

EQUIPMENT SAILOR SHORT WAVE PROGRAMME 1000 AND 1000B.

CONCERNING : New band limits and frequencies for the maritime mobile service.

From the 1.st of Juli 1991, frequencies and band limits for the maritime mobile service are changed.

The 12, 16 and 25 Mhz bands are enlarged and a new band for maritime mobile service are introduced from 18,7 to 18,9 Mhz. The frequencies are changed not only in the frequency bands which are enlarged but also in all other bands allocated to the maritime mobile service.

The change of service frequencies and band limits, means that the exciter S1300, S1300TT, S1301, S1301/L, S1302, S1303 and S1304 has to be modified.

As the modification to get the new 18 Mhz band is rather complicated and because very few administrations will open for communication in this band, S.P.Radio has choosen to have two modifications kits for each exciter. A kit summary is listed on next page.

N.B.: T1127 has to be modified to work in the 18 Mhz band, this modification has to be done at S.P.Radio. When the new 18 Mhz band is installed in SAILOR programme 1000 both T1127 and S1300/01 has to be modified.

S130X kit summary.

Exciter type	Kit number	
	Modified band limits. Without 18 Mhz. band.	Modified band limits. With 18 Mhz. band.
S1300	New frequency programming strips. See below.	Kit no. 726690 and New frequency programming strips.
S1300TT	New frequency programming strips. See below.	Kit no. 726690 and New frequency programming strips.
S1301	New prom IC2101, no. 726694, \$3A32.	Kit no. 726673
S1301/L	New prom IC 2101, no. 726695, \$3A2E.	Kit no. 726673
S1302	New frequency programming strips. See below.	Kit no. 726692 and New frequency programming strips.
S1303	New prom IC 2114, no. 726696, \$F51F. New prom IC 2115, no. 707571, \$E71D.	Kit no. 726672
S1304	New prom IC 2114, no. 726696, \$F51F. New prom IC 2115, no. 707571, \$E71D, and new frequency programming proms. Unprogrammed prom 3 pcs. no. 32.751	Kit no. 726672 and new frequency programming proms.

New frequency programming strips.
Kit no.

10 frequency programming strips
and a programming nipper. 707533
10 frequency programming strips. 726697
50 frequency programming strips. 726698
1 programming nipper. 72.250

18 MHz BAND MODIFICATION KIT FOR SAILOR S1300 AND S1300TT

N.B. T1127 has to be modified before the exciter S1300 or S1300TT is installed in the SAILOR programme 1000 again. The modification of T1127 has to be done at S.P.Radio.

The modification kit no.726690 consists of the following components:

DESCRIPTION	S1300/S1300TT
VCO Module 300	607470
Harm. Filter Module 400	607467
Motor Control Module 700	604121
Band Filter Module 1500	604149
To interconnect the new components, the following wires are added: Wire 1. White/black 75.490. 46,0 cm Wire 2. White/black 75.490. 31,0 cm Wire 3. White/black 75.490. 42,0 cm Wire 4. Violet 75.407. 20,5 cm	526674
Mounting Instructions	Included
New Instruction Manual	M1301GB
Frequency programming strips for test. Two new strips placed in positions 10 and 19.	726691

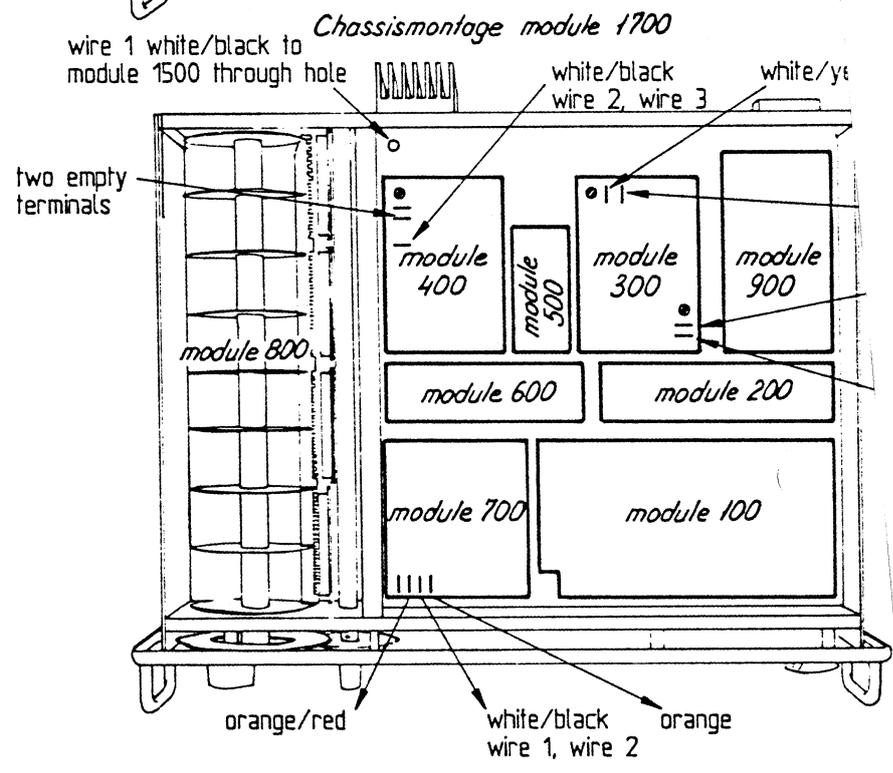
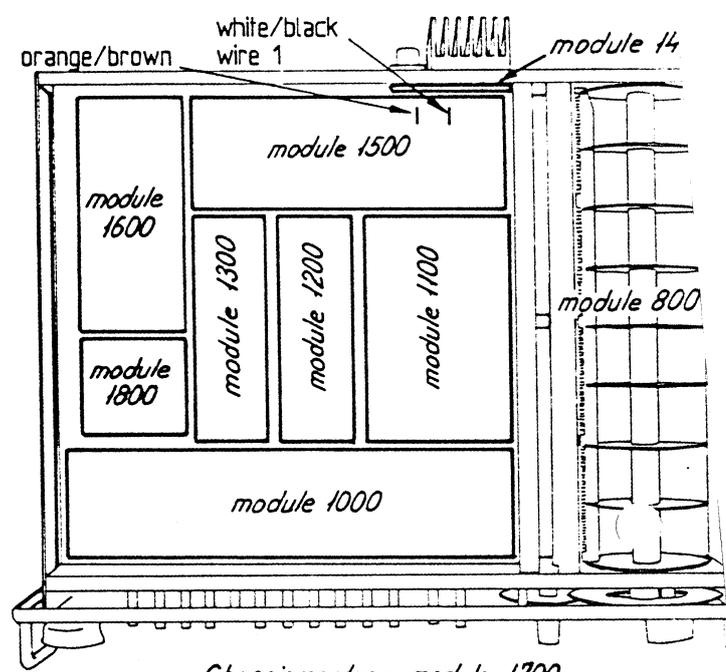
18 MHz BAND MOUNTING INSTRUCTIONS FOR S1300 AND S1300TT

1. Exchange the old PC boards with the new PC boards from the kit:
 1. VCO Unit Module 300, 607470.
 2. Harm. Filter Unit Module 400, 607467.
 3. Motor Control Unit Module 700, 604121.
 4. Band Filter Unit Module 1500, 604149.

2. Solder the wires to the same soldering pins on the new PC boards as on the old boards.

3. Connect the new wires from the kit as illustrated on the next page.
 1. Wire 1, white/black, 46,0 cm from module 700 to module 1500. 18 MHz band filter selection voltage.
 2. Wire 2, white/black, 31,0 cm from module 700 to module 400. Harm. filter selection voltage.
 3. Wire 3, white/black, 42,0 cm from module 400 to module 300. VCO selection voltage.
 4. Wire 4, violet, 20,5 cm from module 300 to module 300. VCOcontrol voltage.

The new wires are connected as illustrated below



4. The circuit diagrammes and the wire diagram in the S1300-TT instructionsbook are not correct for the modules which are changed, the included instructionsbook for S1301/L can on this points be used as a supplement to the S1300-TT book.
5. When the PC boards and the new wires have been mounted, it is necessary to make the following FUNCTION CHECK to be sure that the exciter works properly again.

FUNCTION CHECK AFTER INSTALLATION OF THE 18 MHz BAND

To carry out the FUNCTION CHECK of the exciter, it is necessary to connect the testbox for SAILOR S1300/01 and the artificial key for SAILOR S1300/01 to the exciter.

