

Ref:	NR/SMS/Part/T
Issue:	9
Date:	04 June 2022
Compliance date:	03 September 2022

NR/L3/SIG/10663

NR/SMS/Part/T

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Published and Issued by Network Rail, 2nd Floor, One Eversholt Street, London, NW1 2DN.



NR/L3/SIG/10663 Signal Maintenance Specifications		
NR/SMS/Part/T		
Index – Telecom Assets		
Issue No: 09	Issue Date: 04/06/2022	Compliance Date: 03/09/2022

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END

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NR/SMS/PartT/CA11		
Pole Routes		
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Includes:	Signalling cables carried on telegraph wires
Excludes:	All other types of signalling cable

GENERAL

Refer to NR/L3/MTC/RSC0216/GH04 – Working at Height and [NR/GI/U002](#) (inspection and Safety of Tools, Plant and Protective Equipment).

Do not climb a telegraph pole without first confirming that it will not break away at a decayed section. Soundness test is outlined in SERVICE A.

Defective poles, arms, steps, stays, braces and combiners might be the cause of serious accidents. Report any safety defects to your SM(S) Immediately.

Carefully maintained safety belts and hard hats shall be used whenever overhead pole work is undertaken. They are to be stored away from edge tools and acid. Do not store items in excessively hot or damp conditions.

SERVICE A

- 1.1 Record time and date of survey
- 1.2 Check Pole identification plate. Remove or report any encroaching vegetation (Enter S - scrub, T - trees, O - outside fence, R - danger to the overhead line)
- 1.3 Check the number of Stays is correct and record the condition (D - Defective, G - Sound, S - Slack, T- Tight). The stay wire where it is taken round the pole and the stay adjuster and screw may be served with bituminous compound to prevent corrosion.
- 1.4 Check all four stay wires in good condition are present on poles designated to have them. Generally present in 1 in every 10 poles etc.
- 1.5 Strike the pole with a hammer near the ground to make sure of its soundness (Ringing sound desired as opposed to a dull thud). Insert a sharp object at just below ground level to check there is no obvious decay. Poles are to be listed for renewal only after probing has shown that more than 25% of cross-section is rotten (at any point throughout its length).
- 1.6 Check and record the condition of the insulators/ cups (S – Satisfactory; U – Unsatisfactory and require replacement).
- 1.7 Check and record the condition of the stay rods (S – Satisfactory; U – Unsatisfactory and require replacement).

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- 1.8 Check and record the condition of the binders (S – Satisfactory; U – unsatisfactory and require replacement).
- 1.9 Check and record the number and condition of arms (S – Satisfactory; U – unsatisfactory and require replacement). Pole arms to be wedged level as necessary.
- 1.10 Check and record the condition of the regulation (S – Satisfactory; U – unsatisfactory i.e.1 or more wires slack).
- 1.11 Check and record the condition of the loops (T- Transposition, J – Tap, E – Termination, RW – Redundant Wires, L – Defective, D – Dry Joint).
- 1.12 Record the estimated height of line wires when crossing the rail (minimum 6.1m) and public roads (minimum 6.7m). Record overall classification: (1 – Good, 2 – Fair, minimum non-critical defects only, 3 – Poor, significant defects requiring prompt attention, 4 – Major defect, broken pole, wire down etc).

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APPENDIX A - Record Card

Location:		Date & time of inspection:	
Pole Identification :		Estimated height of wire:	
Component	Condition	Component	Condition/ Number
Cups		Regulation	
Binders		Loops	
Rods		Vegetation	
Arms		Arms Number	
Stays		Stays Number	
Pole Classification And comments:			
Inspectors Name:		Inspectors Signature:	

Figure 1 – Record Card

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APPENDIX B - Pole Diagram

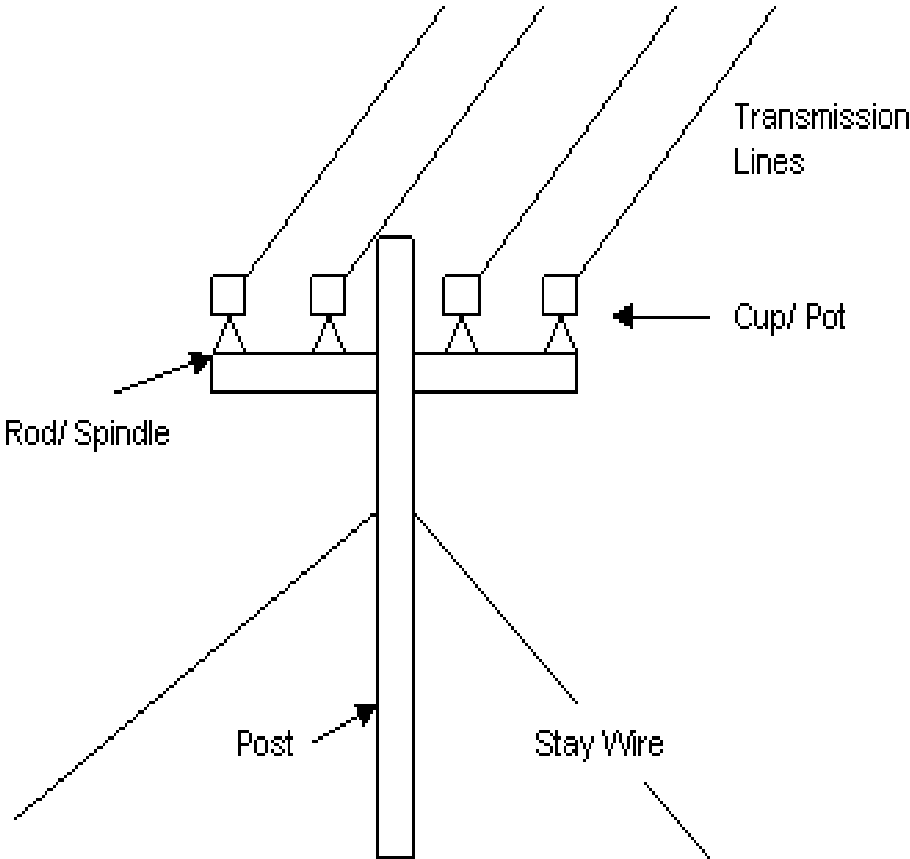


Figure 2 – Pole Diagram

END

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NR/SMS/PartT/IR00		
Radio Electronic Token Block (RETB): General		
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Commonly Used Abbreviations

