

openreach

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For all people involved in OFN construction and
provision

EPT/ANS/A047

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FTTP Quality Standards & Checks

About this document ...

Author

The author of this document may be contacted at:

Quality standards Network Performance

Openreach Chief Engineers Office (BOI)
Post Point Cedar Avenue
Worcester
Worcestershire
England

WR4 9UE

Telephone:

Fax:

Email: accreditationqualitystandards@openreach.co.uk

Content approval

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Issue 9	09-Dec-2019	Quality standards & Accreditation Network Performance	Amendment to 6.5 (item F1088), description & BP amended to reflect current practice.
Issue 8	17-Jul-2019	Quality standards & Accreditation Network Performance	Addition of Connectorised MDU Guidance see section 7, Addition to 5.9 – Kopex, Amendants to 5.2 / 5.12 / 5.24
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Issue 6	21-Dec-2018	Quality standards & Accreditation Network Performance	Section 5 deleted, methodology condensed into S3 5.13 measurement centres added. 5.5 additional guidance. 5.8 ladder loop rudiments amended
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Issue 2	21-Sep-2011	Allan Lupton	Updated to include MDU P&B requirements and all FPQ SS guidance sheets in section 7 updated
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Issue Draft 0b	18-Jan-2011	Allan Lupton	tables of FPQ SS removed due to formatting issues - to use hyperlink references /attachments
Issue Draft 0a	7-Jan-2011	Allan Lupton	Initial draft

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1 *Introduction*

This document references the Quality Standards and Check criteria to be applied by Openreach people and contracted Suppliers when working on OFN plant, cables and equipment.

This includes the criteria for Quality Checks and Independent Audits showing the relevant FPQ category codes and specific guidance.

2 *Reference Documentation*

In addition to standard ISIS working practices the following quality standards reference documentation is applicable to the OFN checks and audits.

EPT/ANS/A040 - OFN User Manual for Engineers

EPT/COF/D945 - TM Nodes

EPT/COF/C005 - CBT build Practices

EPT/COF/C004 - Connectorised L2C

EPT/COF/C007 - Connectorised MDU Installation Practices

3 *Scope*

This document provides guidance for completing relevant FPQ scoresheets used for checking/auditing OFN construction work and L2C provision. The checks may be carried out as “in progress” or “retrospective” on completed work.

4 *Quality Checks and Independent Audits*

The following standards will be checked during quality checks and independent audits completed by Openreach people and their contracted suppliers. This will be in accordance with their agreed quality checking and audit strategy. All results will be input into FPQ, or agreed alternative.

5 *Quality Check and Audit Items*

OFN Scoresheet 601, 604 & 605 Guidance

5.1 Item Description: F0190

Have the Joints / cables been fitted as per job pack instructions unless a DFE has been raised and authorised?

- All cables/plant fitted as per job pack
- Any deviations recorded and returned with appropriate DFE if required
- Additional information should be sought from supplier/PM when achievable if plant is assumed to be installed in alternative location before issuing a defect.

5.2 Item Description: P8196

CBT/cable labelled correctly (Marked with CBT ID, Cable label & Yellow tape on UG SST cable)

Points of reference: EPT/ANS/A040

Guidance:

- Yellow Cable Marker Optical label fitted to SST cable
- Front face above the ports legibly labelled with node ID using permanent marker (e.g. gold/white marker pen)
- Body of Connector Multiport (Squid) marked node ID using permanent marker (e.g. gold/white marker pen)
- If mounted on a MOBRA, where possible label the rear face of the CBT to aid identification (not mandatory)
- SST cable marked with yellow tape in the UG network only. Yellow tape is NOT required on poles

Note: Only one cable marker label is required per cable at a single workpoint i.e. CBT and TM joint located in same jointbox/pole, 1 label required on SST tail.

5.3 Item Description: P8100

Are CBT protective dust caps fitted and fully tightened on all the ports?

Points of reference: EPT/ANS/A040

Guidance:

- CBT port protective covers correctly replaced following testing
- Port cover screwed tightly into port. Firm pressure or tool required for removal.

