

**MOBILE RADIOTELEPHONE
MODEL STORNOPHONE 700
TYPE CQM713
TYPE CQM714
146-174 MHz**

Storno

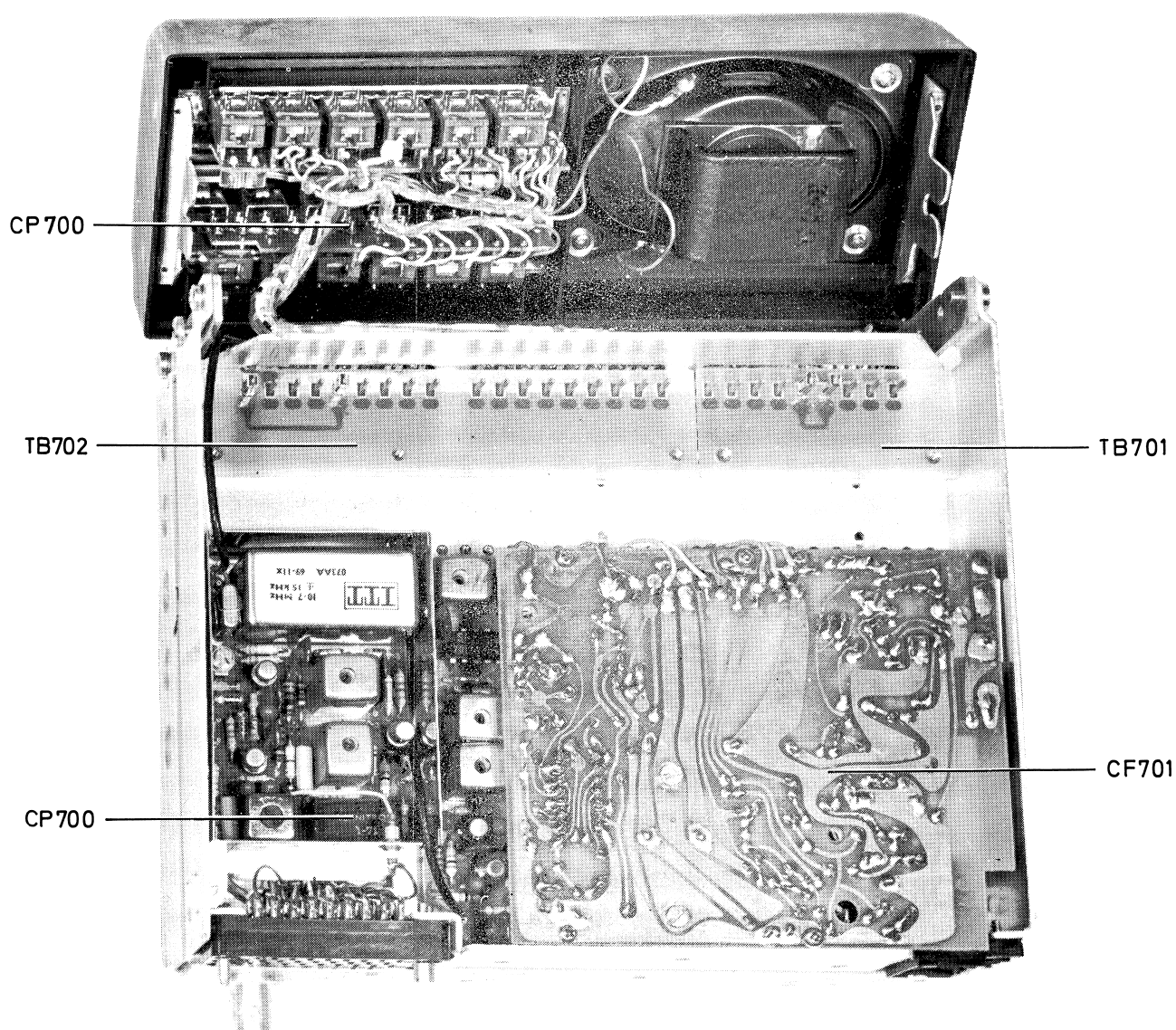
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BOTTOM VIEW

GENERAL SPECIFICATIONS

Type	CQM713	CQM714
Min. Channel Separation	25kHz or 20kHz	12.5kHz
Max. Frequency Swing	$\pm 5\text{kHz}$ or $\pm 4\text{kHz}$	$\pm 2.5\text{kHz}$
Frequency Range	146 - 174 MHz	
Frequency Stability	Meets government specifications	
Max. Bandwidth	1000 kHz	
Antenna Impedance	50 ohms nominal	
Number of RF Channels	Max. 6 channels	
Ambient Temperature	Working range: -25°C to $+50^{\circ}\text{C}$ Function range: -30°C to $+60^{\circ}\text{C}$	
Dimensions	Local controlled version: 180 x 190 x 68 mm Extended local controlled version: 180 x 160 x 68mm Control unit CB700: 118 x 65 x 55mm	
Weight	Local controlled version: 2.1 kilos Extended local controlled version: 1.9 kilos Control unit CB700: 0.2 kilos	

TRANSMITTER SPECIFICATIONS

RF Power Output	10W
Type of Modulation	Phase
AF Response	CQM713: 6dB/octave preemphasis 300Hz ... 3000Hz +1/-3dB CQM714: 6dB/octave preemphasis 300Hz ... 2700Hz +1/-3dB
Modulation Distortion	4%
Modulation Sensitivity	220 mV EMF (600 Ω)
Adjacent-channel Interference	Attenuated to meet government specifications
FM Hum and Noise	45 dB
Spurious and Harmonic Radiation	Attenuated to meet government specifications

RECEIVER SPECIFICATIONS

Sensitivity	CQM713: 0.6 μV e.m.f. for 12 dB SINAD CQM714: 0.6 μV e.m.f. for 12 dB SINAD
Squelch	Electronic, adjustable
Adjacent-channel Selectivity	CQM713: 85 dB (EIA measuring method) CQM714: 80 dB (EIA measuring method)
Intermodulation	80 dB EIA, 75 dB FTZ
Spurious Radiation	Attenuated to meet government specifications
Spurious Response Attenuation	90 dB
AF Output Power	2 watts EIA

GENERAL DESCRIPTION

Introduction

The mobile radiotelephone CQM710 is a transmitter/receiver combination for simplex operated FM radio communication in the frequency range 146-174 MHz. Within this frequency range the radiotelephone is available in two versions:

CQM713 Having a minimum channel separation of 20 kHz or 25 kHz.

CQM714 Having a minimum channel separation of 12.5 kHz.

The radiotelephone can be equipped with a maximum of 6 RF channels and it is intended for as well local operation as extended local operation.

CQM710 is operated from a 12-volt DC power supply, and when installed in a vehicle the negative potential of the battery, from which the radiotelephone is powered, must always be connected to chassis.

Construction

The radiotelephone is housed in a drawer-type cabinet consisting of an outer section designed as a housing, and an inner section that is similar to a drawer. The two sections are held together by a number of screws. The outer section is a box made of 2-mm aluminium sheet.

The drawer section consists of two trays made of cadmium-plated steel sheet. The upper tray designated RF711 contains all the circuits which are not common to the various frequency bands covered by the CQM700 programme. These are:

Antenna filters

Receiver VHF circuits

Crystal shift unit (if any)

Exciter

Transmitter power output amplifier.

The lower tray designated BA701 contains the units that are common to all the frequency bands covered by the CQM700-programme. These are:

Audio amplifier

Intermediate frequency amplifier

Squelch circuit

Voltage regulators

Tone equipment (if any).

Operation of a local controlled station is performed from the front panel of the radio cabinet.

Extended local control is performed from a control unit CB700 which connects to the radiotelephone through a multiconductor cable provided with crimp-pins for solderless connection to the multi-way connector located on the rear of the radio cabinet.

Space is provided in the radio cabinet for installation of tone equipment and a line of tone calling units makes it possible to choose between various forms of selective tone calling systems. All types of the units are provided with cabling terminating in sockets for connection to associated plugs in the radio cabinet thereby making soldering unnecessary.

Depending on whether the radiotelephone is intended for local or extended local control and on the number of RF channels required CQM710 may be provided with the following types of front panels:

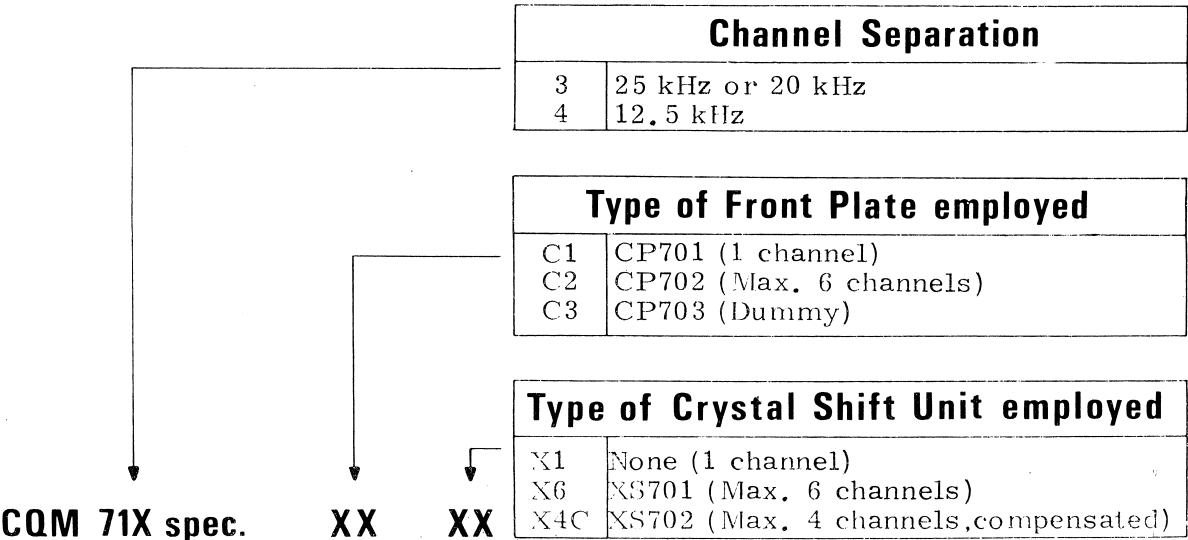
- CP701 Front panel with controls and built-in loudspeaker. This type of panel has no channel selector thus allowing the radiotelephone to be equipped with only one channel.
- CP702 Front panel with controls including channel selector for switching between a maximum of 6 channels. The panel has built-in loudspeaker.
- CP703 Front panel without controls or loudspeaker. Used in extended local controlled radiotelephones.

The radiotelephone may be equipped with one of the below types of crystal shift units if more than one RF channel is required.

- XS701 Channel shift unit for a maximum of 6 channels.
- XS702 Channel shift unit for a maximum of 4 channels with temperature compensated oscillators.

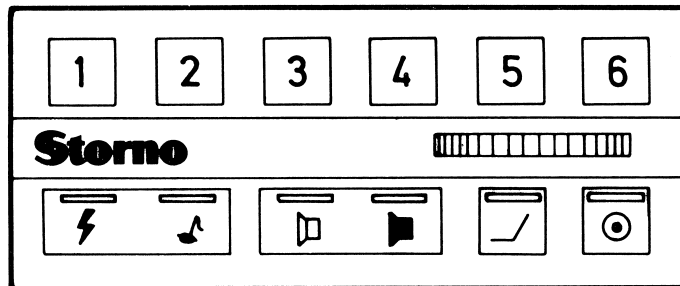
A type plate located on the radio cabinet states the type designation of the radiotelephone besides the operation and the maximum number of channels for which it is intended.

Reading of the type plate:



Operation

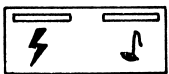
The controls located on the front panel are as follows:



CP 702 FRONT PANEL

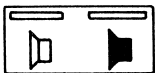


Push-buttons for channel selection.



Tone button with lamp indicating if the channel is occupied (in radiotelephone with built-in tone transmitter).

Transmit button with transmit pilot lamp (in radiotelephone without built-in tone transmitter).



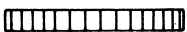
Button for cutting the loudspeaker in and out, provided with pilot lamp indicating received tone call. (This button is used in conjunction with built-in tone receiver only).



Squelch button for cutting the squelch function in and out.



On/off switch with start lamp.



Volume control.

Notice: In radiotelephones with built-in tone transmitter an external key (e. g. steering column switch or microphone button) must be used as transmit button as the internal button on the front panel is then used for keying the tone transmitter.

The CP701 front panel corresponds to type CP702 with the exception of the channel switching unit which is replaced by a dummy chassis.

Control Equipment and Accessories

The types of control equipment and accessories listed on the following pages are available for the CQM710 radiotelephone. Some of them, such as installation materials, antenna, and microphone, are necessary for installing and operating the equipment.

Microphones

- MC701 Fixed microphone with built-in amplifier. Hardware for fixed mounting is supplied.
- MC702 Fist microphone with built-in amplifier, transmit button, and retainer. Mounting hardware is applied.
- MC703 Fixed microphone for mounting on steering column.
- MT701 Handset with built-in amplifier and transmit button. Retainer and mounting hardware is supplied.

All the above types of microphones and handset are provided with cables terminating in crimp-pins for solderless mounting in a multiway connector which provides for connection of accessories to the radiostation.

Antennas

The radiotelephone is designed for operation with a 50-ohm antenna. Storno offers the following type which has base designed to permit mounting from the outside without damaging the car upholstery.

- AN19-5 1/4 wavelength whip antenna for the frequency range 146-174 MHz.

Control Units

One of the following control units, which are intended for installation in or below the dashboard, can be employed for extended local control of the radiotelephone:

- CB701 Control unit housed in a cast plastic cabinet containing controls for the operation of the radiotelephone. This control unit has no channel selector.
- CB702 Control unit housed in a cast plastic cabinet containing controls for the operation of the radiotelephone including a channel selector for switching between a maximum of 6 RF channels.

Both types of control units are provided with a multiconductor cable terminating in crimp-pins for solderless mounting in a multiway connector which provides for connection of the control unit and other accessories to the radio station.

Loudspeakers

When using CQM710 as an extended local controlled station it is necessary to connect an external loudspeaker. The following types are available:

- LS701 Loudspeaker contained in a plastic housing provided with cable terminating in crimp-pins for solderless mounting in a multiway connector which provides connection of accessories to the radiostation.

LS702 Weatherproof loudspeaker featuring the same facilities as type LS701.

Steering-Column Switches

Steering-Column Switches which are used as external transmitter keys are available in two versions, types SU601 and SU602.

Installation Kits

In addition to the accessories listed above, the installation of a CQM710 radiotelephone requires a number of installation kits. These are specified below:

- MN701 Mounting frame for radio cabinet, complete with fixing screws.
- CC701 Cable kit containing battery cable and antenna cable required for installation of a radiotelephone.
- MK701 Mounting kit containing connectors for connection of battery, antenna, and accessories to the radiostation besides fusebox and fuses for installation in the battery cable.

In conjunction with extended local control of the radiotelephone the distance between the control unit and the radiostation may be extended further by means of the below kit:

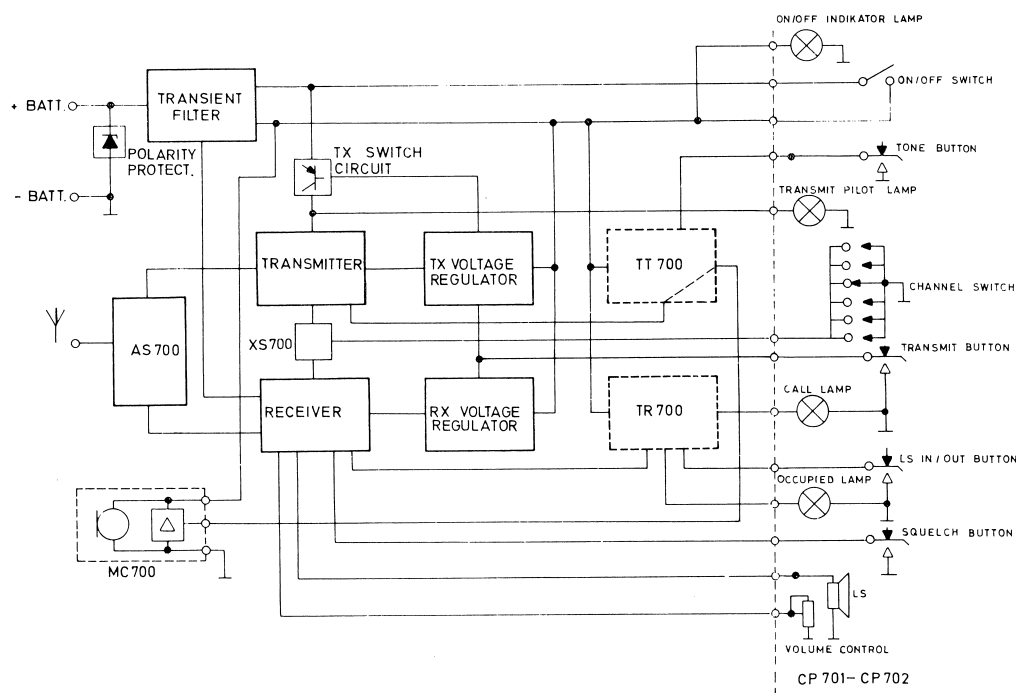
- CC703 Extension cable kit with connectors.

For radiotelephones with built-in tone receiver the following accessories for connection of external alarm devices are available:

- AC701 Alarm circuit.
- SU703 Auto relay.

CIRCUIT ANALYSIS

Principle of Operation



The 13.6 volts supply voltage from the battery is applied to the battery connector designated "BATT.". A zenerdiode connected in the back direction across the battery input serves the purpose of protecting the radiotelephone against the consequences of incorrect battery-voltage polarity. This polarity protection diode is followed by a transient filter from the output of which the supply voltage is applied partly to the on/off switch, and partly to the output stage of the transmitter through a switch transistor.

When activating the on/off switch voltage is fed to two 9-volt voltage regulator circuits for the transmitter and receiver section respectively. Furthermore supply voltage is delivered to the audio output amplifier of the receiver and built-in tone equipment, if any.

The antenna signal is passed to the antenna switching circuit and further to the input of the receiver. The antenna switching operation is controlled by the stabilized 9-volt voltages from the transmitter and receiver voltage regulators.

The local oscillator signal to the receiver is delivered from the channel shift unit XS700 which is controlled from the channel selector. However, in the version of CQM700 intended for one channel only, the radiotelephone contains no channel shift unit as the single pair of crystal oscillators required for that purpose will be incorporated in the transmitter and receiver sections.

The audio output from the receiver is applied to the loudspeaker (LS). The output level is adjusted by means of the volume control.

The squelch function of the receiver may be cut out by means of a squelch button.

As may be seen from the simplified functional diagram the receiver may be connected to a tone receiver TR700, which is used in selective tone calling systems. The tone receiver serves the purpose of cutting the AF circuitry of the receiver in and out.

In systems using selective call the loudspeaker output will normally be cut out by means of the "Loudspeaker In/Out" button.

On receiving a tone call for which the tone receiver is set this will automatically cut in the loudspeaker. A "call lamp" and a "occupied lamp" indicating that a call to the radio station has been received and that the frequency channel is occupied are also controlled by the tone receiver.

These lamps are not used in radiotelephones without tone receiver.

The oscillator signal to the exciter of the transmitter is delivered by the channel shift unit, and the modulating signal to the transmitter modulator is applied from the microphone (MC) through the tone transmitter TT700, if any.

During transmission of tone calls the microphone will be cut out automatically so that the transmitter is modulated only by the tone signal from TT700.

The transmitter is keyed by depressing the transmit button. This will block the receiver's voltage regulator and cancel the blocking of the transmitter's voltage regulator. When the transmitter's voltage regulator starts operating supply voltage is delivered to the exciter and the switch circuit. The switch circuit, in its turn, passes current to the output power amplifier and the entire transmitter is functioning.

The "transmitter on" condition is indicated by a transmit pilot lamp.

In radiotelephones with built-in tone receivers the transmitter cannot be operated until the loudspeaker has been cut in manually by means of the "loudspeaker in/out" button.

Receiver Section

The CQM710 receiver section is a double-conversion superheterodyne using intermediate frequencies of 10.7 MHz and 455 kHz. The very high input selectivity characterizing the receiver is obtained by means of a five-element helix filter having a low insertion loss.

The necessary channel selectivity is accomplished by means of two block filters, viz. a 10.7 MHz crystal filter, and a 455 kHz ceramic filter.

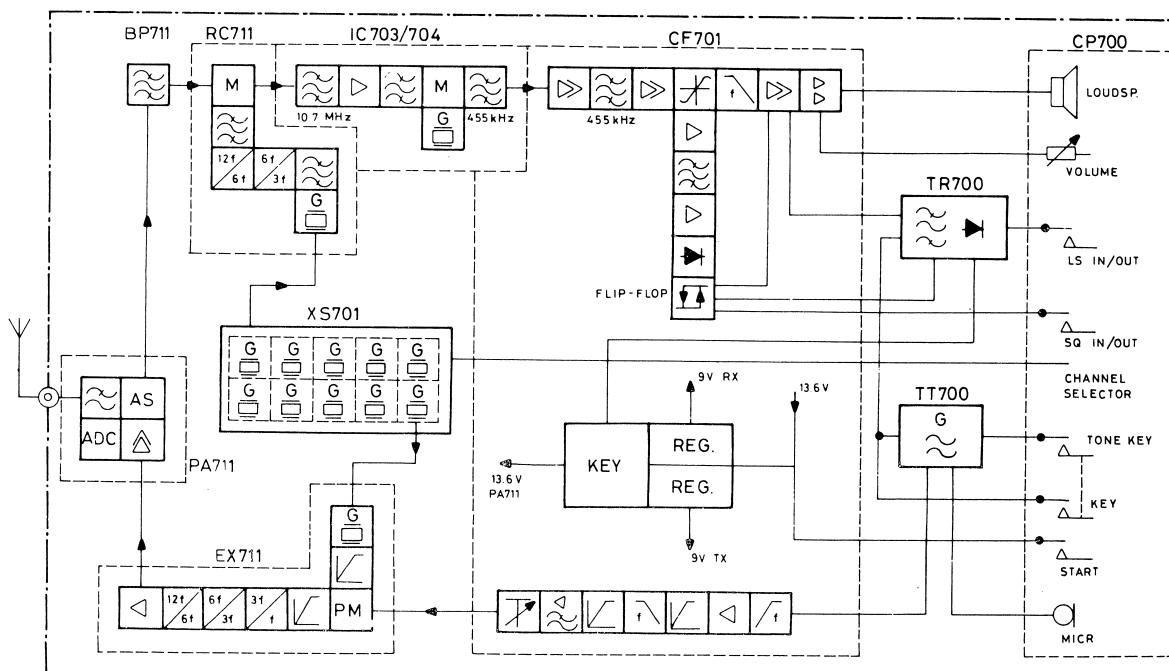
A maximum of 6 crystal controlled oscillators - one for each frequency channel - can be provided.

The oscillators are connected in parallel and channel switching is performed by switching the DC chassis connection between the oscillators.

The receiver is composed of the following subunits:

Antenna switching unit	AS711
Helix filter (RF input filter)	BP711
Receiver converter with multiplier and 1st mixer	RC711
Intermediate-frequency converter with 10.7 MHz crystal filter, 2nd mixer, and 455 kHz ceramic filter:	
For 25 kHz and 20 kHz channel separation	IC703
For 12.5 kHz channel separation	IC704
455 kHz intermediate-frequency amplifier, squelch, audio amplifier, and voltage regulator. (These circuits constitute part of subunit CF701)	CF701
Channel switching unit (if more than 1 channel is employed):	
For maximum 6 channels	XS701
For maximum 4 channels (temp. compensated)	XS702

Signal Path



The input circuits of the receiver are designed to meet the requirements for good selectivity and intermodulation characteristics.

From the antenna shift unit the input signal is passed through a helix filter and an impedance matching network directly to the mixer stage. Because of a low insertion loss in the helix filter it is possible to obtain a good receiver sensitivity without using an RF amplifier stage. The omission of an RF amplifier offers the advantages of improved blocking, selectivity, and intermodulation characteristics.

The BP711 helix filter consists of five tuned circuits which can be adjusted to cover the entire VHF band 146-174 MHz. The coupling between the helix filter and the mixer stage is performed by a tuned impedance matching network loaded with a low Q. This network transforms the output impedance of the helix filter into the input impedance required for the field-effect transistor in the mixer stage.