Abbreviation	Meaning
BER	Bit Error Rate
CDR	Cab Display Radio
MSS	Maintenance Support System
FNL	Far North Line
RETB	Radio Electronic Token Block
RSS	Received Signal Strength
SSI	Solid State Interlocking
TTU	Transportable Token Unit
VDU	Visual Display Unit
VSWR	Voltage Standing Wave Ratio
WHL	West Highland Line

General Overview of RETB

The Radio Electronic Token Block (RETB) system is a variant of Solid State Interlocking (SSI). It was devolved principally for single lines in rural areas of the UK to replace conventional token block working.

Each train operating over the single line is equipped with a Cab Display Radio (CDR) with a unique identity and a speech and data radio transmitter/receiver. At the start of the single line the driver calls the controlling signal box for authority to enter the section. If the line is clear the signaller at the signal box will (via an SSI interlocking) transmit a coded 'electronic token' data message that will be received by the train and shown as authority to proceed on the CDR. The driver will then call the signal box for confirmation to proceed.

Once in the single line section the driver will advise the signaller that the train has cleared the loop track (a marker board is provided for assistance with this). At the end of the single line section the driver will call the signal box to offer back the 'electronic token'. A radio data 'handshake' procedure between the CDR and SSI then confirms that the token is safely removed from the CDR and restored to the SSI and the section released.

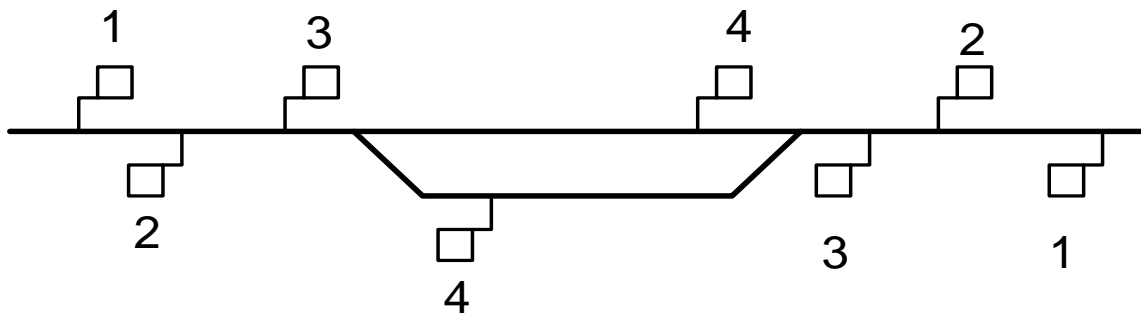
The signaller is equipped with a SSI controlled radio system which allocates the coded 'electronic tokens' to each section and prevents more than one token being issued for an occupied section.

The RETB Next Generation radio system has been configured as an auto-tuning system. This requires the CDR or TTU to be registered onto the radio network for the appropriate signaller. Once registered with the network the CDR or TTU will automatically tune to the strongest appropriate transmitter.

Note: The Hand portable units are not capable of auto-tuning and the appropriate radio channel must be manually selected.

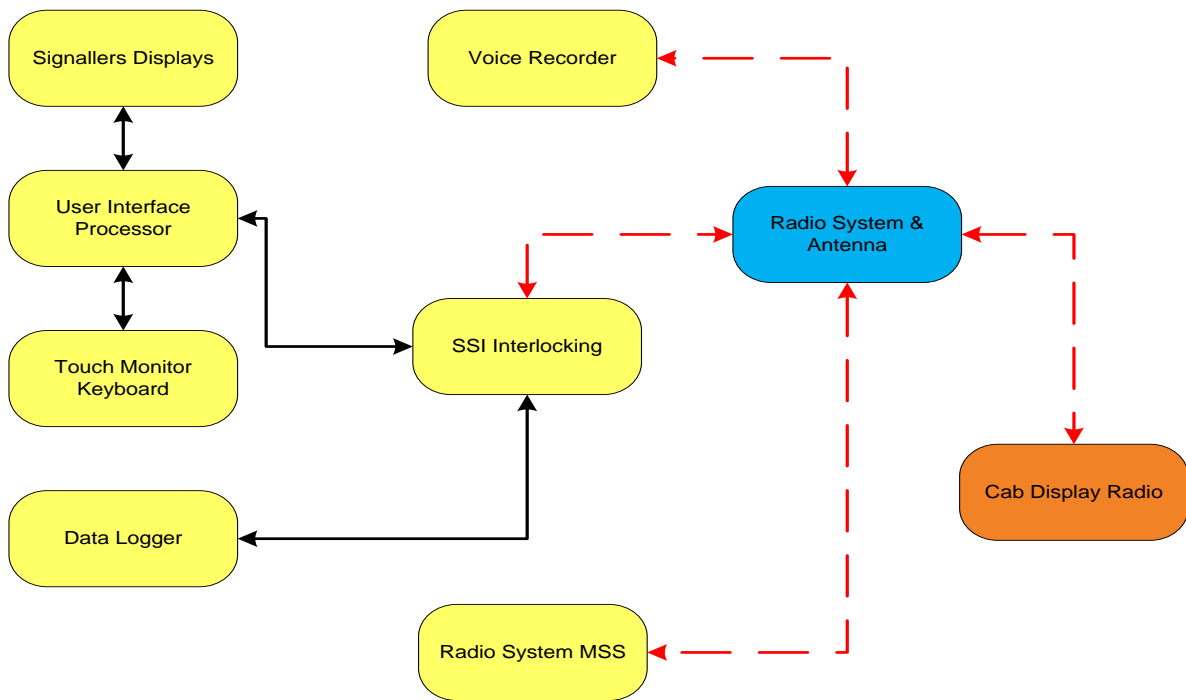
Figures 1, 2 and 3 provide further system details.

