openreach

ISIS Practice
For Openreach people

NWK/LNK/C573

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TM Node Jointbox Capacity

About this document ...

Author

The author of this document may be contacted at:

Evan Rogers
Fibre Network Innovation Specialist
Openreach (BOI)
Post Point Polaris HousOrion Building
Adastral Park
Martlesham Heath
Ipswich
SUFFLK
IP5 3RE

Telephone: +447483169860
Fax:
Email: evan.rogers@openreach.co.uk

Content approval

This is the Issue 3 of this document.
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Version History

Version No.	Date	Author	Comments
Issue 3	22-Jun-2021	Evan Rogers	CBT minimum distance added
Issue 2	28-Apr-2020	Evan Rogers	Editorial updates for clarity
Issue 1	12-Nov-2019	Malcolm Campbell	Conversion of key guidance to a new ISIS document.

Table of Content

1 *Openreach Policy*

Openreach network policy defines a set of requirements to guide the decisions taken when planning and building a telecommunications network.

These requirements ensure we achieve the required outcomes in terms of meeting the strategic direction, architectural design, financial targets and quality standards for the respective network.

This document forms a part of the authorised portfolio of Openreach network planning policy documentation. Adherence to these standards and policy is mandatory. Any deviation presents a risk to the required outcomes, and will be subject to future compliance checking. Network deployments which do not meet network policy will fail any build audit and ultimately jeopardise our ability to provide service to our customers.

Caution: Policies are liable to change. Therefore you must ensure that this copy/material is from a controlled source e.g. The Book Store Libraries, where you are able to register for email alerts when updates are made, from within the documents you reference.

2 *Introduction*

This document details the Openreach network policy for a cable slack storage network. Introducing a cable slack network provides more resilience and flexibility for field cablers and jointers. This document describes the best practise to achieve the safest network build by covering the maximum number of joints per jointbox (dependednt on joint type) and the recommended maximum cable length covering loop storage (input, loop & output) and distributuion.

3 *Scope*

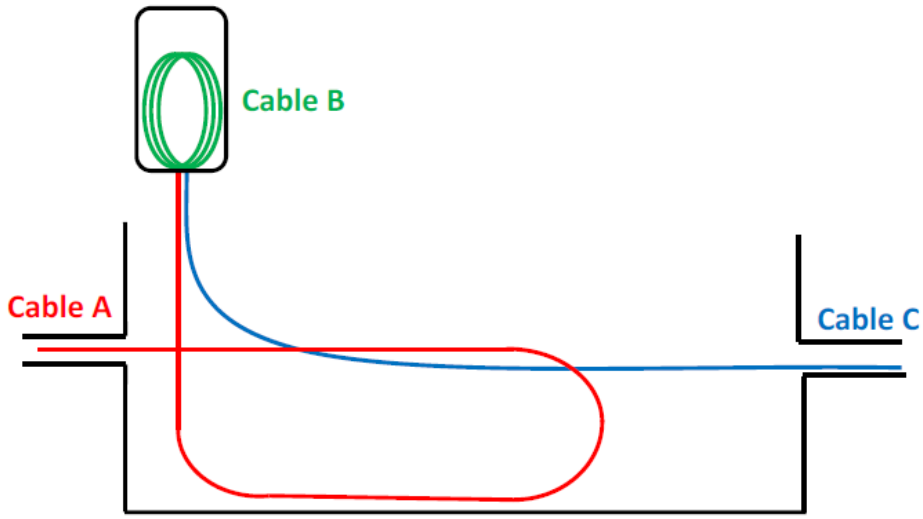
This document covers the maximum number of nodes available for each jointbox size depending on the joint type, the recommended minimum and maximum cable slack length for both spine (input, loop & output) and distribution in the network, all while sticking to the recommended maximum number of cables being input into a node.

The range between maximum length for a ‘no slack network’ (now the minimum length) and the new ‘slack network’ provides flexibility for cablers when building the network (now the maximum).

Ultimately, the length of cable that will be installed into a jointbox will be dependent on the conjestion of existing furnature and available capacity but stay within the minimum and maximum range.

4 Spine Cable Loop Length and Jointbox Capacity for TM Nodes

Also added are two tables, one for the required Cable Loops, and one for the Maximum number of Nodes that could possibly be accommodated within each Joint Box. The tables show a suggested list for a combination of Nodes per Joint Box type, but each box **should not** exceed the amount per box.