Both the injection signal and the antenna signal are applied to the gate of the transistor. The mixer works into a drain circuit from which the 10.7 MHz signal is taken off.

Injection signal to 1st mixer

The injection signal is produced in an oscillator working on the fundamental frequency of the crystal. The oscillator operates within the frequency range 11.2 MHz to 14.5 MHz.

In the oscillator the 3rd harmonic frequency is selected and applied to a multiplier chain consisting of two doubler stages. The multiplier output frequency is 12 times the fundamental frequency of the oscillator.

After the last doubler stage follows a filter consisting of three tuned circuits capacitively coupled to each other. The purpose of the filter is to attenuate undesired frequencies generated by the multiplier chain thereby preventing them from reaching the mixer stage.

The injection signal is chosen to be 10.7 MHz below the antenna frequency, and it is calculated as follows:

$$f_x = \frac{f_a - 10.7}{12} \text{ MHz}$$

where f_x is the crystal frequency
and f_a is the antenna frequency.

The RC711 receiver converter includes an oscillator intended for use in receivers with only one channel. In case more than one channel is required the radiotelephone will be provided with a channel switching unit type XS701 or XS702.

XS701 contains oscillators for five RF channels thus allowing the receiver to be equipped with a maximum of 6 channels.

The oscillator switching unit type XS702 is a temperature compensated unit employed where radiotelephones are to work under extreme low temperatures. The compensation consists in heating the crystals when the ambient temperature falls below approx. -5°C .

XS702 contains oscillators for a maximum of 4 channels.

Intermediate-frequency circuitry

From the mixer in RC711 the 10.7 MHz signal is passed to the intermediate-frequency converter type IC703 or IC704 - depending on the channel separation used - which provides for the entire channel selection in the receiver.

First the 10.7 MHz IF signal is filtered in a crystal filter and afterwards amplified in an IF amplifier stage before it is applied to the transistor in the 2nd mixer stage where it is converted to 455 kHz.

The injection signal to the mixer stage is produced by a crystal-controlled oscillator the frequency of which is normally chosen to be 10.7 MHz less 455 kHz, that is 10.245 MHz, but in cases where one of the harmonics of the local oscillator coincides with the frequency of the antenna signal, which might cause interference, a crystal frequency of 10.7 MHz plus 455 kHz, that is 11.155 MHz, is chosen instead.

In the first case the crystal frequency is calculated as follows:

$$\begin{aligned}f_x + 0.455 &= 10.7 \text{ MHz} \\f_x &= 10.7 \text{ MHz} - 0.455 \text{ MHz}.\end{aligned}$$

In the second case (crystal frequency chosen to be 11.155 MHz) the crystal frequency is calculated as:

$$\begin{aligned}f_x - 0.455 &= 10.7 \text{ MHz} \\f_x &= 10.7 \text{ MHz} + 0.455 \text{ MHz}.\end{aligned}$$

Within the frequency range 146-174 MHz the oscillator frequency will have to be calculated according to the last mentioned formula when the below frequencies are used:

152.5 - 154.9 MHz

162.7 - 165.1 MHz

173.0 - 174.9 MHz

The 455 kHz intermediate-frequency signal from the mixer stage is passed through a ceramic filter in the IC703 or IC704 converter unit before it is applied to the intermediate-frequency amplifier in CF701.

The 455 kHz intermediate-frequency amplifier consists of two resistance-coupled amplifier stage followed by a double-tuned filter and a three-stage integrated amplifier. The last two stages will normally be operating as limiters.

The amplified and limited signal is next detected in a phase detector which constitutes a part of the integrated package containing the last three stages of the IF amplifier.

The detector is a so-called "Quadrature detector" or "product detector" of the balanced type which provides an effective suppression of AM signals.

As the detector has only one tuned circuit it is very simple to adjust.

AF circuitry

The detected signal from the discriminator is fed through a de-emphasis network to a potentiometer which is used for setting the AF signal level irrespective of the channel separation and thus the frequency deviation used.

The signal is then applied to a three-stage amplifier in which a field-effect transistor operating as an electronic switch has been inserted between the second and third stage. This switch serves the purpose of cutting the AF signal in and out in conjunction with the squelch circuit. The three-stage amplifier has a nominal output level of -17 dBm (600 Ω).

The signal is passed on to the loudspeaker amplifier and the tone receiver, if any.

The loudspeaker amplifier amplifies the AF input of 110 mV (600 Ω) to an output level of 2 watts (5 Ω). The input stage is coupled to an active filter which cuts off all frequencies below 250 Hz.

An adjustable resistor forming part of the collector resistance renders it possible to make a 12 dB adjustment of the amplification.

The final regulation of the amplification and thus the loudspeaker output level is performed by means of the volume control on the control panel of the radio-telephone. Electrically the volume control is connected between the first and second AF amplifier stage.

The AF output stage consists of two complementary power transistors operating in Class B push-pull.

Besides temperature compensation negative feed back is employed in the output amplifier to improve the stabilization.

By applying a positive voltage to a "muting terminal" on the AF amplifier it is possible to mute the AF output to the loudspeaker. This muting takes place during periods of transmission and in conjunction with built-in tone receiver where the loudspeaker can be cut out manually.

Squelch Circuit

The squelch circuit in CQM700 is operated by noise voltages in the output signal of the discriminator.

The AF signal from the discriminator is passed to a selective amplifier stage with a resonant circuit in the collector. The resonance frequency of this circuit can be changed in accordance with the channel separation used by means of a strapping arrangement.

The noise signal is passed through an expander circuit before it is detected and applied to a Schmitt trigger, which controls the before mentioned electronic switch in the AF circuit.

When the noise level exceeds a certain value, i.e. when the signal-to-noise ratio falls below a certain value, the trigger circuit will be activated and the AF signal cut off.

The Schmitt trigger also controls a squelch signal circuit which - via the tone receiver, if any - operates the "occupied lamp".

The squelch sensitivity is adjusted by a potentiometer located in the input of the expander circuit (amplitude selective noise amplifier).

By means of a squelch button on the control panel of the radiotelephone the Schmitt trigger can be blocked manually thus cutting off the squelch circuit.

Transmitter Section

(See block diagram on page 9).

The transmitter is phase modulated. Its output frequency is 12 times the oscillator frequency. Phase modulation is performed at the fundamental frequency.

The transmitter is composed of the following subunits:

Channel switching unit (in radiotelephones intended for more than one channel):

For maximum 6 channels	XS701
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For maximum 4 channels, (temp. compensated)	XS702
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Exciter with modulator	EX711
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RF power amplifier	PA711
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Antenna shift unit	AS711
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Modulation amplifier, switch circuits, and voltage regulator	CF701
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(These circuits constitute part of CF701).

AF Circuitry

The modulating signal from the microphone is fed through the tone transmitter unit, if any, otherwise directly to the modulation amplifier in CF701 where it is differentiated (pre-emphased), amplified, limited, integrated, and filtered. The modulation amplifier circuit serves the purpose of matching the microphone output to a signal suitable for the modulator, and to limit the amplitude of the said signal so that the maximum permissible frequency swing will not be exceeded, and the transmitter will not cause interference on adjacent channels.

The amplifier consists of an integrated dual operational amplifier. The differentiation is performed by an RC network in the input of the 1st pre-amplifier. A high degree of negative feedback secures a constant amplification in this amplifier stage. Furthermore the 1st pre-amplifier operates as an amplitude limiter which prevents the signal from exceeding a certain level. From the 1st amplifier the signal is passed through an RC network before it is applied to another limiter consisting of two dual diodes.

This extra limiter has been inserted in order to prevent the phase modulator from being overdriven at low modulating frequencies (phase clipping). During nominal frequency swing the extra clipper will be inactive.

Before being applied to the phase modulator the modulating signal is filtered in a splatter filter. The filter is designed as an active filter containing the 2nd amplifier in the integrated dual amplifier unit.

A potentiometer located in the output of the modulation amplifier circuit is used for adjusting the maximum frequency swing.

RF Circuitry

The fundamental RF signal is generated in a crystal controlled oscillator. As in the case with the receiver, channel switching is performed by switching the DC chassis connection between the oscillators. The transmitter uses one oscillator for each channel. The exciter EX711 contains an oscillator for channel 1. If more than one channel is required the transmitter will be provided with a channel switching unit.

The exciter performs two main functions: it modulates the RF oscillator signal and converts it to a frequency and a level suitable for the following power amplifier, PA711.

The RF signal from the oscillator is applied to the 1st buffer, next to the phase modulator which, in its turn, is followed by the 2nd buffer. The buffers provide for a constant input level to the modulator and correct load impedances.

The phase modulator is a so-called "transconductance modulator" as the phase modulation is produced by varying the transconductance of a transistor. The

modulating signal is applied to the emitter of the transistor whereby its operating point and thus the transconductance is changed concurrently with the modulating signal.

From the 2nd buffer the signal is fed to a frequency multiplier chain consisting of a tripler, a 1st doubler and a 2nd doubler. The transmitter output frequency is 12 times the crystal oscillator frequency.

The three multipliers are designed as balanced circuits resulting in suppression of certain harmonic frequencies.

The tripler suppresses the even harmonics and the doublers suppress the odd harmonics.

Double-tuned bandpass filters with close-to-critical coupling between circuits are used as coupling elements between the stages. These filters limit the bandwidth of the exciter by attenuating undesired harmonics generated in the frequency multiplication process.

From the 2nd doubler the transmitter output frequency signal is fed to an amplifier stage with double-tuned bandpass filters in its input and output circuits which contributes to improved selectivity and thus attenuation of undesired frequencies. Another purpose of the amplifier stage is to amplify the exciter signal to a level suitable for the RF power amplifier unit, PA711. The nominal signal output level from EX711 is 80 mW into a 50 ohms load.

The bandwidth of the transmitter and thus the maximum frequency separation between the channels is determined by the selectivity in the exciter.

The output signal from the exciter is fed to the RF power amplifier which raises the RF signal level to the desired antenna output power.

The power amplifier contains three transistorized amplifier stages all operating on the same frequency. The coupling between the stages consists of tuned matching networks loaded with a low Q .

The RF power amplifier is a Class C amplifier resulting in a high efficiency.

An ADC Circuit (Automatic Drive Control Circuit) in the power amplifier unit regulates the supply voltage to the first PA stage and consequently the drive to the following power amplifier stages. The purpose of this circuit is to ensure constant current through the output transistors and so prevent them from being overloaded. The ADC circuit also causes the output of the RF power amplifier to be less dependent on variations in supply voltage and ambient temperature. By means of a potentiometer in the ADC circuit it is possible to reduce the transmitter output.

From the RF power amplifier the signal is passed through an electronic antenna shift unit and a lowpass filter to the antenna.

The antenna shift unit is composed of diodes which are forward biased during transmission and reverse biased during reception. The lowpass filter is a 7-poled Chebishev filter having a low insertion loss and low ripple. It serves the purpose

of preventing the transmitter from radiating signals at undesired frequencies, such as harmonics of the signal frequency.

The lowpass filter is not adjustable.

Power Supply Circuits and Switch Circuits

CQM700 is powered directly from a 12-volt car battery. The negative battery voltage terminal on the radiotelephone connects directly to the radio chassis, i.e. the radio cabinet.

To suppress noise and transients from the battery voltage the CQM700 is provided with a transient filter.

A polarity protection zenerdiode connected across the battery input serves the dual purpose of limiting peak voltages to approx. 20 volts and protect the radiotelephone against the consequences of incorrect battery-voltage polarity. Incorrect polarity will cause the diode to become conductive, thus blowing the battery-cable fuse.

The CQM700 contains two identical voltage regulator circuits, one for the transmitter and one for the receiver, which deliver 9-volt stabilized supply voltages for operating the transmitter and receiver sections of the radiotelephone with the exception of the loudspeaker AF amplifier and the transmitter RF power amplifier which receive their supply voltages from the battery voltage input.

The voltage regulators are protected against short-circuit by limiting their short-circuit currents so that they will not exceed the maximum currents that can be drawn from the regulators.

Each regulator has a built-in blocking transistor which is controlled from the transmit key button. When the key button is in its non-operated condition the transmitter voltage regulator will be blocked whereas the receiver voltage regulator will be operating, and vice versa when the transmitter is keyed. The supply voltage for the PA711 power amplifier in the transmitter is taken directly from the transient filter and applied to the amplifier unit through a switch transistor. This switch transistor is controlled by the transmitter voltage regulator which, in its turn, is controlled from the transmitter key button.

NOTE: The voltage applied to the switch transistor cannot be turned off by means of the on/off switch on the radiotelephone.

ADJUSTMENT PROCEDURE FOR CQM710

Measuring Equipment

The following measuring instruments and test equipment are required for making adjustments to the receiver and transmitter circuits of the radiotelephones CQM710:

An AF/DC voltmeter, $R_{in} \geq 2M\Omega$ and $C_{in} \leq 50pF$. Accuracy: Better than 3% in the range 50Hz-100kHz. (e.g. HP model 427A).

A vacuum tube voltmeter, DC, $R_{in} \geq 20k\Omega/V$ (e.g. AVO-meter).

A distortion meter for measuring the distortion factor at 1kHz (e.g. Radiometer type BkF 6).

A DC ammeter (e.g. AVO-meter).

An RF milliwatt- and wattmeter, 50Ω (e.g. Rohde und Schwarz type SMDF-413116).

A deviation meter (e.g. Rohde und Schwarz SMDF-BN 413115).

A tone signalling test generator (e.g. Storno type U95B0251-00).

A signal generator, 146-174MHz, $R_{out} = 50\Omega$. The signal generator should be capable of delivering a frequency modulated signal (e.g. Rohde und Schwarz type SMDF-BN 41311).

A crystal-controlled signal generator for 455kHz (e.g. Storno type G21).

A frequency counter with AC input, $R_{in} \geq 1k\Omega$ at 11MHz and $R_{in} = 50\Omega$ at 160MHz. Sensitivity: 50mV at 11MHz and 100mV at 160MHz (e.g. Rohde und Schwarz type SMDF-BN 413115).

Trimming tools, Storno no. 17.0033/170054 including RF probe no. 95.089.

An RF probe, Storno part no. 95.059.

A power supply rated at 10.5-21V, current limiting variable between 0.1-4.0A.

A service and control unit, Storno type C34 or C33.

A battery cable ≥ 1 metre, square 2 x 0.75mm = 5 metre square 4.0mm.

Furthermore the following instruments and equipment are required for checking the stability of the transmitter:

An AM detector, Storno type TS-R11C or TS-R11B.

A load with variable reactance, VSWR ≥ 3 , Storno type W52C.

Two short pieces of coaxial cable, as shown on the setting-up in subsection "checking of transmitter stability".

A detector and amplifier unit, Storno type TS-F42A or an RF millivoltmeter (e.g. HP type 411A).

Service and control units C33 and C34

C33 is a service and control unit containing:

- a CB REMOTE CONTROL SECTION with all controls and lamps required for operating and checking the radiotelephone.
- a DC VOLTAGE CONTROL SECTION with built-in meter for checking the DC operating voltages for the transmitter and the receiver circuits. The voltages are applied either directly to the control unit through the multi-wire cable or through an external test probe which connects to a plug in the control section.
- an INSTRUMENT TERMINAL with connectors for measuring instruments and switches for connection of the instruments to the various inputs and outputs of the radiotelephone.
- a TONE EQUIPMENT section with lamps and controls for operation and checking of tone equipment - if any.
- an RX FREQUENCY CONTROL section housing an intermediate frequency amplifier unit type IA601 and a discriminator-zero instrument. The IF signal is applied to the control unit through a 455kHz probe which is coupled inductively to test point 1

in the CF701 modular unit of the radio-telephone.

a power supply unit which allows the control unit to be operated from 220V AC mains voltage.

a switch designated MODE which allows the control unit to be used with as well local controlled as extended local controlled radiotelephones.

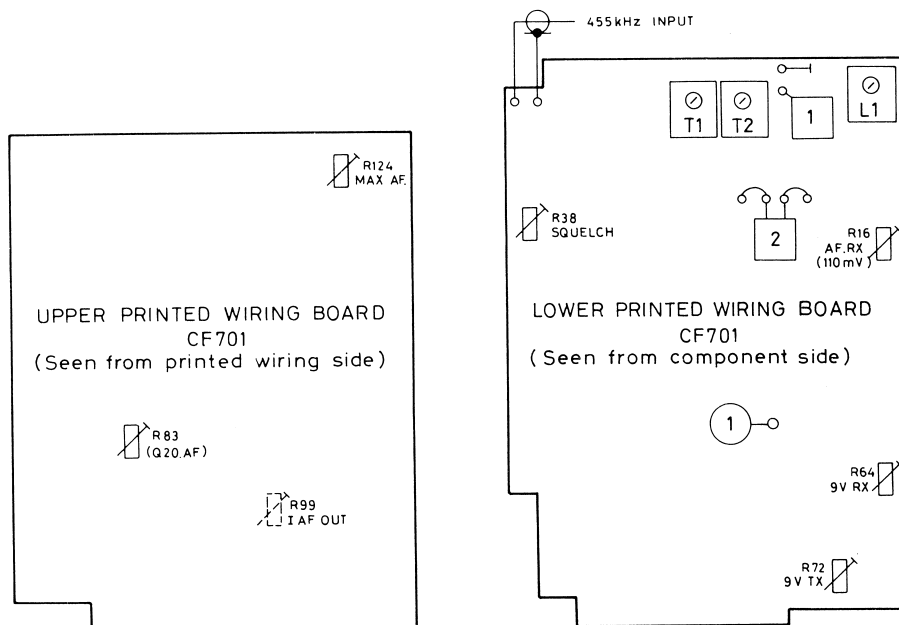
The C33 service and control unit has no built-in microphone, but a plug located on the rear of the cabinet renders it possible to connect an external microphone.

The C34 service and control unit only differs from the C33 previously described in the following respects:

- the DC VOLTAGE CONTROL and RX FREQ. CONTROL sections are omitted.
- the power supply unit is omitted.
- the C34 control unit has a built-in microphone.

In case adjustments are performed without using control unit C33 or C34 care should be taken not to connect internal and external loads across the AF output of the receiver simultaneously.

RECEIVER ADJUSTMENT



Before starting alignment of the receiver first set the supply voltage from the power supply to 13.6V and the current limiter to 1 Amp.

Check the 9VRX voltage at terminal 33 on the terminal board (for location of terminals see cabling diagrams D401.320 or D401.319).

Requirement: 9 volts \pm 0.1 volt.

If necessary adjust the RX voltage by means of potentiometer R64 in CF701.

Alignment of 2nd IF amplifier (455 kHz).

Apply a 455kHz signal to the input of CF701

Connect a DC voltmeter at test point 1 in CF701.

Adjust transformers T1 and T2 for maximum meter reading.

Modulate the 455kHz signal, $\Delta f = 3.5\text{kHz}$ and $f \text{ mod.} = 1\text{kHz}$.

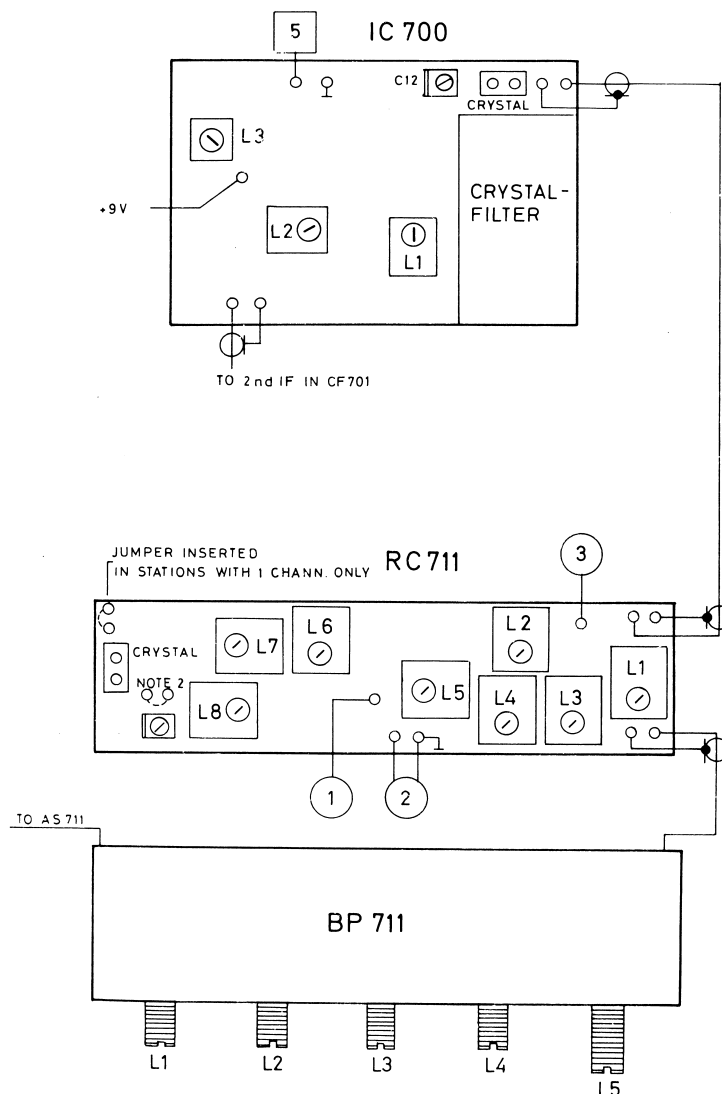
NOTICE: Test point 2 becomes accessible by unscrewing the upper printed wiring board of CF701.

Adjust coil L1 in CF701 for maximum AF signal at test point 2 in CF701. Requirement: $\geq 65\text{mV}$.

Instead of test point 2 the reading may be performed on "Line out" (600Ω) i.e. directly on the control unit. In that case, however, the AF

level should later on be adjusted for a correct output voltage.

Adjustment of oscillator frequency in IC700



Connect the 455kHz signal generator to the 455kHz signal input of CF701.

Connect a signal generator delivering a 10.7MHz signal to the input of IC700. Check by means of a frequency counter that the accuracy of the generator signal is $10.7\text{MHz} \pm 20\text{Hz}$.

Adjust the output level of the signal generators so that a beat note is produced in the loudspeaker.

Adjust trimmer capacitor C12 in IC700 for zero beat in the loudspeaker.

The adjustment may also be checked by means of an oscilloscope connected to the 600Ω output of the AF amplifier (Line out), which is accessible on the control unit.

Alignment of 1st IF amplifier (10.7MHz).

Apply a 10.7MHz signal to the input of IC700.

Connect RF probe 95.089 and DC voltmeter at test point 1 in CF701.

Adjust coils L1, L2 and L3 in IC700 for maximum meter reading.

The level should be so low that limiting does not occur.

NOTICE: The discriminator of the receiver has no zero setting.

Gain in IC700: $\geq 20\text{dB}$.

Alignment of multiplies chain in RC711.

When crystals have been inserted in RC711 and XS701/XS702 select the middle frequency channel.

Connect a DC voltmeter at test point (1) in RC711.

Adjust coils L7 and L8 in RC711 for maximum meter reading, typical value 0.4V.

Requirement: = 0.3V.

Remove DC voltmeter to test point (2) in RC711.

Adjust coil L6 in RC711 for minimum meter reading (upper minimum), typical value 8V.

Requirement: = 8.5V.

When adjusting the excitation to mixer I connect test probe 95.089 and DC voltmeter at test point (2) in RC711.

Turn trimming slug of coil L5 in BP711 out until it is flush with the outer side of the chassis.

Adjust coil L5 in RC711 for maximum meter reading.

Adjust coil L4 in RC711 for minimum meter reading.

Adjust coil L3 in RC711 for maximum meter reading.

Adjust coil L1 in RC711 for minimum meter reading.

As there is only a small difference between maximum and minimum readings, especially during alignment of the last circuits, the excitation to mixer I should also be checked by connecting a DC voltmeter at test point (3) in RC711.

Fine adjust coils L5, L4, L3 and L1 for maximum reading at test point (3).

Make the oscillator in RC711 or XS700 stop oscillating and check the reading in test point (3) without oscillator signal applied to the mixer.

Activate the oscillator again.

Requirement: Reading at test point (3) without oscillator signal applied to the mixer: 1-4.5V. When applying oscillator signal to the mixer the reading should increase by at least 0.5V.

Adjustment of temperature regulating circuit in XS702.