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1. Distant Board & AWS Magnet
2. Loop Clear Board
3. Points Indicator
4. Stop Board

Figure 1 - Block layout of Signalling on a Typical RETB Equipped Single Line & Passing Loop



Key

	Signal Box
	Train
	Radio Network

Figure 2 - Block Layout of an Mk.2 RETB System

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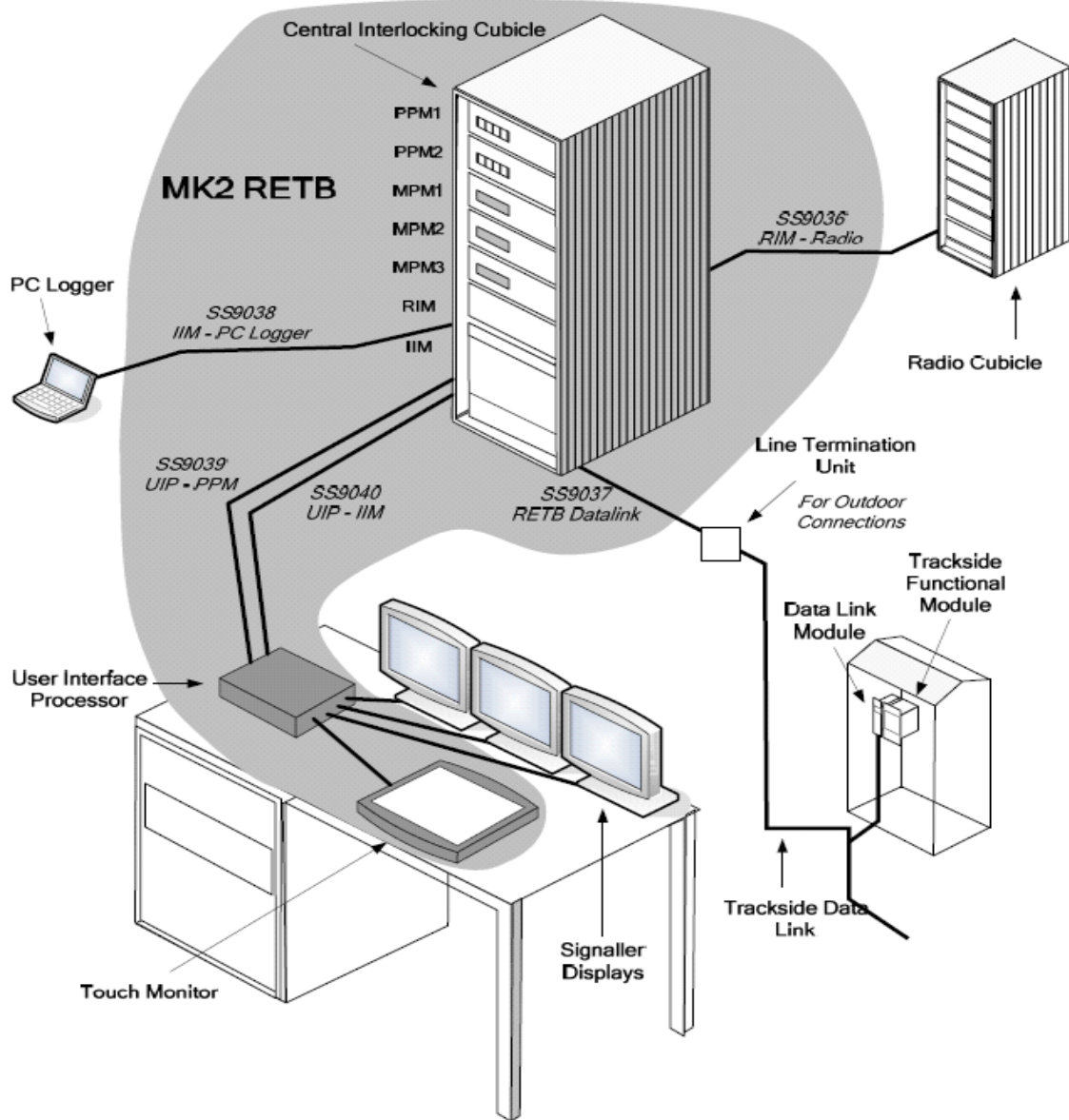


Figure 3 - Pictorial Representation of Mk.2 RETB Signal Box Equipment

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General

- See Appendix A for typical system diagram.
- See Appendix B for PC-VDU installation and setup.

REGULAR TASK

1 Data Logger

- 1.1 Check the PC is logging the token issue/receipt correctly.

2 Display PC's & VDU's

- 2.1 Check all plug couplers are tight and fixing screws secure.
- 2.2 Check that PCs are adequately ventilated and there is no build-up of heat.
- 2.3 Clean and dust all surfaces on the PCs, monitors and desks including all leads and plugs.
- 2.4 Check the filter at the rear of the PC is free from dust, use vacuum cleaner as required.
- 2.5 Clean all VDU screens and housings with a proprietary anti-static dry screen cleaner.
- 2.6 Clean any housing containing PCs associated with driving the VDU equipment.

3 Signallers Audio Console

- 3.1 Examine Audio Console for alarms and fault reports and liaise with Network Rail control if action is required.
- 3.2 Carry out [NR/SMS/PartB/Test 063](#) (Section 1 - Signallers Control Console checks).
- 3.3 Carry out [NR/SMS/PartB/Test 063](#) (Section 2 - 2-Wire Dial-Up Interfaces checks).

4 Radio Rack

- 4.1 Monitor System operation including observation of LEDs on channel cards for normal operation.
- 4.2 Carry out [NR/SMS/PartB/Test 063](#) (Section 5 - System Current issues checks).

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4.3 Review MSS data download to confirm that downloads are being received.