Connect a power supply to the testbox + 22,0V and - 45,0V, e.g. the Power Supply SAILOR N1405. The RF output connector must be loaded with 50 ohm.

An audio frequency generator is connected to the exciter via the special key plug.

FUNCTION CHECK

1. Change the frequency programming strips in position 6,7,8 and 9 with the programming strips for test. The two frequency programming strips included in the modification kit is placed in position 10 and 19.

Strip no. 10 A 25999.0 MHz

B 24000.0 MHz

C 19999.0 MHz

D 18000.0 MHz

19 A 18700.0 MHz

B 18850.0 MHz

C 18999.0 MHz

D None

2. Load TP26 with a 68 ohm resistor.
3. Connect a frequency counter to TP30 via a 1:10 probe.
4. Set the exciter to A3A full power, power level potentiometer fully clockwise and disconnect the audio frequency generator.
5. Connect a voltmeter to TP6.
Connect a voltmeter to TP7.
6. Go through the frequencies indicated in fig. 1 and check the testpoints mentioned below.

7. In the A and C positions you read 4698.0 kHz on the frequency counter, and in the B and D positions you read 2699.0 kHz on the frequency counter.
8. In all positions check that the TP6 voltage is below 3.5V.
9. In A and C positions you check that the TP7 voltage is 15.0V +/- 1.0V, and in B and D positions you check that the TP7 voltage is above 5.0V.
10. Disconnect the 68 ohm load from TP26.

Selected Harm. Filter	Selected VCO	Pos.	Freq. Select kHz
L403	L315	6 A B	1999.0 0000.0
L402	L313	6 C D	3999.0 2000.0
L401	L314	7 A B	5999.0 4000.0
L404	L306	7 C D	7999.0 6000.0
L405	L304	8 A B	9999.0 8000.0
L406	L305	8 C D	13999.0 12000.0
L407	L309	9 A B	17999.0 16000.0
L409	L307	9 C D	23999.0 22000.0
L408	L308	10 A B	25999.0 24000.0
L410	L310	10 C D	19999.0 18000.0

Fig. 1

11. Replace the test frequency strips with the correct frequency programming strips again.
12. Disconnect the brown wire to TP22, and insert an amperemeter.
13. Adjust R1536 to 285 mA.

14. Re-connect the brown wire to TP22.
15. Connect the frequency counter to the RF-output connector via a 1:10 probe.
16. Set the handset key placed on the testbox in position ON.
17. Measure the RF-output carrier frequency, one measurement in each marine band. However, in the CT-band one frequency below and one frequency above 2.0 MHz.
The measured frequencies must have an accuracy better than ± 1.0 ppm.
18. Connect a diode probe to the RF-output connector.
19. Change to TUNE position and set the handset key on the testbox in OFF position.
20. Measure the RF-output voltage with the diode probe. Make one measurement in each frequency band, but in the CT-band you must use one frequency below and one frequency above 2.0 MHz.
The RF-output voltage must be $18.0V \pm 2.0V$.
21. Select a frequency in the CT-band and check that the control range of the power level potentiometer is 12.0 ± 2.0 dB.
22. With the power level potentiometer fully clockwise, please check that the first power reduction step is between 4 dB and 6 dB below full power, that the second step is between 8 dB and 12 dB below full power, that the third step is between 12 dB and 18 dB below full power, and the fourth step between 17 dB and 23 dB below full power.
Then return to full power again.
23. Change to A3J and supply 1500 Hz and 1.0V RMS to the microphone plug. Set the handset key placed on the testbox in position ON.
24. Adjust the power level potentiometer until the RF-output measured with the diode probe is 7.75 V, corresponding to + 20 dB.
25. Change the audio frequency between 500 Hz and 2500 Hz, and check that the RF-output amplitude ripple is below 2.0 dB. Change the audio frequency to 350 Hz and 2700 Hz, and check that the RF output amplitude is at least + 14 dB.
26. Set the audio frequency to 1000 Hz.
27. Disconnect the diode probe and connect an oscilloscope to the RF-output connector.
28. Change to TUNE.

29. Adjust the power level potentiometer to full deflection on the oscilloscope screen (8 div.).
30. Check that the amplitude is within 7 to 8 div. in the positions A3J, A3H and A3A.
31. Check that the steady state amplitude is within 7 to 8 div. in A2H mode (only S1300TT).
32. Check that the steady state amplitude is within 6 to 8 div. in A1 mode (only s1300TT).
33. Change the frequency selector to position A1 (2182 kHz).
34. Press ALARM and TEST ALARM at the same time. The distress signal can now be seen on the oscilloscope. Check the amplitude to be within 7 to 8 div.
35. Check that the time from start of alarm signal until it automatically disappears is 45.0 +/- 1.0 secs.
36. Check that the power reduction switch is disabled under alarm transmission.

END OF FUNCTION CHECK

FREQUENCY TABLE FOR TEST STRIPS

For S1300/S1300TT and S1302 with IC702 changed to \$OD84

FRE- QUENCY kHz	POSI- TION	PROGRAMMING CODE					
			<u>MHz</u>	<u>KHz</u>			
		ZYXV	T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
2000,5	1A	0100	0	0000	0000	0000	0101
2000,0	1B	0100	0	0000	0000	0000	0000
2000,9	1C	0010	0	0000	0000	0000	1001
2000,0	1D	0001	0	0000	0000	0000	0000
2200,0	2A	0001	0	0010	0000	0000	0000
2600,0	2B	0001	0	0110	0000	0000	0000
1600,0	2C	0001	1	0110	0000	0000	0000
2400,9	2D	0011	0	0100	0000	0000	1001
1888,8	3A	0001	1	1000	1000	1000	1000
2444,4	3B	0001	0	0100	0100	0100	0100
4222,2	3C	0110	0	0010	0010	0010	0010
6300,0	3D	0111	0	0011	0000	0000	0000
8300,0	4A	1000	0	0011	0000	0000	0000
12300,0	4B	1001	0	0011	0000	0000	0000
16300,0	4C	1010	0	0011	0000	0000	0000
22111,1	4D	1011	0	0001	0001	0001	0001
25300,0	5A	1100	1	0011	0000	0000	0000
NONE	5B	0000	0	0000	0000	0000	0000
400,0	5C	1101	0	0100	0000	0000	0000
2182,0	5D	1110	0	0001	1000	0010	0000
1999.0	6A #	1101	1	1001	1001	1001	0000
0000,0	6B #	1101	0	0000	0000	0000	0000
3999,0	6C #	0010	1	1001	1001	1001	0000
2000,0	6D #	0010	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 1 is changed for exciters with 18Mhz band.

FREQUENCY KHz	POSITION	PROGRAMMING CODE					
		ZYXV	MHz		KHz		
			T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
5999,0	7A #	0110	1	1001	1001	1001	0000
4000,0	7B #	0110	0	0000	0000	0000	0000
7999,0	7C #	0111	1	1001	1001	1001	0000
6000,0	7D #	0111	0	0000	0000	0000	0000
9999,0	8A #	1000	1	1001	1001	1001	0000
8000,0	8B #	1000	0	0000	0000	0000	0000
13999,0	8C #	1001	1	1001	1001	1001	0000
12000,0	8D #	1001	0	0000	0000	0000	0000
17999,0	9A #	1010	1	1001	1001	1001	0000
16000,0	9B #	1010	0	0000	0000	0000	0000
23999,0	9C #	1011	1	1001	1001	1001	0000
22000,0	9D #	1011	0	0000	0000	0000	0000
25999,0	10A #	1100	1	1001	1001	1001	0000
24000,0	10B #	1100	0	0000	0000	0000	0000
19999,0	10C #	0101	1	1001	1001	1001	0000
18000,0	10D #	0101	0	0000	0000	0000	0000
2000,0	11A	0001	0	0000	0000	0000	0000
4400,0	11B	0110	0	0100	0000	0000	0000
3000,0	11C	0010	1	0000	0000	0000	0000
5000,0	11D	0110	1	0000	0000	0000	0000
6200,0	12A	0111	0	0010	0000	0000	0000
6263,0	12B	0111	0	0010	0110	0011	0000
6325,0	12C	0111	0	0011	0010	0101	0000
NONE	12D	0000	0	0000	0000	0000	0000
8195,0	13A	1000	0	0001	1001	0101	0000
8315,0	13B	1000	0	0011	0001	0101	0000
8435,0	13C	1000	0	0100	0011	0101	0000
NONE	13D	0000	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 10 and 11 is changed for exciters with 18Mhz band.