4.1 JF-11 Installation

Minimum (formerly 'No Slack Network' length):

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	5.2M	3.6M	3.1M	JF-11	11.9M
L Node	5.2M	3.6M	3.1M	JF-11	11.9M
M Node	5.2M	2.7M	3.1M	JF-11	11.0M
S Node	5.2M	2.5M	3.1M	JF-11	10.8M

Maximum:

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	10.4M	3.6M	6.2M	JF-11	20.2M
L Node	10.4M	3.6M	6.2M	JF-11	20.2M
M Node	10.4M	2.7M	6.2M	JF-11	19.3M

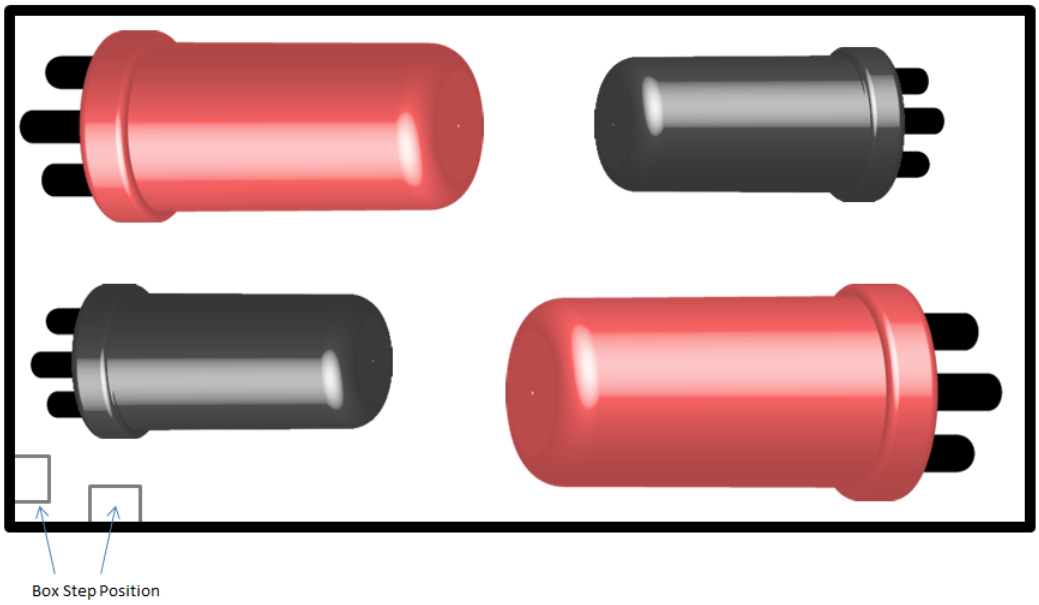
S Node	10.4M	2.5M	6.2M	JF-11	19.1M

Depending on the position of the Joint Box Steps a maximum number of 4 Nodes can be installed. **Only 2 x XL or 2 x L Nodes** can be fitted within this box with any combination of 2 from the following, Medium/Small Nodes or a 4, 8, 12 CBT.

Combinations are indicated in the table below, although the list is a suggestion of possible combinations:

XL Node	Large Node	Medium Node	Small Node	4/8/12 Port CBT
2		2		
1	1	1	1	
2			2	
2				2
	2	2		
	2		2	
	2			2
		2	2	
		2		2
			2	2
		4		
			4	
				4

The Diagram below shows an example of the maximum number of XL Nodes along with 2 x medium Nodes that a JF-11 could accommodate.



4.2 JF-10 Installation

Minimum (formerly 'No Slack Network' length):

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	6.2M	3.6M	3.1M	JF-10	12.9M
L Node	6.2M	3.6M	3.1M	JF-10	12.9M
M Node	6.2M	2.7M	3.1M	JF-10	12.0M
S Node	6.2M	2.5M	3.1M	JF-10	11.8M