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SERVICE A

5 Radio Rack

- 5.1 Carry out [NR/SMS/PartB/Test 063](#) (Section 3 - Basic Radio Rack checks).
- 5.2 Carry out [NR/SMS/PartB/Test 063](#) (Section 4 - Extended Radio Rack checks).
- 5.3 Carry out [NR/SMS/PartB/Test 063](#) (Section 6 - Network Data Integrity Test) to check the data (token) performance of the RETB radio network.

6 SSI Interlocking

- 6.1 Dust the equipment and clean the cubicle. Check the area around the cubicle is clean and tidy.
- 6.2 Examine the equipment, terminals, cable and cable connectors. Particularly look for physical damage, overheating and arcing.
- 6.3 On the MPM and PPM, check that the memory modules are securely fitted and sealed. Observe the following indications on these units, the IIM and RIM are illuminated and showing a steady light:
 - Front Panel
 - All System Indicators.
 - Rear Panel
 - Power;
 - Fused Supply (MPM Only);
 - System.
- 6.4 Where a DLM is fitted, observe that the red power indicator is illuminated and showing steady light.

Note in the site logbook any indicators that are not illuminated and report them to the SM(S).

APPENDIX A – TYPICAL SYSTEM DIAGRAM

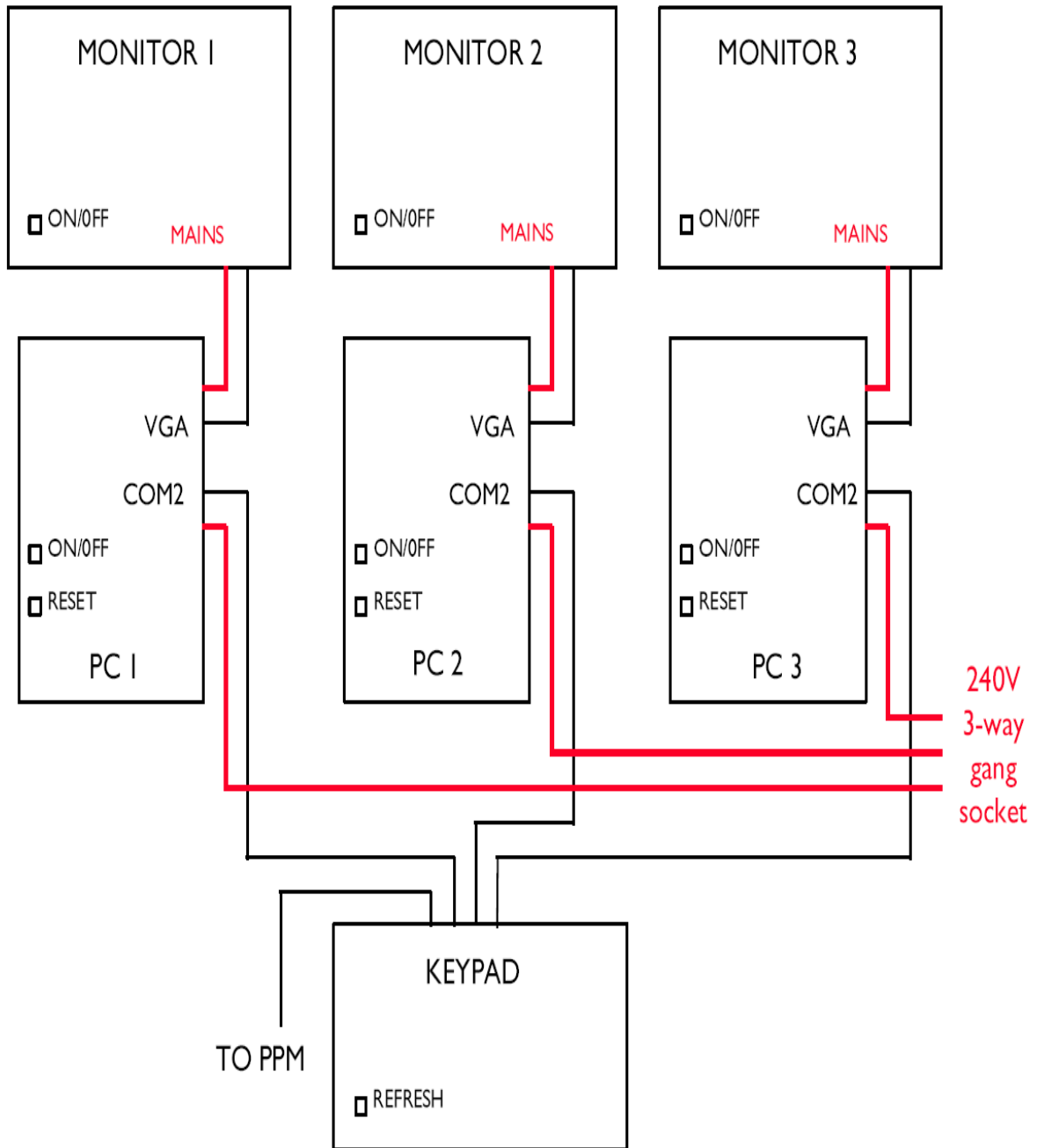


FIGURE 1 – TYPICAL SYSTEM DIAGRAM

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APPENDIX B – PC-VDU installation and set up

Part 1: Install the PC-VDU Software

- a) Use spare monitor if monitor is remote from PC.
- b) Check “qwerty” keyboard is connected.
- c) Turn on the PC.
- d) When the C:\> prompt appears, fully insert the 3.5 inch floppy disk containing the program ET030-A3 into the floppy disk drive of the PC.
- e) Change to the A drive by typing **a:** <return> on the PC “qwerty” keyboard.
- f) Type **install** <return> at the PC “qwerty” keyboard. This can cause the RETB VDU program to be permanently installed on the hard disc.
- g) Remove the 3.5 inch floppy disk and store in a safe place.
- h) Switch off the PC.
- i) Remove the PC “qwerty” keyboard.
- j) Switch on the PC and check that the RETB program initialises with a title box and the correct program and version number, followed by a blank screen with a flashing cursor in the top left position of the screen. Note the program will not give a track display without connection to an RETB interlocking.
- k) If the screen displays “keyboard error” the BIOS is not set up correctly and assistance should be sought.
- l) Switch off the PC.
- m) Label the PC with the following configuration control information: Site, ET 030-version A3, installed date, installed by.