The temperature regulating circuit is adjusted before leaving the factory. However, if it proves necessary the circuit can be adjusted in the following way.

Turn potentiometer R39 in XS702 fully counter-clockwise.

Remove jumper connecting the NTC-resistor.

Set the supply voltage for the radiotelephone at 13.6V.

Check the current consumption in XS702 by inserting an ammeter in the orange-blue wire to XS702.

Adjust the current to 0.45A by means of R39 (the duration of this adjustment should not exceed 30 seconds).

Again insert jumper connecting the NTC-resistor.

Coarse adjustment of BP711.

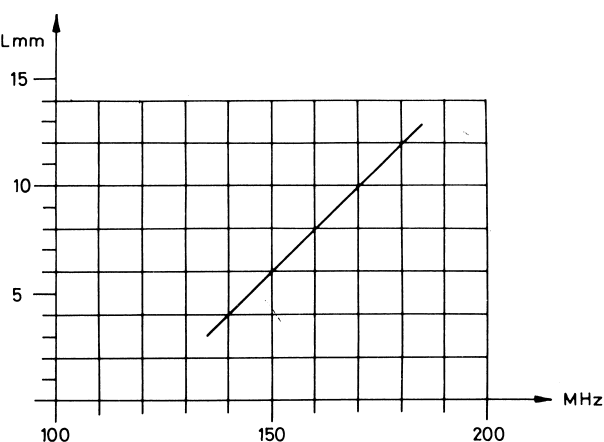
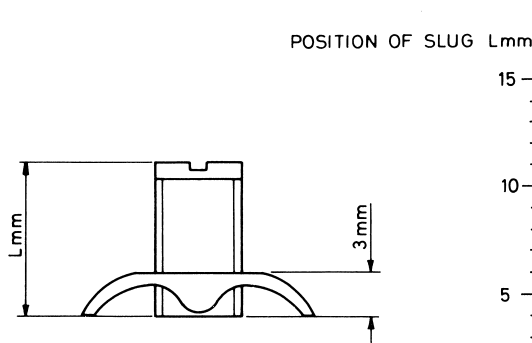
The trimming slug in coil L5 remains in its outer position, whereas the slugs in the other coils are turned a little outwards. The illustration indicates the position of the slugs as a function of the antenna frequency.

Further alignment of RC711 and final alignment of BP711 and IC700.

Connect test probe 95.089 and DC voltmeter at test point (1) in CF701.

Connect a signal generator to the antenna connector and set it at the signal frequency and cut off modulation to the signal generator.

Fine adjustment of the signal generator frequency may be performed by means of a beat note, which is produced by coupling a 10.7MHz crystal controlled signal generator loosely to the input of IC700.



NOTICE: Chassis of the radiotelephone should be connected to the chassis of the 10.7MHz generator.

If the beat note is to be heard in the loud-speaker the squelch must be open, and in case the radiotelephone has built-in tone receiver the "LSin" button should be pushed in.

After having fine adjusted the signal generator frequency set its output level for a meter reading at test point **1** not exceeding 500mV.

Be careful not to exceed this reading during the following alignment procedure in order to avoid limiting.

Adjust coil L1 in RC711 and coils L5, L4, L3, L2, and L1 in BP711 for maximum meter reading at test point **1** in CF701.

Since the circuits interact, especially L1 in RC711 and L5 in BP711, the coils must be readjusted a couple of times in the sequence mentioned above.

As the adjustment of L1 in RC711 will reduce the injection signal to the mixer, coil L3 in RC711 must be readjusted for maximum meter reading at test point **3** in RC711.

Finally check that a proper injection signal is still applied to mixer I in RC711:

Cut off the injection signal and check that the voltage measured at test point **3** in RC711 decreases by at least 0.3V.

Adjust coil L2 in RC711 and coils L1, L2, and L3 in IC700 for maximum reading on DC voltmeter connected at test point **1** in CF701.

Since the circuits in IC700 interact coils L1, L2, and L3 must be readjusted a couple of times.

Modulate the signal generator input by $f_{mod.} = 1\text{kHz}$ and $\Delta f = 3.5\text{kHz}$.

Adjust coil L1 in CF701 for maximum AF signal in CF701 test point **2**.

Requirement: AF signal $\geq 65\text{mV}$.

NOTICE: Instead of test point **2** the LINE OUT (600Ω) which is accessible on the service and control unit may be used instead of measuring the AF voltage level. However, by using this measuring method the AF level should later on be adjusted for correct output voltage.

Adjustment and checking of AF signal.

Modulate the signal generator by 1000Hz and set the frequency swing at $0.7 \times \Delta f_{max.}$:

3.5 kHz in CQM713 (25 kHz channel separation)
2.8 kHz in CQM713 (20 kHz channel separation)
1.75 kHz in CQM714 (12.5 kHz channel separation).

Set the RF output level of the signal generator to 1mV EMF.

If the radiotelephone is provided with tone receiver then push the "LS in" button.

Check the frequency of the signal generator.

Backoff the volume control on the service and control unit employed. Backoff the volume control on the radiotelephone, if any.

Connect AF voltmeter to "Line out" (600 Ω).

Adjust the AF output level to 110mV by means of potentiometer R16 in CF701.

Connect a 5 Ω load resistor across the loudspeaker output terminals (the load is incorporated in the service and control unit).

Connect distortion meter across the loudspeaker output and check the distortion.

Requirement: $k \leq 5\%$

NOTICE: Before leaving the factory the AF output amplifier has been adjusted for:

- a power output of 2W (by means of potentiometer R83)
- an AF input of 110mV at 1kHz
- a base bias to the AF output amplifier stage that will ensure a suitable no-signal current in the stage.

Later adjustments of the no-signal current in the AF output amplifier is performed in the following way:

Turn potentiometer R99 fully counter-clockwise (when viewed from component side of CF701).

Insert a milliammeter in the positive supply lead to the AF amplifier (brown lead between the two CF701 printed wiring boards).

Set the supply voltage to the radiotelephone to 16.0V.

Turn potentiometer R99 clockwise until the AF amplifier current consumption has increased by approx. 2mA.

The above adjustment of the no-signal current in the AF output amplifier may also be performed by measuring the total receiver current consumption in unswitched condition and with the volume control turned down.

Checking the AF power output

Set the volume control for 3.16V across the AF output load (corresponding to an AF power output of 2W) at a modulating frequency of 1000Hz.

Connect distortion meter across the AF output and check the distortion.

Requirement: $k \leq 7\%$.

Adjustment of injection signal frequency in RC711

Connect the signal generator and the frequency counter to the antenna input of the radiotelephone.

Set the signal generator so that the counter indicates the correct receiving frequency.

Connect a 10.7 MHz signal generator to the signal input of IC700.

Set the signal level from the two signal generators so that a beat note occurs in the loudspeaker.

Adjust the injection signal frequency by means of trimmer capacitor C27 in RC711 for zero-beat in the loudspeaker.

In radiotelephones provided with XS701 or XS702 frequency adjustment should be performed on each frequency channel.

On completion of the adjustment the accuracy of the frequencies should be as follows:

In CQM713: Better than 1×10^{-6}

In CQM714: Better than 0.5×10^{-6}

The tolerances stated apply to an ambient temperature of 25°C.

Checking of receiver sensitivity

If the radiotelephone is provided with channel switching select the channel representing the middle frequency.

Frequency-modulate the receiving signal from the signal generator with 1000Hz and frequency swing of $\Delta f = 0.7 \times \Delta f_{\text{max}}$. Adjust the signal generator output level to 1mV.

Connect distortion meter across the AF output.

Set the volume control for 1.0V across the AF output load.

Reduce the output of the signal generator until 12dB SINAD is obtained on the AF output.

Read the calibrated RF output voltage delivered by the signal generator.

Requirement: It should be possible to obtain 12 dB SINAD for a signal input (emf.) $\leq 0.8 \mu\text{V}$.

If the radiotelephone is provided with channel switching the procedure should be repeated on all channels.

Adjusting and checking the squelch

See that the "SQUELCH OUT" button is disengaged, i.e. the receiver is in squelched condition.

Adjust the squelch circuit by means of potentiometer R38 in CF701 to open the AF signal path when an antenna signal corresponding to 10-12dB SINAD across the AF output is applied to the receiver input.

Remove the receiver input signal and check that squelch will close and block the AF output.

Unsquench the receiver by pushing the "SQUELCH OUT" button, and check that the AF signal path opens.

Checking the receiver consumption

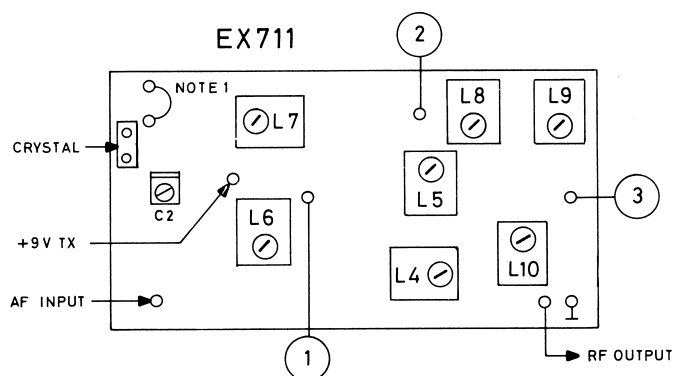
Check the current consumption at 13.6V supply voltage.

Requirement for radiotelephones without tone equipment and in stand-by condition:

Radiotelephones with 1 channel: = 200mA
(170mA typical)

Radiotelephones with 2 or more channels: = 270mA
(240mA typical)

TRANSMITTER ADJUSTMENT



NOTE 1: JUMPER INSERTED IN RADIOTELEPHONES WITH ONE CHANNEL ONLY

Before starting the alignment of the transmitter first set the supply voltage from the power supply to 13.6V and the current limiter to 4 Amp.

If the radiotelephone has built-in tone equipment the "LOUDSPEAKER IN" button must be depressed in order to key the transmitter.

Check the stabilized 9V Tx voltage at terminal 7 on the terminal board (for location see cabling diagrams D901.320 or D401.319).

Requirement: 9V \pm 0.1 Volt.

If necessary adjust the Tx voltage by means of potentiometer R72 in CF701.

Alignment of exciter EX711.

Remove the RF signal lead between EX711 and PA711.

Connect a milliwattmeter to the RF output of EX711.

In radiotelephones with channel switching select the channel representing the middle frequency.

Connect a DC voltmeter at test point (1) in EX711.

Adjust coils L4 and L5 for maximum meter reading, approx. 1.4V.

Remove the DC voltmeter to test point (2) in EX711.

Adjust coils L6 and L7 for maximum meter reading, approx. 0.8V.

Remove the DC voltmeter to test point (3) in EX711.

Adjust coils L8 and L9 for maximum meter reading, approx. 0.05V.

Adjust coil L10 for maximum power output.

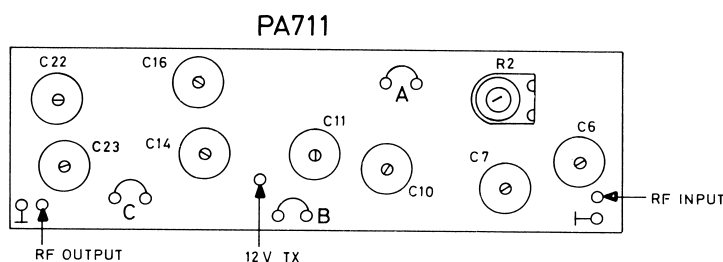
NOTICE: The stated test point readings may be affected by the setting of the coils in the succeeding stages.

When power output from EX711 is obtained the adjustment is performed more easily by adjusting L6, L7, L8, L9 and L10 for maximum reading on the milliwattmeter.

Repeat the alignment of the coils until maximum power output is obtained.

Requirement: Power output from EX711 $\geq 80\text{mW}$.
(In case RF probe and voltmeter are used for measuring the power output, the meter reading should be $\geq 4.5\text{V}$).

Alignment of RF power amplifier PA711.



Connect the wattmeter to the antenna connector.
Insert the RF connection between EX711 and PA711.

Turn the ADC potentiometer R2 in PA711 fully clockwise.

Set all the trimmer capacitors in PA711 to half of their capacity.

Remove strap designated "A" and insert a DC ammeter instead.

Adjust trimmer capacitor C7 for maximum reading on DC ammeter.

Remove strap designated "B" and insert the DC ammeter instead.

Adjust trimmer capacitor C11 for maximum reading on DC ammeter.

Remove strap designated "C" and insert the DC ammeter instead.

Adjust trimmer capacitor C16 for maximum reading on DC ammeter.

If no current can be obtained increase the capacity of trimmer C22 and repeat the adjustment of C16.

Adjust trimmer capacitors C22 and C23 for maximum power output (repeat the adjustment a couple of times).

Adjust trimmer capacitors C14 and C16 for maximum power output (repeat the adjustment a couple of times).

Repeat the alignment of C22, C23, C14, and C16.

Adjust trimmer capacitors C10 and C11 for maximum power output.

Adjust trimmer capacitors C6 and C7 for maximum power output.

Finally adjust C6, C7, C10, C11, C14, C16, C22 and C23 in the sequence stated for maximum power output.

Set the ADC potentiometer R2 in PA711 for 12 watts power output for 13.6V supply voltage from the power supply. This will ensure a power output of more than 10W if the supply voltage is increased to 16 volts in spite of the fact that the ADC circuit will reduce the power output with increasing supply voltage.

Requirements:

At 10.5V supply voltage,

Power output:	> 6W
Current in "C":	< 1.0 A
Current in "B":	< 0.35 A
Current in "A":	< 80 mA

At 13.6V supply voltage,

Power output:	12W
Current in "C":	< 1.6 A
Current in "B":	< 0.5 A
Current in "A":	< 80 mA

At 16.0V supply voltage,

Power output:	$\geq 10W$
Current in "C":	< 1.6 A
Current in "B":	< 0.3 A
Current in "A":	< 80 mA

Checking of these values also indicates if the ADC circuit is operating satisfactory.

Adjustment of transmitter frequencies

Connect the frequency counter to the transmitter output through an attenuation network of approx. 40dB.

Adjust the transmitter frequency by means of trimmer capacitor C2 in EX711 and the trimmer capacitors in XS701/XS702.

Requirement: The accuracy of the frequency be as follows:

In CQM713: $\pm 1 \times 10^{-6}$

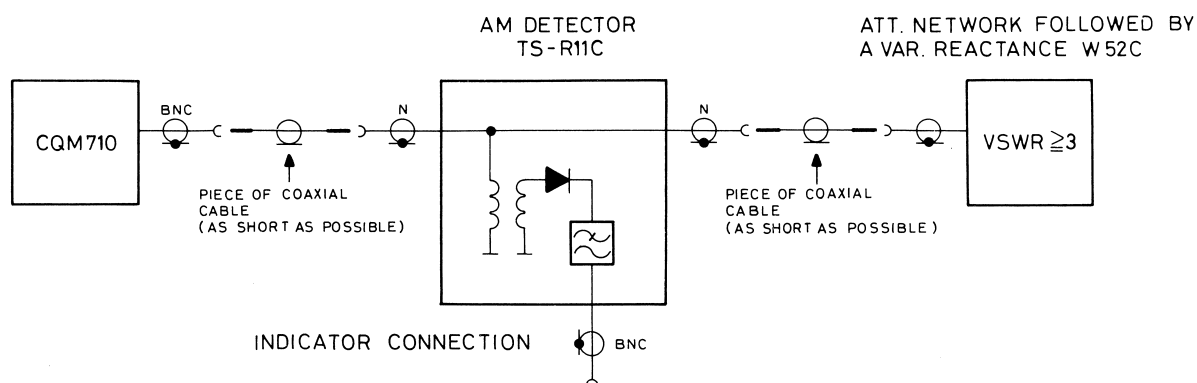
In CQM714: $\pm 0.5 \times 10^{-6}$

The tolerances stated apply to an ambient temperature of 25°C.

Check that no instability or parametric oscillations occur within the supply voltage range 10.5V to 16V. The transmitter should remain stable at a standing wave ratio of $VSWR \geq 3$ with variable phase.

Checking the transmitter stability

Test set-up:



Transmitter instability appears from AM modulation of the transmitted carrier by a modulating frequency which may vary between 0.5-40MHz.

The existence of parasitic oscillations are proved by means of a detector followed by a filter, which removes the carrier, and an indicator, e.g. an

oscilloscope, a millivoltmeter or simply a multimeter with diode detector. When using the latter an amplifier is required, e.g. Storno amplifier detector type TS-F42A.

While varying the phase angle by W52C check that no deflection appears on the AM indicator.

Adjustment of modulation and frequency swing.

Connect distortion meter, voltmeter, and deviation meter to the transmitter output via an attenuating network.

Set the power supply voltage at 13.6V.

Connect the generator to the transmitter modulation input (located on the service and control unit).

Adjust the input signal from the tone generator for nominal modulating level + 20dB, i.e. $V_{mod.} = 2.2V$.

Vary the frequency between 370 and 2900 Hz while adjusting for maximum frequency swing.

In CQM713 (25 kHz): $\Delta F \text{ max.} = \pm 15 \text{ kHz}$

In CQM713 (20 kHz): $\Delta F \text{ max.} = \pm 4 \text{ kHz}$

In CQM714 (12.4 kHz): $\Delta F \text{ max.} = \pm 2.5 \text{ kHz}$

Adjust by means of potentiometer R124 in CF701 the frequency swing so that it will not exceed the maximum value ($\Delta F \text{ max.}$) anywhere inside the frequency range 370-2900 Hz. This should be checked at both negative and positive modulation peaks.

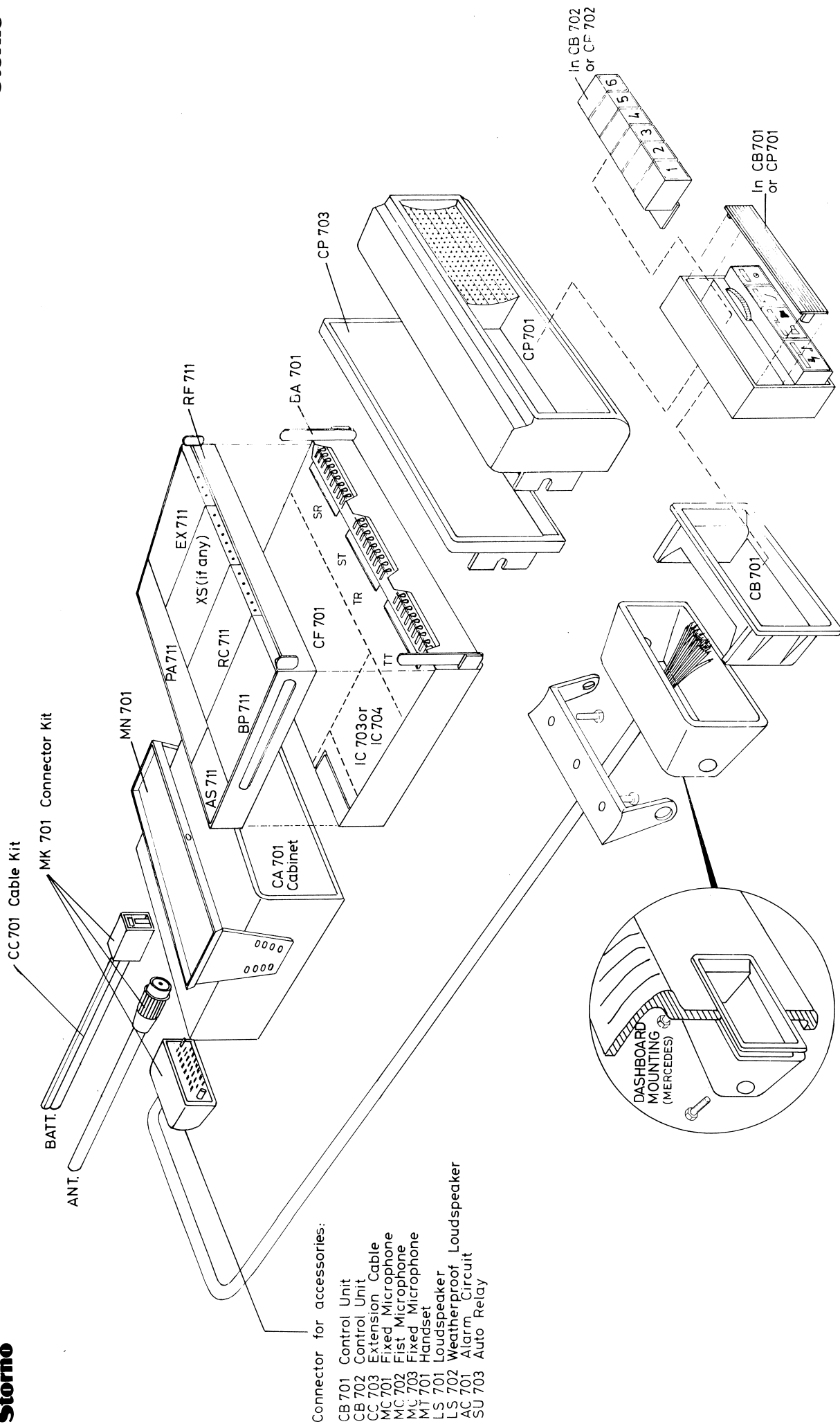
Checking the modulation sensitivity and distortion.

Set the modulating signal from the tone generator for a frequency swing of $0.7 \times \Delta F \text{ max.}$ at 1000 Hz.

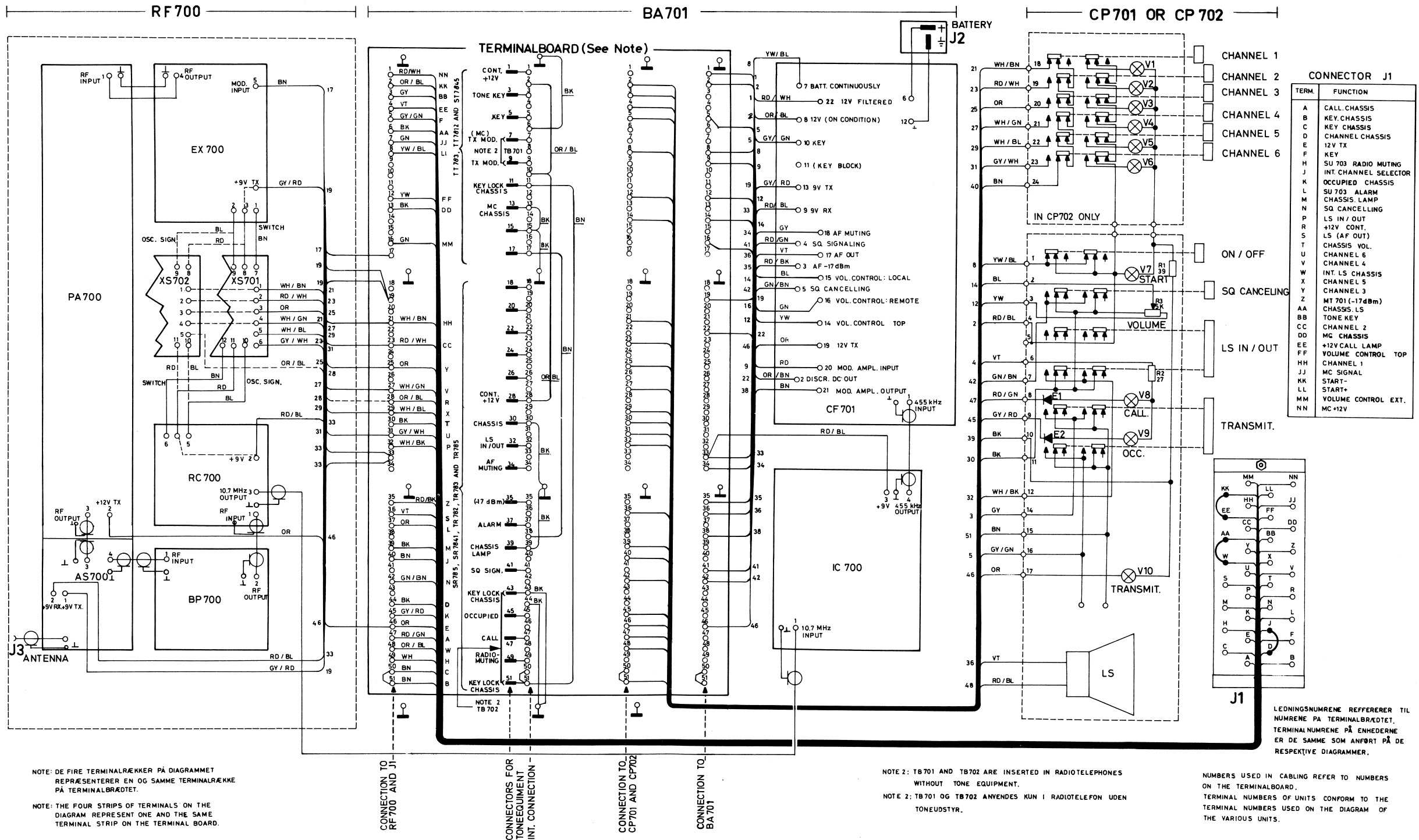
Read the distortion at the distortion meter.

