE safety specifications. Therefore, please add the safety symbol ⚠ to position C 477 in the power supply circuit diagram.

Page 42:

5. Head servo control

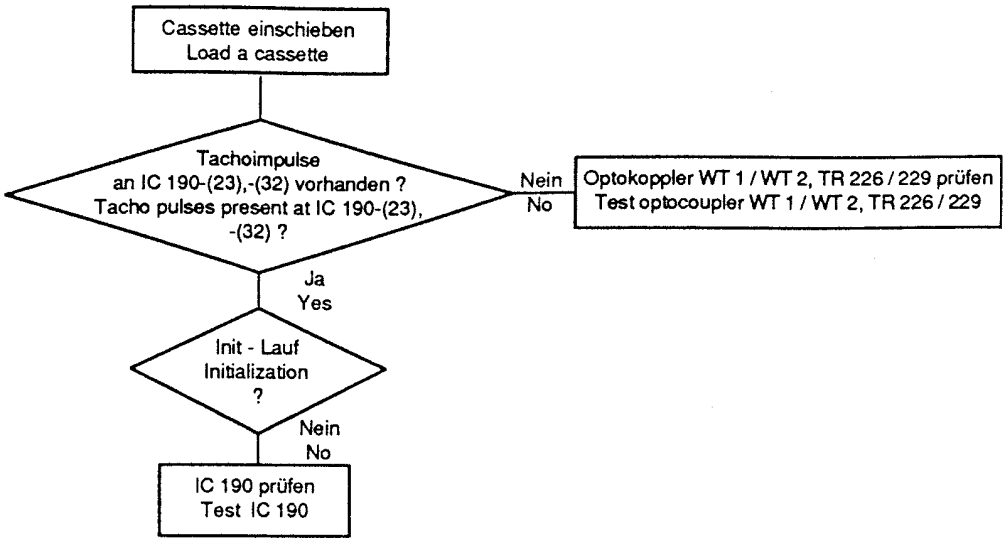
The head servo control system ...
After decoupling by T 312 and phase inversion by **T190** the FG pulses are fed via **pin 33** to the microcomputer. The PG pulses are decoupled by T 310, inverted by **T 192**, and supplied to **IC 190-(3)**.
In record mode, the transistor T 190 performs an OR operation combining the **FG pulses** provided at the base and the filed pulses provided at the emitter. Both signals ...

Seite 118

F 3 — Wickeltachoimpulse fehlen im eingefädelten Zustand (Wiedergabe, Aufnahme, Init-lauf, Bildsuchlauf)
F 7 — Wickeltachoimpulse fehlen im ausgefädelten Zustand (Umspulbetrieb, APF-Suchlauf, Ziellauf)

Page 118

F 3 — No tacho pulses (winding motors) present when tape is threaded (playback, recording, initialization, search).
F 7 — No tacho pulses present when tape is unthreaded (wind / rewind, APF and go-to).



Seite 135:
Die Position 4 im Laufwerk (Feuchtigkeitsfühler) entfällt.

Page 135:
Position 4 in the drive mechanism (dew sensor) is inapplicable.

POS. - NR., POS. - NO.	ABB. - NR., FIG. - NO.	SACHNUMMER PART NUMBER REF. NR. D'ORDINAZIONI	BEZEICHNUNG	DESCRIPTION	DESIGNATION	DENOMINAZIONE
6	1	47226 - 042.00	Bandtrommel kpl.	Tape drum	Tambour de bande	Tamburo nastro
7	1	47226 - 022.01	Kopfscheibe	Head disc	Tete video	Rondella testina

Seite 149
In der Explosionszeichnung entfällt die Position 4.

Page 149
In the exploded drawings the position 4 is inapplicable.

Sicherheitsvorschriften / Safty requirements / Prescrizioni de sicurezza / Prescriptions de securite / Recomendamos de seguridad

(D) **Achtung:** Bei Eingriffen ins Gerät sind die Sicherheitsvorschriften nach VDE 701 (reparaturbezogen) bzw. VDE 0860 / IEC 65 (gerätebezogen) zu beachten!

Bauteile nach IEC- bzw. VDE-Richtlinien ! Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!

MOS Vorschriften beim Umgang mit MOS - Bauteilen beachten!

(GB) **Attention:** Please observe the applicable safety requirements according to VDE 701 (concerning repairs) and VDE 0860 / IEC 65 (concerning type of product)!

Components to IEC or VDE guidelines! Only use components with the same specifications for replacement!

MOS Observe MOS components handling instructions when servicing!

(I) **Attenzione:** Osservarne le corrispondenti prescrizioni di sicurezza VDE 701 (concernente servizio) e VDE 0860 / IEC 65 (concernente il tipo di prodotto)!

Componenti secondo le norme VDE risp. te IEC! In caso di sostituzione impiegare solo componenti con le stesse caratteristiche.

MOS Osservare le relative prescrizioni durante, lavori con componenti MOS!

(F) **Attention:** Prière d'observer les prescriptions de sécurite VDE 701 (concernant les réparations) et VDE 0860 / IEC 65 (concernant le type de produit)!

Composants répondant aux normes VDE ou IEC. Les remplacer uniquement par des composants ayant les mêmes spécifications.

MOS Lors de la manipulation des circuits MOS, respecter les prescriptions MOS!

(E) **Atencion:** Recomendamos las normas de seguridad VDE u otras normas equivalentes, por ejemplo: VDE 701 para reparaciones, VDE 0860 / IEC 65 para aparatos!

Componentes que cumplen las normas VDE/IEC. En caso de sustitución, emplear componentes con idénticas especificaciones!

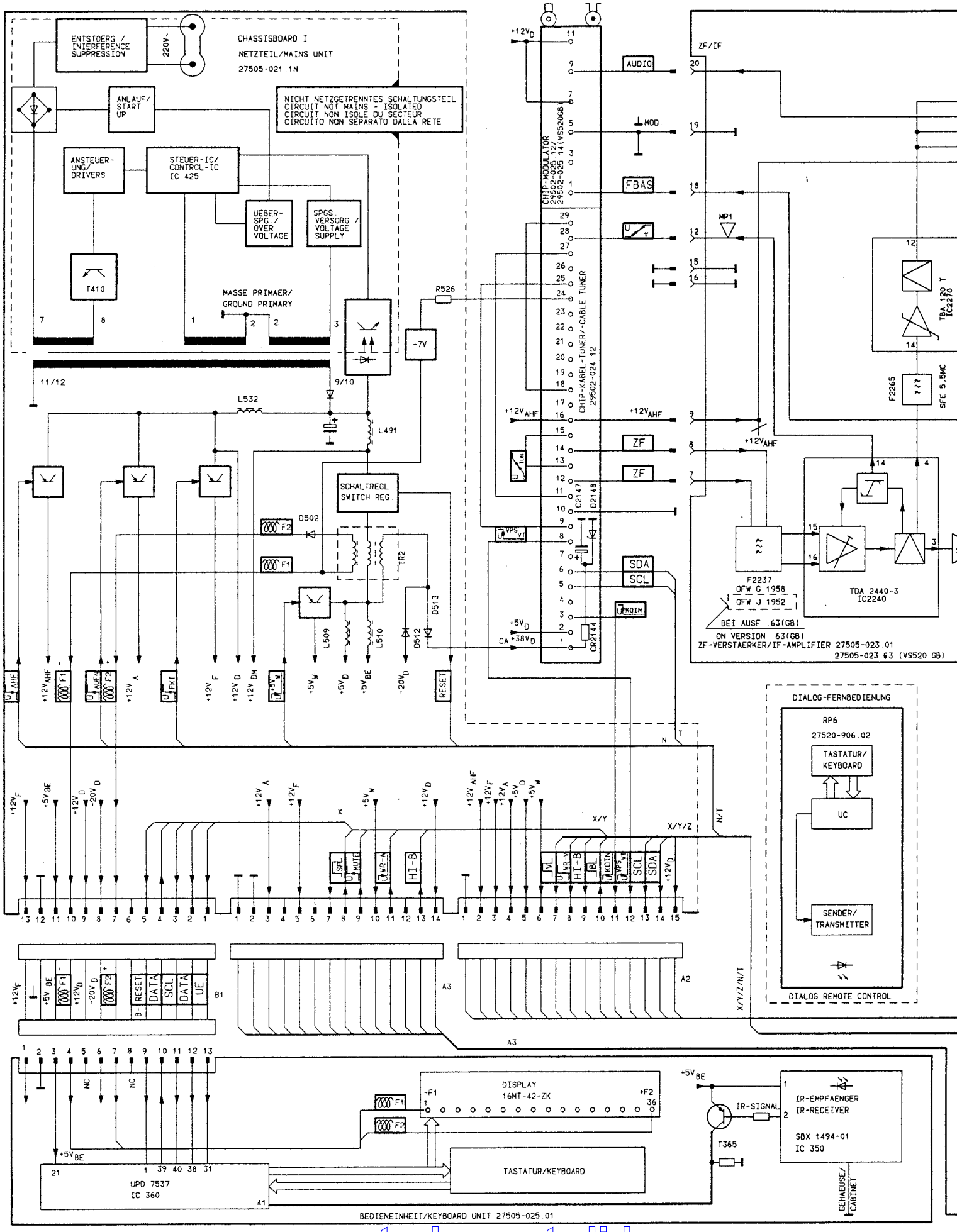
MOS Durante la reparacion observar las normas sobre componentes MOS!

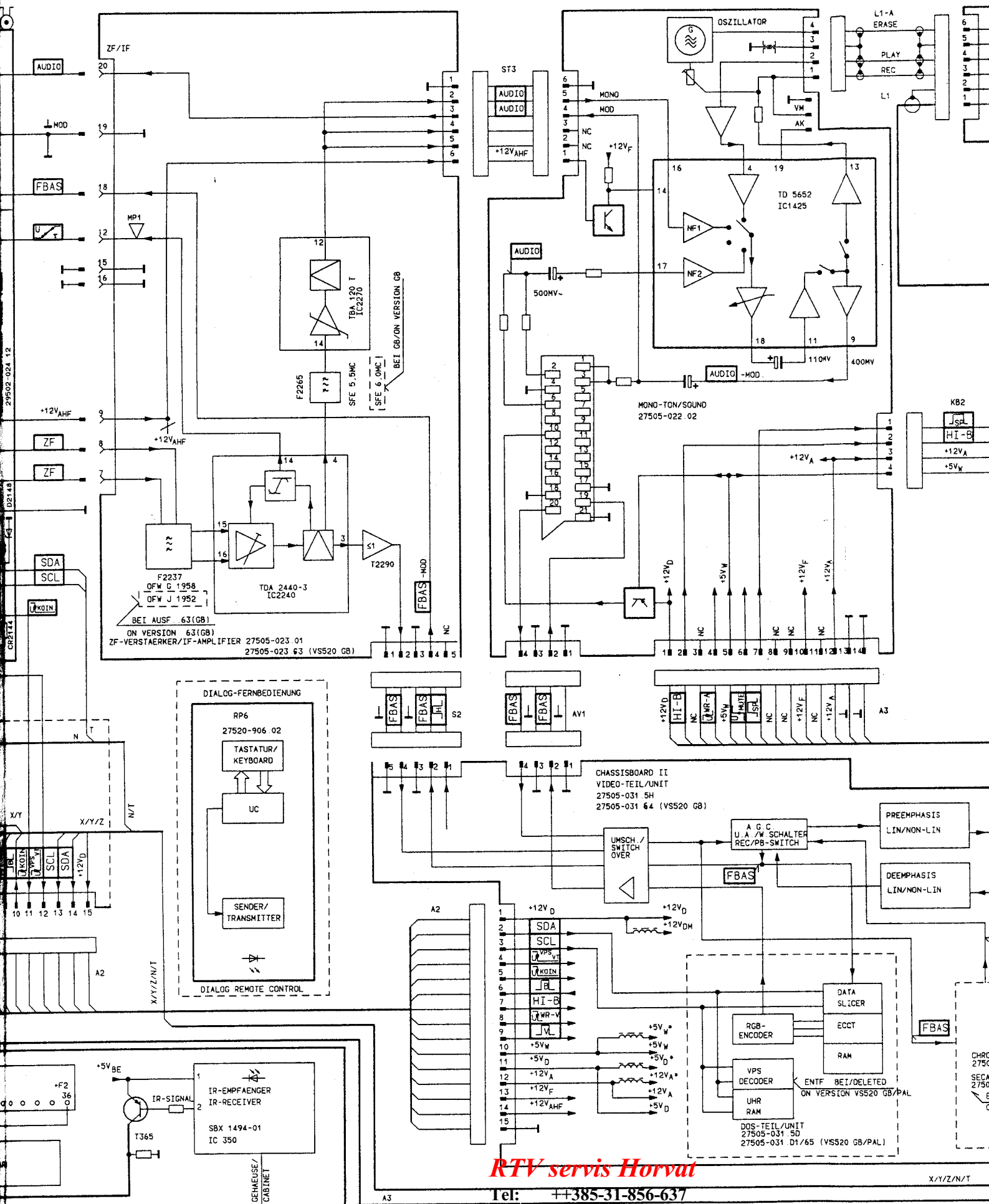
Code zur Farbkennzeichnung / Code for designation of colours / Codice a colore / Code de désignation de couleurs / Codigo de colores

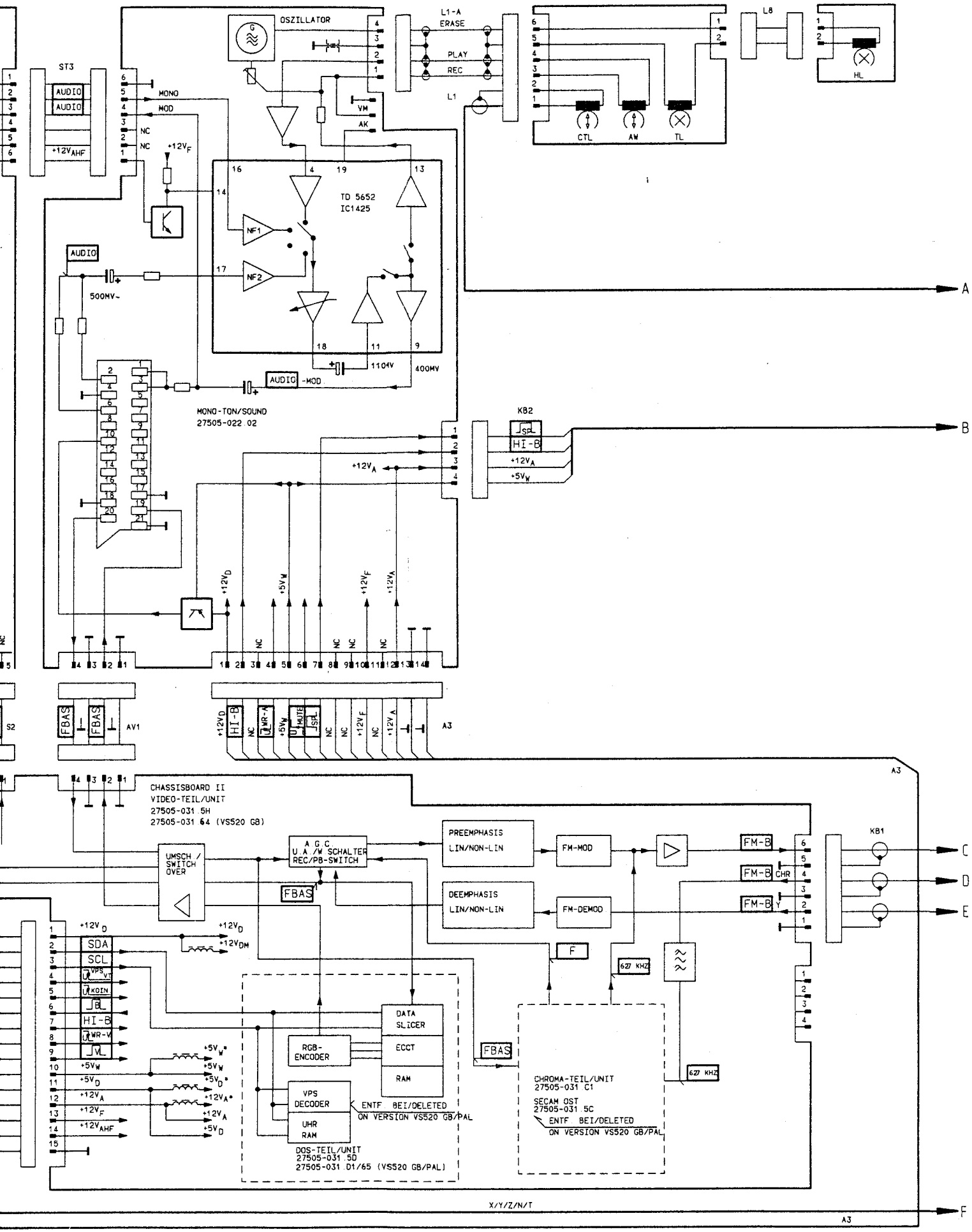
DIN IEC 757

	D	GB	I	F	E
BK	Schwarz	Black	Nero	Noir	Negro
BN	Braun	Brown	Bruno	Brun	Marron
RD	Rot	Red	Rosso	Rouge	Rojo
OG	Orange	Orange	Arancione	Orange	Naranjo
YE	Gelb	Yellow	Giallo	Jaune	Amarillo
GN	Grün	Green	Verde	Vert	Verde
BU	Blau	Blue	Blu	Bleu	Azul
VT	Violett	Violet	Violetto	Violet	Violeto
GY	Grau	Grey	Grigio	Gris	
WH	Weiß	White	Bianco	Blanc	Blanco
PK	Rosa	Pink	Rosa	Rose	Rosa
GD	Gold	Gold	Dorato	Doré	Oro
TQ	Türkis	Turquoise	Turchese	Turquoise	Turquis
SR	Silber	Silver	Argenteo	Argentin	Plata

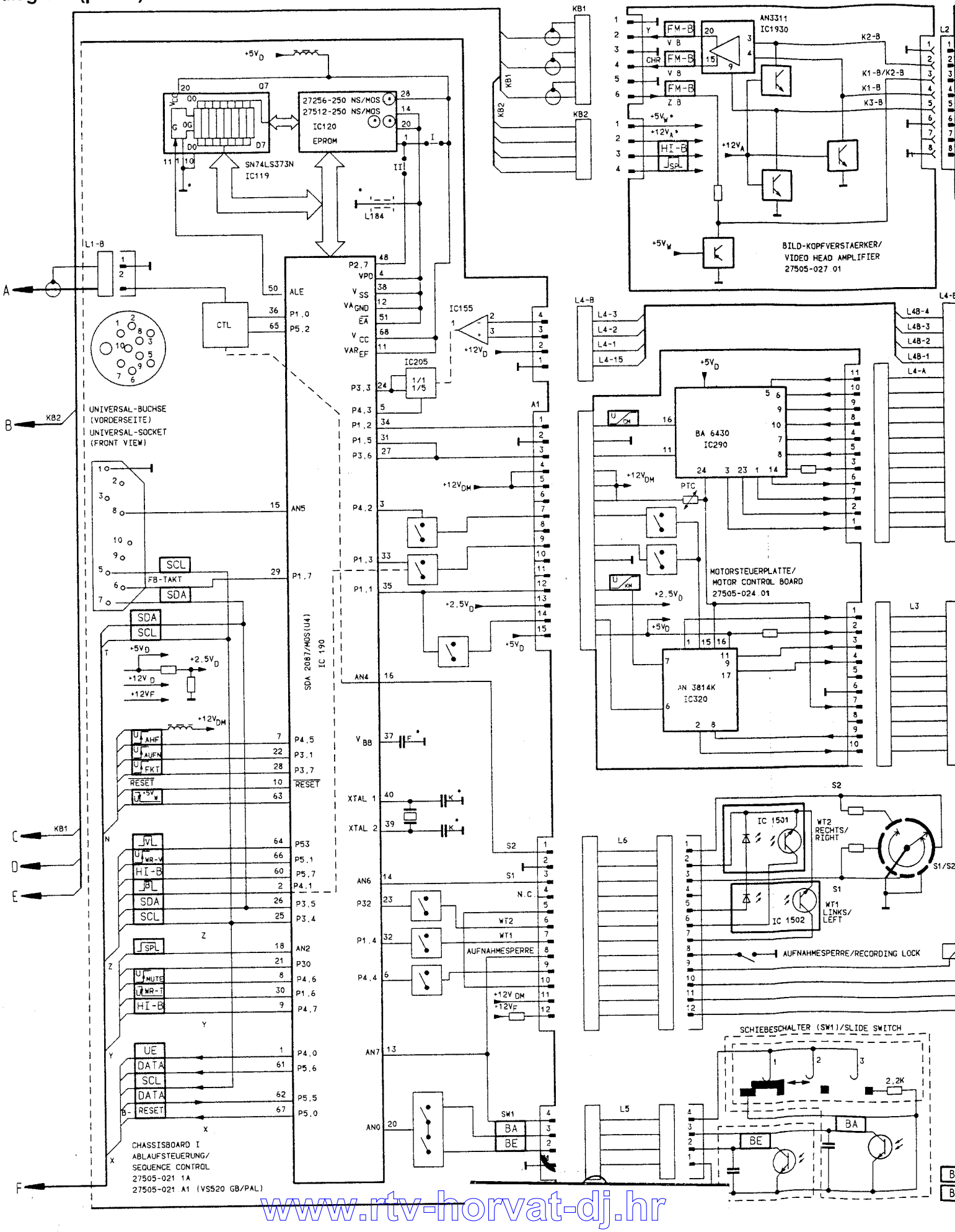
1)

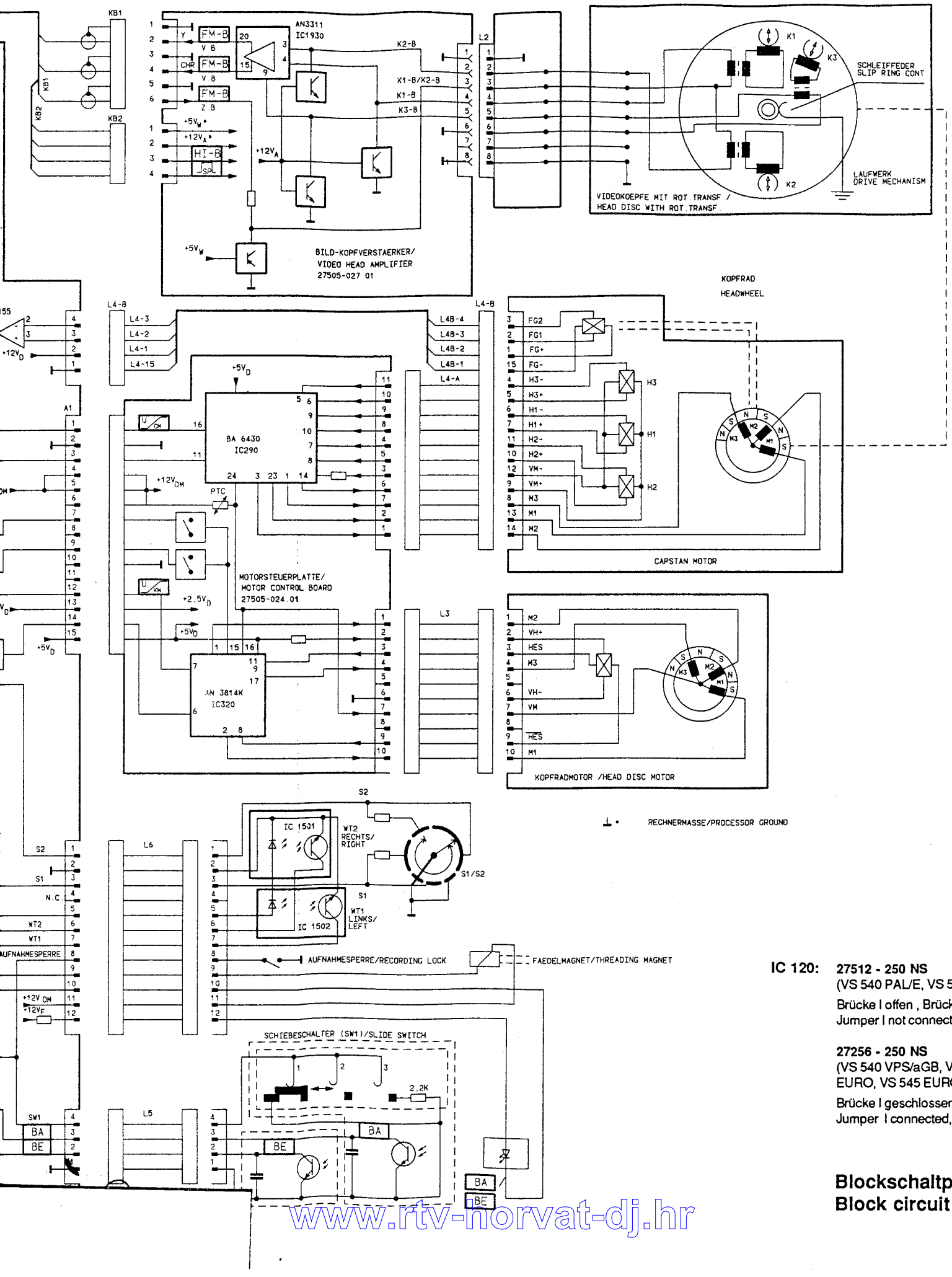






altplan (Teil 2)
cuit diagram (part 2)





IC 120: **27512 - 250 NS**
(VS 540 PAL/E, VS 520 PA

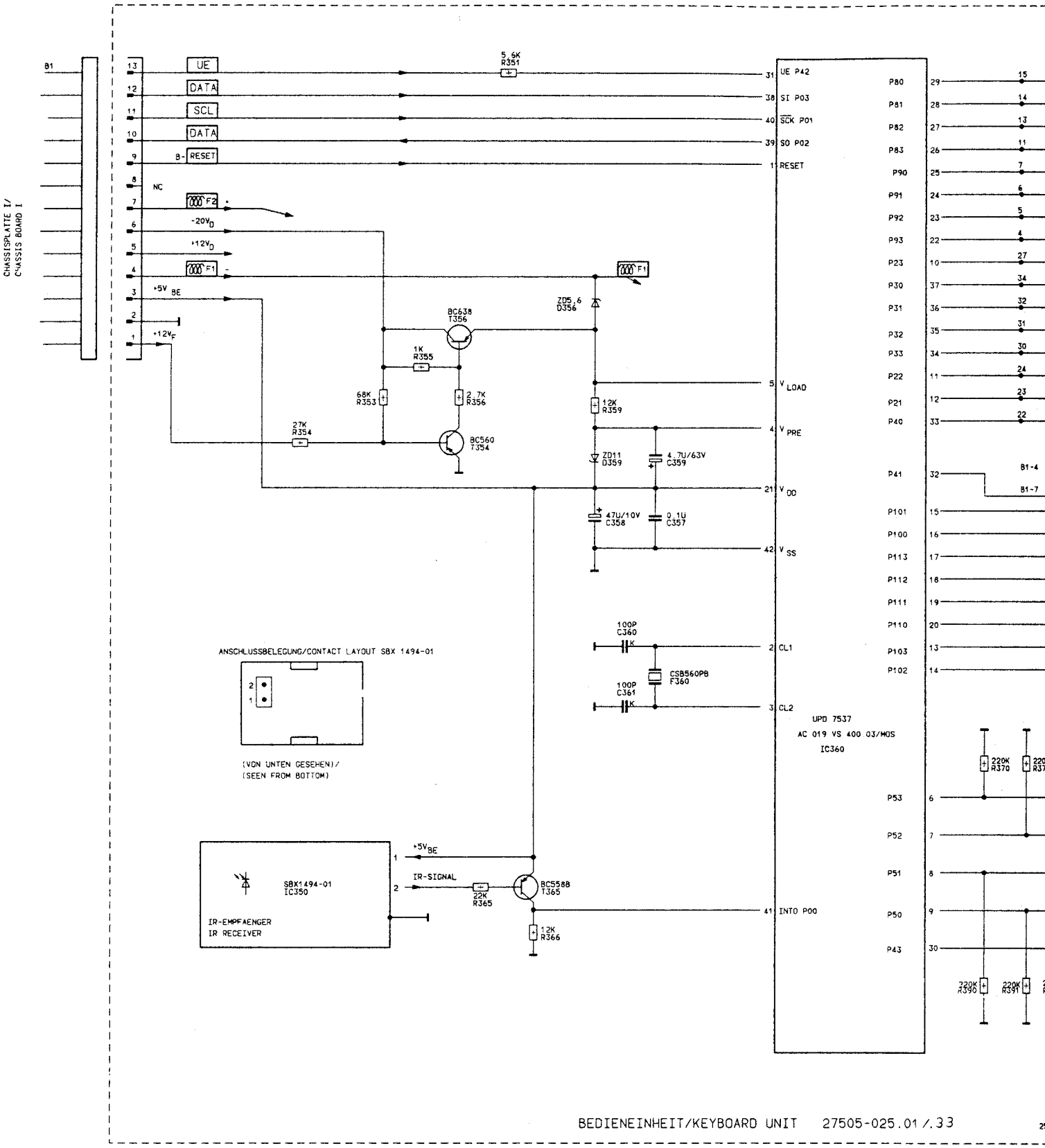
Brücke I offen , Brücke II ge
Jumper I not connected, ju

27256 - 250 NS
(VS 540 VPS/aGB, VS 520
EURO, VS 545 EURO):

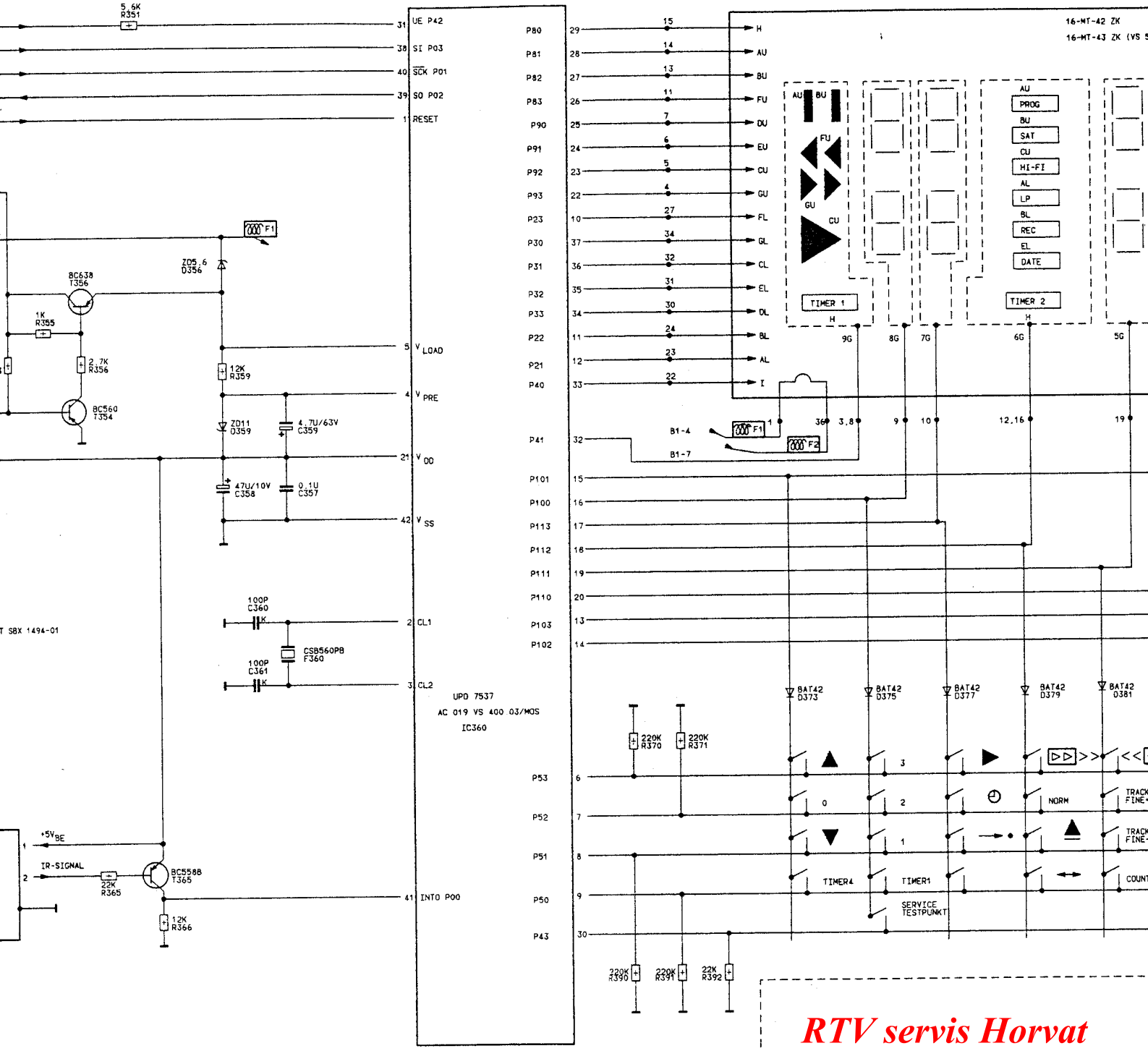
Brücke I geschlossen, Brüc
Jumper I connected, jumpe

Blockschaltplan
Block circuit dia

Bedieneinheit
Keyboard unit

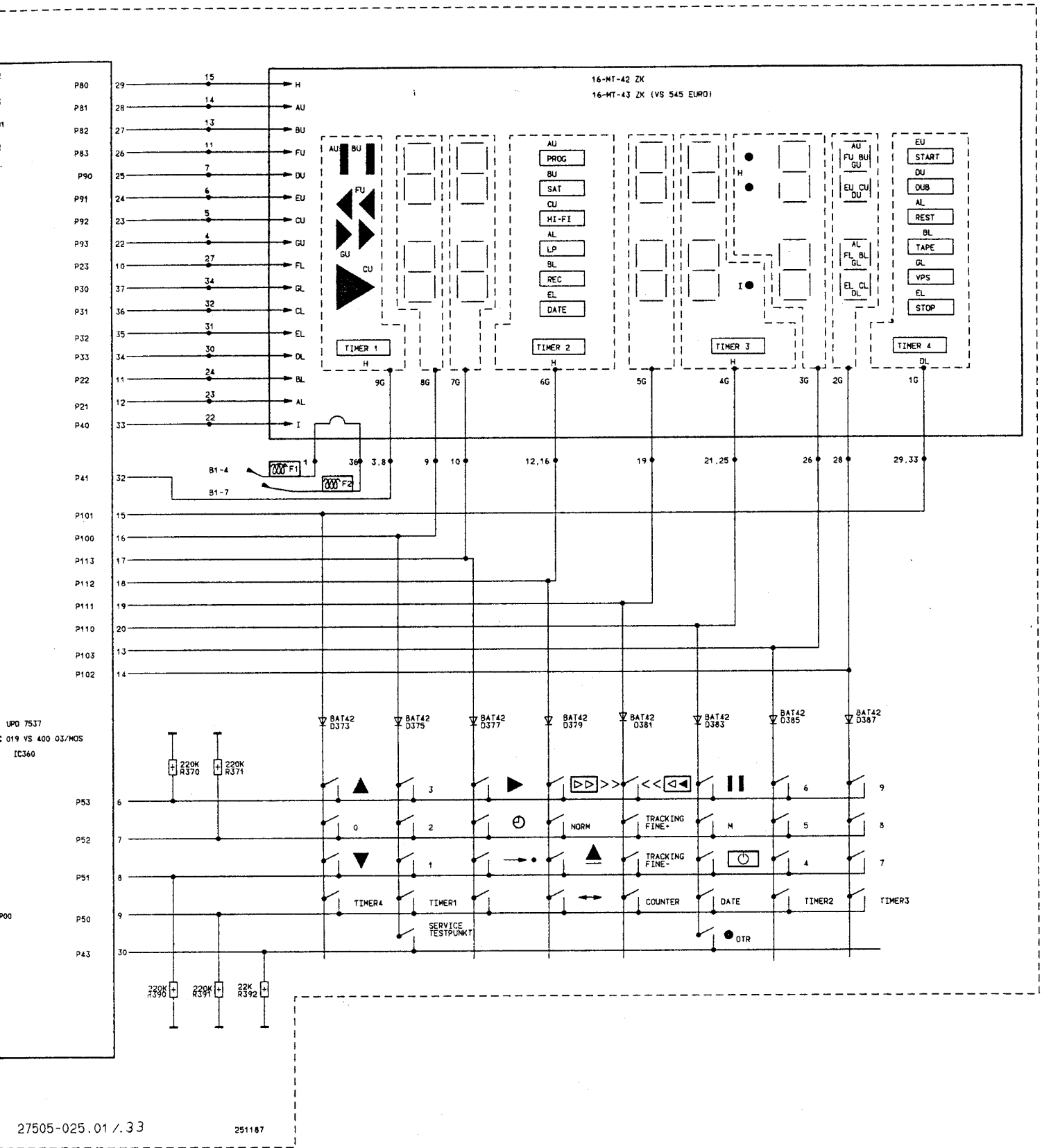


BEDIENEINHEIT/KEYBOARD UNIT 27505-025.01/.33



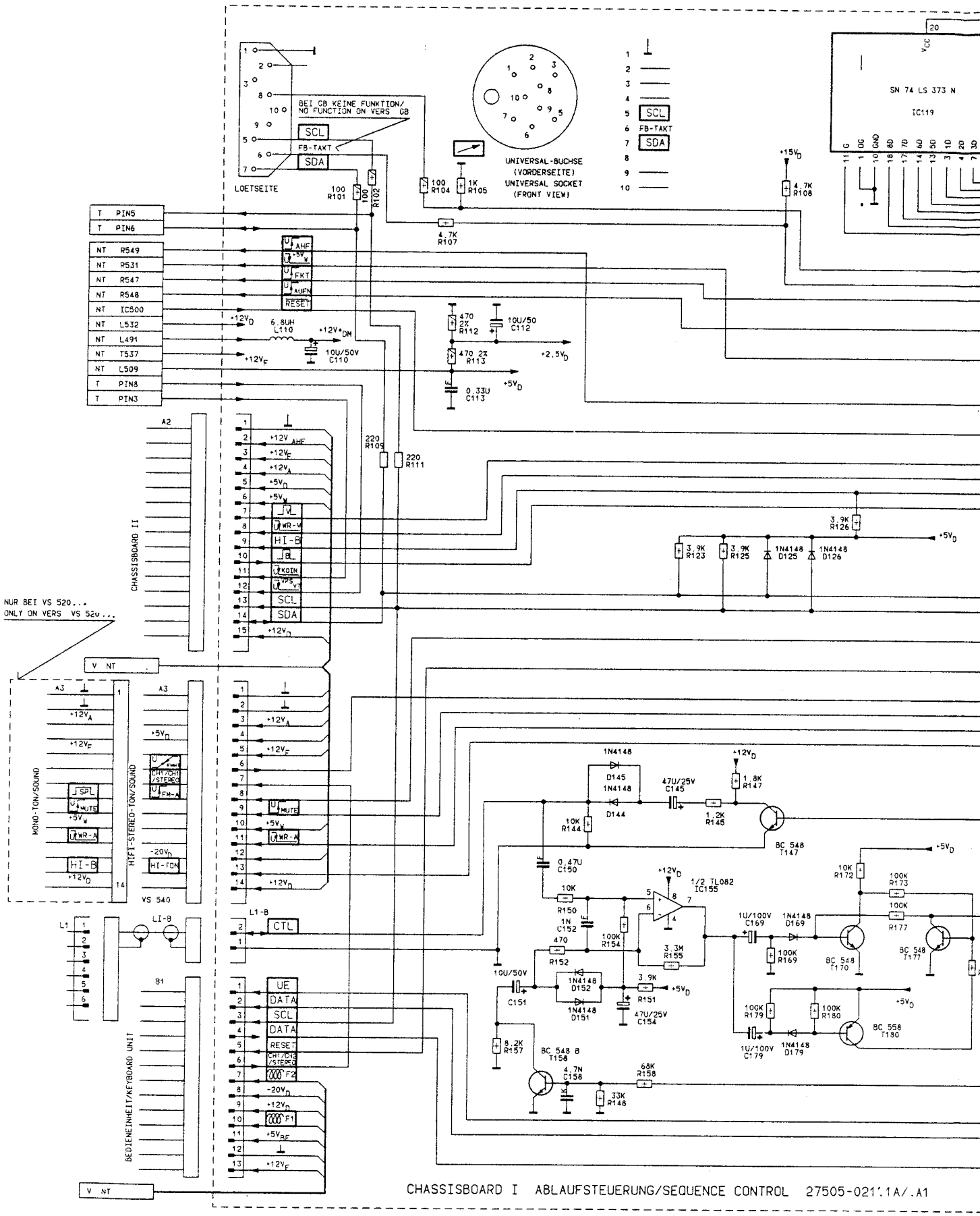
BEDIENEINHEIT/KEYBOARD UNIT 27505-025.01/.33 251187

