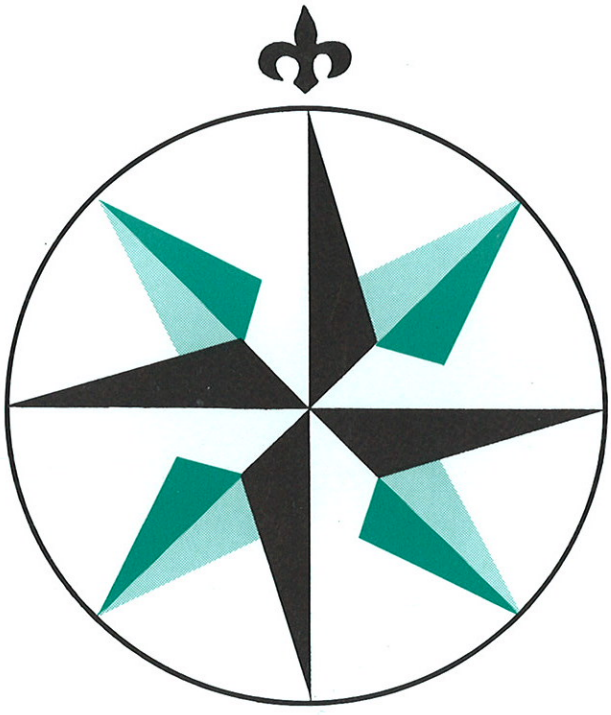


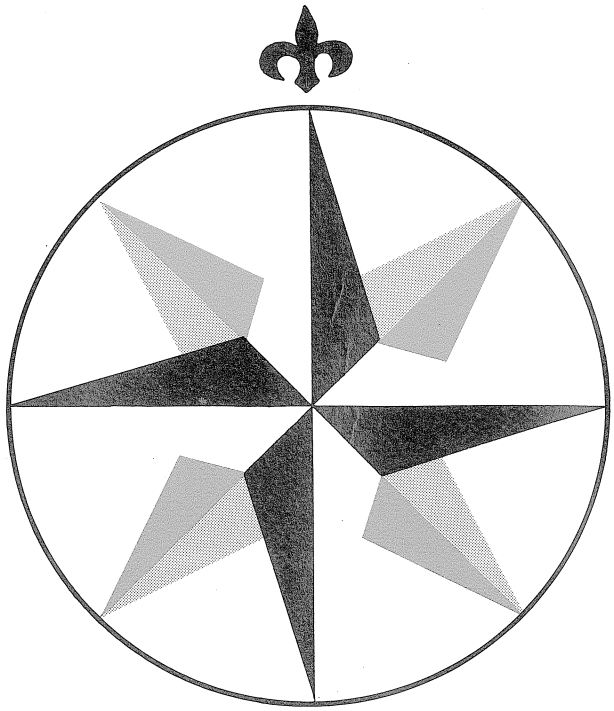
Sailor

Sailor

INSTRUKTIONSBOG FOR SAILOR H 1201

INSTRUCTION BOOK FOR SAILOR H 1201

A/S S. P. RADIO · AALBORG · DENMARK



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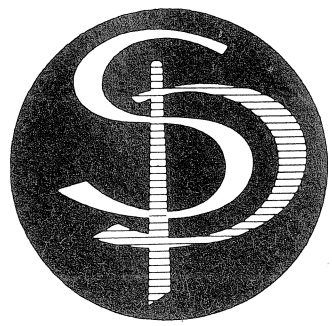

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CONTENTS:

GENERAL DESCRIPTION

TUNER H1201 is an antenna matching circuit for use in the 405 - 535 kHz band.

TUNER H1201 is to be used in connection with transmitter T1127L, and exciter S1301L.

TUNER H1201 contains two dummy loads for testing of the transmitter on 500 kHz and 2182 kHz.

TUNER H1201 is simple to operate: Select Band, load and tune aerial.

TUNER H1201 fits into SAILOR 19" rack system.

