Service Bulletin

DOCUMENT NUMBER: 17-00152
ISSUE NUMBER: 2
ISSUE DATE: March, 97

RELATED DOCUMENTS:
C/R 24971

Premature Termination of Fax/Data Links with 9323/9360 Transceiver

1. Symptom

During transmission of a Fax or Data file using the Codan 9001 or 9002 modems with either a 9323 or 9360 transceiver, the established link may terminate early, before the proper completion of transmission. This has been found to occur with transceivers with operating software at Version 2.32 or earlier.

2. Remedy

Upgrade the transceiver software.

The exact software and procedure will depend on the current software and the type of transceiver.

Contact Codan for details.

Head Office
Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
International +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
HF@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
International +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
International +61 8 9368 5282
Facsimile +61 8 9368 5283

Service Bulletin

DOCUMENT NUMBER: 17-00156
ISSUE NUMBER: 6
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RELATED DOCUMENTS:
C/R 25271
IB-00001
17-00167

9323/9360/9780/9390 Software Compatibility Summary

1. Scope

Software changes can create incompatibilities that can have varying effects on the operation of equipment. This Service Bulletin provides a summary of software compatibilities for 9323, 9360, 9780 and 9390 transceivers.

2. Control head and front panel compatibility with transceiver software Phase 1

Control Head/ front panel ➔ Transceiver ⬇	1.00 - 1.10	1.11 - 1.12	1.13	1.14
1.00 - 1.12		X	X	X
1.13 - 1.14	X		X	X
1.15	X	X		X
1.16	X	X	X	

Control head and front panel compatibility for different Phase software

Control Head/ front panel ➔ Transceiver ⬇	1.xx	2.xx	3.xx	4.xx
1.xx	REFER ABOVE TABLE	X	X	X
2.xx	X		X	X
3.xx	X	X		X
4.xx	X	X	REF. NOTE	

Head Office
Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
International +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
HF@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
International +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
International +61 8 9368 5282
Facsimile +61 8 9368 5283

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Note. Version 3.xx in the control head/front panel is compatible with Version 4.xx in the transceiver except that it does not support the additional features added in version 4.xx.

3. Compatibility with XP programming software

XP ➔ Transceiver ⬇	1.xx	2.xx	3.00, 3.01	3.02 - 4.01	5.xx
1.xx	X	X			
2.xx	X	X			
3.xx	X	X	X		
4.xx	X	X	X		

4. Equipment/Software/Version details

Equipment type	Software number	Versions
9323	90-20523-001 90-20523-005	1.xx ➔ 3.xx 4.xx
9360	90-20523-002 90-20523-005	1.xx ➔ 3.xx 4.xx
9780	90-20523-005	4.xx
9390	90-20523-003 90-20523-004	3.xx 4.xx
Control head/front panel	90-20524-001 90-20524-002	1.xx ➔ 3.xx 4.xx

Notes

1. User configured data (e.g. scan tables, Selcall groups etc.) will be lost when upgrading from V1.00 to V1.10 or when upgrading from V2.10 to any subsequent versions.
2. When upgrading software versions, some hardware modifications may be required. Refer Information Bulletin IB-00001.
3. There is an incompatibility in the GPS data formats between software prior to version 3.01 and subsequent versions. Radios with software prior to version 3.01 require their privacy key to be set with '999999' and their Self ID to be longer than 4 digits to enable them to transfer GPS data to radios with subsequent version software.

5. 9323/9360/9780/9390 - 8570/8571 compatibility

Where Version 4.xx 9323/9360/9780/9390 software is used in a 8570/8571 Remote Control system, the 8570/8571 *must* have version 5.10 or later to achieve *full* compatibility.

6. 9323/9360/9780/9390 - Internav compatibility

Internav software version 2.7 is compatible with all releases of 9323/9360/9780/9390 software. It is recommended however, that the latest version 9323/9360/9780/9390 software be used where this is possible.

7. ALE telcall support with the JPS RTU-282 Radio Telephone Interconnect.

For ALE telcall compatibility with the JPS RTU-282 Radio Telephone Interconnect, use version 4.32 (or later) of the 9323/9360/9780 software and version 4.31 (or later) of the front panel/control head.

Service Bulletin

DOCUMENT NUMBER:	17-00158	RELATED DOCUMENTS:	
ISSUE NUMBER:	2	C/R 24972	
ISSUE DATE:	March, 97		

9323/9360/9390 Loss of Channels, Scan and Selcall parameters during power up OR when used with 9300 ALE controller.

1. Scope.

This Service Bulletin announces the release of revised software which addresses three separate identified problems involving the loss of channel and configuration information. The software adds a high level of validity checking of requests to clear or default contents of both the serial and parallel EEPROM devices in the transceiver. This has been added as a result of several reports of transceivers having lost channels and configuration information dating back to transceivers delivered as early as July 1995.

It is recommended that users of ALE systems upgrade their software. Non ALE users should upgrade if the symptoms occur or if there is reason to suspect they may occur.

Transceivers dispatched from 9 October 1996 will already have revised software fitted.

2. Symptoms.

The transceiver will lose all Channel information*, Scan Tables, and/or Selcall Parameters when turning the transceiver ON or when the transceiver resets as a result of low battery voltage. In ALE installations, the loss of information can also occur if the 9300 ALE controller is being initialised by the transceiver whilst a Scan Table is being edited.

* 9390 Marine transceivers will NOT lose ITU frequencies as these are not stored in EEPROM.

3. Remedy.

Upgrade the transceiver software.

The exact software and procedure will depend on the current software and the type of transceiver.

Contact Codan for details.

Head Office
Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
International +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
HF@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
International +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
International +61 8 9368 5282
Facsimile +61 8 9368 5283

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Service Bulletin

DOCUMENT NUMBER:	17-00167	RELATED DOCUMENTS:	
ISSUE NUMBER:	1		C/R
ISSUE DATE:	July, 97		08-05322
			04-03135
			12-05083

9323/9360/9390 Series - Receiver Exciter

1. Scope

Obsolescence of the Phase Locked Loop (PLL) device, NJ8822 and the Mixer device, SL6440 by the manufacturer has resulted in Codan releasing a revised Receiver Exciter assembly. In addition, new software has been released to function with the new Receiver Exciter.

9323/9360/9390 series transceivers with serial number prefix 'E' are fitted with the new assembly and software.

2. Compatibility

The new Receiver Exciter assembly and the new software are compatible with all previous builds of the affected transceivers. The new software may also be used with the old Receiver Exciter assembly (08-04962-001 or 002) as it incorporates an Auto-detect function to identify the assembly being used. Some hardware changes may be necessary. Refer to Information Bulletin IB-00001

The new Receiver Exciter assembly will *not* function with the old software.

3. Part numbers

The part numbers of the new Receiver Exciter assembly are

Receiver Exciter assembly 08-05322-001 or 002

Circuit diagram 04-03135

Software numbers have not altered, only their issue status has been raised.

Issue 4.00 software or earlier are compatible with the old Receiver Exciter assembly. Issue 4.20 or later are compatible with both versions of the Receiver Exciter assembly.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
International +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
HF@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
International +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
International +61 8 9368 5282
Facsimile +61 8 9368 5283

4. Spares

Stocks of NJ8822 and SL6440 are held to supply spares for the older Receiver Exciter assembly. Conversely the new Receiver Exciter assembly may be substituted along with the new software.

5. Summary

Assembly Number	Software Issue	Compatibility
08-04962-001 or 002 (Old)	4.00 or earlier	YES
	4.10 or later	YES *
08-05322-001 or 002 (New)	4.10 or earlier	NO
	4.20 or later	YES

All YES combinations are compatible with all builds of 9323/9360/9390 transceivers.

* Some hardware changes may be necessary. Refer to Information Bulletin IB-00001

Service Bulletin

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ISSUE NUMBER: 1
ISSUE DATE: August, 97

RELATED DOCUMENTS:
C/R

9323/9360/9780 Software version 4.30

1. Introduction

9323/9360/9780 software 90-20523-005 version 4.30 has been released to correct the following problems.

2. Problems corrected

2.1 Transceiver displays 'Unknown Error'

Present in versions 4.10 and 4.20 only.

The transceiver occasionally displays the message 'Unknown Error' when it is powered up. The message appears for only a few seconds. This problem mainly occurs in vehicle installations and is thought to be related to low supply voltage. The transceiver's operation is in no way affected by this message however it may be disconcerting to the operator.

2.2 9001 or 9002 modem causes channel change

Present in all previous versions.

When the transceiver is used with a 9001 or 9002 data modem and an ALE controller, and is not ALE scanning, the transceiver will sometimes switch to a channel specified by the modem. This fault can also result in the transceiver scanning incorrect channels if the modem issues this command during Selcall scan in an ALE data system.

2.3 Push-To-Talk switching time too long with ARQ modem

Present in all previous versions.

When using the transceiver with an ARQ modem on a two frequency simplex channel, the Push-To-Talk (PTT) switching time is too long. This switching time has been improved from over 100 ms to typically 60 ms or less. Channels using the same transmit/receive frequency are not affected.

Note: When using an 8580 and 9102 with two frequency simplex channels, a delay of 70 ms should be set in 9102.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
radcom@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

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2.4 Failure to establish data link with HAL DSP-4100 ARQ modem

Present in all previous versions.

When a HAL DSP-4100 data modem initiates a data link to another station, the transceiver attempts to start an auto-tuning sequence. This results in a failure to establish the data link.

2.5 Auto tune sequence with ARQ modem interrupted

Present in all previous versions.

When an ARQ modem signals to the transceiver that it has detected an incoming call, the auto-tune process is interrupted by the modem's PTT command, thus aborting the tune cycle.

2.6 Transceiver resets when used with CICS

Present in versions 4.00, 4.10, and 4.20.

If an error is made in entering a CICS (Codan Interface Command Set) call command with two or more arguments (eg "TELCALL =..") and the second argument is invalid, the transceiver will sometimes reset.

2.7 Telephone directory #9 displays rubbish

Present in versions 4.00, 4.10, and 4.20.

The text for telephone directory number 9 can reveal random characters until cleared.

3. Compatibility

Refer to Service Bulletin 17-00156 for full compatibility details.

This software is compatible with CICS version 2.10 and fully backward compatible with version 2.00.

Service Bulletin

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ISSUE NUMBER: 2
ISSUE DATE: February, '98

RELATED DOCUMENTS:
C/R 25243
17-00180

9323/9360/9390/9680/9780 lock up

1. Scope

9323/9360/9390/9780 transceivers in mobile installations are prone to lock up problems if the radio is on during engine cranking.

2. Symptom

Two symptoms have been identified:

- the display on the front panel/control head is blanked although the radio continues to function normally
- the radio fails to respond to any button presses although the display remains

3. Corrective action

Circuit modifications have occurred to overcome this problem. The following table identifies the first transceivers fitted with the modified circuits. Section 4 details the steps required to retrospectively fit the revised circuits.

Transceiver type	Serial Number
9323	E0652
9323-H	E0110
9360	E1426
9360-C	E0100
9360-V	A0269
9390	E0274
9680	E0300
9780	B0556

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Email:
radcom@codan.com.au

Worldwide Web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

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4. Modification

The modification is in two parts. Part one describes the steps required to modify the microprocessor reset circuit in the transceiver. Part two addresses the front panel and control head circuits.

Parts required

1 x XD-01233-500 reset IC (Integrated Circuit) and 1 x 47 kΩ CR25, 0.33 watt resistor (Codan part number 40-44700-020) shall be required for each of the following (minimum of two):

- the main transceiver
- at each control point (front panel or control head)

Tools required

- Pozidrive screwdriver (1 point)
- Desoldering tool
- 60/40 Tin/Lead resin core solder
- Soldering iron
- Side cutters
- Scalpel or sharp blade

The following tools may also be useful:

- Tweezers or small nose pliers
- Surface Mount Device (SMD) desoldering tool

4.1 Part one

This procedure describes the modification to the **transceiver**. The procedure covers two possible circuit configurations.