Requirement: Modulating signal = $220\text{mV} \pm 2\text{dB}$
(i.e. 165 - 275 mV).
 $k \leq 7\%$ (without de-emphasis).

CIRCUIT DIAGRAMS AND PARTS LISTS

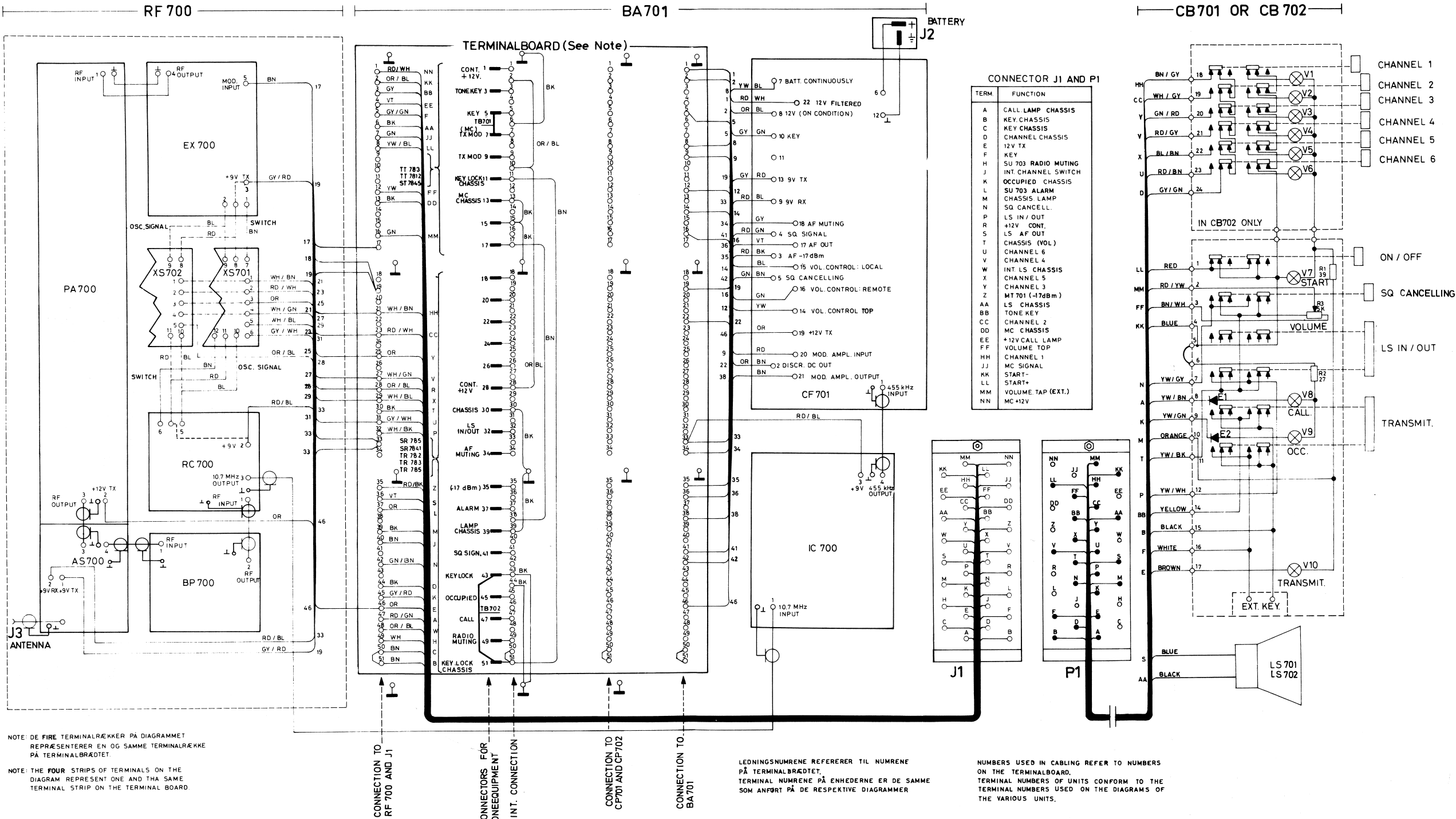






CABLING
LOCAL CONTROLLED
LOKAL BETJENT

CQM700



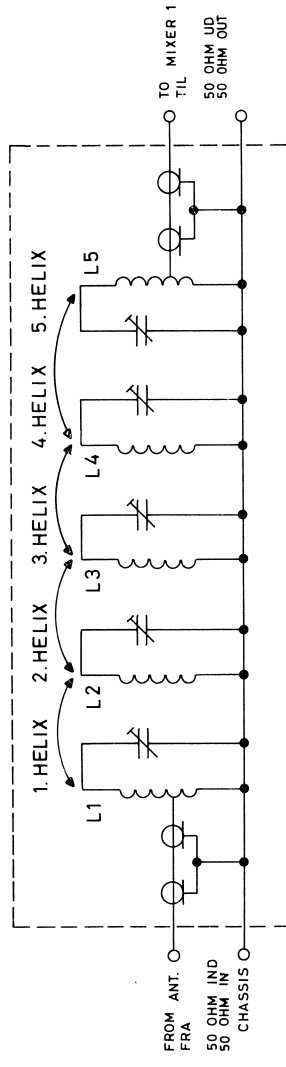
NOTE: DE FIRE TERMINALRÆKKER PÅ DIAGRAMMET
REPRÆSENTERER EN OG SAMME TERMINALRÆKKE
PÅ TERMINALBRÆDDET.

NOTE: THE FOUR STRIPS OF TERMINALS ON THE
DIAGRAM REPRESENT ONE AND THE SAME
TERMINAL STRIP ON THE TERMINAL BOARD

LEDNINGNUMRENE REFERERER TIL NUMRENE
PÅ TERMINALBRÆDDET.
TERMINAL NUMRENE PÅ ENHEDERNE ER DE SAMME
SOM ANFØRT PÅ DE RESPEKTIVE DIAGRAMMER

NUMBERS USED IN CABLING REFER TO NUMBERS
ON THE TERMINALBOARD.
TERMINAL NUMBERS OF UNITS CONFORM TO THE
TERMINAL NUMBERS USED ON THE DIAGRAMS OF
THE VARIOUS UNITS.

CABLING
EXTENDED LOCAL CONTROLLED CQM700
FJERNBETJENT CQM700



BAND PASS FILTER
BÅNDPASSFILTER

BP711

D401.383

Storno

TYPE	NO.	CODE	DATA
BP711		10.2554	Band Pass Filter
	L1	62.0819	RF coil
	L2	62.0819	RF coil
	L3	62.0819	RF coil
	L4	62.0819	RF coil
	L5	62.0819	RF coil

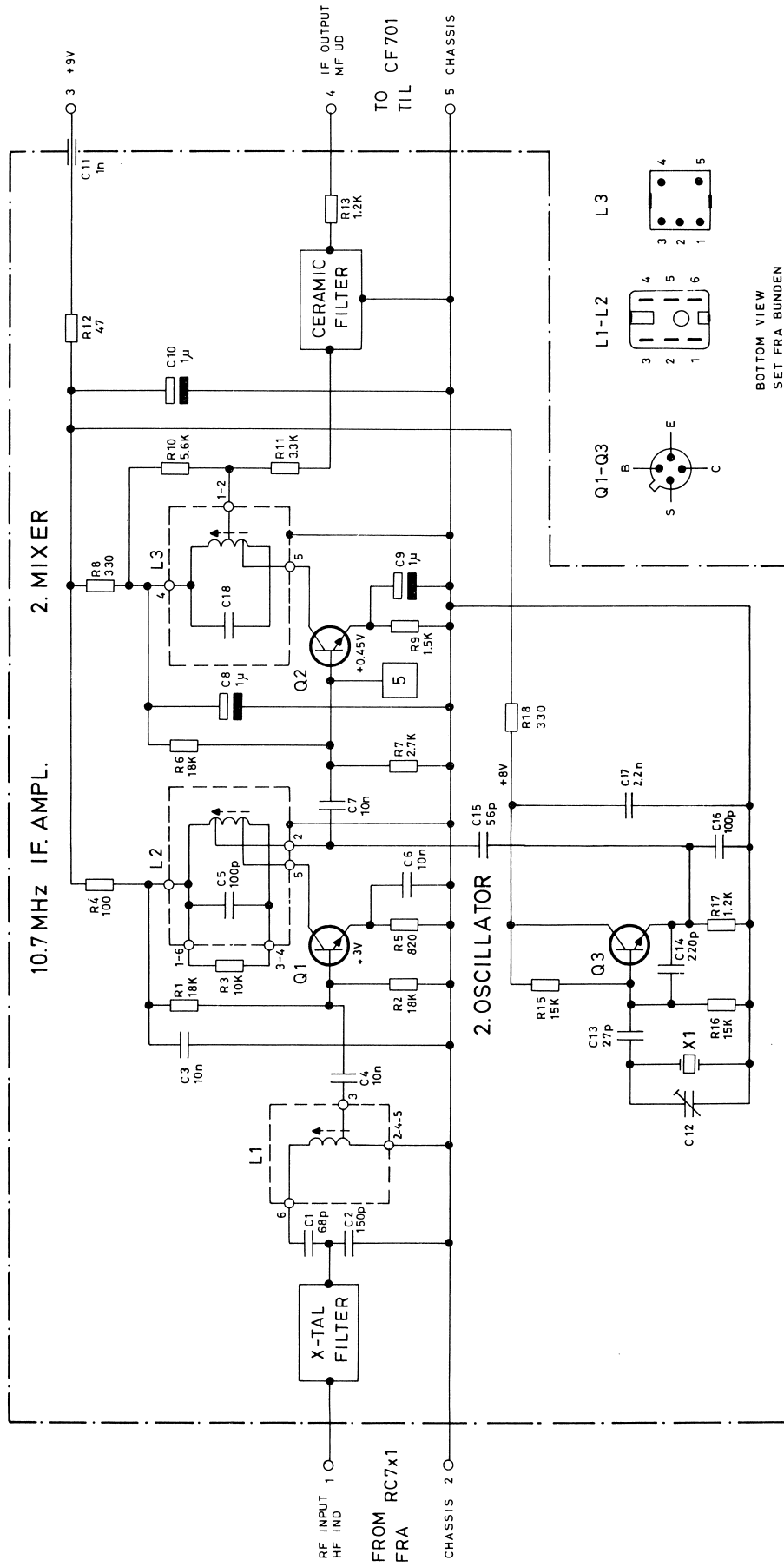
Storno

TYPE	NO.	CODE	DATA

BAND PASS FILTER
BÅNDPASFILTER

BP711

X401.381



IF CONVERTER IC703

D401.327

Storno

Storno

TYPE	NO.	CODE	DATA
IC703		10.2432	IF Converter
	C1	76.5101	68 pF 2.5% polystyr TB
	C2	76.5103	150 pF 2.5% polystyr TB
	C3	76.5070	10 nF 10% polyester. FL
	C4	76.5070	10 nF 10% polyester. FL
	C5	76.5102	100 pF 2.5% polystyr TB
	C6	76.5070	10 nF 10% polyester. FL
	C7	76.5070	10 nF 10% polyester. FL
	C8	73.5114	1 nF 20% tantal
	C9	73.5114	1 μ F 20% tantal
	C10	73.5114	1 μ F 20% tantal
	C11	74.5167	1 nF -20 +80% ceram FT
	C12	78.5044	2-18 pF trimmer
	C13	74.5192	27 pF 5% ceram TB
	C14	76.5104	220 pF 2.5% polystyr TB
	C15	74.5111	56 pF 5% ceram TB
	C16	76.5102	100 pF 2.5% polystyr TB
	C17	76.5059	2.2 nF 10% polyester. FL
	C18		See Ceramic Filter
	R1	80.5264	18 k Ω 5% carbon film
	R2	80.5264	18 k Ω 5% "
	R3	80.5261	10 k Ω 5% "
	R4	80.5237	100 Ω 5% "
	R5	80.5248	820 Ω 5% "
	R6	80.5264	18 k Ω 5% "
	R7	80.5254	2.7 k Ω 5% "
	R8	80.5243	330 Ω 5% "
	R9	80.5254	2.7 k Ω 5% "
	R10	80.5258	5.6 k Ω 5% "
	R11	80.5255	3.3 k Ω 5% "
	R12	80.5233	47 Ω 5% "
	R13	80.5250	1.2 k Ω 5% "
	R15	80.5263	15 k Ω 5% "
	R16	80.5263	15 k Ω 5% "
	R17	80.5250	1.2 k Ω 5% "
	R18	80.5243	330 Ω 5% "
	L1	61.1122	IF coil 10.7 MHz
	L2	61.1123	IF coil 10.7 MHz
	L3		See Ceramic Filter
	X1	98.5010	Crystal 10.2450 MHz Type 98-12
	X1	98.5011	Crystal 11.1550 MHz Type 98-12
		69.5016	Crystal Filter 10.7 MHz
		69.5014	Ceramic Filter 455 kHz
			L3 and C18 included

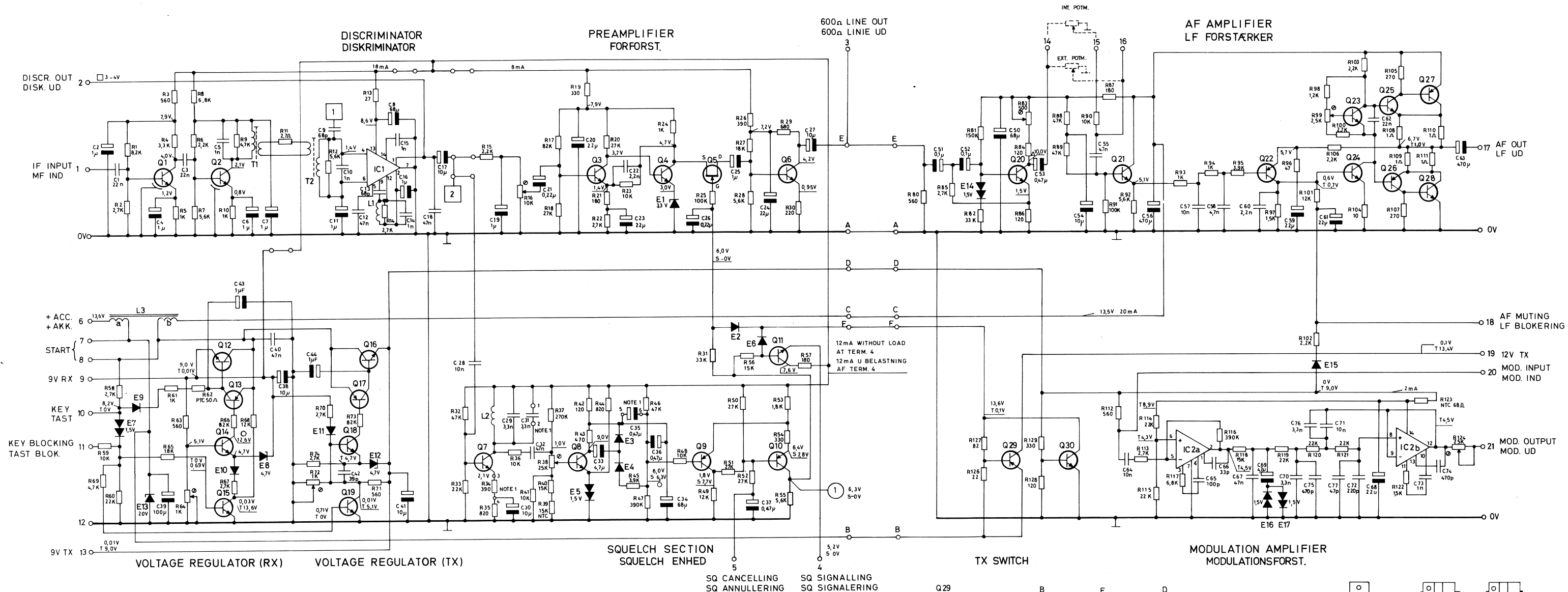
TYPE	NO.	CODE	DATA
	Q1	99.5168	BF167 Transistor
	Q2	99.5166	BF173 Transistor
	Q3	99.5168	BF167 Transistor

IF CONVERTER IC703

X401.314

LOWER PRINTED WIRING BOARD

UPPER PRINTED WIRING BOARD



DEPENDENT ON THE CHANNEL SEPARATION EMPLOYED
MAKE THE FOLLOWING ALTERATIONS:

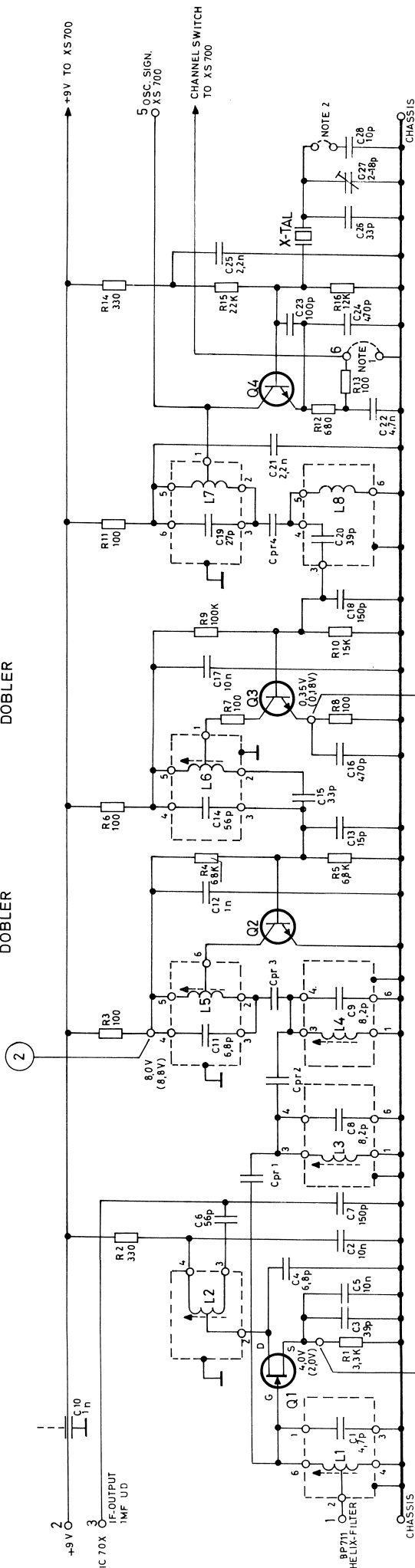
POINTS CH. SEP.	1-2	3-4	5-6	
12.5 kHz	3.3nF	150n	0.47μF	REPLACE R119, R120, R121, BY 27KΩ
20/25 kHz	3.3nF	390n	0.47μF	
50 kHz	OPEN	820n	OPEN	

CONDITIONS OF MEASUREMENTS

- MEASURED AT $\Delta f = 0$ kHz
- Δ RESISTOR R83 SHORT-CIRCUITED
- S SQUELCHED CONDITION
- T TRANSMITTER KEYED CONDITION
- USE A HIGH-RESISTANCE VOLTMETER (2MΩ)

COMMON FUNCTION UNIT CF701
FÆLLESENHED

D401.296/2



TO XS700
OSC. SIGN. +9V

BLUE

TO XS700 SWITCH BROWN

NOTE 1

NOTE 2

NOTE 3

NOTE 4

NOTE 5

NOTE 6

NOTE 7

NOTE 8

NOTE 9

NOTE 10

NOTE 11

NOTE 12

NOTE 13

NOTE 14

NOTE 15

NOTE 16

NOTE 17

NOTE 18

NOTE 19

NOTE 20

NOTE 21

NOTE 22

NOTE 23

NOTE 24

NOTE 25

NOTE 26

NOTE 27

NOTE 28

NOTE 29

NOTE 30

NOTE 31

NOTE 32

NOTE 33

NOTE 34

NOTE 35

NOTE 36

NOTE 37

NOTE 38

NOTE 39

NOTE 40

NOTE 41

NOTE 42

NOTE 43

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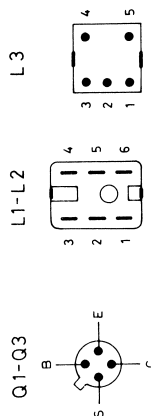
TYPE	NO.	CODE	DATA
RC711		10.2557	Receiver Converter
	C1	74.5131	4.7 pF ± 0.25 pF ceram DI
	C2	74.5109	10 nF -20 +80% ceram PL
	C3	74.5117	39 pF 5% ceram TB
	C4	74.5133	6.8 pF ± 0.25 pF ceram DI
	C5	74.5109	10 nF -20 +80% ceram PL
	C6	74.5111	56 pF 5% ceram TB
	C7	76.5103	150 pF 2.5% polystyr. TB
	C8	74.5134	8.2 pF ± 0.25 pF ceram DI
	C9	74.5134	8.2 pF ± 0.25 pF ceram DI
	C10		
	C11	74.5133	6.8 pF ± 0.25 pF ceram DI
	C12	74.5155	1 nF -20 +80% ceram PL
	C13	74.5137	15 pF 5% ceram DI
	C14	74.5111	56 pF 5% ceram TB
	C15	74.5116	33 pF 5% ceram TB
	C16	74.5161	470 pF -20 +80% ceram PL
	C17	74.5109	10 nF -20 +80% ceram PL
	C18	76.5103	150 pF 2.5% polystyr TB
	C19	74.5116	33 pF 5% ceram TB
	C20	74.5116	33 pF 5% ceram TB
	C21	76.5059	2.2 nF 10% polyester FL
	C22	76.5061	4.7 nF 10% polyester FL
	C23	76.5102	100 pF 2.5% polystyr TB
	C24	76.5106	470 pF 2.5%
	C25	76.5059	2.2 nF 10% polyester FL
	C26	74.5191	33 pF 5% ceram TB
	C27	78.5044	2-18 pF trimmer
	C28	74.5135	10 pF 5% ceram DI
	R1	80.5255	3.3 k Ω 5% carbon film
	R2	80.5243	330 Ω 5%
	R3	80.5237	100 Ω 5%
	R4	80.5271	68 k Ω 5%
	R5	80.5259	6.8 k Ω 5%
	R6	80.5237	100 Ω 5%
	R7	80.5237	100 Ω 5%
	R8	80.5237	100 Ω 5%
	R9	80.5273	0.1 M Ω 5%
	R10	80.5263	15 k Ω 5%
	R11	80.5237	100 Ω 5%
	R12	80.5247	680 Ω 5%
	R13	80.5237	100 Ω 5%
	R14	80.5243	330 Ω 5%
	R15	80.5265	22 k Ω 5%
	R16	80.5262	12 k Ω 5%

TYPE	NO.	CODE	DATA
	L1	61.1142	RF coil 146-174 MHz
	L2	61.1143	IF coil 10.7 MHz
	L3	61.1144	RF coil 135.3 - 163.3 MHz
	L4	61.1144	RF coil 135.3 - 163.3 MHz
	L5	61.1146	RF coil 135.3 - 163.3 MHz
	L6	61.1147	RF coil 67.65 - 81.65 MHz
	L7	61.1145	RF coil 33.8 - 40.8 MHz
	L8	61.1149	RF coil 33.8 - 40.8 MHz
	Q1	99.5245	2N5245 Transistor J-FET
	Q2	99.5217	2N918 Transistor
	Q3	99.5168	BF173 Transistor
	Q4	99.5139	BSX19 Transistor