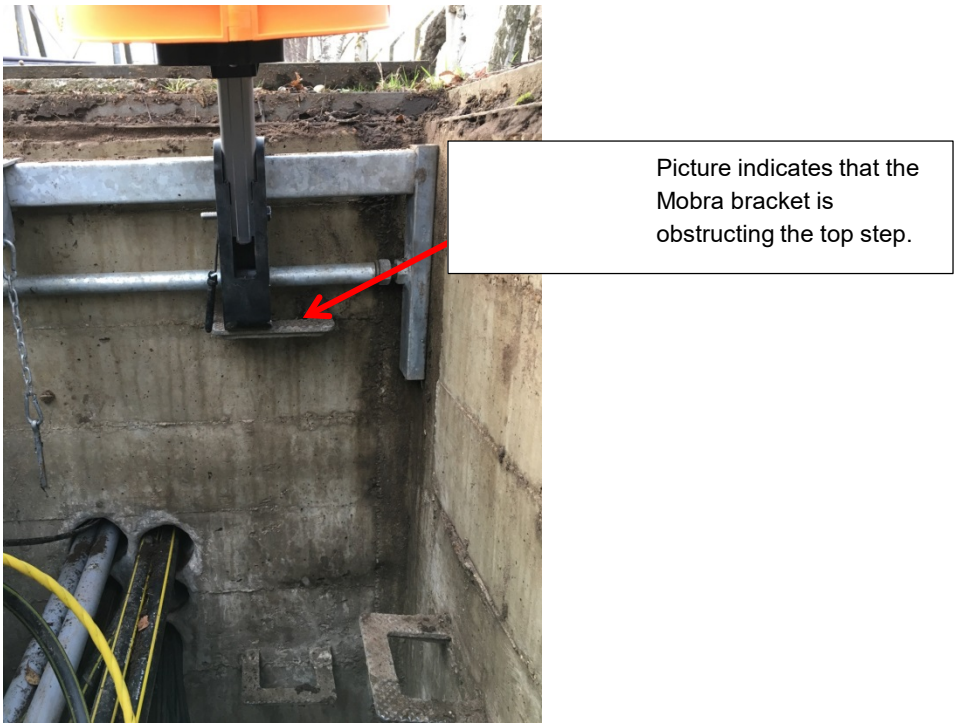
Maximum:

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	12.4M	3.6M	6.2M	JF-10	22.2M
L Node	12.4M	3.6M	6.2M	JF-10	22.2M
M Node	12.4M	2.7M	6.2M	JF-10	21.3M
S Node	12.4M	2.5M	6.2M	JF-10	21.1M

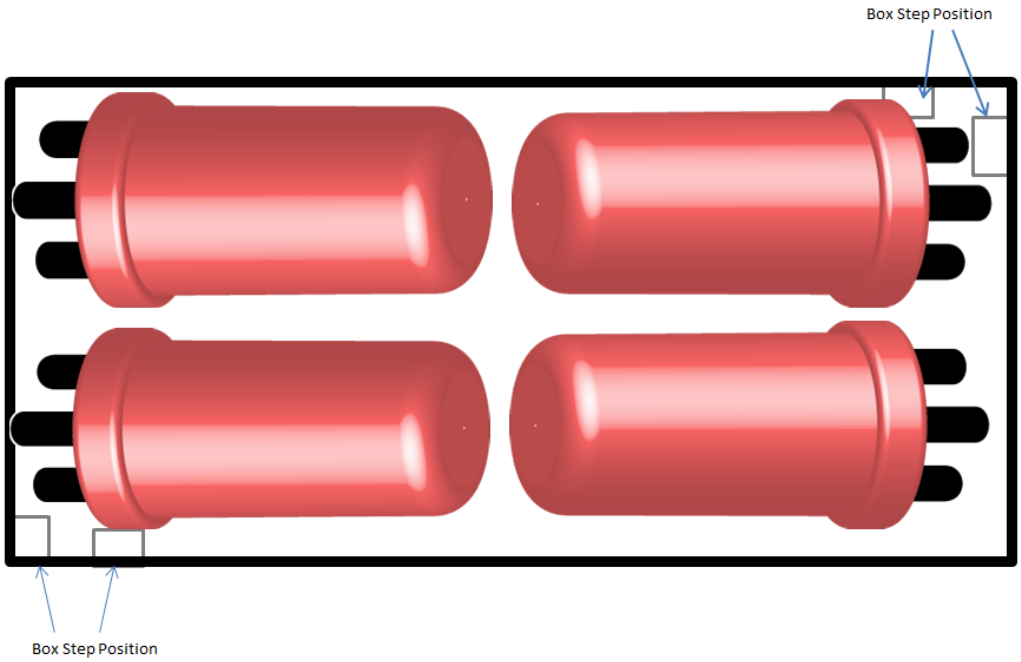
Depending on the position of the Joint Box Steps a maximum number of any 4 Nodes can be installed. Suggested combinations are indicated in the table below:

XL Node	Large Node	Medium Node	Small Node	12 Port CBT

4				
2	2			
2		2		
2			2	
2				2
	4			
	2	2		
	2		2	
	2			2
		4		
		2	2	
		2		2
			4	
			2	2
				4



The Diagram below is an example of the maximum number of XL Nodes a JF-10 can accommodate.



