



# Sailor

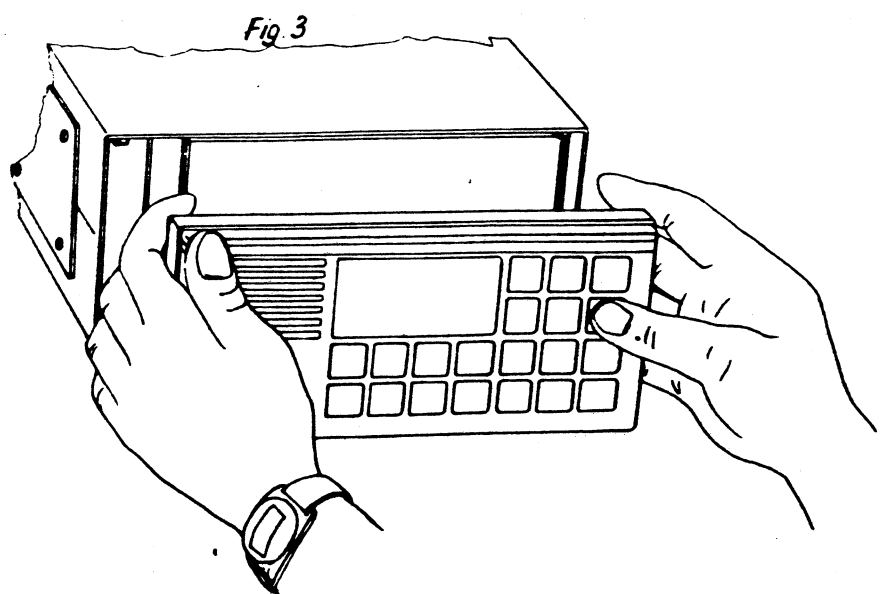
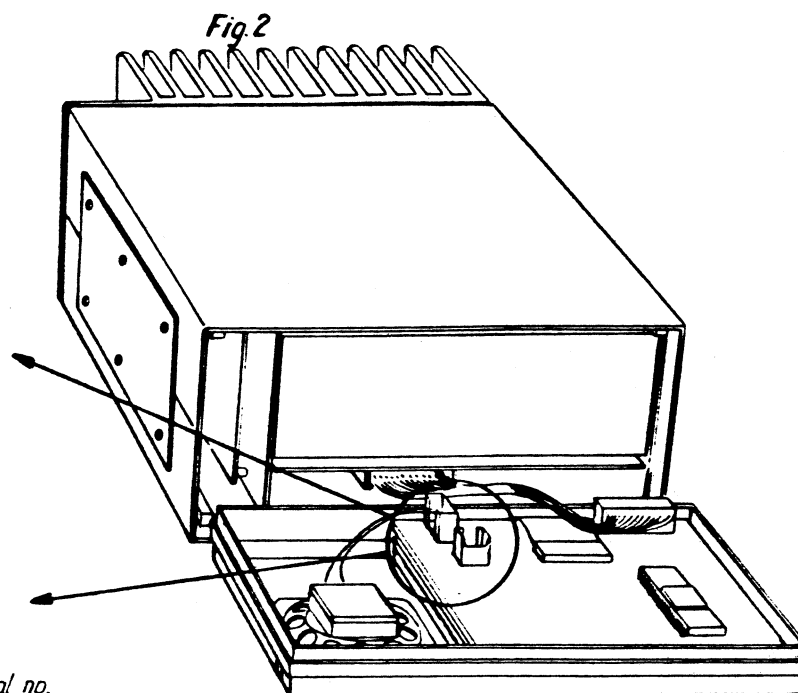
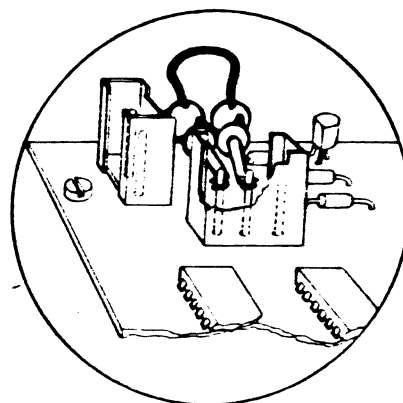
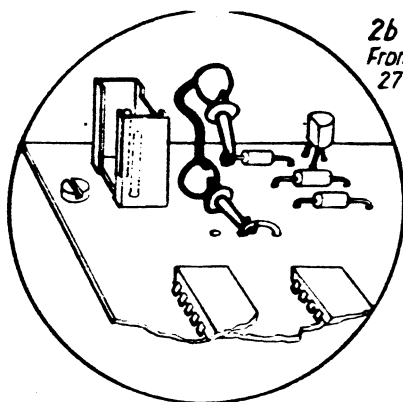
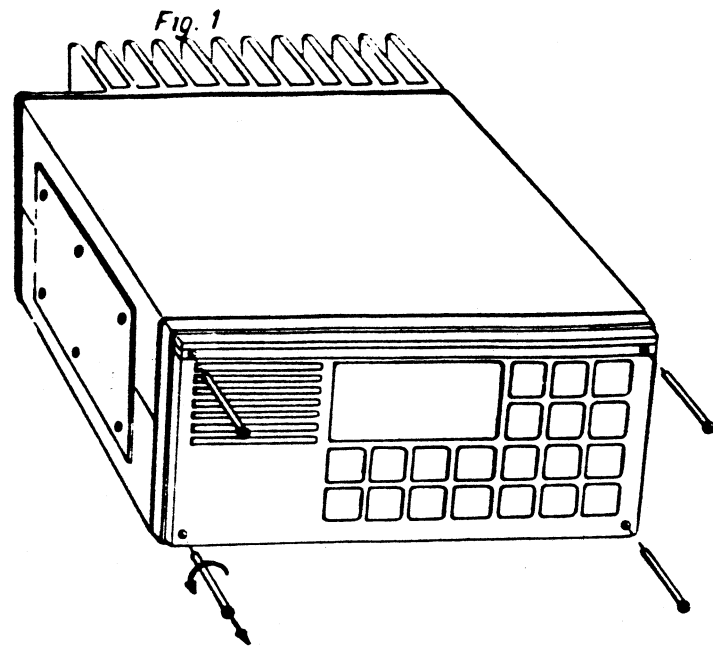
# Sailor