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Part 2: Check PC is set up correctly

- a) Check “qwerty” keyboard is NOT connected.
- b) Switch on the PC.
- c) Check that the RETB program initialises with a title box and the correct program and version number, followed by a blank screen with a flashing cursor in the top left position of the screen. Note the program will not give a track display without
- d) Connection to an RETB interlocking.
- e) Leave the PC switched on for at least one hour and check that the monitor has not gone into “standby” mode (if so, the screen will be completely blank and the power indicator can be orange instead of green).
- f) If possible, leave the PC switched on for a further 23 hours.
- g) If the PC goes into standby mode the BIOS is not set up correctly and assistance should be sought.

PC BIOS set up

- a) Set BIOS such that the PC can operate without a keyboard attached.
- b) Set BIOS such that the PC power management is disabled (i.e. monitor does not turn off after a time).

END

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NR/SMS/PartT/IR12		
RETB Base Station		
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General

More information on mast inspections and maintenance of antenna systems and feeders can be found in NR/L2/TEL/30088.

SERVICE A

Minimum equipment required:

- TTU
- Multimeter
- Engineering Terminal laptop & cables.

1 Control Rack Fixed Station Checks

- 1.1 Review any reported problems associated with the site (e.g. trouble accessing local cell).
- 1.2 Review site alarm activity reported by the MSS.
- 1.3 For sites with a 4-wire interface, carry out [NR/SMS/PartB/Test 066](#) (Section 1 - 4-Wire Line Level Check). Note any gain adjustments that are required (to be performed on site).
- 1.4 For sites with a 2-wire dial-up interface, carry out [NR/SMS/PartB/Test 066](#) (Section 2 – 2-Wire Dial-up Line Level Check). Note any gain adjustments that are required (to be performed on site).
- 1.5 Use the MSS graphing and reporting tools and carry out [NR/SMS/PartB/Test 066](#) (Section 3 -Site Interface and Section 4 Radio Parameter Checks) over the maintenance period.

2 Site Radio & Fixed Site Interface Equipment

- 2.1 Carry out [NR/SMS/PartB/Test 066](#) (Section 5 - On-site Installation Checks) Report any deficiencies to your SM(S).
- 2.2 Carry out [NR/SMS/PartB/Test 066](#) (Section 6 - FSI LED Check).
- 2.3 At sites with a 2 or 4 wire interface, and only when indicated required by pre-visit tests, carry out [NR/SMS/PartB/Test 066](#) (Section 7 - FSI Line Level Adjustment).
- 2.4 Carry out [NR/SMS/PartB/Test 066](#) (Section 8 - Radio Tests – Reported Parameters) and observe installation for “normal” operation. Use system traffic instead of “Tx Key” for keying the transceiver.

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Antenna Systems

2.5 Carry out [NR/SMS/PartB/Test 065](#).

3 Fixed Station Power Supply

3.1 Visually inspect the battery/batteries for signs of swelling or leakage. Replace if damaged.

3.2 Carry out [NR/SMS/PartB/Test 064](#) (Section 2 - PSU in-service health indication Check).

3.3 Carry out [NR/SMS/PartB/Test 064](#) (Section 3 - Basic Check the PSU Output and Alarm Check). This generates an alarm and therefore this test should only be carried out with the co-operation of the signaller.

3.4 Where issues were identified in pre-visit checks, perform relevant fault diagnostics on the site equipment.

Refer to the Fixed Site Equipment Maintenance Manual doc ref: CDL P1062-MAN-001.

4 Final Checks

4.1 Obtain a Test Token and check that the TTU has registered on the appropriate Cell transmitter.

4.2 Use the FSI loudspeaker to monitor calls coming through the site. Listen for clear audio and tokens. Reduce the speaker volume before leaving the site.

SERVICE B

Minimum equipment required:

- Multimeter
- TTU
- RF power meter
- Battery tester (e.g. Hioki 3554)
- Engineering Terminal laptop & cables

These tests are intrusive or disruptive to network operation and should only be carried out with the co-operation of the signaller.

5 Fixed Station Radio & Site Interface Equipment

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- 5.1 Using the Engineering Terminal, carry out [NR/SMS/PartB/Test 066](#) (Section 8 - Radio Tests – Reported Parameters) and check the off-key (idle) and on-key (keyed) supply voltage and current reported by each radio.
- 5.2 For each radio fitted, carry out [NR/SMS/PartB/Test 066](#) (Section 9 - Radio Test – TX Output Power).
- 5.3 Carry out [NR/SMS/PartB/Test 066](#) (Section 10 - Radio Tests – Received Signal Strength) for each radio fitted.

⋮ This does not apply to local Cell radios.

- 5.4 Carry out [NR/SMS/PartB/Test 066](#) (Section 10 - Radio Tests – Received Signal Strength) at Neighbour Sites for each radio fitted.

⋮ This does not apply to local Cell radios.

6 Antenna Systems

- 6.1 Carry out [NR/SMS/PartB/Test 065](#) (Section 2 - Antenna VSWR Measurements).

7 Fixed Station Power Supply

- 7.1 Carry out [NR/SMS/PartB/Test 064](#) (Sections 4 or 5 - Battery Tests) applicable to the PSU capacity.
- 7.2 Carry out [NR/SMS/PartB/Test 064](#) (Sections 6 - Battery Charger Test).

8 Final Checks

- 8.1 Carry out engineering test token returns through the fixed Station using a TTU and observe correct functionality of Radio System.