4.3 JF-6 Installation

Minimum (formerly 'No Slack Network' length):

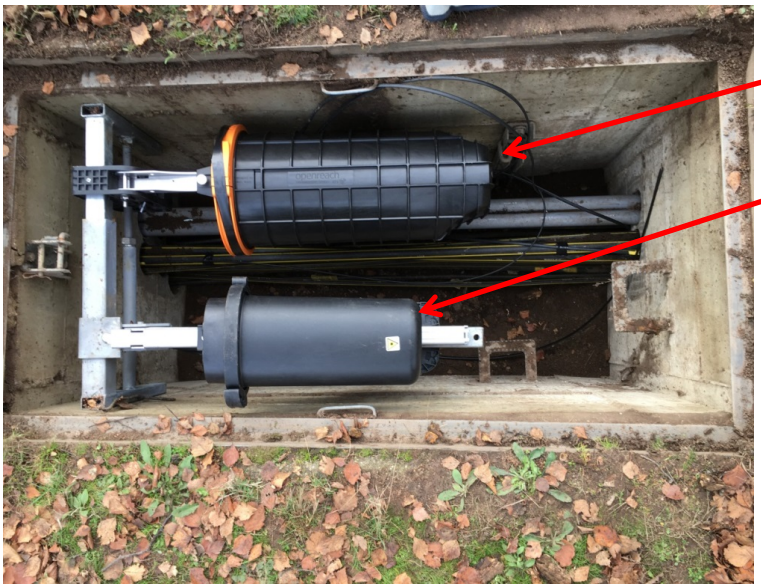
Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	4.2M	3.6M	2.1M	JF-6	9.9M
L Node	4.2M	3.6M	2.1M	JF-6	9.9M
M Node	4.2M	2.7M	2.1M	JF-6	9.0M
S Node	4.2M	2.5M	2.1M	JF-6	8.8M

Maximum:

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	8.4M	3.6M	4.2M	JF-6	16.2M
L Node	8.4M	3.6M	4.2M	JF-6	16.2M
M Node	8.4M	2.7M	4.2M	JF-6	15.3M
S Node	8.4M	2.5M	4.2M	JF-6	15.1M

Depending on the position of the Joint Box Steps a maximum number of 2 Nodes can be installed. Suggested combinations are indicated in the table below:

XL Node	Large Node	Medium Node	Small Node	12 Port CBT
1		1		
1			1	
1				1
	1	1		
	1		1	
	1			1
		2		
		1	1	
		1		1
			2	
			1	1
				2



This Picture shows the Maximum Size Nodes that can be accommodated within a JF-6 structure.

4.4 JF-4 Installation

Minimum (formerly 'No Slack Network' length):

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	2.7M	3.6M	1.6M	JF-4	7.9M
L Node	2.7M	3.6M	1.6M	JF-4	7.9M
M Node	2.7M	2.7M	1.6M	JF-4	7.0M

S Node	2.7M	2.5M	1.6M	JF-4	6.8M

Maximum:

Joint Size	Cable Route-A	Cable Route-B	Cable Route-C	Joint Box Size	Overall Loop Length
XL Node	5.4M	3.6M	3.2M	JF-4	12.2M
L Node	5.4M	3.6M	3.2M	JF-4	12.2M
M Node	5.4M	2.7M	3.2M	JF-4	11.3M
S Node	5.4M	2.5M	3.2M	JF-4	11.1M