**INSTRUCTIONS FOR  
IDENTITY AND SERVICE  
PROGRAMMING OF  
SAILOR VHF RT2047**



**A/S S. P. RADIO · AALBORG · DENMARK**  
**ONLY FOR AGENTS AND SERVICE PERSONNEL**

*Procedure for changing the set to service mode.*



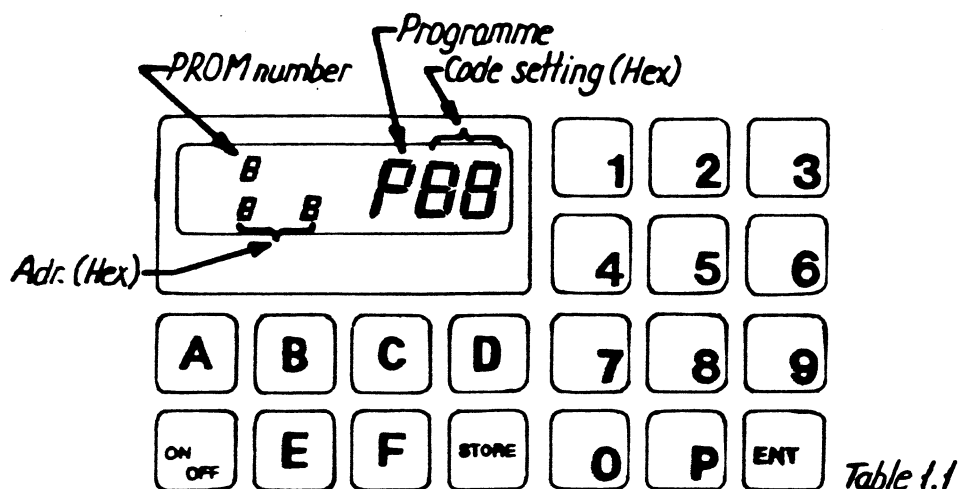


## IDENTITY PROGRAMMING

To store the last setting of volume, squelch and channel an EEPROM is being used. The EEPROM also contains the information of private channels, selcall number identity codes etc.