TUNER H1201 is constructed so that in an emergency situation it can be adjusted to any antenna merely by using the 3 buttons: BANDSWITCH, LOAD, and AERIAL TUNE on the front.

EMERGENCY TUNING PROCEDURE:

1. Select frequency on S1301L.

2. Select the band (BAND I, BAND II or BAND III) in mentioned order which makes it possible to adjust to max. antenna current.

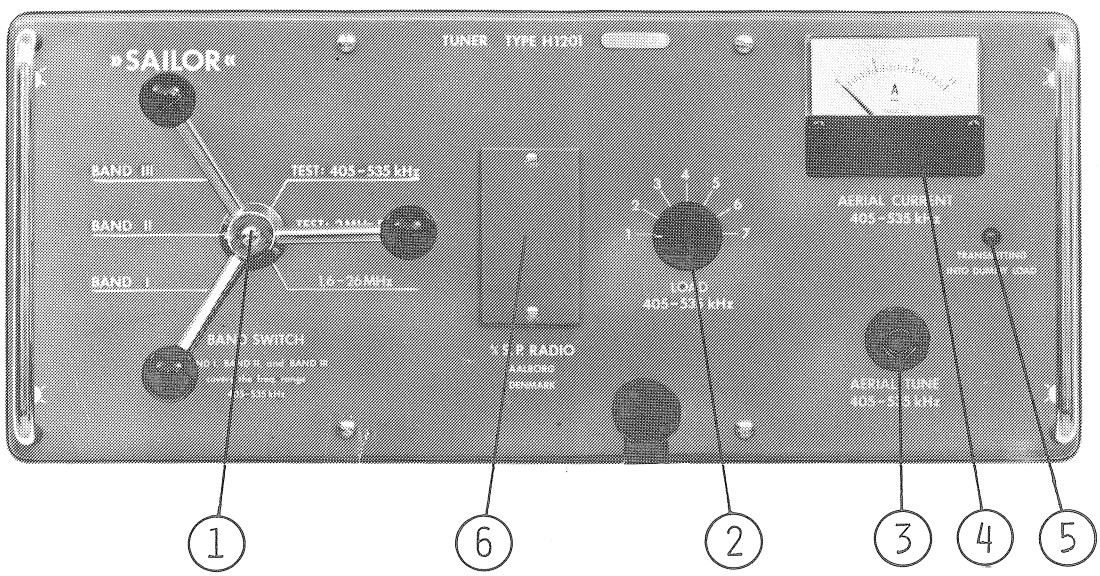
3. Select the loadstep giving max. antenna current when the antenna current is tuned to max. (Avoid to operate switches when transmitter is keyed).

TECHNICAL DATA

Technical data for H1201/T1127L/S1301L.

1.6 - 26 MHz:	See instruction book for S1301L and T1127L.
405 - 535 kHz:	
Output power:	400 W PEP to antenna.
Antenna types:	190 - 800 pF in series with 1-20 ohm.
Frequency tolerance:	See instruction book for S1301L.
Types of emission:	A1 and A2H.
Modulation frequency for A2H:	465 Hz.
Power reduction:	See instruction book for S1301L.
Spurious attenuation:	Better than 40 dB rel. carrier.
Hum and noice:	Better than 40 dB rel. carrier.
Unwanted frequency modulation:	See instruction book for S1301L.
Keying speed:	30 baud.

CONTROLS



(1) BAND SWITCH

For selection of 405 - 535 kHz bands, TEST 405 - 535 kHz, TEST 2 MHz and 1.6 - 26 MHz.

(2) LOAD 405 - 535 kHz

For selection of correct load in 405 - 535 kHz band.

(3) AERIAL TUNE 405 - 535 kHz

After change of frequency in 405 - 535 kHz band tune the aerial by means of knob (3) for max. AERIAL CURRENT (4) .

(4) AERIAL CURRENT 405 - 535 kHz

Shows the aerial current in Amps when transmitting in the 405 - 535 kHz band.