5.4 Item Description: P8198

OH CBT correctly fixed in top pole envelope

Points of reference: EPT/ANS/A040, EPT/OHP/B058

Guidance:

- Plant sited in correct envelope of space
- CBT body excluding the shrinkdown cable tail shall be sited in the top pole envelope
- Where out of spec or non-standard stepping exists consideration should be given to ensure the CBT is located in the best achievable position which does not impede safe access for a climbers belt
- CBT securely screwed using appropriate type and number of fixings
- Correct machine screw for CBT on steel Back to Back mounting bracket

Note: For or 15 Way Split Ring (Crown Type) or non-standard poles where the ring has been fitted excessively low it is permissible to fit CBTs above the ring if space exists. Each pole must be individually assessed to ensure the fixing is in sound timber and the CBT can be safely accessed and all ports are accessible for L2C connectivity

Note: Corning black plastic mounting brackets checked under P8200

5.5 Item Description: P8261

OH Cables routed and dressed away from pole climbing step positions, Minimum cable bend radii maintained

Points of reference: EPT/ANS/A040, EPT/OHP/B073

Guidance:

- Cables routed away from climbing steps giving unobstructed access for placement of the climber's hands and/or feet on steps

Obstructed is defined as:

- Cables which will require moving to allow foot or hand placement
- Cables routed in a manner which risks entanglement of the climber

- Cables not in contact with step metalwork
- Cables left in a manner which would compromise safe access

Note: Incorrect spacing or fixings etc. which do not pose a safety hazard are checked under item P8230

- Minimum cable bend radius maintained:
 - SST: 80mm

- 36f ULW: 84mm
- COF600: 100mm

5.6 Item Description: P8200

OH Top & bottom mountings fitted and 2 x SCF1A provided at cable butt moulding on pole

Points of reference: EPT/ANS/A040, EPT/COF/C005

Guidance:

- Corning type CBTs provided with correct number of black plastic standoff adaptors when mounted on a wooden pole
- Butt moulding secured to bottom mounting with 2 x SCF
- Commscope type correctly fitted in supplied mounting bracket
- Black plastic mountings not required on steel bracket (single mounting required to secure Corning type CBT)

5.7 Item Description: P8229

OH Steel CBT back to back mounting bracket correctly fitted (Top pole envelope & correct fixings)

Points of reference: EPT/ANS/A040, EPT/COF/C005

Guidance:

- Steel bracket securely fixed
- Correct size and number of screws provided
- Location within top pole envelope

5.8 Item Description: P8230

OH Cable fixed to pole using Strip Aluminium with nails bonding and washers on each side at 450 mm intervals or Cleats Wiring Hybrid (SST only). Cables routed away from ladder placement area.

Points of reference: EPT/ANS/A040, EPT/OHP/B073

Guidance:

- Appropriate sized Strip Aluminium used, saddled over cables & secured with two Nails Bonding & Washers
- Correct spacing maintained
- Ladder placement area avoided with newly provided cables where achievable. Consideration must be given to existing plant, pole orientation and likely ladder location(s) as to the best route for new cables.

- Provision of “ladder loop”
- Run straight down the pole to allow V shaped pivot plate to straddle cable(s)

Note: Sharing aluminium strips securing copper cabling is acceptable with OFN cables.

5.9 Item Description: P8231

OH Pole capping not provided where required

Points of reference: EPT/ANS/A040, EPT/OHP/B005

Guidance:

- No capping provided leaving cable(s) liable to damage, vandalism or in a manner which constitutes a hazard to general public or livestock
- Capping not fully covering cables(s) at ground level leaving liable to damage
- Where an existing duct does not sit flush with a pole or new cables require slewing at low level protection steel Kopex is permissible for use until the cable(s) are covered by a standard capping

Note: **Where a capping has been provided but is deficient see P8263**

5.10 Item Description: P8263

OH Pole capping incorrectly provided

Points of reference: EPT/ANS/A040, EPT/OHP/B005

Guidance:

- Appropriate sized capping provided on a wall or pole
- Connector Bend “Elephants Foot” fitted to cover duct where required, large capping to floor level acceptable to protect duct/cables
- Capping insecurely fixed to pole/wall with inappropriate or insufficient number of fixings