RECEIVER CONVERTER
MODTAGERKONVERTER

RC711

X401.382



IF CONVERTER
MF KONVERTER

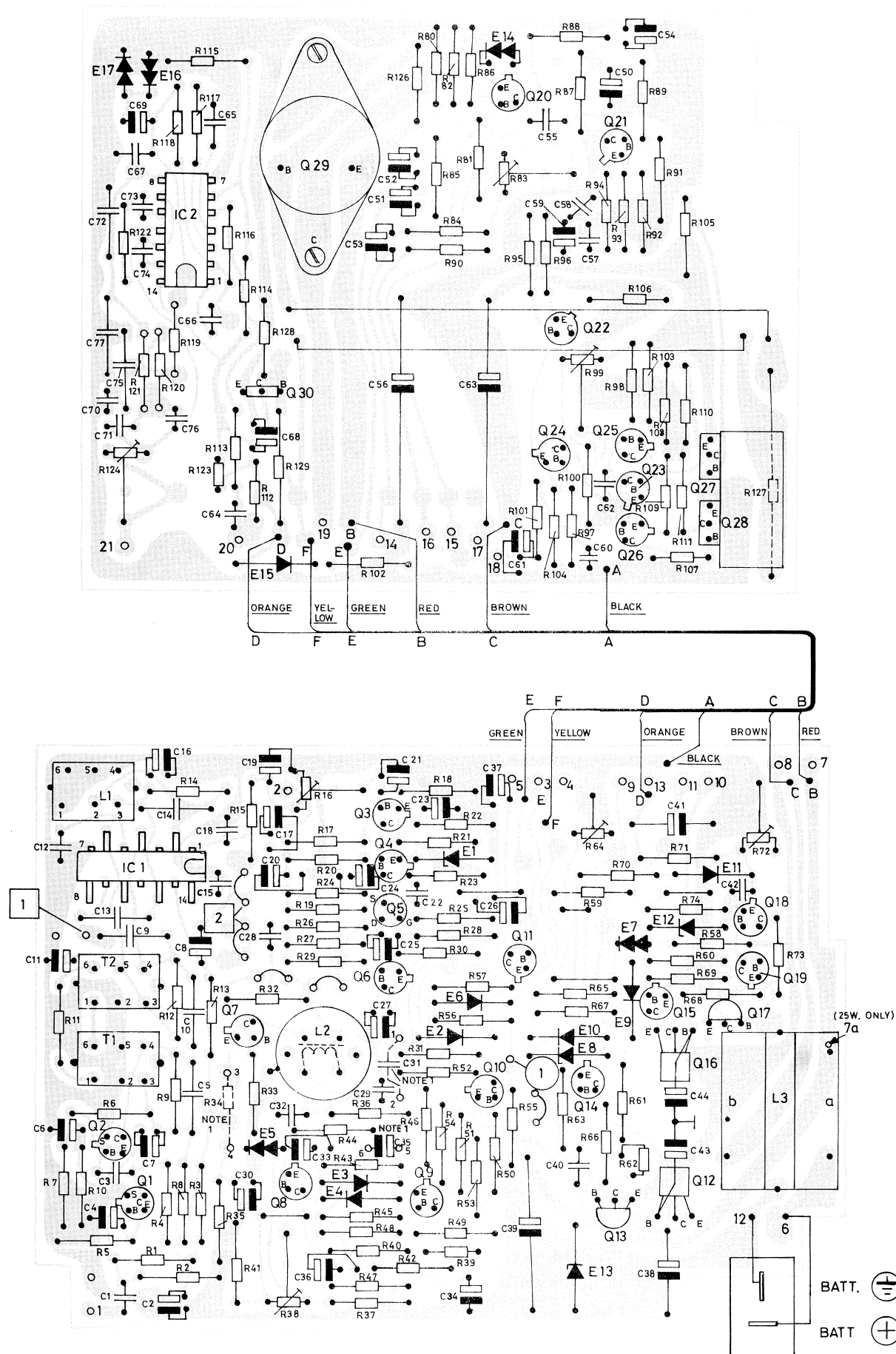
IC704

D401.365/2

TYPE	NO.	CODE	DATA	
IC704		10.2517	IF Converter	
	C1	76.5101	68 pF 2.5% polystyr TB	25V
	C2	76.5103	150 pF 2.5% polystyr TB	25V
	C3	76.5070	10 nF 10% polyester. FL	50V
	C4	76.5070	10 nF 10% polyester. FL	50V
	C5	76.5102	100 pF 2.5% polystyr TB	25V
	C6	76.5070	10 nF 10% polyester. FL	50V
	C7	76.5070	10 nF 10% polyester. FL	50V
	C8	73.5114	1 μ F 20% tantal	35V
	C9	73.5114	1 μ F 20% tantal	35V
	C10	73.5114	1 μ F 20% tantal	35V
	C11	74.5167	1 nF -20 +80% ceram FT	300V
	C12	78.5044	2-18 pF trimmer	300V
	C13	74.5192	27 pF 5% ceram TB	160V
	C14	76.5104	220 pF 2.5% polystyr TB	25V
	C15	74.5111	56 pF 5% ceram TB	160V
	C16	76.5102	100 pF 2.5% polystyr TB	25V
	C17	76.5059	2.2 nF 10% polyester. FL	50V
	C18		See Ceramic Filter	
	R1	80.5264	18 k Ω 5% carbon film	1/8W
	R2	80.5264	18 k Ω 5% "	1/8W
	R3	80.5261	10 k Ω 5% "	1/8W
	R4	80.5237	100 Ω 5% "	1/8W
	R5	80.5248	820 Ω 5% "	1/8W
	R6	80.5264	18 k Ω 5% "	1/8W
	R7	80.5254	2.7 k Ω 5% "	1/8W
	R8	80.5243	330 Ω 5% "	1/8W
	R9	80.5251	1.5 k Ω 5% "	1/8W
	R10	80.5249	1 k Ω 5% "	1/8W
	R11	80.5245	470 Ω 5% "	1/8W
	R12	80.5233	47 Ω 5% "	1/8W
	R13	80.5245	470 Ω 5% "	1/8W
	R14	80.5257	4.7 k Ω 5% "	1/8W
	R15	80.5263	15 k Ω 5% "	1/8W
	R16	80.5263	15 k Ω 5% "	1/8W
	R17	80.5250	1.2 k Ω 5% "	1/8W
	R18	80.5243	330 Ω 5% "	1/8W
	L1	61.1122	IF coil 10.7 MHz	
	L2	61.1123	IF coil 10.7 MHz	
	L3		See Ceramic Filter	
	X1	98.5010	Crystal 10.2450 MHz Type 98-12	
	X1	98.5011	Crystal 11.1550 MHz Type 98-12	

IF CONVERTER IC704
MF KONVERTER

X401.795



Stereo

TYPE	NO.	CODE	DATA
	R16	86.5039	10 k Ω 20% potentiometer
	R17	80.5272	82 k Ω 5% carbon film
	R18	80.5266	27 k Ω 5% "
	R19	80.5243	330 Ω 5% "
	R20	80.5266	27 k Ω 5% "
	R21	80.5240	180 Ω 5% "
	R22	80.5254	2.7 k Ω 5% "
	R23	80.5261	10 k Ω 5% "
	R24	80.5249	1 k Ω 5% "
	R25	80.5273	0.1 M Ω 5% "
	R26	80.5244	390 Ω 5% "
	R27	80.5264	18 k Ω 5% "
	R28	80.5258	5.6 k Ω 5% "
	R29	80.5247	680 Ω 5% "
	R30	80.5241	220 Ω 5% "
	R31	80.5267	33 k Ω 5% "
	R32	80.5269	47 k Ω 5% "
	R33	80.5265	22 k Ω 5% "
	R34	80.5244	390 Ω 5% "
	R35	80.5248	820 Ω 5% "
	R36	80.5261	10 k Ω 5% "
	R37	80.5278	0.27 M Ω 5% "
	R38	86.5044	25 k Ω 20% potentiometer
	R39	89.5010	15 k Ω 2% NTC
	R40	80.5263	15 k Ω 5% carbon film
	R41	80.5261	10 k Ω 5% "
	R42	80.5238	120 Ω 5% "
	R43	80.5245	470 Ω 5% "
	R44	80.5248	820 Ω 5% "
	R45	80.5256	3.9 k Ω 5% "
	R46	80.5269	47 k Ω 5% "
	R47	80.5280	0.39 M Ω 5% "
	R48	80.5261	10 k Ω 5% "
	R49	80.5262	12 k Ω 5% "
	R50	80.5266	27 k Ω 5% "
	R51	80.5266	27 k Ω 5% "
	R52	80.5266	27 k Ω 5% "
	R53	80.5252	1.8 k Ω 5% "
	R54	80.5243	330 Ω 5% "
	R55	80.5258	5.6 k Ω 5% "
	R56	80.5263	15k Ω 5% "
	R57	80.5240	180 Ω 5% "
	R58	80.5254	2.7 k Ω 5% "
	R59	80.5261	10 k Ω 5% "
	R60	80.5265	22 k Ω 5% "
	R61	80.5249	1 k Ω 5% "
	R62	89.5046	50 Ω PTC
	R63	80.5246	560 Ω 5% "

Stereo

TYPE	NO.	CODE	DATA
	R64	86.5068	1 k Ω 20% potentiometer
	R65	80.5264	18 k Ω 5% carbon film
	R66	80.5272	82 k Ω 5% "
	R67	80.5254	2.7 k Ω 5% "
	R68	80.5262	12 k Ω 5% "
	R69	80.5257	4.7 k Ω 5% "
	R70	80.5254	2.7 k Ω 5% "
	R71	80.5246	560 Ω 5% "
	R72	86.5058	1 k Ω 20% potentiometer
	R73	80.5272	82 k Ω 5% carbon film
	R74	80.5254	2.7 k Ω 5% "
	R80	80.5246	560 Ω 5% "
	R81	80.5275	0.15 M Ω 5% "
	R82	80.5267	33 k Ω 5% "
	R83	86.5042	500 Ω 20% potentiometer
	R84	80.5238	120 Ω 5% carbon film
	R85	80.5254	2.7 k Ω 5% "
	R86	80.5238	120 Ω 5% "
	R87	80.5240	180 Ω 5% "
	R88	80.5269	47 k Ω 5% "
	R89	80.5269	47 k Ω 5% "
	R90	80.5261	10 k Ω 5% "
	R91	80.5273	0.1 M Ω 5% "
	R92	80.5258	5.6 k Ω 5% "
	R93	80.5249	1 k Ω 5% "
	R94	80.5249	1 k Ω 5% "
	R95	80.5256	3.9 k Ω 5% "
	R96	80.5233	47 Ω 5% "
	R97	80.5251	1.5 k Ω 5% "
	R98	80.5250	1.2 k Ω 5% "
	R99	86.5043	2.5 k Ω 20% potentiometer
	R100	80.5254	2.7 k Ω 5% carbon film
	R101	80.5262	12 k Ω 5% "
	R102	80.5253	2.2k Ω 5% "
	R103	80.5253	2.2 k Ω 5% "
	R104	80.5225	10 Ω 5% "
	R105	80.5242	270 Ω 5% "
	R106	80.5253	2.2 k Ω 5% "
	R107	80.5242	270 Ω 5% "
	R108	80.5213	1 Ω 5% "
	R109	80.5213	1 Ω 5% "
	R110	80.5213	1 Ω 5% "

COMMON FUNCTIONS UNIT CF701

X401.322/ 2

Storno

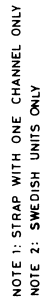
TYPE	NO.	CODE	DATA
R111		80.5213	1 Ω 5% carbon film
R112		80.5246	560 Ω 5% " "
R113		80.5254	2.7 k Ω 5% " "
R114		89.5062	22 k Ω 1% metal film
R115		89.5062	22 k Ω 1% metal film
R116		80.5280	0.39 M Ω 5% carbon film
R117		80.5259	6.8 k Ω 5% " "
R118		80.5263	15 k Ω 5% " "
R119		89.5062	22 k Ω 1% metal film
R120		89.5062	22 k Ω 1% metal film
R121		89.5062	22 k Ω 1% metal film
R122		80.5251	1.5 k Ω 5% carbon film
R123		89.5061	68 Ω 20% NTC
R124		86.5044	25 k Ω 20% potentiometer
R126		80.5229	22 Ω 5% carbon film
R127		84.5224	82 Ω 5% wire wound
R128		80.5238	120 Ω 5% carbon film
R129		80.5443	330 Ω 5% " "
L1		61.1131	IF coil 455 kHz
L2		61.1132	Coil 75 mH
L3		60.5158	Cnoke
T1		61.1130	IF Transformer 455 kHz
T2		61.1130	IF Transformer 455 kHz
E1		99.5210	Zenerdiode 3.3V 5%
E2		99.5237	1N4148 Diode
E3		99.5237	1N4148 Diode
E4		99.5237	1N4148 Diode
E5		99.5209	Stab. diode 1.5V
E6		99.5237	1N4148 Diode
E7		99.5209	Stab. diode 1.5V
E8		99.5224	Zenerdiode 4.7V 5%
E9		99.5237	1N4148 Diode
E10		99.5237	1N4148 Diode
E11		99.5237	1N4148 Diode
E12		99.5224	Zenerdiode 4.7V 5%
E13		99.5249	Zenerdiode BZY93/C20R
E14		99.5209	Stab. diode 1.5V
E15		99.5237	1N4148 Diode
E16		99.5209	Stab. diode 1.5V
E17		99.5209	Stab. diode 1.5V
Q1		99.5166	BF167 Transistor
Q2		99.5166	BF167 Transistor
Q3		99.5143	BC108 Transistor
Q4		99.5143	BC108 Transistor

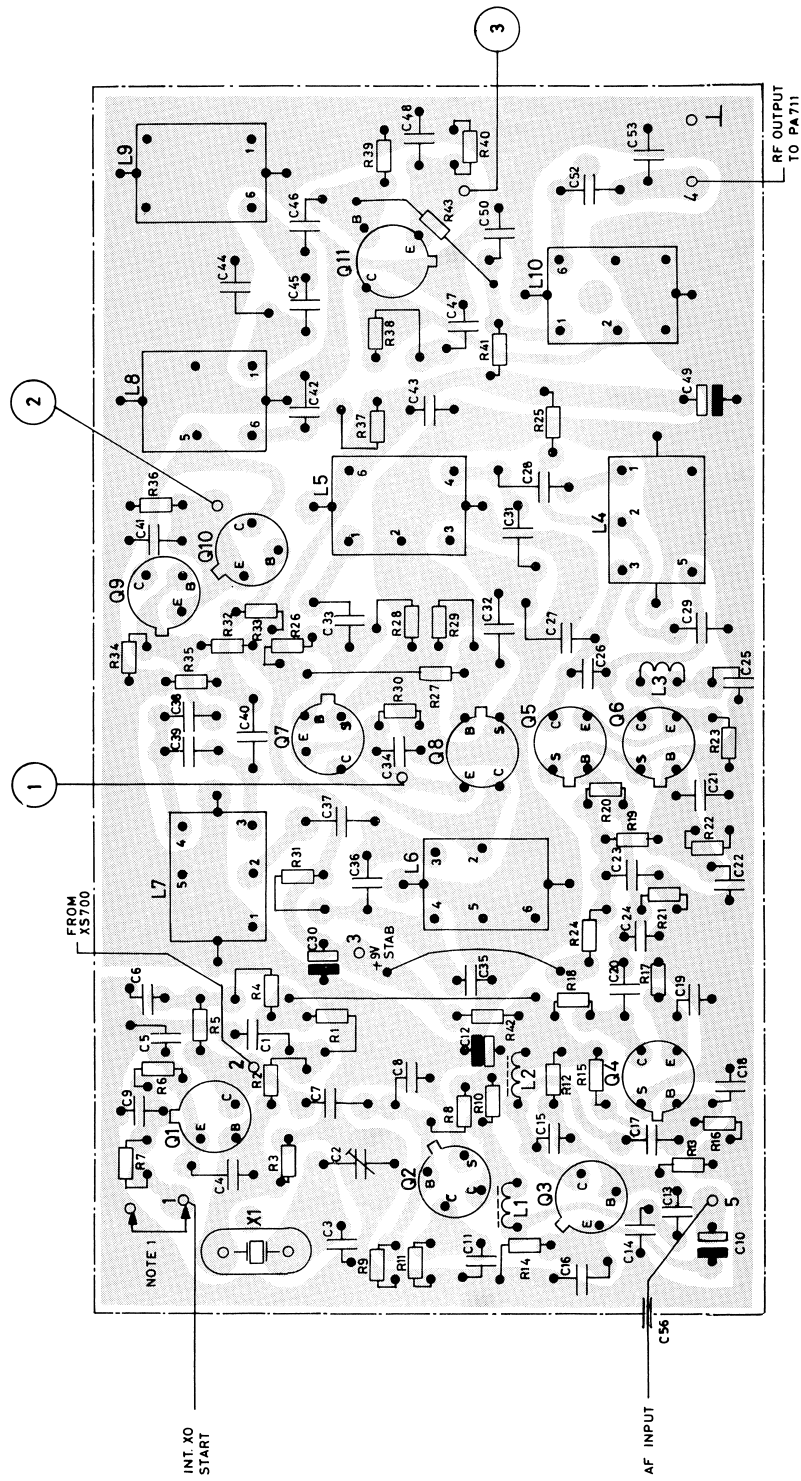
Storno

TYPE	NO.	CODE	DATA
	Q5	99.5247	2N4302 Transistor FET
	Q6	99.5143	BC108 Transistor
	Q7	99.5143	BC108 Transistor
	Q8	99.5143	BC108 Transistor
	Q9	99.5115	BC179 Transistor
	Q10	99.5115	BC179 Transistor
	Q11	99.5143	BC108 Transistor
	Q12	99.5246	TIP 31 Transistor
	Q13	99.5144-01	BC214L Transistor
	Q14	99.5243	BC108 Transistor
	Q15	99.5243	BC108 Transistor
	Q16	99.5246	TIP 31 Transistor
	Q17	99.5144-01	BC214L Transistor
	Q18	99.5143	BC108 Transistor
	Q19	99.5143	BC108 Transistor
	Q20	99.5201	BC109 Transistor
	Q21	99.5201	BC109 Transistor
	Q22	99.5115	BC179 Transistor
	Q23	99.5143	BC108 Transistor
	Q24	99.5143	BC108 Transistor
	Q25	99.5143	BC108 Transistor
	Q26	99.5115	BC179 Transistor
	Q27	99.5236	BD136 Transistor
	Q28	99.5235	BD135 Transistor
	Q29	99.5248	SP2629 Transistor
	Q30	99.5235	BD135 Transistor
	IC1	14.5010	IF ampl./discr.
	IC2	14.5006	MC1437P dual OP amp.

COMMON FUNCTIONS UNIT CF701

X401.322/2





PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE

EXCITER EX711

D401.521/Z

TYPE	NO.	CODE	DATA
EX711		10.2570	Exciter Unit
	C1	76.5059	2.2 nF 10% polyester. FL
	C2	78.5046	2-20 pF trimmer
	C3	74.5192	27 pF 5% ceram TB
	C4	76.5104	220 pF 2.5% polystyr TB
	C5	76.5106	470 pF 2.5% polystyr TB
	C6	76.5061	4.7 nF 10% polyester FL
	C7	74.5155	1 nF -20 +80% ceram PL
	C8	76.5104	220 pF 2.5% polystyr TB
	C9	76.5061	4.7 nF 10% polyester. FL
	C10	73.5124	47 μ F 20% tantal
	C11	76.5069	1 nF 10% polyester. FL
	C12	73.5129	2.2 μ F -20 +50% tantal
	C13	74.5107	27 pF 5% ceram
	C14	74.5106	22 pF 5% ceram
	C15	74.5107	27 pF 5% ceram
	C16	76.5071	22 nF 10% polyester. FL
	C17	74.5135	10 pF 5% ceram DI
	C18	74.5107	27 pF 5% ceram
	C19	76.5069	1 nF 10% polyester. FL
	C20	74.5155	1 nF -20 +80% ceram PL
	C21	74.5155	1 nF -20 +80% ceram PL
	C22	76.5070	10 nF 10% polyester FL
	C23	76.5061	4.7 nF 10% polyester. FL
	C24	74.5186	47 pF 10% ceram PL
	C25	76.5060	3.3 nF 10% polyester. FL
	C26	74.5107	27 pF 5% ceram
	C27	74.5125	1.5 pF \pm 0.25 pF ceram BD
	C28	74.5125	1.5 pF \pm 0.25 pF ceram BD
	C29	76.5070	10 nF 10% polyester. FL
	C30	73.5135	1 μ F -20 +50% tantal
	C31	74.5107	27 pF 5% ceram
	C32	74.5136	12 pF 5% ceram DI
	C33	74.5136	12 pF 5% ceram DI
	C34	74.5161	470 pF -20 +80% ceram PL
	C35	76.5059	2.2 nF 10% polyester FL
	C36	74.5135	10 pF 5% ceram DI
	C37	74.5123	1.0 pF \pm 0.25 pF ceram BD
	C38	74.5137	15 pF 5% ceram DI
	C39	74.5132	5.6 pF \pm 0.25 pF ceram DI
	C40	74.5137	15 pF 5% ceram DI
	C41	74.5161	470 pF -20 +80% ceram PL
	C42	74.5161	470 pF -20 +80% ceram PL
	C43	76.5070	10 nF 10% polyester. PL
	C44	74.5128	2.7 pF \pm 0.25 pF ceram DI
	C45	74.5120	0.39 pF \pm 0.1 pF ceram BD
	C46	74.5130	3.9 \pm 0.25 pF ceram DI

TYPE	NO.	CODE	DATA
	C47	74.5130	3.9 pF \pm 0.25 pF ceram DI
	C48	74.5161	470 pF -20 +80% ceram PL
	C49	73.5109	10 μ F 20% tantal
	C50	76.5061	4.7 nF 10% polyester. FL
	C51		
	C52	74.5128	2.7 pF \pm 0.25 pF ceram DI
	C53	74.5131	4.7 pF \pm 0.25 pF ceram DI
	C54		
	C55	74.5167	1 nF -20 +80% ceram FT
	C56	74.5167	1 nF -20 +80% ceram FT
	C57	76.5072	47nF 10% Polyester. FL(Swedish units only)
	R1	80.5243	330 Ω 5% carbon film
	R2	80.5265	22 k Ω 5% "
	R3	80.5262	12 k Ω 5% "
	R4	80.5237	100 Ω 5% "
	R5	80.5241	220 Ω 5% "
	R6	80.5247	680 Ω 5% "
	R7	80.5237	100 Ω 5% "
	R8	80.5259	6.8 k Ω 5% "
	R9	80.5252	1.8 k Ω 5% "
	R10	80.5251	1.5 k Ω 5% "
	R11	80.5244	390 Ω 5% "
	R12	80.5267	33 k Ω 5% "
	R13	80.5265	22 k Ω 5% "
	R14	80.5256	3.9 k Ω 5% "
	R15	80.5268	39 k Ω 5% "
	R16	80.5261	10 k Ω 5% "
	R17	80.5249	1 k Ω 5% "
	R18	80.5251	1.5 k Ω 5% "
	R19	80.5265	22 k Ω 5% "
	R20	80.5265	22 k Ω 5% "
	R21	80.5261	10 k Ω 5% "
	R22	80.5261	10 k Ω 5% "
	R23	80.5241	220 Ω 5% "
	R24	80.5249	1 k Ω 5% "
	R25	80.5237	100 Ω 5% "
	R26	80.5266	27 k Ω 5% "
	R27	80.5266	27 k Ω 5% "
	R28	80.5260	8.2 k Ω 5% "
	R29	80.5260	8.2 k Ω 5% "
	R30	80.5240	180 Ω 5% "
	R31	80.5237	100 Ω 5% "
	R32	80.5266	27 k Ω 5% "