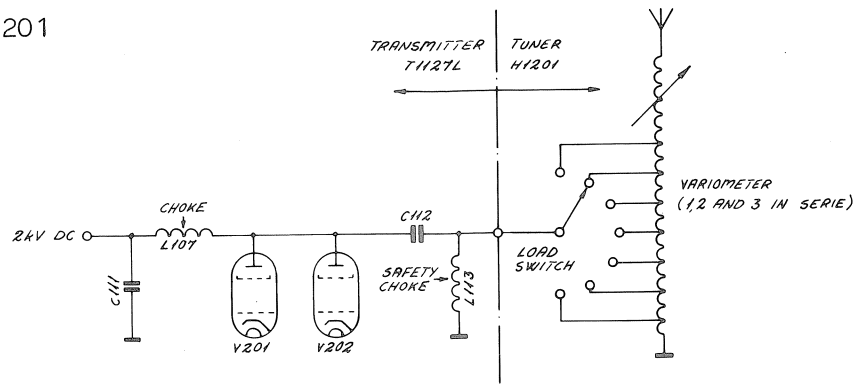
(5) TRANSMITTING INTO DUMMY LOAD

When TEST 405 - 535 kHz or TEST 2 MHz is selected the lamp will light up.

(6) Behind this cover is adjustment for dummy load 2 MHz.

PRINCIPLE OF OPERATION

TUNER H1201



H1201 is made for use in conjunction with transmitter T1127L, exciter S1301L and the power supplies N1400 and N1401.

S1301L and T1127L are originally planned and constructed so that they are both equipped with totally 19 bands of which the 18 bands covers the frequency range 1.6 - 26 MHz. The 19. band is for use in the frequency range 405 - 535 kHz.

Transmitter T1127L is constructed so that the antenna matching circuits for bands between 1.6 and 26 MHz are built into the transmitter, and the antenna can therefore be connected directly to the output terminal of the transmitter.

However for the band 405 - 535 kHz the transmitter has no antenna matching circuit. In this band the transmitter works as a power amplifier of approx. 1000 W PEP and with an output impedance of approx. 1500 ohms.

This means that S1301L/T1127L must be equipped with an external antenna matching circuit when the frequency range 405 - 535 kHz is to be used.

H1201 contains besides the above mentioned antenna matching unit also two artificial antennas for test of the station in the 405 - 535 kHz band and the 2 MHz band.

Furthermore H1201 contains a bandswitch with the following positions.

1.6 - 26 MHz.

The output terminal on transmitter T1127L is connected directly to the antenna connection on top of H1201. Therefore H1201 has no influence on the way T1127L/S1301L works in the frequency range 1.6 - 26 MHz.

BAND I, BAND II, BAND III.

The output terminal on T1127L is connected to the antenna connection of H1201 via the antenna matching circuit.

On the frontplate of T1127L is a table showing which band and loadstep is to be used when using the different antennas and frequencies. This table is filled-in by the technician when the set is installed.

H1201 is constructed so that in an emergency situation it can be adjusted to any antenna mereby by using the 3 buttons: BANDSWITCH, LOAD, and AERIAL TUNE on the front.

TEST 405 - 535 kHz

Dummy load for test of frequencies in the band 405 - 535 kHz.
The antenna is grounded.

TEST 2 MHz BAND

Dummy load for test of emergency tone generator on frequency close to 2182 kHz.
The antenna is grounded.
(SOLAS conference 1974, Regulation 16).

During installation the impedance for this dummy load is adjusted so that it corresponds to the antenna at the test frequency in question. This adjustment takes place behind the cover on the front of H1201 (Fig. 1).

H1201/T1127L/S1301L is equipped with a blocking system to avoid harmful effects from incorrect operation.

S1 on the H1201 diagram is a part of that blocking system.

TUNING-UP PROCEDURE

1.6 - 26 MHz

Tune the transmitter as described in the instruction manual for the transmitter, the bands 1.6 - 26 MHz (bandswitch in pos. 1.6 - 26 MHz).

TEST 2 MHz BANDS

Set bandswitch to pos. TEST 2 MHz bands.

Select a TEST FREQUENCY close to 2182 kHz.