5.11 Item Description: P8264

OH fibre drop identification label provided on all poles (wooden = board, hollow = adhesive)

Points of reference: EPT/ANS/A040

Guidance:

- Label provided to wooden pole at approximately eye level, near DP number or test label
- Securely fixed with 4 x Pins Steel in corners

- Self-Adhesive label provided on hollow pole
- Inclusion on plant ID (e.g. CBT ID) on the label is not mandatory
- Label not required on DNO poles (Practice awaiting confirmation from Electricity Suppliers Org Oct 2018)

5.12 Item Description: F0105

Joint (inside & outside)/Cable/sub duct/BFT/tray/shelf/termination unit/jumper marked or labelled correctly

Points of reference: EPT/ANS/A040

Guidance:

- Newly provided joint closures labelled with a minimum of planned T Code
- Additional/unplanned joints where no planned T-Code exists:
 - Closure marked with a minimum of: estimate, ON number, UIN and date.
 - Joint location recorded on jobpack return/GeoHub to enable line plant record update
- Fibre trays labelled as per FNC
- Cable(s) labelled with yellow Cable Marker Optical and all relevant fields legibly completed in indelible pen
- Underground cables without factory applied longitudinal yellow stripe marked with yellow tape

5.13 Item Description: F0192

OH Have the Joint (s) been correctly fitted within the bottom pole envelope of space

Points of reference: EPT/ANS/A040, EPT/OHP/B058

Guidance:

- Joint fitted in prescribed location:
 - Mounting bracket centre 750mm from bottom climbing step tread.
 - Cables above 2m
- TM Joint does not compromise safe access for the climber
- Bracket correctly fitted with supplied coach screws and locking pin inserted
- Bracket correctly orientated
- For roadside poles joint mounted in a location to avoid projection into the carriageway where it may be struck by vehicular traffic

5.14 Item Description: F4385

Permitted fibre plant correctly fitted to a licenced Joint User (DNO) pole.

Points of reference: EPT/ANS/A040, NWK/LNK/C517, EPT/PPS/B037 & B038

Guidance:

- DNO pole licensed for joint user attachments
- Plant fitted in specified location
- No attachments to Electricity Northwest, other attachments approved by local DNO
- Correct power separation maintained
- Small TM joint, CBT & cables with similar characteristics to dropwire permissible

5.15 Item Description: F4377

TM Closure, port and cable installation critical items

Points of reference: EPT/ANS/A040, EPT/COF/D945

Guidance:

- Correct port kit used for cable type and assembled as per instructions contained in EPT/COF/D945 section 2
- Cable correctly anchored in port kit, no excessive strength member protruding through clamp
- Tape not mandatory on 36f 4 way entry (088362), steel strength members cut as per instructions
- Port kit fully inserted into joint chassis, gland nut tight. Allow ¼ turn for settlement of gland.
- Spacer washers (where required) fitted. Depending on cable configuration may not be fully tight against the joint body.
- Clamp correctly fitted & not defective
- O ring present and free from grease and dirt
- Protective tray/chassis/SASA covers replaced
- Looped cables must be provided in oval port
- Looped/spare elements correctly stored.
 - Velcro/clear door replaced on L/XL, plastic sleeve fitted if oval entry kit provided
 - Velcro retraining strap on S/ M

- BFT cap sealing, waterblock correctly fitted
- No excessive loops of cable left in jointbox (ABC measurement)
- No loops of cable left on a pole.
- 33Kv ADSS crossing: Joint(s) >1 span back from crossing

5.16 Item Description: F4378

TM Closures, ports and cable installation non critical items.