Procedure

- ❑ Remove the transceiver (including the control head where applicable) from the installation.
- ❑ Remove the two screws securing the bottom cover and remove the cover.
- ❑ Locate the Microprocessor and Audio Assembly PCB (Printed Circuit Board), 08-04966-001.
- ❑ Disconnect all the ribbon cables from the PCB taking careful note of the orientation of the connectors on P103 and P302.
- ❑ Remove the eight screws securing the PCB.
- ❑ Withdraw the PCB from the chassis.
- ❑ Locate and remove R124, R125, R126, and C114. Refer to Figures 1 and 2.

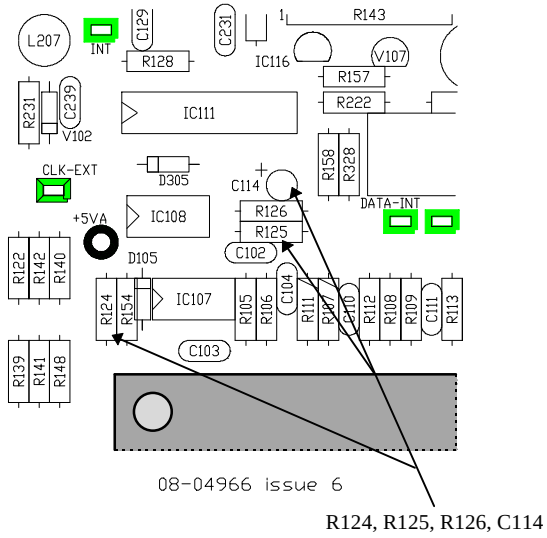


Figure 1: Location of components

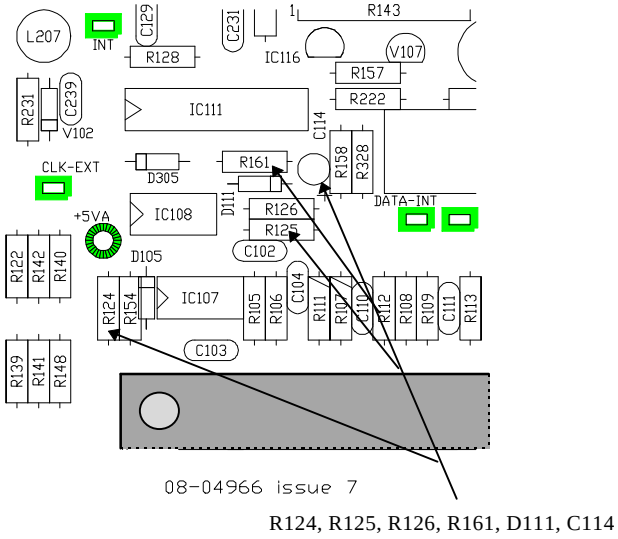


Figure 2: Location of components

- ❑ Remove R161 and D111 if fitted. Refer to Figures 1 and 2.
- ❑ Locate IC107 (LM358). Refer to Figure 3.

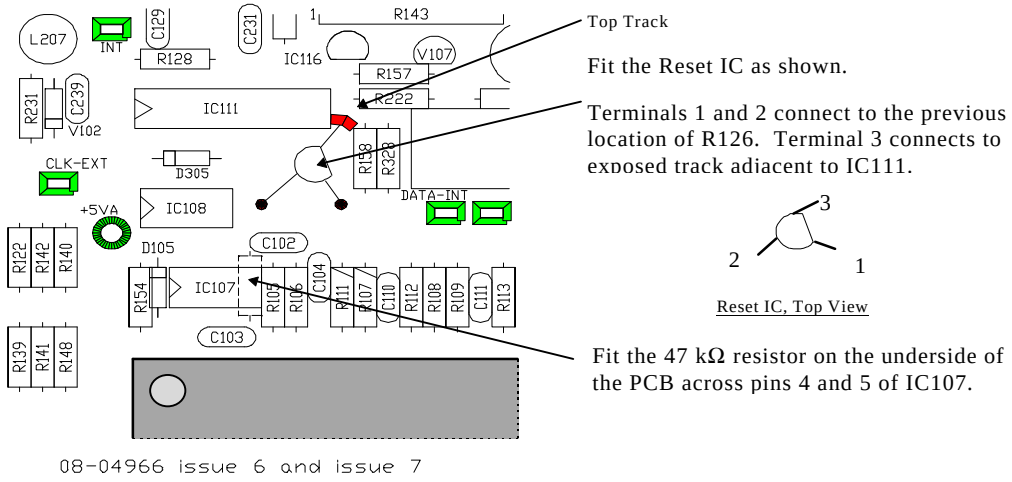


Figure 3: Location of IC and 47 kΩ resistor

- ❑ Fit and solder the 47 kΩ resistor across pins 4 and 5 of IC107. This is best done on the underside. Refer to Figure 3.
- ❑ Locate the track on the component side of the PCB adjacent to IC111. Refer to Figure 3.
- ❑ Using the scalpel or blade, carefully scrape the green masking from the track so that approximately 2 mm of bare copper is exposed.
- ❑ Tin the exposed copper.
- ❑ Fit the Reset IC as shown in Figure 3.
- ❑ Fit and secure the PCB into the chassis with the eight screws.
- ❑ Replace all ribbon cables onto their corresponding connectors paying particular attention to the orientation of P103 and P302.

4.2 Part two

This procedure describes the modification to the **front panel** and/or **control head**. The procedure covers two possible circuit configurations.

Refer to Service Bulletin 17-00180 as further work may be required.

- ❑ If you want to modify a front panel, continue at *Procedure: front panel*.

  Otherwise, continue at *Procedure: control head*.

Procedure: front panel

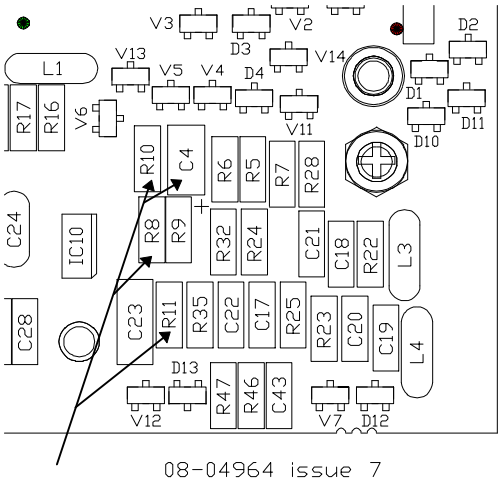
- ❑ Disconnect the cable connecting the front panel to the Microprocessor and Audio PCB.
- ❑ Remove the four screws securing the front panel to the chassis.
- ❑ Withdraw the entire front panel from the chassis.
- ❑ Remove the two screws securing the shield covering the front panel PCB.
- ❑ Remove the shield.
- ❑ Continue at *Procedure: modification*.

Procedure: control head

- ❑ Remove the two screws securing the back panel and remove the panel.
- ❑ Carefully disconnect the control interface cable (P4) and the extension speaker plug (if fitted).

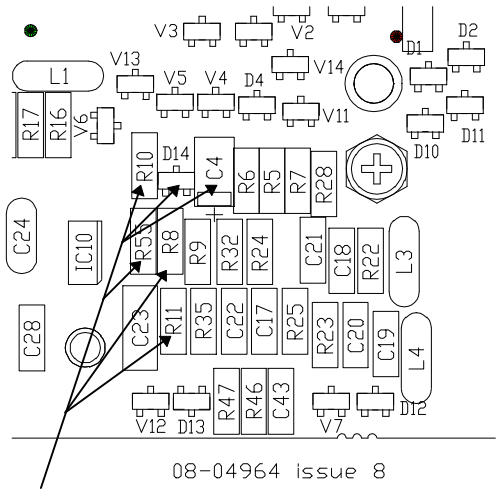
Procedure: modification

- ❑ Locate R8, R10, R11, and C4. Refer to Figures 4 and 5.



R8, R10, R11, C4

Figure 4: Location of components

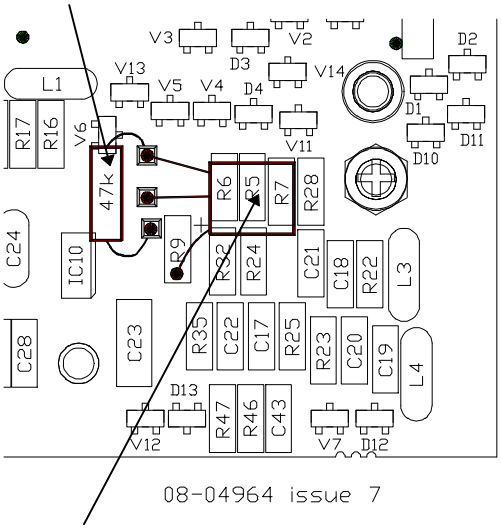


R8, R10, R11, R55, D14, C4

Figure 5: Location of components

- ❑ Using a pair of tweezers (or small nose pliers) and soldering iron, or a SMD desoldering tool, remove R8, R10, R11, and C4 from the PCB.
- ❑ Remove R55 and D14 if fitted. Refer to Figures 4 and 5.
- ❑ Fit and solder the 47 kΩ resistor as shown in Figure 6 or 7.

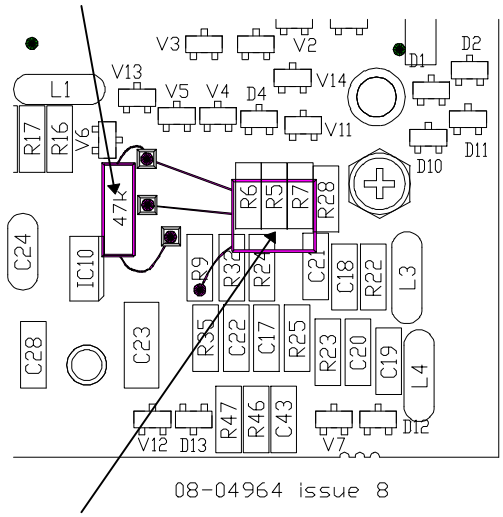
Fit 47 kΩ resistor between R8 and R10 pads as shown



Fit Reset IC to, R10 pads and to R9—**Flat side UP**

Figure 6: Location of IC and 47 kΩ resistor

Fit 47 kΩ resistor between R8 and R10 pads as shown



Fit Reset IC to, R10 pads and to R9—**Flat side UP**

Figure 7: Location of IC and 47 kΩ resistor

- ❑ Fit and solder the Reset IC as shown in Figure 6 or 7.

Reassembly

- ❑ Reassembly of the front panel is the reverse of the steps in *Procedure: front panel*.
- ❑ Reassembly of the control head is the reverse of the steps in *Procedure: control head*.
- ❑ Refit the bottom cover to the transceiver and secure with the two screws.
- ❑ Reinstall the transceiver (including the control head where applicable) to the installation.

Service Bulletin

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RELATED DOCUMENTS:
C/R

VCO1 Unlock in 9323 & 9360 series transceivers

1. Scope

9323 and 9360 transceivers used in close proximity to VHF/UHF transmitters may suffer VCO1 unlock errors.

The modification described in the Service Bulletin is incorporated into 9323 and 9360 transceivers dispatched from February 1996.

2. Symptom

The 9323/9360 will display the error message 'Unlock error VCO1' accompanied by two beeps when a VHF or UHF transmitter located up to approximately 4 metres away is keyed.

3. Cause

The unlock error is caused by the RF energy from the VHF/UHF transmitter disturbing the normal operation of the VCO1 control circuit.