Start the transmitter on this frequency. Tune the transmitter in the dummy load on the selected frequency. (The meter on T1127L tunes to max.).

If it is not possible to obtain a peak reading on the meter (meter on T1127L) the jumper wire behind the cover on the front plate of H1201 must be cut (fig. 1) (cut the wire in both ends close to the solderings).

Note TEST FREQUENCY on the table on the front of T1127L.

405 - 535 kHz BAND

Tune the transmitter in the 405 - 535 kHz band in the following way:

a. Set the frequency 512 kHz on S1301L.

b. Set LOAD to 4 and bandswitch to BAND I.

c. Key the transmitter, type of emission A1.
Tune the antenna. If this is not possible try BAND II and then BAND III until it is possible. (Avoid to operate switches on H1201 when transmitter is keyed).

d. Select the loadstep which gives max. antenna current when the antenna current is carefully tuned to peak reading.

e. Drive level is now adjusted in the same way as for 1.6 - 26 MHz bands, except for the meter reading which is set to 8 instead of 3, or if the spark gap is activated to a lower value which will keep the spark gap inactive.

f. Repeat d.

h. Note the BAND (I, II or III) and loadstep for this frequency and antenna in question on the table on the front of T1127L.

i. Repeat the points a - d incl. and point h for all frequencies in the 405 - 535 kHz band with main- and reserve antenna.

TEST 405 - 535 MHz

Set bandswitch to TEST 405 - 535 kHz.

Select for 500 kHz the loadstep giving highest antenna current and note this on the table on the front of T1127L.

SAFETY SPARK GAP

To avoid excessive voltage in H1201 and aerial installation, H1201 is equipped with a spark gap.

The spark gap consists of 2 $^{\phi}6$ bars, mounted under the top cover of H1201, and the aerial stand-off.

The spark gap limits the voltage to approx. 22 kV peak.

If the spark gap is activated under normal conditions the aerial must be changed or the drive level (point e. in the tuning-up procedure for H1201) must be reduced to a lower test meter reading.

AERIAL

The transmitter T1127L with the TUNER H1201 is constructed for the type of aerial which will give the best radiation diagram, namely a vertical aerial with an electrical length of 15 to 22 metres.

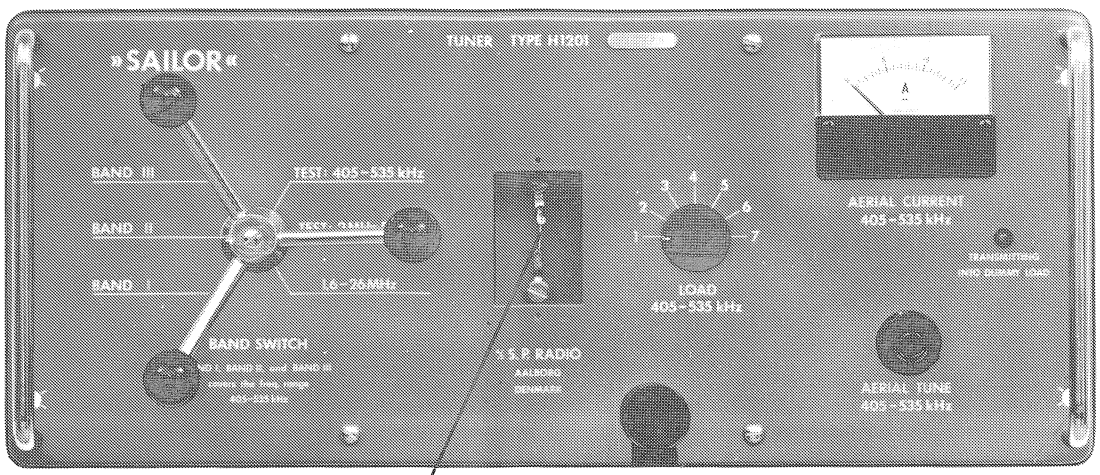
Out of consideration for the range covered on the high short wave bands a short aerial should be selected. However, it must also be considered that as large a part of the aerial as possible be able to radiate the around for better results. To obtain this it may be necessary to use a rather long aerial. For the 405 - 535 kHz MF-band the long aerial will give the best result, but it is the tuning in the frequency range from 1.6 - 4 MHz which determines the max. length of the aerial. In other words, if the transmitter can be tuned to the highest frequency in the range 1.6 - 4 MHz, the aerial is not too long.