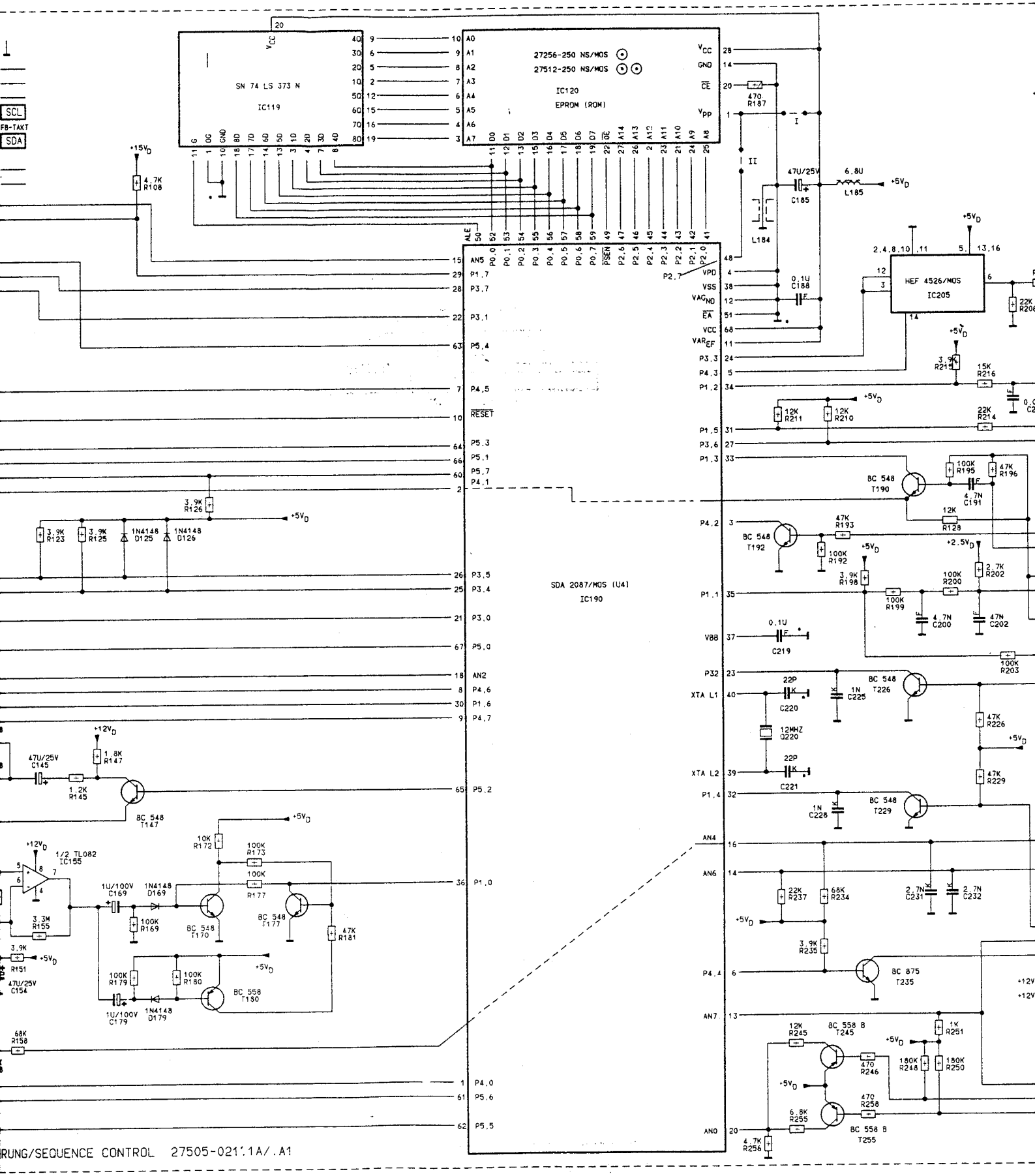
Bedieneinheit
Keyboard unit



Bedieneinheit
Keyboard unit

Chassisplatte I / Chassis board I
Ablaufsteuerung / Sequence control



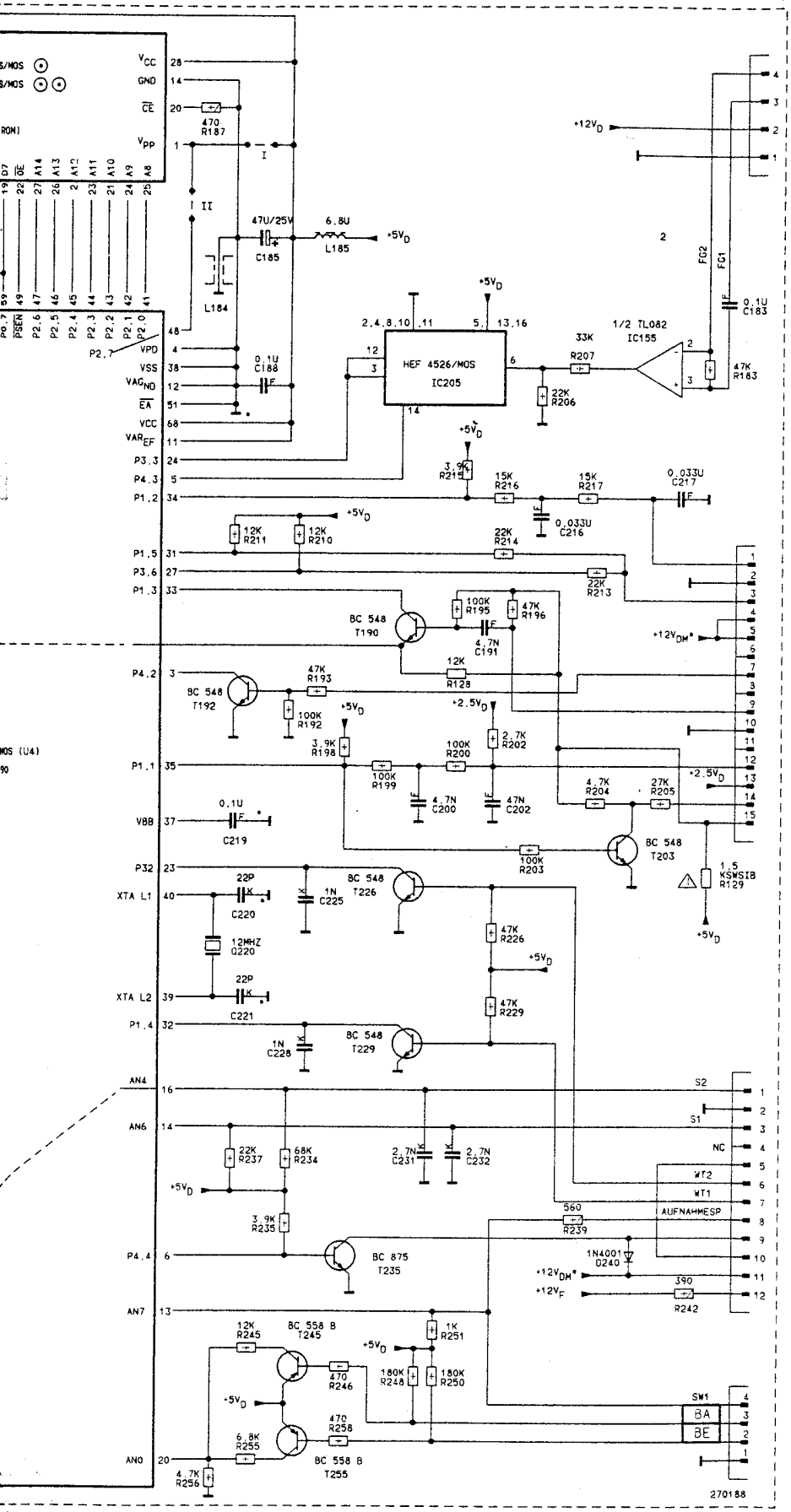


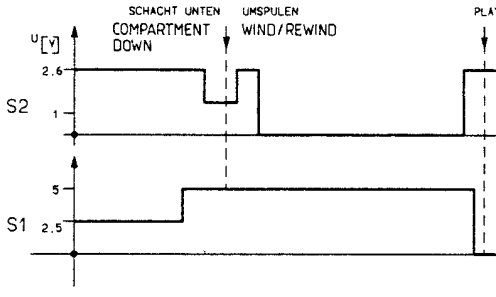
IC 120: **27512 - 250 NS**
(VS 540 PAL/E, VS 520 PAL/E):

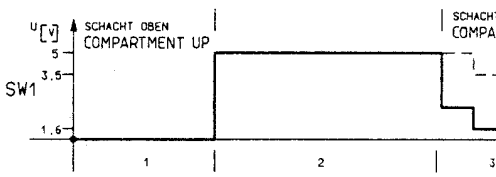
Brücke I offen , Brücke II geschlossen
Jumper I not connected, jumper II connected

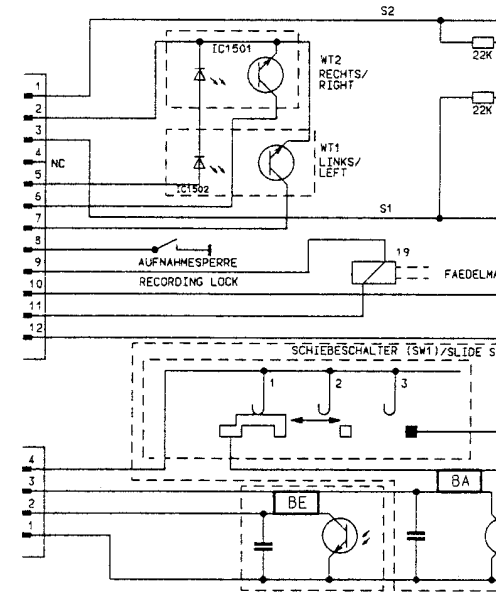
27256 - 250 NS
(VS 540 VPS/aGB, VS 520 VPS/GB,VS 525 EURO, VS 545 EURO):

Brücke I geschlossen, Brücke II offen
Jumper I connected, jumper II not connected





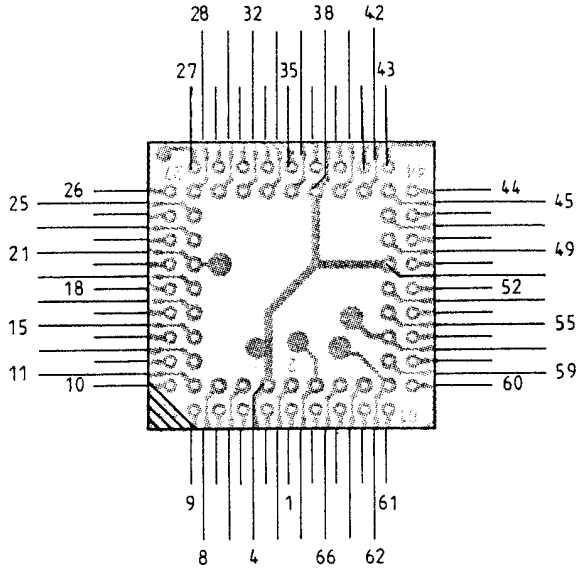


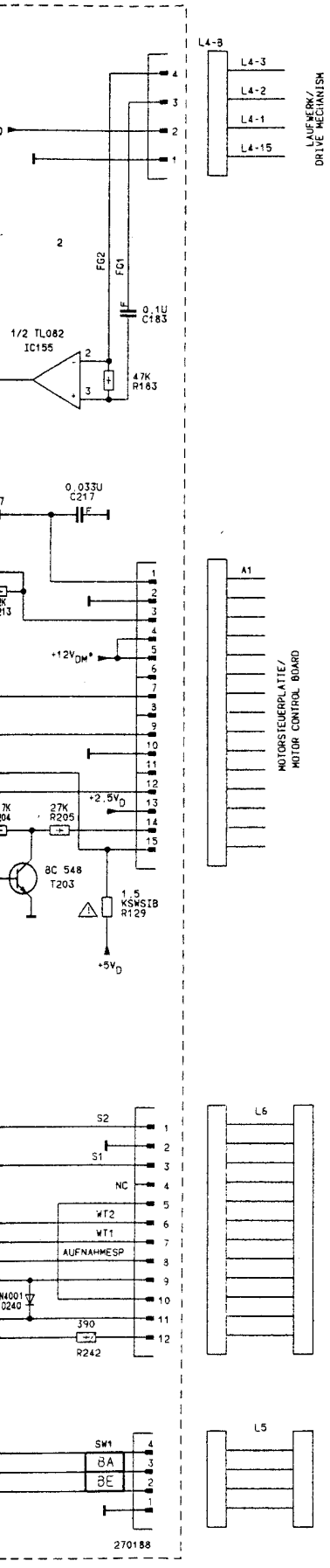


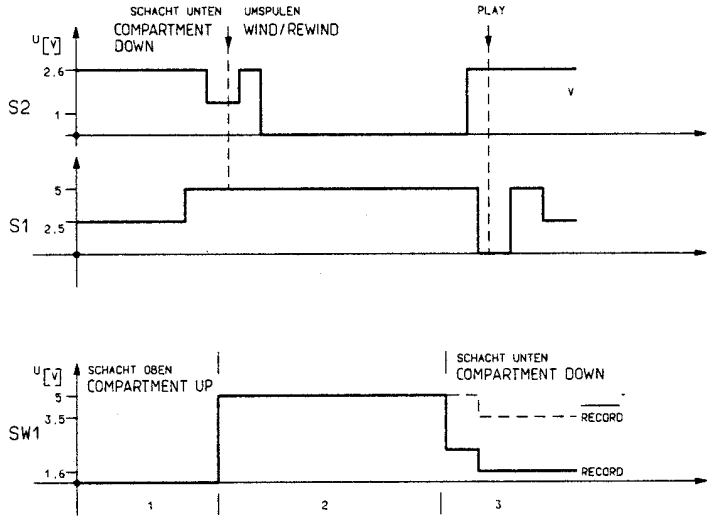
IC 120: **27512 - 250 NS**
(VS 540 PAL/E, VS 520 PAL/E):
Brücke I offen , Brücke II geschlossen
Jumper I not connected, jumper II connected

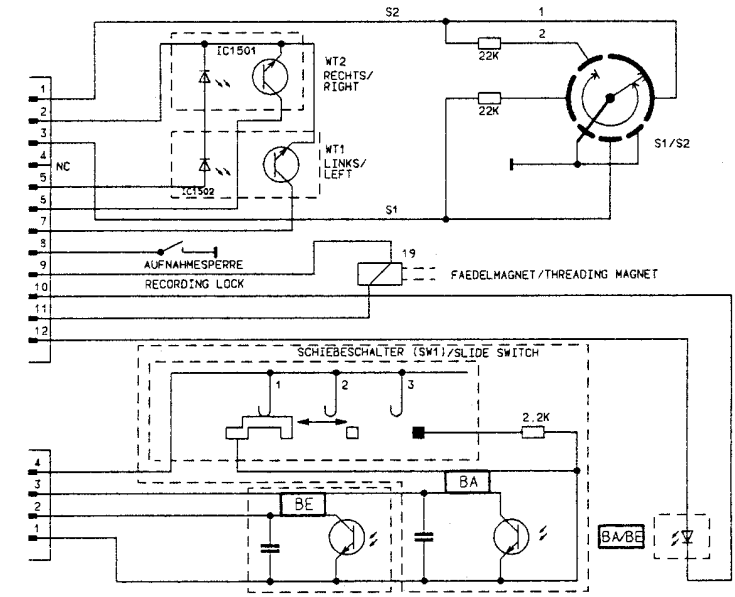
27256 - 250 NS
(VS 540 VPS/aGB, VS 520 VPS/GB,VS 525 EURO, VS 545 EURO):
Brücke I geschlossen, Brücke II offen
Jumper I connected, jumper II not connected

Sockel des IC 190 von der Lötseite gesehen
IC 190 socket viewed from the soldering side









Chassisplatte I / Chassis board I
Ablaufsteuerung / Sequence control

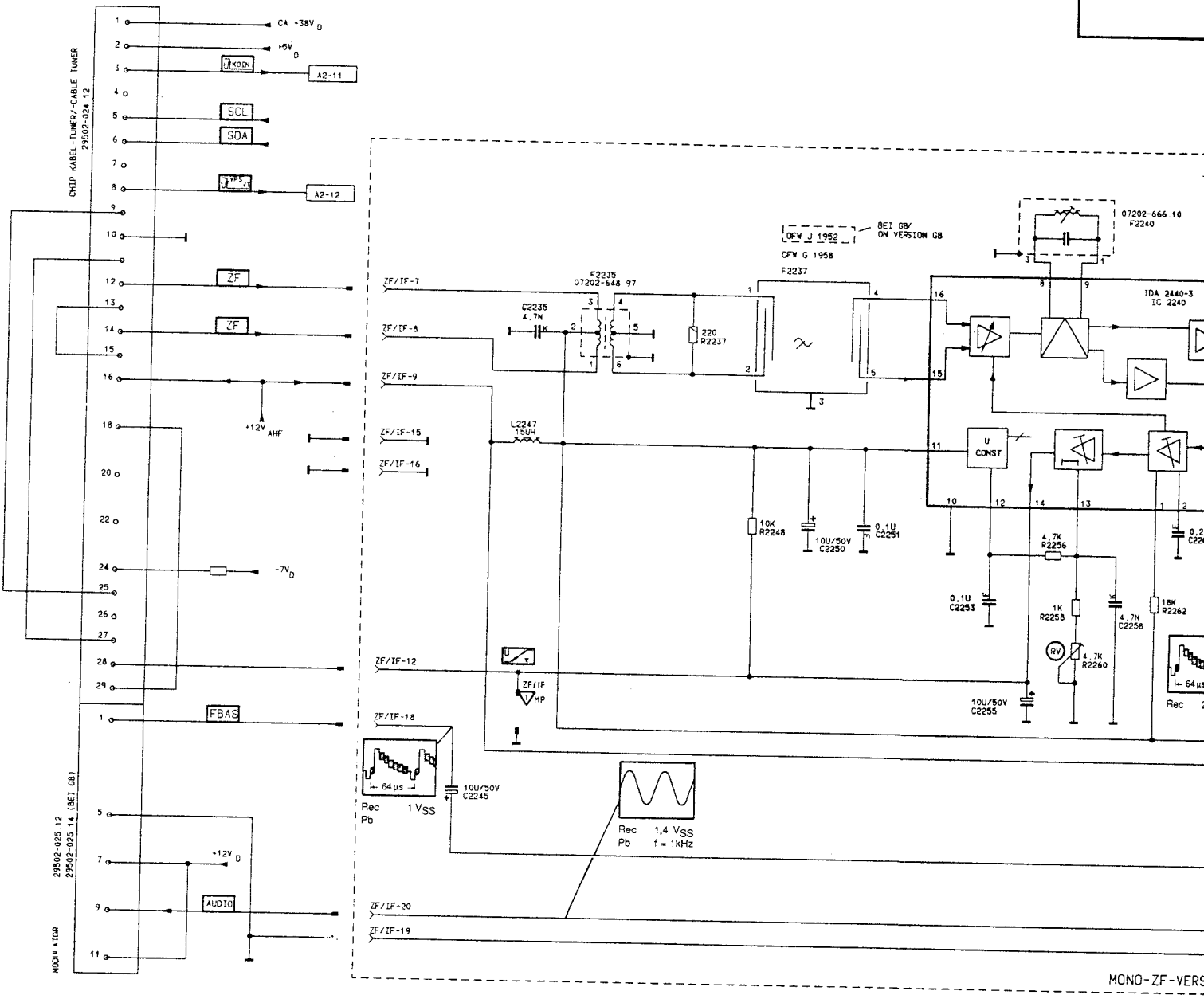
ZF - Verstärker
IF amplifier

27505 - 023.01 / GB -023.63

Abgleich :

Meßgeräte : Vo
Servicearbeiten n

Abgleich Alignmen
1. Regelspannu verzögerung
1. Delayed AGC voltage



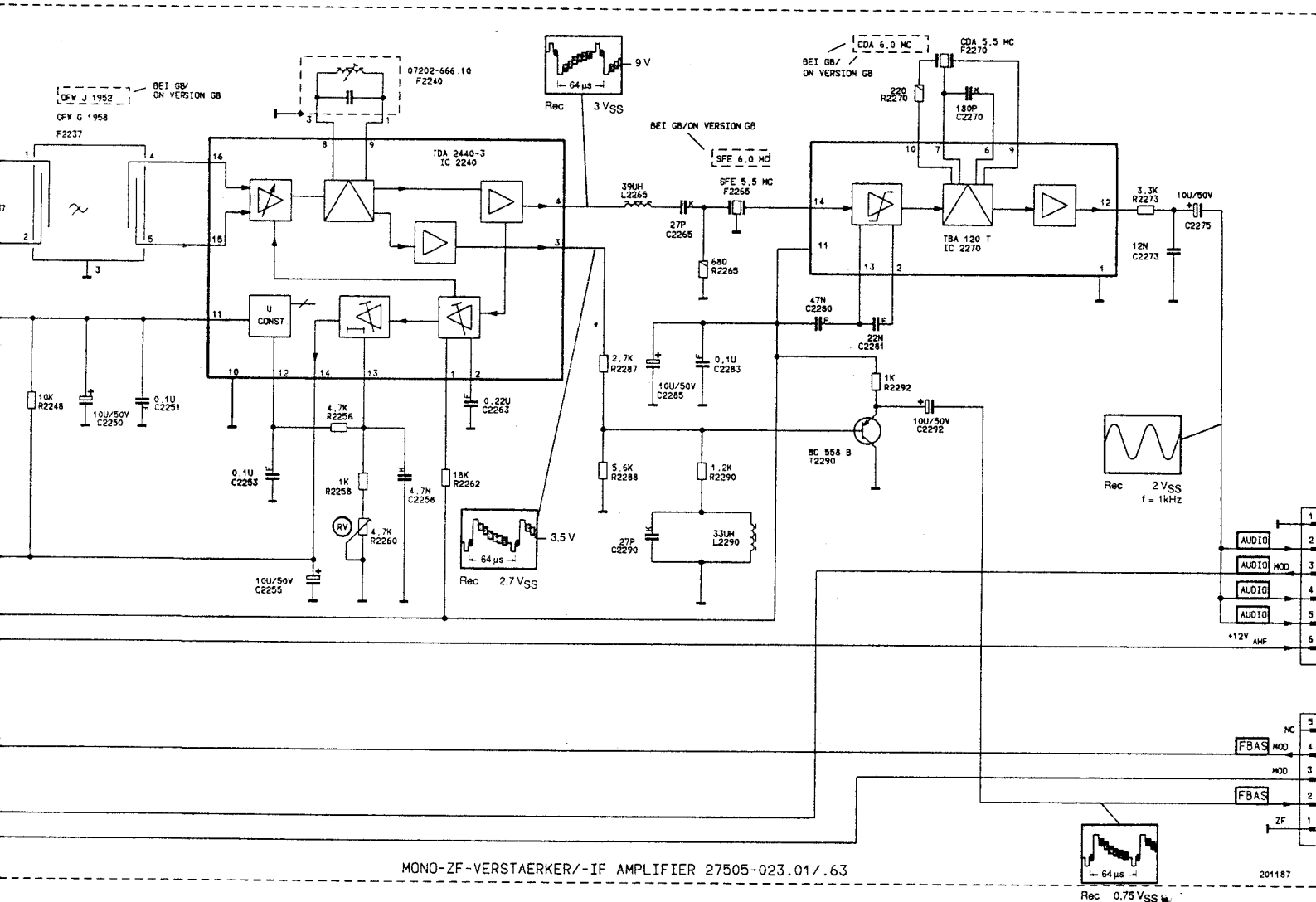
Abgleich :

Meßgeräte : Voltmeter
Servicearbeiten nach Bausteinwechsel : 1

Alignment :

Test equipment: Voltmeter
Servicing work after changing board : 1

Abgleich Alignment	Vorbereitung Connect test equipment to	Betriebsart / Cassette Operating mode	Abgleich mit Alignment with	Abgleichvorg Frequency, voltage, i
1. Regelspannungs-verzögerung	Sendernormtestbild (oberer UHF-Bereich, Antennenpegel 64 dBµV) einspeisen. R 2260 im Uhrzeiger-sinn auf Anschlag stellen. Voltmeter: MP ZF (1)	A / W-Cassette Aufnahme	R 2260 (RV)	R 2208 soweit gegen den Uh drehen, bis der angezeigte S gegenüber dem Maximalwer absinkt (Regeleinsatz).
1. Delayed AGC voltage	Input a standard test pattern (upper UHF-range, 64 dBµV aerial signal). Turn R 2260 fully clockwise . Voltmeter: MP IF (1)	R / P cassette Recording		Turn R 2208 counter-clockwi indicated voltage level decre 0.5 V with reference to the m comes into operation).



MONO-ZF-VERSTAERKER/-IF AMPLIFIER 27505-023.01/.63

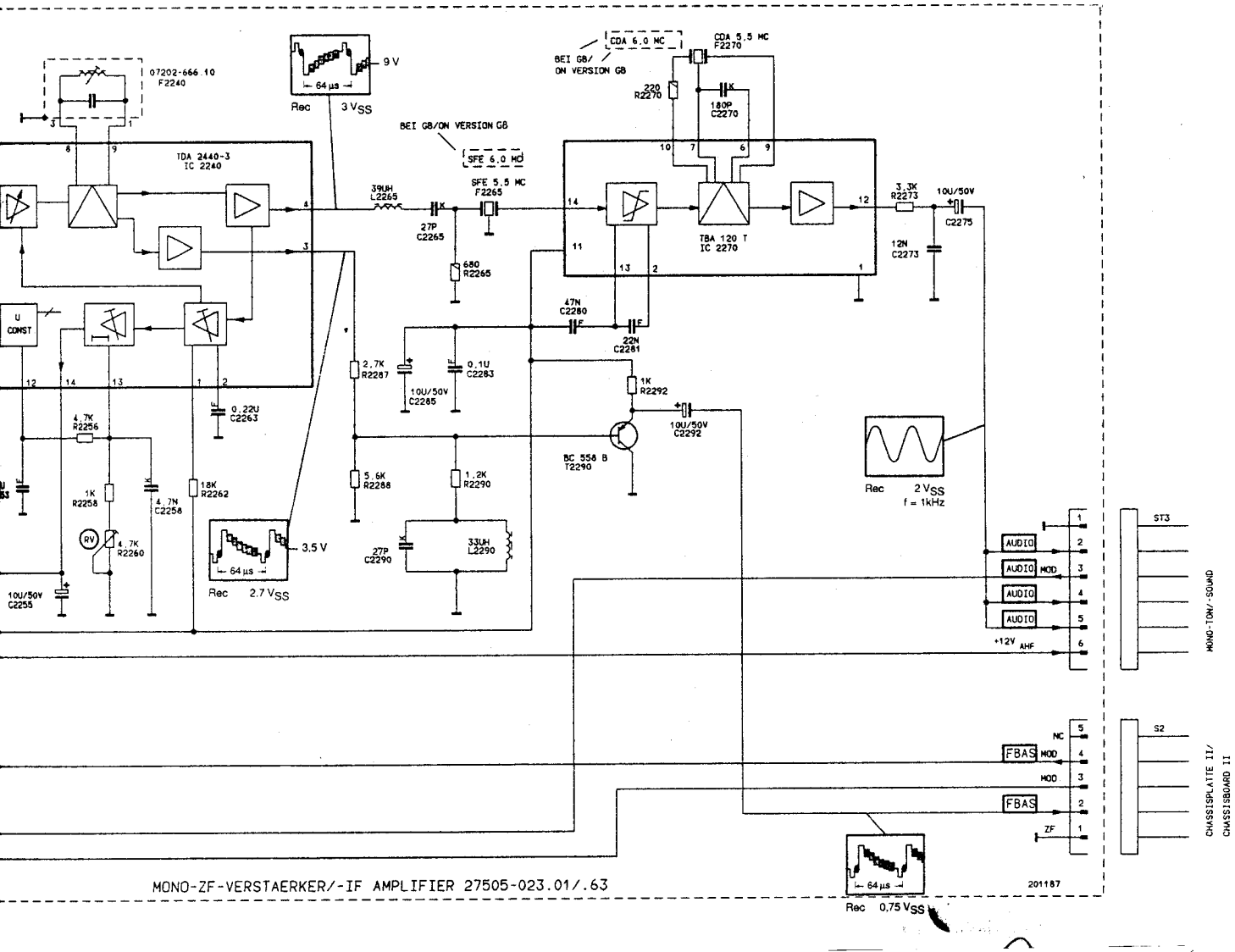
Abgleich :

Meßgeräte : Voltmeter
Servicearbeiten nach Bausteinwechsel : 1

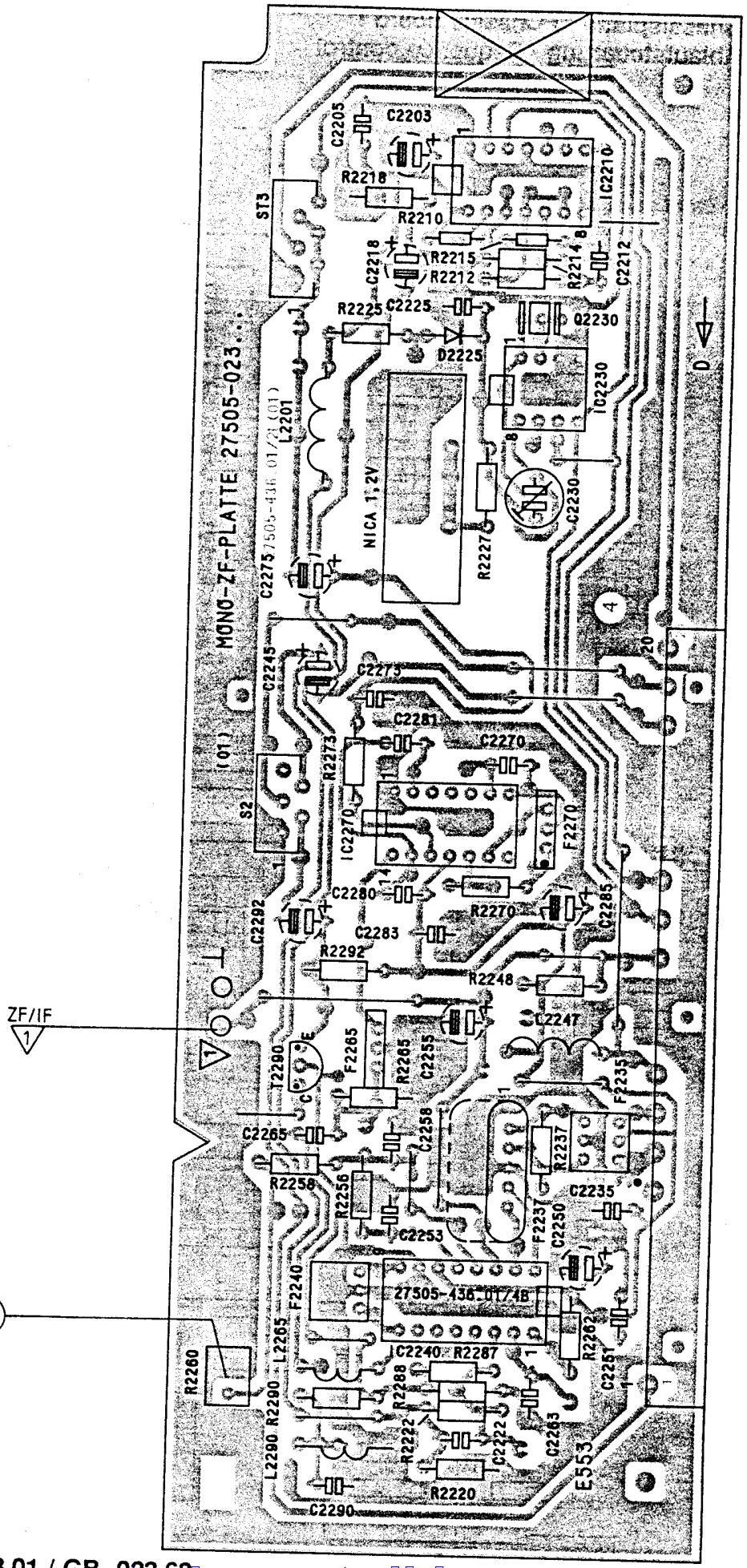
Alignment :

Test equipment: Voltmeter
Servicing work after changing board : 1

Abgleich Alignment	Vorbereitung Connect test equipment to	Betriebsart / Cassette Operating mode	Abgleich mit Alignment with	Abgleichvorgang Frequency, voltage, instructions
1. Regelspannungs-verzögerung	Sendernormtestbild (oberer UHF-Bereich, Antennenpegel 64 dBµV) einspeisen. R 2260 im Uhrzeiger-sinn auf Anschlag stellen. Voltmeter: MP ZF (1)	A / W-Cassette Aufnahme	R 2260 (RV)	R 2208 soweit gegen den Uhrzeigersinn drehen, bis der angezeigte Spannungswert gegenüber dem Maximalwert um 0,2 . . . 0,5 V absinkt (Regeleinsatz).
1. Delayed AGC voltage	Input a standard test pattern (upper UHF-range, 64 dBµV aerial signal). Turn R 2260 fully clockwise . Voltmeter: MP IF (1)	R / P cassette Recording		Turn R 2208 counter-clockwise until the indicated voltage level decreases by 0.2 . . . 0.5 V with reference to the max. level (AGC comes into operation).



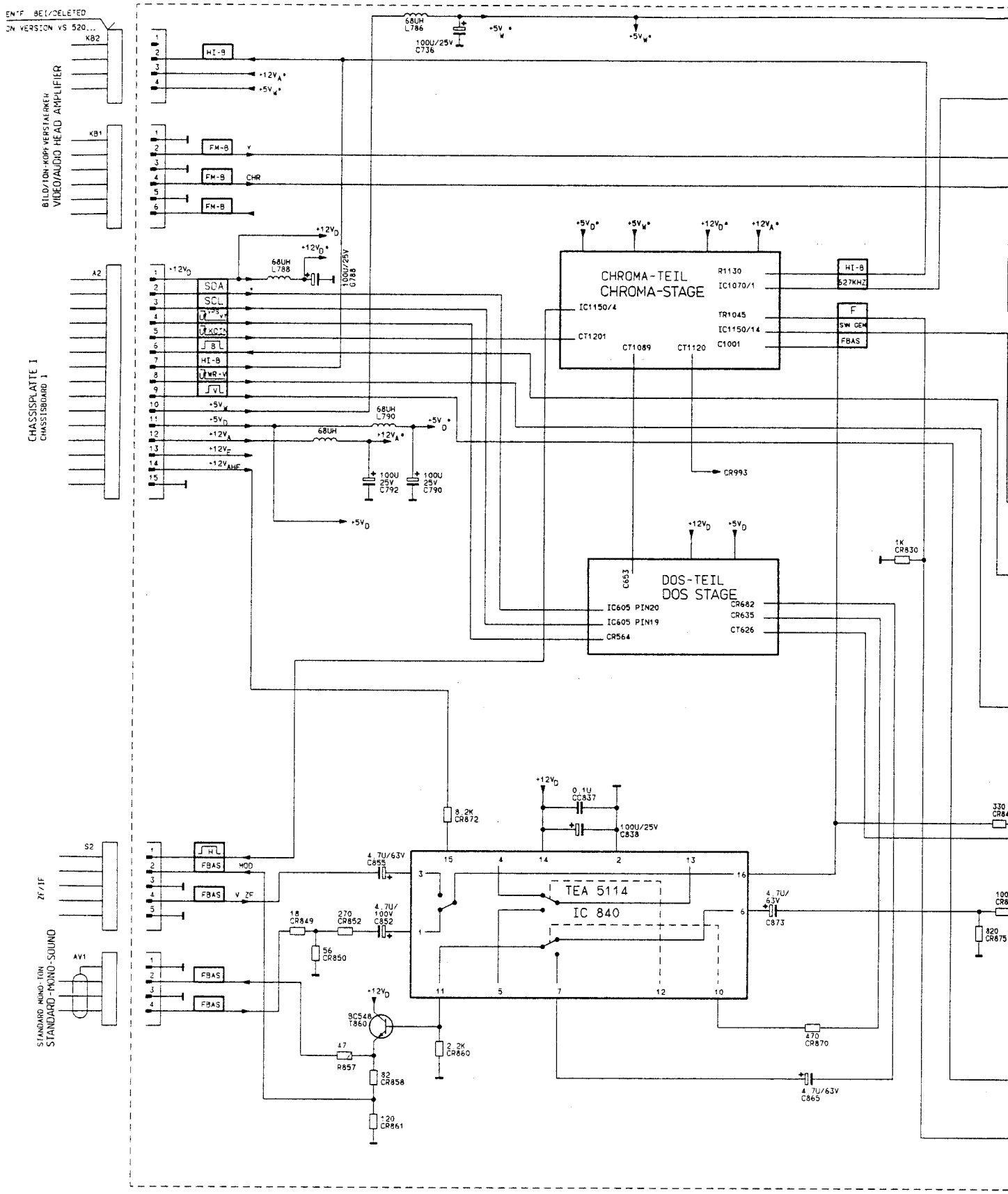
Ansicht von der Lötseite
View of soldering side
Vista dal lato saldature
Vue cote soudure
Vista por la parte de las soldaduras