4. Remedy

The following modification should be performed if:

- the radio has exhibited the symptom under the conditions described
- there is a possibility that the conditions described may be encountered

5. Procedure

5.1 Parts required

1 x BF494 NPN transistor (Codan Part Number BF494)

1 x 1 kΩ, CR25, 0.33 watt resistor (Codan Part Number 40-31000-020)

1 x 1 nF, ceramic capacitor (Codan Part Number 46-31000-200)

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Email:
radcom@codan.com.au

Worldwide Web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

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5.2 Tools required

- Pozidrive screwdriver (1 point)
- Soldering iron
- 60/40 Tin/Lead resin core solder
- Side cutters

The following tools may also be useful.

- Small nose pliers
- Desoldering tool

5.3 Procedure

- ❑ Remove the transceiver from the installation.
- ❑ Remove the two screws securing the top cover.
- ❑ Locate the Receiver Exciter Printed Circuit Board (PCB), 08-04962.
- ❑ Disconnect all the connectors from the PCB.
- ❑ Remove the seven screws securing the PCB.
- ❑ Withdraw the PCB from the chassis.
- ❑ Locate and remove C103 from the PCB. Refer to Figure 1.

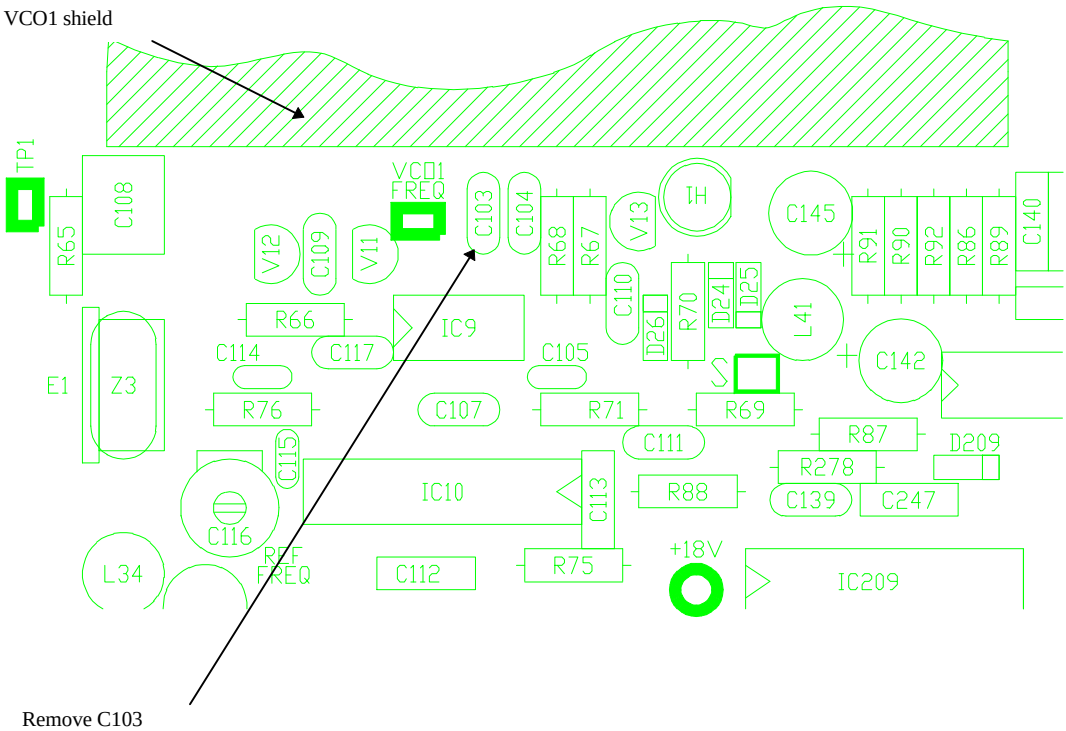

Figure 1. Location of C103

- ❑ Trim and solder one lead of the 1 kΩ resistor to IC9 pin 4. Refer to Figure 2.

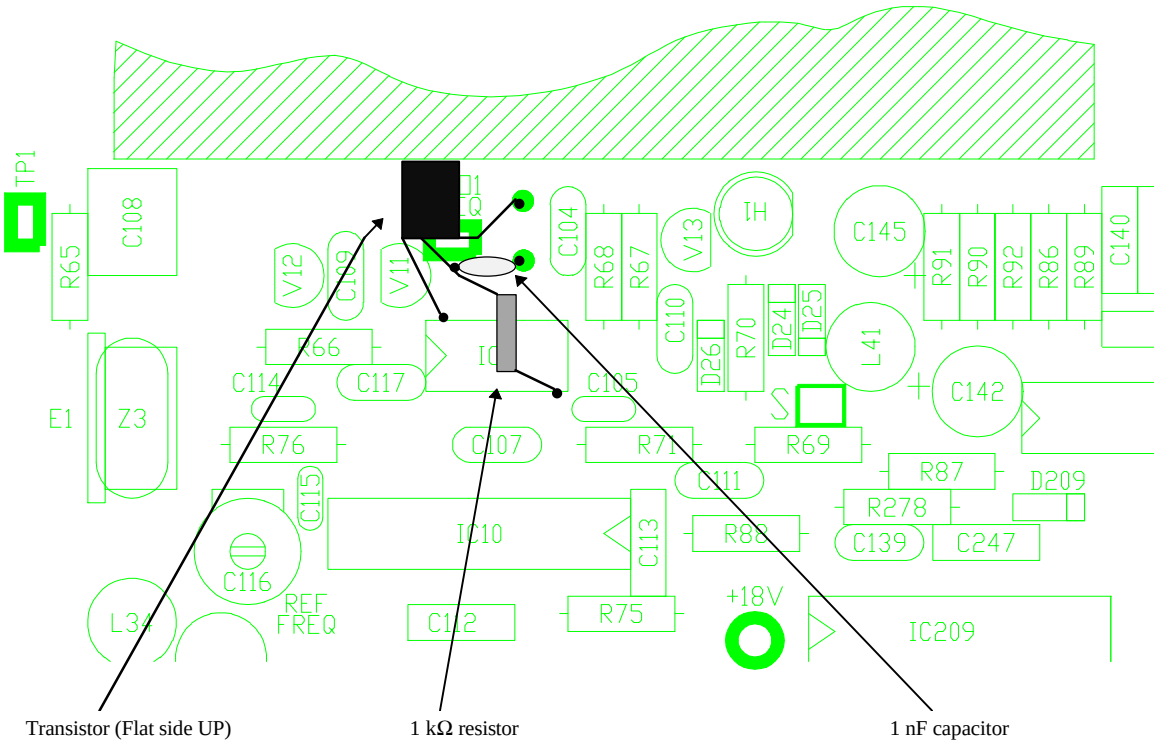

Figure 2 Diagram of modification

- ❑ Fit one lead of the capacitor into the bottom hole for C103. Trim and solder.
- ❑ Solder the remaining leads of the capacitor and the resistor together.
- ❑ With the transistor flat side up, solder the centre lead to the leads of the capacitor and resistor. Trim any excess lead.
- ❑ Trim and solder the Collector of the transistor to IC9 pin 8.
- ❑ Fit the Base of the transistor into the upper most hole for C103. Trim and solder.
- ❑ Ensure there is no possibility of a short circuit occurring particularly to the test point labelled VCO1 FREQ.
- ❑ Secure the transistor with some silicon sealant if necessary.
- ❑ Secure the PCB into the chassis with the seven screws.
- ❑ Replace all connectors.
- ❑ Refit and secure the top cover.
- ❑ Return the transceiver to the installation.

Service Bulletin

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ISSUE NUMBER: 1
ISSUE DATE: January, '98

RELATED DOCUMENTS:
C/R

9323/9360/9390/9680/9780 Software version 4.31

1. Introduction

9323/9360/9780 software 90-20523-005 and 9390/9680 software 90-20523-004 version 4.31 have been released.

2. Problems corrected

2.1 Failure of ALE link message to appear on C752 computer when link established

Present in all previous releases of version 4.xx.

When used in a single site Remote Control system with ALE and a C752 adaptor connected to the 8570, the ALE link message would occasionally not appear on the C752 Computer Interface when a link was established.

2.2 False 'Tune failed' report when dB Volts display enabled

Present in all previous releases of version 4.xx.

When the dB Volts display is enabled, the transceiver often reports **Tune failed** following an antenna tuning operation.

2.3 PA cooling fan would not operate when used in a polling application

Present in all previous versions.

When used in a polling application such as GPS tracking with Internav software, the cooling fan for the PA would not switch on despite the PA getting hot.

2.4 Incorrect response when polling a transceiver with a GPS receiver

Present in all previous versions.

If the GPS receiver sent an invalid GPS position to the transceiver before the polling sequence, the response was sometimes **No GPS unit connected** instead of **Unknown position**.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
radcom@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

2.5 Incorrect AM transmissions when AM selected on a USB/LSB channel

Present in version 4.30 of 90-20523-005.

If a channel with upper and lower sideband was selected in a transceiver with AM option enabled, selecting AM resulted in incorrect AM transmissions.

2.6 Operator able to program channel 1 in an 8570/9390 combination

Present in all previous versions of 90-20523-004.

The 9390 transceiver allowed an operator to program channel 1 (emergency frequency 2182 kHz) from the 8570 Remote Control Console. This can result in the wrong frequency being used on the emergency channel..

3. Compatibility

Refer to Service Bulletin 17-00156 for full compatibility details.

This software is compatible with CICS version 2.10 and fully backward compatible with version 2.00.

Service Bulletin

DOCUMENT NUMBER: 17-00182
ISSUE NUMBER: 1
ISSUE DATE: February, '98

RELATED DOCUMENTS:
C/R

9323/9360/9780 Software version 4.32

1. Introduction

9323/9360/9780 software 90-20523-005 version 4.32 has been released.

2. Problems corrected

2.1 Incoming ALE link unable to be established prior to data call

Present in version 4.31.

In a system comprising a transceiver, 9001/2 modem and an 8570 Remote Control Console, the system would not allow an incoming ALE link to be established prior to a data call. This problem means that V4.31 is not suitable for this system.

2.2 Manual tune sequence results in 'Tune Failed' message

Present in all previous releases of version 4.xx.

The transceiver would respond with a **Tune Failed** message when a manual tune was performed despite proof that the antenna had tuned correctly. This would only occur on certain frequencies and varied between installations. Auto-tune sequences were not affected.

3. Compatibility

Refer to Service Bulletin 17-00156 for full compatibility details.

This software is compatible with CICS version 2.10 and fully backward compatible with version 2.00.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
radcom@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

9323/9360/9780 HF SSB Transceiver software upgrade

SERVICE BULLETIN

Introduction

This service bulletin affects users of a single site, remote controlled system with software versions 3.08 to 4.32 in the transceiver. The affected system will include either a 9001 or 9002 modem, but no Automatic Link Establishment (ALE) controller.

Symptom

The system will not allow the modem to PTT in response to an incoming data call if the system is scanning at the time of the call.

Action

Users of a single site, remote controlled system with 9001/9002 (no ALE) and software versions 3.08 to 4.32 inclusive must upgrade their transceiver software to version 4.33.

Finding the software version of your transceiver using the remote control console

❑ Press **Function**, then enter the function code **10** within two seconds followed by **Enter**.

The display on the remote control console will show the software version of the transceiver.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Email
radcom@codan.com.au

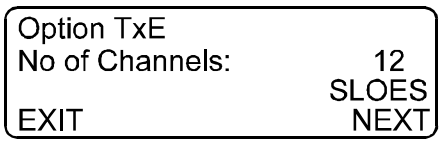
Worldwide Web
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Finding the software version of your transceiver using the transceiver

❑ Press **Mode** until you see a display that is similar to the following.



❑ Rotate **Select** or press **F2/NEXT** until you see the software version for the transceiver.

Compatibility

Software version 4.33 supports Computer Interface Command System (CICS) version 2.10. It is fully backward compatible with CICS version 2.00.

For further information on software compatibility, see Service Bulletin “9323/9360/9780/9390 Software Compatibility Summary”, Codan part number 17–00156.