When choosing type of aerial and insulators all these considerations have to be taken into account, including that the antenna voltage at the foot point is very high (25 k Volt) in the band from 405 - 535 kHz.

The aerial can be a self supporting whip aerial or a wire aerial with a suitable top capacity.

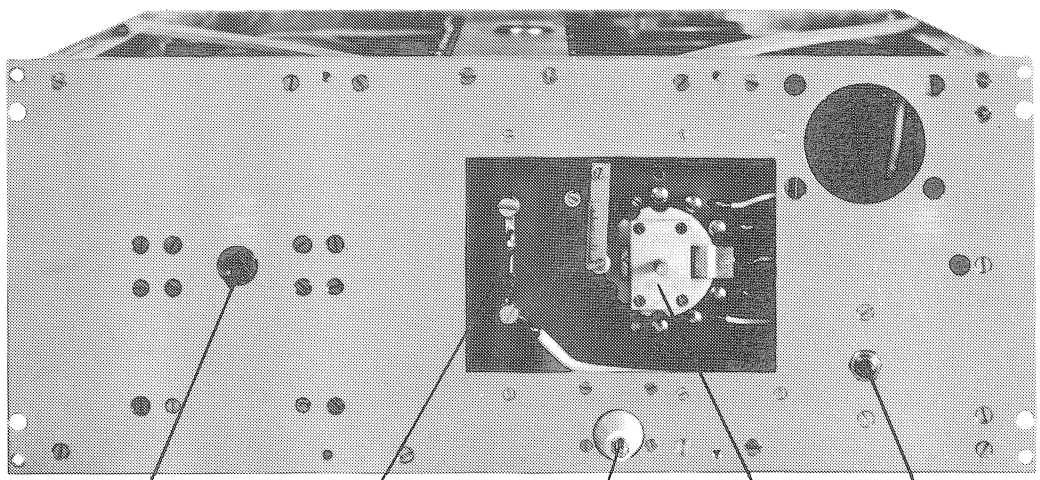
Recommended aerials:
Self supporting whip aerial from DUK Antennen STA 150 C - MF/HF.
Self supporting whip aerial from TJØSTHEIM Antennas AS 9 STX.
Wire aerial with suitable top capacity: Electrical length 15 - 22 m.

From the deckhead insulator to the insulator on top of H1201 or H1202 the signal is led through a feeder, which can be made either of 8 - 12 mm copper tube or of aerial wire. The feeder is placed on stand-off insulators is such manner that there is a distance of at least 100 mm between the feeder and the deckhouse roof, the deck or the bulkhead. The feeder must be as short as possible, and it should be no longer than 10% of the total length of the aerial.