EXCITER UNIT
STYRESENDER

EX711

X401.371/2

Storno

TYPE	NO.	CODE	DATA
R33		80.5266	27 k Ω 5% carbon film
R34		80.5258	5.6 k Ω 5% "
R35		80.5258	5.6 k Ω 5% "
R36		80.5233	47 Ω 5% "
R37		80.5230	27 Ω 5% "
R38		80.5229	22 Ω 5% "
R39		80.5237	100 Ω 5% "
R40		80.5217	2.2 Ω 5% "
R41		80.5228	18 Ω 5% "
R42		80.5237	100 Ω 5% "
R43		80.5051	1.5K Ω 5% "
L1		63.5007	15 μ A 10% RF choke
L2		63.5007	15 μ H 10% "
L3		62.065101	0.08 μ H 20% RF choke
L4		61.1113	RF coil 37 MHz
L5		61.1113	RF coil 37 MHz
L6		61.1150	RF coil 74 MHz
L7		61.1151	RF coil 74 MHz
L8		61.1152-01	RF coil 148 MHz
L9		61.1153	RF coil 148 MHz
L10		61.1154	RF coil 148 MHz
Q1		99.5139	BSX19 Transistor
Q2		99.5168	BF173 Transistor
Q3		99.5121	BC107 Transistor
Q4		99.5175	BF185 Transistor
Q5		99.5175	BF185 Transistor
Q6		99.5175	BF185 Transistor
Q7		99.5175	BF185 Transistor
Q8		99.5175	BF185 Transistor
Q9		99.5139	BSX19 Transistor
Q10		99.5139	BSX19 Transistor
Q11		99.5229	2N4427 Transistor
C57		76.5072	47nF 10% polyester. FL (Swedish units only)

50V

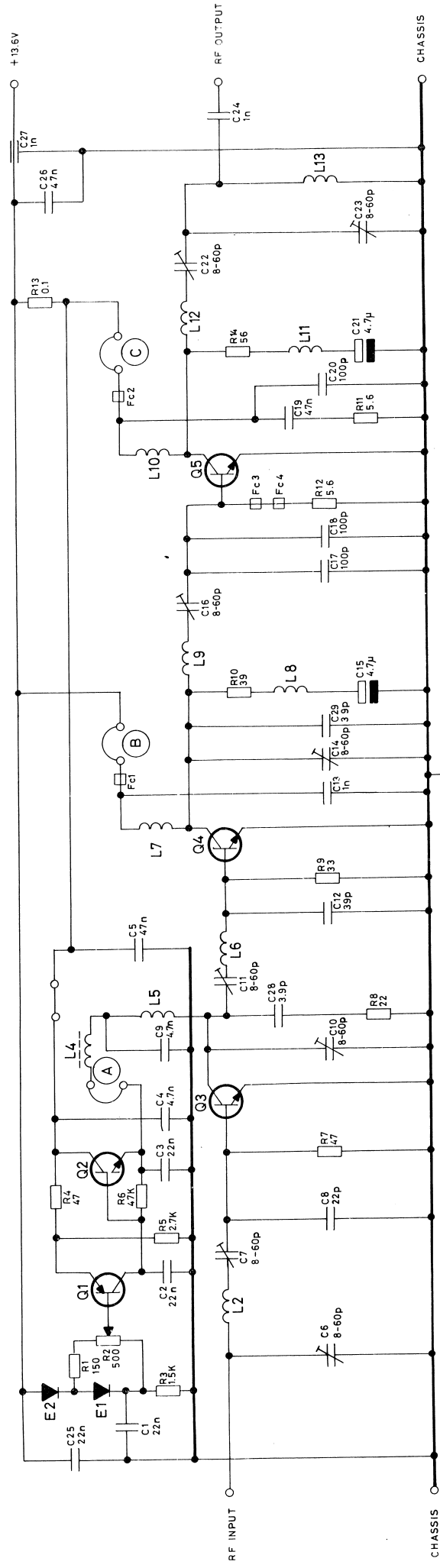
Storno

TYPE	NO.	CODE	DATA

EXCITER UNIT
STYRESENDER

EX711

X401.371/2

RF POWER AMPLIFIER
HF EFFEKTFORSTÆRKER
PA711

D401.362

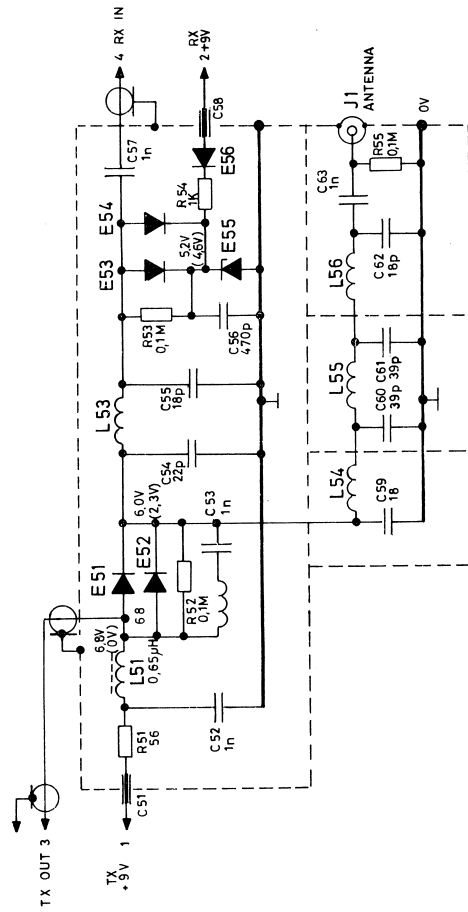
TYPE	NO.	CODE	DATA
PA711		10.2558	RF Power Amplifier Unit
AS711		10.2553	Antenna Switch (part of PA711)
	C1	76.5071	22 nF 10% polyester, FL
	C2	76.5071	22 nF 10% " FL
	C3	76.5071	22 nF 10% " FL
	C4	76.5061	4.7 nF 10% " FL
	C5	76.5072	47 nF 10% " FL
	C6	78.5052	8-60pF trimmer
	C7	78.5052	8-60pF trimmer
	C8	74.5106	22 pF 5% ceram TB
	C9	76.5061	4.7 nF 10% polyester, FL
	C10	78.5052	8-60pF trimmer
	C11	78.5052	8-60pF trimmer
	C12	74.5117	39 pF 5% ceram TB
	C13	74.5155	1 nF -20 +50% ceram PL
	C14	78.5052	8-60pF trimmer
	C15	73.5126	4.7 nF 20% tantal
	C16	78.5052	8-60pF trimmer
	C17	74.5199	100 pF 20% ceram PL
	C18	74.5199	100 pF 20% ceram PL
	C19	76.5072	47 nF 10% polyester, FL
	C20	74.5013	100pF 20% ceram DI
	C21	73.5126	4.7 μ F 20% tantal
	C22	78.5052	8-60pF trimmer
	C23	78.5052	8-60pF trimmer
	C24	74.5015	1 nF -20 +50% ceram DI
	C25	76.5071	22 nF 10% polyester, FL
	C26	76.5072	47 nF 10% polyester, FL
	C28	74.5130	3.9 pF \pm 0.25pF ceram DI
	R1	80.5239	150 Ω 5% carbon film
	R2	86.5042	500 Ω 20% potentiometer
	R3	80.5251	1.5 Ω 5% carbon film
	R4	80.5233	47 Ω 5% " "
	R5	80.5254	2.7 k Ω 5% " "
	R6	80.5269	47 k Ω 5% " "
	R7	80.5233	47 Ω 5% " "
	R8	80.5229	22 Ω 5% " "
	R9	80.5231	33 Ω 5% " "
	R10	80.5432	39 Ω 5% " "
	R11	80.5222	5.6 Ω 5% " "
	R12	80.5222	5.6 Ω 5% " "
	R13	82.5205	0.22 Ω 10% wire wound
	R14	80.5434	56 Ω 5% carbon film

TYPE	NO.	CODE	DATA
	L2	62.0822	RF coil 146-174 MHz
	L4	63.5008	0.47 μ H 20% RF choke
	L5	62.0822	RF coil 146-174 MHz
	L6	62.0823	RF coil 146-174 MHz
	L7	62.0824	RF coil 146-174 MHz
	L8	61.5011	0.06 μ H 20% RF choke
	L9	62.0825	RF coil 146-174 MHz
	L10	62.0824	RF coil 146-174 MHz
	L11	61.5011	0.06 μ H 20% RF choke
	L12	62.0827	RF coil 146-174 MHz
	L13	62.0826	RF coil 146-174 MHz
	E1	99.5028	1N914 Diode
	E2	99.5028	1N914 Diode
	Q1	99.5230	BC178 Transistor
	Q2	99.5235	BD135 Transistor
	Q3	99.5229	2N4427 Transistor
	Q4	99.5232	BLY87A Transistor
	Q5	99.5253	BLY88A Transistor
	Fb1	65.5061	Ferrite bead 60 MHz.
	Fb2	65.5061	" " "
	Fb3	65.5075	" " 300 MHz
	Fb4	65.5075	" " "

RF POWER AMPLIFIER PA711

HF EFFEKTFORSTÆRKER

X401.373/2



DC VOLTAGES WITH BRACKET ARE MEASURED IN TRANSMIT MODE.

DC VOLTAGES WITHOUT BRACKETS ARE MEASURED IN RECEIVE MODE.

ANTENNA SWITCHING UNIT
AS711
ANTENNESKIFTEENHED

Storno

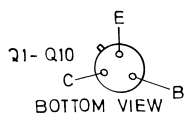
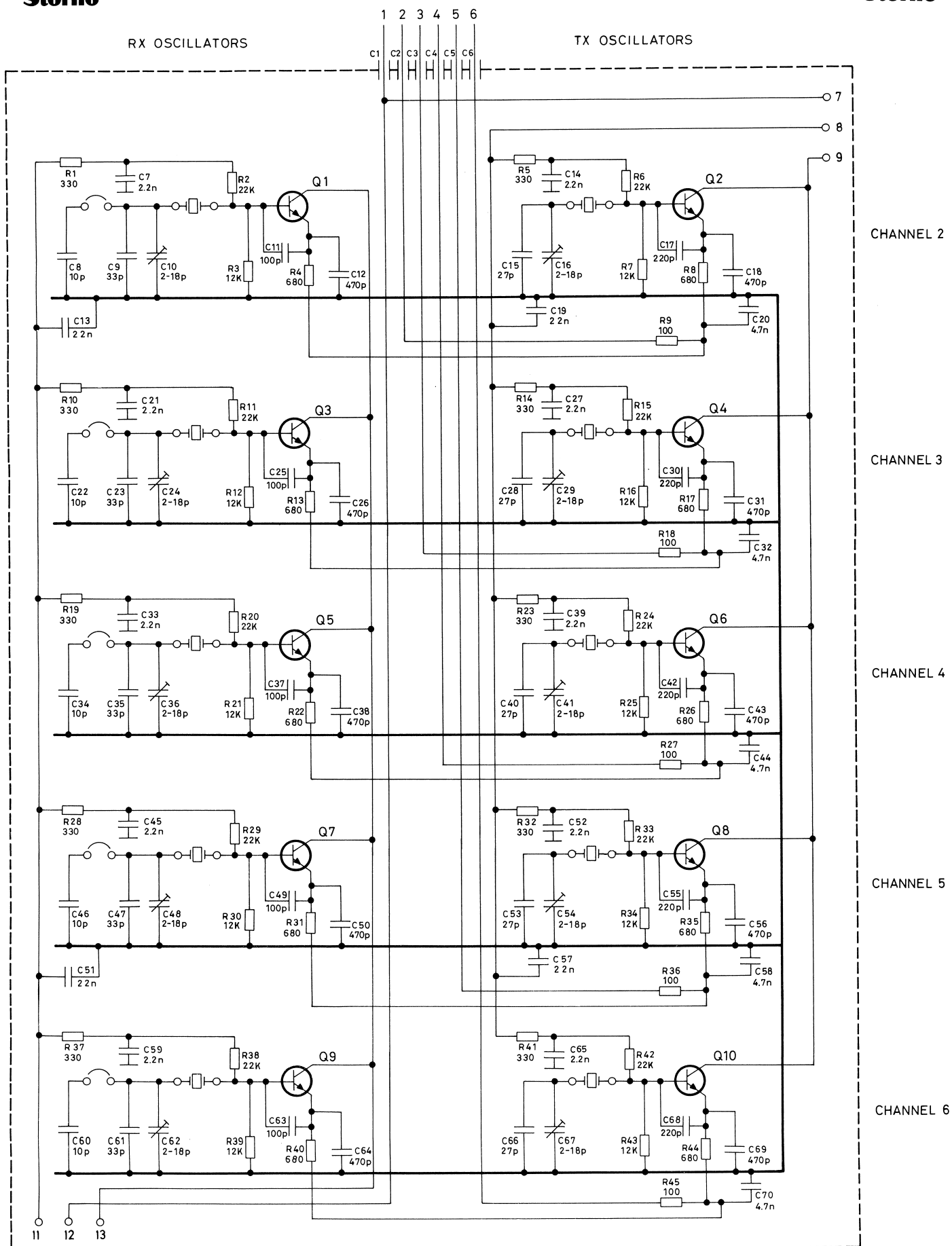
TYPE	NO.	CODE	DATA
AS711		10.2553	Antenna Switching Unit (part of PA711)
	C51	69.5007	VHF feed-through filter
	C52	74.5155	1 nF -20 +80% ceram PL
	C53	74.5155	1 nF -20 +80% ceram PL
	C54	74.5008	22 pF 5% ceram DI
	C55	74.5138	18 pF 5% ceram DI
	C56	74.5162	470 pF -20 +50% ceram DI
	C57	74.5155	1 nF -20 +80% ceram PL
	C58	69.5007	VHF feed-through filter
	C59	74.5196	18 pF 5% ceram DI
	C60	74.5197	39 pF 5% ceram DI
	C61	74.5197	39 pF 5% ceram DI
	C62	74.5196	18 pF 5% ceram DI
	C63	74.5015	1 nF ±20% ceram DI
	R51	80.5234	56 Ω 5% carbon film
	R52	80.5073	0.1 MΩ 5% " "
	R53	80.5073	0.1 MΩ 5% " "
	R54	80.5049	1 kΩ 5% " "
	R55	80.5273	0.1 MΩ 5% " "
	L51	62.0662-01	0.65 μH RF choke
	L52	62.0818	RF coil
	L53	62.0817	RF coil
	L54	62.0816	RF coil
	L55	62.0816	RF coil
	L56	62.0816	RF coil
	E51	99.5244	BA182 Diode
	E52	99.5244	BA182 Diode
	E53	99.5244	BA182 Diode
	E54	99.5244	BA182 Diode
	E55	99.5224	Zenerdiode 4.7V 5%
	E56	99.5237	1N4148 Diode

Storno

TYPE	NO.	CODE	DATA

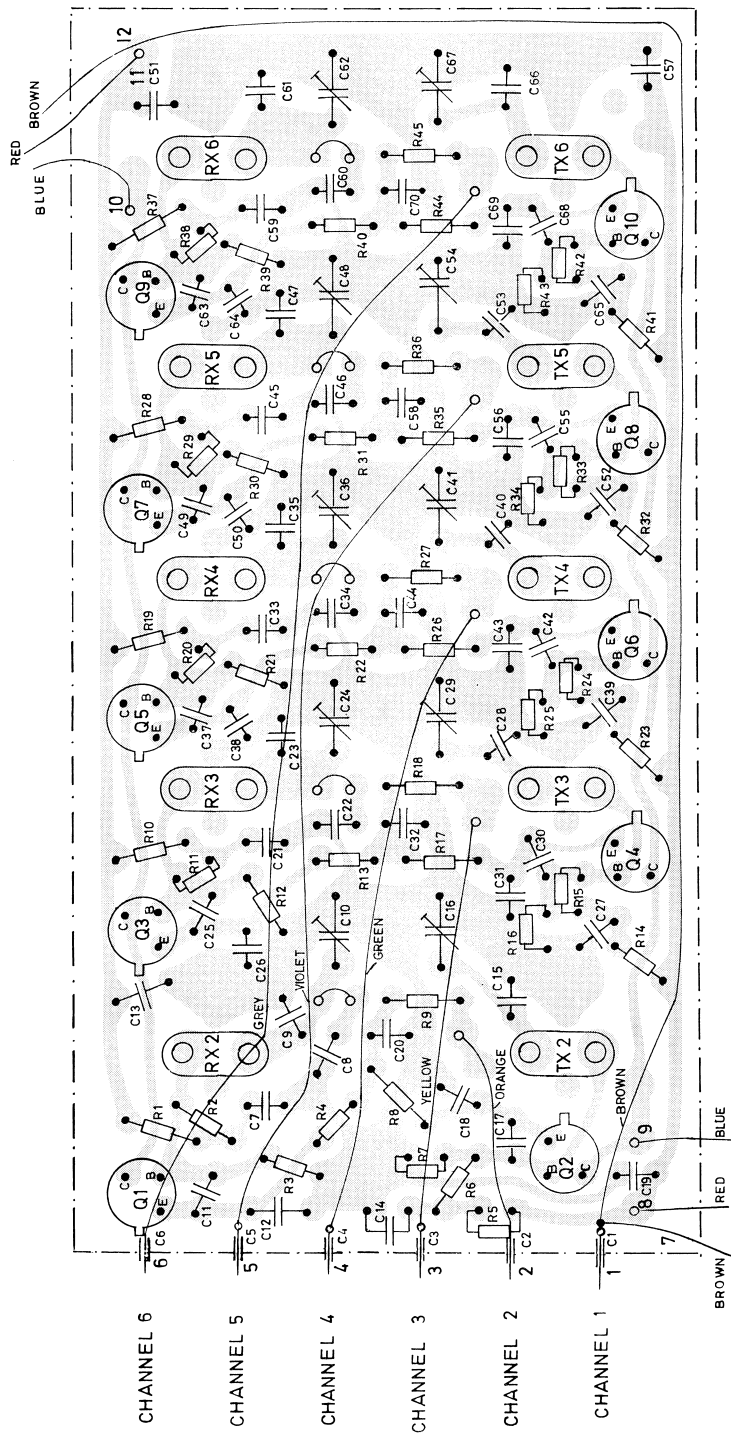
ANTENNA SWITCHING UNIT AS711
ANTENNESKIFTEENHED

X401.380/2



CRYSTAL SWITCH UNIT XS701

D401.328/2



PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE

CRYSTAL OSCILLATOR PANEL XS701

D401.518

TYPE	NO.	CODE	DATA
XS701		10.2436	Crystal Switching Unit
	C1	74.5167	1 nF -20 +80% ceram FT 300V
	C2	74.5167	1 nF -20 +80% ceram FT 300V
	C3	74.5167	1 nF -20 +80% ceram FT 300V
	C4	74.5167	1 nF -20 +80% ceram FT 300V
	C5	74.5167	1 nF -20 +80% ceram FT 300V
	C6	74.5167	1 nF -20 +80% ceram FT 300V
	C7	76.5059	2.2 nF 10% polyester. FL 50V
	C8	74.5135	10 pF 5% ceram DI 125V
	C9	74.5191	33 pF 5% ceram TB 160V
	C10	78.5044	2-18 pF trimmer 300V
	C11	76.5102	100 pF 2.5% polystyr TB 25V
	C12	76.5106	470 pF 2.5% polystyr TB 25V
	C13	76.5071	22 nF 10% polyester. FL 50V
	C14	76.5059	2.2 nF 10% polyester. FL 50V
	C15	74.5192	27 pF 5% ceram TB 160V
	C16	78.5044	2-18 pF trimmer 300V
	C17	76.5104	220 pF 2.5% polystyr TB 25V
	C18	76.5106	470 pF 2.5% polystyr TB 25V
	C19	76.5071	22 nF 10% polyester. FL 50V
	C20	76.5061	4.7 nF 10% polyester. FL 50V
	C21	76.5059	2.2 nF 10% polyester. FL 50V
	C22	74.5135	10 pF 5% ceram DI 125V
	C23	74.5191	33 pF 5% ceram TB 160V
	C24	78.5044	2-18 pF trimmer 300V
	C25	76.5102	100 pF 2.5% polystyr TB 25V
	C26	76.5106	470 pF 2.5% polystyr TB 25V
	C27	76.5059	2.2 nF 10% polyester. FL 50V
	C28	74.5192	27 pF 5% ceram TB 160V
	C29	78.5044	2-18 pF trimmer 300V
	C30	76.5104	220 pF 2.5% polystyr TB 25V
	C31	76.5106	470 pF 2.5% polystyr TB 25V
	C32	76.5061	4.7 nF 10% polyester. FL 50V
	C33	76.5059	2.2 nF 10% polyester. FL 50V
	C34	74.5135	10 pF 5% ceram DI 125V
	C35	74.5191	33 pF 5% ceram TB 160V
	C36	78.5044	2-18 pF trimmer 300V
	C37	76.5102	100 pF 2.5% polystyr TB 25V
	C38	76.5106	470 pF 2.5% polystyr TB 25V
	C39	76.5059	2.2 nF 10% polyester. FL 50V
	C40	74.5192	27 pF 5% ceram TB 160V
	C41	78.5044	2-18 pF trimmer 300V
	C42	76.5104	220 pF 2.5% polystyr TB 25V
	C43	76.5106	470 pF 2.5% polystyr TB 25V
	C44	76.5061	4.7 nF 10% polyester. FL 50V
	C45	76.5059	2.2 nF 10% polyester. FL 50V
	C46	74.5135	10 pF 10% ceram DI 125V

TYPE	NO.	CODE	DATA
	C47	74.5191	33 pF 5% ceram TB 160V
	C48	78.5044	2-18 pF trimmer 300V
	C49	76.5102	100 pF 2.5% polystyr TB 25V
	C50	76.5106	470 pF 2.5% polystyr TB 25V
	C51	76.5071	22 nF 10% polyester. FL 50V
	C52	76.5059	2.2 nF 10% polyester. FL 50V
	C53	74.5192	27 pF 5% ceram TB 160V
	C54	78.5044	2-18 pF trimmer 300V
	C55	76.5104	220 pF 2.5% polystyr TB 25V
	C56	76.5106	470 pF 2.5% polystyr TB 25V
	C57	76.5071	22 nF 10% polyester. FL 50V
	C58	76.5061	4.7 nF 10% polyester. FL 50V
	C59	76.5059	2.2 nF 10% polyester. FL 125V
	C60	74.5135	10 pF 5% ceram DI 160V
	C61	74.5191	33 pF 5% ceram TB 300V
	C62	78.5044	2-18 pF trimmer 300V
	C63	76.5102	100 pF 2.5% polystyr TB 25V
	C64	76.5106	470 pF 2.5% polystyr TB 25V
	C65	76.5059	2.2 nF 10% polyester. FL 50V
	C66	74.5192	27 pF 5% ceram TB 160V
	C67	78.5044	2-18 pF trimmer 300V
	C68	76.5104	220 pF 2.5% polystyr TB 25V
	C69	76.5106	470 pF 2.5% polystyr TB 25V
	C70	76.5061	4.7 nF 10% polyester. FL 50V
	R1	80.5243	330 Ω 5% carbon film 1/8W
	R2	80.5265	22 k Ω 5% " 1/8W
	R3	80.5262	12 k Ω 5% " 1/8W
	R4	80.5247	680 Ω 5% " 1/8W
	R5	80.5243	330 Ω 5% " 1/8W
	R6	80.5265	22 k Ω 5% " 1/8W
	R7	80.5262	12 k Ω 5% " 1/8W
	R8	80.5247	680 Ω 5% " 1/8W
	R9	80.5237	100 Ω 5% " 1/8W
	R10	80.5243	330 Ω 5% " 1/8W
	R11	80.5265	22 k Ω 5% " 1/8W
	R12	80.5262	12 k Ω 5% " 1/8W
	R13	80.5247	680 Ω 5% " 1/8W
	R14	80.5243	330 Ω 5% " 1/8W
	R15	80.5265	22 k Ω 5% " 1/8W
	R16	80.5262	12 k Ω 5% " 1/8W
	R17	80.5247	680 Ω 5% " 1/8W