9323/9360/9780 software upgrade

SERVICE BULLETIN

Introduction

This service bulletin affects the users of a split–site, remote controlled system with software versions 4.00 to 4.33. The affected system may include an IPC–500 telephone interconnect unit, or an Automatic Link Establishment (ALE) controller.

Symptoms

There are a variety of symptoms that may indicate the requirement for a software upgrade. These symptoms include:

- the transceiver possibly displaying an invalid position for a period of time after the transceiver has been switched on
- a scanning split–site, remote controlled system with an attached IPC unit sending revertive beeps on the wrong channel in response to a selcall
- hearing two sets of revertive beeps when a selcall is sent to a split–site, remote controlled system
- returning calls stored in call memory on the wrong sideband, if those calls have been received on a channel that has optional (U/L) sideband available
- the ALE controller “locking up” if the user attempts to make an ALE call and the ALE scan table is not selected

Action

Users of a split–site, remote controlled system with any of the following equipment and software must upgrade to software version 4.34:

- an IPC–500 telephone interconnect unit and software versions 4.00 to 4.33
- an ALE controller and software versions 4.31 to 4.33

The remote control software must also be upgraded to version 5.12 or later.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Codan Comunicaciones Ltda.
Av. 11 de Septiembre 2155, Of. 701/A
Edificio Panorámico
Providencia
Santiago, CHILE
Teléfono +56 2 373 9577
Facsímile +56 2 373 9579

Email: radcom@codan.com.au **Worldwide Web:** www.codan.com.au

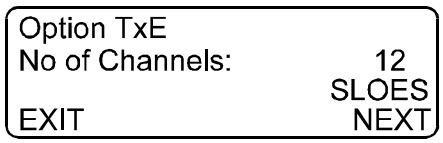
Finding the software version of your transceiver using the remote control console

❑ Press **Function**, then enter the function code **10** within two seconds followed by **Enter**.

The display on the remote control console will show the software version of the transceiver.

Finding the software version of your transceiver using the transceiver

❑ Press **Mode** until you see a display that is similar to the following.



❑ Rotate **Select** or press **F2**/**NEXT** until you see the software version for the transceiver.

Compatibility

Software version 4.34 supports Computer Interface Command Set (CICS) version 2.11. It is fully backward compatible with CICS version 2.00. This software version should be used with remote control software version 5.10 or later. It is possible to use an earlier version of the remote control software, but a large amount of the Computer Interface Command Set (CICS) functionality will be lost.

For further information on software compatibility, see Service Bulletin “9323/9360/9780/9390 Software Compatibility Summary”, Codan part number 17–00156.

Introduction of the surface mount Microprocessor and Audio PCB in 9323/9360/9390/9680/9780 transceivers

CODAN

SERVICE BULLETIN

Introduction

This Service Bulletin affects users of the 9323/9360/9390/ 9680/9780 transceivers. The Microprocessor and Audio printed circuit board (PCB) has been replaced with a surface mount PCB (see Table 1). The new Microprocessor and Audio PCB increases the reliability of the transceiver, and meets the changing availability of some components.

Table 1: Comparison of new and old Microprocessor and Audio PCB

PCB	Part number	Type
New Microprocessor and Audio PCB	08–05739–001	Surface mount
Old Microprocessor and Audio PCB	08–04966–001	Thru–hole mount

Details

The serial number prefixes of the 9323/9360/9390/9680/9780 transceivers that have been fitted with the new Microprocessor and Audio PCB have been incremented by one letter. The serial number prefixes of the transceivers fitted with the old and new PCBs are listed in Table 2.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton, South Australia 5074
AUSTRALIA
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
UNITED KINGDOM
Telephone +44 1252 717 272
Facsimile +44 1252 717 337

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth, Western Australia 6151
AUSTRALIA
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Codan Pty Ltd
10660 Wakeman Ct
Manassas, VA 20110
USA
Telephone +1 703 361 2721
Facsimile +1 703 361 3812

Email: radcom@codan.com.au **Worldwide Web:** www.codan.com.au

Table 2: Serial number prefixes of the transceivers fitted with the old and new versions of the Microprocessor and Audio PCB

Type of transceiver	Old serial number prefix	New serial number prefix
9323	E	F
9323 H	E	F
9323 low power	P	Q
9360 C	E	F
9360 low power	P	Q
9360 MR (Arabic)	A	B
9360 MR (Cyrillic Russian)	A	B
9360 MR (English)	A	B
9360 V	A	B
9360–30	E	F
9390	E	F
9390 H	B	C
9680	E	F
9780	B	C
9780 low power	P	Q

Software compatibility

Transceivers using software versions 3.00 or later

The new Microprocessor and Audio PCB (part number 08–05739–001) can be used as a direct replacement in all transceivers using software versions 3.00 or later.

Transceivers using software versions earlier than version 3.00

To fit the Microprocessor and Audio PCB in transceivers using software versions earlier than version 3.00, complete the following.

- ❑ Upgrade the software to at least version 3.00.
- ❑ Modify the PCB of the control panel, according to 17–60056.
- ❑ Fit the new Microprocessor and Audio PCB (part number 08–05739–001).

Repair issues

The use of the surface mount Microprocessor and Audio PCB means that this PCB can no longer be repaired in the field and should be considered for module level repairs only.

The circuitry of the microprocessor contained within the metal shield remains unchanged with standard thru–hole–mounted components.

Introduction of new surface mount PCBs in 9323/9360/9390/9680/9780 Transceivers

SERVICE BULLETIN

CODAN

Introduction

This Service Bulletin affects users of the 9323/9360/9390/ 9680/9780 Transceivers. The thru-hole printed circuit boards (PCBs) of the Receiver Exciter and the Power Amplifier assemblies have been replaced with surface mount PCBs (see Table 1). The new PCBs increase the reliability of the transceiver, and meet the changing availability of some components.

Table 1: Comparison of new and old PCBs/assemblies

PCB/assembly	Part number	Circuit diagram[2]
New Receiver Exciter PCB	08-05798-001	04-03349
Old Receiver Exciter PCB	08-05322-001	04-03135
New 26.5 MHz Power Amplifier Assembly	08-05749-001	04-03269
Interim 26.5 MHz Power Amplifier Assembly[1]	08-05872-001	04-03372
Old 26.5 MHz Power Amplifier Assembly	08-04963-001	04-02973
New 30 MHz Power Amplifier Assembly	08-05749-002	04-03268
Interim 30 MHz Power Amplifier Assembly[1]	08-05872-002	04-03373
Old 30 MHz Power Amplifier Assembly	08-05237-001	04-03096
New 50 W Power Amplifier Assembly	08-05749-003	04-03360
Old 50 W Power Amplifier Assembly	08-04963-002	04-03177

1 The interim Power Amplifier assemblies were fitted to transceivers to overcome component supply problems.

2 The circuit diagrams are available from Codan if required.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton, South Australia 5074
AUSTRALIA
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
UNITED KINGDOM
Telephone +44 1252 717 272
Facsimile +44 1252 717 337

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth, Western Australia 6151
AUSTRALIA
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Codan Pty Ltd
10660 Wakeman Ct
Manassas, VA 20110
USA
Telephone +1 703 361 2721
Facsimile +1 703 361 3812

Email: radcom@codan.com.au **Worldwide Web:** www.codan.com.au

Details

The 9323/9360/9390/9680/9780 Transceivers that have been fitted with the new PCBs have a serial number prefix of J or greater. The serial number prefixes of the transceivers fitted with the old and new PCBs are listed in Table 2.

During the transition period from thru-hole to surface mount PCBs, some transceivers may have been manufactured using both thru-hole and surface mount PCBs.

Table 2: Serial number prefixes of the transceivers fitted with the old and new versions of the PCBs

Type of transceiver	Old serial number prefix	Interim serial number prefix	New serial number prefix
9323	F	K	J
9323 H	F	K	J
9323 low power	Q	K	J
9360 C	F	K	J
9360 low power	Q	K	J
9360 MR (Arabic)	B	K	J
9360 MR (Cyrillic Russian)	B	K	J
9360 V	B	K	J
9360-30	F	K	J
9390	F	K	J
9390 H	C	K	J
9680	F	K	J
9780	C	K	J
9780 low power	Q	K	J

Software compatibility

Receiver Exciter PCB

Transceivers using software versions earlier than version 4.20

To fit the new Receiver Exciter PCB in transceivers using software versions earlier than version 4.20, complete the following:

- ❑ Upgrade the software to at least version 4.20 (for details see Information Bulletin IB-00001 and the Service Bulletin *9323/9360/9390 Series—Receiver Exciter* (Codan part number 17-00167)).
- ❑ Modify the PCB of the control panel, according to the Application Note *9323 software upgrade* (Codan part number 17-60056).
- ❑ Fit the new Receiver Exciter PCB.

Transceivers using software versions 4.20 or later

The new Receiver Exciter PCB can be used as a direct replacement in all transceivers using software versions 4.20 or later.

Power Amplifier Assembly PCBs

The new Power Amplifier Assembly PCBs can be used as a direct replacement in all transceivers.

Repair issues

The surface mount PCBs cannot be repaired in the field and should be considered for module level repairs only.

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SERVICE BULLETIN

Replacement of power transistors SRFH1008 and MRF455

Introduction

This service bulletin affects the users of transceivers with power amplifier (PA) output transistors SRFH1008 or MRF455. There are two transistors (matching pair) on each PA PCB. The following transceivers are affected:

- 85xx series transceivers, including variants 9313 and 9480
- 9105 (X2) transceiver
- 9323, 9360, 9390, 9780 transceivers including low power (LP) models

The transistors SRFH1008 and MRF455 are obsolete. The replacement transistor is MS1253-CDN.

Symptoms

If the modifications described below are not made when replacing the transistors, the PAs continue to operate but they may display the following symptoms:

- some spurious oscillations on the output
- the intermodulation distortion (IMD) not meeting the specifications according to the Technical Service Manual (TSM), causing minor distortion of transmitted voice and data

Actions

When replacing transistor SRFH1008 or MRF455 with MS1253-CDN the following is required:

- a modification to the PAs of 93xx series/9780 and LP transceivers (part number 08-05872-xxx or 08-04963-xxx), including an adjustment to the driver bias
- a modification to the 85xx series/9313/9480 transceivers
- an additional adjustment to the output bias on the PAs of all the affected transceivers

Codan Limited
ABN 77 007 590 605
81 Graves Street
Newton SA 5074
AUSTRALIA
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411
asiatech.support@codan.com.au

Codan Limited
ABN 77 007 590 605
532 Seventeen Mile Rocks Road
Sinnamon Park Qld 4073
AUSTRALIA
Telephone +61 7 3291 6333
Facsimile +61 7 3291 6350

Codan (UK) Ltd
Gostrey House
Union Road
Farnham Surrey GU9 7PT
UNITED KINGDOM
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
uktech.support@codan.com.au

Codan Pty Ltd
10660 Wakeman Ct
Manassas VA 20110
USA
Telephone +1 703 361 2721
Facsimile +1 703 361 3812
ustech.support@codan.com.au

Equipment required

The equipment required to perform the modifications include:

- a soldering iron
- a small posi drive screw driver for trimpot adjustment
- a resistor box or a series of E12 resistors
- a multimeter that can read both milliamps (mA) and amps (A)
- a pair of long nose pliers
- a microphone compatible with the transceiver
- TSM for the transceiver under repair

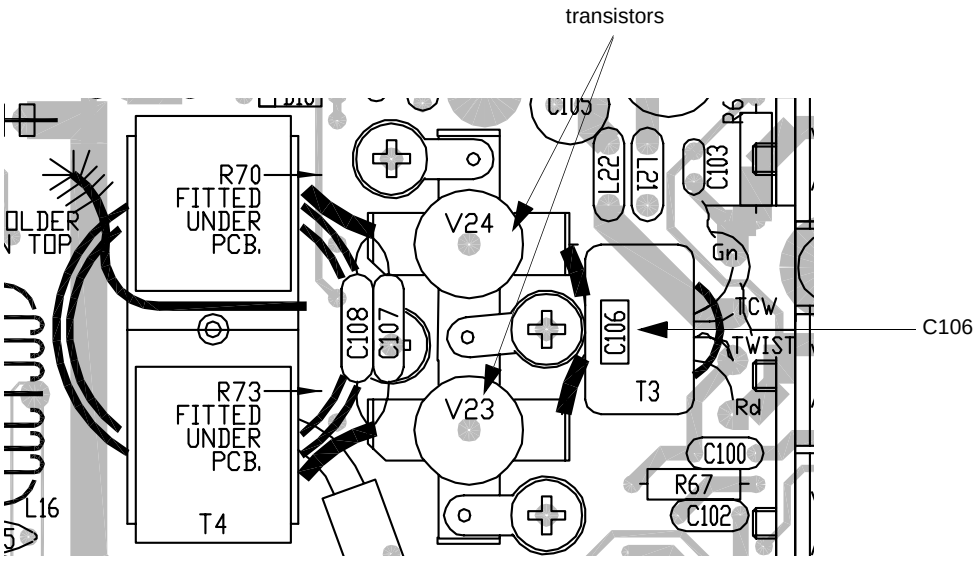
Modifying the power amplifiers in the 93xx series/9780 and LP transceivers

All surface-mount PAs (Codan part number 08-05872-xxx) have a 470 pf capacitor on the board already, therefore the following modification is *not* required.