JUMPER WIRE FOR
ADJUSTMENT OF
DUMMY LOAD 2 MHz

FIG. 1



BAND SWITCH
S3

JUMPER WIRE
FOR ADJUST-
MENT OF DUM-
MY LOAD 2 MHz

INPUT
STAND OFF

LOADING
S2

ANTENNA
TUNE KNOB

FIG. 2

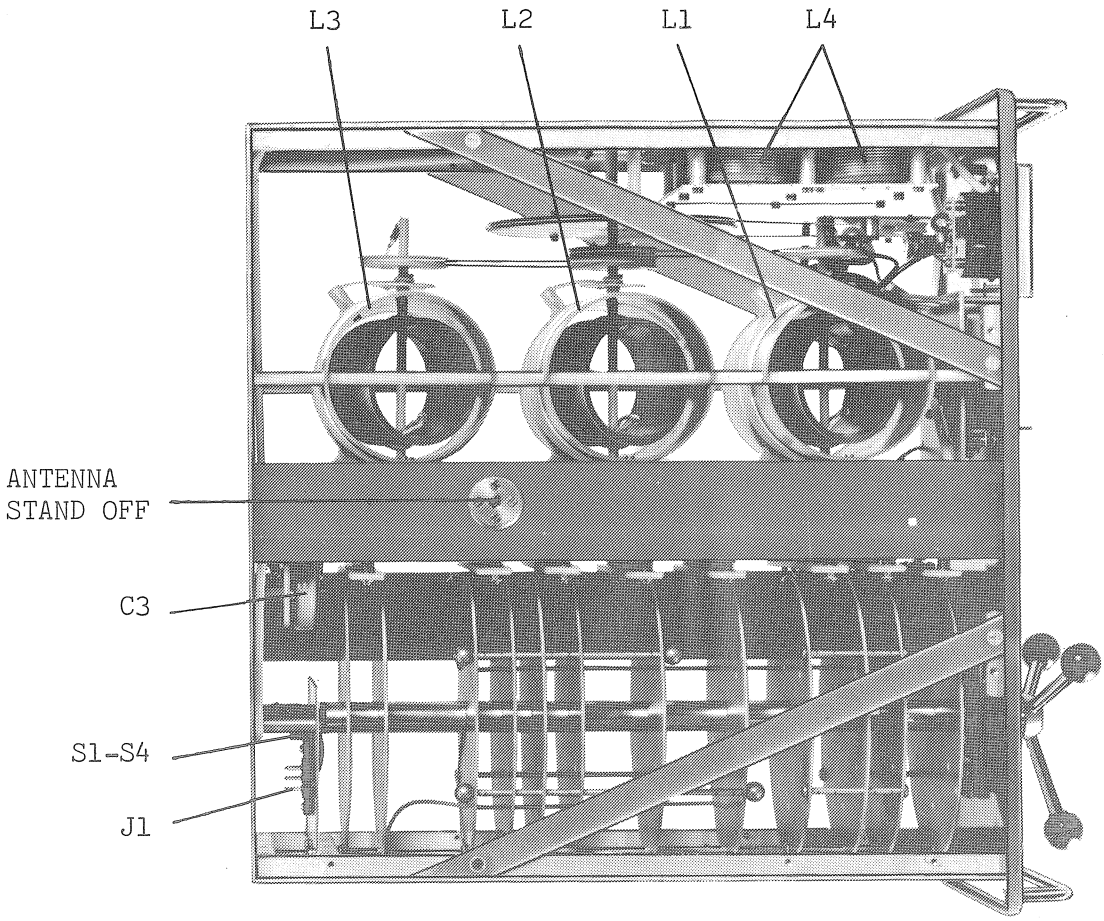

L3
L2
L1
L4
ANTENNA
STAND OFF
C3
S1-S4
J1

FIG. 3

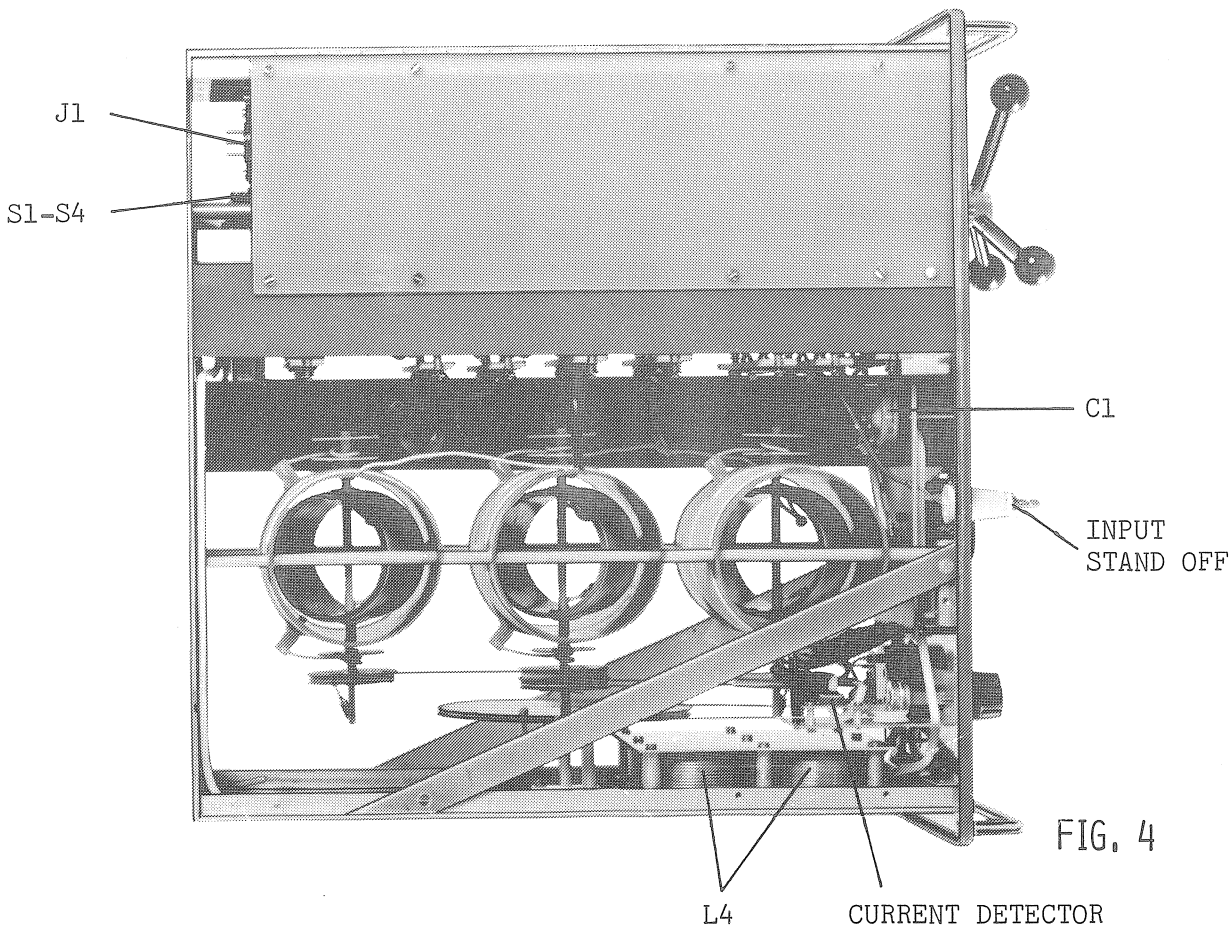

J1
S1-S4
C1
INPUT
STAND OFF
L4
CURRENT DETECTOR

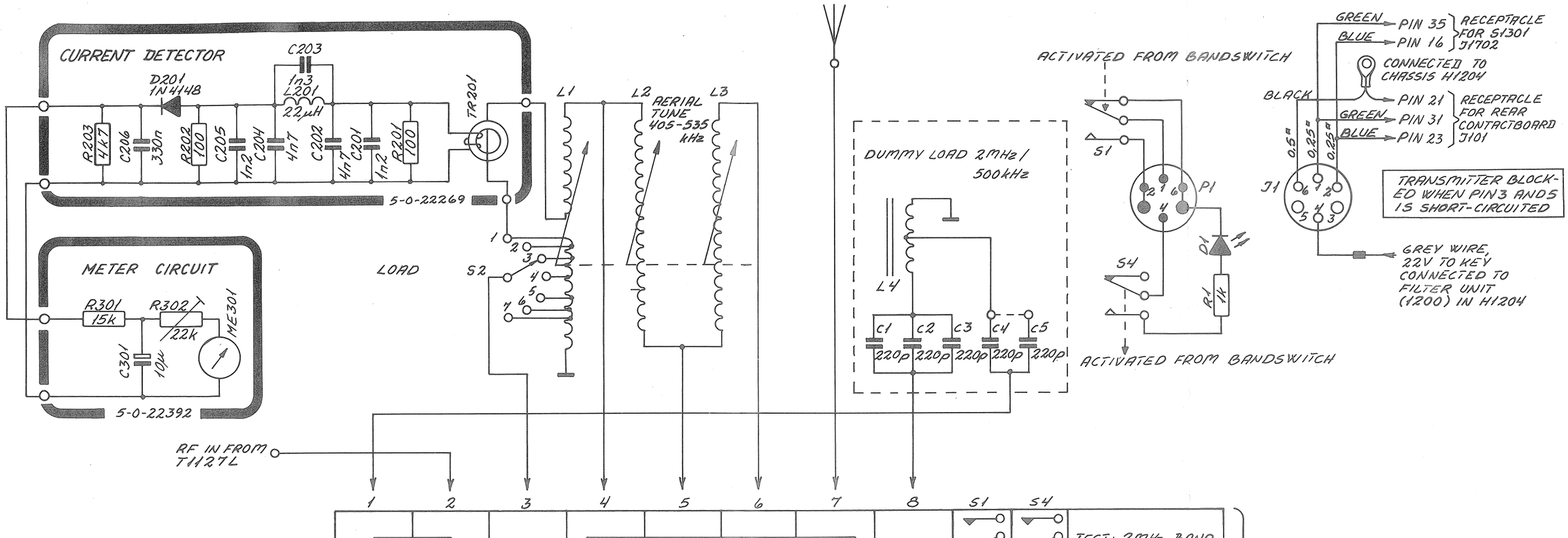
FIG. 4

Main chassis H1201

Symbol	*Description*	*Manufact.*	
C1	Capacitor 220pF ±20% 5KV	R.C.L.	441/1/83822/113
C2	Capacitor 220pF ±20% 5KV	R.C.L.	441/1/83822/113
C3	Capacitor 220pF ±20% 5KV	R.C.L.	441/1/83822/113
C4	Capacitor 220pF ±20% 5KV	R.C.L.	441/1/83822/113