END

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NR/SMS/PartT/TE01		
Operational Telephones		
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Includes:	<p>Lineside Telephones such as, Signal Post Telephones, Crossing Telephones, Point Zone Telephones.</p> <p>Operational building telephones, including, signal boxes (Magneto telephones only), token huts, GF huts and shunters cabins etc.</p>
Excludes:	<p>Phones located in the following places:</p> <ul style="list-style-type: none"> • Non-operational rooms situated in operational buildings. • PETS units in Signalling/Operating Centres. • Lineside plug points and telephones connected to Tunnel Emergency Communication Systems. • GSM/GSM-R Crossing Phones. • GSM-R HMI's. • Concentrator HMI's.

GENERAL

• This document is based on the requirements of NR/L3/TEL/30181/011. It should be noted that it is not a copy and some elements might differ.

• Because all types of Operational phones are cover by this single SMS the user should identify the correct service from the list below and carry out only the required service:

- Appendix B - Maintenance of CB Type Telephones (Including VoIP ringdown).
- Appendix C - Maintenance of MAG/LB Type Telephones.
- Appendix D - Maintenance of Auto Type Telephones (Including VoIP keypad type).
- Appendix E - Maintenance of Autodial Type Telephones (including VOIP).
- Appendix F - Maintenance of PETS/KETS Type Telephones.

Appendix B - Maintenance of CB Type Telephones (Including VoIP ringdown)

SERVICE A

- A1 Make a test call. When calling a Signaller or control centre, advise them that you are carrying out routine maintenance.
- A2 Confirm that any associated indications (e.g. concentrator) are functioning and presented correctly. Confirm that the sounder/external bell operates correctly.

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- A3 Check that the speech quality is clear and that there is no significant line noise, crackling or audible crosstalk. Ask the recipient for an assessment of the speech level and noise. Report a defect if speech levels are poor, or there is a hum, crackle or crosstalk.
- A4 Request a call back to the telephone. Check that the sounder and any visual indication, if fitted, operates correctly.
 - Answer the call.
- A5 Check telephone, post and fixings for orientation and deterioration (where applicable) and telephone is securely mounted. Replace any damaged or worn handset cords.
- A6 Check that locks, hinges and doors are lubricated and functional (where applicable).
- A7 Clean the telephone exterior, handset compartment or cradle, handset and cord.
- A8 Check that the internal/external telephone labels are present, readable and correct for the location (as per standard NR/SP/TEL/30032). The labels shall include the following:
 - a) External label which represents the telephone's function (SPT/Level Crossing etc).
 - b) Limited clearance identification (where applicable).
 - c) Instructions on how to use the telephone.
 - d) The name of the controlling signal box/electrical control room.
 - e) The circuit name/ID/number.
 - f) The location grid reference using a 6-figure grid reference (i.e. TQ123456).
 - g) The phonetic alphabet (where applicable).
 - In addition, for crossing telephones, the following shall include:
 - h) The public telephone number of the correct continuously staffed location.
 - i) A warning to the user that the call might be recorded (where applicable).
- A9 Check the visible portion of the tail cable for damage and that the cable is fitted and sealed into the telephone unit with a gland (where applicable).
- A10 Check the calling button/switch (if provided) is free to move.

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- A11 Call in to the Signaller/Controller and come to a clear understanding as to the purpose and implication of the test.
- A12 Request the Signaller/Controller to attempt to clear the call.
- A13 Keep the handset off the hook at the telephone until the timeout expires, which should be 3 minutes for crossing telephones and between 6 and 8 minutes for other telephones. Check that the call clears down (where applicable).
- A14 Check, if provided, that it is possible to call the Signaller/Controller from another handset on the same circuit whilst the timed-out handset is still off the hook.
- A15 Repeat A14 and A15 for all other phones on the circuit.

Appendix C - Maintenance of MAG/LB Type Telephones

SERVICE A

- A1 Make a test call. When calling a Signaller or control centre, advise them that you are carrying out routine maintenance.
- A2 Confirm that any associated indications (e.g. concentrator) are functioning and presented correctly. Confirm that the sounder/external bell operates correctly.
- A3 Check that the speech quality is clear and that there is no significant line noise, crackling or audible crosstalk. Ask the recipient for an assessment of the speech level and noise. Report a defect if speech levels are poor, or there is a hum, crackle or crosstalk.
- A4 Request a call back to the telephone. Check that the sounder and any visual indication if fitted, operates correctly.
 - Answer the call.
- A5 Check telephone, post and fixings for orientation and deterioration (where applicable) and that the telephone is securely mounted.
- A6 Check that locks, hinges and doors are lubricated and functional (where applicable).
- A7 Clean the telephone exterior, handset compartment or cradle, handset and cord.

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- A8 Check that the internal/external telephone labels are present, readable and correct for the location (as per standard NR/SP/TEL/30032). The labels shall include the following (where applicable):
- a) External label which describes the telephone's function (SPT / Level Crossing etc).
 - b) Limited clearance identification.
 - c) Instructions on how to use the telephone.
 - d) The name of the controlling signal box / electrical control room.
 - e) The circuit name/ID/number.
 - f) The location grid reference using a 6-figure grid reference (i.e. TQ123456).
 - g) The public telephone number of the correct continuously staffed location.
 - h) The phonetic alphabet (where applicable).
- In addition, for crossing telephones, the following shall include:
- i) The public telephone number of the correct continuously staffed location.
 - j) A warning to the user that the call might be recorded (where applicable).
- A9 Check the visible portion of the tail cable for damage and that the cable is fitted and sealed into the telephone unit with a gland.
- A10 Check the calling button is free to move.
- A11 Check that the cell housing is clean and dry, and that the connecting cables are in good condition.
- A12 Check battery voltage and current (5mA).
- A13 Renew the cells at the phone and control point where not covered by other standards or maintenance regimes; correctly dispose of old cells.
- A14 Call in to the Signaller/Controller and come to a clear understanding as to the purpose and implication of the test.
- A15 Request the Signaller/Controller to attempt to clear the call.