To modify the PAs in the 93xx series/9780 and LP transceivers:

- ❑ Remove the two faulty transistors from the PA PCB (see Figure 1).

Figure 1: Power amplifier PCB for the 93xx series/9780 and LP transceivers



- ❑ Replace C106 with a capacitor that has a value of 470 pf.

  Later model 93xx series/9780 PAs (Codan part number 08-04963-xxx) may already have the 470 pf capacitor in place. If you are unsure of the value of C106, it is recommended you replace it with a 470 pf capacitor as a precaution.

- ❑ Replace the transistors with MS1253-CDN.
- ❑ Continue from page 3, *Adjusting the driver bias for power amplifiers in 93xx series/ 9780 and LP transceivers*.

Adjusting the driver bias for power amplifiers in 93xx series/9780 and LP transceivers

To adjust the driver bias for PAs in 93xx series/9780 and LP transceivers:

- ❑ Disconnect the exciter output to the PA by removing the J2 connector on the PA (see Table 2).
- ❑ Switch off the transceiver and disconnect it from the DC supply.
- ❑ Remove the wire link between the **LINK** stakes on the PA PCB (Codan part number 08-04963-xxx or 08-05872-xxx).
- ❑ Connect a multimeter (set to mA range) across the stakes. As viewed from the front, the positive stake is to the left.
- ❑ Reconnect the DC supply and switch on the transceiver.
- ❑ Select any channel and press the press-to-talk (PTT) button on the microphone. Measure the current across the stakes.
- ❑ Do one of the following:
  - For older PAs, adjust select on test resistor R54 if necessary as shown in Table 1.
  - For surface-mount technology PAs, adjust trimpot R54 if necessary as shown in Table 1.

Table 1: Driver bias currents

Model	SRFH1008/MRF455 bias current	MS1253-CDN bias current
93xx series/9780	17±1 mA	30±5 mA
93xx series/9780 LP	21±1 mA	30±1 mA

- ❑ Switch off the transceiver and disconnect the power supply.
- ❑ Use a length of tinned copper wire (TCW) or resistor leg to replace the wire link between the **LINK** stakes.
- ❑ Continue from page 5, *Adjusting the output bias in all transceivers*.

Modifying the power amplifiers in the 85xx series/9313/9480 transceivers

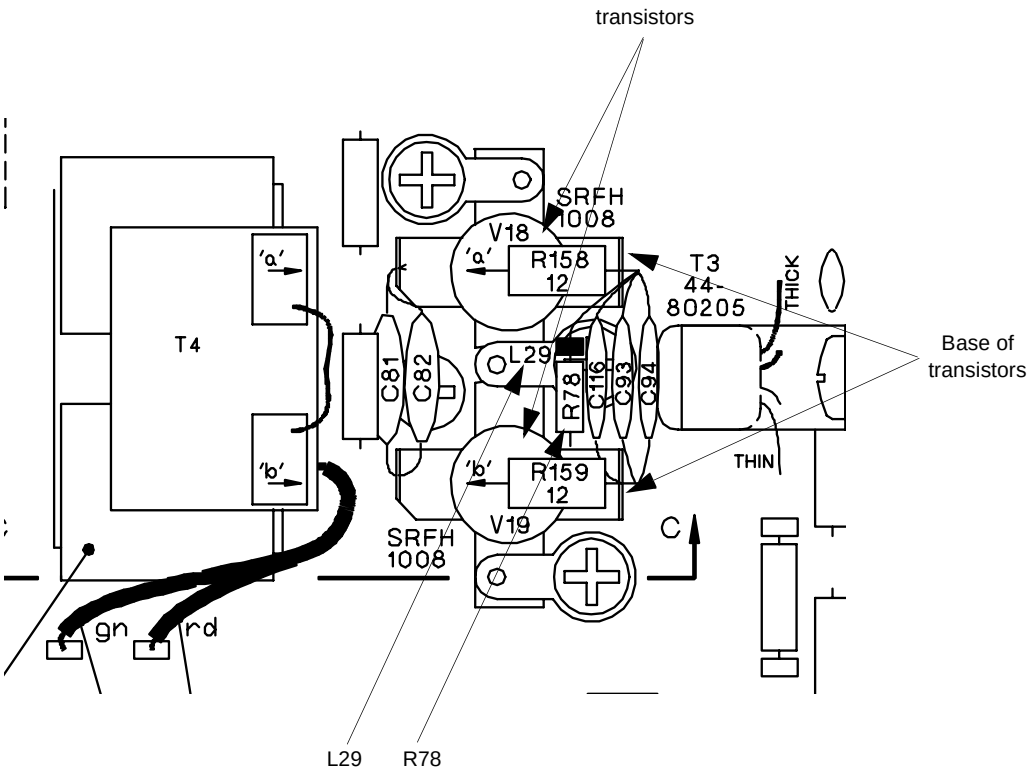
If the SRFH1008 or MRF455 transistors are not faulty and do not require replacement, there is some benefit in fitting a resistor/choke circuit as described below.

This modification is only required in very early 85xx series/9313/9480 PAs.

To modify the PAs in 85xx series/9313/9480 transceivers:

- ❑ Check if there is a resistor/choke (R78/L29) across the base of both transistors on the PA PCB (Codan part number 08-03743-xxx) (see Figure 2).

Figure 2: Power amplifier PCB for the 85xx series/9313/9480 transceivers



If R78/L29 is not present, it must be fitted.

Without the resistor/choke in place, spurious oscillations at approximately 4 MHz occur. The resistor/choke network consists of a:

- 12 Ω ¼ W 5% resistor
- ferrite bead placed on one leg of the resistor with a small amount of silastic to stop any movement

- ❑ Replace the transistors with MS1253-CDN (see Figure 2).
- ❑ Continue from page 5, *Adjusting the output bias in all transceivers*.

Adjusting the output bias in all transceivers

To adjust the output bias:

- ❑ Disconnect the exciter output to the PA by removing the associated connector on the PA (see Table 2).

Table 2: Exciter connector reference

Model	Connector
93xx series/9780 and 93xx series/9780 LP	J2
X2	P2
85xx series/9313/9480	P2

- ❑ Switch off the transceiver and disconnect it from the DC supply.
- ❑ Remove the wire link from the **PA O/P** stakes on the PA PCB, located below the relay (see Table 3 for the relay specific to the transceiver type).

Table 3: Relay reference

Transceivers	Relay
85xx series/9313/9480	K7
X2, 93xx series/9780, 93xx series/9780 LP	K8

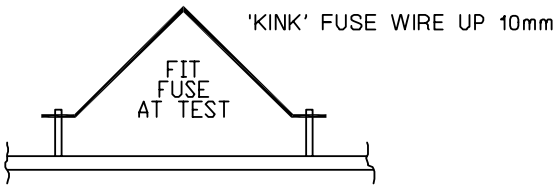
- ❑ Connect a multimeter (set to A range) across the stakes. As viewed from the front, the positive stake is to the left.
- ❑ Reconnect the DC supply and switch on the transceiver.
- ❑ Select any channel and press the PTT button on the microphone. Measure the current across the stakes.
- ❑ Adjust associated trimpot for the correct current as shown in Table 4.

Table 4: Output bias current

Model	Trimpot allocation	SRFH1008/MRF455 bias current	MS1253-CDN bias current
93xx series/9780	R59	250±10 mA	300±10 mA
93xx series/9780 LP	R59	145±25 mA	145±25 mA
X2	R45	180±10 mA	200±5 mA
85xx series/9313/ 9480	R48	150±50 mA	200±10 mA

- ❑ If the **PA O/P** fuse is broken, do the following:
  - Replace the **PA O/P** fuse with two strands (2×0.2 mm TCW) taken from a piece of 7×0.2 mm cable.
  - Solder the wire ends to the stakes as shown in Figure 3.
  - Kink the wire up 10 mm to form an inverted V as shown in Figure 3.

Figure 3: Replacing the fuse



Testing the power amplifiers

As a final test it is recommended that you test the IMD of each PA. For instructions on how to test the IMD, refer to the adjustments section in the TSMs for the transceivers.

CODAN

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia

PO Box 96
Campbelltown
South Australia
5074

Telephone
National (08) 305 0311
Internat'l +61 8 305 0311
Facsimile (08) 305 0411

Service bulletin

17-00154 ISSUE 1 July 1996

9350 Auto Antenna tune-fails at approximately 22MHz.

1. Scope

This service bulletin pertains to an intermittent 9350 tune failure at approximately 22MHz, only when used with the 9323/9360 series transceivers. The problem has been identified as being caused by the transceiver to which it is attached.

This affects transceivers manufactured between December 1994 and July 1996.

2. Symptom

The 9350 intermittently fails to tune on frequencies around the 22MHz mark.

3. Details

The problem is due to some alternative capacitors for C107 and C108 fitted to the PA assemblies used in the 9323/9360 transceivers. The alternatives are Silver Mica types and are unsuitable for use in this position resulting in possible oscillations from the PA at the critical frequencies.

Tools required.

- Pozidrive screwdriver

Tools required if capacitors need changing.

As above plus:
- Soldering iron with heavy duty tip
- Safety glasses for use during soldering
- Solder

4. Identifying the capacitors

The capacitors are in parallel and are fitted across the collectors of V23 and V24 on the PA assembly.

1) Remove the transceiver from the installation, ensure the power is disconnected.
2) Remove the two screws securing the bottom cover and remove the cover. The bottom cover is the one fitted with 4 rubber feet.
3) Locate the PA assembly at the rear of the transceiver.
4) Disconnect all the cables and looms which go over the PA shield.
5) Remove the 8 shield securing screws, (Qty 2 are located on the rear panel of the radio).
6) Remove the shield.
7) Locate C107 and C108 across the collectors of the PA output transistors, V23 and V24.

8) Check if these capacitors are a Dark Brown colour and are shaped as shown below.

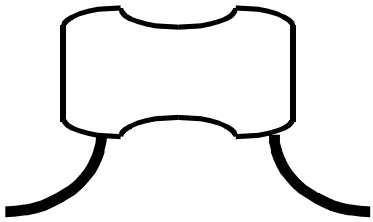


Diagram showing shape of incorrect capacitor

9) If the fitted capacitors match the above description, then they are unsuitable in this location and should be changed.

Note: These capacitors may also be used in other locations on the PA. This type of capacitor is perfectly OK in these locations.

10) If the capacitors are NOT of this type, proceed to section 6, reassembly.