CRYSTAL SWITCH UNIT XS701

X401.313/2

Storno

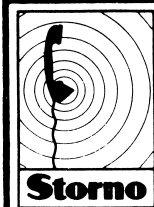
Storno

TYPE	NO.	CODE	DATA	
	R18	80. 5237	100 Ω 5%	carbon film
	R19	80. 5243	330 Ω 5%	" "
	R20	80. 5265	22 kΩ 5%	" "
	R21	80. 5262	12 kΩ 5%	" "
	R22	80. 5247	680 Ω 5%	" "
	R23	80. 5243	330 Ω 5%	" "
	R24	80. 5265	22 kΩ 5%	" "
	R25	80. 5262	12 kΩ 5%	" "
	R26	80. 5247	680 Ω 5%	" "
	R27	80. 5237	100 Ω 5%	" "
	R28	80. 5243	330 Ω 5%	" "
	R29	80. 5265	22 kΩ 5%	" "
	R30	80. 5262	12 kΩ 5%	" "
	R31	80. 5247	680 Ω 5%	" "
	R32	80. 5243	330 Ω 5%	" "
	R33	80. 5265	22 kΩ 5%	" "
	R34	80. 5262	12 kΩ 5%	" "
	R35	80. 5247	680 Ω 5%	" "
	R36	80. 5237	100 Ω 5%	" "
	R37	80. 5243	330 Ω 5%	" "
	R38	80. 5265	22 kΩ 5%	" "
	R39	80. 5262	12 kΩ 5%	" "
	R40	80. 5247	680 Ω 5%	" "
	R41	80. 5243	330 Ω 5%	" "
	R42	80. 5265	22 kΩ 5%	" "
	R43	80. 5262	12 kΩ 5%	" "
	R44	80. 5247	680 Ω 5%	" "
	R45	80. 5237	100 Ω 5%	" "
	Q1	99. 5139	BSX19 Transistor	
	Q2	99. 5139	BSX19	" "
	Q3	99. 5139	BSX19	" "
	Q4	99. 5139	BSX19	" "
	Q5	99. 5139	BSX19	" "
	Q6	99. 5139	BSX19	" "
	Q7	99. 5139	BSX19	" "
	Q8	99. 5139	BSX19	" "
	Q9	99. 5139	BSX19	" "
	Q10	99. 5139	BSX19	" "

TYPE	NO.	CODE	DATA

CRYSTAL SWITCH UNIT XS701

X401.313/2



konstr./tegn.
HJS/ KSP
godk.
komp.liste

AF-AMPLIFIER
LF-FORSTÆRKER

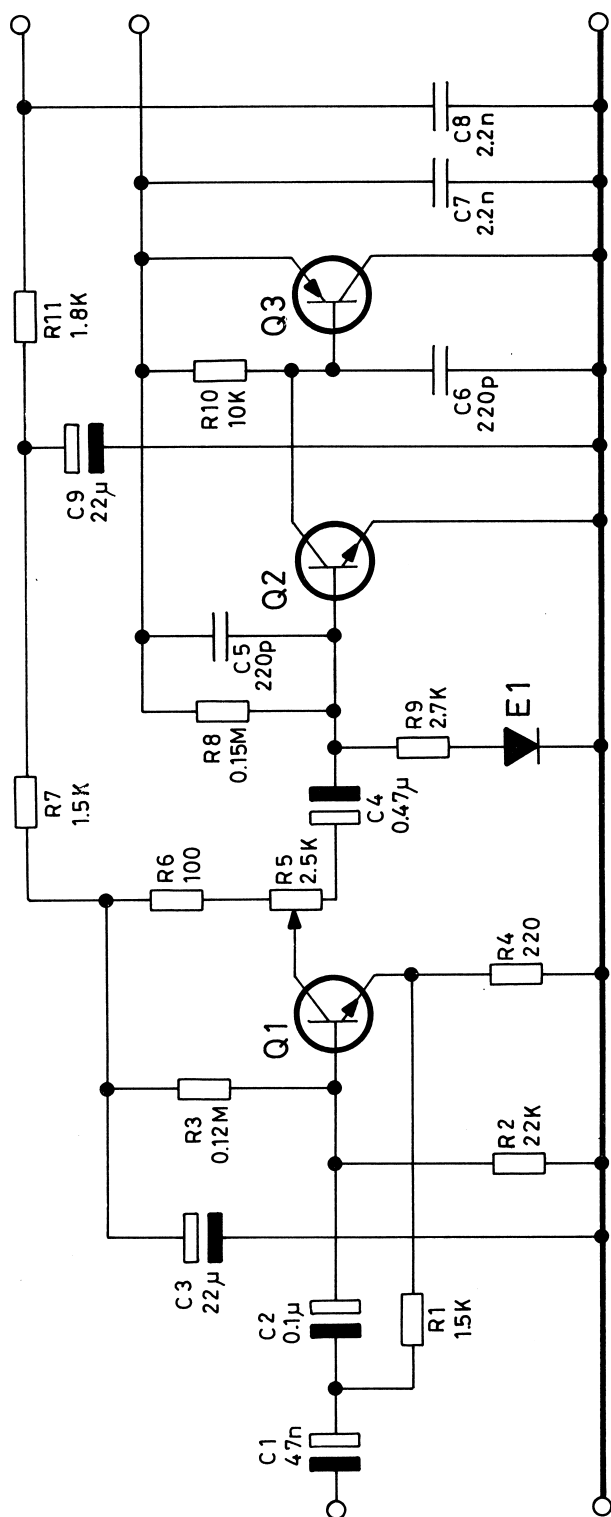
AA701

KODE

TEGN. NR.

D401.216

A 4



Storno

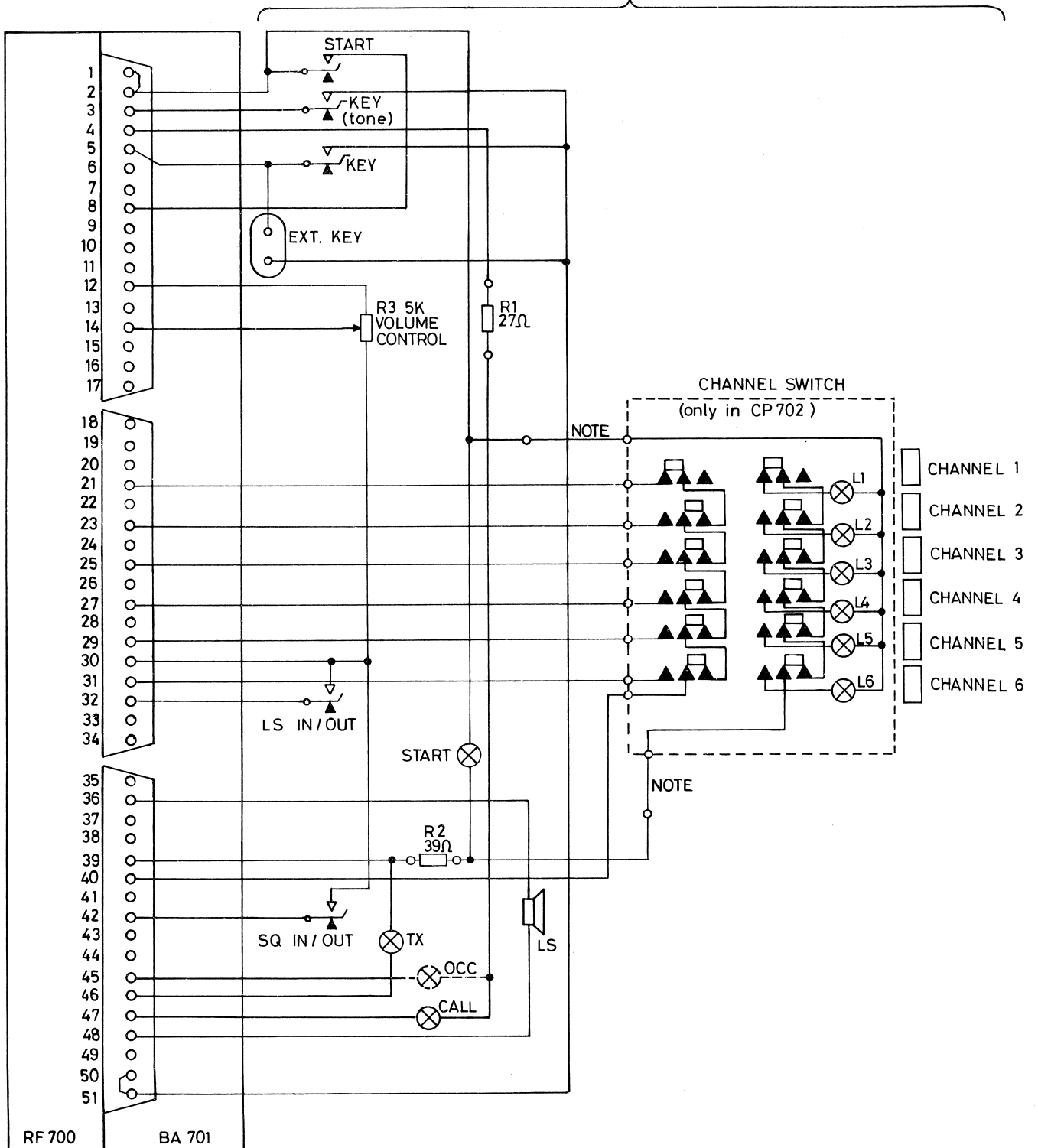
Storno

TYPE	NO.	CODE	DATA
AA701		10. 2488	Microphone Amplifier
	C1	73. 5130	0. 1 μ F -20 +60% tantal
	C2	73. 5130	0. 1 μ F -20 +60% tantal
	C3	73. 5127	22 μ F 20% tantal
	C4	73. 5134	0. 47 μ F -20 +60% tantal
	C5	76. 5106	470 pF 2. 5% polystyr TB
	C6	76. 5104	220 pF 5% polystyr TB
	C7	76. 5059	2. 2 nF 10% polyester. FL
	C8	76. 5059	2. 2 nF 10% polyester. FL
	C9	73. 5127	22 μ F 20% tantal
	C10	74. 5161	470 pF -20 +80% ceram PL
	R1	80. 5251	1. 5 k Ω 5% carbon film
	R2	80. 5265	22 k Ω 5% " "
	R3	80. 5274	0. 12 M Ω 5% " "
	R4	80. 5241	220 Ω 5% " "
	R5	86. 5067	2. 5 k Ω 20% potentiometer
	R6	80. 5037	100 Ω 5% carbon film
	R7	80. 5251	1. 5 k Ω 5% " "
	R8	80. 5272	82 k Ω 5% " "
	R9	80. 5254	2. 7 k Ω 5% " "
	R10	80. 5261	10 k Ω 5% " "
	E1	99. 5028	1N914 Diode
	Q1	99. 5121	BC107 Transistor
	Q2	99. 5121	BC107 Transistor
	Q3	99. 5043	NS6063 Transistor

MICROPHONE AMPLIFIER AA701

X401.318

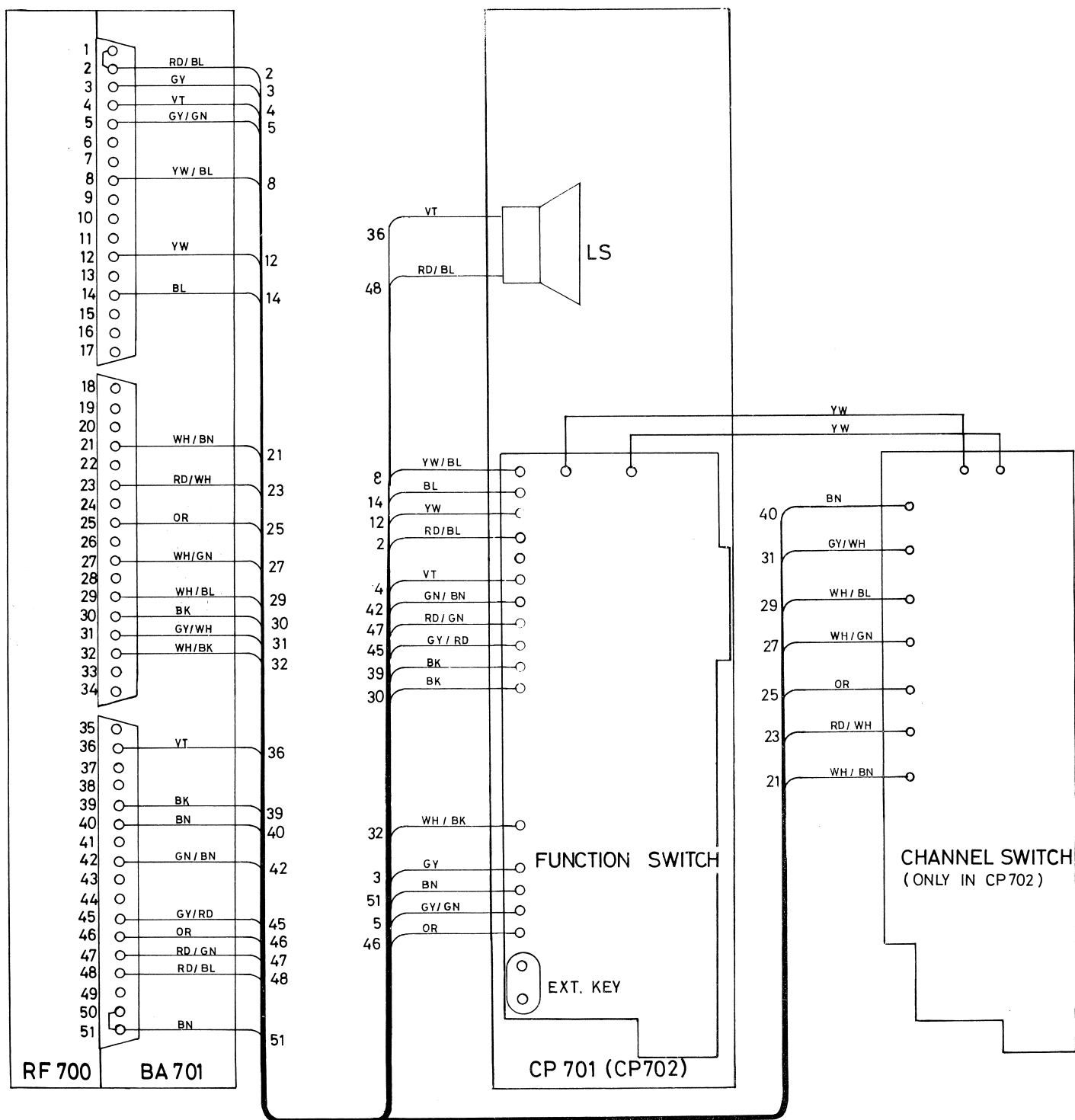
CP 701 OR CP 702



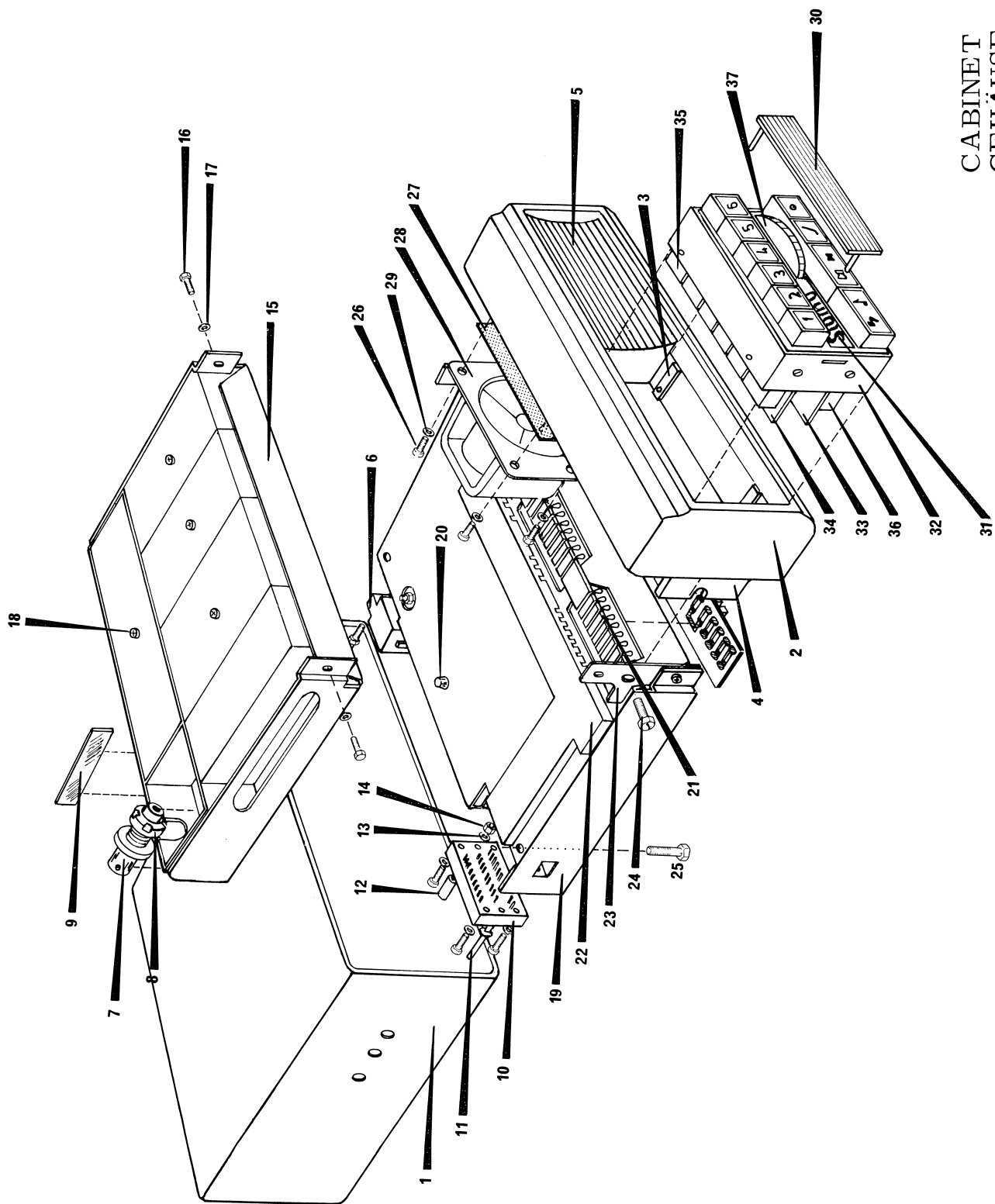
NOTE: CONNECTIONS IN CP 702.

FRONT PANEL CP 701, CP 702

D401.320



CABLING BETWEEN RADIO SECTION AND CONTROL PANEL.



CABINET
GEHÄUSE

CA701

M405.030

ITEM	CODE	DESCRIPTION
1.	10.2423	CA701 Cabinet with item 9 CA701 Kabinet med Pos 9
2.	15.0129	Frame: Front (rivetted to Pos. 4) Forramme monteret med pos. 4
3.	36.0222	Retaining spring: Push button Ass. Fjeder for CP701/CP702
4.	33.0370	Bracket: Front Panel Plade for sammenspænding
5.	52.0040	Grill: Loudspeaker Pynteplade for højttaler
6.	41.0184	Connector: 12V Konnektor for 12V
7.	41.0166	Connector: Antenna Konnektor for antenne
8.	29.0231	Nut.: Position 7 Møtrik for Pos. 7
9.	12.0164	Shield: Plexiglas Dækplade for type nr.
10.	41.5082	Connector: 34 PIN Konnektor: 34 pol
11.	31.0455	PIN: Guide Styretap for pos. 10
12.	31.0456	Bush: Guide Styrebøsning for 10
13.	2450-048027	Spring washer Fjederskive
14.	2205-026050	Nut Møtrik
15.	11.0852-01	Chassis Chassis for RF700
16.	20011-03006	Retaining screw Skrue for pos. 15
17.	2450-060032	Lock washer Spændskive
18.	20022-02004	Retaining screw Skrue
19.	11.0853	Chassis Chassis for BA700
20.	32.5048	Bumper: Black Rubber Afstandsstykke gummi
21.	54.0477	Terminal Board Tilslutningsliste
22.	12.0175	Guide: Cable Asembly (Grey plastic) Kablingsholder (grå plastik)
23.	37.0138	Hinge: Chassis Sammenspændingsbøjle

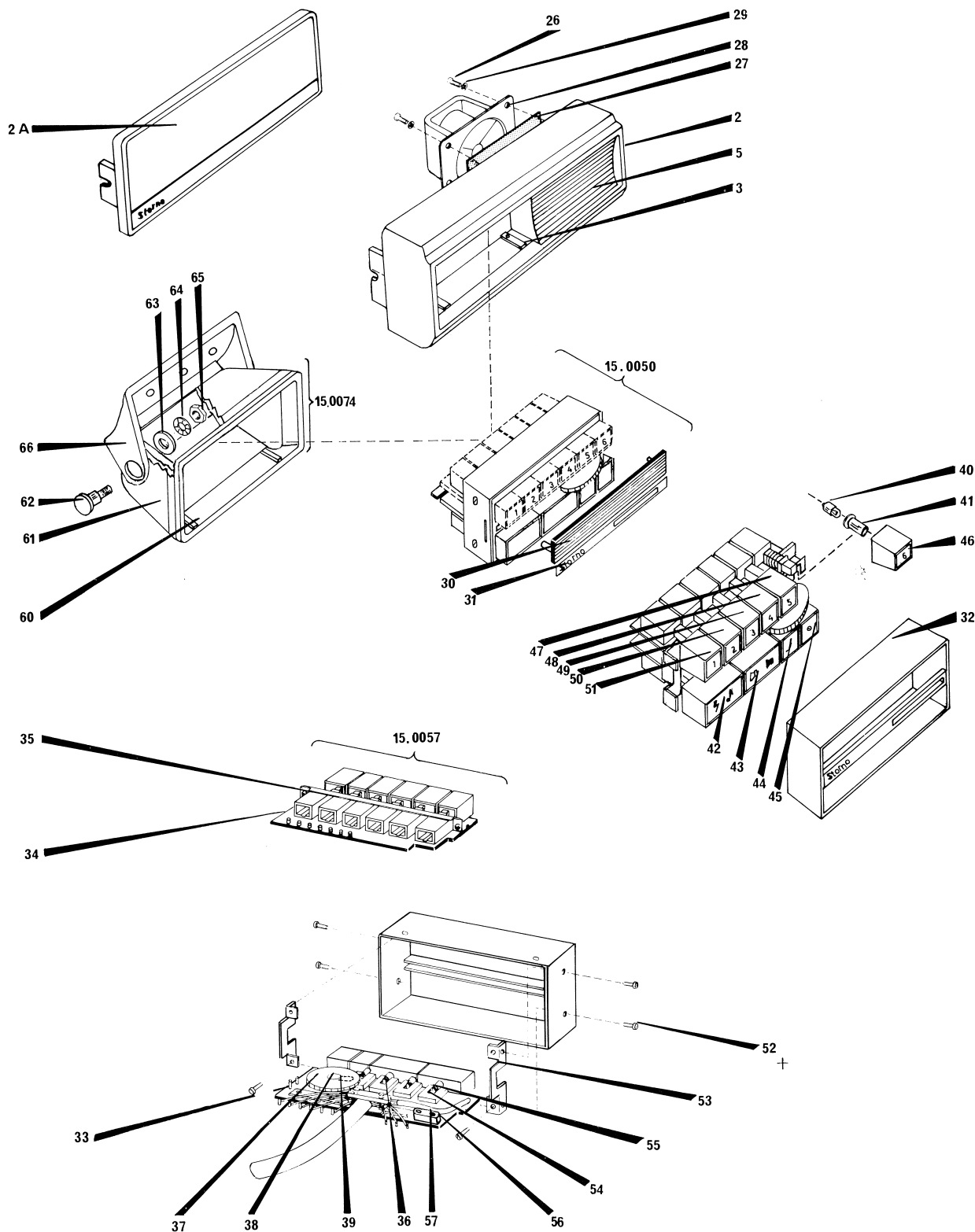
CABINET
KABINET CA701

ITEM	CODE	DESCRIPTION
24.	28.0096	Retaining screw: Hinge Skrue
25.	28.0095	Retaining screw: BA Skrue for BA-bund
26.	20.412-02207	Retaining screw: Loudspeaker Skrue for højttaler
27.	52.0041	Dust cover Beskyttelsesnet
28.	97.5032	Loudspeaker 5Ω 2 Watt Højttaler 5Ω 2 Watt
29.	2401-070028	Washer Skive
30.	51.0774	Front plate: Blank (only CP701) Pynteplade (kun i CP701)
31.	51.0764	Label "STORNO" Skilt "STORNO"
32.	12.0153	Frame: Push button Ramme for betjeningspanel
33.	54.0585	Terminal Board: Push Button Ass. Lederplade for tast/tone
34.	54.0584	Terminal Board: Channel switch Lederplade for kanalomskifter
35.	47.0562	Switch ass.: Push button (Channel switch) Omskifterenhed: Kanalomskifter
36.	47.0561	Switch ass.: Push button (Tone-on/off) Omskifterenhed: Tast/tone
37.	12.0166	Knob: Volume Control Knap: Volumenkontrol
	10.2560	TB701 Terminal Board: Shorting Strap long Kortslutningsprint, lang (See note 1)
	10.2561	TB702 Terminal Board: Shorting Strap short Kortslutningspring, kort (See note 2)
		<u>Note 1</u> If the radio equipment is not provided with tone/transmitter, a terminal board shorting strap TB701 should be mounted on the terminal board 54.0477.
		<u>Note 2</u> If the radio equipment is not provided with tone/receiver, a terminal board shorting strap TB702 should be mounted on the terminal board 54.0477.