FREQUENCY KHz	POSITION	PROGRAMMING CODE					
		ZYXV	MHz		KHz		
			T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
12230,0	14A	1001	0	0010	0011	0000	0000
12440,0	14B	1001	0	0100	0100	0000	0000
12652,0	14C	1001	0	0110	0101	0010	0000
NONE	14D	0000	0	0000	0000	0000	0000
16360,0	15A	1010	0	0011	0110	0000	0000
16610,0	15B	1010	0	0110	0001	0000	0000
16859,0	15C	1010	0	1000	0101	1001	0000
NONE	15D	0000	0	0000	0000	0000	0000
22000,0	16A	1011	0	0000	0000	0000	0000
22156,0	16B	1011	0	0001	0101	0110	0000
22311,0	16C	1011	0	0011	0001	0001	0000
NONE	16D	0000	0	0000	0000	0000	0000
25070,0	17A	1100	1	0000	0111	0000	0000
25140,0	17B	1100	1	0001	0100	0000	0000
25210,0	17C	1100	1	0010	0001	0000	0000
NONE	17D	0000	0	0000	0000	0000	0000
595,0	18A	1101	0	0101	1001	0101	0000
598,0	18B	1101	0	0101	1001	1000	0000
601,0	18C	1101	0	0110	0000	0001	0000
NONE	18D	0000	0	0000	0000	0000	0000
18700,0	19A	0101	0	0111	0000	0000	0000
18850,0	19B	0101	0	1000	0101	0000	0000
18999,0	19C	0101	0	1001	1001	1001	0000
NONE	19D	0000	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 14 , 15 , 17 and 19 is changed for exciters with 18Mhz band.

18 MHz BAND MODIFICATION KIT FOR SAILOR S1301 AND S1301L

N.B. T1127 has to be modified before the exciter S1301 or S1301/L is installed in the SAILOR 1000 again. the modification of T1127 has to be done at S.P.Radio.

The modification kit consists of the following components:

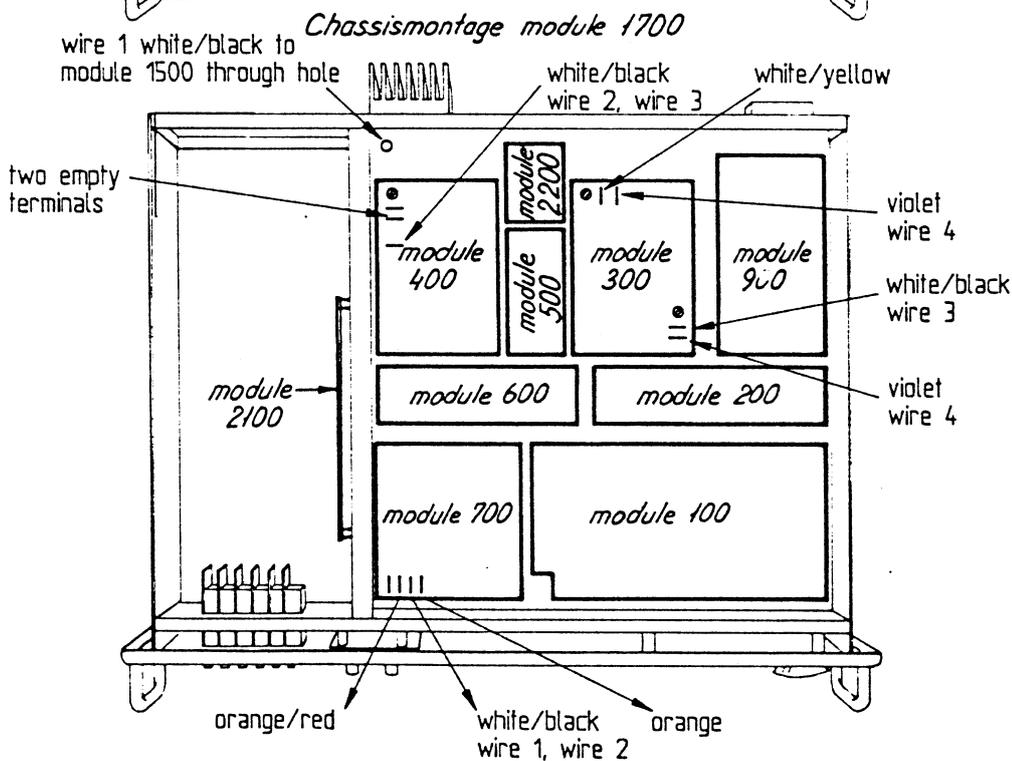
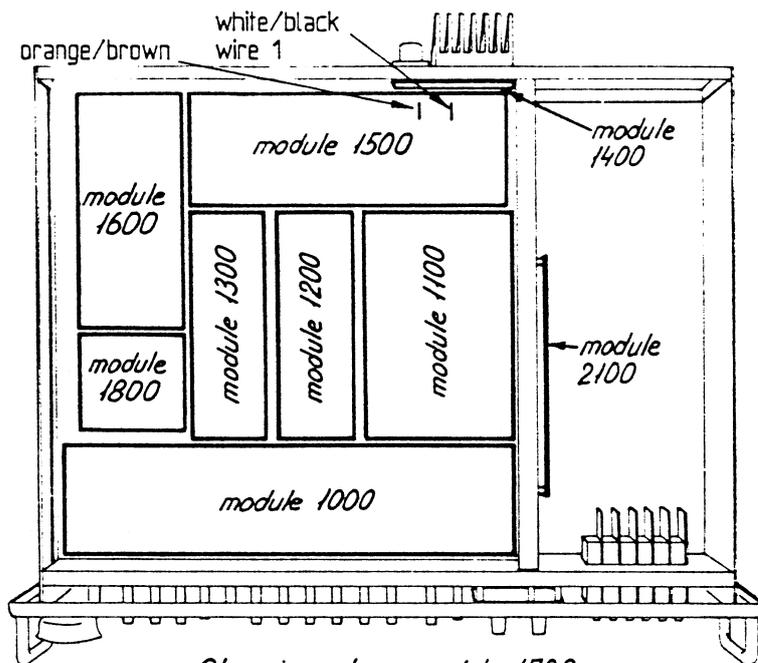
DESCRIPTION	S13001	S1301L
VCO Module 300	607470	606470
Harm. Filter Module 400	607467	607467
Motor Control Module 700	604121	604121
Band Filter Module 1500	604149	604149
Prom to FREQUENCY SELECTOR Module 2100, IC2101	704880 \$3A41	704909 \$3A3D
To interconnect the new components, the following wires are added: Wire 1. White/black 75.490. 46,0 cm Wire 2. White/black 75.490. 31,0 cm Wire 3. White/black 75.490. 38,5 cm Wire 4. Violet 75.407. 20,5 cm	526674	526674
Mounting Instructions	included	
New Instruction Manual	M1301GB	M1301LGB
Testprom for FREQUENCY SELECTOR Module 2100, IC2101	726675 \$36A8	726675 \$36A8

18 MHz BAND MOUNTING INSTRUCTIONS FOR S1301 AND S1301L

1. Exchange the old PC boards with the new PC boards from the kit:
 1. VCO Unit Module 300, 607470.
 2. Harm. Filter Unit Module 400, 607467.
 3. Motor Control Unit Module 700, 604121.
 4. Band Filter Unit Module 1500, 604149.
2. Solder the wires to the same soldering pins on the new PC boards as on the old boards.
3. Connect the new wires from the kit as illustrated on the next page.
 1. Wire 1, white/black, 46,0 cm from module 700 to module 1500. 18 MHz band filter selection voltage.
 2. Wire 2, white/black, 31,0 cm from module 700 to module 400. Harm. filter selection voltage.
 3. Wire 3, white/black, 42,0 cm from module 400 to module 300. VCO selection voltage.

4. Wire 4, violet, 20,5 cm from module 300 to module 300. VCO control voltage.

The new wires are connected as illustrated below.



4-0-22632 4-0-22633

4. When the PC boards and the new wires have been mounted, it is necessary to make the following FUNCTION CHECK to be sure that the exciter works properly again.

FUNCTION CHECK AFTER INSTALLATION OF THE 18 MHz BAND

To carry out the FUNCTION CHECK of the exciter, it is necessary to connect the testbox for SAILOR S1300/01 and the artificial key for SAILOR S1300/01 to the exciter.