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Appendix D - Maintenance of Auto Type Telephones (Including VoIP keypad type)

SERVICE A

- A1 Make a test call. When calling a recipient, advise them that you are carrying out routine maintenance.
- A2 Check that the speech quality is clear and that there is no significant line noise, crackling or audible crosstalk. Ask the recipient for an assessment of the speech level and noise. Report a defect if speech levels are poor, or there is a hum, crackle or crosstalk.
- A3 Request a call back to the telephone. Check that the sounder/external bell and any visual indication if fitted, operates correctly.
 - Answer the call.
- A4 Check telephone, post and fixings for orientation and deterioration (where applicable) and telephone is securely mounted.
- A5 Check that locks, hinges and doors are lubricated and functional (where applicable).
- A6 Clean the telephone exterior, handset compartment or cradle, handset and cord.
- A7 Check that the internal/external telephone labels are present, readable and correct for the location (as per standard NR/SP/TEL/30032). The labels shall include the following (where applicable):
 - a) External label which describes the telephone's function (SPT / Level Crossing etc).
 - b) Limited clearance identification.
 - c) Instructions on how to use the telephone.
 - d) The name of the controlling signal box / electrical control room.
 - e) The circuit name/ID/number.
 - f) The location grid reference using a 6-figure grid reference (i.e. TQ123456).
 - g) The public telephone number of the correct continuously staffed location.
 - h) The phonetic alphabet (where applicable).
- In addition, for crossing telephones, the following shall include:
 - i) The public telephone number of the correct continuously staffed location.
 - j) A warning to the user that the call might be recorded (where applicable).

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- A8 Check the visible portion of the tail cable for damage and that the cable is fitted and sealed into the telephone unit with a gland.
- A9 Check the calling button is free to move.
- A10 Check that the cell housing is clean and dry, and that the connecting cables are in good condition.
- A11 Check battery voltage and current (5mA).
- A12 Renew the cells at the phone and control point where not covered by other standards or maintenance regimes; correctly dispose of old cells.
- A13 Call in to the Signaller/Controller and come to a clear understanding as to the purpose and implication of the test.
- A14 Request the Signaller/Controller to attempt to clear the call.

Appendix E - Maintenance of Autodial Type Telephones (including VOIP)

- A1 Make a test call. When calling a Signaller or control centre, advise them that you are carrying out routine maintenance.
- A2 Confirm that any associated indications (e.g. concentrator) are functioning and presented correctly. Confirm that the sounder/external bell operates correctly.
- A3 Check that the speech quality is clear and that there is no significant line noise, crackling or audible crosstalk. Ask the recipient for an assessment of the speech level and noise. Report a defect if speech levels are poor, or there is a hum, crackle or crosstalk.
- A4 Request a call back to the telephone. Check that the sounder and any visual indication if fitted, operates correctly.
 - Answer the call.
- A5 Check telephone, post and fixings for orientation and deterioration (where applicable) and phone is securely mounted.
- A6 Check that locks, hinges and doors are lubricated and functional (where applicable).
- A7 Clean the telephone exterior, handset compartment or cradle, handset and cord.

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A8 Check that the internal/external phone labels are present, readable and correct for the location (as per standard NR/SP/TEL/30032). The labels shall include the following:

- a) External label which describes the telephone's function (SPT / Level Crossing etc).
- b) Limited clearance identification (where applicable).
- c) Instructions on how to use the telephone.
- d) The name of the controlling signal box / electrical control room.
- e) The circuit name/ID/number.
- f) The location grid reference using a 6-figure grid reference (i.e. TQ123456).
- g) The phonetic alphabet (where applicable).

In addition, for crossing telephones, the following shall include:

- h) The public telephone number of the correct continuously staffed location.
- i) A warning to the user that the call might be recorded (where applicable).

A9 Check the visible portion of the tail cable for damage and that the cable is fitted and sealed into the telephone unit with a gland.

A10 Check the dial or keypad is operating correctly.

Appendix F - Maintenance of PETS/KETS Type Telephones

SERVICE A - Crossing End Telephones Check

NOTE: Carry out the following service on each crossing phone (including any non-emergency telephones for the crossing).

A1 Check that access to the crossing telephone is possible and safe.

A2 Where fitted, check for presence and legibility of 3-sided telephone sign. Check that it is visible, and no undergrowth is close to obscuring it.

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- A3 Check the telephone labels are present, readable and correct for the site. The labels shall include the following:
- a) 'Black phone', sign 787 on the housing.
 - b) Instructions on how to use the telephone.
 - c) The name of the controlling signal box.
 - d) The name of the level crossing.
 - e) The location grid reference using a 6-figure grid reference; (i.e. TQ123456).
 - f) The public telephone number of the correct continuously staffed location.
 - g) The phonetic alphabet.
 - h) A warning to the user that the call might be recorded (where applicable).
- A4 Check telephone, post and fixings for orientation and deterioration. Repair or replace where required.
- A5 Check for any substantial damage to the telephone housing and that the door can stay closed. Lubricate hinges where required.
- A6 On non-emergency telephones, check that any locks are lubricated and functional.
- A7 Check that the backlight for the instructions is functional and providing necessary illumination.
- A8 Check the visible portion of the tail cable for damage and that the cable is fitted and sealed into the telephone unit with a gland.
- A9 Check handset for damage. Replace where required.
- A10 Check the cord for damage or substantial wear. Replace where required.
- A11 Call in to the Signaller and advise that you are carrying out routine maintenance.
- A12 Confirm with the Signaller that the sounder operates, and the correct indication is displayed on the concentrator or for standalone PETS/KETS units, the Signaller's handset is correctly labelled. If there is no indication or it is incorrect then advise the Signaller of the crossing, the telephone concerned and report the defect to Infrastructure Fault Control.
- A13 Check that the speech quality is clear and that there is no significant line noise, crackling or audible crosstalk.

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A14 Request that the Signaller calls back to the crossing. Check that all the sounders operate correctly; answer the call.

Off hook test

A15 Take a handset off hook but do not call in. Wait for at least 30 seconds.

A16 Call in to the Signaller from another telephone whilst the first handset is off hook. The call should be successful. Confirm with the Signaller that they have received an “off hook” alarm.