For normal operation and up to 20 private channels only one PROM No. 0 IC609 is necessary. If more than 20 private channels or a new function code for the international channels (Inland) are to be used, a second PROM No. 1 IC610 is to be inserted.

For identity programming and service use the keyboard can be set in service mode with a configuration as shown in table 1.1.



### Operation Procedure for Service Mode

1. Unscrew the 4 screws on frontplate (fig. 1) place the keyboard in front of the set (see fig. 2).
2. To enable service mode a jumper has to be connected on the keyboard-unit from the 3-poled socket (pin in the middle) to ground (fig. 2a) or from the hook to ground (fig. 2b).
3. Switch "ON" the set.
4. The display will be erased and the set is ready for programming.
5. While programming the keyboard can be held with left hand, fig. 3.
6. Select the service programme to be used e.g. P3.



The read out will show the address, the actual code, and the PROM number.

7. To change the code in an address e.g. from FF to F4.

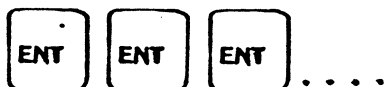
press



When you press ENT the code will be changed and the read out will show the next address.

8. To step through all the addresses in one service programme.

Press



9. To store the service programme when you have corrected it.

Press



#### HEXADECIMAL PROGRAMMING

In service mode all addresses and codes to be programmed is in hexadecimal notation.

Conversion from binary to hexadecimal notation:

Binary bit No. 7 6 5 4 3 2 1 0  
                   Group M Group L

Split-up the 8 bits into two groups of 4 bits as shown. Then correct each group according to the following table.

E.g. bit No.                   7 6 5 4 3 2 1 0  
 Binary code                   1 1 0 0 1 0 0 1  
 Conversion to                                
 Hexadecimal code             C           9

Binary	Hex
0 0 0 0	0
0 0 0 1	1
0 0 1 0	2
0 0 1 1	3
0 1 0 0	4
0 1 0 1	5
0 1 1 0	6
0 1 1 1	7
1 0 0 0	8
1 0 0 1	9
1 0 1 0	A
1 0 1 1	B
1 1 0 0	C
1 1 0 1	D
1 1 1 0	E
1 1 1 1	F

#### PROGRAMMING OF PRIVATE CHANNELS FROM P0 TO P19 AND FROM P20 TP P67

When you have decided the private channel number to be used.

Find the hexadecimal codes in table 1.2.1. and 1.2.2. and insert them in table 1.2.

Use the Operation Procedure in Service Mode to programme in the private channels.

Table 1.2.

Private Channels	Addr.	Frequency Code	Addr.	Function Code
		See table 1.2.1.		See table 1.2.2.

## Select Service Programme P3

P 0	3C		3D	
P 1	3E		3F	
P 2	40		41	
P 3	42		43	
P 4	44		45	
P 5	46		47	
P 6	48		49	
P 7	4A		4B	
P 8	4C		4D	
P 9	4E		4F	

## Select Service Programme P4

P 10	50		51	
P 11	52		53	
P 12	54		55	
P 13	56		57	
P 14	58		59	
P 15	5A		5B	
P 16	5C		5D	
P 17	5E		5F	
P 18	60		61	
P 19	62		63	

When private channels from P20 to P67 the second PROM no. IC610 is to be inserted on the printed circuit board.

Note! Private channels from P20 to P67 can not be programmed if a new function code to international maritime channels is programmed and vice versa.