Connect a power supply to the testbox + 22,0V and - 45,0V, e.g. the Power Supply SAILOR N1405. The RF output connector must be loaded with 50 ohm.

An audio frequency generator is connected to the exciter via the special key plug.

FUNCTION CHECK

1. Exchange the prom IC2101 on the FREQUENCY SELECTOR Module 2100 with the testprom 726675, \$36A8.
2. Load TP26 with a 68 ohm resistor. *(500 FRA HARM. FL)*
3. Connect a frequency counter to TP30 via a 1:10 probe. *(500 VCO OUT)*
4. Set the exciter to A3A full power, power level potentiometer fully clockwise and disconnect the audio frequency generator.
5. Connect a voltmeter to TP6.
Connect a voltmeter to TP7. *(200 VCO VARICAP SPENDING)*
6. Go through the frequencies indicated in fig. 1 and check the testpoints mentioned below.
7. In the A position you read 4698.0 kHz, and in the B position you read 2699.0 kHz.
8. In all positions check that the TP6 voltage is below 3.5V.
9. In the A position you check that the TP7 voltage is 15.0V +/- 1.0V, and in the B position you check that the TP7 voltage is above 5.0V.
10. Disconnect the 68 ohm load from TP26.

Selected Harm. Filter	Selected VCO	Pos.	Freq. Select kHz
L403	L315	A B	1999.0 0000.0
L402	L313	A B	3999.0 2000.0
L401	L314	A B	5999.0 4000.0
L404	L306	A B	7999.0 6000.0
L405	L304	A B	9999.0 8000.0
L406	L305	A B	13999.0 12000.0
L407	L309	A B	17999.0 16000.0
L410	L310	A B	19999.0 18000.0
L409	L307	A B	23999.0 22000.0
L408	L308	A B	25999.0 24000.0

Fig. 1

11. Exchange the prom IC2101, now the testprom, with the correct prom for S1301, \$3A41, and for S1301L, \$3A3D.
12. Connect the frequency counter to the RF-output connector via a 1:10 probe.
13. Set the handset key placed on the testbox in position ON.
14. Measure the RF-output carrier frequency, one measurement in each marine band. However, in the CT-band one frequency below and one frequency above 2.0 MHz.
The measured frequencies must have an accuracy better than +/- 1.0 ppm.
15. Connect a diode probe to the RF-output connector.
16. Change to TUNE position and set the handset key on the testbox in OFF position.

17. Measure the RF-output voltage with the diode probe. Make one measurement in each frequency band, but in the CT-band you must use one frequency below and one frequency above 2.0 MHz.
The RF-output voltage must be 18.0V +/- 2.0V.
18. Select a frequency in the CT-band and check that the control range of the power level potentiometer is 12.0 +/- 2.0 dB.
19. With the power level potentiometer fully clockwise, please check that the first power reduction step is between 4 dB and 6 dB below full power, that the second step is between 8 dB and 12 dB below full power, that the third step is between 12 dB and 18 dB below full power, and the fourth step between 17 dB and 23 dB below full power.
Then return to full power again.
20. Change to A3J and supply 1500 Hz and 1.0V RMS to the microphone plug. Set the handset key placed on the testbox in position ON.
21. Adjust the power level potentiometer until the RF-output measured with the diode probe is 7.75 V, corresponding to + 20 dB.
22. Change the audio frequency between 500 Hz and 2500 Hz, and check that the RF-output amplitude ripple is below 2.0 dB. Change the audio frequency to 350 Hz and 2700 Hz, and check that the RF output amplitude is at least + 14 dB.
23. Set the audio frequency to 1000 Hz.
24. Disconnect the diode probe and connect an oscilloscope to the RF-output connector.
25. Change to TUNE.
26. Adjust the power level potentiometer to full deflection on the oscilloscope screen (8 div.).
27. Check that the amplitude is within 7 to 8 div. in the positions A3J, A3H and A3A.
28. Check that the steady state amplitude is within 7 to 8 div. in A2H mode.
29. Check that the steady state amplitude is within 6 to 8 div. in A1 mode.
30. Connect the audio frequency generator to the telex input on the artificial key, and set the audio generator to 1500 Hz and 1V RMS.
31. Check that the steady state amplitude is within 5 to 6 div. in TELEX mode.

32. Change to fixed 2182 kHz.

Press ALARM and TEST ALARM at the same time. The distress signal can now be seen on the oscilloscope. Check the amplitude to be within 7 to 8 div.

34. Check that the time from start of alarm signal until it automatically disappears is 45.0 +/- 1.0 secs.
35. Check that the power reduction switch is disabled under alarm transmission.

END OF FUNCTION CHECK

18 MHZ BAND MODIFICATION KIT FOR SAILOR S1302

The modification kit 726692 consists of the following components:

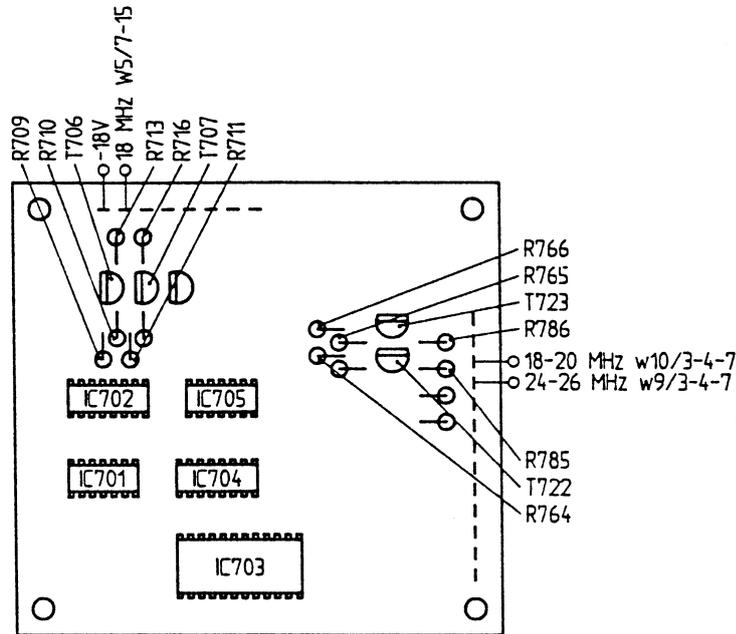
DESCRIPTION	S1302
VCO Unit	607470
Harm. Filter Unit	607467
Band Filter Unit	607464
Additional components for VCO SELECTOR Module 700: 607482 6 pcs. resistors 12 Kohm +/- 5% 0.4W 2 pcs. transistors BC328-25 1 pc. prom, \$OABA, IC702	01.727 28.052 707483
To interconnect the new components, the following wires are added: Wire 1. Violet 75.407, 20,5 cm Wire 2. White/black 75.490. 46,0 cm Wire 3. White/black 75.490. 23,0 cm Wire 4. White/black 75.490. 42,0 cm	526674
Mounting Instructions	Included
New Instruction Manual	M1303GB
Sticker Drive Level T1130/T1135	53.231
Testprom for VCO SELECTOR IC702 Prom, \$0D84	726693
Programming Strips for Test Two strips placed in postions 10 and 19	726691

18 MHZ BAND MOUNTING INSTRUCTIONS FOR S1302

1. Exchange the old PC boards with the new PC boards from the kit:
 1. VCO Unit, 607470.
 2. Harm. Filter Unit, 607467.
 3. Band Filter Unit, 607464.