Points of reference: EPT/ANS/A040

Guidance:

- Port capacity maximised with use of correct entry kit and utilisation of spare cable entries.
- Oval port used for non-looped cables (i.e. 2 cut cable ends) where a serviceable circular port exists
- Missing or incorrect cable ties on ports

Note: Labelling of joint, cables & trays etc. under item F0105

5.17 Item Description: F4384

TM Fibre routing, Splicing & SASA critical items

Points of reference: EPT/ANS/A040

Guidance:

- Correct splice protector used for tray type and seated in correct tray position
- Fibres spliced as per FNC
- No fibres liable to damage by incorrect routing in chassis or tray
- Sufficient spare fibre left in trays for jointing (Approximately 4 wraps)
- Elements correctly presented to chassis with no excessive bends
- Element coating stripped in specified location.
- Correct race way used:
 - Left: Incoming fibres
 - Right: Outgoing fibres
- SASA fitted in correct location
- Planned type of SASA fitted (16 or 32 way)
- SASA Input/output fibres correctly routed
- Spare SASA outputs stored in chassis or spare tray

Note: Transportation tubing (e.g. OTIAN Element Support Tube 3A) is not required from COF cable butt to chassis.

5.18 Item Description: P8237

Fibre Cables correctly supported & restrained, min bending maintained.

Points of reference: EPT/ANS/A040, EPT/ANS/A004

Guidance:

- Fibre cables <25mm diameter supported & restrained on either Kits Support 1A or Flatbar where achievable
- Bend radius for cable type maintained
- Best achievable solution used for non-standard boxes (e.g. grey tube)

5.19 Item Description: F0193

MOBRA/joint support critical items

Points of reference: EPT/ANS/A040, EPT/COF/D897

Guidance:

- No drill MOBRA only expanded to grip brick or concrete jointboxes
- Modular box corner brackets fitted in JMF 4/6 boxes
- MOBRA & arm correctly assembled with nuts correctly tightened
— Bolt thread protruding through blue Nyloc nut
- Mobra correctly sited in jointbox
- Med & Small TM joints permissible on Flat Bar
- Best achievable solution used for pre-cast (JB23/6) or non-standard boxes (e.g. grey tube)

5.20 Item Description: F0194

MOBRA/joint support non critical items

Points of reference: EPT/ANS/A040, EPT/COF/D897

Guidance:

- Grub screw tightened

5.21 Item Description: F0195

COF215 / 36F ULW Cable critical items

Points of reference: EPT/ANS/A040, AEI/AEC/B248, EPT/COF/D932

Guidance:

- 7mm Purple flash clamp 36fULW
- Clamp correctly fitted on pole ringhead or bracket (e.g. UPB, 22)
- Clamp wrapped correctly, cable not twisted around the clamp
- Intermediate Clamp correctly assembled and fixed to pole and used in appropriate location
- Suitable cable used for power crossings
- Protector Cable Abrasion applied where multiple clamps exist on ring

Note: Wire height, pre climb label etc. are checked on SS606

5.22 Item Description: F0197

Fibre locking mechanism (e.g. ELM) critical items

Points of reference: EPT/ANS/A040, EPT/COF/D879

Guidance:

- Fibre locking only provided to cables where stabilisation of fibre movement is required: 36f ULW, FDC & BFDT.
- Fibre locking mechanism provided at all jointing positions (OH & UG) where overhead cable sections exist
- Correct locking device fitted for cable type:
 - ELM fitted to 36f ULW
 - ACD fitted to 4/12FDC
- Cable correctly wrapped on ELM (5 crosses in centre), Single cable provided per ELM
- 36f ELM Fitted in appropriate location on pole:
 - Bottom pole envelope near joint/capping
 - COF215 tailed CBT, ELM fitted in top pole envelope adjacent to CBT
- ELM not sited in ladder placement area
- 2 x Strap Cable Fixing provided at cable entry/exit point
- 4/12f ACD fitted as per D879
- ELM free from physical damage from incorrect installation
- Incorrect cable wrapped type around ELM

- No excessive cable bend or twist present

5.23 Item Description: F0198

Fibre locking mechanism (erg ELM) non- critical items

Points of reference: EPT/ANS/A040

Guidance:

- Incorrect or insufficient fixings used
- 4 x 1" No8 woodscrews should be used on ELM

5.24 Item Description: F0199

Other fibre cables (e.g. SST, COF209 A/C, FDC) critical items

Points of reference: EPT/ANS/A040

Guidance:

- Correct OH clamp used for cable type
- COF209 96f A/C:
 - Route stability applied where required
 - Correct clamp and cable make off
 - Standard aerial cabling items apply
 - A/C wire heights maintained
- Overhead SST cable:
 - Clamp correctly assembled
 - Correct link (Carabiner or Link Cabling) used to attach clamp to ringhead/bracket
 - Link correctly closed/assembled
 - 1 clamp per link
 - Approx. 10 anti-galloping twists per span
 - ELM/ACD not required
 - Cable can be routed in front of ring
- 4/12 FDC
 - 6mm Orange flash clamp
 - Clamp correctly fitted on pole ringhead or bracket (e.g. UPB, 22)
 - Cable can be routed in front of ring
- Cable(s) routed correctly at pole top to minimise damage from movement and facilitate access to pole top apparatus
- COF600 not provided overhead

5.25 Item Description: F0233

Other fibre cables (e.g. SST, COF209 A/C, FDC) non-critical items

Points of reference: EPT/ANS/A040

Guidance:

5.26 Item Description: F0232

ADSS overhead cable critical items

Points of reference: EPT/ANS/A040, AEI/AEC/B301

Guidance:

- No ELM/ACD fitted to ADSS cable
- 33Kv ADSS power crossings correctly provided (power separation)
- 33kv power crossing correctly labelled. (Pole & cable)
- Route stability provided where required for ADSS cable(s)
- Correct clamp for ADSS cable type
- Clamp correctly fitted to cable and secured on pole ringhead or bracket (e.g. UPB, 22) as appropriate

Note: 33Kv joint position checked under item F4377

5.27 Item Description: I6210

Newly provided dropwire in line of route provided in accordance with working practices and pole loading restrictions.

Points of reference: EPT/ANS/A011 & NWK/NNS/V046

Guidance: See EPT/ANS/A011

6 FTTP L2C Scoresheet Guidance

L2C Scoresheets 578 & 9

6.1 Item Description: F6218

Correct Dual Drop cable clamp used and correctly fitted

Points of reference: EPT/COF/C004

Guidance:

- Correct type clamp used
- Yellow tip clamp wrapped around copper& fibre, unmarked clamp copper separated and cable tied to clamp
- Clamp correctly attached to pole ringhead/bracket
- Clamp wrapped around cable, no excessive bend/twist evident

6.2 Item Description: I6226

Existing dropwire recovered and replaced with Hybrid Dual Drop cable or Hybrid BFDT

Points of reference: EPT/COF/C004

Guidance:

- Existing copper dropwire recovered and replaced with hybrid where achievable
- Permitted exceptions: two services exist in D/W, serving copper DP is in different location to CBT/Manifold, existing fixing is inaccessible

6.3 Item Description: F1085

OptiTap connector correctly inserted into CBT with arrow facing upwards and lock nut fully tightened

Points of reference: EPT/COF/C004

Guidance:

- Locking ring correctly tightened with no movement evident when light pressure applied with finger & thumb

6.4 Item Description: F1087

Internal fibre cable installed correctly. (Bend radius maintained, correct fixings used, not liable to damage)

Points of reference: EPT/COF/C004

Guidance:

- Minimum cable bend radius maintained
- Correct fixings used

Note: Fire proof fixing checked under S0081

6.5 Item Description: F1088

Correct Fibre cleaning kit used and used as per specification

Points of reference: EPT/COF/C004, AEI/AEC/B331

Guidance:

- It is mandatory that each and every connection is cleaned using the new stickler kit. It is mandatory to use the items within this kit every time a fibre is connected/spliced (IP check only)

6.6 Item Description: F1089

Field Fit connector correctly installed

Points of reference: EPT/COF/C004

Guidance:

- In progress:
 - Fibre cleaned with IPA before termination
- Retro:
 - Cable correctly anchored with Aramid yarn
 - Correctly assembled as per EPT/COF/C004

6.7 Item Description: F1090

BBU and case correctly installed

Points of reference: EPT/COF/C004

Guidance:

- Securely fixed to building fabric
- Internal components correctly installed and connected
- Cables correctly routed within case

6.8 Item Description: F1092

Worksite clear for hazardous fibre waste (shards, fibres)

Points of reference: Health Safety Handbook, EPT/COF/D050

Guidance:

- No fibre shards/offcuts present
- Fibre waste correctly disposed of in sharps bin

7 **Connectorised MDU items**

Connectorised MDU network construction FPQ scoresheet 559 guidance.