## Select Service Programme P6

P 20	0		1	
P 21	2		3	
P 22	4		5	
P 23	6		7	
P 24	8		9	
P 25	A		B	
P 26	C		D	
P 27	E		F	
P 28	10		11	
P 29	12		13	

Select Service Programme P7

P 30	14		15	
P 31	16		17	
P 32	18		19	
P 33	1A		1B	
P 34	1C		1D	
P 35	1F		1F	
P 36	20		21	
P 37	22		23	
P 38	24		25	
P 39	26		27	

Select Service Programme P8

P 40	28		29	
P 41	2A		2B	
P 42	2C		2D	
P 43	2E		2F	
P 44	30		31	
P 45	32		33	
P 46	34		35	
P 47	36		37	
P 48	38		39	
P 49	3A		3B	

Select Service Programme P9

P 50	3C		3D	
P 51	3E		3F	
P 52	40		44	
P 53	42		43	
P 54	44		45	
P 55	46		47	
P 56	48		49	
P 57	4A		4B	
P 58	4C		4D	
P 59	4E		4F	

Select Service Programme P10

P 60	50		51	
P 61	52		53	
P 62	54		55	
P 63	56		57	
P 64	58		59	
P 65	5A		5B	
P 66	5C		5D	
P 67	5E		5F	

## Frequency Code for Private Channels

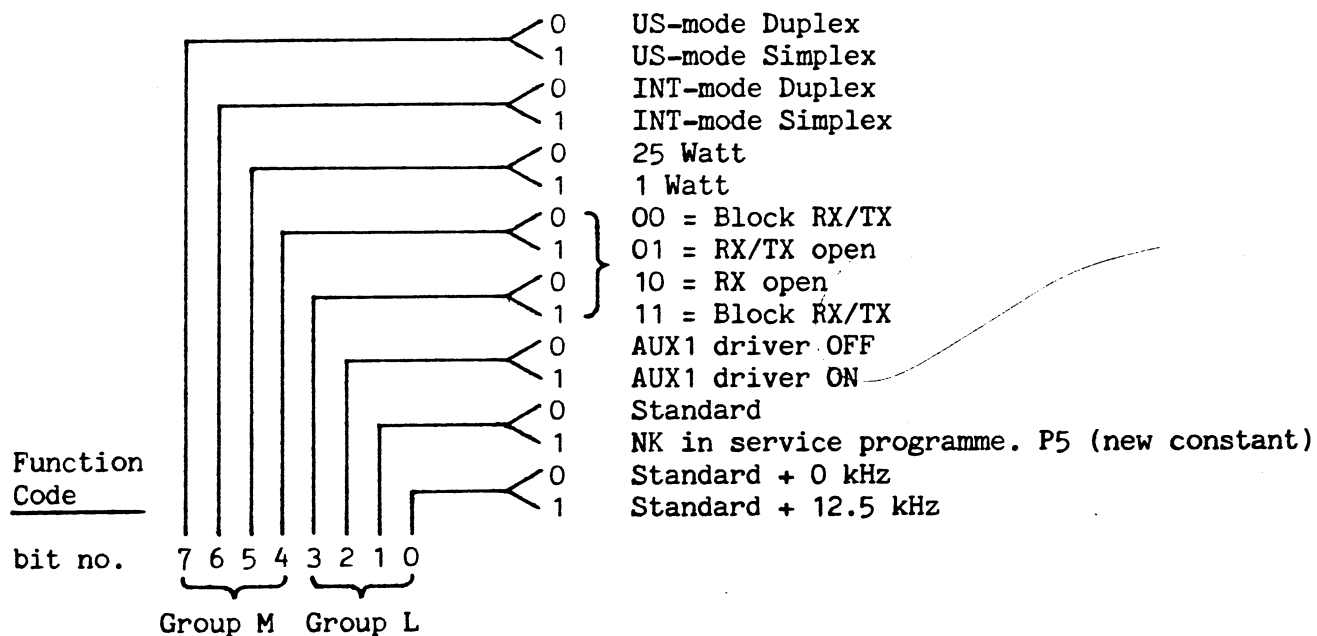
Table 1.2.1.