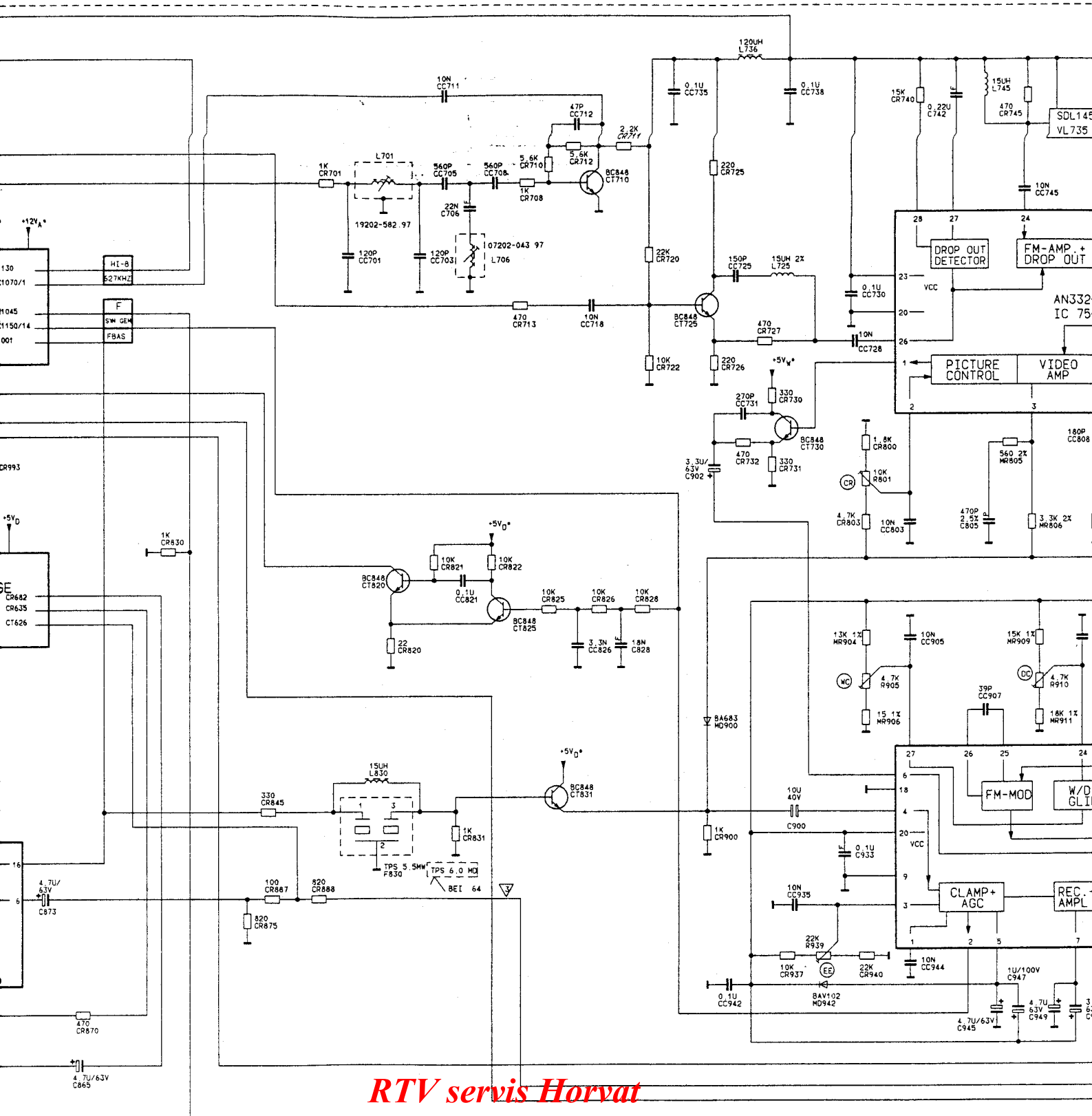


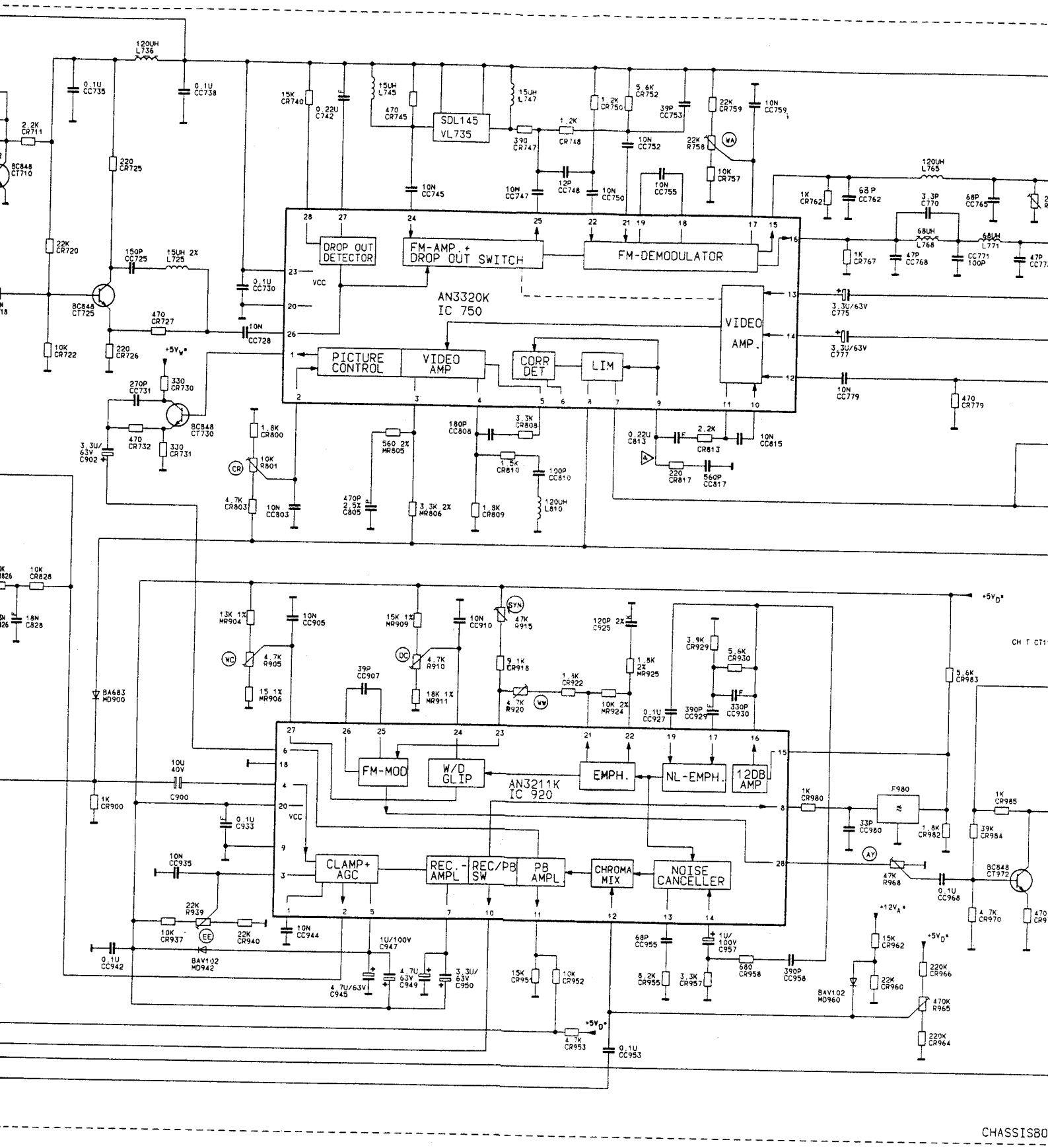
ZF - Verstärker
IF amplifier

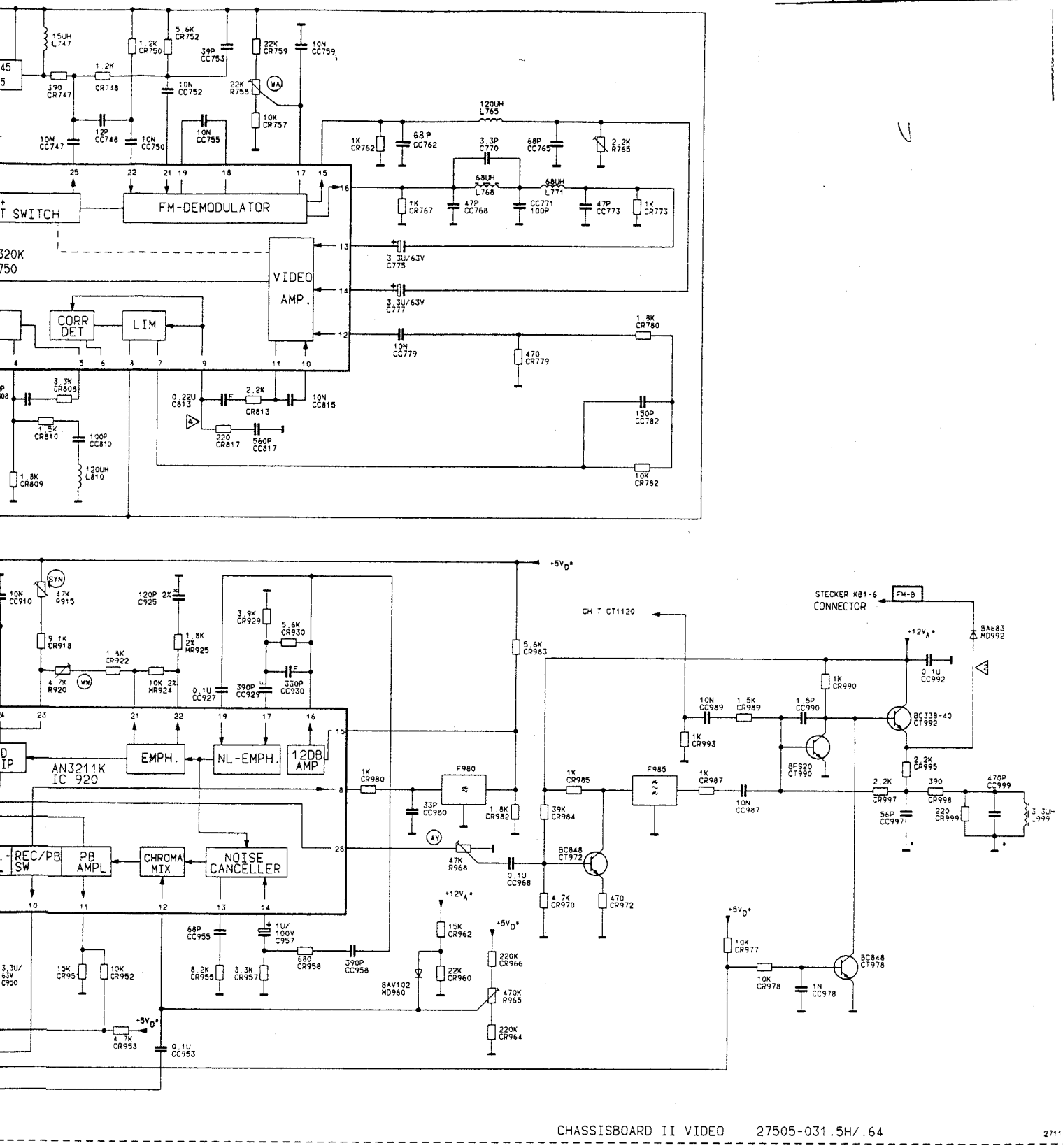
27505 - 023.01 / GB -023.63

Chassisplatte II / Chassis board II
Video









CHASSISBOARD II VIDEO 27505-031.5H/.64

271187

Bild - Kopfverstärker 27505-027.01

Funktionsübersicht

Der Bild-Kopfverstärker hat die Aufgabe bei Aufnahme die FM-Signale den rotierenden Übertragern zuzuleiten. Das Signal wird dann über das Kopfrad auf Band aufgesprochen.

Bei Wiedergabe wird das vom Band abgetastete FM-Signal verstärkt, über die Steckerkontakte KB 1-2 der Videoverarbeitung und über KB 1-4 der Chromaverarbeitung zugeführt. Des weiteren erfolgt die Umschaltung der FM vom Band bei den Featurefunktionen.

1. Aufnahme

Das FM-Signal gelangt von der FM-Aufsprechstufe auf der Chassisplatte II über den Steckerkontakt KB 1-6, den Widerstand CR 1955 und den Steckerkontakt L 2-3 zum rotierenden Übertrager. Die Spannung $+12V_A$ schaltet die Transistoren CT 1935, CT 1940 und CT 1943 durch. Somit erhalten die Übertragerwicklungen über die Steckerkontakte L2-2, L 2-4 und L 2-5 Massepotential.

2. Wiedergabe

Das gemeinsame Ende der rotierenden Übertrager erhält über L 2-3 HF-Masse. Die FM-Informationen vom Band gelangen über die Steckerkontakte L 2-2, L 2-4 an die Pins 3 und 4 des IC 1940. Im IC 1940 durchlaufen sie je einen Verstärker, werden anschließend in der Kopfschaltstufe durch den HI-Impuls kopfbezogen zum FM-Signal geschaltet. Das FM-Signal durchläuft im IC weitere Verstärkerstufen und steht an IC 1940-(15) für die Chromaverarbeitung und an IC 1940-(20) für die BAS-Verarbeitung zur Verfügung. Das FM-Signal für die Chromaverarbeitung wird über den Transistor CT 1930 ausgekoppelt und über den Steckerkontakt KB 1-4 dem Chromaschaltungsteil zugeführt. Das FM-Signal für die BAS-Signal-Verarbeitung durchläuft einen Verstärker, bestehend aus CT 1912, CT 1917, CT 1922, CT 1925 und gelangt über Steckerkontakt KB 1-2 in den Videoschaltungsteil auf der Chassisplatte II.

Bei Standbild verwendet man für das FM-Signal die FM-Information von Kopf 3. Diese wird durch den Kopfumschaltimpuls "SP", anstelle der FM-Information von Kopf 1 zum FM-Signal geschaltet. Bei Zeitlupenwiedergabe werden durch die Kopfumschaltimpulse "HI" und "SP" die FM-Informationen der drei Köpfe K1, K2 und K3 zum FM-Signal zusammengeschaltet.

Video head amplifier 27505-027.01

Short functional description

In record mode the video head amplifier serves the purpose of passing the FM video signal to the rotating transformers. The signal is then recorded on the tape by the head cylinder.

In playback mode the picked up FM signal from the tape is first amplified and then passed through the plug contacts KB 1-2, KB 1-4 for further processing. Moreover, the FM from the tape is switched over here in this stage according to the operating mode.

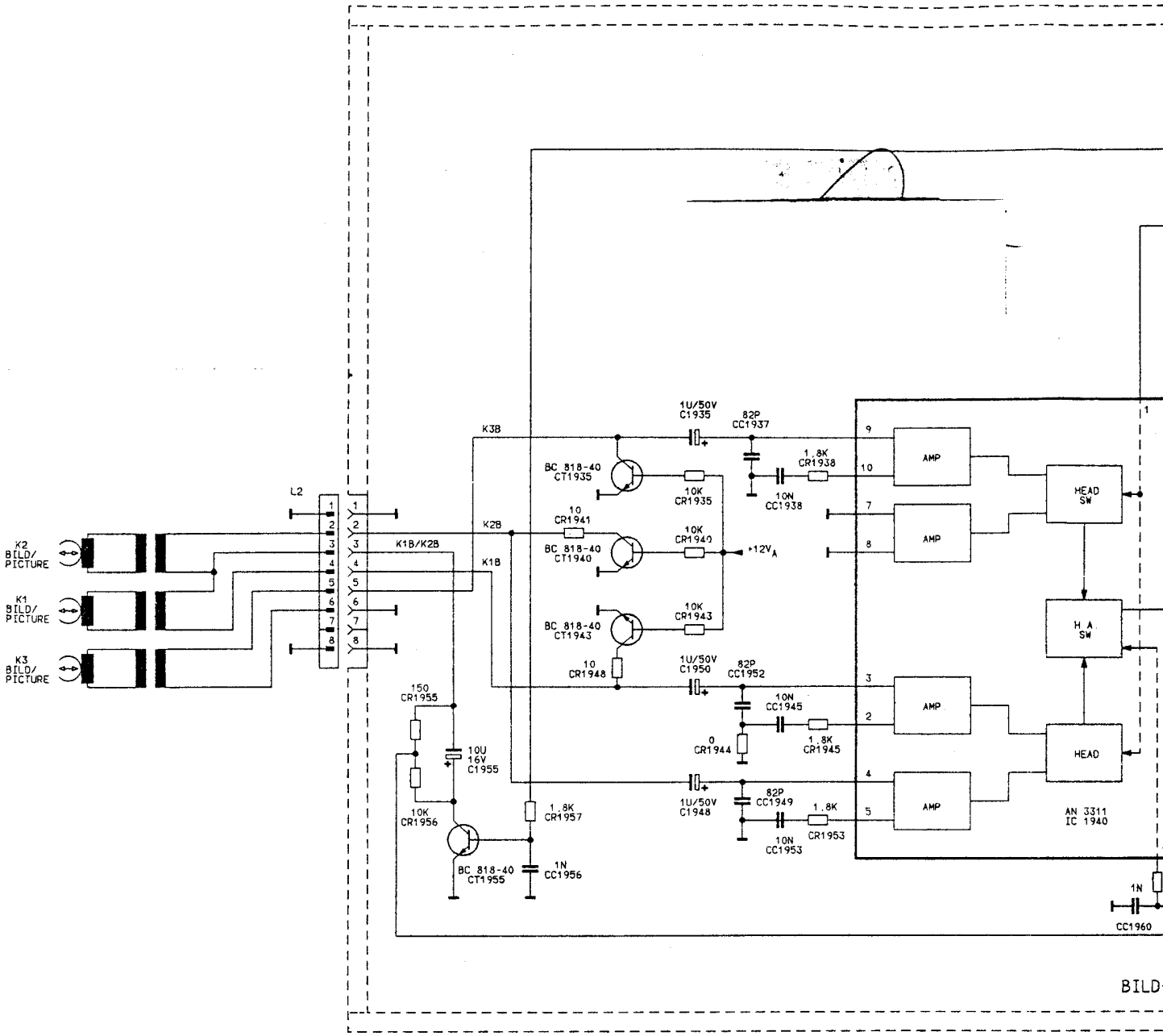
1. Recording

From the recording stage on the chassis board II the FM signal is passed via contact KB 1-6, a resistor CR 1955 and contact L 2-3 to the rotating transformer. The $+12V_A$ voltage causes the transistors CT 1935, CT 1940 and CT 1943 to turn on so that the transformer windings are set to ground potential via plug contacts L 2-2, L 2-4, and L 2-5.

2. Playback

The common terminal of the rotating transformers is connected to RF ground via contact L 2-3. The FM information from the tape is passed through contacts L 2-2, L 2-4 to pins 3 and 4 of IC 1940. In IC 1940, the signals are passed through an amplifier each and are then switched by the HI head switching pulse in the head switching stage to build up the FM signal. Having passed further amplifier stages in this IC the FM signal is provided on IC 1940-(15) for chroma processing on the one hand, and on IC 1940-(20) for composite video processing on the other hand. The FM signal for chroma processing is decoupled via transistor CT 1930 and fed to the plug contact KB 1-4 where it is supplied to the chroma processing stage. The FM signal for composite video signal processing passes through an amplifier stage, consisting of CT 1912, CT 1917, CT 1922, CT 1925 and is then fed to the video processing stage on chassis board II via plug contact KB 1-2.

In still picture mode the FM information from head 3 is used to form the FM signal; it is added by the "SP" head switching pulse instead of the information from head 1. In slow motion, the heads K1, K2 and K3 are switched alternately by the HI and SP pulses to build up the FM signal.



Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes

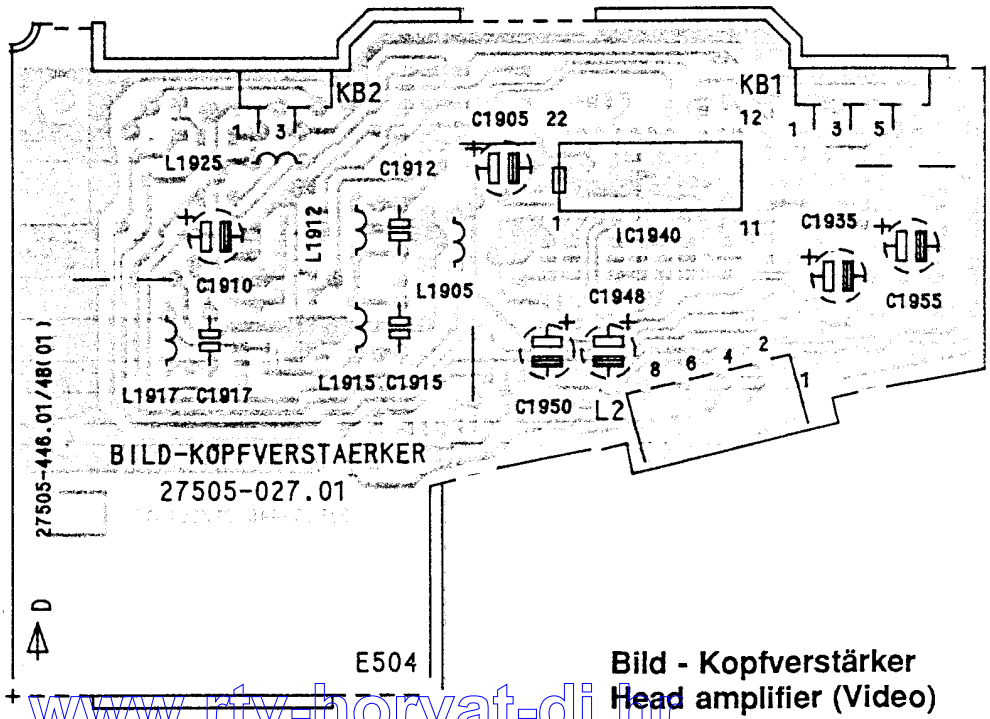
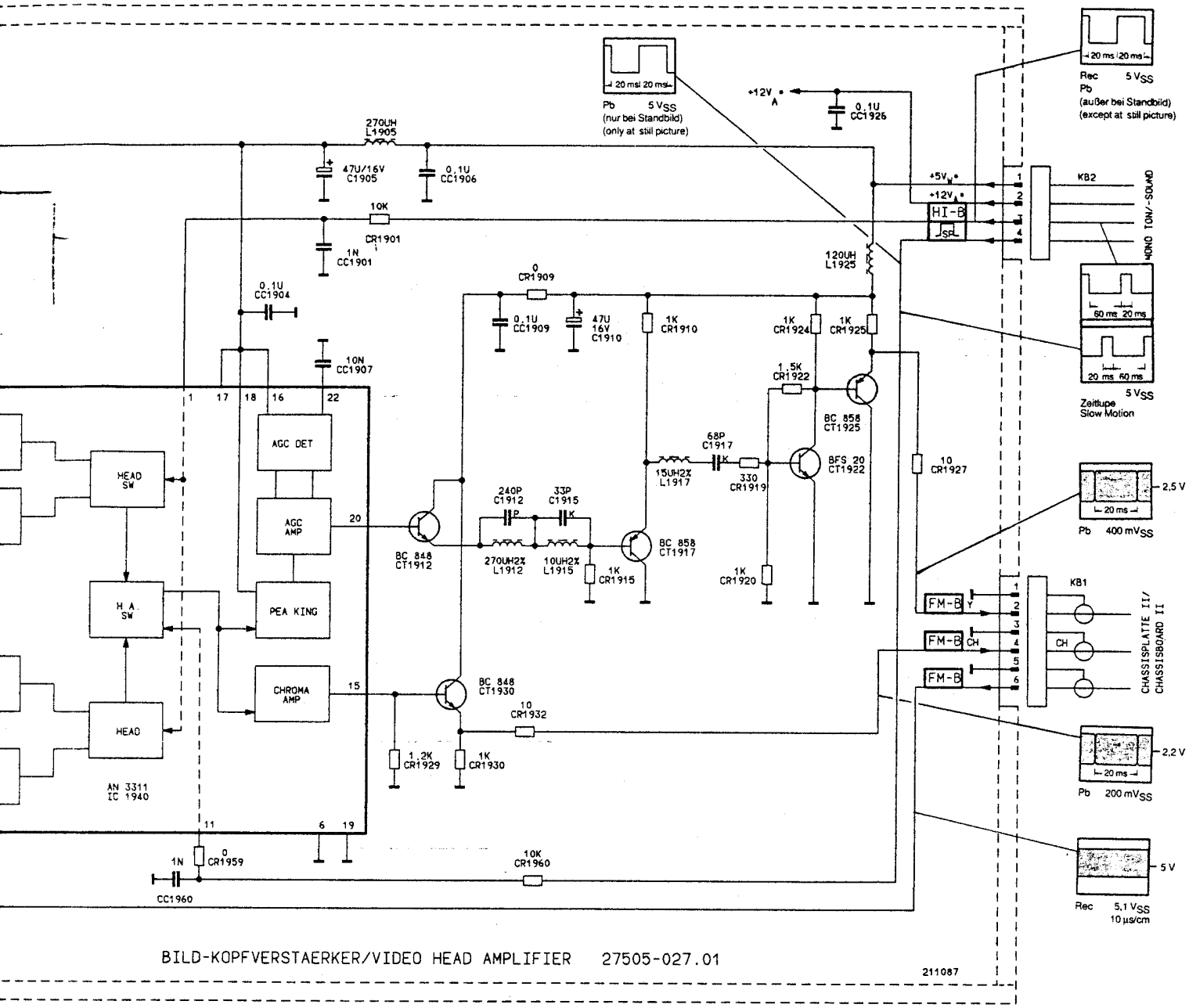
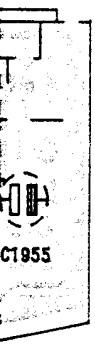
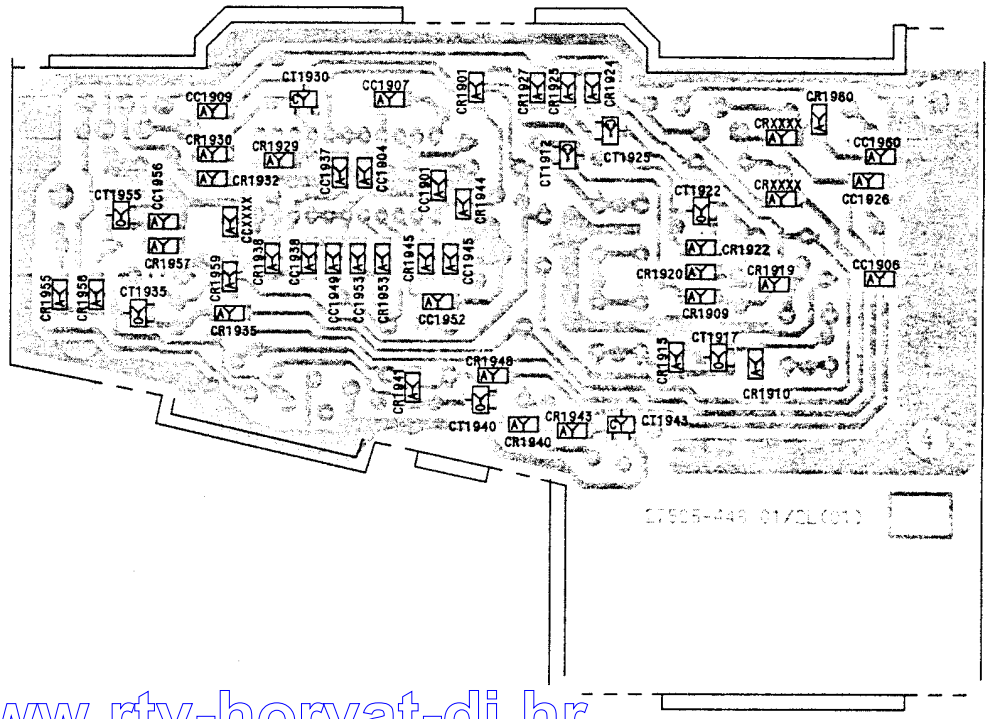


Bild - Kopfverstärker
Head amplifier (Video)





Ansicht von der Lötseite
View of soldering side
Vista dal lato saldature
Vue cote soudure
Vista por la parte de las soldaduras



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Mono - Ton 27505 - 022.02

Funktionsübersicht
Das bei Aufnahme von der ZF (oder EURO-AV-Buchse) anstehende NF-Signal wird im Mono-Ton-Baustein zum einen für die Aufzeichnung vorbereitet und zum anderen für den EE-Betrieb an Modulator und EURO-AV-Buchse geleitet.
Bei Wiedergabe wird das NF-Signal vom AW-Kopf abgenommen und verstärkt. Danach führt man es dem Modulator und der EURO-AV-Buchse zu.
Sowohl bei Aufnahme als auch bei Wiedergabe wird die Amplitude des NF-Signals durch eine Pegelautomatik ausgeregelt.

1. Aufnahme
Die NF-Signale von ZF-Verstärker und / oder EURO-AV-Buchse stehen an IC 1425-(17) bzw. IC 1425-(16). Der nachfolgende Eingangswahlschalter schaltet, abhängig von den Spannungspegeln an den Pins 14 und 15, das gewünschte NF-Signal durch.

Funktion	IC 1425 - (14)	IC 1425 - (15)	Mode
—	L	L	—
Aufnahme HF	L	H	Record RF
Aufnahme AV	H	H	Record AV
Wiedergabe	H	L	Playback

Anschließend durchläuft es im IC 1425 eine Regelstufe und zwei Verstärkerstufen, bevor es über IC 1425-(9) für den EE-Betrieb dem Modulator und der EURO-AV-Buchse zugeführt wird. Über einen weiteren im IC 1425 integrierten Verstärker und IC 1425-(13) mit nachgeschalteter Aufnahmeentzerrung gelangt das NF-Signal an den Steckerkontakt L 1A-1. Hier werden NF-Signal und Vormagnetisierungsspannung addiert und gemeinsam dem AW-Kopf zugeführt. Das andere Ende des AW-Kopfes liegt über T 1420 und R 1420 an Masse.

1.1 Löschoszillator
Der selbstschwingende Löschoszillator besteht aus dem Transistor T 1435 und dem Resonanzkreis C 1431, C 1432, L 1432. Der Schaltpegel $\overline{U}$ WR-A vom Ablaufrechner IC 190 schaltet über T 1440 den Transistor T 1434 durch. Die Oszillatorstufe erhält Betriebsspannung und schwingt an. Über C 1445 wird die Löschspannung ausgekoppelt. Mit R 1448 läßt sich die Vormagnetisierungsspannung einstellen.

2. Wiedergabe
Bei Wiedergabe erhält der AW-Kopf über T 1480 und Steckerkontakt L 1A-1 Massepotential. Das vom AW-Kopf abgetastete NF-Signal gelangt über den Steckerkontakt L 1A-2 und den Verstärker T 1420 an IC 1425-(4). Es durchläuft im IC 1425 den integrierten Wiedergabeentzerrer, die Regelstufe, einen Verstärker und wird über den Monitorausgang IC 1425-(9) der EURO-AV-Buchse und dem Modulator zugeführt.

3. Stummschaltung
Der Mute-Befehl vom Ablaufrechner IC 190 dient dazu den Tonausgang des IC 1425 bei allen Funktionen außer Wiedergabe und Aufnahme, sowie bei Servofehlern stummzuschalten. Dazu erhält der IC 1425 über Pin 8 den Befehl U MUTE.

Mono Sound 27505 - 022.02

Short Functional Description
The AF signal coming from the IF stage (or EURO-AV socket) in record mode is further processed in the mono sound stage for recording on the one hand, and on the other hand, it is passed on to the modulator and EURO-AV socket for EE operation.
On playing back, the AF signal is picked up by the R / P head and passed on for amplification. The signal is then supplied to the modulator and to the EURO-AV socket.
Both in record mode and playback mode the AF signal amplitude is subjected to an automatic level control.

1. Recording
The AF signals from the IF amplifier and/or EURO-AV socket are fed to IC 1425-(17) and IC 1425-(16), respectively. Depending on the voltage levels on pin 14 and pin 15, the input selector following passes on the required AF signal.

In IC 1425, the signal then passes one control stage and two amplifier stages from where it is supplied via IC1425-(9) to the modulator for EE operation and to the EURO-AV socket. From another amplifier integrated in IC 1425 and via IC 1425-(13) followed by a recording equalizer the AF signal arrives at plug contact L 1A-1. Here, the AF signal and the bias voltage are added and fed to the R/P head. The other end of the R/P head is connected to ground via T 1420 and R 1420.

1.1 Erase oscillator
The self-resonant erase oscillator consists of a transistor T 1435 and a resonant circuit C 1431, C 1432, L 1432. The switching voltage $\overline{U}$ WR-A supplied by the sequence control computer IC 190 turns on the transistor T 1434 via T 1440. The oscillator stage is supplied with operating voltage and thus starts to oscillate. The erase voltage is decoupled by C 1445. R 1448 is provided for adjusting the bias voltage.

2. Playback
On playing back, the R/P head is set to ground potential via T 1480 and plug contact L 1A-1. The AF signal picked up by the R/P head is passed through plug contact L 1A-2 and the amplifier T 1420 to IC 1425-(4). In IC 1425 the AF signal is subjected to an integrated playback equalizer, a control stage as well as an amplifier and is then fed via the monitor output IC 1425-(9) to the EURO-AV socket and the modulator.

3. Muting
The mute instruction given by the sequence control computer IC 190 sets the IC 1425 audio signal output to mute mode in the event of any servo errors and for all operating functions except playback and recording. The mute switching voltage U MUTE is input on pin 8 of IC 1425.

Abgleich :

Meßgeräte : Oszilloskop mit Tastkopf 10 : 1, Frequenzzähler, NF - Millivoltmeter, Tongenerator, Videocassette Type BASF E 180 Chromdioxid Super HG

Servicearbeiten nach Bausteinwechsel : 2

Alignment :

Test equipment: Oscilloscope with 10 : 1 probe, frequency counter, AF millivoltmeter, AF generator, Videocassette Type BASF E 180 Chromdioxid Super HG

Servicing work after changing board : 2

Abgleich Alignment	Vorbereitung Connect test equipment to	Betriebsart / Cassette Operating mode	Abgleich mit Alignment with	Abgleichvorgang Frequency, voltage, instructions
1. Tonlöschfrequenz 1. Sound erase frequency	Frequenzzähler : MP VM ▽1 Frequency counter : MP VM ▽1	Aufnahme Recording	L 1432 (FREQ)	Frequenz von 62,5 kHz ± 2,5 kHz einstellen. Set frequency to 62.5 kHz ± 2.5 kHz.
2. Vormagnetisierung (VM) 2. Bias (VM)	Oszilloskop : MP VM ▽1 Oscilloscope : MP VM ▽1	Aufnahme Recording	R 1448 (VM)	Spannung von 45 V_{ss} einstellen. * Frequenzgangprüfung Set voltage to 45 V_{pp}. * Checking frequency response

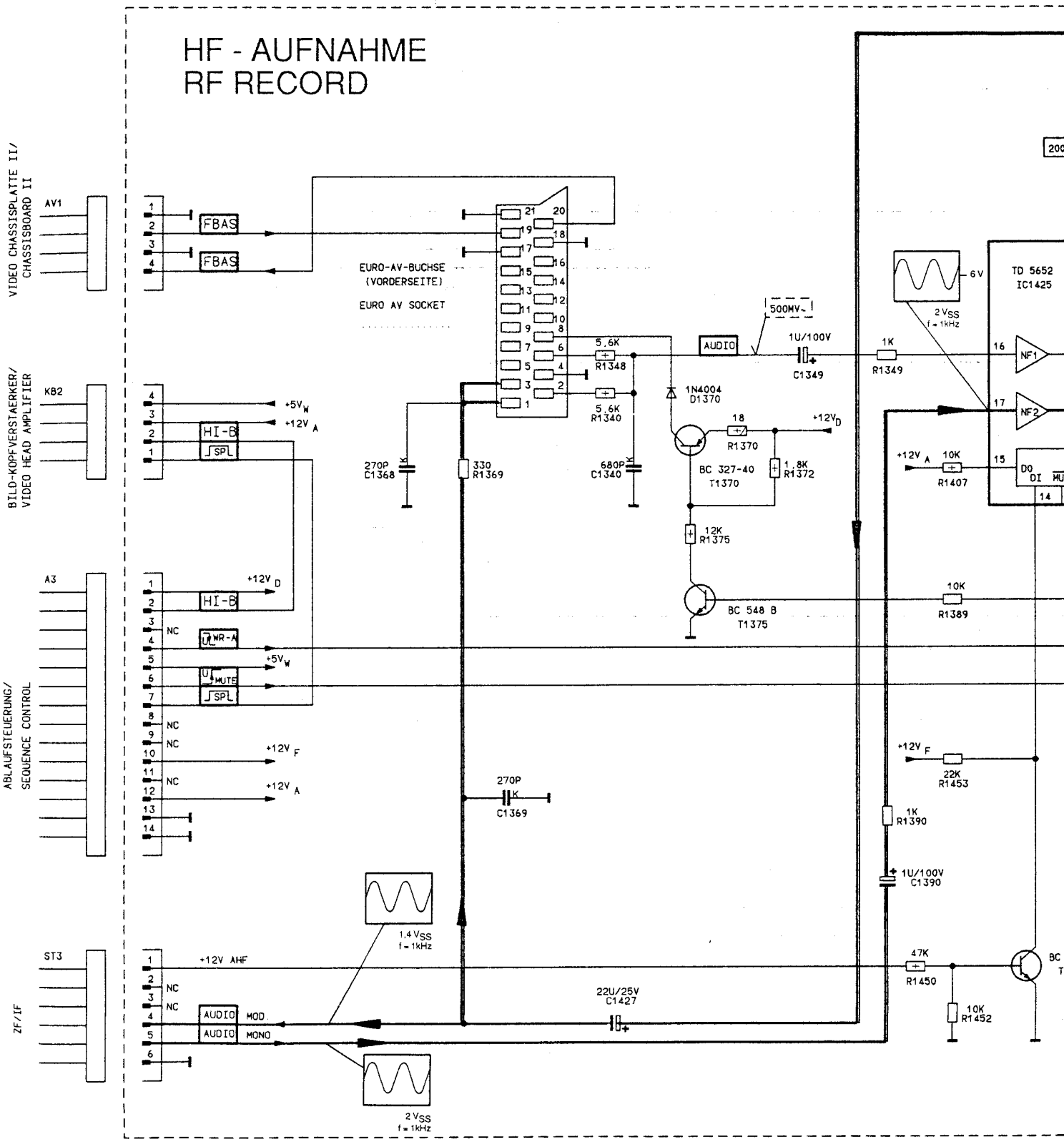
* Frequenzgangprüfung

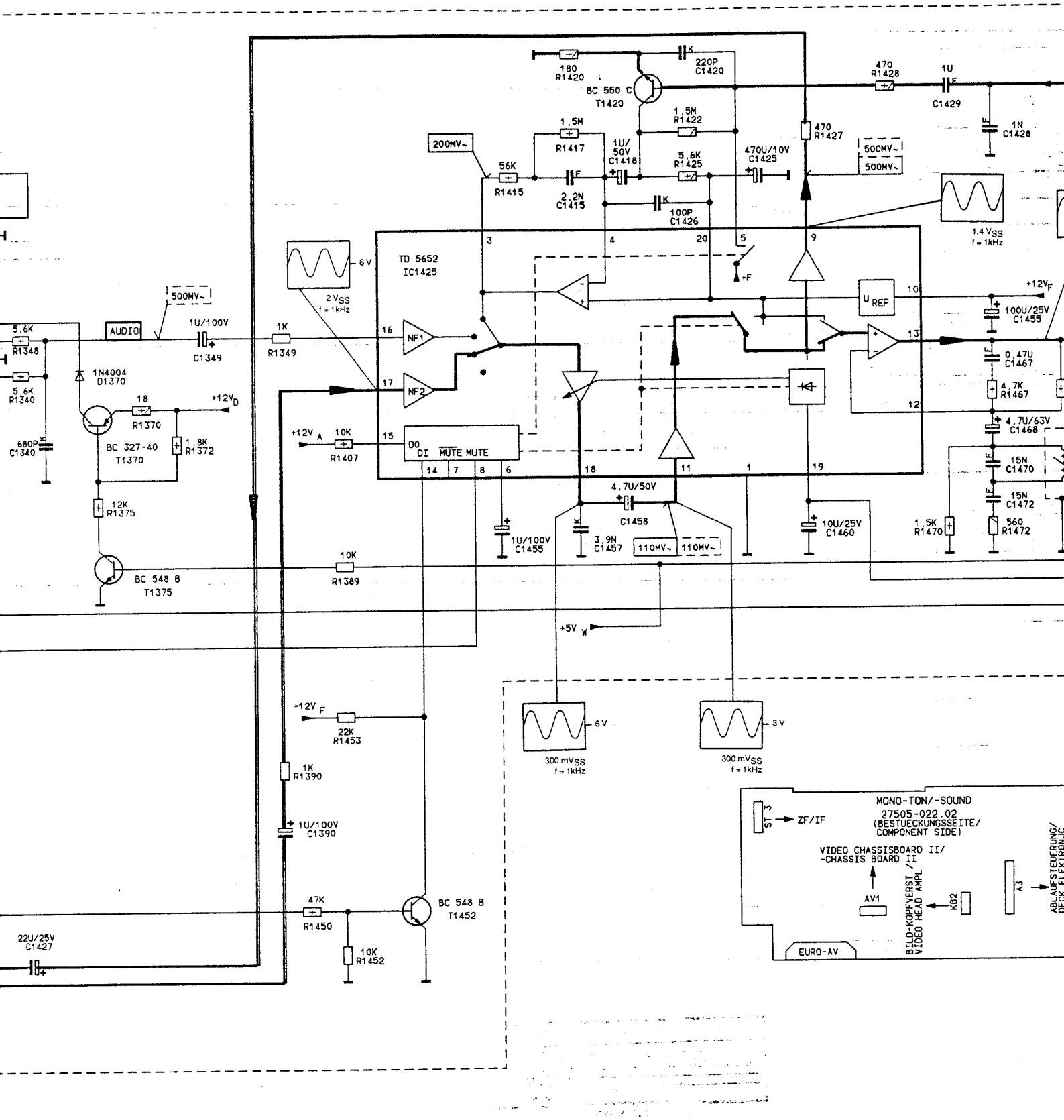
- FBAS-Signal an EURO-AV-Buchse, Kontakt 20.
- Audio-Signal 10 mV_{eff} (28mV_{ss}) vom Tongenerator an EURO-AV-Buchse Kontakt 2/6.
- AV-Aufnahme mit jeweils ca. 1 Minute 400 Hz- und 8 kHz-Ton durchführen.
- Diese Aufnahme wiedergeben.
- NF-Millivoltmeter (ww. Oszilloskop) an EURO-AV-Buchse Kontakt 1/3 .
- Das Spannungsverhältnis von 400 Hz zu 8 kHz darf nicht größer als 1 : 0,7 bzw. 0,7 : 1 sein (± 3 dB). Überschreitet das Spannungsverhältnis diese Grenzen, ist die Vormagnetisierung zu verändern:
  Wiedergabespannung bei 8 kHz vergrößern : »VM« verringern.
  Wiedergabespannung bei 8 kHz verkleinern : »VM« erhöhen.