A17 Request that the Signaller calls back. Answer the call.

A18 Return all telephone handsets to the ‘on hook’ position.

Intrusion Test

A19 Initiate a call from one of the public PETS/KETS telephones to the signal box. Once the call is in progress, initiate another call to the signal box from another public PETS/KETS telephone.

A20 Check that an intrusion tone is presented to the Signaller.

Time out test

A21 Call Signaller to inform that it is a timeout test, clear down the call and remove handset from cradle, wait at least 9 minutes.

A22 Call back Signaller using an alternative telephone and confirm that the “off-hook” alarm is present.

A23 Return handset on hook and check with Signaller all alarms have cleared.

A24 Repeat A21 – A23 for all other public telephones at crossing.

A25 Take 2 handsets off hook and wait 9 minutes.

A26 Call Signaller using an alternative telephone and confirm that a “multiple off-hook” alarm is present.

A27 Return all handsets on hook and check with Signaller all alarms have cleared.

END

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Includes:	External Cable routes
Excludes:	Cables mounted to structures or inside buildings

GENERAL

Asbestos cement troughing can pose a serious risk to health if disturbed; under NO circumstance shall asbestos cement troughing or lids be disturbed. If any are discovered or you are unsure about the consistency of the troughing, ask your SM(S).

All known and discovered asbestos cement troughing shall be identified on the route records.

Working within certain inspection pits or chambers can be designated as Working in Confined Places requiring the correct competency and the use of specialist PPE and gas detection equipment. If you are in doubt, ask your SM(S).

On cable pits when the lids or coverings are removed for maintenance, safety precautions shall be taken to check that no one can accidentally fall into the exposed cable pit.

SERVICE A

1. Full Inspection and Minor Maintenance of Cable Routes

- 1.1 Check that all route lids are 'in-place' and if provided with secure fastenings, that these are present and functional. Where displaced lids or unsecured fastenings are identified they shall be refitted.
- 1.2 Check that the route has no visible damage, including crushed lids and troughs.
 - Where damage to the cable route is identified visually check, within the route for signs of damage.
 - Remove any pieces of ballast which have entered the route which could cause damage to the cables.
 - Exclude minor problems such as a chipped corner or crack which does not affect the structural integrity of the route.
- 1.3 Where ground anchors are installed, check that they and their associated securing ties are present and are correctly retaining the cable.
- 1.4 Visually check for exposure of the re-enforcing fabric used in the construction of the trough route and lids.

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1.5 Visually check that no embankment, spoil or ballast is encroaching onto or covering the route, or that the route is not being displaced from either its horizontal or vertical alignment or is subject to damage by movement of the Permanent Way.

Note any areas where the route is surrounded or covered by vegetation which would either hinder access or cause exposure of the cable route to a heightened fire risk.

1.6 Check that the cable route/ducting has not become a conduit for water drainage. Check for evidence of silting or scouring.

1.7 Check that there are no lengths of rail, sleepers or other heavy items restricting access to the route.

1.8 Check that any ballast boards and their supports are in good order and are functional.

1.9 Where provided, check that ballast retaining walls for joint bays and locations are in good order, this shall include checking for crumbling concrete, loose brickwork and loose mortar.

1.10 Where the route is provided on supports, hangers or trestles, check that these structures are secure, in good order and all fittings are present and functional.

1.11 Where the route is provided through station platforms, check that there is no visual subsidence of the line of the route. Where subsidence is evident and where the extent of the subsidence poses a risk to persons or property, action shall be taken as is reasonable to warn station users of the hazard.

1.12 Check that joint bays are free from rubbish, soil, ballast and debris.

1.13 Check for signs of rodent incursion especially where cable route enters location cases, signal boxes or relay rooms and that any fire blocks provided are still intact.

SERVICE B

2. Cable Pit Inspection and Minor Maintenance

2.1 Remove the cable pit cover and check whether the cable pit contains any debris. Debris found in the pit shall be removed and disposed of.

2.2 Check that the pit retaining walls and lid surround are secure and intact, this shall include checking for:

a) Crumbling concrete.

b) Loose brickwork.

c) Loose mortar.

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2.3 Check the existing draw wires or ropes between pits for free movement, where a draw wire or rope does not move freely then the pipe shall be further investigated to ascertain whether it is a blocked pipe.

⋮ This gives an indication as to the condition of the connecting duct pipes between the pits.

2.4 Check that the cables in the pit are not chafing against the sides of the pit or duct in a way to cause damage to the cable sheath. Where chafing is identified or if the outer sheath of the cable has been penetrated, this shall be reported as corrective maintenance.

2.5 Check that all covers and lids are in good order, can be secured and that all clips and fastenings are present and functional.

2.6 Restore all protective covers and lids on completion of the inspection, check that they are correctly seated and secured.

2.7 Where it is identified that a cable pit is in danger of subsidence or collapse or the pit covers or lid are missing, this shall be reported immediately.

The area shall be clearly identified and where it poses a risk to persons or property, take action as is reasonable to warn other persons of the hazard.

SERVICE C

⋮ These tasks may be undertaken from a cab of a train or by reviewing video footage.

3. Route Inspection

3.1 Examine the route by visual inspection, check that it is undamaged and intact. Note shall be taken of the following:

a) Any areas where the cable route is obscured by ballast, rails, landslip or dense vegetation etc.

b) Where the cable route has been displaced from its original alignment by landslip, earthworks or building works adjacent to the route.

c) Where cables are exposed or are hanging unsupported, when they would be expected to be afforded protection by the cable route.

d) Where visual evidence indicates that the cable route could have been crushed by heavy machinery gaining access to the railway.

e) Any areas where the cable route is flooded.

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- f) Any areas where the cable route is now remote from the operational railway due to the abandonment of sidings / land.
- g) Any signs of fire damage to, or adjacent to the cable route (embankment fires etc).
- h) Any signs of contamination to the cable route by hazardous substances such as acid, diesel, oil etc.

END