F <sub>TX</sub>	F <sub>RX</sub> Duplex	Code Hex
155.400	160.000	E8
155.425	160.025	E9
155.450	160.050	EA
155.475	160.075	EB
155.500	160.100	EC
155.525	160.125	ED
155.550	160.150	EE
155.575	160.175	EF
155.600	160.200	FO
155.625	160.225	F1
155.650	160.250	F2
155.675	160.275	F3
155.700	160.300	F4
155.725	160.325	F5
155.750	160.350	F6
155.775	160.375	F7
155.800	160.400	F8
155.825	160.425	F9
155.850	160.450	FA
155.875	160.475	FB
155.900	160.500	FC
155.925	160.525	FD
155.950	160.550	FE
155.975	160.575	FF
156.000	160.600	00

F <sub>TX</sub>	F <sub>RX</sub> Duplex	Code Hex
157.450	162.050	3A
157.475	162.075	3B
157.500	162.100	3C
157.525	162.125	3D
157.550	162.150	3E
157.575	162.175	3F
157.600	162.200	40
157.625	162.225	41
157.650	162.250	42
157.675	162.275	43
157.700	162.300	44
157.725	162.325	45
157.750	162.350	46
157.775	162.375	47
157.800	162.400	48
157.825	162.425	49
157.850	162.450	4A
157.875	162.475	4B
157.900	162.500	4C
157.925	162.525	4D
157.950	162.550	4E
157.975	162.575	4F
158.000	162.600	50

## Function Code for Private Channels

Table 1.2.2.



Conversion from binary to hexadecimal code.

### PROGRAMMING OF SELCALL NUMBER

Fill-out the table 1.3. and programme in the selcall number. Use the Operation Procedure for Service Mode.

Table 1.3.

Select Service Programme P5											
Selcall figure 4 3 2 1 0						Addr..	Selcall Number Codes				
						68					
						69					
						6A					
						6B					
						6C					

The selcall number code is to be set direct, one address for each figure.  
Only if there are two identical figure in succession, the latter of them is to be programmed as an A.

E.g. number 67730 is to be programmed as 67A30.

The selcall will as a standard from the factory be programmed with the number 72389.

### Disable of Selcall

See programming of Identity code No. 0.

### PROGRAMMING OF SELCALL ALARM VOLUME

Use the Operating Procedure for Service Mode.

Select Service Programme P5	
Addr.	Alarm Volume from 0 to F
6E	

The Selcall Alarm Volume can be programmed in 16 steps from 0 to F.

### PROGRAMMING OF MIN. VOLUME LEVEL

Use the Operating Procedure for Service Mode.