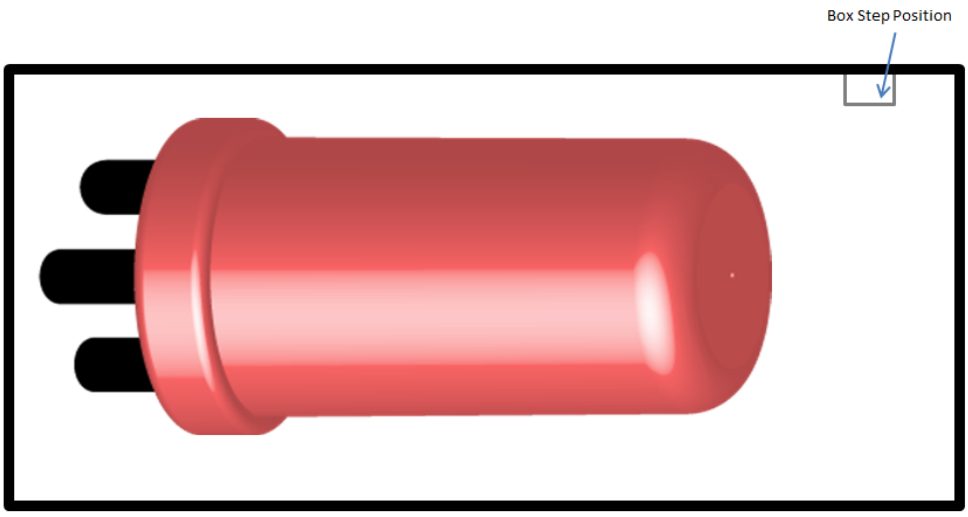
Depending on the position of the Joint Box Steps a maximum number of 2 Nodes can be installed. A variety of combinations of any 2 Nodes can be accommodated within a JF-4 structure.

Suggested combinations are indicated in the table below:

XL Node	Large Node	Medium Node	Small Node	12 Port CBT
1				
	1			
		1		1
			1	1
				2

The Diagram below shows an example of an XL Node in a JF-4, indicating that this would be the only Node possible within this structure. Other variations are shown within the table

This is an example of a Medium and 12 Port CBT accommodated within a JF-4 structure. Other variations of CBT's are possible via the table included.



4.5 JF2 Installation

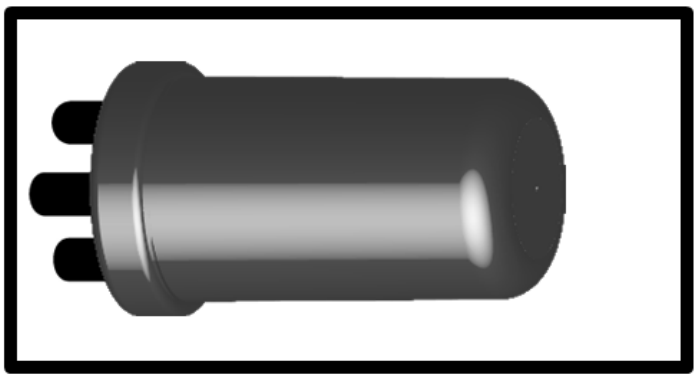
Joint Size	Cable	Cable	Cable	Joint Box	Overall Loop

	Route-A	Route-B	Route-C	Size	Length
S Node	4.0M	2.5M	2.4M	JF-2	5.7M

One small Node or 1 CBT (4, 8,12port) can be installed within a JF2. No Mobras are fitted within a JF-2 structure. Suggested combinations are indicated in the table below:

XL Node	Large Node	Medium Node	Small Node	12 Port CBT
			1	
				1

Picture below shows an example of 1 Small Node in a JF2.



The next section (4.6) includes 'Additional Information'

(Provided by Stan Edwards - Jan 2018)

There has been a review of what components (CBT & TM Nodes) can be installed within joint box structures: JRC1/JB23/JB26.

4.6 Joint box JRC1 capacity – FTTP

Placement of nodes within JRC structures is not ideal due to potential access issues. Where this is unavoidable the recommendation would be to install a maximum of 1 x splitter node and 1 x CBT placed side by side.

Note: A MOBRA cannot be used within this joint box type. Therefore, nodes and CBT's must be secured adequately to cable bearers whilst accounting for correct minimum bend radi.

4.7 Joint box JB26 capacity – FTTP

Placement of nodes within JB26 structures is not ideal due to capacity restrictions. Where this is unavoidable the recommendation would be to install a maximum of 1 x 4/8/12 CBT or 1 x small node.

Note: A MOBRA cannot be used within this joint box type. Therefore please ensure that the components are secured adequately and account for correct minimum bend radi.