2. Solder the wires to the same soldering pins on the new PC boards as on the old boards.

3. The additional components to the VCO SELECTOR P.C. board should be fitted as illustrated below.

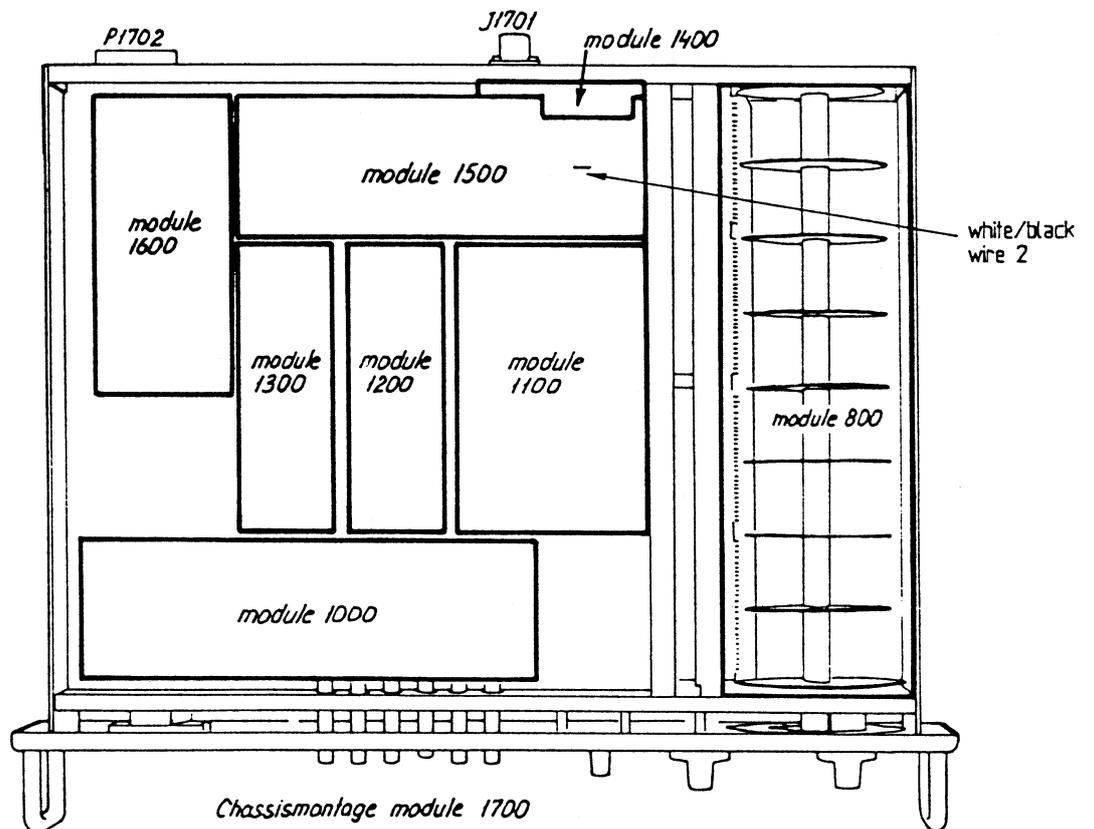
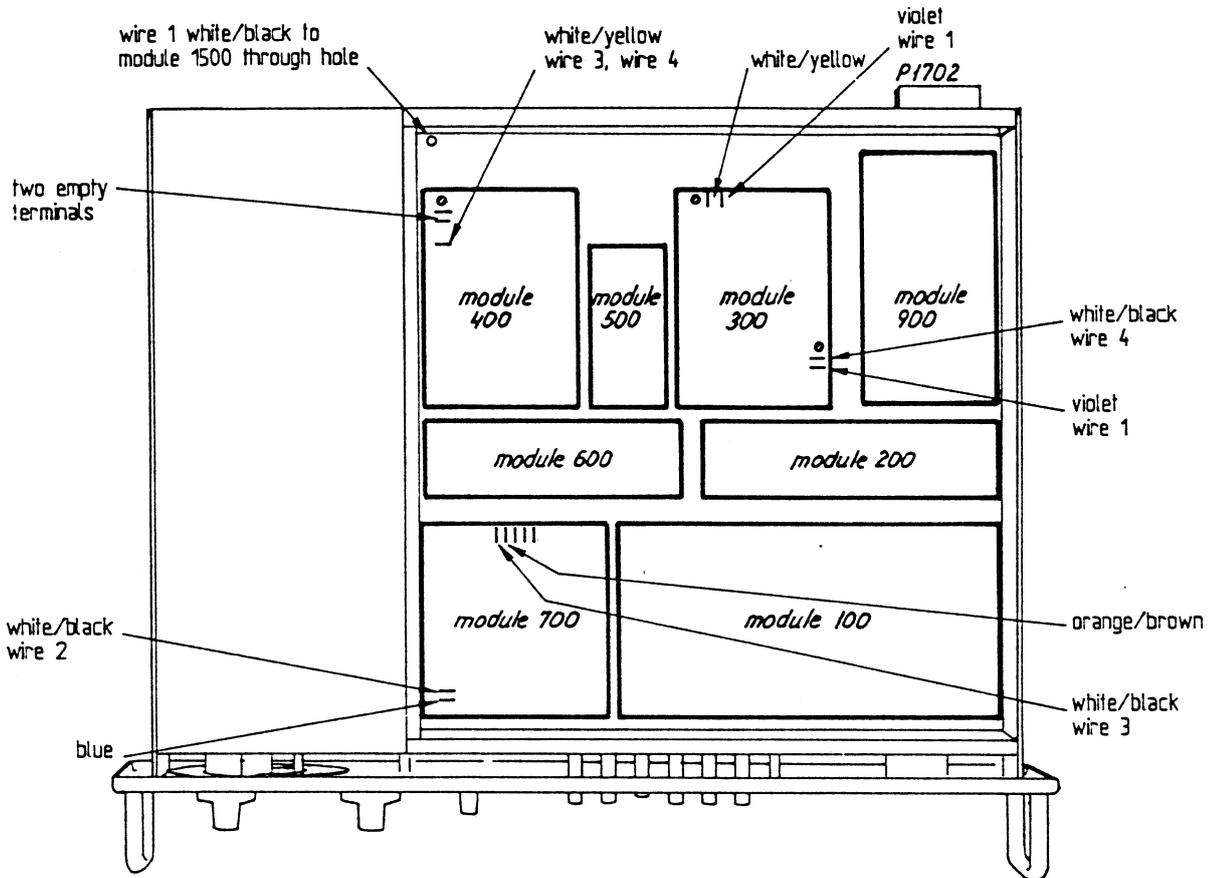


Additional components:

18 MHz Band Pass		18 MHz VCO selection	
T706	BC328-25	T723	BC328-25
R709	12 kohm ±5%	R766	12 kohm ±5%
R710	12 kohm ±5%	R765	12 kohm ±5%
R713	12 kohm ±5%	R786	12 kohm ±5%

4. Connect the new wires from the kit as illustrated on the next page.
1. Wire 1, violet, 20,5 cm from module 300 to module 300. VCO control voltage.
 2. Wire 2, white/black, 46,0 cm from module 700 to module 1500. 18 MHz band filter selection voltage.
 3. Wire 3, white/black, 31,0 cm (cut to 23,0 cm) from module 700 to module 400. Harm. filter selection voltage.
 4. Wire 4, white/black, 42,0 cm from module 400 to module 300. VCO selection voltage.

The new wires are connected as illustrated below.



4-6-23896 4-6-23897

5. The circuit diagrammes and the wire diagram in the S1302 instructionsbook are not correct for the modules which are changed, the included instructionsbook for S1303 can on this points be used as a supplement to the S1302 book.
6. When the PC boards and the new wires have been mounted, it is necessary to make the following FUNCTION CHECK to be sure that the exciter works properly again.

FUNCTION CHECK AFTER INSTALLATION OF THE 18 MHz BAND

To carry out the FUNCTION CHECK of the exciter, it is necessary to connect the testbox for SAILOR S13002/03/04 to the exciter.

Connect a power supply to the testbox + 22,0V, + 8,0V and - 45,0V, e.g. the Power Supply SAILOR N1405. The RF output connector must be loaded with 50 ohm.

An audio frequency generator is connected to MIC.IN terminal on the testbox S1302/03/04.

FUNCTION CHECK

1. Change the prom IC702 on the VCO SELECTOR Module 700 with the test prom 726693 with the \$0D84.
2. Change the frequency programming strips in position 6,7,8, and 9 with the programming strips for test. The two frequency programming strips included in the modification kit is placed in position 10 and 19.

Strip no. 10 A 25999.0 MHz
 B 24000.0 MHz
 C 19999.0 MHz
 D 18000.0 MHz
 19 A 18700.0 MHz
 B 18850.0 MHz
 C 18999.0 MHz
 D None

3. Load TP26 with a 68 ohm resistor.
4. Connect a frequency counter to TP30 via a 1:10 probe.
5. Set the exciter to A3H (H3E) full power, power level potentiometer fully clockwise and disconnect the audio frequency generator.
6. Connect a voltmeter to TP6.
 Connect a voltmeter to TP7.
7. Go through the frequencies indicated in fig. 1 and check the testpoints mentioned below.

8. In the A and C positions you read 4698.0 kHz on the frequency counter, and in the B and D positions you read 2699.0 kHz on the frequency counter.
9. In all positions check that the TP6 voltage is below 3.5V.
10. In A and C positions you check that the TP7 voltage is 15.0V +/- 1.0V, and in B and D positions you check that the TP7 voltage is above 5.0V.
11. Disconnect the 68 ohm load from TP26.