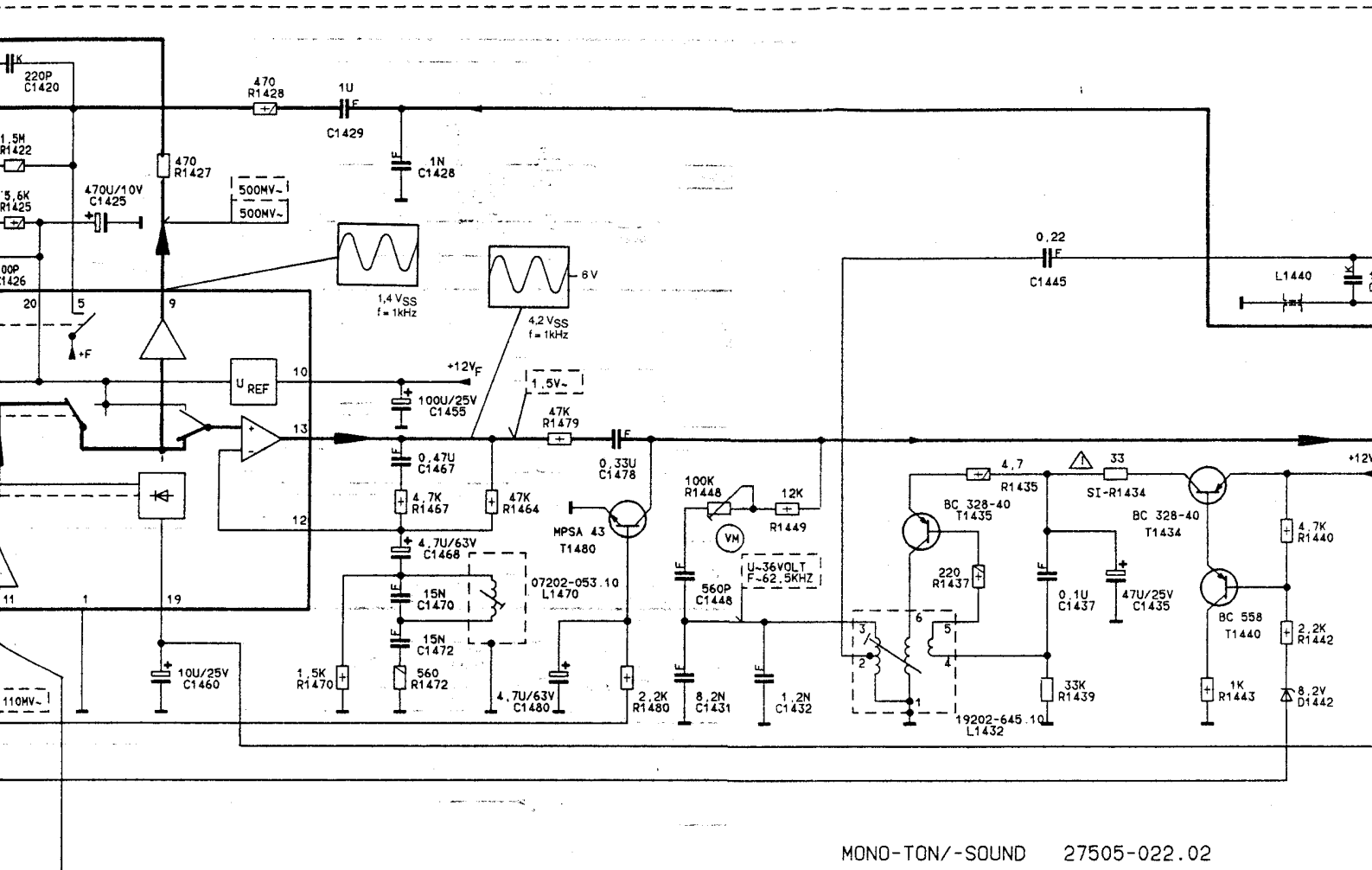
* Checking frequency response

- Feed in a CCVS signal to EURO AV socket pin 20.
- Feed in a Audio signal 10 mV_{rms} (28mV_{pp}) from AF signal generator to EURO AV socket pin 2/6.
- Perform AV recording 400 Hz and 8 kHz 1 min. lach.
- Playback this record.
- Connect AF millivoltmeter (swb. oscilloscope) to EURO AV socket pin 1/3 .
- Voltage ratio of 400 Hz to 8 kHz must not be higher than 1 : 0.7 or 0.7 : 1 (± 3dB).
- For higher ratio increase or decrease bias voltage:
  For increasing PB output 8 kHz decrease »VM«.
  For decreasing PB output 8 kHz increase »VM«.

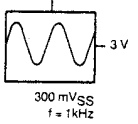
Mono - Ton
Mono sound

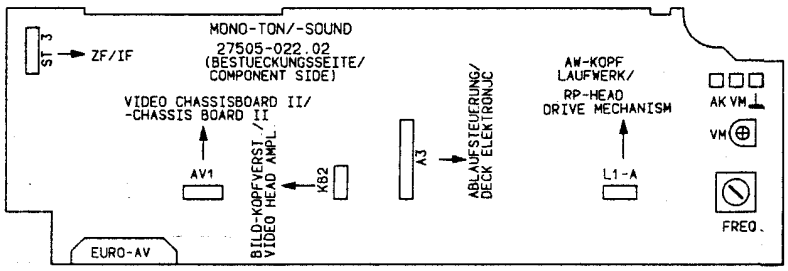






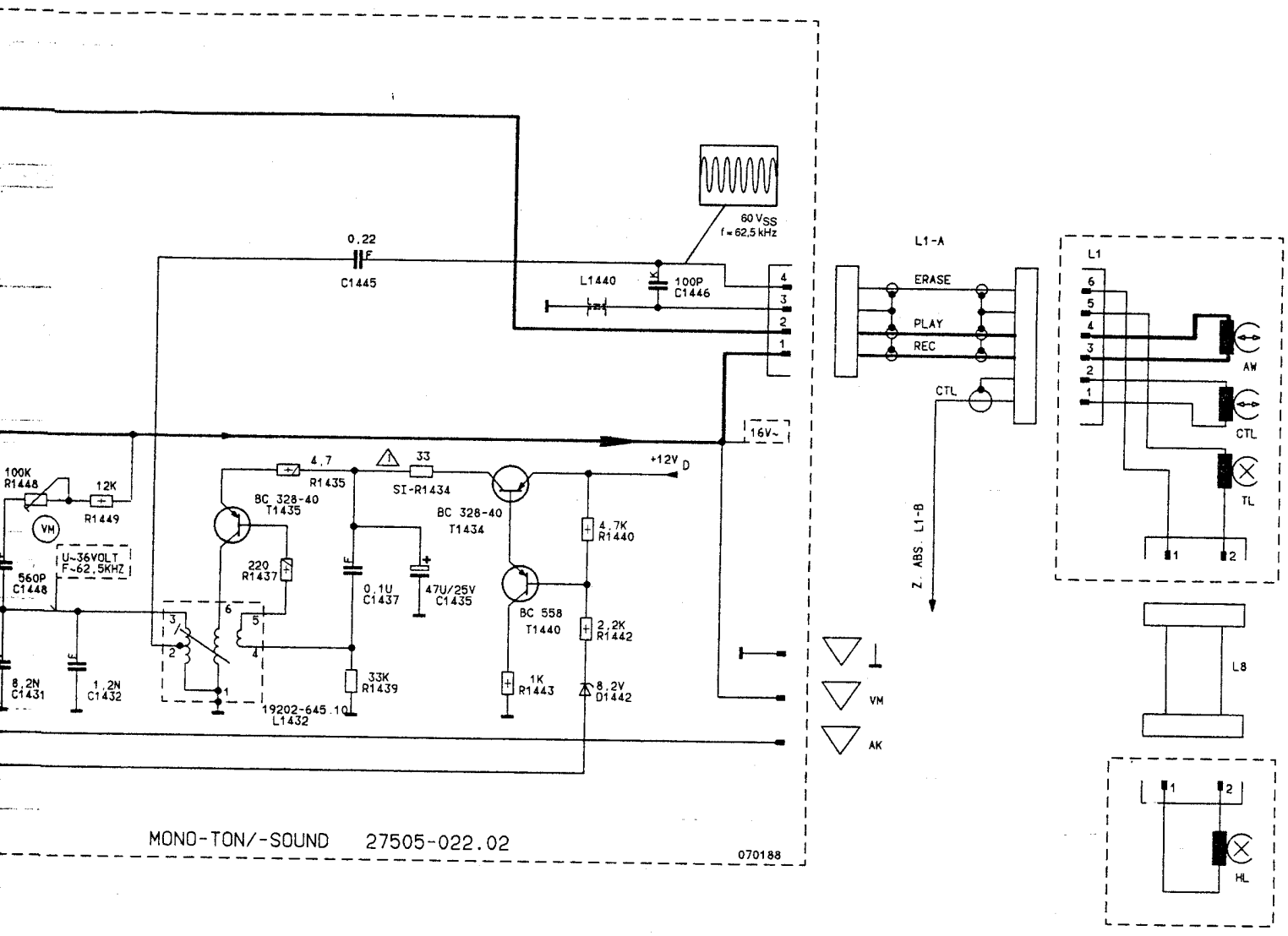
MONO-TON/-SOUND 27505-022.02





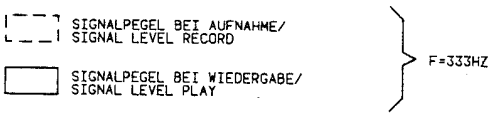
IC1425

FUNKTION	PIN 15	PIN 14
—	L	L
A-HF	H	L
W	L	H
A-AV	H	H



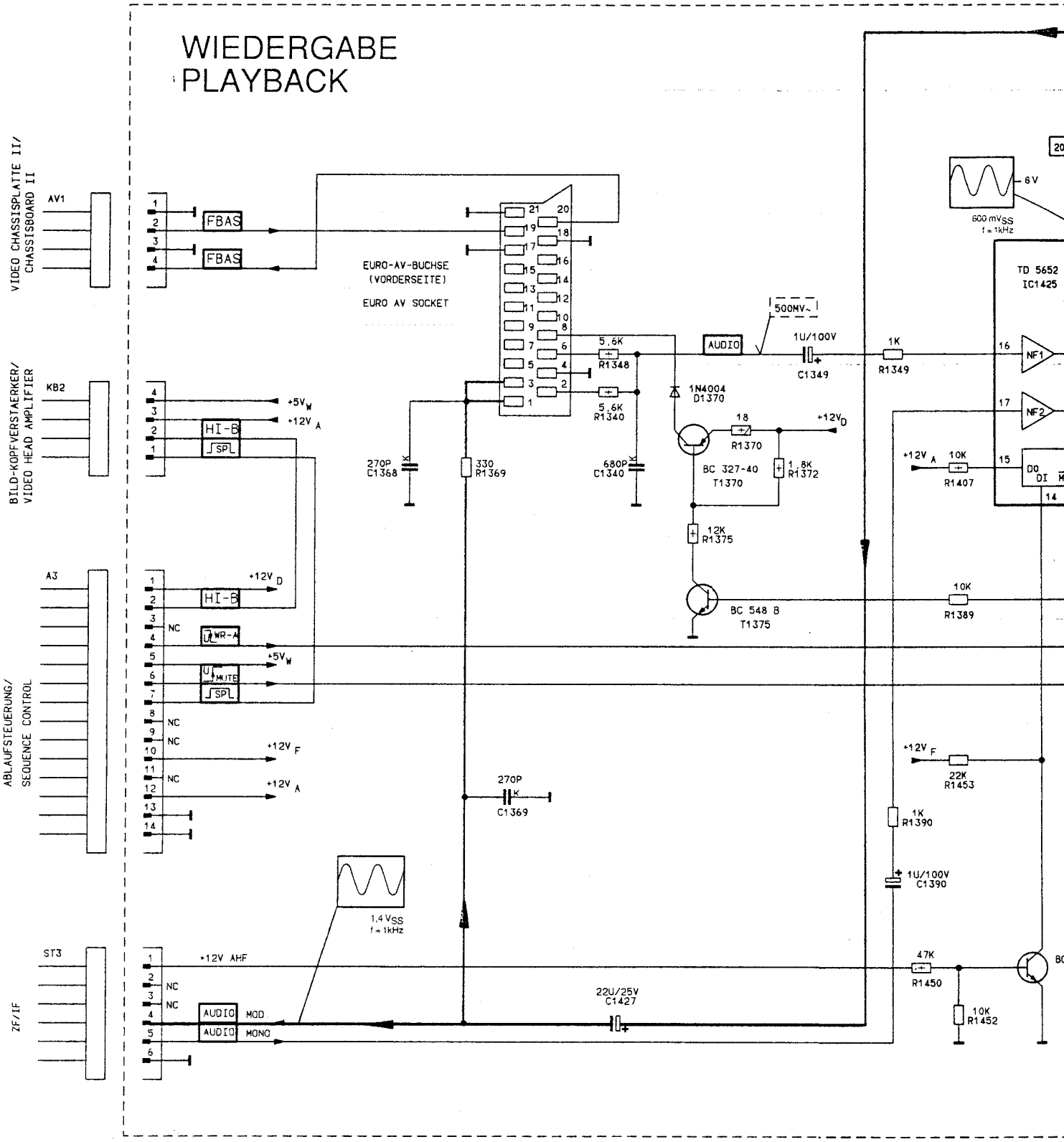
IC1425

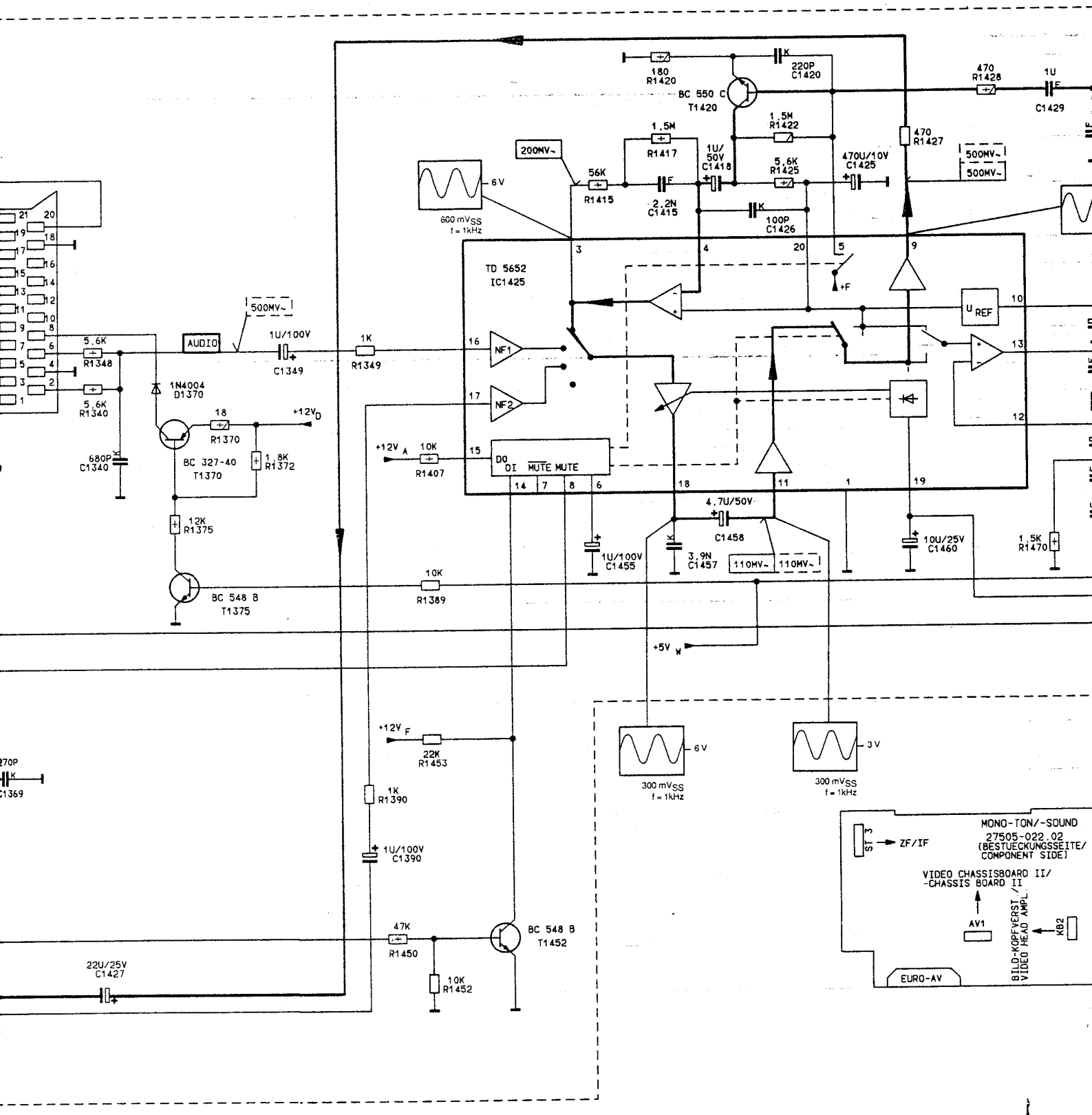
FUNKTION	PIN 15	PIN 14
—	L	L
A-HF	H	L
W	L	H
A-AV	H	H

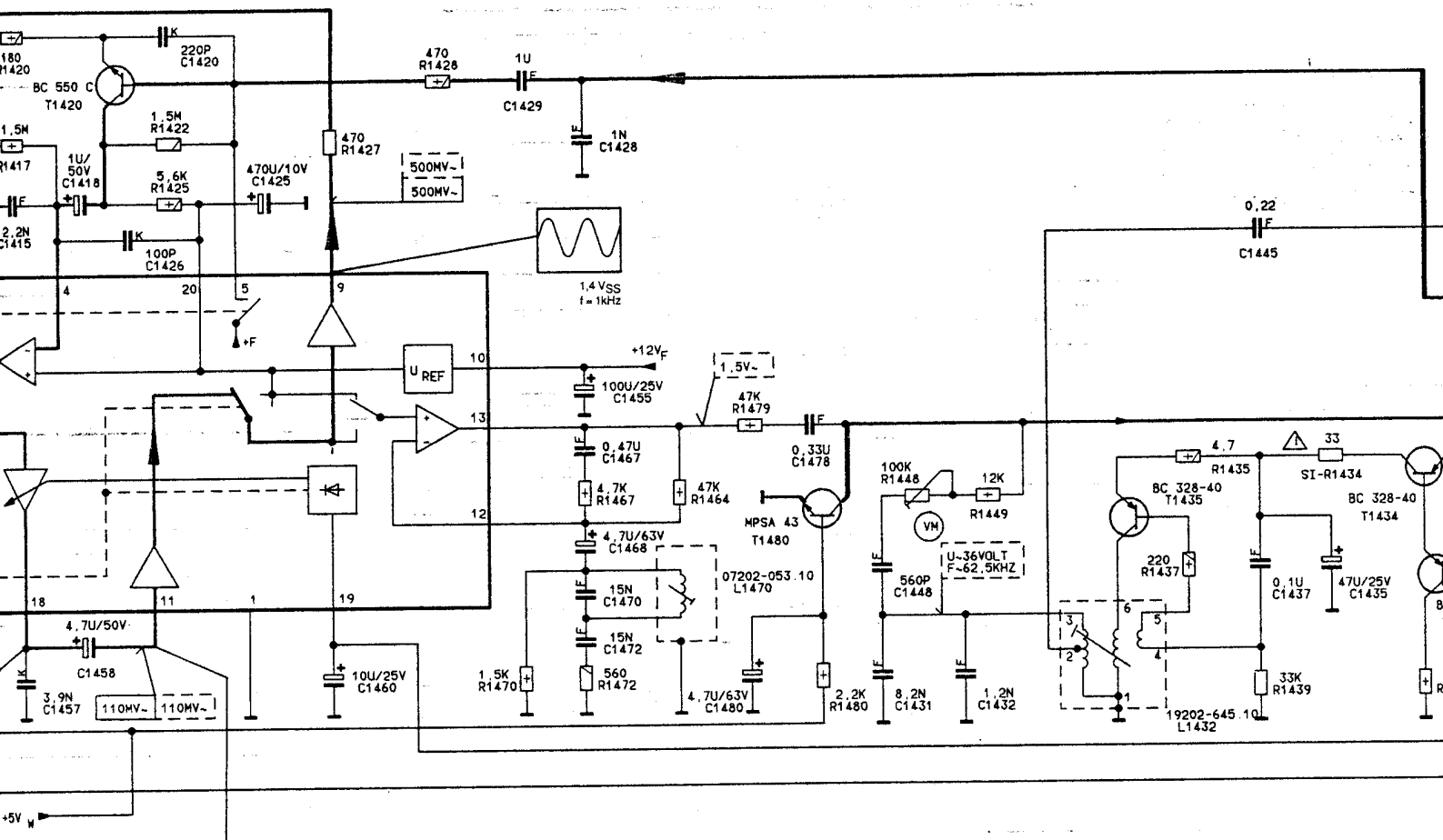


Mono - Ton
Mono sound

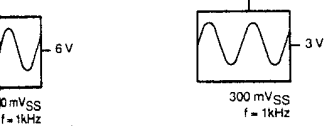
Mono - Ton
Mono sound

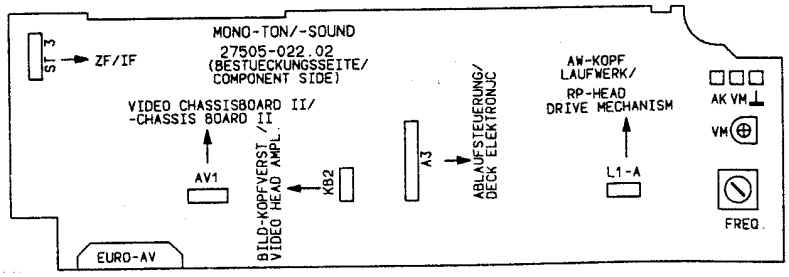






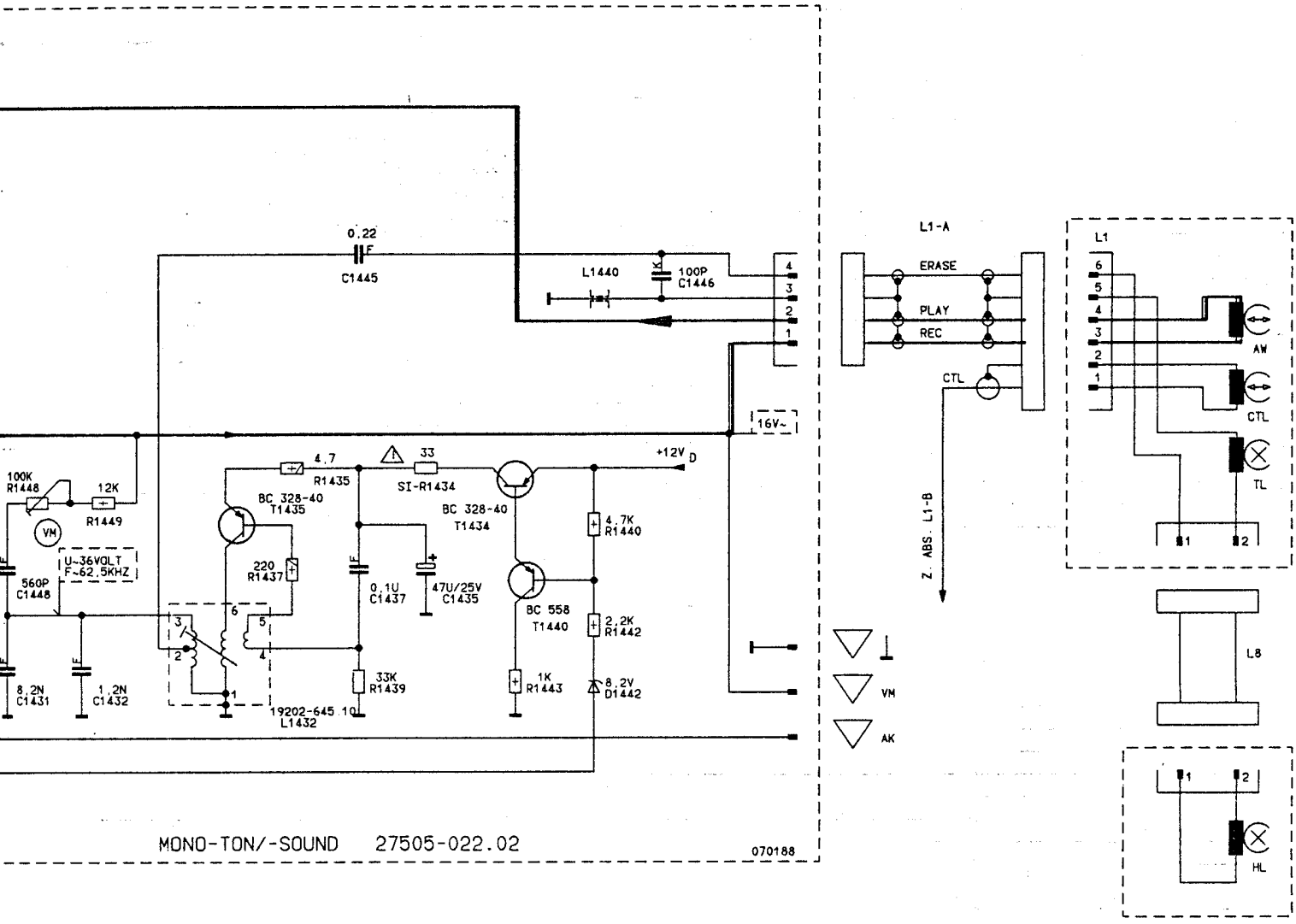
MONO-TON/-SOUND 27505-022.02

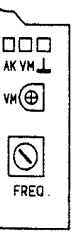




IC1425

FUNKTION	PIN 15	PIN 14
—	L	L
A-HF	H	L
W	L	H
A-AV	H	H





IC1425

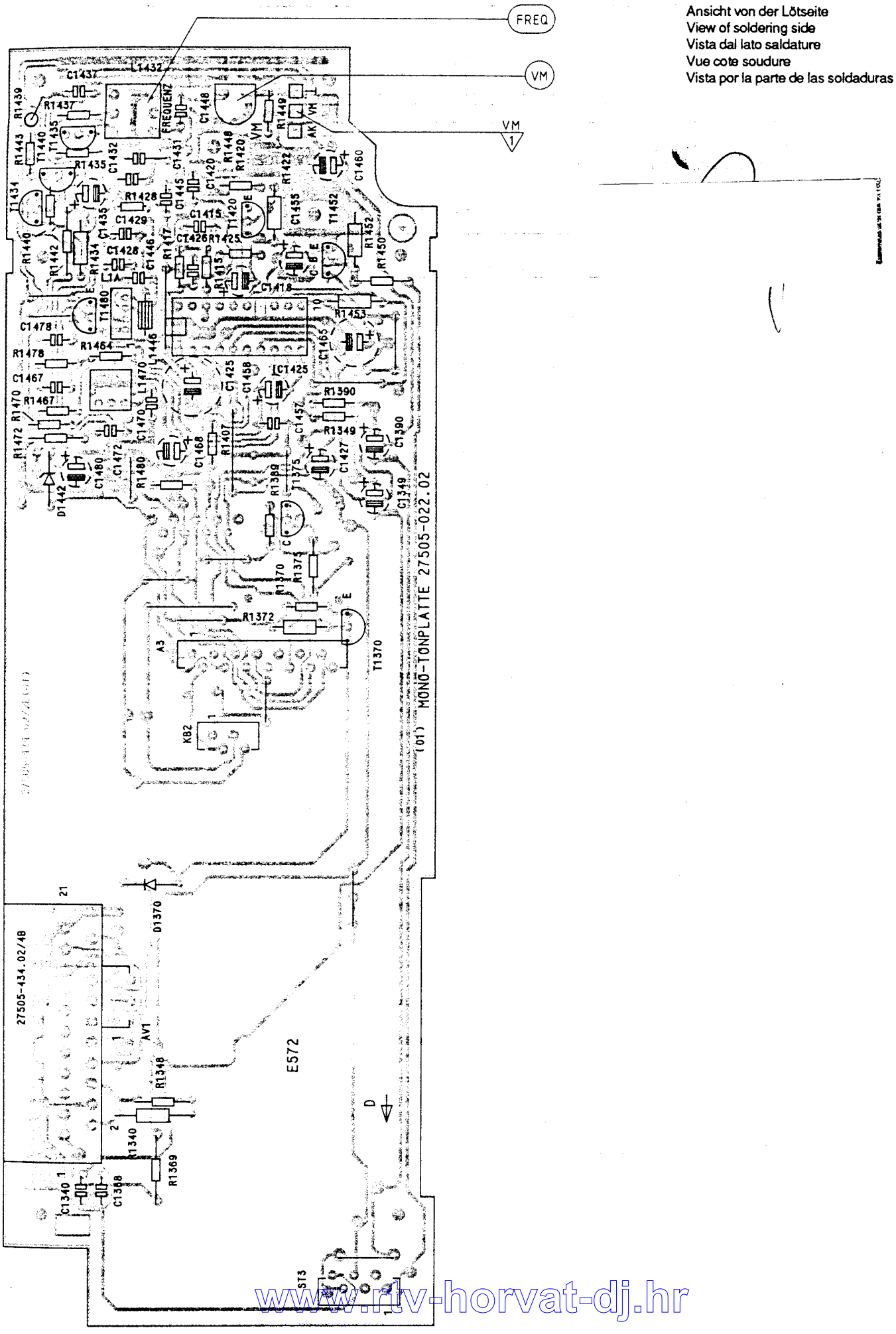
FUNKTION	PIN 15	PIN 14
—	L	L
A-HF	H	L
W	L	H
A-AV	H	H

SIGNALPEGEL BEI AUFNAHME/ SIGNAL LEVEL RECORD

SIGNALPEGEL BEI WIEDERGABE/ SIGNAL LEVEL PLAY

F=333HZ

Mono - Ton
Mono sound



Ansicht von der Lötseite
View of soldering side
Vista dal lato saldature
Vue cote soudure
Vista por la parte de las soldaduras

GRUNDIG ERSATZTEILLISTE

VIDEO

GB List of Spare- Parts • F Liste de pièce détachées • I Lista ricambi D Btx * 32700 #

Ergänzung zu den Ersatzteillisten in den Service Manuals VS 540 PAL/VPS, VS 540 PAL/VPS/GB/E
Supplement to the spare parts lists in the Service Manuals VS 540 PAL/VPS, VS 540 PAL/VPS/GB/E

VS 520 PAL, VS 520 VPS, VS 520 GB, VS 520 E

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni		Benennung	Description	Désignation	Denominazione
01	4	27033-154.01		Gehäuse-Oberteil kpl.	Cabinet top	Couvercle de boit.	Parte super.mobile
04	4	27032-209.01	4x	Fuß	Foot	Pied	Piedino
06	4	27033-101.01		Frontplatte kpl. mit Tasten/VPS	Front panel with buttons/VPS	Panneau avant a. touche/VPS	Piastra frontale p. tasto/VPS
06.1	4	27033-157.01		Frontklappe	Front flap	Clapet frontal	Sportello frontale
06		27033-101.03		Frontplatte kpl. mit Tasten/GB/PAL	Front panel with buttons/GB/PAL	Panneau avant a. touche/GB/PAL	Piastra frontale p. tasto /GB/PAL
06.1		27033-159.01		Frontklappe / GB	Front flap / GB	Clapes frontal/GB	Sportello frontale/GB
06.2	4	27033-221.01		Druckschnäpper	Pressure catch	Cliquet	Fermo a scatto
08	4	27033-212.01		Netzteilisolierung	Mains stage insulation	Isolation aliment.	Isolam. alimentat.
09	4	27033-213.01	2x	Scharnier	Hinge	Charniere	Cerniera

			Laufwerk (27123-005.03) (kein E-Teil)	Drive mechanism (27123-005.03) (no spare part)	Mecanisme d'entr. (27123-005.03) (aucune piese de rechange)	Meccanica di movimento (27123-005.03) (nessun pezzo di ricambio)
1	1	75987-263.04	Schraube	Screw	Vis	Vita
2	1	75987-263.05	Winkel links	Bracket left	Equerre gauche	Supp. angol.sinistra
3	1	75987-263.06	Winkel rechts	Bracket right	Equerre droite	Supp. angol. destra
5	1	75987-263.08	Erdungsfeder	Earting spring	Ressort masse	Molla massa
6	1	47226-044.00	Bandtrommel kpl.	Tape drum	Tambour de bande	Tamburo nastro
7	1	47226-021.01	Kopfrad	Head wheel	Roue de tete	Ruota testina
9	1	75987-263.09	Halter	Holder	Fixation	Supporto
10	1	75987-263.10	Abschirmblech	Screening plate	Blindage	Schermo
11	1	75987-263.11	Bandzugfühler	Tape tension sensor	Borne de bande	Sensore tensione nastro
12	1	75987-263.12	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
13	1	75987-263.13	Bremsband	Brake tape	Ruban de frein	Nastro freno
14	1	75987-263.14	Wickelteller L kpl.	Spool carrier	Plateau de bobin.	Piattello avvolgente
15	1	75987-263.15	Scheibe	Washer	Rondelle	Rondella
16	1	75987-263.16	Bandzuglösehebel	Tape tension lifting le.	Levier de tete.ban.	Leva sblocco tens.nastr
17	1	75987-263.17	Löschkopf	Erase head	Tete d'effacem.	Testina di cancellazion
18	1	75987-263.18	Bandzughebelauflage	Tape tens.lever bearing	Supp.levier ten. de bande	Supp.leva tens. nastro
19	1	75987-263.19	Winkel links	Bracket left	Equerre gauche	Supp.angol.sinistra
20	1	75987-263.20	Sicherungsscheibe	Safety plate	Clip	Rondella di sicurezza
21	1	75987-263.21	Bandzuglösehebel	Tape tension lift.lever	Levier de tet.band.	Leva sblocco tens.nastr
22	1	75987-263.22	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
23	1	75987-263.23	Aufnahmesperre	Record lock	Bloquage d'enreg.	Blocco di registrazione
24	1	75987-263.24	Stoppbremse	Stopbrake	Frein d'arret	Fremo
25	1	75987-263.25	Grundbremse	Basic brake	Frein de base	Freno principale
26	1	75987-263.26	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
27	1	75987-263.27	Stoppbremse	Stopbrake	Frein d'arret	Fremo
28	1	75987-263.28	Grundbremse	Basic brake	Frein de base	Freno principale
29	1	75987-263.29	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
30	1	75987-263.30	Winkel rechts	Bracket right	Equerre droite	Supporto angol.destra
31	1	75987-263.31	Einstellschraube	Adjustment screw	Vis de reglage	Vite regolatrice
32	1	75987-263.32	Druckfeder	Compr. spring	Ressort a compress.	Molla di pressione

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
33	1	75987-263.33	Einstellschraube	Adjustment screw	Vis de reglage	Vite regolatrice
34	1	75987-263.34	Audio-Synchronkopf	Audio sync head	Tete synchro	Testina sincr. audio
35	1	75987-263.35	Mutter M4	Nut M4	Ecrou M4	Dado M4
36	1	75987-263.36	Einstellmutter	Adjusting nut	Ecrou de reglage	Dado di regolazione
37	1	75987-263.37	Kopfträger	Head support	Tete support	Supporto testina
38	1	75987-263.38	Druckdrehfeder	Compress.tension spring	Ressort	Molla di press./traz.
39	1	75987-263.39	Ladehilfshebel	Adjustment lever	Levier de changem.	Leva ausil.carica
40	1	75987-263.40	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
41	1	75987-263.41	Einstellschraube	Adjustment screw	Vis de reglage	Vite regolatrice
42	1	75987-263.42	Schraube	Screw	Vis	Vita
43	1	75987-263.43	Olfangring	Oil stop disk	Rondelle protectr. d'huile	Anello di tenuta olio
44	1	75987-263.44	Sicherungskappe	Fuse cover	Coperture fusible	Copertura fusibile
45	1	75987-263.45	Andruckrolleneinheit	Pressure roller assem.	Ensemble lev.galet pres.	Unita rullo preminastro
46	1	75987-263.46	Andruckfeder	Pressure spring	Ressort de press.	Molla di pressione
47	1	75987-263.47	Andruckarm	Pressure arm	Levier presseur	Leva di pressione
48	1	75987-263.48	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
49	1	75987-263.50	Lifthebel	Lifting lever	Levier ascenseur	Leva di sollevamento
50	1	75987-263.51	P 5-Zahnsegment	Toothsectional	Segment dente	Segmento dentato
51	1	75987-263.52	Rollenhebelantrieb	Roller drive lever	Entrainem.levier	Comando leva rullo
52	1	75987-263.53	Einstellmutter M3	Adjusting nut M3	Ecrou de reglage	Dado di regolazione
53	1	75987-263.54	P5-Hebel	P5-Lever	P5-levier	P5-leva
54	1	75987-263.55	P5-Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
55	1	75987-263.56	Funktionswahlschalter	Funct.select.switch	Selecteur de mode	Selettore di funzione
56	1	75987-263.57	Abschirmplatte	Screening plate	Blindage	Piastra schermante
57	1	75987-263.58	Bandführungsrolle cpl.	Tape guide roller	Roul. de guidage	Rullo guidanastro
58	1	75987-263.59	Umlenkbolzeneinheit	Threading bolt assem.	Ensemble pivots	Unita perno rinvio
59	1	75987-263.60	Schraube	Screw	Vis	Vita
60	1	75987-263.61	Bolzenarretierung	Bolt securing lock	Butee	Blocco perno
61	1	75987-263.62	Bandführungsrolle cpl.	Tape guide roller	Rouleau de guidage	Rullo guidanastro
62	1	75987-263.63	Umlenkbolzeneinheit	Threading bolt assem.	Ensemble pivots	Unita perno rinvio
63	1	75987-263.64	Einstellplatte	Adjusting plate	Platine de reglage	Piastra regolatrice
64	1	75987-263.65	Untersetzungs-Rad	Reduction gear wheel	Pignon de reduct.	Riduttore
65	1	75987-263.66	Zwischenrad	Idler wheel	Roue intermediaire	Puleggia intermedia
66	1	75987-263.67	Hubmagnet	Lifting solenoid	Solenoide a depl.	Magnete di sollevam.
67	1	75987-263.68	Schwenkschieber	Swivel slider	Glissiere	Cursore
68	1	75987-263.69	Magnethebel	Magnetic lever	Levier a aimant	Leva magnetica
69	1	75987-263.70	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
70	1	75987-263.71	Bremsfeder	Brake spring	Ressort frein	Molla freno
71	1	75987-263.72	Wickelteller R kpl.	Spool carrier	Plateau de bobin.	Piattello avvolgente
72	1	75987-263.73	Capstanlager kpl.	Capstan bearing	Palier cabestan	Boccola capstan
73	1	75987-263.74	Schraube	Screw	Vis	Vita
74	1	75987-263.75	Kühlblech	Heat sink	Radiateur	Lamierino diss.term.
75	1	75987-264.65	Funktionsschalter-platte kpl.	Function-switch-plate cpl.	Commutateur de fonct. plaque kpl.	Commutatore di funzione piastra kpl.
78	1	75987-264.67	Bandendabschalter-platte kpl.	Tape switch-off plate cpl.	Levier d'arret de bande plaque kpl.	Leva spegnia, nastro piastro kpl.
78.1	1	75987-264.68	Flexible Leitung	Flexible cable	Cable flexible	Cavo flessibile
80	1	75987-264.66	Wickelsensorpl. kpl.	Winding-sensor cpl.	Senseur de bobinage	Sensore di avvolgimento
100	2	75987-263.76	Sicherungsscheibe	Safety plate	Clip	Rondella di sicurezza
101	2	75987-263.77	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
102	2	75987-263.79	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
103	2	75987-263.80	Hauptsteuerschieber	Main control slider	Gliss.de guidage princ.	Cursore comando princ.
104	2	75987-263.81	Steuerschieber	Control slider	Glissiere de guid.	Cursore comando
105	2	75987-263.82	Bremshebel	Brake lever	Levier de frein	Leva del freno
106	2	75987-263.83	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
107	2	75987-263.84	Bremssockel	Brake base	Butee	Zoccolo freno
108	2	75987-263.85	Spannrollenhebel	Tension roller lever	Levier galet-tend.	Leva rullo tensione
109	2	75987-263.86	Steuerhebel	Control lever	Levier de controle	Leva di comando
110	2	75987-263.87	Sperrhebel	Locking lever	Levier de blocage	Leva di bloccaggio
111	2	75987-263.88	Kurvenrad	Curved wheel	Came	Ruota a camme
112	2	75987-263.89	Kurvenrad	Curved wheel	Came	Ruota a camme
113	2	75987-263.90	Steuerrad	Control gear	Pignon de control	Ruota di comando