4.8 Joint box JB23 capacity – FTTP

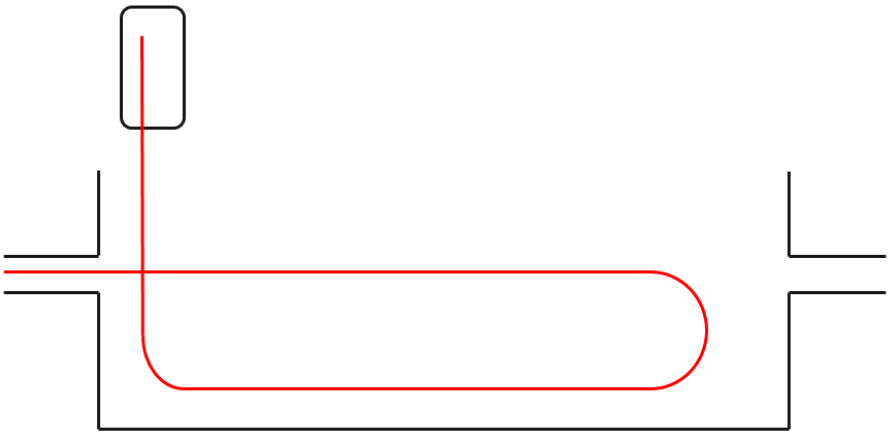
Placement of nodes within JB23 structures is not ideal due to capacity restrictions. Where this is unavoidable the recommendation would be to install a maximum of 1 x 4/8/12 CBT. There is no capacity for a small node.

Note: A MOBRA cannot be used within this joint box type. Therefore please ensure that the components are secured adequately and account for correct minimum bend radi.

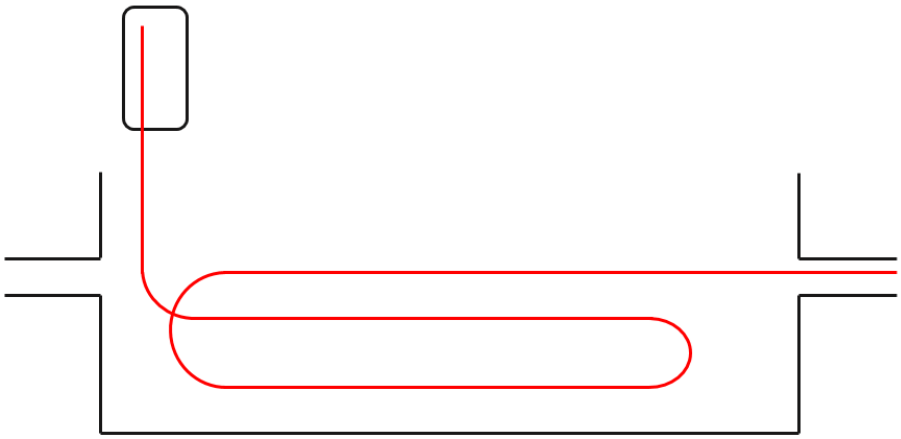
5 *Distribution Cable Length and Jointbox Capacity for TM Nodes*

The tables show a suggested list for a combination of Nodes per Joint Box type, but each box should not exceed the amount per box.

Left Hand Side Entry:



Right Side Entry:



5.1 JF 11

Minimum:

Joint Size	Left Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	5.2M	2.2M	JF-11	7.4M
L Node	5.2M	2.2M	JF-11	7.4M
M Node	5.2M	2.2M	JF-11	7.4M
S Node	5.2M	2.2M	JF-11	7.4M

Maximum:

Joint Size	Right Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	8.2M	2.2M	JF-11	10.4M
L Node	8.2M	2.2M	JF-11	10.4M
M Node	8.2M	2.2M	JF-11	10.4M
S Node	8.2M	2.2M	JF-11	10.4M

5.2 JF 10

Minimum:

Joint Size	Left Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	5.2M	2.2M	JF-10	7.4M

L Node	5.2M	2.2M	JF-10	7.4M
M Node	5.2M	2.2M	JF-10	7.4M
S Node	5.2M	2.2M	JF-10	7.4M

Maximum:

Joint Size	Right Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	8.2M	2.2M	JF-10	10.4M
L Node	8.2M	2.2M	JF-10	10.4M
M Node	8.2M	2.2M	JF-10	10.4M
S Node	8.2M	2.2M	JF-10	10.4M

5.3 JF 6

Minimum:

Joint Size	Left Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	4.2M	2.2M	JF-6	6.4M
L Node	4.2M	2.2M	JF-6	6.4M
M Node	4.2M	2.2M	JF-6	6.4M
S Node	4.2M	2.2M	JF-6	6.4M