Selected Harm. Filter	Selected VCO	Pos.	Freq. Select kHz
L403	L315	6 A B	1999.0 0000.0
L402	L313	6 C D	3999.0 2000.0
L401	L314	7 A B	5999.0 4000.0
L404	L306	7 C D	7999.0 6000.0
L405	L304	8 A B	9999.0 8000.0
L406	L305	8 C D	13999.0 12000.0
L407	L309	9 A B	17999.0 16000.0
L409	L307	9 C D	23999.0 22000.0
L408	L308	10 A B	25999.0 24000.0
L410	L310	10 C D	19999.0 18000.0

Fig. 1

12. Exchange the testprom IC702/\$0C98 with the supplied correct prom S.P. number 707483 \$0ABA.
13. Exchange the test frequency strips with the correct frequency programming strips again.
14. Connect the frequency counter to the RF-output connector via a 1:10 probe.

15. Set the handset key placed on the testbox in position ON.
16. Measure the RF-output carrier frequency, one measurement in each marine band. However, in the CT-band one frequency below and one frequency above 2.0 MHz.
The measured frequencies must have an accuracy better than ± 1.0 ppm.
17. Connect a diode probe to the RF-output connector.
18. Change to TUNE position and set the handset key on the testbox in position OFF.
19. Measure the RF-output voltage with the diode probe. Make one measurement in each frequency band, but in the CT-band you must use one frequency below and one frequency above 2.0 MHz.
The RF-output voltage must be 3.7 ± 0.4 V.
20. In TUNE position the tune lamp on the exciter must be alight. The transmitter start and the simplex relay lamp on the testbox must be alight.
21. Check that the power level potentiometer on the testbox has a control range of approx. 12 dB.
22. Change to A3H (H3E).
With the power level potentiometer on the testbox fully clockwise, set the handset key on the testbox in ON position. Please check that the first power reduction step is between 4 dB and 6 dB below full power, that the second step is between 8 dB and 12 dB below full power, that the third step is between 12 dB and 18 dB below full power, and the fourth step between 17 dB and 23 dB below full power.
23. Check that the power reduced lamp is alight when the power is reduced.
24. Check that the power reduced switch is disabled when tune is activated.
25. Change to A3J (J3E). Choose a channel in the CT band.
26. Supply 1500 Hz and 3.16V RMS to the AF input plug on the testbox S1302/03/04.
27. Adjust the power level potentiometer on the testbox until the meter deflection (diode probe connected to the RF output) is 2.45V corresponding to 0.0 dB.

28. Change the AF tone generator frequency between 500 Hz and 2500 Hz, and check that the output amplitude ripple is below 2 dB. Check that -6 dB frequencies are approx. 300 Hz and 2700 Hz.
29. Set AF tone generator to 1500 Hz.
30. Disconnect the diode probe and connect the oscilloscope to the RF output connector.
31. Change to tune position.
32. Adjust the power level potentiometer on the testbox until full deflection is seen on the oscilloscope screen (8 div. pp.).
33. Check that the amplitude is within 7 div. pp. and 8 div. pp. in the positions A3J (J3E), A3H (H3E) and A3A (R3E).
34. Select the frequency 2182 kHz. Frequency programming position 1A.
35. Press SEND ALARM and TEST ALARM at the same time. The distress signal can now be seen on the oscilloscope. The time from start of alarm signal until it automatically disappears must be 45 secs.
36. Check that the power reduced switch is disabled under alarm transmission.
37. Check that the 2182 kHz selected lamp is alight when the frequency selector is in position 2182 kHz.

END OF FUNCTION CHECK.

FREQUENCY TABLE FOR TEST STRIPS

For S1300/S1300TT and S1302 with IC702 changed to \$OD84

FRE- QUENCY kHz	POSI- TION	PROGRAMMING CODE					
			<u>MHz</u>	<u>KHz</u>			
		ZYXV	T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
2000,5	1A	0100	0	0000	0000	0000	0101
2000,0	1B	0100	0	0000	0000	0000	0000
2000,9	1C	0010	0	0000	0000	0000	1001
2000,0	1D	0001	0	0000	0000	0000	0000
2200,0	2A	0001	0	0010	0000	0000	0000
2600,0	2B	0001	0	0110	0000	0000	0000
1600,0	2C	0001	1	0110	0000	0000	0000
2400,9	2D	0011	0	0100	0000	0000	1001
1888,8	3A	0001	1	1000	1000	1000	1000
2444,4	3B	0001	0	0100	0100	0100	0100
4222,2	3C	0110	0	0010	0010	0010	0010
6300,0	3D	0111	0	0011	0000	0000	0000
8300,0	4A	1000	0	0011	0000	0000	0000
12300,0	4B	1001	0	0011	0000	0000	0000
16300,0	4C	1010	0	0011	0000	0000	0000
22111,1	4D	1011	0	0001	0001	0001	0001
25300,0	5A	1100	1	0011	0000	0000	0000
NONE	5B	0000	0	0000	0000	0000	0000
400,0	5C	1101	0	0100	0000	0000	0000
2182,0	5D	1110	0	0001	1000	0010	0000
1999.0	6A #	1101	1	1001	1001	1001	0000
0000,0	6B #	1101	0	0000	0000	0000	0000
3999,0	6C #	0010	1	1001	1001	1001	0000
2000,0	6D #	0010	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 1 is changed for exciters with 18Mhz band.

FREQUENCY KHz	POSITION	PROGRAMMING CODE					
			<u>MHz</u>	<u>KHz</u>			
		ZYXV	T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
5999,0	7A #	0110	1	1001	1001	1001	0000
4000,0	7B #	0110	0	0000	0000	0000	0000
7999,0	7C #	0111	1	1001	1001	1001	0000
6000,0	7D #	0111	0	0000	0000	0000	0000
9999,0	8A #	1000	1	1001	1001	1001	0000
8000,0	8B #	1000	0	0000	0000	0000	0000
13999,0	8C #	1001	1	1001	1001	1001	0000
12000,0	8D #	1001	0	0000	0000	0000	0000
17999,0	9A #	1010	1	1001	1001	1001	0000
16000,0	9B #	1010	0	0000	0000	0000	0000
23999,0	9C #	1011	1	1001	1001	1001	0000
22000,0	9D #	1011	0	0000	0000	0000	0000
25999,0	10A #	1100	1	1001	1001	1001	0000
24000,0	10B #	1100	0	0000	0000	0000	0000
19999,0	10C #	0101	1	1001	1001	1001	0000
18000,0	10D #	0101	0	0000	0000	0000	0000
2000,0	11A	0001	0	0000	0000	0000	0000
4400,0	11B	0110	0	0100	0000	0000	0000
3000,0	11C	0010	1	0000	0000	0000	0000
5000,0	11D	0110	1	0000	0000	0000	0000
6200,0	12A	0111	0	0010	0000	0000	0000
6263,0	12B	0111	0	0010	0110	0011	0000
6325,0	12C	0111	0	0011	0010	0101	0000
NONE	12D	0000	0	0000	0000	0000	0000
8195,0	13A	1000	0	0001	1001	0101	0000
8315,0	13B	1000	0	0011	0001	0101	0000
8435,0	13C	1000	0	0100	0011	0101	0000
NONE	13D	0000	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 10 and 11 is changed for exciters with 18Mhz band.

FREQUENCY KHz	POSITION	PROGRAMMING CODE					
			<u>MHz</u>	<u>KHz</u>			
		ZYXV	T	100 DCBA	10 DCBA	1 DCBA	0,1 DCBA
12230,0	14A	1001	0	0010	0011	0000	0000
12440,0	14B	1001	0	0100	0100	0000	0000
12652,0	14C	1001	0	0110	0101	0010	0000
NONE	14D	0000	0	0000	0000	0000	0000
16360,0	15A	1010	0	0011	0110	0000	0000
16610,0	15B	1010	0	0110	0001	0000	0000
16859,0	15C	1010	0	1000	0101	1001	0000
NONE	15D	0000	0	0000	0000	0000	0000
22000,0	16A	1011	0	0000	0000	0000	0000
22156,0	16B	1011	0	0001	0101	0110	0000
22311,0	16C	1011	0	0011	0001	0001	0000
NONE	16D	0000	0	0000	0000	0000	0000
25070,0	17A	1100	1	0000	0111	0000	0000
25140,0	17B	1100	1	0001	0100	0000	0000
25210,0	17C	1100	1	0010	0001	0000	0000
NONE	17D	0000	0	0000	0000	0000	0000
595,0	18A	1101	0	0101	1001	0101	0000
598,0	18B	1101	0	0101	1001	1000	0000
601,0	18C	1101	0	0110	0000	0001	0000
NONE	18D	0000	0	0000	0000	0000	0000
18700,0	19A	0101	0	0111	0000	0000	0000
18850,0	19B	0101	0	1000	0101	0000	0000
18999,0	19C	0101	0	1001	1001	1001	0000
NONE	19D	0000	0	0000	0000	0000	0000

Indicate strips necessary to install the 18 MHz band.