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
114	2	75987-263.91	Zwischenrad	Idler wheel	Roue intermed.	Puleggia intermedia
115	2	75987-263.92	Planetenrad	Planet wheel	Satelitte	Ruota satellite
116	2	75987-263.93	Kupplungsrad	Clutch wheel	Roue d'embrayage	Ruota frizione
117	2	75987-263.94	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
118	2	75987-263.95	Kupplungsschieber	Clutch slider	Glissiere d'embr.	Cursore frizione
119	2	75987-263.96	Antriebsrad	Drive wheel	Roue motrice	Puleggia di trazione
120	2	75987-263.97	Ringrad	Ring wheel	Roue dentee	Ruota ad anello
121	2	75987-263.98	Sicherungsscheibe	Safety plate	Clip	Rondella di sicurezza
122	2	75987-263.99	Umstellhebel	Change-over lever	Levier	Leva deviatrice
123	2	75987-263.78	Lagerwinkel kpl.	Bearing bracket	Equerre	Supp. angolato
124	2	75987-264.01	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
125	2	75987-264.02	Auslösehebel	Release lever	Levier de declench.	Leva di sblocco
126	2	75987-264.03	Abdeckung	Cover	Recouvrement	Copertura
127	2	75987-264.04	Antriebsrad	Drive wheel	Roue motrice	Puleggia di trazione
128	2	75987-264.05	Antriebsrad	Drive wheel	Roue motrice	Puleggia di trazione
129	2	75987-264.06	Umschalthebel (R)	Switch-over lever	Levier de commut.	Leva commut.
130	2	75987-264.07	Umschalthebel (L)	Switch-over lever	Levier de commut.	Leva commut.
131	2	75987-264.08	Lagerplatte	Bearing plate	Plaque de roulem.	Piastra di appoggio
132	2	75987-264.09	Antriebsriemen	Drive belt	Courroie motrice	Cinghia di trazione
133	2	75987-264.10	Capstanrotor kpl.	Capstan-Rotor	Cabestan-Roteur	Rotore capstan
134	2	75987-264.11	Anschlagwinkel	End stop bracket	Equerre a chapeau	Supp. ang. arresto
135	2	75987-264.12	Capstanstator kpl.	Capstan-Stator	Cabestan-Stateur	Statore capstan
136	2	75987-264.13	Scheibe	Washer	Rondelle	Rondella
137	2	75987-264.14	Riemenscheibe	Pulley	Poulie	Puleggia cinghia
138	2	75987-264.15	Laderad	Loading wheel	Galet de chargement	Ruota di carica
139	2	75987-264.16	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
140	2	75987-264.17	Ladehebel	Loading lever	Levier de chargem.	Leva di carica
141	2	75987-264.18	Zahnsegment	Toothsectional	Segment dente	Segmento dentato
142	2	75987-264.19	Ladekurvenrad	Curved loading wheel	Roue a came	Ruota a camme carica
143	2	75987-264.20	Laderad	Loading wheel	Galet de chargem.	Ruota di carica
144	2	75987-264.21	Steuerhebel	Control lever	Levier de controle	Leva di comando
145	2	75987-264.22	Ladehebel	Loading lever	Levier de chargem.	Leva di carica
146	2	75987-264.23	Zwischenrad	Idler wheel	Roue intermediaire	Puleggia intermedia
147	2	75987-264.24	Schwenkrad kpl.	Swivel wheel	Roue mobile	Puleggia
148	2	75987-264.25	Impulskopf	Impulse head	Tete d'impulsion	Testina impulsi
197	3	75987-264.69	Optokoppler/Bandanf.	Photo holder (R) unit	Coupleur-opto	Optoaccoppiatore
200	3	75987-264.70	Optokoppler/Bandende	Photo holder (L) unit	Coupleur-opto fin	Optoaccoppiatore
					fin de bande	fine nastro
201	3	75987-264.26	Abdeckplatte	Cover plate	Cache	Piastra copertura
202	3	75987-264.27	Cassettenschacht kpl.	Cassette compartment	Compartiment cass.	Vano cassetta
203	3	75987-264.28	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
204	3	75987-264.29	Führung links	Guide left	Guide gauche	Guida sinistra
205	3	75987-264.30	Ladeschieber	Loading slider	Glissiere de charg.	Sensore di carica
206	3	75987-264.31	Rolle	Roller	Rouleaux	Rullino
207	3	75987-264.32	Druckhebel links	Comp. lever left	Levier de pression	Leva di pressione
208	3	75987-264.33	Haltewinkel	Stop bracket	Angle d'arret	Supporto
209	3	75987-264.34	Cassettenhalter	Cassette holder	Support cassette	Supporto cassetta
210	3	75987-264.35	Hebel	Lever	Levier	Leva
211	3	75987-264.36	Druckhebel rechts	Comp. lever right	Levier de pression	Leva di pressione
212	3	75987-264.37	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
213	3	75987-264.38	Führung rechts	Guide right	Guide droite	Guida destra
214	3	75987-264.39	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
215	3	75987-264.40	Entriegelungshebel	Locking lever	Levier de deverr.	Leva di sblocco
216	3	75987-264.41	Schachtführung L kpl.	Compartment guide	Quide de compartim.	Guida vano
217	3	75987-264.42	Schachtführung L	Compartment guide	Quide de compartim.	Guida vano
218	3	75987-264.43	Hebel	Lever	Levier	Leva
219	3	75987-264.44	Schachtführung R kpl.	Compartment guide	Quide de compartim.	Guida vano
220	3	75987-264.45	Schachtführung R	Compartment guide	Quide de compartim.	Guida vano
221	3	75987-264.46	Schiebeschalter	Slider switch	Interr. a coulisse	Interruttore a curs.
222	3	75987-264.47	Hebel	Lever	Levier	Leva
223	3	75987-264.48	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
224	3	75987-264.49	Zahnstange (A)	Toothed rack	Cremaillere	Cremagliera
225	3	75987-264.50	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
226	3	75987-264.51	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
227	3	75987-264.52	Sperrhebel	Locking lever	Levier de blocage	Leva di bloccaggio
228	3	75987-264.53	Zahnstange (B)	Toothed rack (B)	Cremaillere	Cremagliera

Pos. No.	Fig. No.
229	3
230	3
231	3
232	3
233	3
234	3
235	3
237	3
238	3
239	3
240	1
241	1
260	XX
261	XX
261	XX
261	XX
262	XX
262	XX
262	XX
262	XX
263	XX
265	XX
266	XX
267	XX
267	XX
270	
271	
271	
272	
272	

XX = s

260

Pos. No.	Fig. No.
2	
3	

F 360

IC350

IC360

T354
T356
T365

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
229	3	75987-264.54	Welle kpl.	Spindle	Arbre	Albero
230	3	75987-264.55	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
231	3	75987-264.56	Hebel	Lever	Levier	Leva
232	3	75987-264.57	Hebel	Lever	Levier	Leva
233	3	75987-264.58	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
234	3	75987-264.59	Cassettenführung	Cassette drive	Guide glissiere	Guida cassetta
235	3		Cassettenklappe	Cass. comp. lid	Couv. comp. cass.	Sport. vano cass.
			27033-268.01 236 3			
		75987-264.61	Schenkelfeder	Leg spring	Ressort a branches	Molla di torsione
237	3	75987-264.62	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
238	3	75987-264.63	Zugstange	Tension lug	Tige de transmiss.	Barra di trazione
239	3	75987-264.64	Zugfeder	Tension spring	Ressort a traction	Molla di trazione
240	1	09604-995.00	Scheibe	Washer	Rondelle	Rondella
241	1	27033-234.01	Kabelhalter	Cable clamp	Support cable	Supporto cavo
			Steckkarten	Plug in circuit boards	Carte C.I. embroch.	Schede
260	XX	27505-025.01	Bedieneinheit mit Infrarotempfänger	Keyboard unit infra-red receiver	Unite de commande receoteur infraro.	Unita comandi ricevitore infrar.
261	XX	27505-021.02	Chassisplatte I (VPS)	Chassis panel I (VPS)	C.I. princip.I/VPS	Piastra telaio I/VPS
261	XX	27505-021.04	Chassisplatte I(PAL,E)	Cahssis panel I (PAL,E)	C.I. princ.I/PAL,E	Piastra telaio I/PAL,E
261	XX	27505-021.63	Chassisplatte I (GB)	Chassis panel I (GB)	C.I. princip.I(GB)	Piastra telaio I (GB)
262	XX	27505-031.15	Chassisplatte II (VPS)	Chassis panel II (VPS)	C.I.princip.II/VPS	Piastra telaio II/VPS
262	XX	27505-031.16	Chassisplatte II (E)	Chassis panel II (E)	C.I. princip.II(E)	Piastra telaio II/E
262	XX	27505-031.01	Chassisplatte II (PAL)	Chassis panel II (PAL)	C.I.princip.II/PAL	Piastra telaio II/PAL
262	XX	27505-031.65	Chassisplatte II (GB)	Chassis panel II (GB)	C.I.princip.II(GB)	Piastra telaio II (GB)
263	XX	27505-022.02	Mono-Ton	Mono sound	BF mono	Audio mono
265	XX	27505-027.01	Kopfverstärker/Bild	Head amplifier-Video-	Ampli de te./image	Amplif.testina-Video-
266	XX	27505-024.01	Motorsteuerplatte	Motor drive panel	C.I. comande moteur	Piastra comando motore
267	XX	27505-023.01	ZF-Verstärker	Amplifier IF	Amplificateur FI	Amplificatore FI (GB)
267	XX	27505-023.63	ZF-Verstärke (GB)	Amplifier IF (GB)	Amplificateur FI	Amplificatore FI
270		29502-024.12	Kabel-Tuner	Cable tuner	Tele-distribution	Tuner per TV cavo
271		29502-025.12	Modulator KT	Modulator KT	Modulateur KT	Modulatore KT
271		29502-025.14	Modulator KT (GB)	Modulator KT (GB)	Modulateur KT (GB)	Modulatore KT (GB)
272		27520-039.01	Video-Geber RP 6	Remote-Video RP6	Emetteur-Video	Emmettitore-Video
272		27520-042.01	Video-Geb.RP6/LCD(GB)	Remote-Video RP6/LCD/GB	Emetteur-Video	Emmettitore-Video

XX = siehe gesonderte E-Listen /see separate parts lists/voir liste de pieces sep./vedi liste ricambi a parte

260 27505 - 025.01 Bedieneinheit / Keyboard unit / Unite de commande / Unita comandi

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
2		27033-210.97	Fluoreszenz-Anzeige	Fluoresc.indic.panel	Afficheur fluoresc.	Display fluoresc.
3		27511-127.00 32x	Tipptaste	Push Button	Touche	Microtasto

F 360	8602-333-065	Ker.-Res. 560 KHz	D356	8309-720-056	Z 5,6 C/0,5 W
			D359	8309-720-111	Z 11 C/0,5 W
			D373	8309-198-041	BAT 41
			D375	8309-198-041	BAT 41
			D377	8309-198-041	BAT 41
			D379	8309-198-041	BAT 41
			D381	8309-198-041	BAT 41
			D383	8309-198-041	BAT 41
			D385	8309-198-041	BAT 41
			D387	8309-198-041	BAT 41

IC350	8305-011-387	SBX 1494-01 (Infrarot-Empfänger)
IC360	8305-275-538	UPD 7537/A-019

T354	8302-201-561	BC 560
T356	8302-200-638	BC 638
T365	8302-200-559	BC 558 B

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
2		27511-452.00	Einbaustecker	Built-in plug	Prise a encastrer	Spina da pannello
3		27511-454.00	Mehrfachbuchse 9-pol.	Multiple socket	Prise multiple	Presa multipla
4		8140-601-352	Wandlertrafo /TR 1)	Transductor	Transducteur	Trasduttore
5		09266-133.21	Speicherdrossel(TR 2)	Store choke	Bobine	Bobina di accumulo
6		8306-000-015	Optokoppler (OK 445)	Optocoupler (OK 445)	Coupleur-opto	Optoaccoppiatore

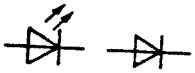
L 110		8140-525-991	6,8 uH
L 185		8140-525-991	6,8 uH
L 420		8140-526-409	0,68 uH
L 422		8140-525-714	4,7 uH
L 432		8140-525-911	470 uH
DR 460		09266-134.97	Funkentstördrossel (!)
L 491		8140-601-353	
L 509		8140-601-353	
L 510		8140-526-401	
L 532		8140-601-353	

Q 220		8382-249-597	12,0 MHz

IC 119		8305-199-373	SN 74/LS 373 N
IC 120		19798-003.25	27256-250 NS EPROM 520/20
IC 155		19799-261.96	TL 082
IC 190		8305-158-208	SDA 2087
IC 205		8305-005-526	HEF 4526 BP(LOC MOS)
IC 425		8305-334-601	TDA 4601 D
IC 500		8305-204-964	L 4964

T 147		8302-202-538	BC 548
T 148		8302-202-543	BC 548 B
T 170		8302-202-538	BC 548
T 177		8302-202-538	BC 548
T 180		8302-202-558	BC 558
T 190		8302-202-538	BC 538
T 192		8302-202-538	BC 548
T 203		8302-202-538	BC 548
T 226		8302-202-538	BC 548
T 229		8302-202-538	BC 548
T 235		8302-200-875	BC 875
T 245		8302-200-559	BC 558 B
T 255		8302-200-559	BC 558 B
T 410		8302-260-903	BU 9038
T 424		8302-200-548	BC 548 C
T 530		8302-200-369	BC 369 G
T 537		8302-200-369	BC 369 G
T 538		8302-200-548	BC 548 C
T 540		8302-200-369	BC 369 G
T 542		8302-200-548	BC 548 C
T 545		8302-200-369	BC 369 G
T 546		8302-200-548	BC 548 C

TY 401		8309-508-100	MCR 100-7 (!)



GLR 470		8308-560-384	SKB 380/C 1500
D 125		8309-214-114	TD 129
D 126		8309-214-114	TD 129
D 144		8309-214-114	TD 129
D 145		8309-214-114	TD 129
D 151		8309-214-114	TD 129
D 152		8309-214-114	TD 129
D 169		8309-214-114	TD 129
D 179		8309-214-114	TD 129
D 407		8309-214-114	TD 129
D 409		8309-565-507	RGP 10 J
D 410		8309-516-016	BYV 16
D 420		8309-215-013	1 N 4007
D 424		8309-720-119	ZD 18 C
D 435		8309-565.507	RGP 10 J
D 485		8309-517-020	BXW 29-150 F
D 500		8309-220-340	SB 340
D 502		8309-518-021	BYV 10-60
D 512		8309-565-507	RGP 10 J
D 513		8309-565-507	RGP 10 J
D 547		8309-198-085	BAT 85
D 548		8309-198-085	BAT 85
D 549		8309-198-085	BAT 85

C 530		8452-027-026	1000 uF/ 40 V

C 410		8515-911-054	FKP1/1200pF/2000 V
C 428		8520-697-555	KC 10/3300pF/400 V
C 460		8511-793-018	0,1uF/20%/275 VW (!)
C 462		8660-097-234	Si-Kerko(B) 1000pF (!)
C 463		8660-097-234	Si-Kerko(B) 1000pF (!)
C 465		8511-793-018	0,1uF/20%/275 VW (!)
C 470		8650-090-510	HV-Kerko/1000pF/1 KV
C 472		8650-090-510	HV-Kerko/1000pF/1 KV
C 474		8650-090-510	HV-Kerko/1000pF/1 KV
C 475		8650-090-510	HV-Kerko/1000pF/1 KV
C 477		8452-297-385	Elko 100uF/385 V (!)
C 478		8660-097-238	Si-Kerko(B) 2200pF (!)
C 485		8650-090-477	HV-Kerko/270pF/2 KV
C 502		8650-090-510	HV-Kerko/1000pF/1 KV

R 452	8792-002-135	1 Kohm		SI 460	8315-615-003	630 MA / T (!)

261 27505 - 021.04 (PAL,E) Chassisplatte I / Chassis board I / C. I. principal I / Piastro telaio I

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
2		27511-452.00	Einbaustecker	Built-in plug	Prise a encastrer	Spina da pannello
3		27511-454.00	Mehrfachbuchse 9-pol.	Multiple socket	Prise multiple	Presa multipla
4		8140-601-352	Wandlertrafo /TR 1)	Transductor	Transducteur	Trasduttore
5		09266-133.21	Speicherdrossel(TR 2)	Store choke	Bobine	Bobina di accumulo
6		8306-000-015	Optokoppler (OK 445)	Optocoupler (OK 445)	Coupleur-opto	Optoaccoppiatore

L 110	8140-525-991	6,8 uH	T 538	8302-200-548	BC 548 C
L 185	8140-525-991	6,8 uH	T 540	8302-200-369	BC 369 G
L 420	8140-526-409	0,68 uH	T 542	8302-200-548	BC 548 C
L 422	8140-525-714	4,7 uH	T 545	8302-200-369	BC 369 G
L 432	8140-525-911	470 uH	T 546	8302-200-548	BC 548 C
DR 460	09266-134.97	Funkentstördrossel (!)			
L 491	8140-601-353				
L 509	8140-601-353				
L 510	8140-526-401				
L 532	8140-601-353		TY 401	8309-508-100	MCR 100-7 (!)

Q 220	8382-249-597	12,0 MHz	GLR 470	8308-560-384	SKB 380/C 1500
			D 125	8309-214-114	TD 129
			D 126	8309-214-114	TD 129
			D 144	8309-214-114	TD 129
			D 145	8309-214-114	TD 129
IC 119	8305-199-373	SN 74/LS 373 N	D 151	8309-214-114	TD 129
IC 120	19798-004.10	27512-250 NS EPROM 520P/20	D 152	8309-214-114	TD 129
IC 155	19799-261.96	TL 082	D 169	8309-214-114	TD 129
IC 190	8305-158-208	SDA 2087	D 179	8309-214-114	TD 129
IC 205	8305-005-526	HEF 4526 BP(LOC MOS)	D 407	8309-214-114	TD 129
IC 425	8305-334-601	TDA 4601 D	D 409	8309-565-507	RGP 10 J
IC 500	8305-204-964	L 4964	D 410	8309-516-016	BYV 16
			D 420	8309-215-013	1 N 4007
			D 424	8309-720-119	ZD 18 C
			D 435	8309-565.507	RGP 10 J
			D 485	8309-517-020	BXW 29-150 F
T 147	8302-202-538	BC 548	D 500	8309-220-340	SB 340
T 148	8302-202-543	BC 548 B	D 502	8309-518-021	BYV 10-60
T 170	8302-202-538	BC 548	D 512	8309-565-507	RGP 10 J
T 177	8302-202-538	BC 548	D 513	8309-565-507	RGP 10 J
T 180	8302-202-558	BC 558	D 547	8309-198-085	BAT 85
T 190	8302-202-538	BC 538	D 548	8309-198-085	BAT 85
T 192	8302-202-538	BC 548	D 549	8309-198-085	BAT 85
T 203	8302-202-538	BC 548			
T 226	8302-202-538	BC 548			
T 229	8302-202-538	BC 548			
T 235	8302-200-875	BC 875			
T 245	8302-200-559	BC 558 B	C 530	8452-027-026	1000 uF/ 40 V
T 255	8302-200-559	BC 558 B			
T 410	8302-260-903	BU 9038			
T 424	8302-200-548	BC 548 C			
T 530	8302-200-369	BC 369 G			
T 537	8302-200-369	BC 369 G			

Q 570	8382-251-397	13,875 MHz
Q 585	8382-246-096	6,0 MHz
Q 610	8382-200-797	32,768 KHz
Q 1085	8382-240-994	4,433619 MHz

IC 570	8305-303-580	SAA 5231 (MOS)
IC 580	8305-501-135	SAF 1135 P
IC 605	8305-303-583	SAA 5241 A (MOS)
IC 610	8305-108-583	PCF 8583
IC 625	8305-275-464	UPD 446 c/D1
IC 640	8305-205-206	MC 1377 P
IC 750	8305-073-320	AN 3320 K
IC 840	8305-365-114	TEA 5114
IC 920	8305-073-211	AN 3211 K
IC 1070	8305-076-367	AN 6367
IC 1150	8305-246-163	MN 6163

CT 626	8301-000-858	BC 858
CT 710	8301-000-848	BC 848
CT 725	8301-000-848	BC 848
CT 730	8301-000-848	BC 848
CT 820	8301-000-848	BC 848
CT 825	8301-000-848	BC 848
CT 831	8301-000-848	BC 848
CT 860	8301-000-848	BC 548
CT 972	8301-000-848	BC 848
CT 978	8301-000-848	BC 848
CT 990	8301-185-020	BFS 20
CT 1010	8301-000-848	BC 848
CT 1030	8301-000-858	BC 858
CT 1035	8301-185-020	BFS 20
CT 1040	8301-000-848	BC 848
CT 1045	8301-000-848	BC 848
CT 1089	8301-000-848	BC 848
CT 1120	8301-000-848	BC 848
CT 1170	8301-000-848	BC 848
CT 1173	8301-006-818	BC 818-40
CT 1201	8301-000-848	BC 848
CT 1208	8301-185-020	BFS 20
CT 1210	8301-003-858	BC 858 B
CT 1212	8301-201-848	BC 848 B
CT 1220	8302-201-848	BC 848 B
CT 1225	8301-185-020	BFS 20
CT 1228	8301-000-848	BC 848
CT 1232	8301-000-848	BC 848
CT 1238	8301-185-020	BFS 20
CT 1250	8302-202-848	BC 848 C
CT 1260	8301-000-848	BC 848
CT 1265	8301-000-848	BC 848

MOS = Vorschriften beachten
Observe MOS precautions
Respecteur les precautions
Attenzione alle norme MOS

MD 612	8309-534-148	M 4148
MD 900	8309-401-683	BA 683
MD 942	8309-402-102	BAV 102
MD 960	8309-402-102	BAV 102
MD 992	8309-401-683	BA 683
MD 1001	8309-401-683	BA 683
MD 1003	8309-401-683	BA 683
MD 1072	8309-402-102	BAV 102
MD 1203	8309-402-102	BAV 102
MD 1212	8309-402-102	BAV 102
MD 1222	8309-402-102	BAV 102
MD 1235	8309-534-154	LL 4154
MD 1236	8309-534-154	LL 4154

C 610	8699-999-345	4,5...20pF
C 1085	8699-999-345	4,5...20pF

R 574	8701-118-025	KSW/Si/810 Ohm (!)

R 647	8792-002-151	10 KOhm
R 758	8792-002-154	22 KOhm
R 765	8792-002-140	2,2 KOhm
R 801	8792-002-151	10 KOhm
R 905	8792-002-146	4,7 KOhm
R 910	8792-002-146	4,7 KOhm
R 915	8792-002-146	4,7 KOhm
R 920	8792-002-146	4,7 KOhm
R 939	8792-002-154	22 KOhm
R 965	8792-002-172	470 KOhm
R 968	8792-002-146	4,7 KOhm
R 1020	8792-002-151	10 KOhm
R 1037	8792-002-146	4,7 KOhm
R 1115	8792-002-135	1 KOhm

Bauteilhinweis
(!) Hinweis:
Bauelemente nach VDE- bzw. IEC-Richtlinien.
Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!
Notes on components (!) Cautions:
Components to VDE or IEC quidelines. Only use components with the same specification for replacement!
(!) attention:
Composants conformes aux prescriptions vde et iec. en cas de replacement n'utiliser que des compos. de memes specifications!
(!) nota:
Componenti secondo le norme VDE risp. te iec. in caso die sostituzione impiegaresolo componenti con le stesse caratteristiche!

263 27505 - 022.02 Mono-Ton / Mono sound / BF mono / Audio mono

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
1		27505-022.02	Standard-Ton	Standard sound	BF Mono	Audio standard
2		27511-453.00	Scart-Buchse	Scart socket	Embase peritelevis.	Presa scart

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
L1432		19202-641.97	
L1470		07202-053.10	
IC1425		8305-335-652	TDA 5652
T1370		8302-201-328	BC 327-40
T1375		8302-202-543	BC 548 B
T1420		8302-200-554	BC 550 C
T1434		8302-200-176	BC 328-40
T1435		8302-200-176	BC 328-40
T1440		8302-202-558	BC 558
T1452		8302-202-543	BC 548 B
T1480		8302-420-043	MPS-A 43

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
D1370		8309-215-020	1 N 4004
D1442		8309-720-082	Z-8,2 C/ 0,5 W
R1434		8766-701-037	Si 33 Ohm (!)
R 1448		8792-002-159	47 KOhm

(!)

265 27505 - 027.01 Kopfverstärker (Bild) / Head amplifier (Video) / Ampli de tetes / Amplif. testina (Video)

Pos. No.	Fig. No.	Bestell-Nr. Part No./Ref. Nr. d'ordinazioni	Benennung	Description	Désignation	Denominazione
1		27505-027.01	Kopfverstärker/Bild	Head amplifier-video	Ampli de tetes im.	Amplif.testina-video

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
L1905		8140-526-934	270 uH
L1912		8140-525-300	270 uH
L1915		8140-525-298	10 uH
L1917		8140-525-299	15 uH
L1925		8140-526-930	120 uH
IC1940		8305-073-311	AN 3311 K

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
CT 1912		8301-000-848	BC 848
CT 1917		8301-000-858	BC 858
CT 1922		8301-185-020	BFS 20
CT 1925		8301-000-858	BC 858
CT 1930		8301-000-848	BC 848
CT 1935		8301-006-818	BC 818-40
CT 1940		8301-006-818	BC 818-40
CT 1943		8301-006-818	BC 818-40
CT 1955		8301-006-818	BC 818-40

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
F2235		07202-648.97	
F2237		8319-001-956	OFW/G 1958
F2240		07202-666.10	
F2265		19203-065.97	Ker.Filter 5,5 MC
F2270		19203-026.97	Ker.Diskr. 5,5 MC 10
L2247		8140-525-998	
L2265		8140-525-872	
L2290		8140-526-110	
IC2240		8305-342-440	TDA 2440-3
IC2270		8305-302-125	TBA 120 T
T2290		8302-200-559	BC 558 B
R2260		8792-001-146	4,7 KOhm

Pos. No.	Fig. No.	Bestell-Nr. Part No. Réf. Nr. d'ordinazioni	Benennung Description Désignation Denominazione
F2235		07202-648.97	
F2237		8319-001-952	OFW/J 1952
F2240		07202-666.10	
F2265		19203-012.97	Ker.Filter 6,0 MHZ
F2270		19203-028.97	Ker.Disk.6,0 MC10
L2247		8140-525-998	15 uH
L2265		8140-525-872	39 uH
L2290		8140-526-110	33 uH
IC 2240		8305-342-440	TDA 2440-3
IC 2270		8305-302-125	TBA 120 T
T 2290		8302-200-559	BC 558 B
R 2260		8792-001-146	4.7 kOhm

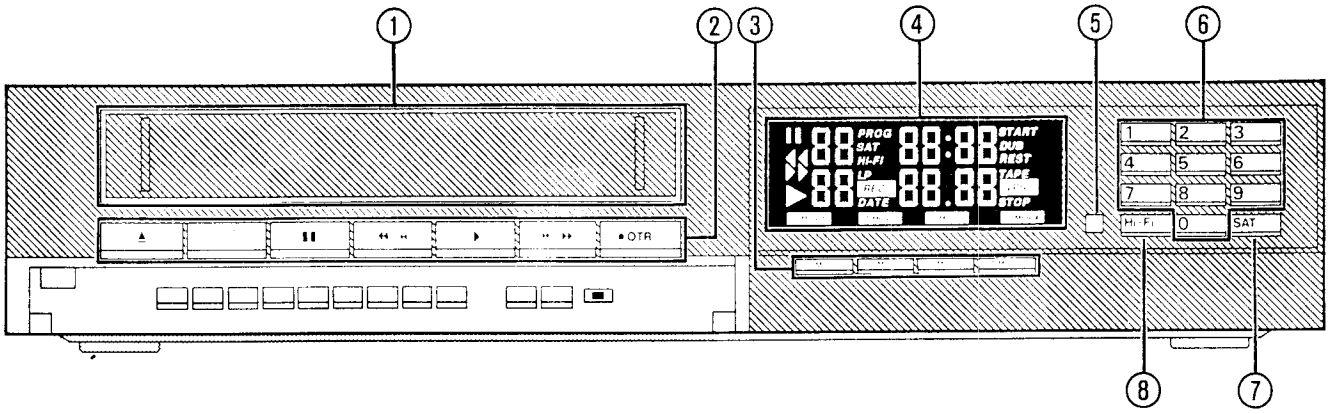
VS 540 Hi-Fi GB

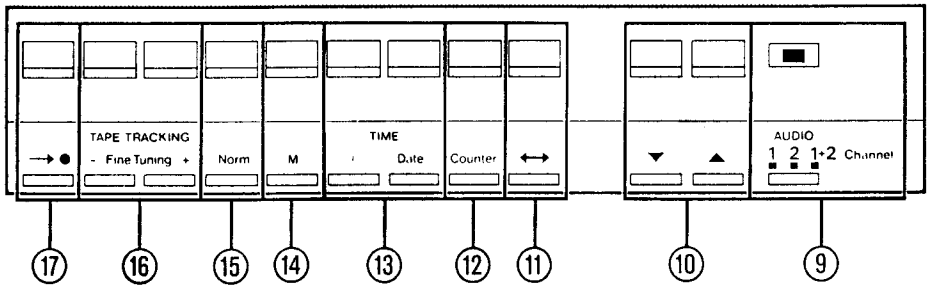
VIDEO CASSETTE RECORDER

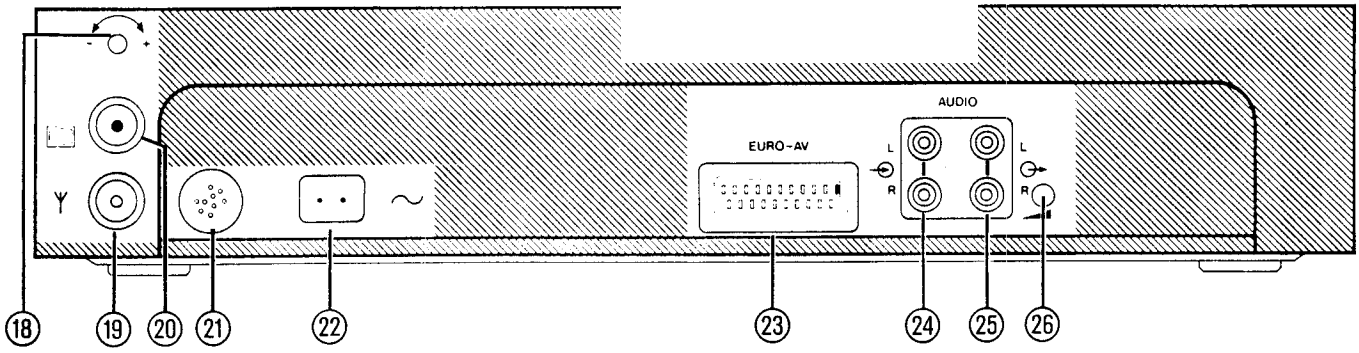
text
PROGRAMMING

GRUNDIG

Contents







Your Recorder at a Glance

Please read the detailed operating instructions first. There you will learn to operate your recorder step-by-step in the correct sequence.

Once you have familiarised yourself with the recorder, you will be able to operate it by merely using these two pages.

① Cassette Compartment

Insert the cassette until it is automatically pulled in.
To remove cassette, press button ⏏.

② Drive Mechanism Buttons

• O T R — Record Button

For starting recording. Confirms the switch-off time of a recording started manually.

⏩ ▶▶ — Forward Wind/Picture Search Button

When recorder is in stop position: fast forward wind of tape.
During playback: fast forward wind at 5 or 8 times normal speed without sound.

▶ — Playback Button

For starting playback.

◀◀ ⏪ — Rewind/Picture Search Button

When recorder is in stop position: fast rewind of tape.
During playback: rewind at 5 or 8 times normal speed without sound.

⏸ — Pause Button

Playback mode: still picture (freeze-frame).
Repeatedly pressing this button optimises the still picture and advances the freeze frame.
During recording: interrupts the recording.

⏻ — Stop and Standby Button

Terminates all tape running functions and the pause mode.
In stop mode: switches the recorder to standby; time of day is shown with reduced brightness.
The unit can only be completely isolated from the mains supply by unplugging it from the wall socket.

⏏ — Cassette Button

For ejecting the cassette.
For switching between programmed TIMER operation and normal operation.
Also used to stop TIMER recording which is in progress.

③ TIMER Buttons 1 ... 4

For calling up the 4 TIMER positions, for confirming the entered TIMER data and for checking, correcting and erasing the TIMER data after programming.

④ Display

The brightness of the display is reduced during standby and TIMER standby.

⑤ Infrared Eye for the Remote Control Receiver

⑥ 1 ... 0 — Numbered Buttons

For keying in:
Time of day, date, TV station position, switch-on and switch-off times for timer recordings, channel number, code numbers, Go-To Time and total playing time of non-standard cassettes.

⑦ SAT — Satellite Receiver Button

Selects the picture/sound signal of a satellite receiver connected to the EURO-AV socket ㉓ for recording.

⑧ Hi-Fi — Hi-Fi Button

Selects the sound signal at the AUDIO sockets ㉔ for recording.

Operating Controls behind the Flap

⑨ AUDIO — Sound Track Selection Switch

For selecting the sound tracks 1 and 2 on playback.
Mono/stereo sound: Setting 1+2 Channel.
Two-channel sound: Setting 1 or 2.

⑩ ▼▲ — Programme Selection Buttons

Repeatedly pressing the button marked ▲ steps through the programme positions in the sequence 1, 2, 3 ... 38, 39, AV.

Repeatedly pressing the button marked ▼ steps through the programme positions in the sequence AV, 39, 38 ... 3, 2, 1.

Keeping button ▲ or ▼ pressed changes the programme positions continuously.

To stop programme selection, select a tape rund function or stop.

⑪ ↔ — Go-To Button

For fast rewinding or forward winding the tape to a desired position.
Enter Go-To time as three figures in hours and minutes.

⑫ Counter — Counter Selection Button for Electronic Display

Switches display between hours/minutes display and 4-digit tape counter display.
Confirms the total playing time of non-standard hour cassettes.

⑬ TIME

Date — Date Button

Confirms the date after a correction.
Shows the time and the date in the display.

Your Recorder at a Glance

Clock Button
Starts the clock after a correction.
Shows the time in the display.

⑭ **M** **Memory Button**
For storing the channel and code numbers in the memory.

⑮ **Norm** **Standard Button**
Switches from channel number to special channel number and vice versa.

⑯ **TAPE TRACKING/Fine Tuning**

+ − **Tracking/Fine Tuning Buttons**
During playback: for optimising sound and picture quality of cassettes recorded on other recordes.
When programming the station positions: for finde tuning the stations.

⑰ **Station Search Button**
Activates the direct channel number entry mode.
Confirms the entered programme positions.
Starts the station search mode.

Sockets and Controls on the Back of the Recorder

⑱ **− +** **Channel Selector**
The output channel of the recorder has been set to channel 36.
This setting can be varied (+ or −) with the channel selector.

⑲ **Aerial Input Socket**
Connect the TV aerial to this socket.

⑳ **Aerial Output Socket**
For connecting to the aerial socket of the TV set using the aerial cable supplied.

㉑ **Universal Socket**
For service purposes.

㉒ **Mains Supply Socket**
Connect the mains cable supplied to this socket.

㉓ **Euro-AV Socket**
For connecting a TV set, video recorder, satellite receiver, etc.

㉔ **AUDIO** **Sound Input Sockets**
For stereo sound recordings.
For connecting the stereo system using a commercial sound cable with phono plugs.

㉕ **AUDIO** **Sound Output Sockets**
For stereo sound playback.
For connecting the stereo system using a commercial sound cable with phono plugs.

㉖ **Sound Level Control**
For matching the sound output level ta a hifi system.

What You should Know about Your Video Recorder

This recorder employs the VHS System.

The recordings made with this recorder can be played back on recorders which operate with the same system.

The dialogue remote control handset, ...

... central control unit for the video recorder and GRUNDIG colour TV sets (from 1983 models onwards).

From the comfort of your armchair, you will be able to remotely control most functions of the video recorder and television set.

The display of the remote control handset will indicate each operating step visually by a symbol (▯), as long as a button is pressed.

For further information on how to operate the dialogue remote control handset see the **separate operating instructions supplied.**
The instructions are divided into four sections:

1. **TV functions**
   For the important functions of your GRUNDIG TV set.

2. **Programme and drive mechanism functions**
   Each button on the remote control handset controls the same function as the respective button on the recorder.

3. **TIMER (preselection) functions**
   These are used to programme all TIMER (preselect memory) data in the remote control handset and to "transmit" the data to the recorder.
   The data appear in the display of the recorder.
   The TIMER recording will be made at the preselected times.

4. **Text-Programming**
   Programming with the remote control handset, checking on the TV set, ...
   ... ie: enter the data with the remote control handset, the data are shown on the screen of the TV set.
   Information lines guide you to the next programming step and the entry possibilities resulting from that.

Is your local area connected to a cable TV network or will it be connected in the near future?

If this should be the case, you will have no problems, as your recorder is suited for cable TV reception, i.e. it can receive and record all the TV broadcasts which are applied directly or via Satellite to the cable TV system.

Only one button for instant recording! (OTR = One Touch Recording)

Insert cassette, press button **OTR** and recording starts. More on this later.

Recording and playback of sound in HiFi quality

Your recorder is provided with two different systems for recording and playing back the sound:

- the HiFi sound track for stereo recordings;
- the mono sound track for sound reproduction on standard VHS recorders.

You can also use the video recorder as HiFi sound tape recorder.
When making HiFi sound recordings or playing back, it automatically selects the longplay mode thus doubling the playing time of the cassette inserted.

The ATTS System (ATTS = AUTO - TAPE - TIME - SELECT)

automatically recognizes the **total playing time** as well as the already **elapsed playing time** when **standard hour cassettes** are used. The times are shown in the display.

Use the special functions of the recorder!

- Continuous playback, eg: commercial spots
- Continuous recording, eg: in surveillance systems
- Suppression of image interferences when playing back cassettes of poor quality recorded on another recorder.

Security Lock

With the electronic lock you can stop other people using your recorder without permission.

The recorder can be programmed for:

- four different TV broadcasts over a 12 month period.
- one daily recording at the same time,
- one weekly recording at the same time.