C5	Capacitor 220pF ±20% 5KV	R.C.L.	441/1/83822/113
D1	Diode, light emitting	Xciton	XC 5053Y
L1	Variometer H1201	S.P.	
L2	Variometer H1201	S.P.	
L3	Variometer H1201	S.P.	
L4	R.F. Resistor coil H1201	S.P.	
R1	Resistor 1Kohm ± 5% 0.33W	Philips	2322 211 13102
S1	Micro switch	Cherry	E62 10HD PDT
S2	Switch	S.P.	
S3	Switch	S.P.	
S4	Micro switch	Cherry	E62 10HD PDT
J1	Socket	Hirschmann	Mesei 60F
P1	Plug	Hirschmann	Mek 60Bz

Current detector H1201

Symbol	*Description*	*Manufact.*	
R201	Resistor 100 ohm ±5% 1,15W	Philips	2322 191 31001
R202	Resistor 100 ohm ±5% 1,15W	Philips	2322 191 31001
R203	Resistor 4,7Kohm ±5% 0,33W	Philips	2322 211 13472
C201	Capacitor polystyrene 1,2nF	Philips	2222 425 41202
C202	Capacitor polystyrene 4,7nF	Philips	2222 425 41702
C203	Capacitor polystyrene 1,3nF	Philips	2222 426 41302
C204	Capacitor polystyrene 4,7nF	Philips	2222 425 41702
C205	Capacitor polystyrene 1,2nF	Philips	2222 425 41202
C206	Capacitor polyester 0,33uF ± 10% 100V	Philips	2222 344 25333
D201	Diode	Philips	1N4148
L201	Choke 22uH ± 5%	Kaschke	Bauform 200
TR201	Toroid	S.P.	TL274
	Meter circuit		
R301	Resistor 22Kohm ± 5% 0,33W	Philips	2322 211 13223
R302	Resistor potentiometer 22Kohm ± 20%	Philips	2322 410 01158
C301	Capacitor electrolytic 10uF-10/+100% 40V	Siemens	B41313-A7106-V
ME301	Meter 300uA	Sinohara	SW-80



SAILOR SSB H1201