Select Service Programme P5	
Addr.	Min. volume from 0 to F
6D	

For inland programming where the volume must not go to a level of ZERO

### PROGRAMMING OF PREFERENCE CHANNEL FOR DW & SCANNER

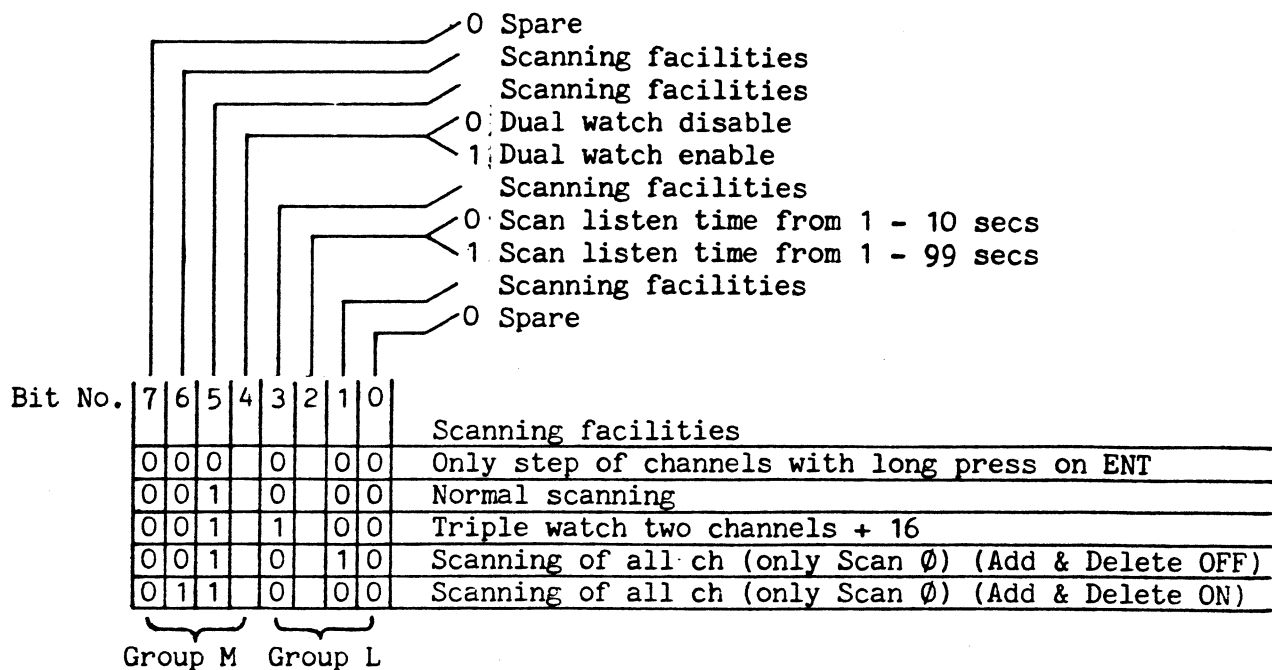
Use the Operating Procedure for Service Mode.

Select Service Programme P5.	
Addr.	Preference Ch. Hexadecimal
74	

The international channel number must be converted into hexadecimal notation



Service Programme P5; Addr. 73



Conversion from binary to hexadecimal.

## TEST PROGRAMME FOR RT2047

### CHECK OF COMMUNICATION TO RX-SYNTHESIZER

Select Service Programme P12

The microprocessor IC619 initiates and loads the RX-Synthesizer with channel 16.

Use the Strobe ST,J603/3 for triggering of your oscilloscope and you will be able to see on all the pins that they can go high and low.

### CHECK OF LATCHES TO SQUELCH AND VOLUME

Select Service Programme P13

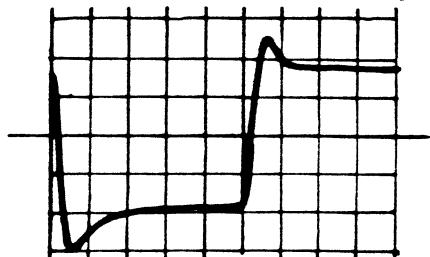
The microprocessor IC619 writes continuously the hex.-code 55 and AA in the latch IC604.

Use the strobe ST,PC3 for triggering of your oscilloscope and you will be able to see on all the output pins on IC604 that they go high and low.

### CHECK OF STEP RESPONSE ON RX-SYNTHESIZER

Select Service Programme P14

Connect the oscilloscope between L205 and L207.

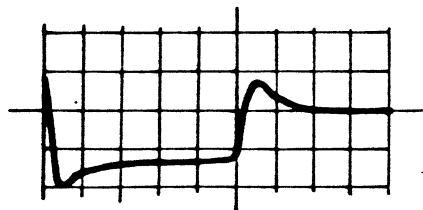


*1Volt pr. div.  
5m. sec. pr. div.*

### CHECK OF STEP RESPONSE ON TX-EXCITER

Select Service Programme P15

Connect the oscilloscope probe between L311 and R344.



*1Volt pr. div.  
5m. sec. pr. div.*

### ALL PINS ON MICROPROCESSOR IC619 TO INPUT PORTS

Select Service Programme P16

### WRITE/READ TEST OF PROM NO.0 IC609

Select Service Programme P17

The EEPROM goes through a write/read test and the display has following read-out.