Positioning and Connection

Positioning

- Place the recorder onto a plain and hard surface.
- Do not set up the recorder in the immediate vicinity of a source of heat or in direct sunlight.
- Keep free the ventilation holes in the base of the recorder and the ventilation slots in the upper part of the cabinet.
- The recorder and the cassettes must not be exposed to moisture, or to sharp changes in temperature such as may occur when the recorder or the cassettes are taken from a cold to a warm area, which can lead to condensation (so-called "sweating"). In this case, switch on the recorder and allow it to stand for at least 2 hours without a cassette in it.

Aerial Connection

- Remove the plug (**A**) of the aerial cable from the aerial socket of the TV set and insert the plug into the socket Y of the video recorder.

Connection to TV Set

- Use the aerial cable supplied to connect the socket marked ⊡ on the video recorder (plug **B**) to the aerial socket on the TV set (plug **A**).

AV Connection

Advantage of this connection is a better quality of picture and sound during playback.

The recorded stereo sound **can only be played back via this AV connection** and a stereo TV set.

- If your TV set has a **Euro-AV** socket, connect this socket via a Eura-AV cable (plug **C**) with the **EURO-AV** socket of the recorder.
- If your TV set is provided with a **DIN-AV** socket, make the connection by means of a standard adapter cable.

Connecting to the Stereo System

- Connect the AUDIO sockets of the recorder to suitable audio input sockets of the stereo system using a commercial sound cable with phono plugs.

Power Supply Connection

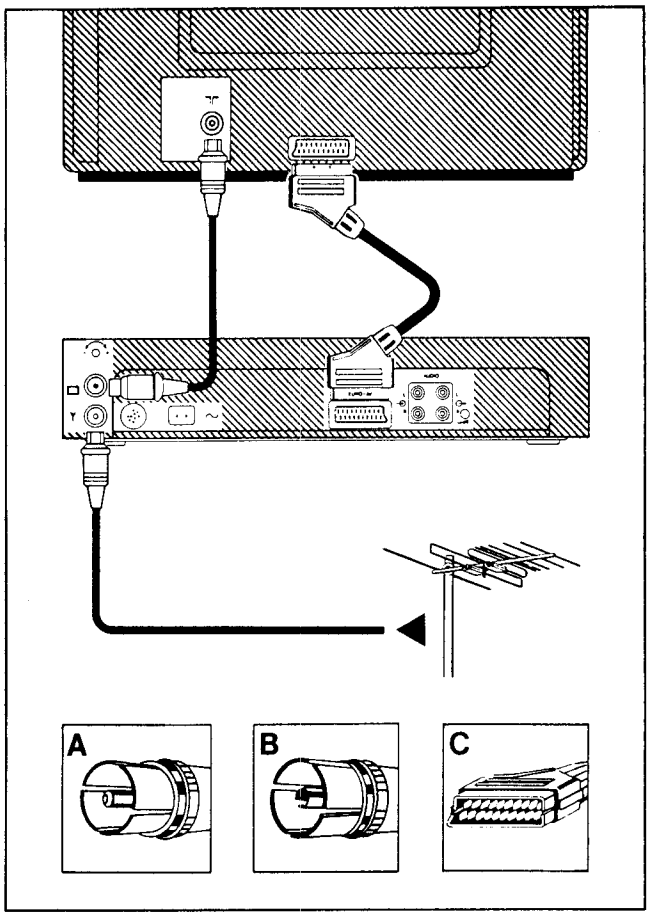
Your unit is designed to operate from 240 V AC mains electricity supply. When he installs it for you, your dealer will ensure that your local electricity supply is suitable and no further adjustments should be necessary. We advise that a 13 amp 3-pin plug provided with a 3 amp fuse be fitted. The brown lead must be connected to the live pin (marked "L" or "brown" or "red") and the blue lead to the neutral pin (marked "N" or "blue" or "black") On no account should either wire be connected to the earth pin (marked "E" or "green/yellow"). If other mains plugs are used, ensure that they are protected by a 5 amp fuse.

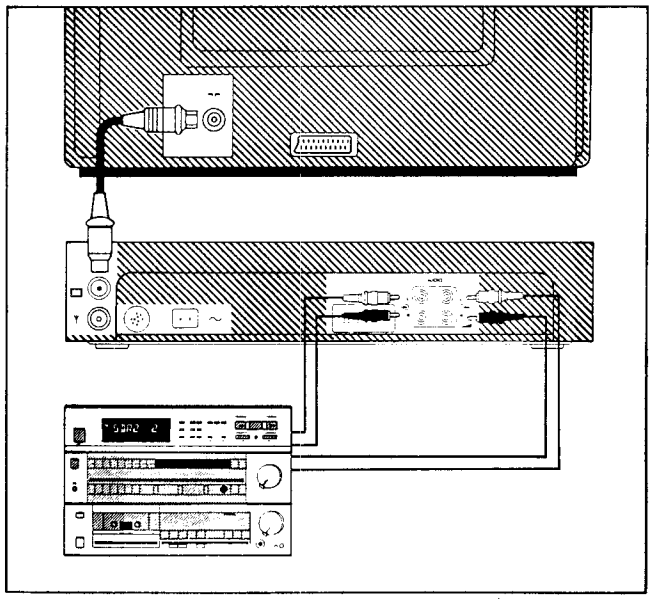
Connection to Mains

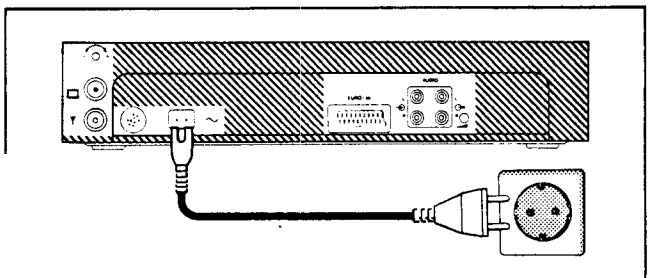
- Insert the mains lead supplied into the socket marked ~ on the recorder.
- Plug the mains lead into the wall socket (240 V AC, 50 Hz).

Switch on Recorder:

- by pressing **any button.** (Exception: button ⏻).
- by inserting a cassette.



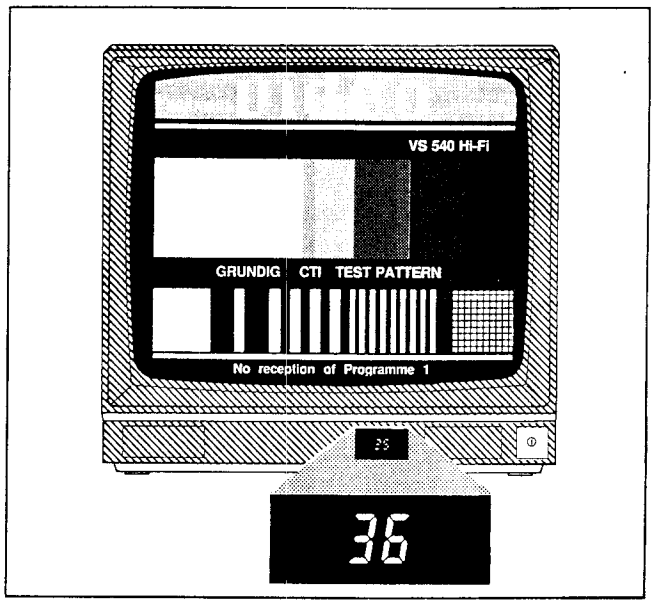


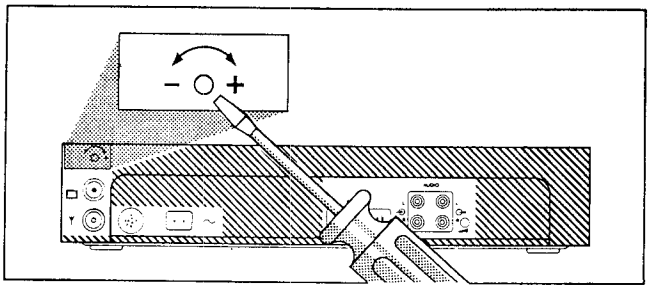


Tuning the TV Set to the Recorder

Your TV set receives the programmes of various stations on certain channels. Your recorder is also transmitting on such a channel (channel 36 in the UHF band) to which the TV receiver now must be tuned.
For this purpose, the recorder is provided with a transmitter which delivers a colour test pattern. Proceed as follows:

- Switch on TV set and select the **programme position** on the TV set, which is intended for playback of video recordings via the **aerial cable.**
- Unplug the aerial cable from the aerial socket Y of the recorder.
- Switch on recorder by pressing button ▲.
- The recorder now "transmits" the colour test pattern.
- Tune the TV set to the test pattern **(channel 36 in the UHF band)** and enter in memory.
  For information on how to do this see the operating instructions for yor TV set.
- Re-insert the aerial cable in the aerial socket Y of the recorder.
- If there is a TV station transmitting on channel 36, you will get "moiré patterning" or "wavy lines" on the screen of the TV set. In this case, the frequency of the output channel of the recorder test pattern must be varied:
- Slightly turn the channel selector − + on the back of the recorder to left or right.
- Again search and store the test pattern on the TV set.





Tuning the Recorder to TV Stations

So that your recorder can record TV broadcasts, it must be tuned to the local TV stations or to the special channels of the regional cable TV network.

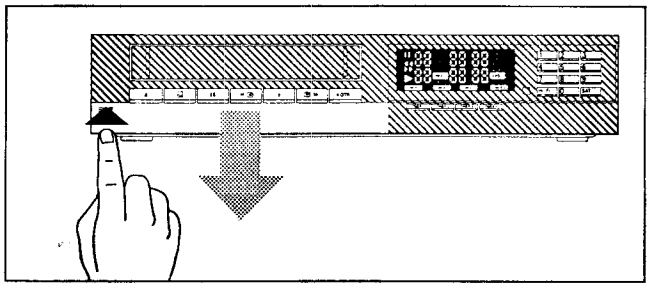
There are three possibilities for tuning:

1. Directly on the recorder by entering the channel number.
2. Directly on the recorder using the station search system.
3. With the remote control handset and text programming (see pages 25 - 37).

Information about the channel numbers/special channel numbers can be obtained from your **dealer, after-sales service** or the **post office**.

Up to 39 station positions can be allocated to stations.

For the **"record programming"** function with **Teletext** pages it is important that the **programme position 1** is allocated to a station of the ITV and **programme position 2** to a station of the BBC.



- Switch on TV set.
- Select the programme position for video playback on the TV set.

– The tuning procedure can be checked on the TV screen.

- Open flap. There are operating controls behind the flap which are not used too often.

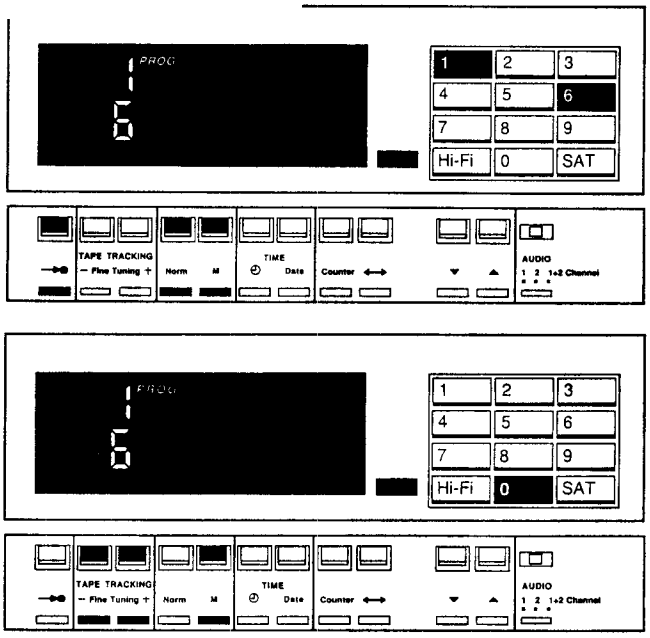
Tuning to TV stations by entering channel numbers:

Example 1

- Select station position 1 by pressing numbered button **1** and then button →•.

– The display shows the station position (in our example PROG. 1) and any channel number.
If **CA** (= special channel) appears next to the channel number in the display of the recorder, press the **Norm** button once, **CA** goes out.

- Enter the channel number (in our example channel 6, ARD) with the numbered button **6** and then enter it in the memory with button **M**.



Error Correction

To correct wrong entries, press numbered button **0 twice** and enter the channel number again.

Fine-Tuning the Preset Stations

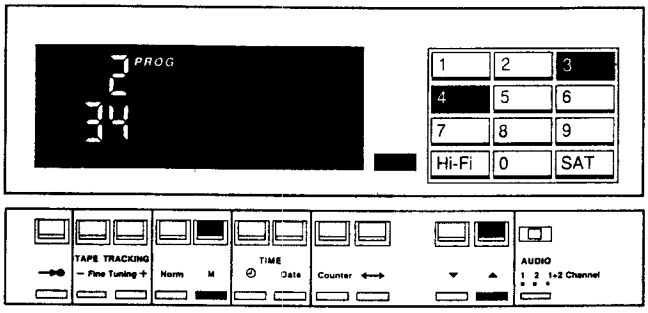
Compare the picture with the picture quality of the first programme you are accustomed to by switching to and fro between the programme position for video playback and the first programme position on the TV set.
If necessary, correct the picture quality with the **+ Fine Tuning –** buttons.
Then press the **M** button.

Tuning the Recorder to TV Stations

Example 2

- Selecet station position 2 by pressing button ▲ .
- Enter the channel number (in our example channel 34, ZDF) with the numbered buttons **3** and **4** and then enter it in the memory with button **M**.

– For error correction and fine tuning see example 1.



Example 3 (entering special channel)

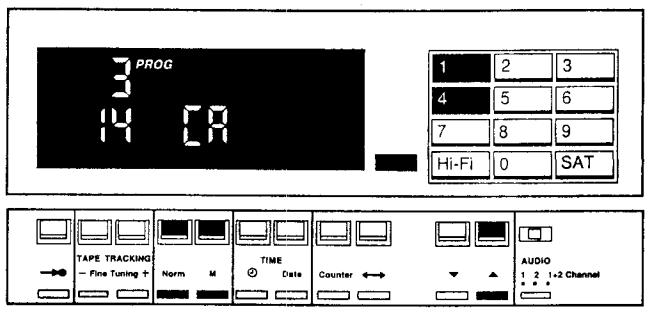
- Select programme position 3 by pressing button ▲ .
- Switch the recorder over to special channels by pressing the **Norm** button **once**.

– The station position (in our example PROG. 3), a channel number and **C A** (stands for special channel) appear in the display.

- Enter the channel number of the desired **special channel** (in our example S 14) with the numbered buttons **1** and **4** and press button **M**.

– For error correction and fine tuning see example 1.

- Following the above examples, up to 39 memory locations can be allocated to various stations and special channels.
- To terminate the tuning mode, press button ⏻ .



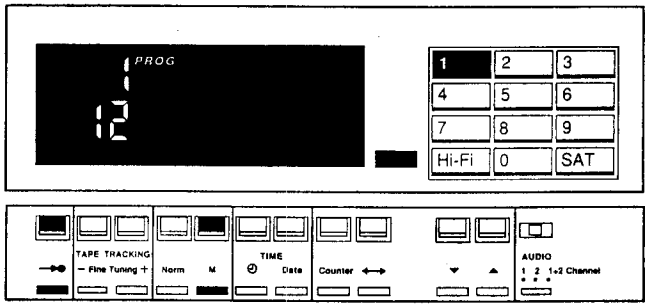
Tuning to TV stations using the automatic station search system:

The recorder searches the TV channels from channel 1 to 80 and then the special channels (**CA**) from channel S 1 to S 41. But the special channels (S 21 to S 41) are not allocated yet.

Example 4

- Call up first station position by pressing numbered button **1** and then button →•.
- Repeatedly press button →• until the station you wish to allocate to station position 1 appears with optimum picture quality on the TV screen.
- Store the found station (channel 12 in our example) by pressing button **M**.

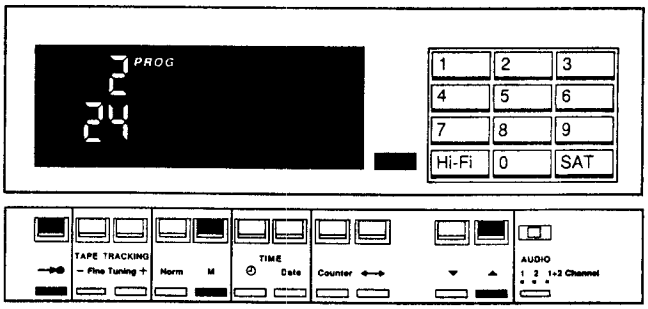
– For error correction and fine tuning see example 1.



Example 5

- Call up second position by pressing button ▲ .
- Repeatedly press button →• until the station you wish to allocate to programme position 2 is found.
- Store the found station (channel 24 in our example) with button **M**.

– For error correction and fine tuning see example 1.

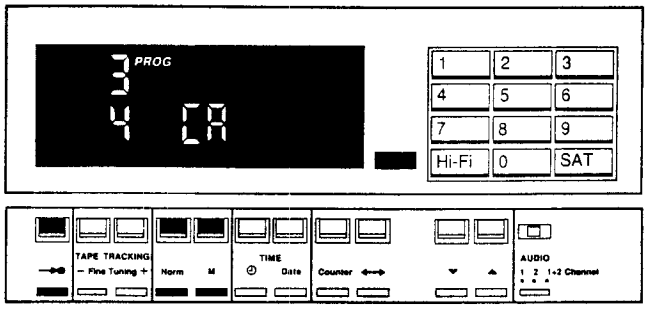


Example 6 (entering special channel)

- Call up third station by pressing button ▲ .
- Repeatedly press button →• until the programme of the desired special channel appears on the TV screen.
- Press button **M** to store the special channel (in our example S 4, indication **4 CA**) into the memory.

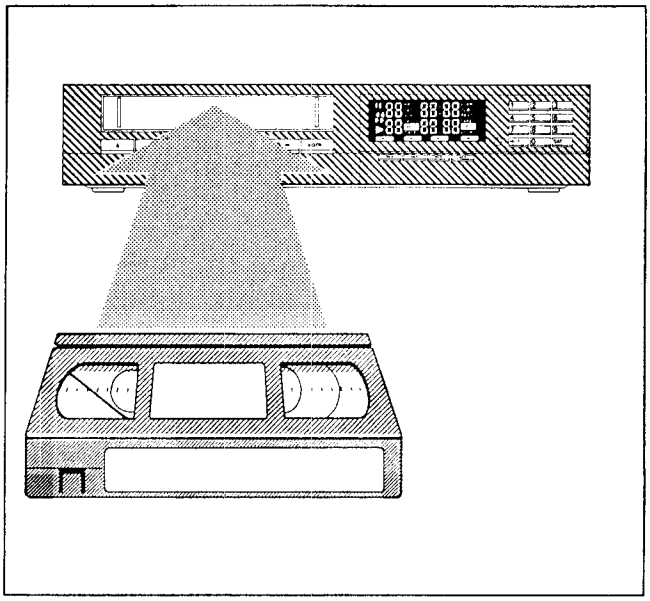
– For error correction and fine tuning see example 1.

- Following the above examples, up to 39 memory locations can be allocated to various stations and special channels.
- Press button ⏻ to terminate the tuning mode.



The VHS Cassette

- **You must only use VHS Video Cassettes.**
- **It is absolutely necessary to observe the information provided in the cassette container.**



Inserting the Cassette

- Insert the cassette with the label uppermost into the cassette compartment until it is automatically pulled in. The recorder is now switched on.
  - The total playing time (eg: **C 3** for 3 hours) as well as the tape time used are indicated in hours and minutes if a standard hour cassette is used.
  - With **non-standard** hour cassettes, the recorder automatically switches to tape length indication (four digits – **0000**).
- Principally it is possible to **enter** the total playing time for **all cassettes** in minutes with the numbered buttons **1 ... 0** and to **confirm** it with the button Counter (eg: **3 0** for a cassette with 30 mins. playing time and **1 9 5** for a cassette with 195 mins. playing time).
  - This is also valid in exceptional cases, in which the playing time indication on the cassette and the indication of the total playing time as calculated by the ATTS **differ**.

Removing the Cassette

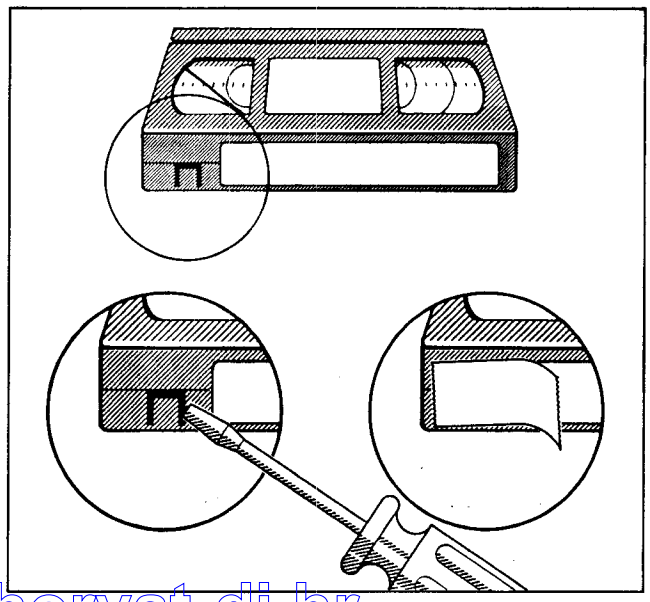
- Press button ⏏. The cassette will be partly ejected.

Indication of the Total Playing Time for Standard Hour Cassettes through ATTS.		
Cassette	**Playing Time Indication**	**HiFi Operation**
E 60 (60 mins.)	C 1	C 2
E 120 (120 mins.)	C 2	C 4
E 180 (180 mins.)	C 3	C 6
E 240 (240 mins.)	C 4	C 8

Indication after Entry of the Total Playing Time for Other Cassettes, eg:		
Cassette	**Playing Time Indication**	**HiFi Operation**
30 mins.	03	C 1
90 mins.	09	C 3
170 mins.	17	34
195 mins.	19	38

Erase Prevention

Whenever a recording is made on a cassette, any recording already on the tape will automatically be erased. For this reason, provision is made to prevent your recordings from accidental erasure.
To do this, simply break out the erase protection lug of the cassette.
If you later want to use a cassette protected in this way for recording, cover the hole with sticky tape.

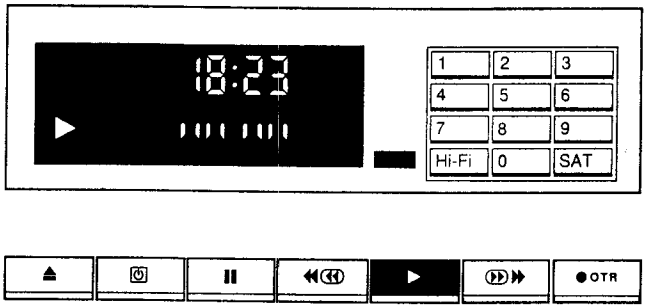


Playback

- Switch on TV set.
- Select the programme position for video playback on TV set.
- Insert cassette into recorder.
- Open flap.

Starting Playback

- Press button ▶ .
- Use the buttons **– TAPE TRACKING +** to optimise the picture/sound quality.
  The more vertical bars lighting up in the display (see Fig.), the **better** the **playback quality.**
- If the picture on the screen "jumps" or "rolls" when playing back cassettes recorded on other recorders, press the numbered buttons **8 5 1 1** and then buttons **M**.



Selecting the Sound Track

- When playing back select the desired sound track with switch **AUDIO** .

– Switch **AUDIO** set to **1**: synchronized sound track.
– Switch **AUDIO** set to **2**: original sound.

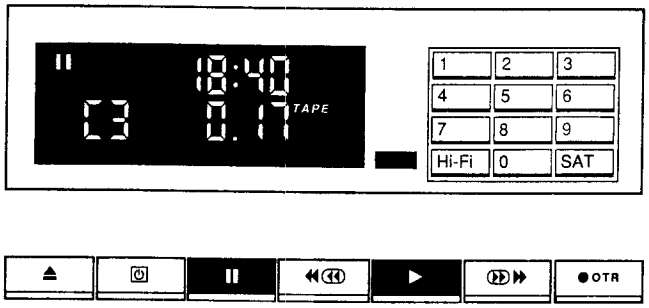
Pause (Freeze Frame) (with interference zones)

- Press button ▶ and then button **II**.

– Repeatedly pressing this button improves the picture quality and advances the freeze frame.
– The duration of the freeze frame function is limited in time. When this time has elapsed, the recorder is automatically switched to stop.

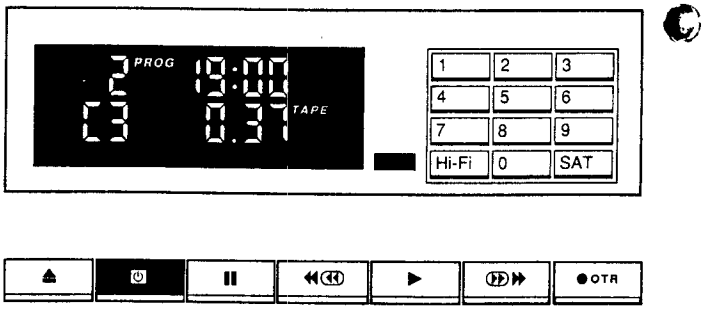
- To continue playback press button ▶ .

– Once the end of the tape is reached, the recorder automatically switches to rewind, the tape is wound to its beginning, and the recorder switches to stop.



Terminating playback

- Press button ⏻ .



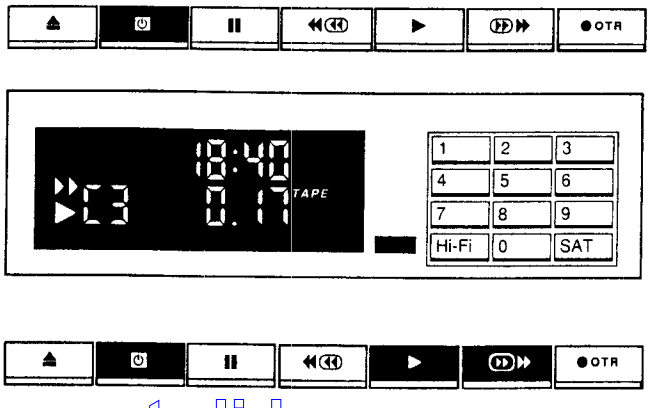
Picture Search (with interference bars)

For "thumbing through" a recording at 5 or 8 times normal playback speed.

- Forward search: Press button ▶ , then press button ⏩ ▶▶ once or twice (5 times, 8 times).
- Reverse search: Press button ▶ , then press button ◀◀ ⏪ once or twice (5 times, 8 times).

– The sound is automatically switched off.
– Picture search is time-limited. After that time has elapsed the recorder switches to stop.

- Cancel the search function by pressing button ⏻ .



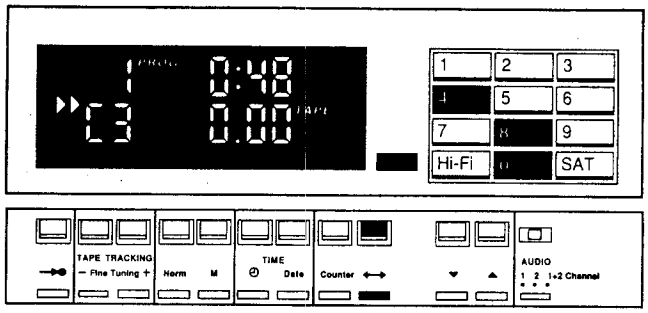
Playback

Go-To, Fast Winding Tape to a Certain Position

- Enter required Go-To time as **three figures in hours and minutes** using the numbered buttons **1 to 0.**

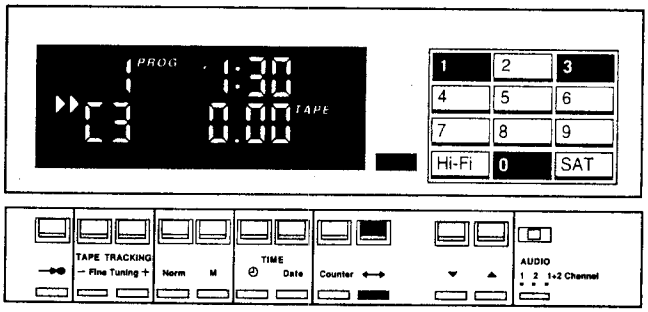
Examples:

- For a Go-To time of 48 minutes press the numbered buttons **0 4 8** , then press button ⟷ .



- For a Go-To time of 1 hour and 30 minutes press the numbered buttons **1 3 0**, then press button ⟷ .

– After the last entry, the recorder winds to the required tape position and then switches to playback.



Automatic Programme Finder (APF System)

This vacility enables you to find precisely and quickly the beginning of any recording (own recordings).

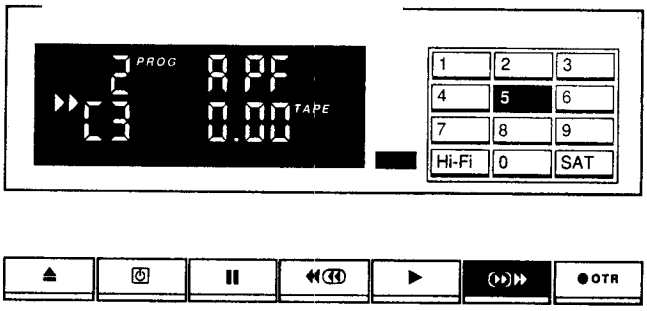
The system uses a special signal automatically recorded on the tape at the beginning of every recording.

The marks always refer to the **beginning of the tape**.

Example:

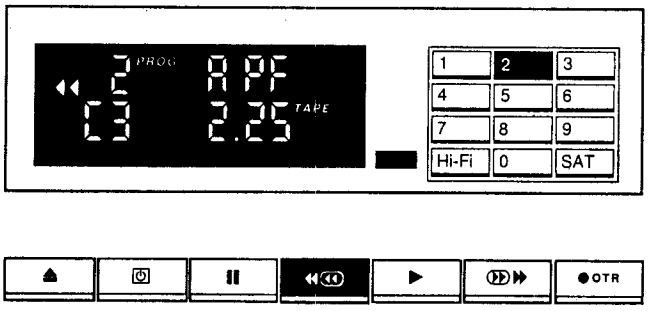
- The tape is at the beginning and you wish to see the fifth recording. For this press numbered button **5** and then button ⏭ .

– The tape will be wound to the beginning of the fifth recording and then automatically played back from this point.



- If, afterwards, you want to see the third recording (counting from the **tape beginning**), skip two recordings by pressing the numbered button **2**, then press button ⏮ .

– The tape will be wound to the beginning of the third recording and then automatically played back from this point.

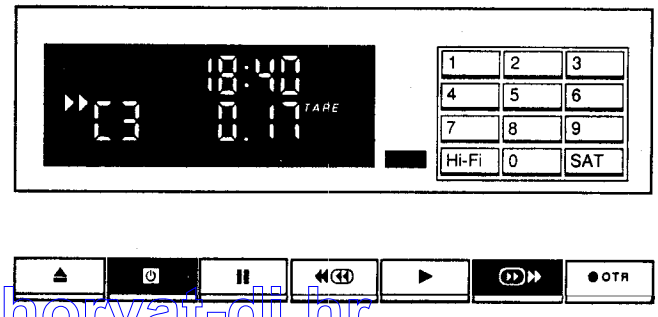


Fast Winding the Tape

- With stop selected: Fast forward wind with button ⏭ .
- With stop selected: Fast rewind with button ⏮ .

– When the beginning or the end of the tape is reached, the recorder automatically switches to stop.

- To cancel the fast wind mode, press button ⏻ .



Immediate (Manual) Recording

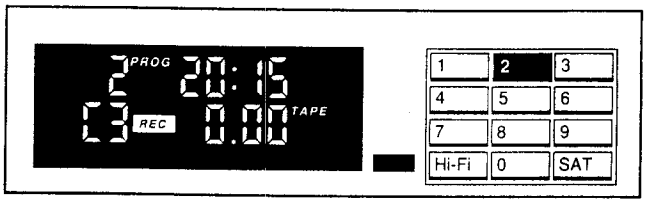
- Insert cassette with sufficient playing time (observe "Erase Prevention").

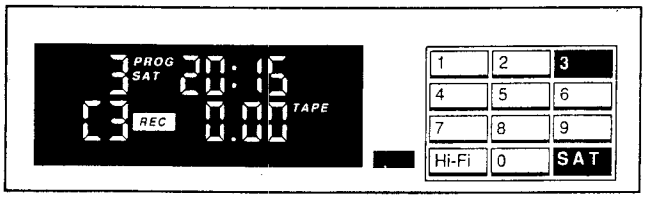
Recording TV programmes:

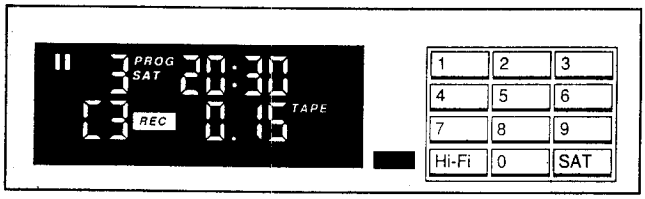
- Press button **OTR** for a longer time, recording starts (instant recording).
  - The unit will always record the programme of the station position number shown in the display of the recorder, **or**
- Select the required station position (2 in our example) with the numbered button **2** and start recording by pressing button **OTR**, **or**

Recording satellite programmes:

- To do this enter the required satellite programme with the numbered buttons **1** to **0**, then press the **SAT** button and start recording by pressing button **OTR**.
  - The display shows the current data, **STOP** flashes. After a short time the elapsed playing time of the tape appears.
  - You can watch the programme being recorded on the TV set (programme position for video playback). However, it is also possible to watch another TV programme whilst recording.
- To interrupt the recording, press button **II** (pause).
  - The pause mode is time-limited. After that time has elapsed, the recorder switches to stop.
- To restart recording press button **II** or button **OTR**.



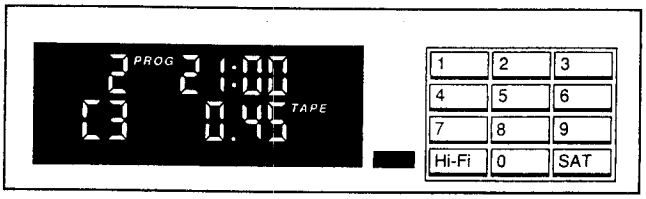




There are 3 possibilities of stopping the recording:

Possibility 1

- Stopping the recording with button ⏻ .



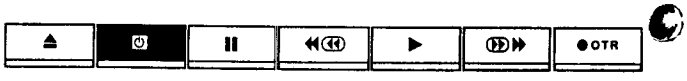
Possibility 2

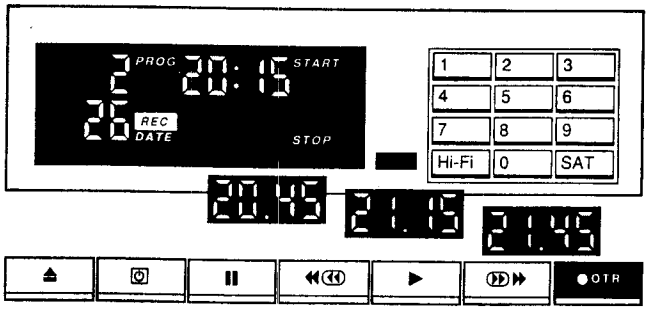
- Stopping the recording automatically by **30 minute intervals**.

Example

A recording has been started manually at **20.15 hours (= switch-on time)**.

- Then enter the **recording time** with button **OTR**. In example 90 minutes (press **OTR** button 3 times).





OTR button	Recording time	Switch-off time
1st press	30mins.	20.45 hours
2nd press	60 mins.	21.15 hours
3rd press	90 mins.	21.45 hours
4th press	120 mins.	22.15 hours
5th press	150 mins.	22.45 hours
6th press	180 mins.	23.15 hours
7th press	210 mins.	23.45 hours
8th press	240 mins.	0.15 hours
9th press	30 mins.	20.45 hours

- The display shows the switch-off time and after a short time the elapsed playing time of the tape appears.

Immediate (Manual) Recording

Possibility 3

Automatically stopping a recording by entering the switch-off time.

Example

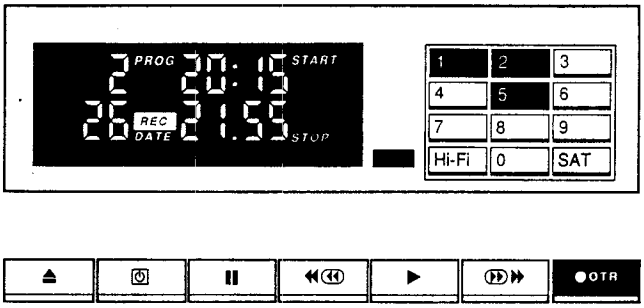
A recording has been started manually at **20.15 hours (= switch-on time)**.

- Enter the required switch-off time (in example 21.55 hours) with the numbered buttons **2 1 5 5** and confirm with button **OTR**.

– **REST** in the display indicates the remaining playing time of the tape.

– After approx. 3 seconds the elapsed playing time of the tape appears.

→ If the end of the tape is reached during recording, the recorder will switch to fast rewind, the tape will be rewound to the beginning and the recorder will switch to stop.



Canging the switch-off time

- Press button **OTR**, **STOP** flashes in the display of the recorder.
  Enter the new switch-off time with the numbered buttons **1** ... **0** and confirm with button **OTR**.

Parallel Sound Recordings

At the same time as the picture is being recorded, the sound from an external sound source can be recorded, for example, a concert being broadcasted by a TV station and a radio station. The radio sound is recorded on the hifi track whereas the television sound is recorded on the mono track.

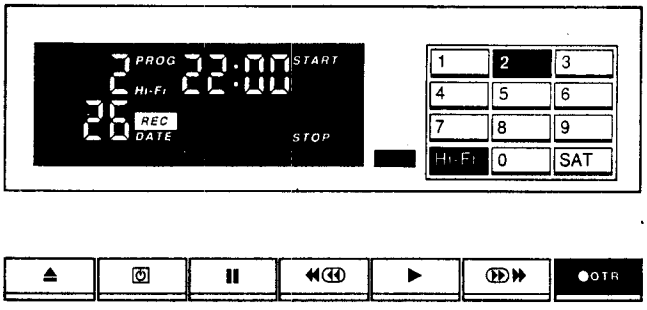
Preparations:

- Connect the external sound source (eg: hifi system) to the **AUDIO** sockets using a commercial sound cable with phono plugs.
- Insert cassette.

Recording:

- Select the required station position (2 in our example) with the numbered button **2** and then press the **Hi-Fi** button.
- Start recording by pressing the **OTR** button.

– During playback, the **Hi-Fi** button can be used to select between television and radio sound.



TIMER Programming

The recorder can be programmed so that it records at a later time.

You can programme:
- **four different TV broadcasts within a period of 12 months**
  or
- **one daily or weekly broadcast at the same time.**

The indications in the display will lead you step by step through the programming sequence.

A flashing indication in the display means, that you have to enter the respective data.

The programming of the TIMER positions can also be carried out with the remote control handset and "text programming" (see pages 25-37).

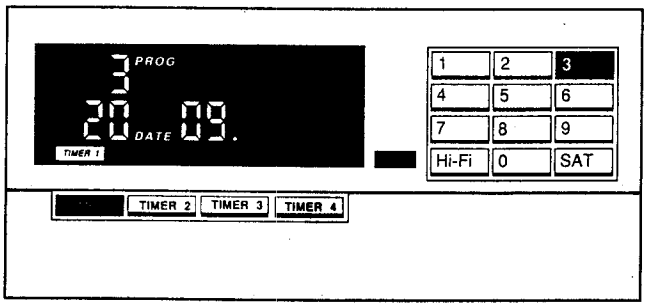
- Insert a cassette with sufficient playing time (observe "Erase Prevention").
- Check the time of day on the recorder.
- If a **F** appears in the display during programming, this means, that the memory has rejected the entered data (eg: 32.06 = non-existent date).