Maximum:

Joint Size	Right Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	7.2M	2.2M	JF-6	9.4M
L Node	7.2M	2.2M	JF-6	9.4M
M Node	7.2M	2.2M	JF-6	9.4M
S Node	7.2M	2.2M	JF-6	9.4M

5.4 JF 4

Minimum:

Joint Size	Left Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	2.7M	2.2M	JF-4	4.9M
L Node	2.7M	2.2M	JF-4	4.9M
M Node	2.7M	2.2M	JF-4	4.9M
S Node	2.7M	2.2M	JF-4	4.9M

Maximum:

Joint Size	Right Hand Side	Inside Node	Joint Box Size	Overall Loop Length
XL Node	4.7M	2.2M	JF-4	6.9M
L Node	4.7M	2.2M	JF-4	6.9M
M Node	4.7M	2.2M	JF-4	6.9M
S Node	4.7M	2.2M	JF-4	6.9M

5.5 JF 2

Minimum:

Joint Size	Left Hand Side	Inside Node	Joint Box Size	Overall Loop Length
S Node	2.0M	2.2M	JF-2	4.2M

Maximum:

Joint Size	Right Hand Side	Inside Node	Joint Box Size	Overall Loop Length
S Node	4.0M	2.2M	JF-2	6.2M

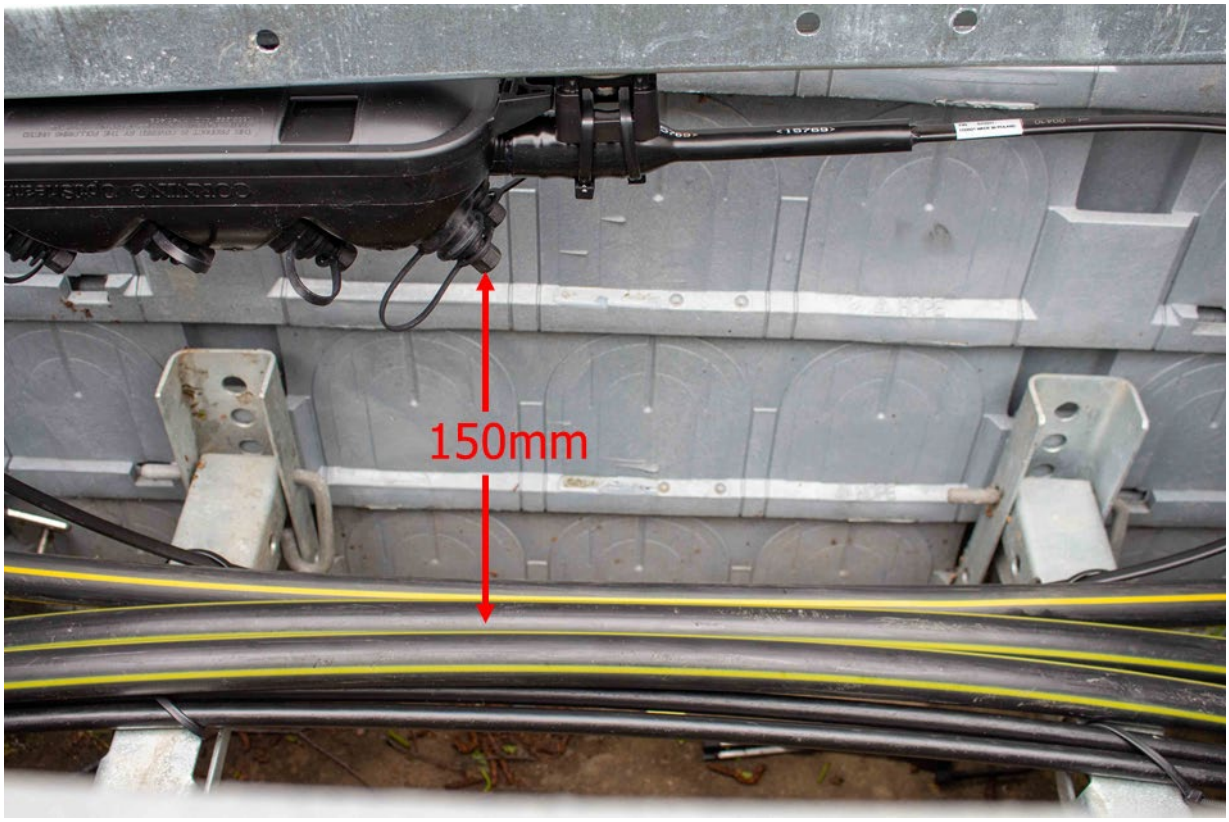
Total lengths will be effected dependant on box conjestion.