Read out:

A0 for no error.

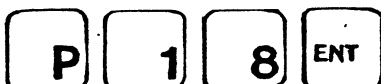
E0 for an error, will appear where the error is.

### COPY OF PROM NO. 1, IC610 to PROM NO.0 IC609

Select Service Programme P18

Insert the PROM which you want to copy in socket No.1 and the other one in socket No.0.

Press:



Read out:

A0 for OK

E0 for error

## PROGRAMMING OF QUICK SELECT CHANNEL

Use the Operating Procedure for Service Mode.

Select Service Programme P5	
Addr.	Quick Select ch. Hexadecimal
75	

The international channel number must be connected into hexadecimal notation

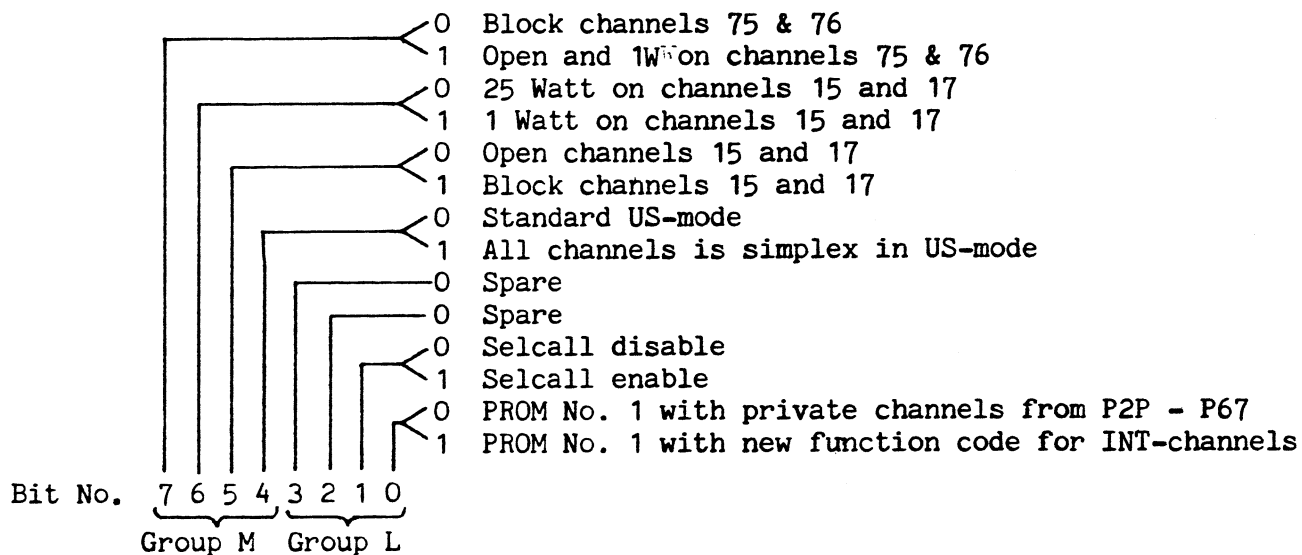
## PROGRAMMING OF IDENTITY CODES FROM No. 0-3.

Use the Operating Procedure for Service Mode.

Select Service Programme P5		
	Addr.	Identity code see code 0 to 3
Identity code No. 0	70	
Identity code No. 1	71	
Identity code No. 2	72	
Identity code No. 3	73	