5. Changing the capacitors (where required)

Parts required.

- 2 x 180 pf, 5%, 500V, NPO Disc Ceramic capacitors. (Codan Part number 46-21800-020).

Codan will supply the correct capacitors free of charge on request.

1) Using a very hot, heavy duty soldering iron, remove the capacitors. Take care not to melt or burn any surrounding wires or components.
2) Prepare the replacement capacitors by holding the bodies of the two capacitors together and twisting the leads together. (As per the original capacitors). Trim the leads.
3) Solder the capacitors across the collector tabs of V23 and V24. Keep the capacitor leads very short. Take care not to melt or burn any surrounding wires or components.
4) Ensure that the connections to the PA output transformer T4 are maintained and that no short circuits are created.

6. Reassembly

Reassemble the transceiver in reference to steps 2 - 5 of section 4 above, but in reverse order paying particular attention to the following points.

- Check no wires are trapped or pinched by the PA shield.
- Check the orientation and location of connectors.

7. Checks following replacement of capacitors

Check the radio transmits at full power.

8. Final

Reinstall the transceiver and perform on air tests.

9323/9360 software and hardware upgrade for morse code

SERVICE BULLETIN

Introduction

This Service Bulletin affects the users of 9323/9360 transceivers with Option M and software versions 4.34 or earlier, who need to send morse code at speeds of up to 68 words per minute. It applies to transceivers fitted with Microprocessor and Audio PCB, part number 07–01536–11 or earlier. The location of the PCB part number is shown in Figure 1.

Symptom

The switching speed of the transceiver is too slow causing high speed morse transmissions to sound irregular.

Action

To improve the morse switching speed of the transceiver, upgrade to software version 4.35 and perform the following hardware modification.

- ❑ Switch the power off.
- ❑ From the component side of the Microprocessor and Audio PCB (assembly part number 08–04966, PCB part number 07–01536–11), cut pin 9 of IC111 using side cutters (see Figure 1).

  ↳ Ensure there is no connection between pin 9 of IC111 and R228 through visual examination or using an ohm–meter.

- ❑ Route the multi–strand wire (part number 66–02072–005) from R228 to pin 4 of P204 (see Figure 1).

After the software and hardware upgrade the 9323/9360 transceivers will support sending morse code at speeds of up to 68 words per minute.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Codan Comunicaciones Ltda.
Av. 11 de Septiembre 2155, Of. 701/A
Edificio Panorámico
Providencia
Santiago, CHILE
Teléfono +56 2 373 9577
Facsímile +56 2 373 9579

Email: radcom@codan.com.au **Worldwide Web:** www.codan.com.au

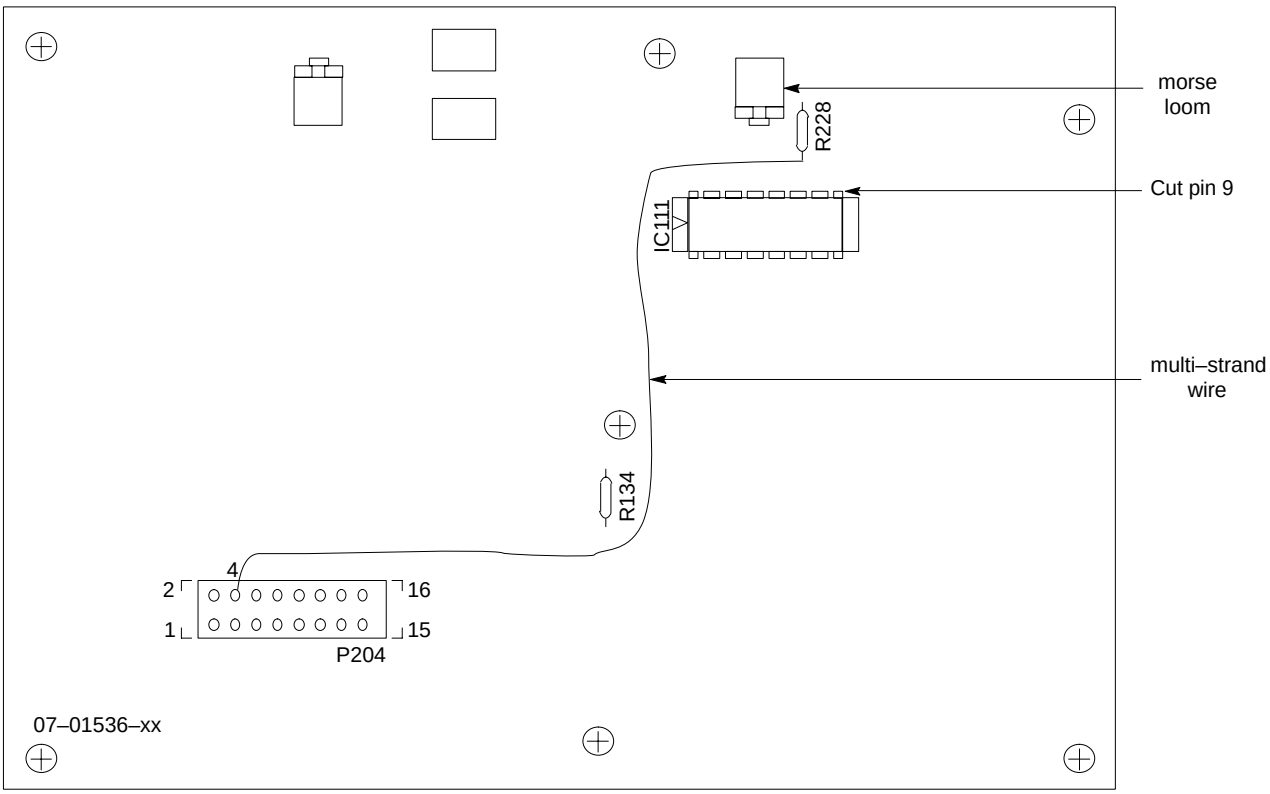


Figure 1: Hardware modification to the Microprocessor and Audio PCB (07–01536–11)

9390/9680 software upgrade

SERVICE BULLETIN

Introduction

This service bulletin affects users of split–site/single–site remote control systems and marine transceivers with software versions 4.00 to 4.31. The affected system may include an IPC–500 telephone interconnect unit, an Automatic Link Establishment (ALE) controller, a Global Positioning System (GPS) receiver, or a Codan data modem 9001/9002.

Symptoms

There are a variety of symptoms that may indicate the requirement for a software upgrade. These symptoms include:

- the transceiver possibly displaying an invalid position for a period of time after the transceiver has been switched on
- a scanning split–site, remote controlled system with an attached IPC unit sending revertive beeps on the wrong channel in response to a selcall
- hearing two sets of revertive beeps when a selcall is sent to a split–site, remote controlled system
- returning calls stored in call memory on the wrong sideband, if those calls have been received on a channel that has optional (U/L) sideband available
- a single–site remote control system with a data modem 9001/9002, and *no* ALE controller, not allowing the modem to PTT in response to an incoming data call if the system is scanning at the time of the call
- a system with an ALE controller pausing scan mode when it detects incoming signals until either an ALE call is received, the selcall decoder detects any activity, or an attached data modem's Q–line is toggled, indicating a data signal may have been detected

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

Codan Comunicaciones Ltda.
Av. 11 de Septiembre 2155, Of. 701/A
Edificio Panorámico
Providencia
Santiago, CHILE
Teléfono +56 2 373 9577
Facsímile +56 2 373 9579

Email: radcom@codan.com.au **Worldwide Web:** www.codan.com.au

- a remote control system with ALE and a data modem 9001/9002 resuming scan mode two seconds after the ALE is established, then establishing a data link on the channel on which the ALE link was previously established
- a remote controlled system with a 9001/9002, not allowing an ALE link to be established prior to a data call
- displaying the **Tune failed** message, on specific frequencies, during tuning of the 9350 antenna, even when the 9350 tunes correctly

Action

Users of split–site/single–site, remote control systems and marine transceivers with any of the following equipment and software versions 4.00 to 4.31 inclusive must upgrade to software version 4.34:

- an IPC–500 telephone interconnect unit
- a GPS receiver
- an ALE controller
- a 9001/9002 data modem

The remote control software must also be upgraded to version 5.10 or later.

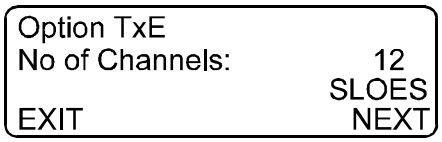
Finding the software version of your transceiver using the remote control console

❑ Press **Function**, then enter the function code **10** within two seconds followed by **Enter**.

The display on the remote control console will show the software version of the transceiver.

Finding the software version of your transceiver using the transceiver

❑ Press **Mode** until you see a display that is similar to the following.



❑ Rotate **Select** or press **F2**/**NEXT** until you see the software version for the transceiver.

Compatibility

Software version 4.34 supports Computer Interface Command Set (CICS) version 2.11. It is fully backward compatible with CICS version 2.00. This software version should be used with remote control software version 5.10 or later. It is possible to use an earlier version of the remote control software, but a large amount of the Computer Interface Command Set (CICS) functionality will be lost.

For further information on software compatibility, see Service Bulletin “9323/9360/9780/9390 Software Compatibility Summary”, Codan part number 17–00156.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia

PO Box 96
Campbelltown
South Australia
5074

Telephone
National (08) 305 0311
Internat'l +61 8 305 0311
Facsimile (08) 305 0411

17-00143 ISSUE 1 APRIL 1995

Enhancements in 9323 Series Transceivers

Scope

This Service Bulletin outlines modifications that have occurred to the 9323 series transceivers to facilitate improvements in the operation of these transceivers. There are three changes, two of which involve the change of resistor values and the third involves the addition of a resistor. For each modification there is a separate section to this bulletin identifying the symptom relating to the change, the parts required to perform the change, and the details of the change.

Although the three modifications are not related, any transceiver undergoing any one of them should be checked for, and where required, have the remaining changes done.

Note:- The modifications mentions in this Service Bulletin are incorporated in 9323 transceivers from Serial Number A1334 onwards.

1. **Mute opens on short transient signals**

   1.1. **Symptom**

   The mute gate operates, ie., opens, on short transient signals. It is not possible to correct for this using the mute adjustment potentiometer as it is related to the attack time of the mute circuit.

   1.2. **Parts required**

   1 x 100K ohm resistor (Codan Part Number 40-51000-020).

   1.3. **Details**

   The remedy requires R361 on the Microprocessor & Audio PCB assembly, 08-04966-001, to be changed from 3K9 ohms to 100K ohms. With the transceiver disconnected and removed from the installation, remove the bottom cover. Identify R361, which is located in the bottom left quadrant of the PCB (with the front panel towards you) below IC307, LM339. Check the value of this resistor. If it is 100K ohms then there is no need to perform this change. If R361 is 3K9 ohms, then proceed as follows. Disconnect all the ribbon cables from the PCB taking careful note of the orientation of the connectors on P103 and P302. Remove the 7 cross head screws securing the PCB in place and withdraw the PCB. Using the appropriate desoldering tool, carefully remove R361 and replace it with a 100K ohm resistor. There is no need to readjust the mute following this procedure.

2. **Transceiver turns itself ON and/or unable to turn transceiver OFF**

   2.1. **Symptom**

   The transceiver turns itself ON and then may or may not be able to be turned OFF. This is caused by leakage in the power-on circuit and can be overcome by biasing V203 (the power-on transistor) off slightly so that it requires a greater base current to turn the transceiver ON.