7.1 Item Description: F1171 / F1175

NEW Basement Splicing Box – Critical Items

NEW Connectorised Splitter Box - Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Splice/Splitter box securely fixed to building fabric using suitable fixings
- Installed as per manufacturer's instructions including but not limited to:
 - Gas seals correctly provided where required on external cables
 - Correct cable entry used for cable type
 - Cable correctly anchored/secured for cable type
 - Splitter outputs (yellow jumpers) not trapped or damaged by lid closure
 - Lid missing or incorrectly provided leaving the unit fault prone or liable to damage/vandalism

7.2 Item Description: F1173 / F1177

NEW Basement Splicing Box – Non-Critical Items

NEW Connectorised Splitter Box – Non-Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Lid incorrectly provided (e.g. loose/missing screw)

7.3 Item Description: F1179 NEW Invisilight Cable e.g. 12f

Corridor Cable - Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Invisilight cable fully secured to building fabric with adhesive
- Cable routed safely and in a damage free location
- Corner protectors correctly installed where required
- Cable bend radius maintained
- Cable free from damage, kinks or evidence excessive tension applied

Note: Correct provision of fireproof fixings and firestopping of holes checked under items S0080 & S0081

7.4 Item Description: F1181 NEW Invisilight Cable e.g. 12f

Corridor Cable - Non-Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Excessive adhesive applied detrimental to building aesthetics

- Cable run poorly executed (e.g. sagging or wavy cabling), correct run achievable

7.5 Item Description: F1183 NEW Other Fibre Cables e.g. EZBend – Critical Items

Points of reference: EPT/COF/C007

Guidance:

Other fibre cable(s) (e.g. EZ bend, COF950) installed correctly

- Cable correctly secured to building fabric, cable tray or in trunking/conduit
- Cable routed safely and in a damage free location
- Cable bend radius maintained
- Cable free from damage, kinks or evidence excessive tension applied

Note: Correct provision of fireproof fixings and firestopping of holes checked under items S0080 & S0081

7.6 Item Description: F1185 Other Fibre Cables e.g. EZBend – Non-Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Cable run poorly executed (e.g. sagging or wavy cabling), correct run achievable

7.7 Item Description: F1187 New Floor DP- Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Floor DP securely fixed to building fabric using suitable fixings
- Spool correctly secured
 - Spool lock should be slid up to lock the spool in place with the spool lock screw
 - Spool should be positioned so that the SC connectors are facing down
- 900 Micron tails properly routed and free from damage due to lid closure
- Lid missing or incorrectly provided leaving the unit fault prone or liable to damage/vandalism

Note: Correct provision of fireproof fixings and firestopping of holes checked under items S0080 & S0081

7.8 Item Description: F1189 NEW Floor DP- Non-Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Lid incorrectly provided (e.g. loose/missing screw)

7.9 Item Description: F1195 NEW End User Break Out - Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Breakout securely fixed to building fabric using suitable fixings
- Fibres and SC adaptor stowed securely and free from damage
- Lid missing or incorrectly provided leaving the unit fault prone or liable to damage/vandalism

7.10 Item Description: F1119 NEW End User Break Out – Non- Critical Items

Points of reference: EPT/COF/C007

Guidance:

- Lid incorrectly provided (e.g. loose)

7.11 Item Description: F1149 NEW MDU Fibre routing and splicing

Points of reference: EPT/COF/C007

Guidance:

Splitter/splice box:

- Correct splice protector used for tray type and seated in correct tray position
- Fibres spliced as per FNC
- Splitter box jumpers terminated as per FNC

- No fibres liable to damage by incorrect routing in chassis or tray or EU Breakout
- Sufficient spare fibre left in trays for jointing (Approximately 4 wraps)
- Elements correctly presented to chassis with no excessive bends
- Element coating stripped in specified location.

8 *Enquiries*

All enquiries about this document should be referred to the author.

END OF DOCUMENT