### Identity Code No. 0

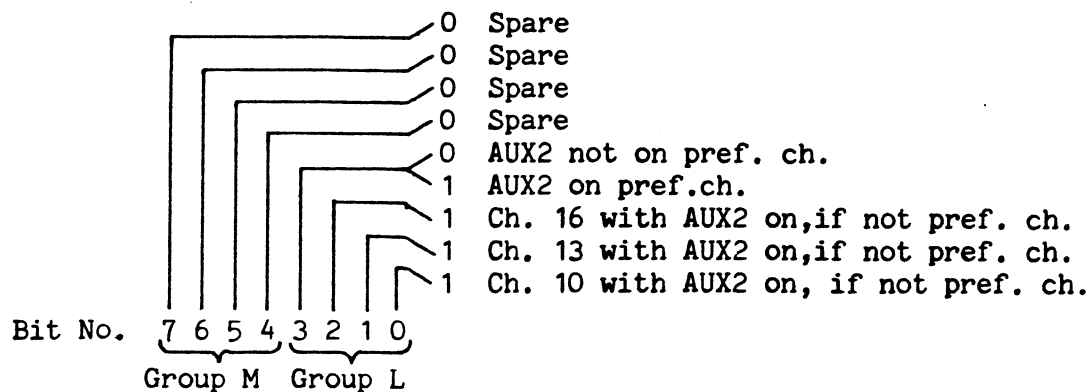
Service Programme P5; Addr. = 70



Conversion from binary to hexadecimal code.

### Identity Code No. 1

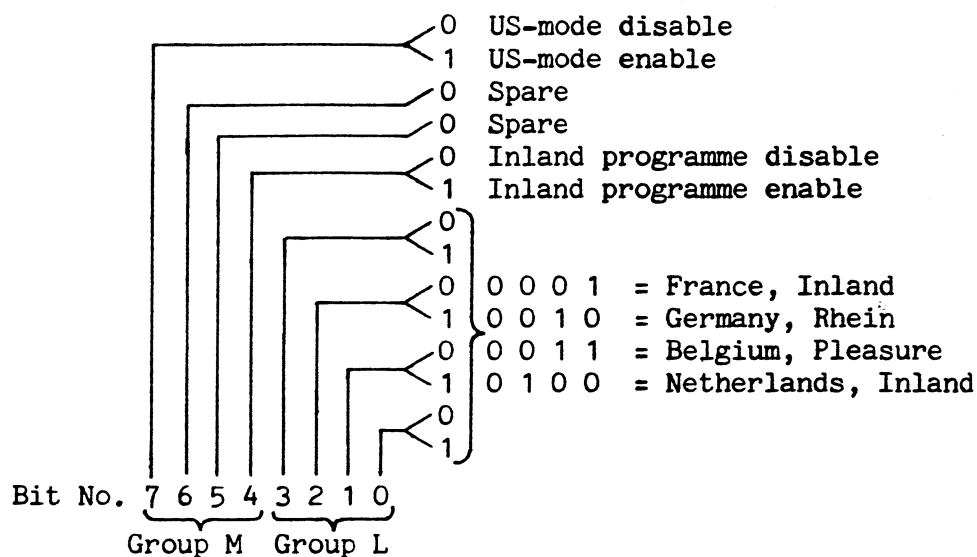
Service Programme P5; Addr. = 71



Conversion from binary to hexadecimal code.

### Identity Code No, 2

Service Programme P5; Addr. = 72



Conversion from binary to hexadecimal.

### SELCALL TEST TONE

Select Service Programme P19

Tone number 7 will be generated in the loudspeaker (set the volume to step 10).  
Connect a wire from the loudspeaker terminal to the point between C620 and R652.  
Connect an oscilloscope to pin 14 of IC614.

Adjust potentiometer R663 to max. output on the oscilloscope.

Note! It is not necessary to change your programmed selcall number.

### TEST OF DISPLAY

Select Service Programme P50

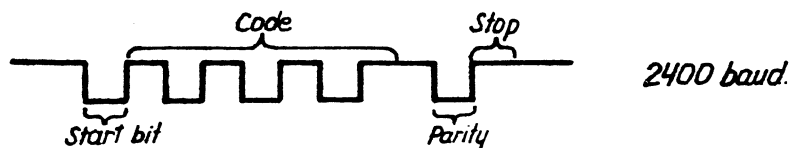
The display will read out all the figures and letters.

### TEST OF THE COMMUNICATION BETWEEN MICROPROCESSOR IC619 AND IC607

Select Service Programme P51

The communication is an serial RS232 interface.

The terminal IC706 will send



Read out:

A1 for OK.