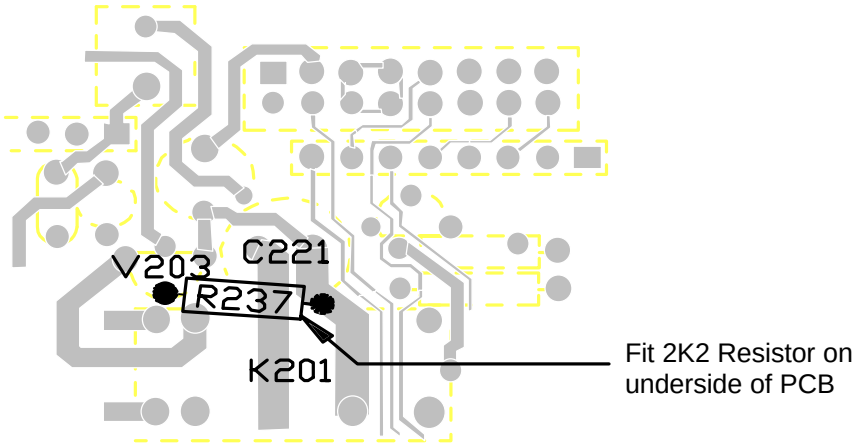
   2.2. **Parts required**

   1 x 2K2 ohm CR25 resistor (Codan Part Number 40-32200-020).

1.1. **Details**

The remedy requires the addition of a resistor on the Microprocessor & Audio PCB assembly, 08-04966-001. With the transceiver disconnected and removed from the installation, remove the bottom cover. Disconnect all the ribbon cables from the PCB taking careful note of the orientation of the connectors on P103 and P302. Remove the 7 cross head screws securing the PCB in place and withdraw the PCB. Identify V203, which is located at the right rear corner of the PCB (with the front panel towards you) adjacent to the relay K201. Fit a 2K2 resistor between the Base of V203 and relay K201, (Base-Emitter junction of V203), as shown below. This resistor can be added to any circuit diagrams that you may have, and be designated R237.

08-04966-001
Bottom View



2. **Failure of transceiver to reset properly with low battery**

2.1. **Symptom**

The problem is related mainly to vehicle installations in which the transceiver is powered up whilst the engine is being cranked. The symptoms are varied. It may be that the transceiver losses all of its channel information or it may exhibit spurious operation and perform with various peculiarities for which there appears to be no reasonable explanation. The following modification overcomes this problem by ensuring a reset pulse is applied to the processor IC101 under all conditions.

2.2. **Parts required**

1 x 15 ohm CR25 resistor (Codan Part Number 40-11500-020).

2.3. **Details**

The remedy requires R201 on the Microprocessor & Audio PCB assembly, 08-04966-001, to be changed from 39 ohms to 15 ohms. Depending on the circumstances, the transceiver may also need to have channel information reprogrammed.

With the transceiver disconnected and removed from the installation, remove the bottom cover. Identify R201, which is located at the right rear corner of the PCB (with the front panel towards you), adjacent to the relay K301. Check the value of this resistor. If it is 15 ohms then there is no need to perform this change. If R201 is 39 ohms, then proceed as follows. Disconnect all the ribbon cables from the PCB taking careful note of the orientation of the connectors on P103 and P302. Remove the 7 cross head screws securing the PCB in place and withdraw the PCB. Using the appropriate desoldering tool, carefully remove R201 and replace it with a 15 ohm resistor.

Final

Refit the PCB into place and secure with the 7 screws. Replace all ribbon cables correctly onto their corresponding connectors paying particular attention to the orientation of P103 and P302. Replace the bottom cover and if necessary, reprogram the transceiver using XP.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia

PO Box 96
Campbelltown
South Australia
5074

Telephone
National (08) 305 0311
Internat'l +61 8 305 0311
Facsimile (08) 305 0411

Service bulletin

17-00150 ISSUE 2 June '96

9323 / 9360 / 9390 PROGRAMMING CABLES

1. Scope

This service bulletin outlines the modification required on 9323 / 9360 / 9390 programming cables part numbers 08-05137-001 and 08-05138-001.

2. Symptom

This modification is only required if the following symptoms are observed.

There are two symptoms depending on the cable that is being used. When using the 08-05137-001 cable to program 9323 / 9360 / 9390 Front Control transceivers via XP, the message "Could not establish communication with transceiver" will appear on the Computor. When using the 08-05138-001 cable to clone 9323 / 9360 / 9390 Front Control transceivers, the error message "Cloning Failed" appears. These symptoms are caused by a TCW (Tinned Copper Wire) link being fitted across the incorrect connector pins.

To perform this modification, the following tools will be required.

A soldering iron.
A small flat bladed screwdriver.
Safety glasses for use during soldering procedures.

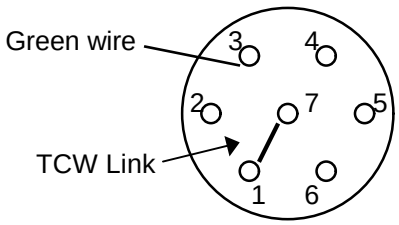
3. Parts required

No parts are required for this modification.

4. Details

For cable 08-05137-001, the modification is done only at the connector that plugs into the transceiver. For cable 08-05138-001 the modification is required at both connectors.

1. Slide the rubber cover back and clear of the connector.
2. Loosen the small grub screw sufficiently for the cable to move freely in the connector.
3. Secure the front section of the connector by plugging it into a corresponding socket or by holding it with a pair of pliers. Unscrew the back section of the connector to reveal the wiring.
4. Remove the TCW link from between pins 7 and 5 (refer diagram below).
5. Solder a TCW link between pins 7 and 1.



Rear view

6. Replace the back section of the connector and tighten the grub screw. Check the cable is secure.
7. Slide the rubber cover back over the connector.

5. Final

Confirm that programming can now be successfully performed.

CODAN

Codan Pty Ltd
A.C.N. 007 590 605
81 Graves Street
Newton
South Australia
email: HF@codan.com.au

PO Box 96
Campbelltown
South Australia
5074

Telephone
National (08) 8305 0311
Internat'l +61 8 8305 0311
Facsimile (08) 8305 0411

http://www.codan.com.au

17-00164 ISSUE 2 March 1997

Receiver Desensitisation in 9323 & 9360 Transceivers

Scope

This Service Bulletin applies only to type 9323 & 9360 transceivers with A or B series Serial Numbers that have had their software (EPROMs) upgraded to Version 3. The Serial Number is stamped on a metal plate rivetted to the heatsink fins at the rear of the transceiver.

Introduction

The introduction of Version 3 software redefined the use of the I/O (Input/Output) ports of IC209 on the Receiver/Exciter PCB (P/No 08-04962-001) within the transceiver. This change produced an effective densensitisation of the receiver of some 10dB. To overcome this, the line from Port 3 of IC209 (Pin 7) should be disconnected. This is best achieved by the removal of resistor R273. Once removed you should note an improvement in receiver performance. Transceivers factory fitted with Version 3 or later software already incorporate this modification.

Procedure

1. Remove the transceiver top cover.
2. Locate the Receiver/Exciter PCB, part number 08-04962-001.
3. With the front panel towards you, locate R273 (100K ohm resistor).

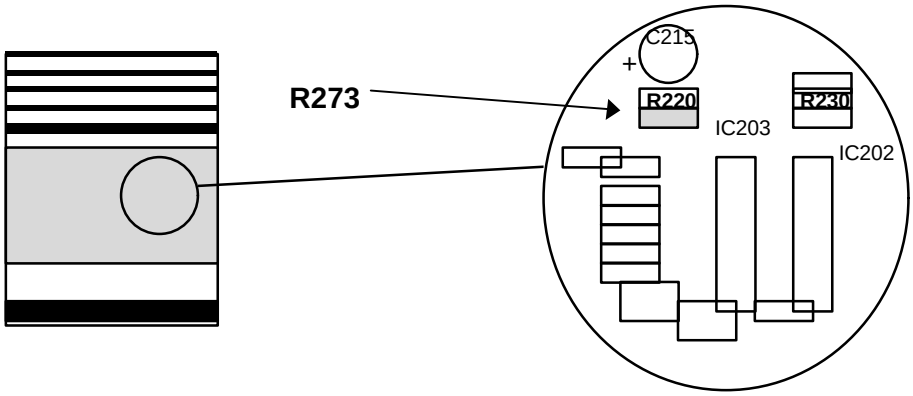


Figure 1 Location of R273

4. Remove R273 from the PCB by carefully cutting both leads with a pair of side cutters.
5. Replace the transceiver top cover.

CODAN

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia

PO Box 96
Campbelltown
South Australia
5074

Telephone
National (08) 8305 0311
Internat'l +61 8 8305 0311
Facsimile (08) 8305 0411
E-Mail HF @ codan.com.au
Internet http://www.codan.com.au

17-00161 ISSUE 1 October 1996

Loss of Configuration Information (Serial Data) in 9323/9360/9390 series transceivers.

1. Scope.

This Service Bulletin refers to the *possible* loss of configuration information in the 9323/9360/9390 series transceivers.

Configuration Information includes:
- Software Options (GPS, ES, ALE, etc.)
- Scan tables
- Selcall parameters

This modification should be performed on ALL relevant transceivers and should be considered a preventative measure.

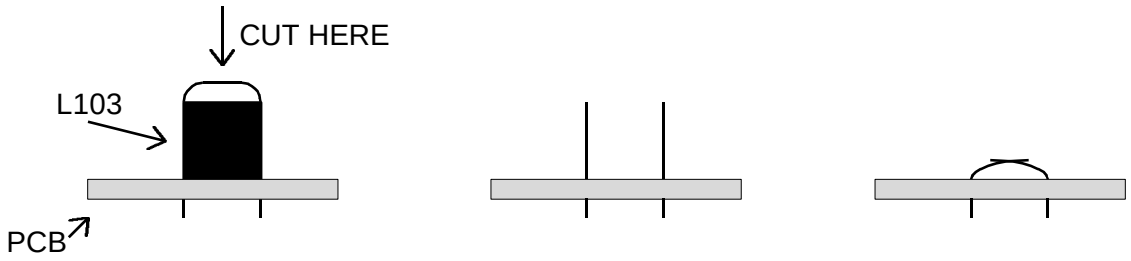
Transceivers dispatched from October 28, 1996 have this component removed.

2. Remedy.

Remove L103, a choke located on the Microprocessor & Audio PCB, 08-04966.

3. Procedure.

1. Remove the transceiver from the installation, ensure the power is disconnected.
2. Remove the two screws securing the bottom cover and remove the cover.
3. Locate the Microprocessor and Audio PCB Assembly (08-04966-001).
4. Remove the 4 screws securing the top Microprocessor (µP) shield. Remove the shield.
5. Locate L103, a ferrite bead inductor located adjacent to IC 101.
6. Using a pair of side cutters, cut the ferrite bead and the wire simultaneously. Remove the ferrite by sliding it up and off the wires. Ensure all traces of ferrite are removed from the PCB.



7. Bend the two wires towards each other so that they are flat on the PCB.
8. Trim off excess wire and solder the two wires together to form a link.
9. Replace the top µP shield and secure with the 4 screws.
10. Replace the bottom cover and the 2 securing screws.

Service Bulletin

DOCUMENT NUMBER: 17-00180
ISSUE NUMBER: 2
ISSUE DATE: March, '98

RELATED DOCUMENTS:
C/R 25315
17-00175

Transceiver fails to power up normally

1. Scope

This Service Bulletin refers to front control transceivers and control heads dispatched since December 1997. This is the second issue of this Service Bulletin in which the range of acceptable regulators has been extended.

The tables below identify the range of equipment and serial numbers likely to be affected.

Table 1: Range of affected transceiver serial numbers

Transceiver type	From Serial Number	To Serial Number
9360F	E1426	E1634
9360-VF	A0269	A0270
9390F	E0274	E0296
9680	E0300	E0349
9780F	B0556	B0632

Table 2: Range of affected control head serial numbers

Control head type	From Serial Number	To Serial Number
9330	D1284	D1312
9366	D1464	D1654
9391	D0155	D0158
9782	A0334	A0395

Any transceiver or control head modified in accordance with Service Bulletin 17-00175 may also be affected.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
Telephone +61 8 8305 0311
Facsimile +61 8 8305 0411

Email:
radcom@codan.com.au

Worldwide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
Telephone +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
Telephone +61 8 9368 5282
Facsimile +61 8 9368 5283

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2. Symptoms

Previously observed symptoms include:

- transceiver display back lights are on but there are no characters on the display and no functionality
- transceiver functions normally but takes significantly longer than usual to power up

Symptoms may only occur under certain conditions such as extremes of temperature.