CABINET
KABINET CA701

Sorno

Sorno



CONTROL UNITS
BEDIENGERÄTE

CQM700
(CB700, CP700)

M405.037 / 2

ITEM	CODE	DESCRIPTION
	15.0050	Control Panel Complete (1 Channel) Betjeningspanel komplet (1 kanal)
	15.0057	Switch Unit Omskifter enhed
2.	15.0129	Frame: Front Forramme
2A	10.2422	Front Plate CP703 Forplade CP703
3.	36.0222	Retaining spring: Push button Ass. Fjeder for CP701/CP702
5.	52.0040	Grill: Loudspeaker Pynteplade for højttaler
26.	20.412-02207	Retaining screw: Loudspeaker Skrue for højttaler
27.	52.0041	Dust cover Beskyttelsesnet
28.	97.5032	Loudspeaker 5Ω 2 Watt Højttaler 5Ω 2 Watt
29.	2401-070028	Washer Skive
30.	51.0774	Front plate (only CP701) Pynteplade (kun i CP701)
31.	51.0764	Label "STORNO" Skilt "STORNO"
32.	12.0153	Frame: Push Button Ramme for betjeningspanel
33.	54.0584	Wiring Board: Push Button Ass. Lederplade for tast/tone
34.	54.0585	Wiring Board: Channel Switch Lederplade for kanalomskifter
35.	47.0562	Switch Ass: Push Button Ass. Channel Switch Omskifterenhed: Kanalomskifter
36.	47.0561	Switch Ass: Push Button (Tone On/Off) Omskifterenhed for tast/tone
37.	12.0166	Knob: Volume Control Knap for volumenkontrol
38.	86.5069	Potentiometer 5K Log. Potentiometer 5K Log.
39.	32.0393	Spring: Contact (Pos. 38) Fjeder for pos. 38
40.	92.5098	Incandescent Lamp 12V 0.06A Lampe 12V 0.06A
41.	31.0457	Bush (Pos. 40) Bøsning for pos. 40
42.	49.0208	Knob: Tone Knap: Tast/tone
43.	49.0207	Knob: Loudspeaker Knap: Højttaler
44.	49.0214	Knob: Squelch Knap: Squelch
45.	49.0211	Knob: On/Off Knap: Afbryder
46.	49.0216	Knob: Channel 6 Knap: Kanal 6
47.	49.0213	Knob: Channel 5 Knap: Kanal 5

CONTROL UNITS

CQM700

BETJENINGSENHEDER

(CB700, CP700)

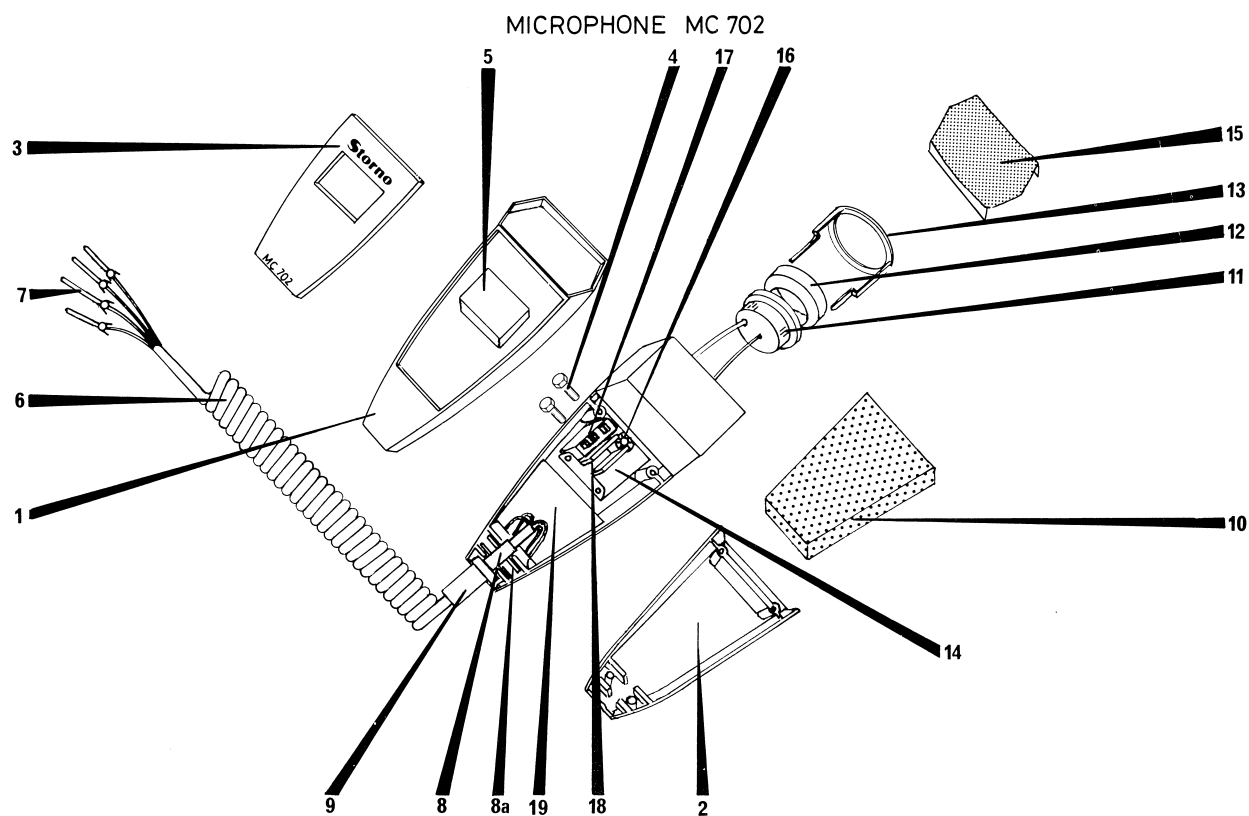
Storno**Storno**

ITEM	CODE	DESCRIPTION
48.	49.0210	Knob: Channel 4 Knap: Kanal 4
49.	49.0215	Knob: Channel 3 Knap: Kanal 3
50.	49.0212	Knob: Channel 2 Knap: Kanal 2
51.	49.0209	Knob: Channel 1 Knap: Kanal 1
52.	20011-02004	Screw Skrue
53.	33.0376	Bracket Bøjle for sammenspænding
54.	46.0010	Lamp Socket Lampeholder
55.	46.0011	Lamp Contact Lampe Kontakt
56.	39.0019	Connector 2 Pin Kontaktholder
57.	34.0062	Connector Pin Konnektor bøsning
60.	12.0165	Chassis ass. Chassis kompl.
61.	12.0155	Cabinet Kabinet
62.	28.0098	Screw Skrue
63.	2451-180062	Spring washer 18 x 6.2 x 0.6 Skive
64.	2442-090051	Washer Skive
65.	2207-050080	Nut Møtrik
66.	12.0161	Mounting frame Ophæng for CB700
60- 66	15.0074	Housing Svøb

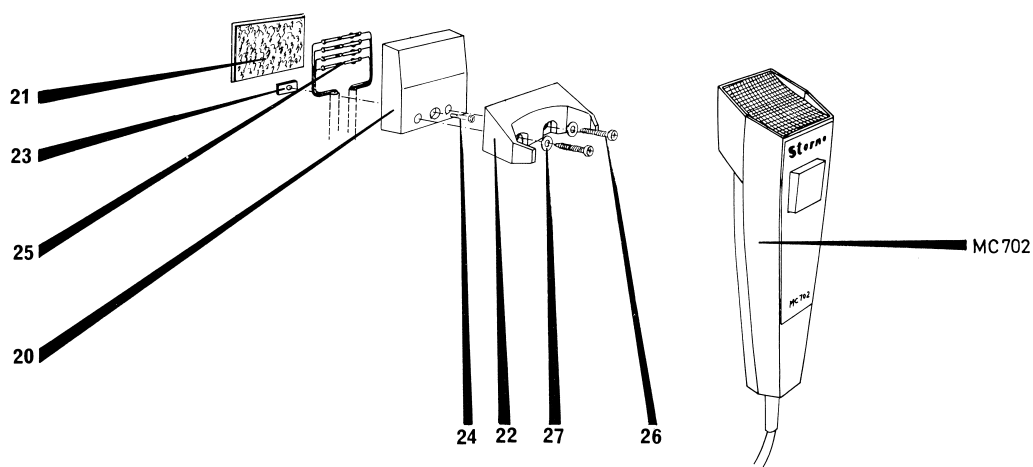
CONTROL UNITS
BETJENINGSENHEDER

CQM700
(CB700, CP700)

M405.037-3/2



JUNCTION BOX JB 701 AND MC 702



FIST MICROPHONE MC702, JUNCTION BOX JB701
HANDMIKROFON MC702, ANSLUSSKASTEN JB701

ITEM	CODE	DESCRIPTION
	96.0094	MC702 Microphone ass. MC702 Mikrofon kompl.
1	12.0174	Microphone housing Mikrofon hus
2	12.0172	Cover plate Bagstykke
3	51.0780	Front plate Forplade
4	20011-02010	Screw 2 x 10 Skrue
5	12.0171	Button Knap
6	18.0652	Spiral core Spiral snøre
7	41.5519	Pin contact 0,12 x 0,22 Kontakt ben
8	31.0307-10	Shrink tube Krymperør
8a	33.0361	Angle Vinkel
9	32.0383	Sleeve Gummitylle
10	32.0191	Foam packing Skumindlæg
11	96.5069	Microphone cartridge Mikrofon kapsel
12	32.0186-01	Rubberring Gummiring
13	37.0076	Spring for microphone unit Fjeder for mikrofon enhed
14	36.0202	Spring glip assembly Fjeder komplet
15	52.0043	Dust cover assembly Net for mikrofon komplet
16	2447-080030	Speed nuts 8 x 3 Låsering
17	47.5040	Microswitch Mikroswitch
18	33.0331-01	Bracket for item 14 Bøjle for pos 14
19	10.2548	AA702 Amplifier ass. AA702 Forstærker kompl.

FIST MICROPHONE
HÅNDMIKROFON

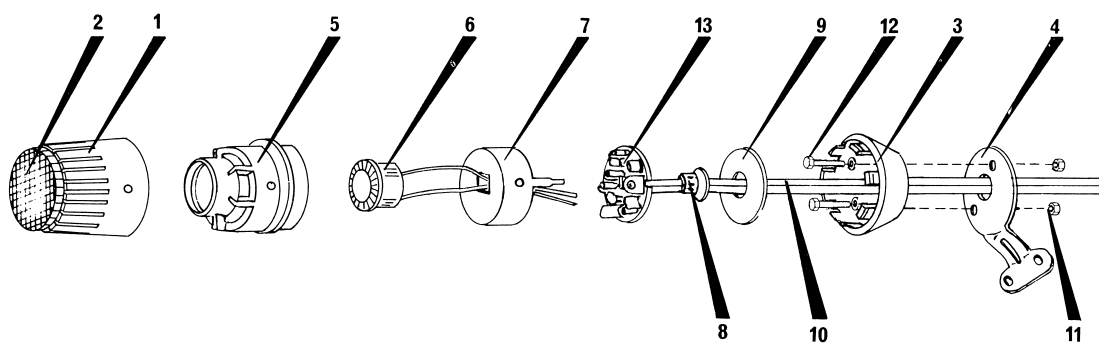
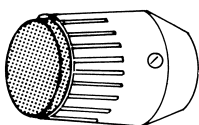
MC702

ITEM	CODE	DESCRIPTION
	10.2543	Junction box JB701 ass. Samleboks JB701 kompl.
20	12.0170	Housing black Hus sort
21	32.0377	Retaining plate: foam Skumplade
22	12.0173	Microphone retainer Mikrofon holder
23	38.0058	Cable clamp Kabelbøjle
24	20022-03008	Screw M 3 x 8 Skrue M 3 x 8
25	18.0646	Cable 2,50 m with pin and socket contact Kabel 2,50 m med stik monteret
26	20412-04225	Screw 4,2 x 25 Skrue 4,2 x 25
27	2450-080043	Washer Skiver

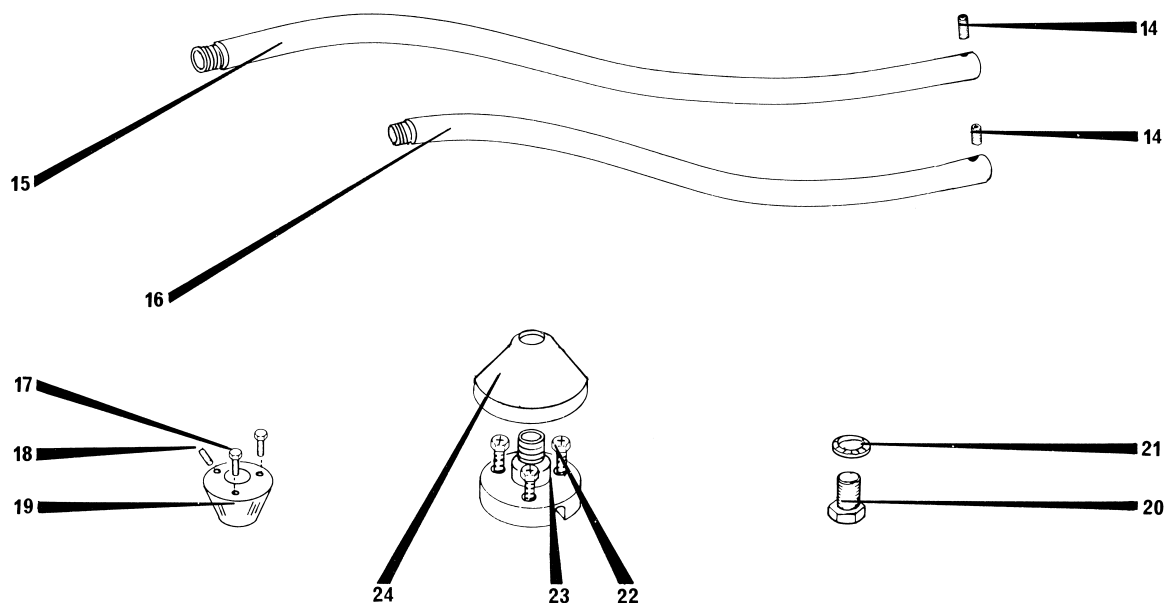
JUNCTION BOX ASS.
SAMLEBOKS KOMPL.

JB701

MICROPHONE MC701



MOUNTING KIT MK704



FIXED MICROPHONE MC701, MOUNTING KIT MK704
 FEST MIKROFON MC702, EINBAU SATZ MK704

ITEM	CODE	DESCRIPTION
	15.0075	Microphone MC701 Mikrofon MC701
1	15.0062	Microphone housing with dust cover Mikrofon hus med beskyttelsesnet
2	52.0038	Dust cover Beskyttelsesnet
3	12.0148	Microphone housing, rear Mikrofonhus, bagstykke
4	11.0816	Plate Plade
5	12.0147	Rubber suspension Gummiholder
6	96.5079	Microphone cartridge Mikrofon kapsel
7	68.0103	Can Skærmdåse
8	30.5023	Rivet 4.8 x 0.4 x 4.6 Nitte 4,8 x 0,4 x 4,6
9	53.0532	Washer Skive for bund
10	18.0627	2.5 m wiring with pin contact 2,5 m ledning med kontaktben
11	2202-030055	Nut M3 x 5.5 Møtrik
12	20242-03006	Screw M3 x 6 Skrue M3 x 6
13	10.2488	AA701 amplifier AA701 forstærker

FIXED MICROPHONE ASS.
FAST MIKROFON KOMPL.

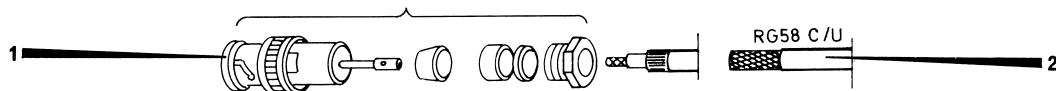
MC701

ITEM	CODE	DESCRIPTION
	10.2545	MK704 mounting kit /montage sæt
14	20193-03002	Screw Skrue
15	37.0140	Gooseneck 20 cm Svanehals 20 cm
16	37.0141	Gooseneck 35 cm Svanehals 35 cm
17	20242-03006	Screw Skrue
18	20063-03006	Screw Skrue
19	28.0099	Nipple for item 15 and 16 Nippel for pos 15 og 16
20	28.0065	Nipple for item 15 and 16 Nippel for pos 15 og 16
21	2441-180105	Washer Skive
22	20412-03913	Screw Skrue
23	28.0100	Nipple Nippel
24	32.0381	Cover Hætte

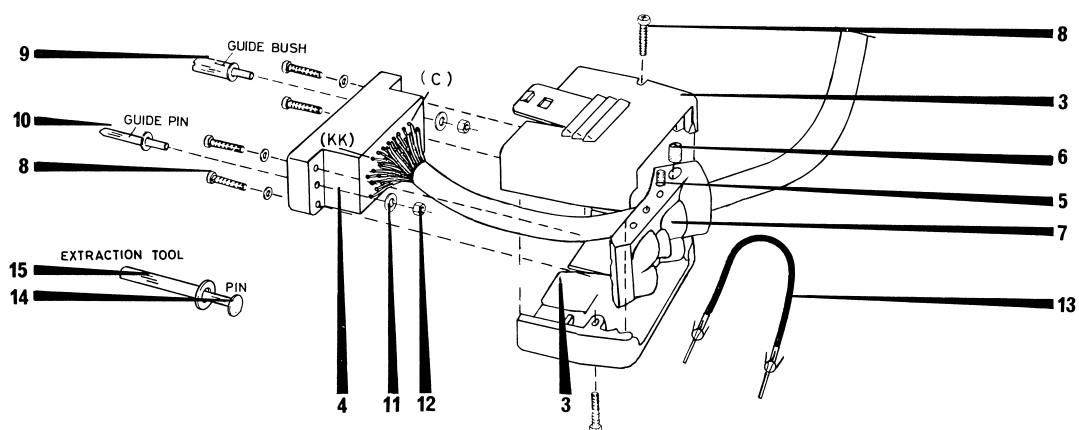
MOUNTING KIT
MONTAGESÆT

MK704

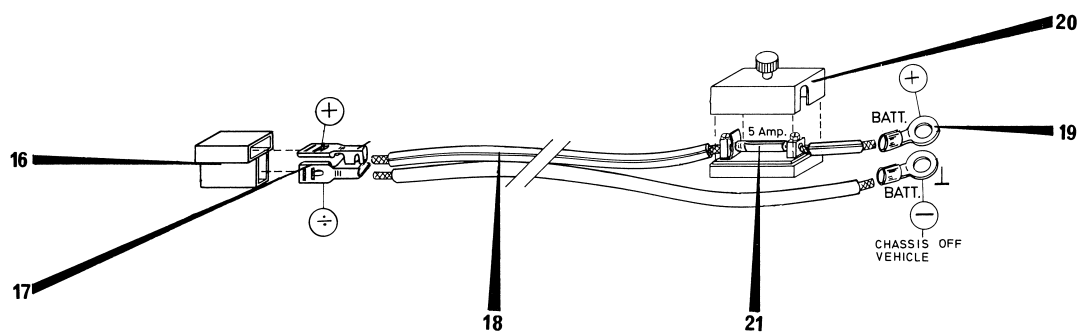
ANTENNA CONNECTOR 41.5120



CONNECTOR ASSEMBLY 41.0191



BATTERY CONNECTION



MOUNTING KIT
EINBAU SATZ

MK701

ITEM	CODE	DESCRIPTION
1	41.5120	Antenna connector Antenne konnektor
2	175.5013	Coax cable Coaxkabel
3	41.0191	Connector assembly Konnektor komplet
4	12.0152	Housing Hushalvdel
5	41.5523	Connector 34 pole Konnektor 34 pol
6	21141-04006	Nylon screw M 4 x 6 Nylon skrue M 4 x 6
7	21141-06006	Nylon screw M 6 x 6 Nylon skrue M 6 x 6
8	12.0151	Cablehanger Aflastning for kabel
9	20.412-02207	Screw 2,2 x 7 Skrue
10	31.0456	Guide bush Styrebøsning
11	31.0455	Guide pin Styretap
12	2450-048027	Washer 4,8 x 2,7 Skive 4,8 x 2,7
13	2202-026050	Nut 6 kt 2,6 x 5 Møtrik 2,6 x 5
14	18.0668	Shorting strap Kortslutningsledning
15	31.0470	Pin for extraction tool Tap for udtrækkerværktøj
16	30.0033	Extraction tool Udtrækkerværktøj
17	32.0394	Rubber plug for item 7 Gummiprop for pos 7
18	41.5506	Battery connection Batteri tilslutning
19	41.5507	Housing for item 17 Holder for pos 17
20	173.5022	Socket contact Kontakt
21	35.5005	Battery cable Batteri kabel
22		Cable eye Kabelsko

MOUNTING KIT
MONTAGESÆT

MK701

M405.032-2

Storno**Storno**

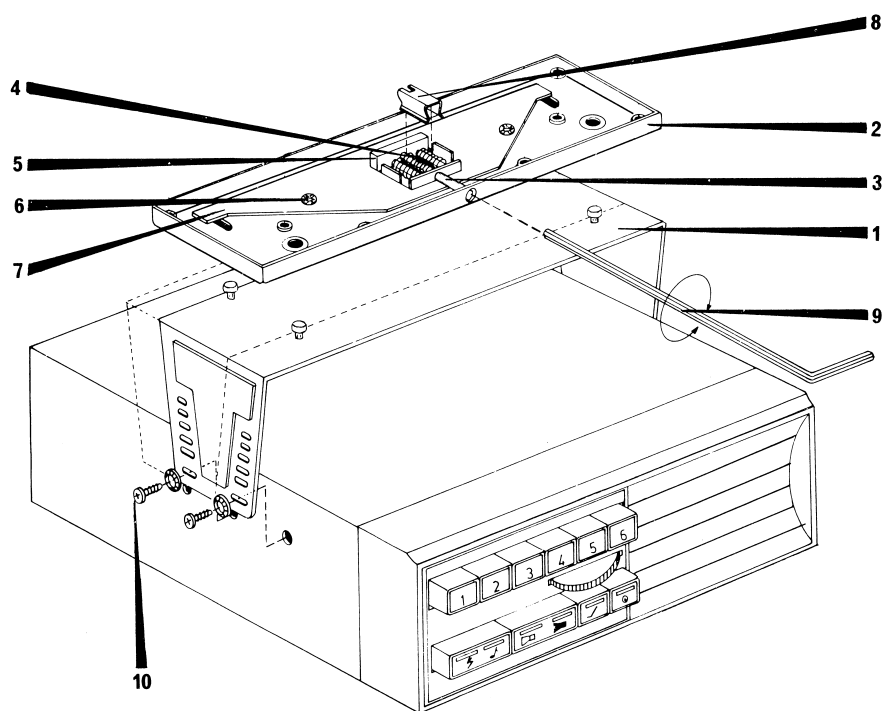
ITEM	CODE	DESCRIPTION
20	46.5010	Fusebox Sikringsboks
21	92.5100	Fuse 5 amp. Sikring 5 amp.

MOUNTING KIT
MONTAGESÆT

MK701

M405.032-2

Page 2 of 2



MOUNTING FRAME
OPSPÆNDINGSBESLAG

MN701

ITEM	CODE	DESCRIPTION
	10.2419	MN701. Mounting frame assembly Montagesæt komplet
1	37.0143	Mounting bracket Fastspændingsbeslag
2	11.0846	Mounting stand Montagebeslag
3	28.0101	Screw 5,5 cm Skrue 5,5 cm
4	11.0842	Guidepin: spring Holder for fjeder
5	36.0220	Spring for item 4 Fjeder for pos 4
6	2453-115030	Speed nut Låsering
7	11.0844	Lock plate: sheet metal Glideplade
8	36.0219	Retaining bar: spring Låsebøjle
9	17.5004-01	Unbrako tool Unbraconøgle
10	20242-04005	Screw 4 x 5 Skrue 4 x 5

MOUNTING FRAME ASS. CQM700
OPHÆNG KOMPLET CQM700

MN701