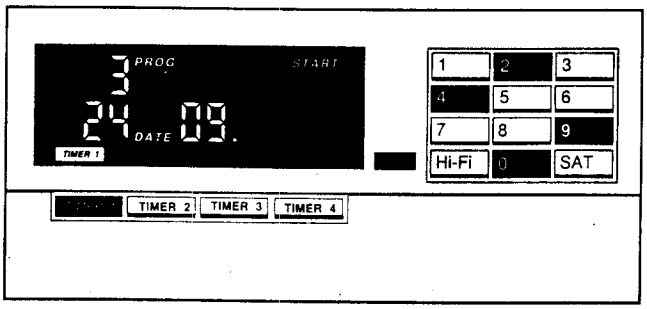
Programming Example

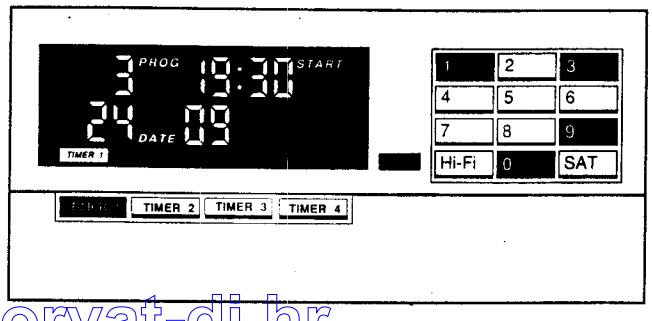
- Call up first TIMER by pressing button **TIMER 1**.
- **PROG** and **TIMER 1** flash in the display.
  Enter the desired programme position number (3 in our example) with the numbered button **3**, **or**

Recording satellite programmes:
- To do this enter the required satellite programme as one or two figures using the numbered buttons **1** to **0**, then press the **SAT** button, **or**

Recording radio programmes:
- To do this press the **Hi-Fi** button.
- Confirm programme entry with the **TIMER 1** button.
- **DATE** flashes.
  The actual date i shown in the display (September, 20th in our example).
  Confirm this date with button **TIMER 1** **or** enter the desired date (September, 24th in our example).
  – The number of the month must be entered as two figures (in our example **0** and **9**).
  Press the numbered buttons **2 4 0 9** and then button **TIMER 1**.
- **START** flashes.
  Enter the switch-on time (19.30 hours in the example) with the numbered buttons **1 9 3 0** and confirm with button **TIMER 1**.

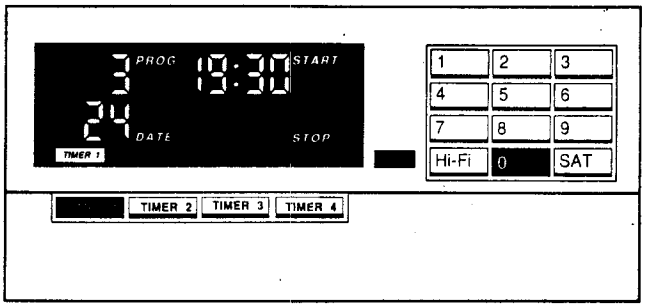




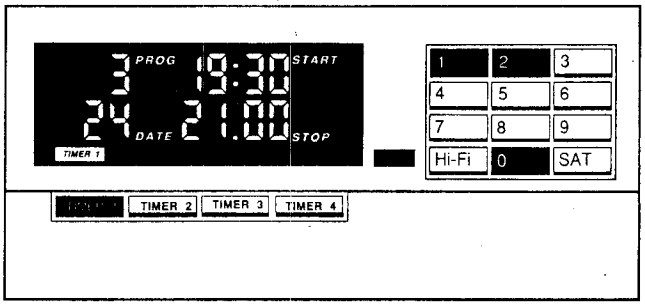


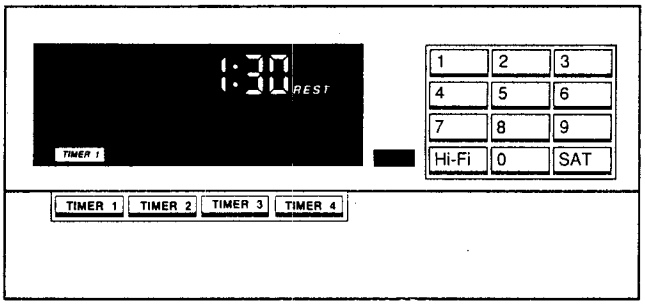
TIMER Programming

- **STOP** flashes.
  Enter switch-off time (21.00 hours in the example) with the numbered buttons **2 1 0 0** and confirm with button **TIMER 1**.
- The recorder is switched to recording standby mode and the recording is automatically started and stopped at the preselected times. From now on, the tape run buttons are blocked.
- A total of **four** TIMER positions can be programmed.



- **REST** means the time left for further recordings.
- If the programmed **recording times** exceed the **total playing time** of the cassette, the recording will run to the end of the tape, the recorder will switch to rewind and the tape will be rewound to the beginning. The recorder will then switch to stop.
- If **FULL** instead of **REST** appears in the display, there is not sufficient playing time left on the tape for the recording planned.
- **--:--** in the display means, that the total playing time has not been entered with a cassette not conforming to hour standard.
- If **CASS** is shown in the display, check whether the cassette is protected against accidental erasure.





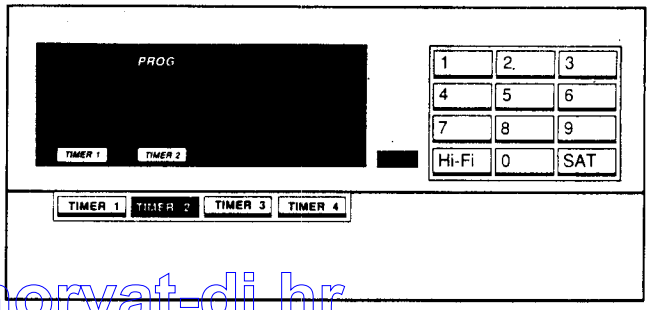
Interrupting the recording standby mode

If you want to use the recorder when it is in recording standby mode,

- press button ▲ approx. 5 seconds and perform the desired function.
- When finished insert the cassette again and confirm the **flashing TIMER** indication by pressing the **associated TIMER** button.
- The timer recording will be started at the programmed time.

Programming the second TIMER

- Press button **TIMER 2**, **PROG** and **TIMER 2** are flashing in the display, the allocated TIMER **(TIMER 1** in example) lights up.
- Enter the data for the desired TV programme in the same as in the way programing example for TIMER 1.
- If **COLL.** and **two flashing TIMER** indications briefly appears in the display, the switch-on and switch-off times of these **two TIMERS** are **overlapping**.
- Call up the TIMERS with buttons **TIMER 1 ... 4** and correct the TIMER times.



TIMER Programming

Altering individual data of a timer

If you wish to alter data, repeatedly press the **TIMER 1** button until the respective data word (PROG, DATE, START or STOP) flashes in the display.

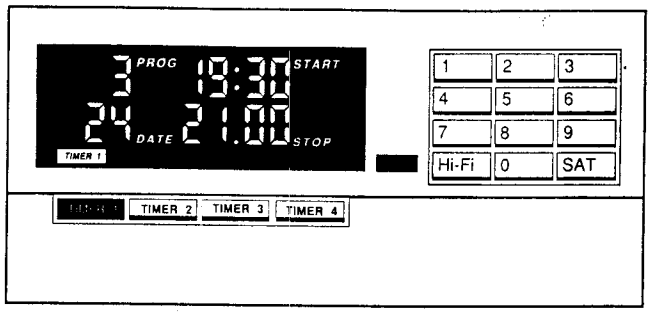
Example: Changing the switch-off time from 21.00 hours to 21.30 hours.

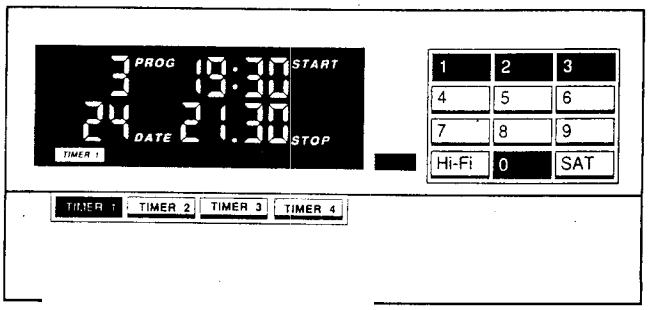
- Call up the TIMER to be corrected (TIMER 1 in the example) by pressing the **TIMER 1** button **once only.**

– The data to be corrected appear in the display, **TIMER 1** flashes.

- Repeatedly press button **TIMER 1** until **STOP** is flashing. Enter the new switch-off time (21.30) with the numbered buttons **2 1 3 0** and confirm with button **TIMER 1**.

– The recorder is switched to recording standby mode again and the recording will be started at the programmed time.





Erasing a programmed TIMER

- Call up the respective TIMER (TIMER 2 in the example) by pressing the **TIMER 2** button **twice, TIMER 2** and **PROG.** flash.

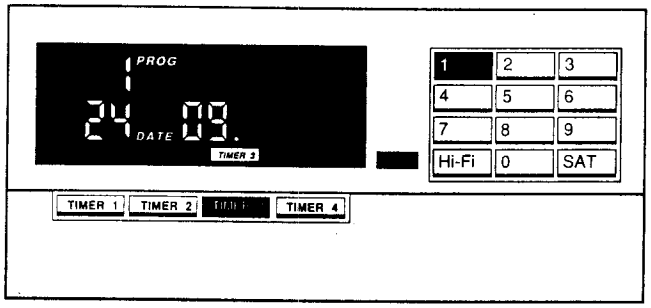
– The TIMER data are shown in the display of the recorder.

- Press numbered button **0** and then button **TIMER 2.**

– The TIMER is erased and can be programmed again.

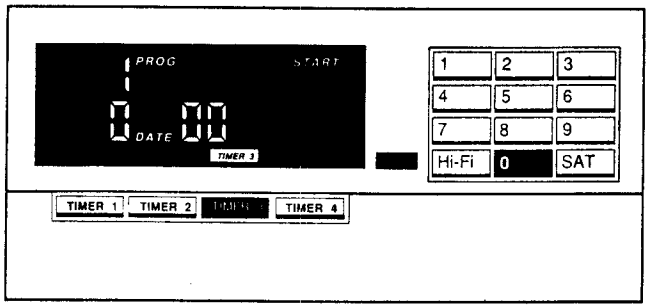
Automatic timer recording to be made daily ("every-day mode") or weekly ("every-week mode") at the same time.

- Call up the TIMER (TIMER 3 in the example) by pressing the **TIMER 3** button.
- Enter the desired station position number (1 in the example) with the numbered button **1** and confirm with the **TIMER 3** button.



Entering the "every-day" function.

- Instead of entering the date, press the numbered button **0** and confirm this entry with the **TIMER 3** button.

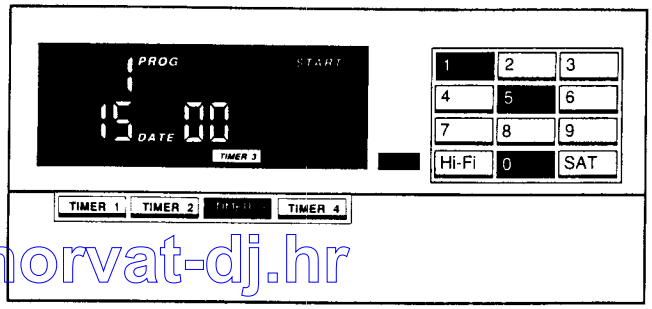


Entering the "weekly" function.

- Enter the day figure of the date (the 15th in the example) with the numbered buttons **1** and **5** and instead of entering the month figure, press the numbered button **0 twice** and confirm these entries with the **TIMER 3** button.
- Enter the switch-on and switch-off times with the respective numbered buttons and confirm with button **TIMER 3.**

– The recorder records **daily** or **weekly** at the same time until the end of the tape is reached.
At the end of the tape this recording mode is cancelled, the tape will be rewound to the beginning and the recorder switches to stop.

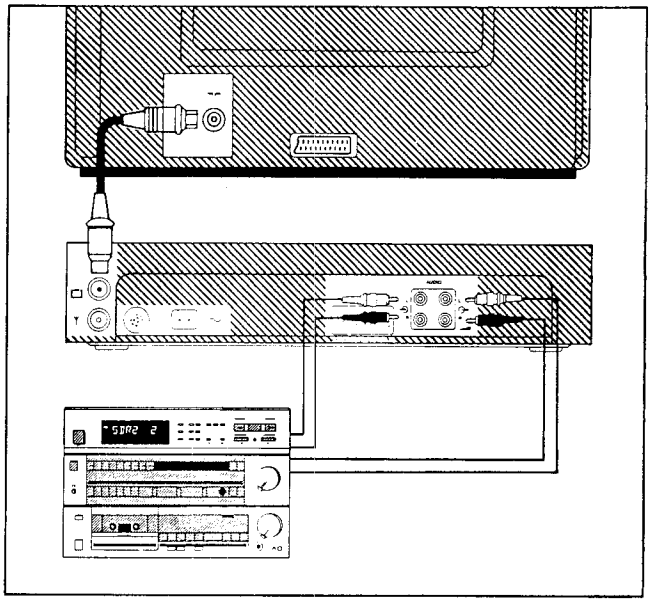
- To stop the **every-day** or **weekly** mode, press button ▲.



The Video Recorder as HiFi Sound Tape Recorder

Preparations

- Connect the hifi system to the **AUDIO** sockets (phono) of the recorder using a commercial adapter cable.
- Switch on the hifi system and select the desired sound source (eg: radio, music cassette, etc.).
- Insert a cassette with sufficient playing time in the recorder; the recorder is now switched on.
- It is recommended, to switch over from hours/minutes display to tape counter mode (4-digit tape position indication). To do so, press button **Counter**.

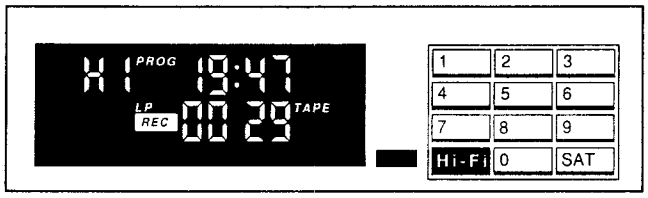


Sound Recording

- Start sound recording by pressing button **Hi-Fi** and then button **OTR**.

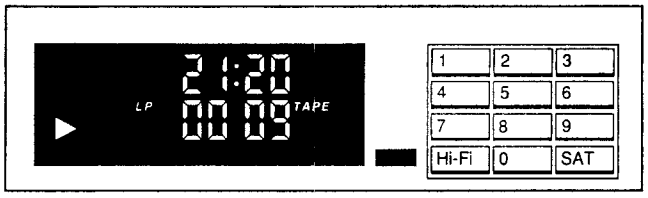
– The recorder automatically selects the longplay mode (**LP** lights up in the display = **double playing time** of the cassette inserted).
– The sound recording level is adjusted automatically.

- Stop sound recording with button ⏻.



Playing Back a Sound Recording

- Press button ⏪ and when the desired point on the tape is reached, press button ▶.
- Stop playback with button ⏻.

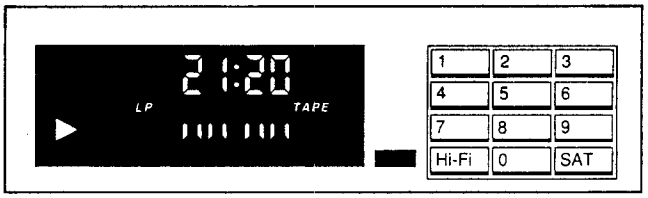


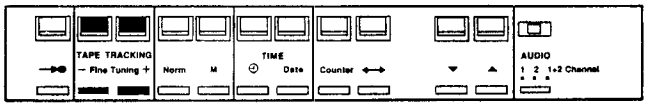
Adjusting the HiFi Sound Track

When playing back a cassette recorded on another recorder, it may be necessary to adjust the tracking of the sound track.

- For this purpose, continously press one of the – **TAPE TRACKING** + buttons.

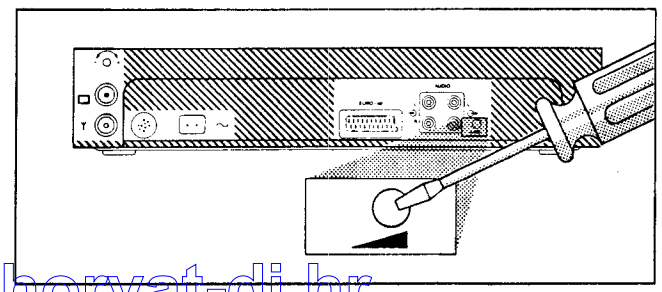
– The more vertical bars lighting up in the display (see Fig.), the better the playback quality.





Matching the Volume

If, on playback of a hifi sound recording, there is a difference in volume between the recorder sound reproduction and sound reproduction of the hifi system, match the volume of the recorder with the sound level control marked ◢ on the back of the recorder.

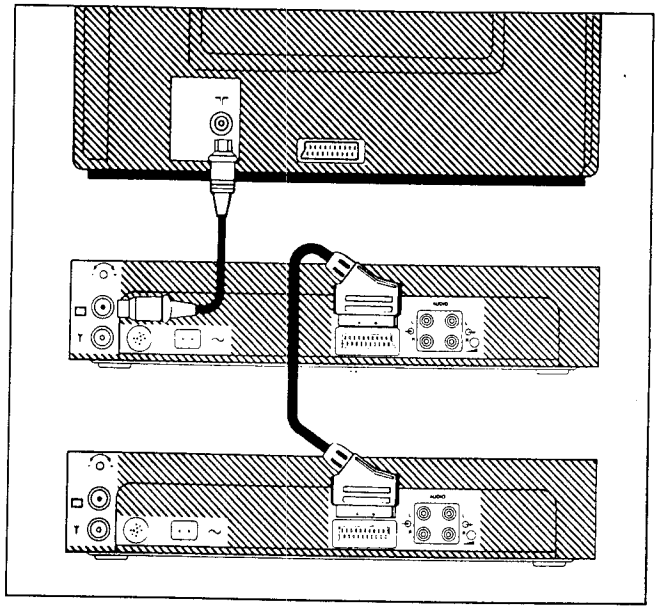


Copying Cassettes

Connection

[1] Connect the **EURO-AV** socket of your recorder with the respective socket of the other recorder.
– Adapter cables can be obtained from your dealer.

[2] Connect socket ⊏ of the recording recorder and the aerial socket of your TV set by means of an aerial cable.



Recording

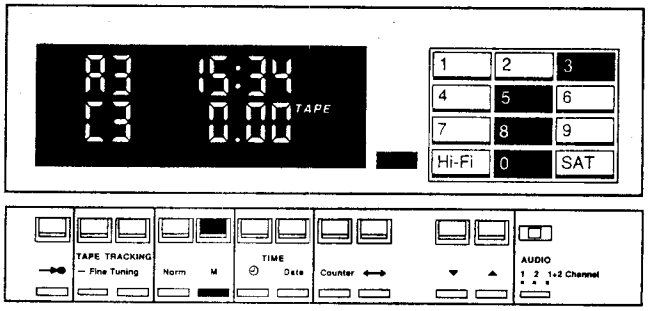
- Switch on TV set and select the programme position for video playback on the TV set (the TV set acts as monitor).
- Load the cassette to be copied into the **playback recorder** and a cassette of sufficient playing time into the **recording recorder**.
- Press numbered button **0** on the **recording recorder**.
- Start playback on the **playback recorder** and simultaneously start recording on your recorder by pressing button **OTR**.
- To stop recording press button ⏻ .

Special Functions of the Recorder

Your recorder can be programmed to

- play back continuously,
- record coninuously.

Repeated Playback



- Open flap.
- Load cassette and press button ▶.
  Press button ⏻ at the point where playback is to be stopped.
- Mark this point on the tape by pressing the numbered buttons **8 5 0 3** and then button **M**.

– **A 3** in the display indicates that this special function has been selected.
The tape is rewound to the beginning and the recorder switches to playback.
When the marked tape position is reached, playback is stopped, the tape is rewound to the beginning, and playback is started again.

- To cancel this special function press button ⏏.

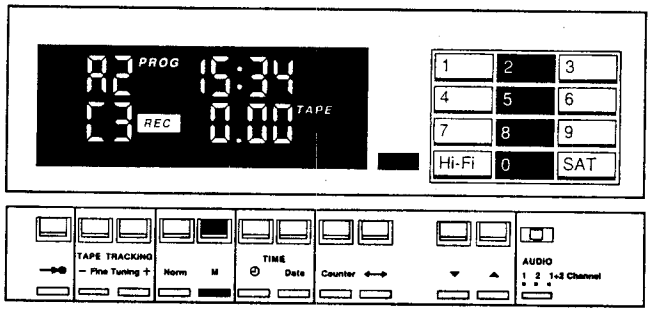
Repeated Recording

- Open flap.
- Load a cassette. Check whether the cassette is protected against accidental erasure.

Enter the special function:

- Recording via the EURO-AV socket.
  Press the numbered buttons **8 5 0 2** and then button **M**.

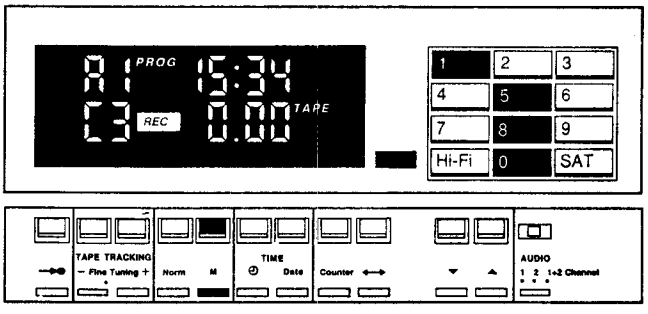
– **A 2** indicates that this special function has been selected.



Enter the special function:

- Recording via the aerial socket (aerial socket).
  Press the numbered buttons **8 5 0 1** and then button **M**.

– **A 1** indicates that this special function has been selected.

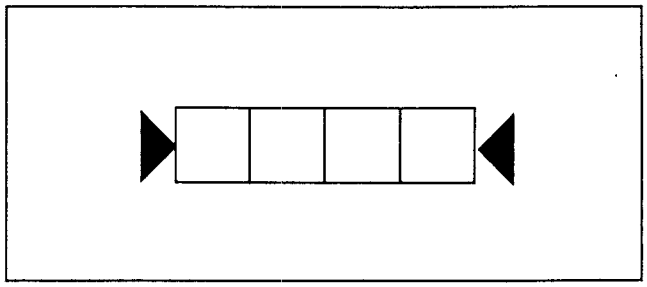


The recorder records until the end of the tape is reached, the tape is rewound to the beginning and recording is started again.

- To cancel this special function press button. ⏏.

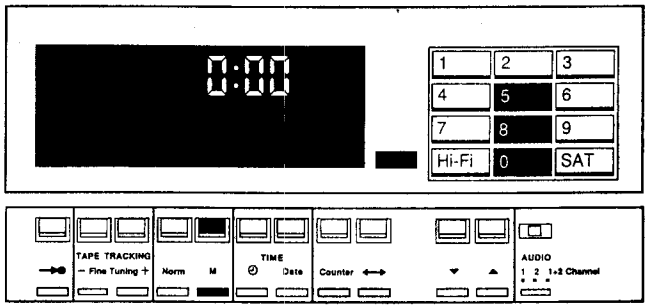
The Electronic Combination Lock

Your recorder is equipped with an **electronic combination lock** which can be used to prevent any of the function being selected. Even a cassette which is loaded after the lock is applied cannot be removed until you unlock the recorder again.
The lock can be applied and removed quite simply by using any number containing **4 digits**.
Select a number you wish to use then **enter this personal code in the boxes opposite.** This page can be removed and stored in a safe place.
If you should forget the code number or mislay this shett, your dealer will be able to unlock your video recorder.



To apply lock:

- Open flap.
- Prepare recorder for entering the code number. To do this, press button ⏻, numbered buttons **8 5 0 0** and then button **M**.

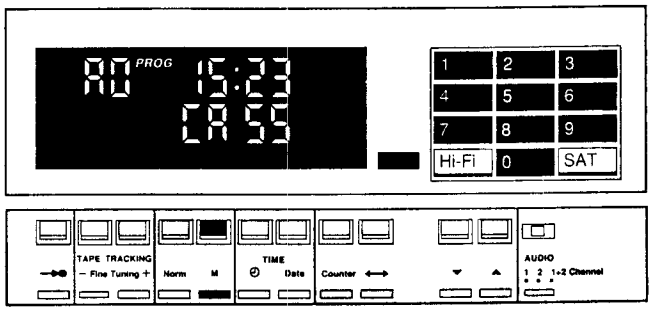


- Enter 4-digit code number with the numbered bottons.

Please make a note of your personal code number

- Store the code number by pressing button **M**.

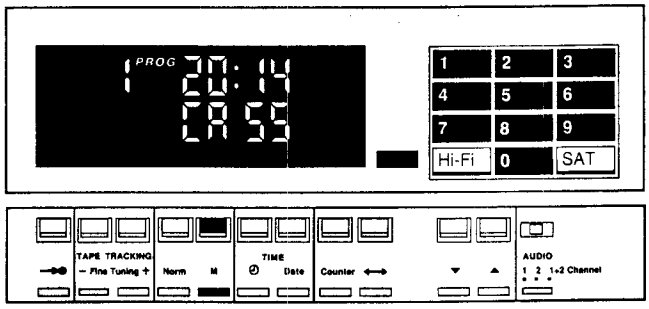
– The display shows **A 0** and the time of day (**15.23** in the example).
– The recorder is locked.
If a cassette is inserted, it cannot be removed until the recorder is unlocked.



To unlock the recorder:

- Open flap.
- Enter code number by pressing the respective numbered buttons and press store button **M**.

– **A 0** in the display goes out, the programme, the time of day (**20.14** hours in the example) and **CASS** are shown.
– This recorder is unlocked; all the functions can now be selected again.



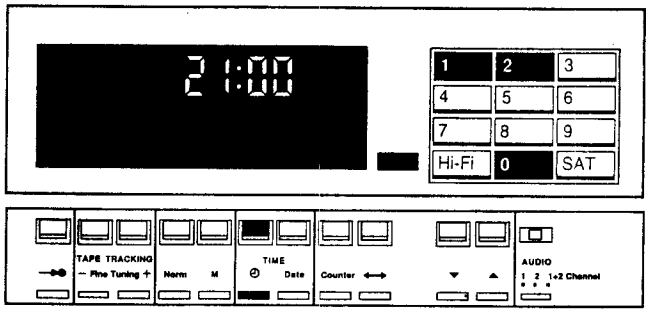
Changing the Time and Date

Resetting the clock from summer to winter time (eg: from 22.00 hours to 21.00 hours)

- Open flap, enter the time (21.00 hours in the example) with the numbered buttons **2 1 0 0** and confirm with button ⏲.

– After button ⏲ has been pressed, the clock starts running. This is indicated by dots flashing once a second.

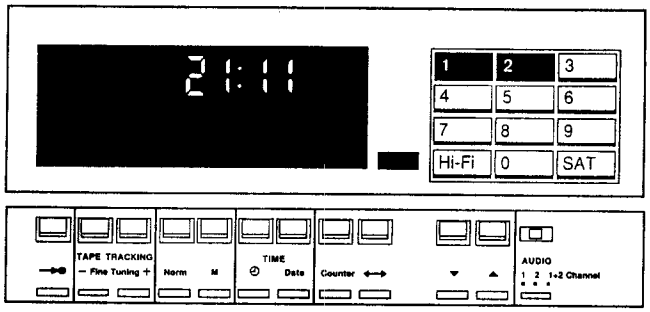
– The clock continues to run after the recorder has been disconnected from the mains, even though the display goes out.



Changing the date (example: from 22.11. to 21.11)

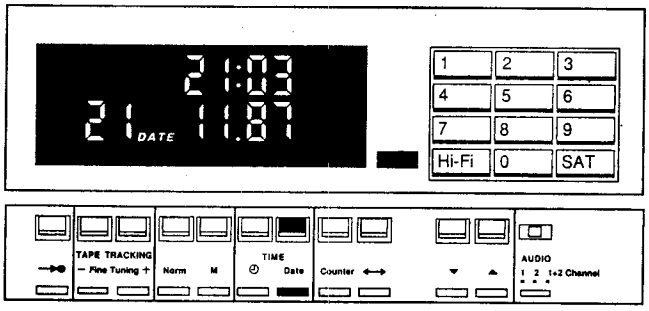
- Enter the date (November 21th in the example) by pressing the numbered buttons **2 1 1 1**.

– The month must always be entered as two figures.



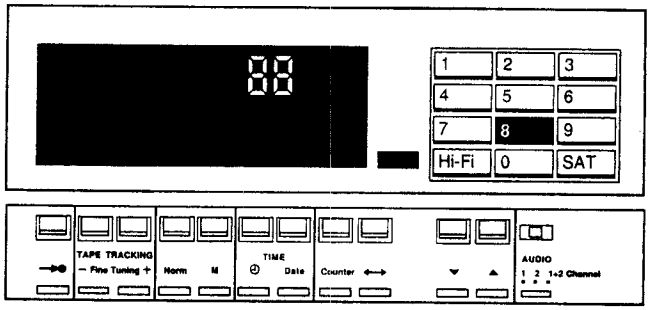
- Open the flap and confirm the date by pressing button **Date**.

– The date can be displayed at any time by pressing button **Date**.



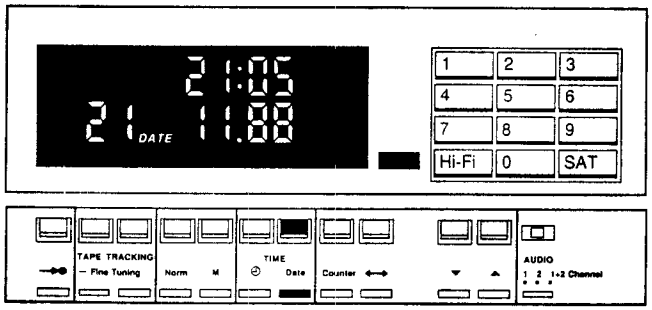
Correcting the year

- Enter the year ('88 in the example) by pressing the numbered buttons **8 8**.



- Open the plap and confirm the year by pressing button **Date**.

– The year and the date can be displayed at any time by pressing button **Date**.



Important Notes/Specification

This unit meets interference radiation regulations based on the EEC guidelines No. 76/889 and 82/499 EEC, BS 800: 1979, SI 1978/1267.

E. and O.E.

Subject to technical change and to alteration in styling.

On no account should your try to open the video recorder yourself as the manufacturer does not accept any liability for any damage which may result.

Automatic Error Indication

F and any number flashing in the display indicates that there is a fault which can often be eliminated by some simple operations.

First try to press button ▲ and change the cassette.

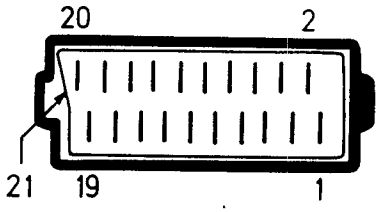
If this is of no avail, contact your dealer and tell him which number is flashing together with **F** in the display.

TV standard:	CCIR, PAL I 625 lines
System:	VHS
Mains power supply:	240V AC,±10%, 50 Hz
Weight:	approx. 6 kg
Power consumption:	
– on record:	approx. 27 W
– in "stop" setting:	approx. 23 W
– standby:	approx. 16 W (only time displayed, with reduced brightness)
Operating position:	horizontal
Ambient temperature:	+5°C to +40°C
Relative humidity:	up to 80%
Fast wind/rewind time:	max. 6 mins. for a E 240 cassette
Universal socket : (no standard)	9-pin,
Euro-AV socket: (DIN/EN 50 049)	21-pin
Aerial input socket: (DIN 45 325)	coaxial **B**, 75 ohm input
Aerial output socket: (DIN 45 325)	coaxial **S**, 75 ohm output

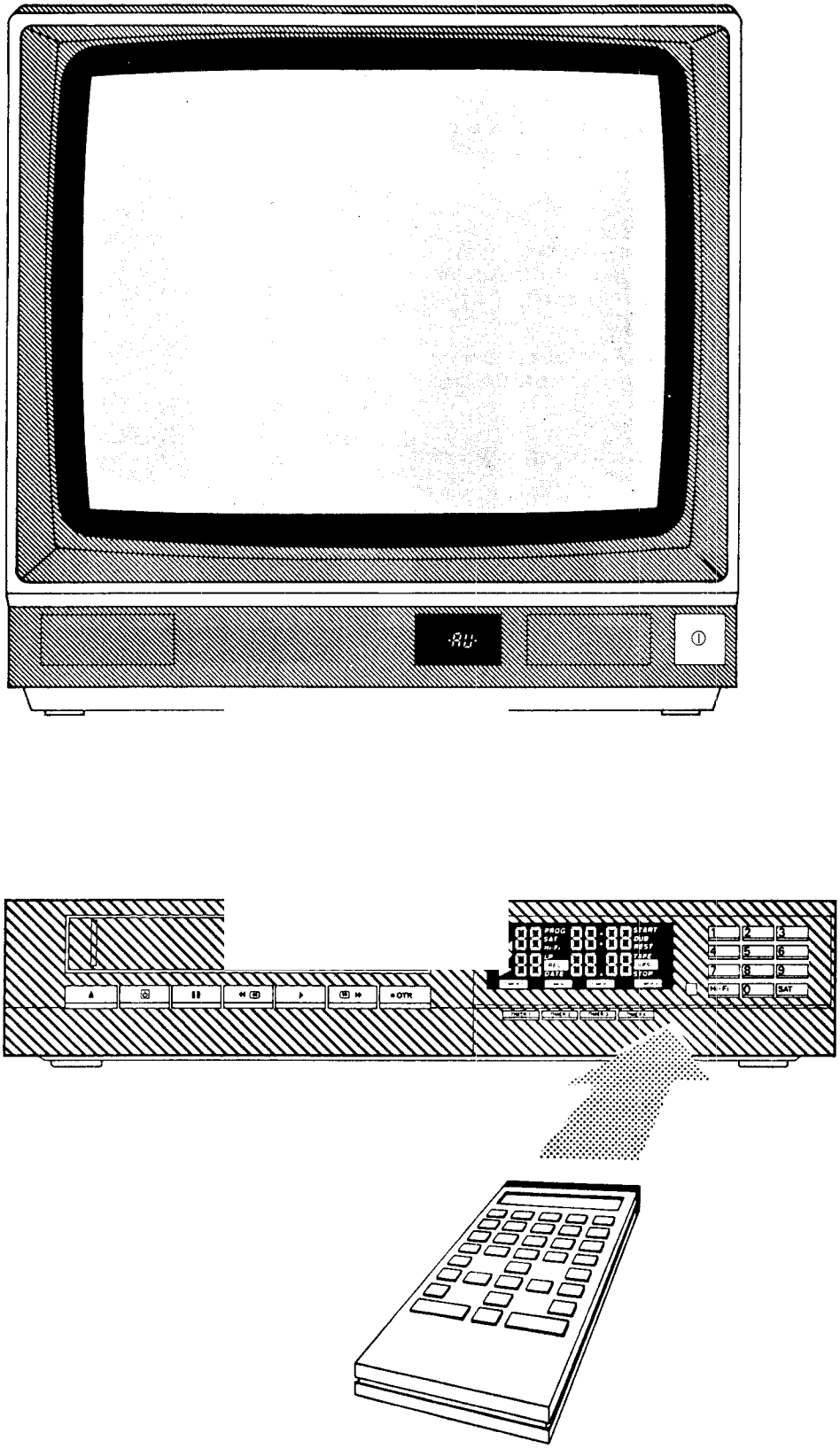
Grundig INTERNATIONAL LTD, HEAD OFFICE
Central WAREHOUSE SPARES & SERVICE
Mill road
Rugby Warwickshire
CV21 1PR

Pins Connections of Euro-AV Socket

Pin		Signal
1	=	audio output, R.H.
2	=	audio input, R.H.
3	=	audio output, L.H.
4	=	audio ground
5	=	n.c.
6	=	audio input, L.H.
7	=	n.c.
8	=	AV-switchvoltage
9	=	n.c.
10	=	n.c.
11	=	n.c.
12	=	n.c.
13	=	n.c.
14	=	n.c.
15	=	n.c.
16	=	n.c.
17	=	video-ground
18	=	n.c.
19	=	video-output
20	=	video-input
21	=	shield



The Video Remote Control Handset



The Video Remote Control Handset, ...

... central control unit for this video recorder and GRUNDIG colour TV sets (from 1983 models onwards).

From the comfort of your armchair, you will be able to remotely control most functions of the video recorder and television set.

The display of the remote control handset will **indicate each operating step visually** by a symbol (◻), as long as a button is pressed.

The instructions for the remote control handset are divided into four sections:

1. **TV functions**
   For the important functions of your GRUNDIG TV set.
2. **Programme and drive mechanism functions**
   Each button on the remote control handset controls the same function as the respective button on the unit.
3. **TIMER (preselection) functions**
   These are used to programme all TIMER (preselect memory) data in the remote control handset and to "transmit" the data to the recorder.
   The data appear in the display of the recorder.
   The TIMER recording will start and stop at the preselected times.
4. **Text programming**
   Programming with the remote control handset, checking on the TV set, ie: enter the data with the remote control handset, the data are shown on the screen of the TV set.
   Information lines guide you to the next programming step and the entry possibilities resulting from that.

   The possibilities of text programming:
   - Language selection
   - Tuning recorder to TV stations
   - Programming TIMER recordings
   - Selecting Teletext

1. TV functions

(Only with GRUNDIG remote-control colour TV sets from 1983 models onwards)

This involves using the following buttons:

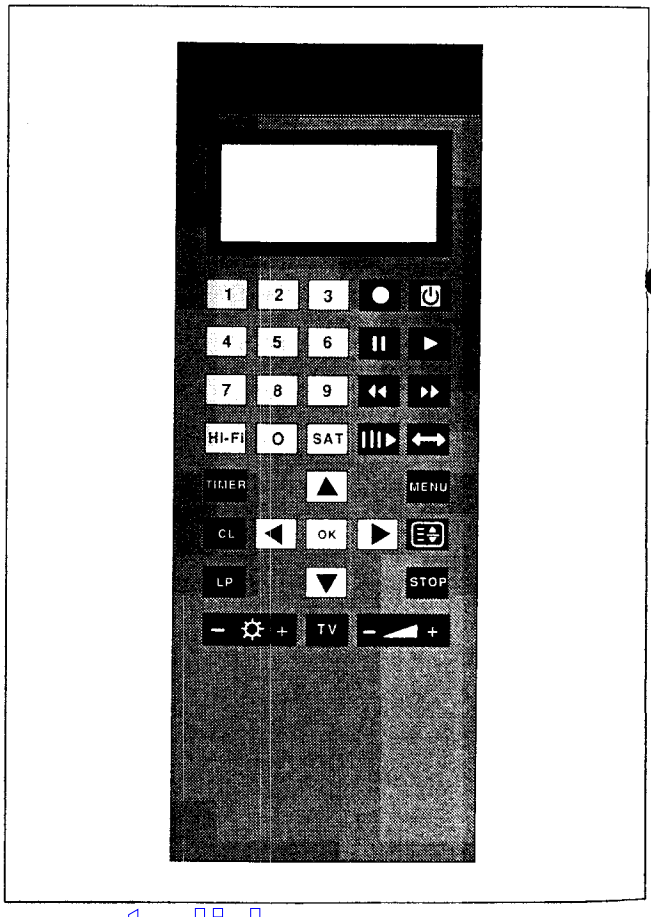
- Switch on the TV set with the mains switch.
- Point the remote control handset at the TV set.

TV ——— **TV button**

- **TV** button switches the GRUNDIG TV set from standby to **A V** or **A . V** programme position. Switches over between **A V** programme position and **A . V** programme position.
- Enter required TV station number (up to station position 39) as **one** or **two** figures using the numbered buttons **1** to **0**, then press the **TV** button.
- **Keeping** the **TV** button **pressed** switches the TV set to standby.
- Pressing the **TV** button again switches the TV set back on.

– ◢ + **Volume control**
Softer: press – side of button.
Louder: press + side of button.

– ☼ + **Brightness**
Darker: press – side of button.
Brighter: press + side of button.