3. Cause

The problems are caused by the use of non brand-name, generic voltage regulators.

A recent change to the microprocessor reset circuit (refer Service Bulletin 17-00175), has made the use of non brand-name generic regulator types unacceptable.

4. Corrective action

If the symptoms exist in equipment identified in Tables 1 and 2, or in equipment that has been modified retrospectively in accordance with Service Bulletin 17-00175, the voltage regulator should be suspected and changed if necessary.

4.1 Procedure

- ❑ Remove the transceiver/control head from the installation.
- ❑ If you want to modify a front panel, continue at *Procedure: front panel*.

  Otherwise, continue at *Procedure: control head*.

Procedure: front panel

- ❑ Remove the two screws securing the bottom cover and remove the cover.
- ❑ Disconnect the cable connecting the front panel to the Microprocessor and Audio PCB.
- ❑ Remove the four screws securing the front panel to the chassis.
- ❑ Withdraw the entire front panel from the chassis.
- ❑ Remove the two screws securing the shield covering the front panel PCB.
- ❑ Remove the shield.
- ❑ Continue at *Procedure: identifying the regulator*.

Procedure: control head

- ❑ Remove the two screws securing the back panel and remove the panel.
- ❑ Carefully disconnect the control interface cable (P4) and the extension speaker plug (if fitted).

Procedure: identifying the regulator

❑ Locate IC11. Refer to Figure 1.

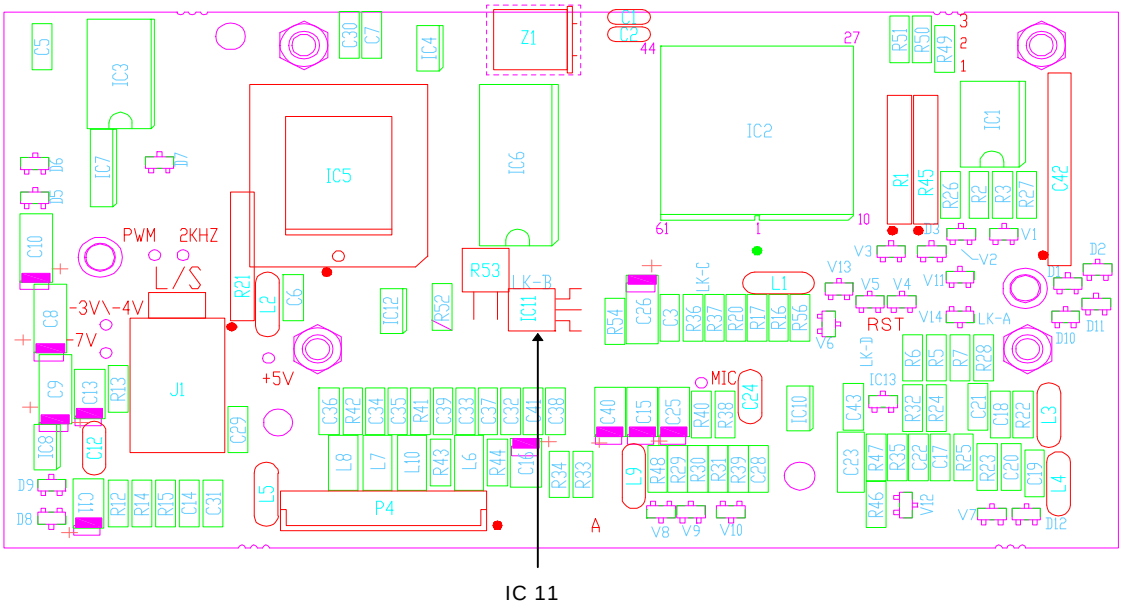

Figure 1: Location of IC11

❑ Carefully lift IC11 up off the board so that the identifying markings on its flat side may be read.

❑ Check that the regulator has a manufacturer's marking such as a **trademark** or a **name**.

❑ If IC11 does not have a manufacturer's trademark or name it will need replacing. Continue at *Procedure: changing the regulator.*

Otherwise, continue at *Reassembly.*

Procedure: changing the regulator

Parts required

- 1 x LM340LAZ-5.0 voltage regulator, Codan part number XB-07805-501

Tools required

- Desoldering tool (or desoldering wick)
- 60/40 Tin/Lead resin core solder
- Soldering iron
- Side cutters
- Small pliers

Note. Since the display module prevents access to Side 1 of the display board, the regulator must be removed and reinstalled from Side 2. This is the uppermost side. It is therefore not necessary to remove the display board from the front panel/control head.

Warning. During the following steps, take great care not to damage the through hole plating.

- ❑ Cut each of the three leads of the regulator as close as possible to the body of the regulator.
- ❑ Using the soldering iron and the pliers, heat each joint and remove the leads from the board.
- ❑ Using the desoldering tool or the desoldering wick, clear the solder from the three holes.
- ❑ Form and trim the leads of the replacement regulator. Refer to Figure 2.

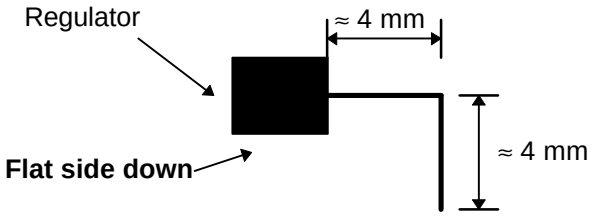

Figure 2: Formation of regulator leads

- ❑ Insert the regulator into the three holes. *Flat side down.* Refer to Figure 1.
- ❑ Solder the three leads into the display board.

Reassembly

- ❑ Reassembly of the front panel is the reverse of the steps in *Procedure: front panel*.
- ❑ Reassembly of the control head is the reverse of the steps in *Procedure: control head*.
- ❑ Reinstall the transceiver/control head to the installation.

Service Bulletin

DOCUMENT NUMBER: 17-00166
ISSUE NUMBER: 1
ISSUE DATE: May, 96

RELATED DOCUMENTS:
C/R

VCO 2 Unlock in 9323 and 9360 series transceivers

1. Introduction

9323, 9360 and 9360-30 transceivers fitted with version 4.10 software are likely to suffer VCO2 (Voltage Controlled Oscillator) unlock problems under certain conditions. The modification described in this Service Bulletin overcomes this.

The modification should be performed if;

a) VCO2 unlocks as described in section 3

or

b) If the transceiver is fitted with version 4.10 software AND the Serial Number is not specified below

2. Serial Numbers

The modification detailed in this Service Bulletin has been incorporated into transceivers with the following Serial Numbers.

9323.	D0311, D0312, and D0464 onwards
9360.	D0108, D0133, D0296, D0297, D0298, and D0307 onwards
9360-30	D0235 onwards

3. Details

The VCO unlock condition will occur under one or more of the following conditions,

- Power Up
- An interruption to the power supply causing the transceiver to reset (such as cranking of a motor)
- High Humidity

The unlock error can be temporarily cancelled by turning the radio OFF and then back ON. To prevent re occurrence, the following modification must be done.

Codan Pty Ltd
ACN 007 590 605
81 Graves Street
Newton
South Australia 5074
International +61 8 8305 0311
Facsimile +61 8 8305 0411

E-mail:
HF@codan.com.au

World-wide web:
http://www.codan.com.au

Codan (UK) Ltd
Gostrey House
Union Road
Farnham, Surrey GU9 7PT
United Kingdom
International +44 1252 717 272
Facsimile +44 1252 717 337
Telex 858355

Codan Pty Ltd
Suite 11A, 2 Hardy Street
South Perth
Western Australia 6151
International +61 8 9368 5282
Facsimile +61 8 9368 5283

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4. Modification

WARNING

If a 9323/9360/9390 Technical Service Manual is to be used to do this modification, observe the following precaution.

The overlay diagram 08-04962-001 shows the position of R72 and R74 transposed. The correct position of R74 is adjacent to C248 and test point +5VB.

The silkscreen on the Receiver Exciter Assembly is CORRECT.

4.1 Tools required

Pozidrive screwdriver (1 point)
Soldering Iron
Side Cutters
Small pliers

4.2 Materials required

1 x 1KΩ, 0.25 watt, (CR25) resistor
Tinned Copper Wire
60/40 Tin/Lead resin core solder

4.3 Procedure

1. Disconnect power from the transceiver and remove from the installation.
2. Remove the top cover.
3. Referring to the diagram, locate the position of R73 and R74. (Neither of these resistors are fitted).

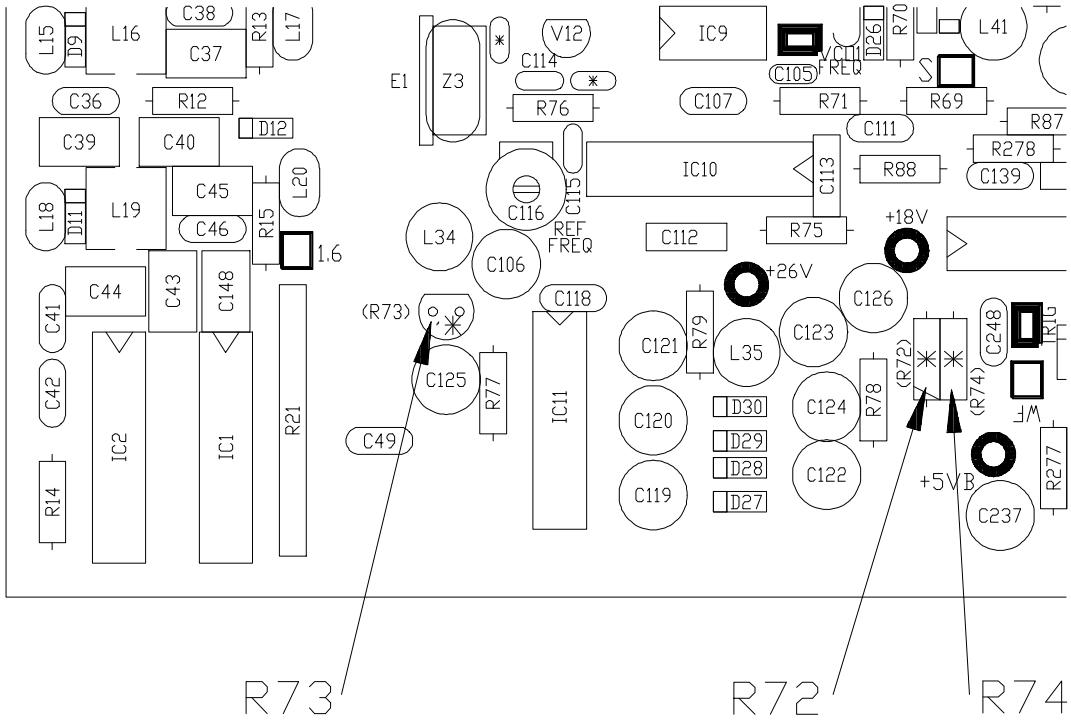

Figure 1: Position of R73 and R74 (Bottom Left Hand Corner of 08-04962)

4. Remove the Receiver Exciter assembly from the chassis.
5. Using tinned Copper Wire (TCW), fit and solder a link into the holes marked R73. Trim excess lead length.
6. Fit and solder the 1KΩ resistor into the holes marked R74. Trim excess lead length.
7. Fit and secure the Receiver Exciter assembly into chassis.
8. Refit plugs ensuring correct placement and orientation.
9. Fit top cover
10. Reinstall
11. Connect power.