The programming of strip no. 14 , 15 , 17 and 19 is changed for exciters with 18Mhz band.

18 MHZ BAND MODIFICATION KIT FOR SAILOR S1303/04

The modification kit consists of the following components:

Kit no. 726672

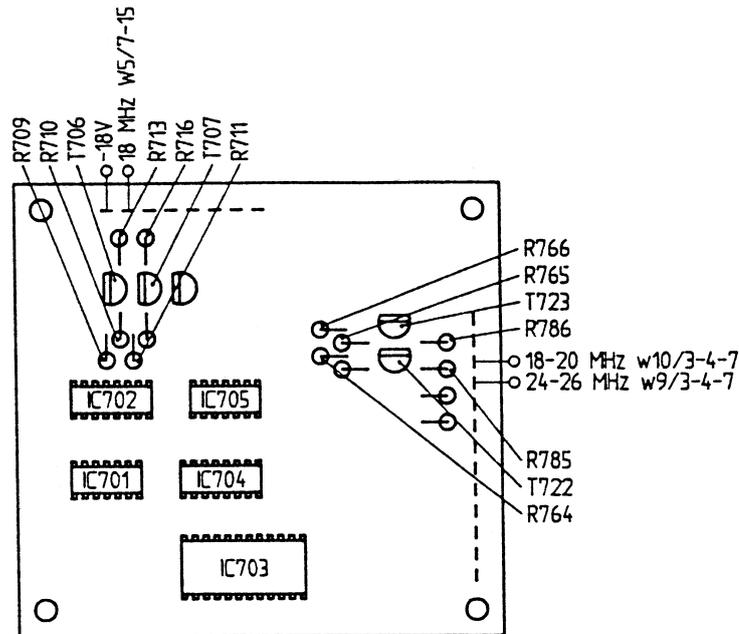
DESCRIPTION	S1303/04
VCO Unit	607470
Harm. Filter Unit	607467
Band Filter Unit	607464
Additional components for VCO SELECTOR Module 700: 607482 6 pcs. resistors 12 Kohm +/- 5% 0.4W 2 pcs. transistors BC328-25 1 pc. prom, \$OABA, IC702	01.727 28.052 707483
The Proms on FREQUENCY CONTROL Unit Module 2100 607569 Prom IC2114, \$F445 Prom IC2115, \$E71D	707570 707571
To interconnect the new components, the following wires are added: Wire 1. Violet 75.407, 20,5 cm Wire 2. White/black 75.490. 46,0 cm Wire 3. White/black 75.490. 23,0 cm Wire 4. White/black 75.490. 42,0 cm	526674
Mounting Instructions	included
New Instruction Manual	M1303GB
Sticker Drive Level T1130/T1135	53.231
A Set of Testproms IC702, \$1020 IC2114, \$AE80 IC2115, \$C894	KIT 726676

18 MHZ BAND MOUNTING INSTRUCTIONS FOR S1303 AND S1304

1. Exchange the old PC boards with the new PC boards from the kit:
 1. VCO Unit, 607470.
 2. Harm. Filter Unit, 607467.
 3. Band Filter Unit, 607464.

2. Solder the wires to the same soldering pins on the new PC boards as on the old boards.

3. The additional components to the VCO SELECTOR P.C. board should be fitted as illustrated below.

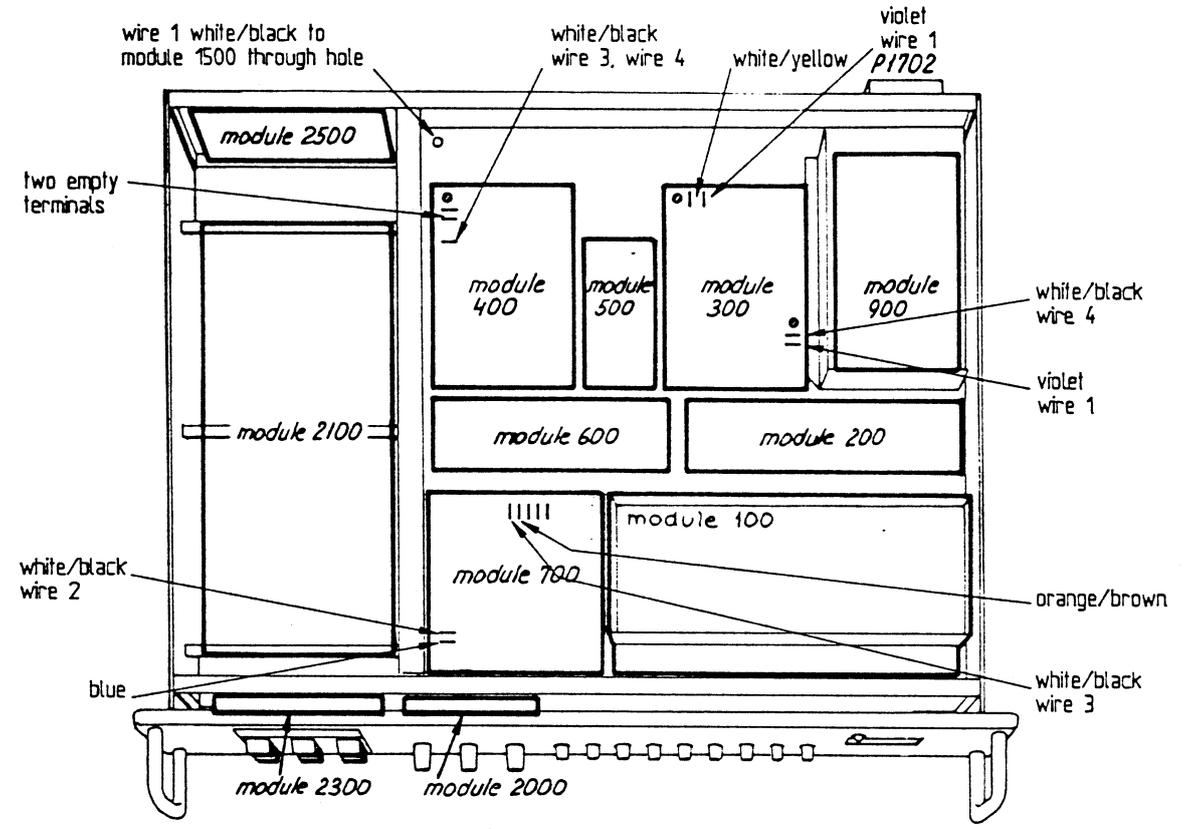


Additional components:

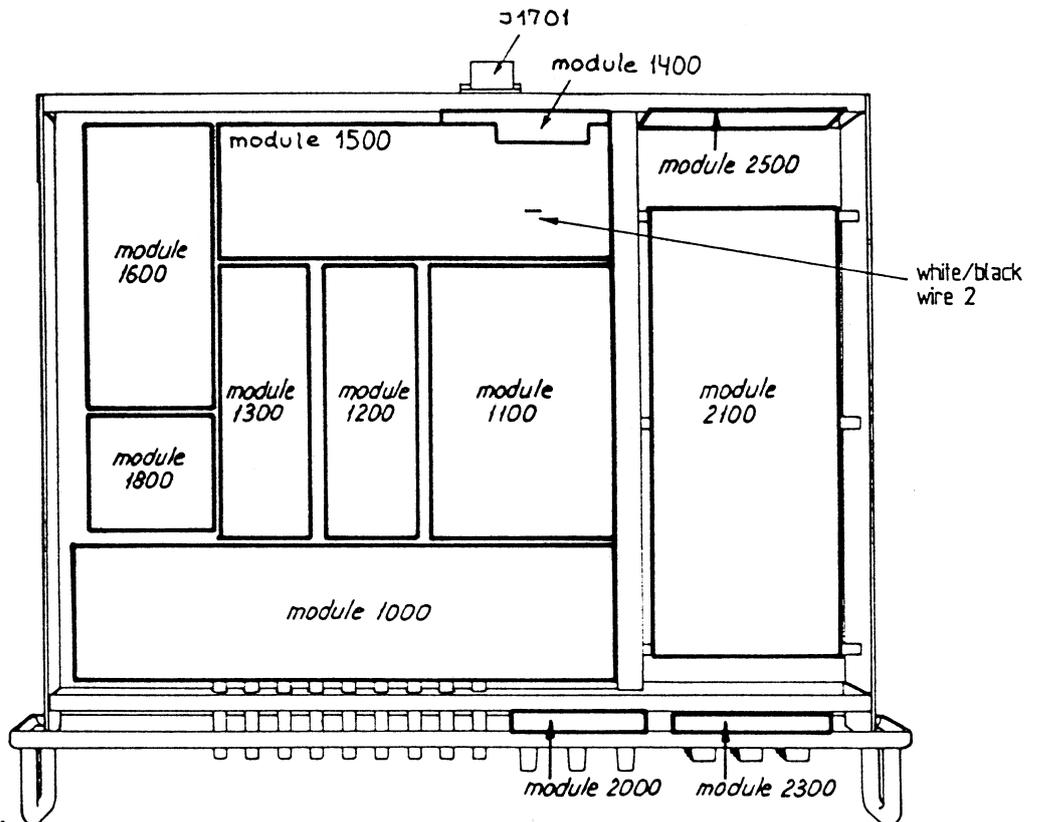
18 MHz Band Pass	18 MHz VCO selection
T706 BC328-25	T723 BC328-25
R709 12 kohm ±5%	R766 12 kohm ±5%
R710 12 kohm ±5%	R765 12 kohm ±5%
R713 12 kohm ±5%	R786 12 kohm ±5%

4. Connect the new wires from the kit as illustrated on the next page.
1. Wire 1, violet, 20,5 cm from module 300 to module 300. VCO control voltage.
 2. Wire 2, white/black, 46,0 cm from module 700 to module 1500. 18 MHz band filter selection voltage.
 3. Wire 3, white/black, 31,0 cm (cut to 23,0 cm) from module 700 to module 400. Harm. filter selection voltage.
 4. Wire 4, white/black, 42,0 cm from module 400 to module 300. VCO selection voltage.

The new wires are connected as illustrated below.



Chassis montage module 1700



S1303/04

5. When the PC boards and the new wires have been mounted, it is necessary to make the following FUNCTION CHECK to be sure that the exciter works properly again.

FUNCTION CHECK AFTER INSTALLATION OF THE 18 MHz BAND

To carry out the FUNCTION CHECK of the exciter, it is necessary to connect the testbox for SAILOR S1302/03/04 and the artificial key for S1302/03/04 to the exciter.

Connect a power supply to the testbox + 22,0V, + 8,0V and - 45,0V, e.g. the Power Supply SAILOR N1405. The RF output connector must be loaded with 50 ohm.

An audio frequency generator is connected to MIC.IN terminal on the testbox S1302/03/04.

FUNCTION CHECK

1. Exchange the prom IC702 on the VCO SELECTOR Module 700 with the test prom \$1020.
2. Exchange the proms IC2114 and IC2115 on the FREQUENCY CONTROL module 2100 with the testproms. IC2114 has the \$AE80 , and IC2115 has the \$C894 .
3. Load TP26 with a 68 ohm resistor.
4. Connect a frequency counter to TP30 via a 1:10 probe.
5. Set the exciter to A3H (H3E) full power, power level potentiometer fully clockwise and disconnect the audio frequency generator.
6. Connect a voltmeter to TP6.
Connect a voltmeter to TP7.
7. Go through the frequencies indicated in fig. 1 and check the testpoints mentioned below.
8. In the A position you read 4698.0 kHz on the frequency counter, and in the B position you read 2699.0 kHz on the frequency counter.
9. In all positions check that the TP6 voltage is below 3.5V.
10. In A position you check that the TP7 voltage is 15.0V +/- 1.0V, and in B position you check that the TP7 voltage is above 5.0V.
11. Disconnect the 68 ohm load from TP26.

Selected Harm. Filter	Selected VCO	Pos.	Freq. Select kHz
L403	L315	A B	1999.0 0000.0
L402	L313	A B	3999.0 2000.0
L401	L314	A B	5999.0 4000.0
L404	L306	A B	7999.0 6000.0
L405	L304	A B	9999.0 8000.0
L406	L305	A B	13999.0 12000.0
L407	L309	A B	17999.0 16000.0
L410	L310	A B	19999.0 18000.0
L409	L307	A B	23999.0 22000.0
L408	L308	A B	25999.0 24000.0

Fig. 1

12. Exchange the testprom IC702/\$1020 with the supplied correct prom S.P. number 707483, \$0ABA.
13. Exchange the testproms IC2114/\$AE80 and IC2115/\$C894 with the supplied correct proms, IC2114/\$F445 S.P. Number 707570 and IC2115/\$E71D S.P. Number 707571.
14. Connect the frequency counter to the RF-output connector via a 1:10 probe.
15. Set the handset key placed on the testbox in position ON.
16. Measure the RF-output carrier frequency, one measurement in each marine band. However, in the CT-band one frequency below and one frequency above 2.0 MHz.
The measured frequencies must have an accuracy better than +/- 1.0 ppm.
17. Connect a diode probe to the RF-output connector.

18. Change to TUNE position and set the handset key on the testbox in position OFF.
19. Measure the RF-output voltage with the diode probe. Make one measurement in each frequency band, but in the CT-band you must use one frequency below and one frequency above 2.0 MHz.
The RF-output voltage must be $3.7 \pm 0.4V$.
20. In TUNE position the tune lamp on the exciter must be alight. The transmitter start and the simplex relay lamp on the testbox must be alight.
21. Check that the power level potentiometer on the testbox has a control range of approx. 12 dB.
22. Change to A3H (H3E).
With the power level potentiometer on the testbox fully clockwise, set the handset key on the testbox in ON position. Please check that the first power reduction step is between 4 dB and 6 dB below full power, that the second step is between 8 dB and 12 dB below full power, that the third step is between 12 dB and 18 dB below full power, and the fourth step between 17 dB and 23 dB below full power.
23. Check that the power reduced lamp is alight when the power is reduced.
24. Check that the power reduced switch is disabled when tune is activated.
25. Change to A3J (J3E). Choose a channel in the CT band.
26. Supply 1500 Hz and 3.16V RMS to the AF input plug on the testbox S1302/03/04.
27. Adjust the power level potentiometer on the testbox until the meter deflection (diode probe connected to the RF output) is 2.45V corresponding to 0.0 dB.
28. Change the AF tone generator frequency between 500 Hz and 2500 Hz, and check that the output amplitude ripple is below 2 dB.
Check that -6 dB frequencies are approx. 300 Hz and 2700 Hz.
29. Set AF tone generator to 1500 Hz.
30. Disconnect the diode probe and connect the oscilloscope to the RF output connector.
31. Change to tune position.
32. Adjust the power level potentiometer on the testbox until full deflection is seen on the oscilloscope screen (8 div. pp.).

33. Check that the amplitude is within 7 div. pp. and 8 div. pp. in the positions A3J (J3E), A3H (H3E) and A3A (R3E).
34. Supply 1500 Hz and 3.16V RMS to the AF input connector on the artificial key S1303/04.
35. Check that the peak amplitude is within 7 div. pp. and 8 div. pp. in the positions TELEX and A2H. It can be necessary to activate the tune button a short moment.
36. Check that the peak amplitude is within 5 div. pp. and 6 div. pp. in the position A1.
37. Set the display input switch in position 2182 kHz selected.
38. Press SEND ALARM and TEST ALARM at the same time. The distress signal can now be seen on the oscilloscope. The time from start of alarm signal until it automatically disappears must be 45 secs.
39. Check that the power reduced switch is disabled under alarm transmission.
40. Check that the 2182 kHz selected lamp is alight when the frequency selector is in position 2182 kHz.
41. Set the data/clock switch on the artificial key in position OFF.
42. Set the display input switch in position EXT.FREQ.CONTROL.
43. Check that the display is blank.
44. Set the data/clock switch on the artificial key in ON position.
45. Check that the display is filled with zeroes.
46. Check that the dimmer switch is working.

END OF FUNCTION CHECK.