The Video Remote Control Handset

2. Programme and drive mechanism functions

This involves using the following buttons:

1 ... 0 _____ **Numbered buttons**
For keying in:
The station number and the Go-To time.
The switch-off time for immediate (OTR) recordings.
The APF numbers for locating the beginning of your own recordings.

▲▼ _____ **Programme selection buttons**
▲ selects station position 1 and steps through the station positions in the sequence 2, 3 ... AV.
▼ selects the AV programme position and steps through the station positions in the sequence 39, 38 ... 1.
Keeping button ▲ or ▼ pressed changes the programme positions continuously.
Stopping programme selection: select tape run function or stop.

● _____ **Record button**
Pressing the button a longer period starts the recording.
1. Pressing the button once or several times determines the switch-off time of an immediate recording (30-minute interval).
2. Enter switch-off time with numbered buttons **1** to **0** and then confirm with button ●.

Hi-Fi _____ **Hifi button**
Starts a hifi recording.
A sound source (stereo system) must be connected to the AUDIO input sockets marked ⊖.
Press **Hi-Fi** button and then button ● .
On playback: switches over between standard sound and hifi sound.

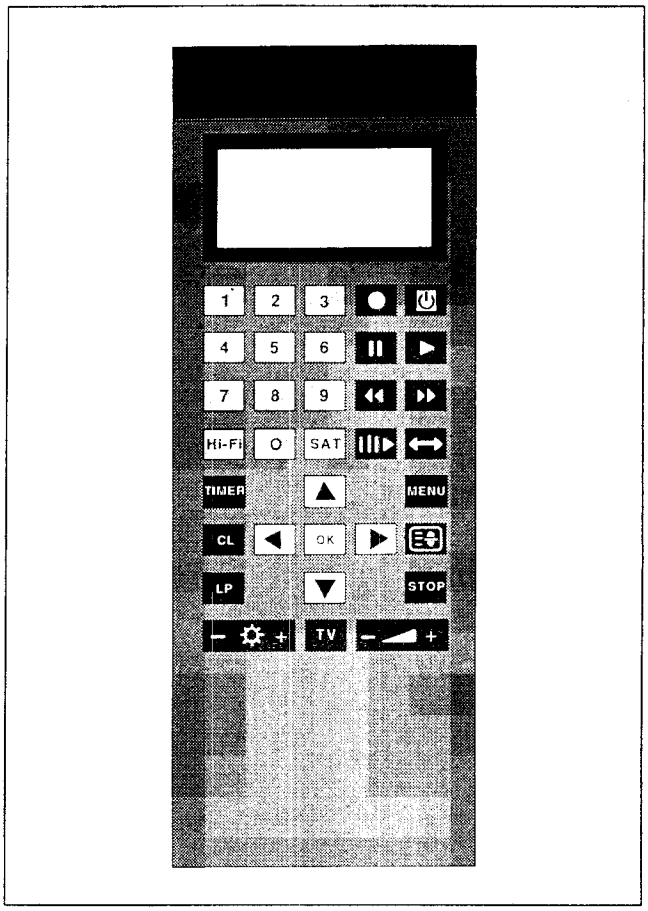
SAT _____ **Satellite button**
Starts a satellite programme recording (if a satellite receiver is connected to the EURO-AV socket).
Enter satellite programme as 1 or 2 figures using the numbered buttons **1** to **0**.
Press **SAT** button and then button ●.

◀◀ _____ **Reverse picture search button**
On playback: press once to play back at 5 times normal speed, without sound.
Press twice to play back at 8 times normal speed, without sound.

▶ _____ **Playback button**
Starts playback.

▶▶ _____ **Forward picture search button**
On playback: press once to playback at 5 times normal speed, without sound.
Press twice to play back at 8 times normal speed, without sound.

II _____ **Pause button**
On playback: still picture (freeze-frame).
Repeatedly pressing this button optimises the still picture and advances the freeze-frame.



◀◀ _____ **Rewind button**
On stop/standby: fast rewind of tape.
For APF (automatic programme finder): Enter number of required recording with the numbered buttons **1** to **0** and start with button ◀◀.

▶▶ _____ **Forward wind button**
On stop/standby: fast forward wind of tape.
For APF (automatic programme finder): Enter number of required recording with the numbered buttons **1** to **0** and start with button ▶▶.

⟷ _____ **Go-To button**
Enter required tape position as **3 figures** in hours and minutes using the numbered buttons **1** to **0**, then press button ⟷.

◀ ▶ _____ **Tracking buttons** (left, right)
On playback: pressing button ◀ or ▶ improves picture quality of recordings made on other recorders.

⏻ _____ **Stop and standby button**
Terminates all tape running functions and pause mode.
On stop: pressing the button again switches the recorder to standby; the time of day ist shown with reduced brightness.

The Video Remote Control Handset

3. TIMER (preselection) functions

This involves using the following buttons:

TIMER ____ **TIMER button**
For switching on the display of the remote control handset and for confirming the entered data.

C L ____ **Cancel button**
For cancelling individual data in the display; for erasing the complete TIMER position.

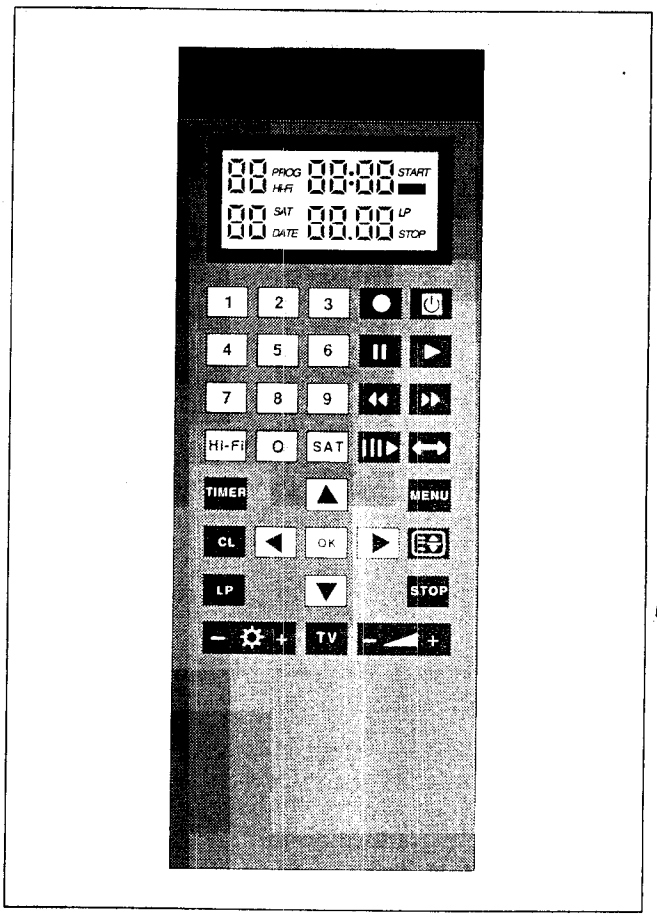
STOP ____ **STOP button**
For switching off the display.
The data entered in the memory are retained.

1 ... 0 ____ **Numbered buttons**
These can be used to enter:
Programme, date, start and stop times for TIMER recordings.

Hi-Fi ____ **Hifi button**
For programming a sound recording.
A sound source (stereo system) must be connected to the AUDIO input sockets marked ⊖.

SAT ____ **Satellite button**
For programming satellite programmes (if a satellite receiver is connected to the **EURO-AV** socket).

O K ____ **OK button**
For transmitting the data to the recorder.



Example of programming

⚠ Note: An **F** appearing in the **display of the remote control handset** indicates that the data has not been accepted (eg: 32.09. = non-existent date).

- Press **TIMER** button; **PROG** flashes in the display.

Recording TV programmes:

- To do this, enter required TV station number as one or two figures using the numbered buttons **1** to **0**, **or**

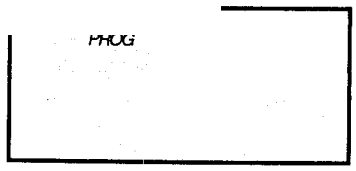
Recording satellite programmes:

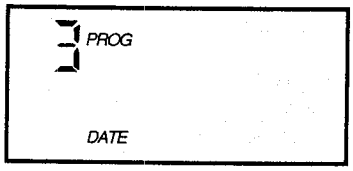
- To do this, enter the required satellite station number as one or two figures using the numbered buttons **1** to **0** and then press the **SAT** button, **or**

Recording radio programmes:

- To do this, press the **Hi-Fi** button.
- Confirm programme entry with the **TIMER** button.

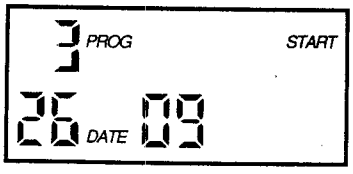
– **DATE** flashes in the display.





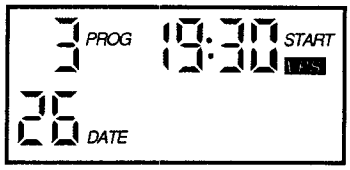
- Enter date with numbered buttons **1** to **0** (always enter month as two figures) and confirm with **TIMER** button.

– **START** flashes in the display.

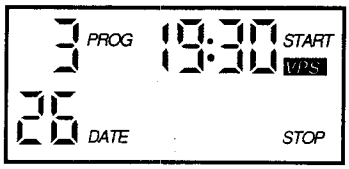


The Video Remote Control Handset

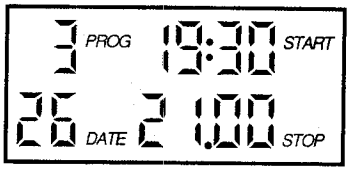
- Enter starting time (in hours and minutes) with buttons **1** to **0** and confirm with **TIMER** button.
- **VPS** flashes in the display.



- Erase VPS by pressing numbered button **0**.
- **STOP** flashes in the display.



- Enter stopping time (in hours and minutes) with numbered buttons **1** to **0** and confirm with **TIMER** button.
- The TIMER position of the remote control handset is now completely programmed.



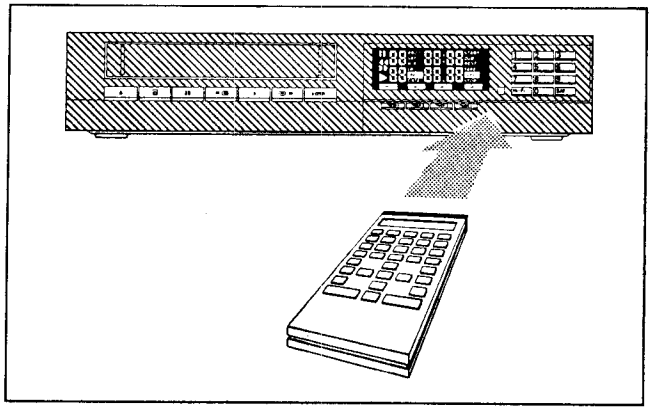
Before the TIMER data are "transmitted" to the recorder, you can:

Correct the TIMER data of the remote control handset

- Repeatedly press the **TIMER** button until the respective "data word" (PROG. DATE, START, STOP) flashes in the display.
- **"Overwrite"** the **data** with the numbered buttons **1** to **0** and confirm all following data with the **TIMER button**.

"Transmitting" the TIMER data of the remote control handset

- After the last entry the TIMER data must be "transmitted" to the recorder. To do this, press the **O K** button and keep the remote control handset pointed at the recorder until the symbol ▯ **in the remote control handset** goes out.
- If the symbol ▯ appears **in the display of the recorder,** "transmit" the data once again by pressing the **O K** button **or** **TIMER** button, then press the **O K** button.
- The programmed TIMER data are now shown **in the display of the recorder, TIMER 1** flashes for several seconds and then the TIMER data are shown with reduced brightness.
- The recorder will start and stop the TIMER recording at the preselected times.

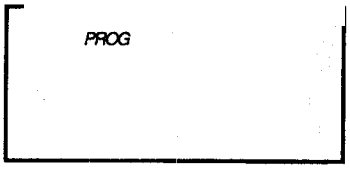


Switching off the display of the remote control handset

- Press **STOP** button.
- The TIMER data go out, but can be recalled with the **TIMER** button.
- After about 1 minute the display is automatically switched off.

Erasing the TIMER data of the remote control handset

- Press **TIMER** button.
  The TIMER data appear in the display.
- To erase the TIMER data, press the **C L** button and then the **O K** button.

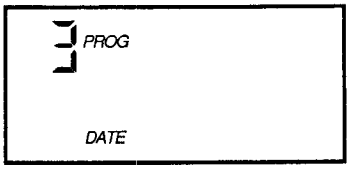


The Video Remote Control Handset

Automatic timer recording to be made daily (every-day mode) or weekly (every-week mode) at the same time.

- Press **TIMER** button; **PROG** flashes in the display.
- Enter required TV station number as one or two figures using the numbered buttons **1** to **0** and then confirm with the **TIMER** button.

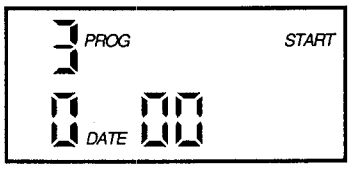
– **DATE** flashes in the display.



Entering the "daily" function:

- Instead of entering the date, press the numbered button **0** and confirm with the **TIMER** button.
- Enter switch-on time and switch-off time with the respective numbered buttons and confirm with the **TIMER** button.

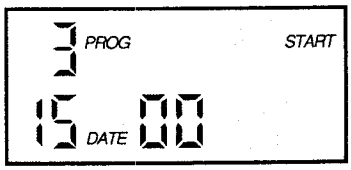
– The recorder will now make a recording at the same time "every day" until the tape is full. When the end of the tape is reached, the timer mode will be cancelled, the tape will be re-wound to the beginning and the recorder will switch to stop.



Entering the "weekly" function.

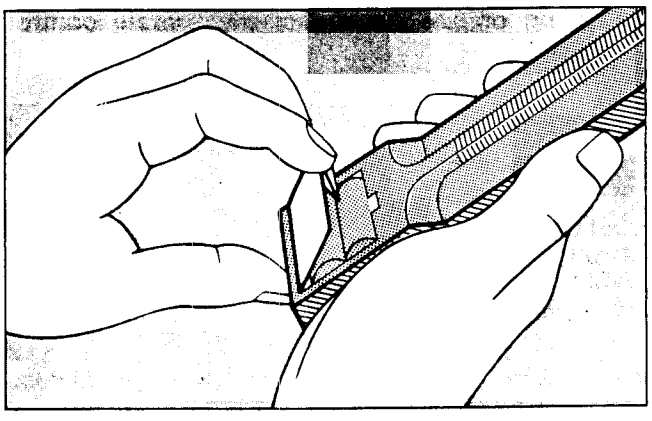
- Enter the date ot the first switch-on day with the numbered buttons **1** to **0** and **instead** of entering the month, press the numbered button **0 twice** and confirm with the **TIMER** button.
- Enter switch-on time and switch-off time with the respective numbered buttons and confirm with the **TIMER** button.

– The recorder will now make a recording at the same time "every week" until the tape is full. When the end of the tape is reached, the timer mode will be cancelled, the tape will be re-wound to the beginning and the recorder will switch to stop.



Changing the batteries (two 1.5 V HP 7 batteries)

Should the recorder no longer respond to the signals from the remote control handset, the batteries are probably exhausted. You may change the batteries yourself.
To remove the battery compartment cover, press the catch, remove the cover and replace the batteries (observe polarity).
Exhausted batteries should be removed from the remote control unit as no responsibility is taken for damage caused by leaking batteries.



Text Programming

4. Text programming ...
... the comfortable way to operate your recorder.

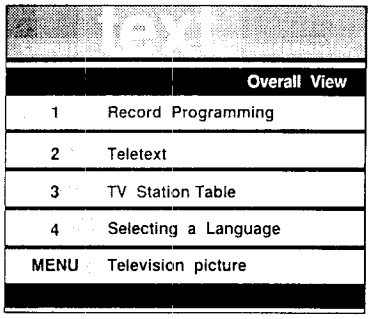
Text programming enables you to carry on a dialogue with this recorder.

Each function selected with the remote control handset is "answered" by the recorder with information pages and dialogue lines on the screen of your TV set.

The instructions marked **yellow** denote the buttons which have to be pressed on the remote control handset for the operation. Your are guided step by step with instructions which are simple and understandable.

From the information page **Overall View**, you can select:

- Record programming
- Teletext
- TV Station Table
- Selecting a Language
- Television Picture



For text programming the following buttons are required:

MENU — **MENU button**
Switches to Text programming and back to TV programme.

O K — **OK button**
Confirms entries.

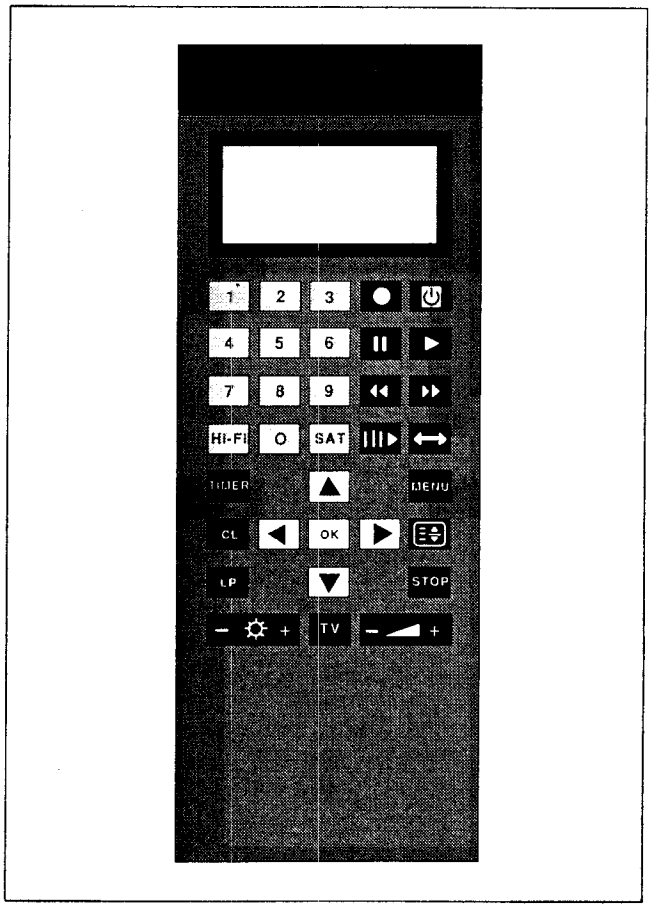
1 ... 0 — **Numbered buttons**
For keying in:
Programme, date, start and stop times, Teletext pages and the instructions of the dialogue line.

C L — **Cancel button**
For erasing data.

SAT — **Satellite button**
Switches over to satellite programmes.

▲ — **Cursor button**
For selecting ...
... the individual station positions 39 ... 1;
... the TIMER positions 4 ... 1;
... a "daily" recording;
... the required language.

▼ — **Cursor button**
For selecting ...
... the individual station positions 1 ... 39;
... the TIMER positions 1 ... 4;
... a "weekly" recording;
... the required language;
... the manual entry mode.



Text Programming

▶ _____ **Cursor button**

For selecting ...
... the station positions 21 ... 39;
... letters/characters;
... the data to be changed;
for TIMER programming.

◀ _____ **Cursor button**

For selecting ...
... the station positions 1 ... 20;
... letters/characters;
... the data to be changed.
Switches over to special channels.

_____ **Large/small button**

Enlarges the picture screen content and switches back again to normal size.

- Switch on TV set.
- Select the programme position for video playback on the TV set.
- Point the remote control handset at the recorder.
- Switch off the data shown in the display of the remote control handset by pressing the **STOP** button.

Selecting the language

Select "your" language.

- Select the **Overall View** page with the **MENU** button.
- Select the line **4 Selecting a Language** in the **Overall View** page using the numbered button **4**.

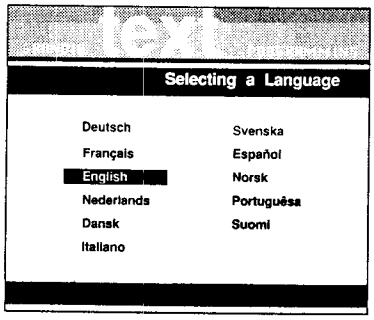
– The **Selecting a Language** page appears.

- Select the required language with the buttons ▲ or ▼.

– The selected language is marked with blue background.

- Return to the **Overall View** page using the **MENU** button.

– The information pages and all dialogue lines appear now in the language selected.



TV Station Table

(Tuning the recorder to TV stations)

- Select the **Overall View** page using the **MENU** button.
- Select the line **3 TV Station Table** in the **Overall View** page using the numbered button **3**.

– The **TV Station Table** appears; programme position 1 is activated (line marked with blue background).

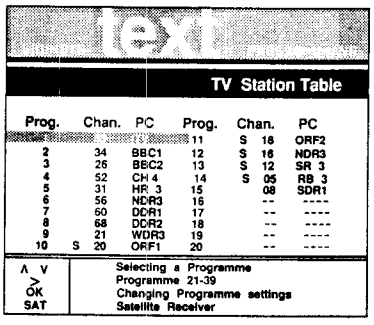
Example of tuning station position 1:

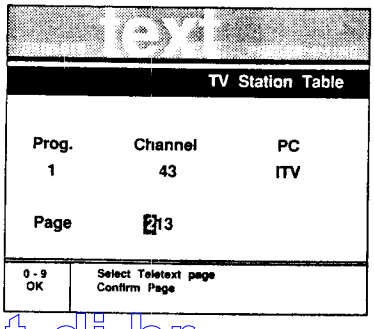
- To change an allocated station, press the **O K** button.

– The first station position appears enlarged on the screen; the first digit of the channel number shows a rectangle (cursor).

- Enter the required channel number (in the case of special channel numbers press the ◀ button beforehand) as two figures using the numbered buttons **1** ... **0**.
- Enter the station abbreviation (max. 4 places) by repeatedly pressing or holding pressed the buttons ◀ or ▶ until the required letter (character) is shown.
- Confirm the letter (character) with the **O K** button.
- Repeat the entry for the 3 remaining places.

– After the last entry the **TV Station Table** is shown again; station position 1 shows the data entered.





Text Programming

Following this example, up to 39 station positions can be allocated to the channel numbers/special channel numbers of the stations.
Teletext page numbers can only be allocated to station positions 1 and 2 .
The station positions 21 ... 39 cannot be programmed with station abbreviations.

- Select the station positions 2 ... 20 with button ▲ or ▼ .
- Switch over to station positions 21 ... 39 with button ▶; switch back to station positions 1 ... 20 with button ◀.

Note on record programming with Teletext pages:

For the "record programming" function with Teletext pages it is important that the programme positions 1 and 2 are allocated to stations which transmit Teletext pages, which contain a programme summary.
The contents of a Teletext page are subject to change without notice and therefore its suitability of any page for Text programming cannot be guaranteed.
The page shown opposite is an example of a suitable page for Text programming, the important points are ...
...The programme table is a single column.
...The format of the time eg: 20.15 or 20:15; (24 hr Clock), 8.15 or 8:15; (12 hr Clock), can be used but will require corrections if it refers to a P.M. programme (see later instructions).
These can then be used to select programmes.
In the factory programme position 1 is allocated to a station of the ARD (Videotext page 303, ARD evening programme) and programme position 2 to a station of the ZDF (Videotext page 303, ZDF evening programme).
If you wish to programme with other programme summaries or with programme summaries of other stations (ITV, BBC programmes, cable or satellite programmes), you can change this entry.

- Select line **3** of the **TV Station Table** from the **Overall View** page using the numbered button **3** .
- Select programme position 1 or 2.
- Change the channel number and station abbreviation (if you wish to use the Videotext services of other stations) or
- confirm the channel number and station abbreviation with the **O K** button (if **another** Teletext page of the **same** station is required).

– After the station abbreviation has been confirmed enter
Page 213 (for programme position 1),
Page 171 (for programme position 2).
The cursor is positioned at the first digit of the page number.

- Enter the required Teletext page number with the numbered buttons **1** ... **0** and confirm with the **O K** button.

– This Teletext page is used for "TIMER" programming.

Erasing the data of a programme position

- Select the programme position with the buttons ▼ or ▲ .
- Press **C L** button.

– The programme position is free for entering new data.

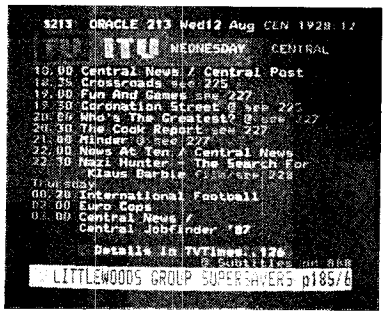
Entries required for satellite reception

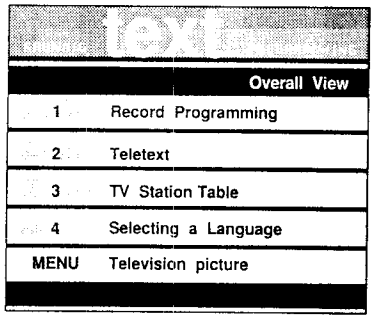
(Only possible with satellite receiver equipped for this)

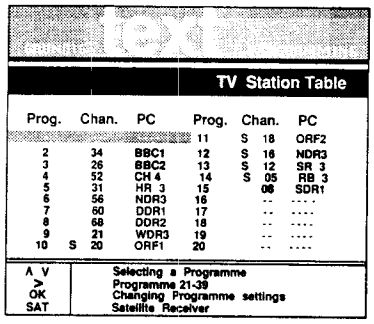
- Select the **TV Station Table** page, then press the **SAT** button.

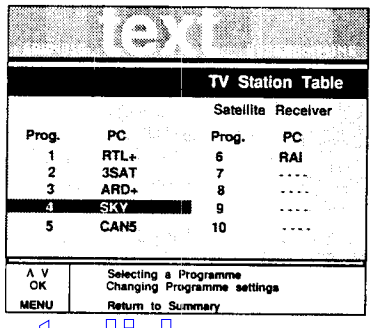
– The **Satellite Receiver** page appears.

- Enter the station abbreviation as desribed in the example above.
- Return to the **Overall View** page using the **MENU** button.
- Switch off Text programming by pressing the **MENU** button once or twice.







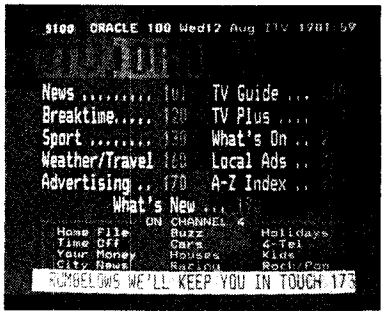


Text Programming

Programming a TIMER recording

- Switch on TV set.
- Select the programme position for video playback on the TV set.
- Check clock time and date of the recorder.
- Select the programme position on the recorder appropriate to the Teletext pages you wish to use for programming; in the following example, programme position 1, ITV.
- Select the **Overall View** page with the **MENU** button.
- Select the line **1 Record Programming** in the **Overall View** page using the numbered button **1**.

– The **Record Programming** page appears.

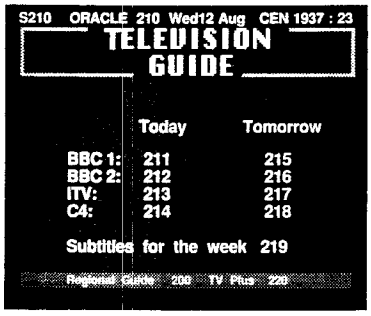


Two programming possibilities are available:

1. Programming with the aid of the Teletext pages.
2. Programming by entering the data manually.

1. Programming with the aid of the Teletext pages

The programme guide of ITV and BBC 1 programmes can be selected with the numbered buttons **1** (ITV) or **2** (BBC 1), select other programme guides (selection via Teletext page 100) with the numbered button **0**.



Example of programming with Teletext page 100:

- Call up the TELETEXT with the numbered button **0**.

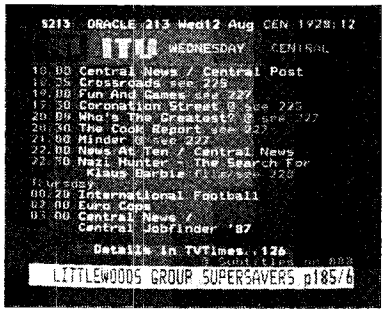
– The page appears; from this select the TV Guide.
To do this

- Press the numbered buttons in the sequence **2 1 0**.

– The page appears after a short time.
– Select programme guide required, eg: ITV page 213.

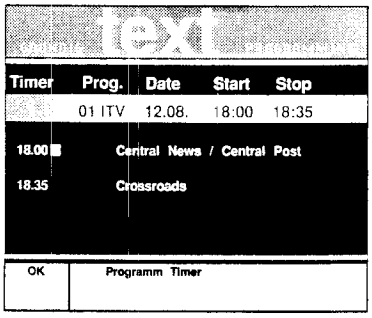
- Press the numbered buttons in the sequence **2 1 3**.

– The page appears after a short time.
Some page numbers may contain several subpages, which are "changed" automatically by the broadcasting station.
Subpages can be recognized by an insert, eg: 3/6 indicates that the 3rd page of 6 existing subpages is shown.
Wait until the required subpage is shown on the screen.



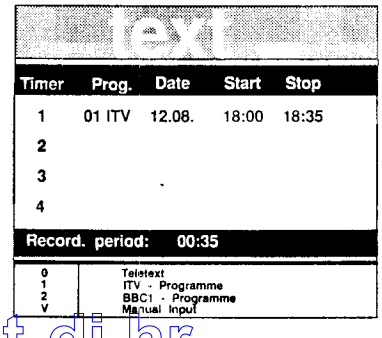
- Activate record programming with the **O K** button.

– A rectangle (cursor) appears next to the clock time on the ITV programme page.
If the message **No Transmitted Page found** appears at the bottom of the screen, then this Text page is not suitable for Text-programming the recorder.



- Select the programme by repeatedly pressing the button ▼ until the cursor is positioned next to the clock time of the required programme.
- Confirm the programme with the **O K** button.

– TIMER position 1 takes over the data of the programme.
– Missing data can be completed with the numbered buttons **1** ... **0** and confirmed with button **O K**.
– Corrections can be made by pressing the ◀ button until the cursor is over the data to be changed.
– Change data as required with the buttons indicated.
– Confirm the data is correct with button **O K**.
– Press **O K** until the page shown opposite appears.
– The **Record Programming** page shows the 4 TIMER positions. TIMER position 1 is allocated.



– **Reserve time** indicates the remaining playing time of the tape; without a cassette **record time** is indicated.

- Following this example, 3 further TIMER positions can be programmed with data.
- Press **MENU** button once or twice to stop Text programming.

Text Programming

⚠If instead of the **Reserve time** the **recording time** appears...
... there is no cassette in the unit;
... the cassette is protected against accidental erasure;
... a non-standard length cassette is being used.

⚠Note: A negative time (minus (–) in front of the Reserve time, line with red background) appearing next to the **Reserve time** indicates that a cassette with insuffient playing time has been inserted, or the sum of all TIMER recording times is too large.

⚠Note: **Collision** appearing in the red line (the TIMER positions concerned are marked red) indicates that the recording times of the TIMER positions overlap one another.
To change the data entered in a TIMER position, select the data to be changed with button ◄ or ►, enter the new data and confirm the data line step by step with the **OK** button.

Erasing programmed TIMER positions

- Call up the **Record Programming** page with the numbered button **1**.
- Select **Manual Input** with button ▼.
- Select the TIMER position to be erased with button ▼ and erase with **C L** button.

– The TIMER position is erased and can be programmed again.

Changing individual data of a TIMER position

- Call up the **Record Programming** page with the numbered button **1**.
- Select **Manual Input** with button ▼.
- Select the TIMER position concerned with button ▼.
- Select the data to be changed with button ► or button ◄, enter the new data and confirm the data line step by step with the **O K** button.

If you wish to programme for other programmes from ITV or BBC 1 with the aid of the Teletext pages, press numbered button **1** for the ITV programme guide (Teletext page 213) or numbered button **2** for the BBC 1 programme guide (Teletext page 171).
Select the relevant page for the alternative programme guide required.
Programming is the same as in the previously described example (Programming with the aid of the Teletext pages), however the programme number will require changing.

2. Programming by entering data manually

- Select the **Overall View** page using the **MENU** button.
- Select the line **1 Record Programming** in the **Overall View** page using the numbered button **1**.

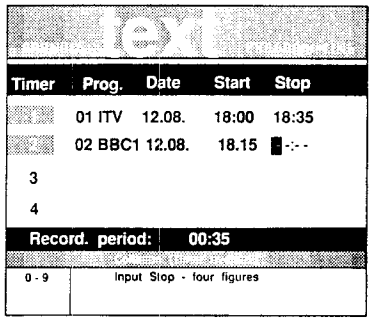
– The **Record Programming** page appears.

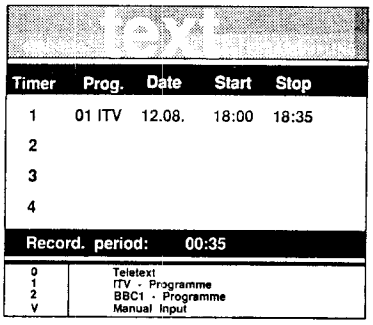
- Use button ▼ to select the **Manual Input** function in the **Record Programming** page.

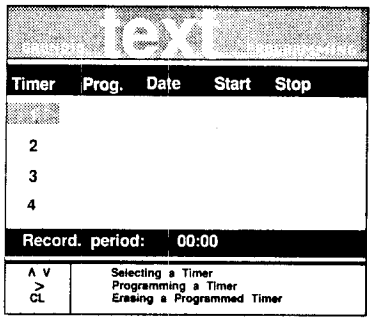
– A blue rectangle (cursor) appears over the 1st TIMER position.

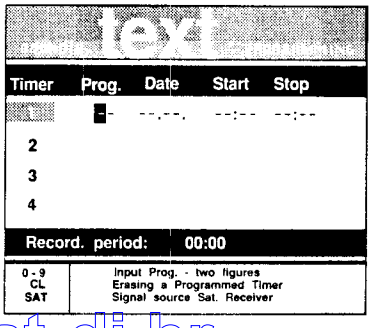
- Use the buttons ▼ or ▲ to select a TIMER position.
- Activate TIMER position with button ►.

– Horizontal lines appear in the selected TIMER position and a black cursor appears on the 1st position of the programme (Prog.).
– The recorder will not accept wrong entries (eg: 40 = nonexistent programme position). The cursor jumps to the 1st position of the current entry, make the corrections with the numbered buttons **1** ... **0**.









Text Programming

Select from the dialogue line:

Television programmes

- To do this, enter required programme as two figures (eg: for 2nd programme **0** and **2**) using the numbered buttons **1** ... **0.**

Satellite programmes

- To do this, press the **SAT** button and then enter the required satellite programme as two figures using the numbered buttons **1** ... **0.**

Radio programmes

- To do this, press the **Hi-Fi** button.

– For sound recordings no programme entry is required.
– The cursor jumps to the date.

- For recordings to be made the same day, confirm the date with the **OK** button or
  enter the required date as four figures (eg: for the 25th September **2509**) using the numbered buttons **1** ... **0**, or

for "daily" recordings at the same time

- enter the figure for the day in the date as two figures using the numbered buttons **1** ... **0**, then press button ▲.

– Indication: figure for the day in the date and **ED**(= every day).
– Recordings will take place every day starting from the day selected, or

for "weekly" recordings at the same time

- enter the figure for the day in the date as two figures using the numbered buttons **1** ... **0**, then press button ▼.

– Indication: figure for the day in the date and **EW** (= every week).
– Recordings will take place every week starting from the day selected.
– The cursor jumps to start.

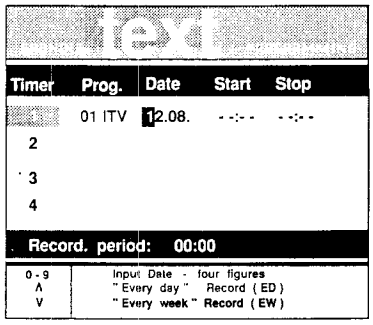
- Enter the switch-on time as four figures using the numbered buttons **1** ... **0**.

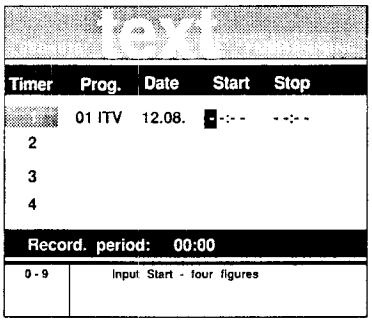
– The cursor jumps to stop.

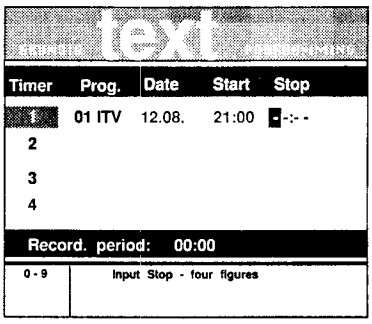
- Enter the switch-off time as four figures using the numbered buttons **1** ... **0**.

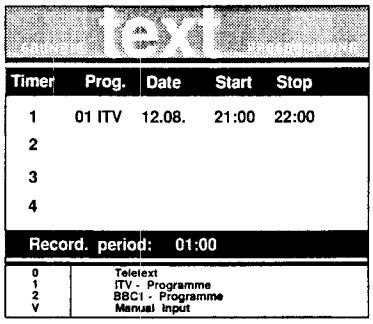
– The **Recording Programming** table shows the TIMER positions with the entered data.
– **Recording period** shows the total playing time of the four TIMER positions.

- Erasing TIMER positions and changing individual data of a TIMER position is done in the same way as described under "Programming with the aid of the Teletext pages".

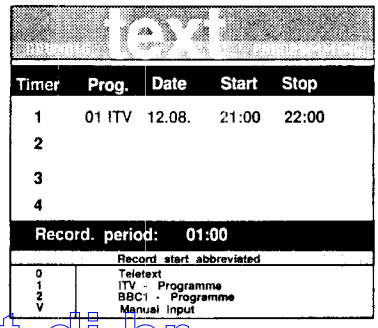








⚠Note: Ten minutes before the beginning of recording, the message **Record starts shortly** appears.
Leave "Text programming" by pressing the **MENU** button once or twice.



Teletext

This recorder is equipped with a Teletext decoder which enables you to select the Teletext services of the broadcasting stations.

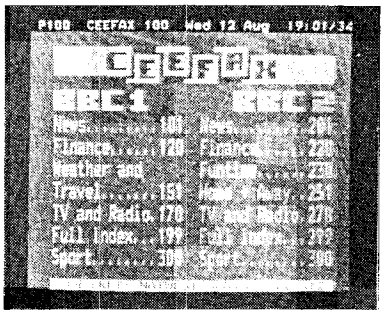
Calling up Teletext pages

- Select the **Overall View** page using the **MENU** button.
- Select the line **2 Teletext** in the **Overall View** page using the numbered button **2**.

– The Teletext page 100 (contents)) appears.

- Select the required Teletext page from the Teletext contents by entering the page number of the Teletext page as three numbers using the numbered buttons **1** ... **0**.

– The page appears after a short time.



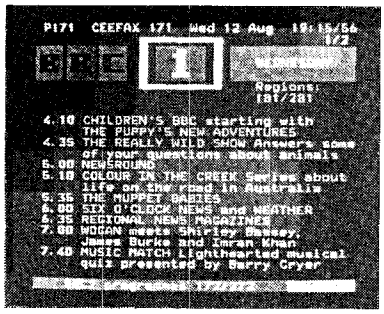
Subpages

Some page numbers may contain several subpages, which are changed automatically by the broadcasting stations.
Subpages can be recognized by an insert below the clock time or Stop, eg: 3/3.
This indicates that the 3rd page of three existing subpages is shown.

- If you wish to hold a subpage for a longer period, press the **STOP** button.

– **Stop** appears in place of the clock time.

- Pressing the **STOP** button again cancels this state.



Enlarging the character size

- This is done by pressing the button marked ⊟:

– First press doubles the size of the top half of the page;
– second press doubles the size of the bottom half of the page;
– third press returns the page to normal size.

- To return to the **Overall View** page, press the **MENU** button.
- To return to the TV picture, press the **MENU** button once again.