The greatrer the slack installed into a box, the higher the risk for damage due to cable volume, existing furnature conjestion and engineers standing in the box.

6 Minimum Distance from CBT to other Furniture

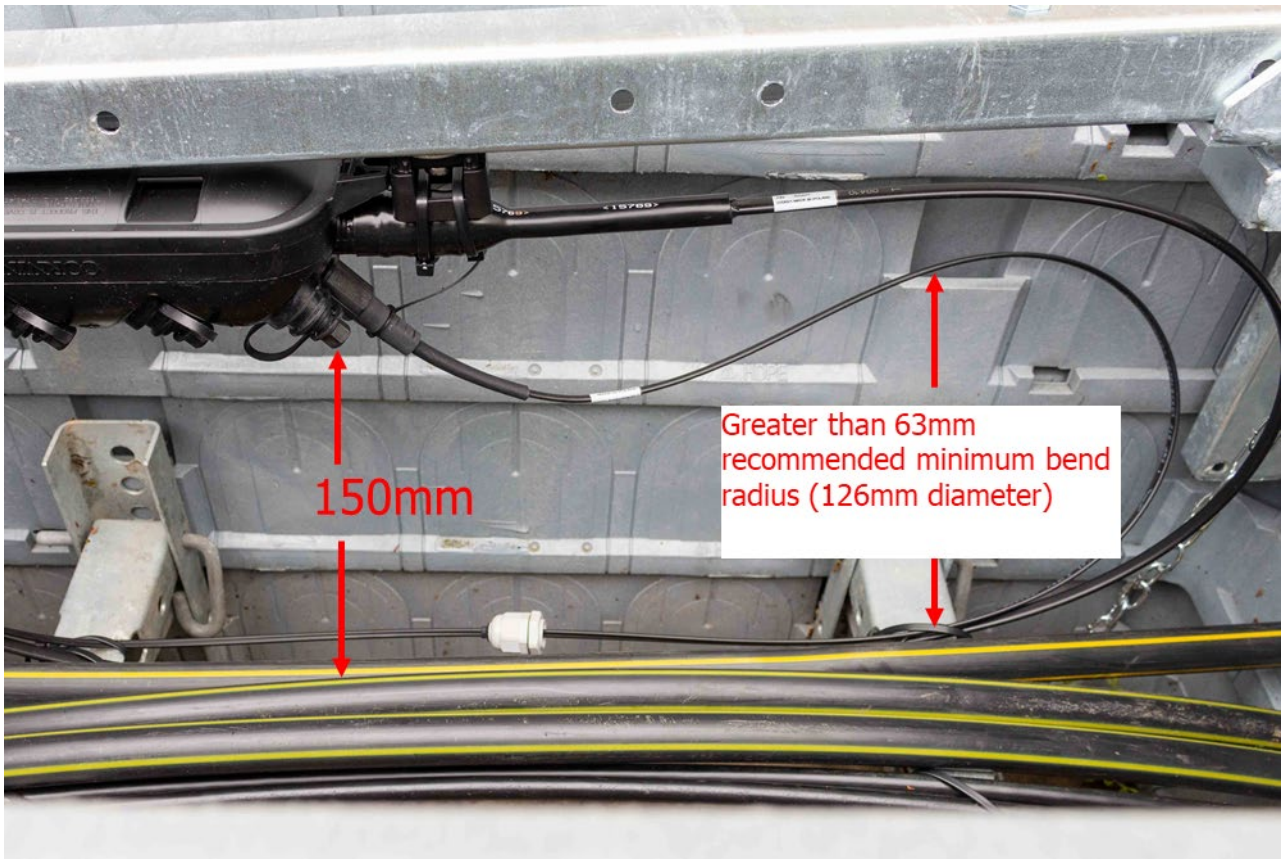
6.1 CBT on MOBRA/ARM

The minimum recommended distance between the CBT port plugs and existing cables/ joints is 150mm. This will ensure that when the optitap connectors of either the Corning Rocdrop or the Commscopes Ezaxs are fitted into the CBT the cable will not be compromised passed the minimum bend radius for those cables.



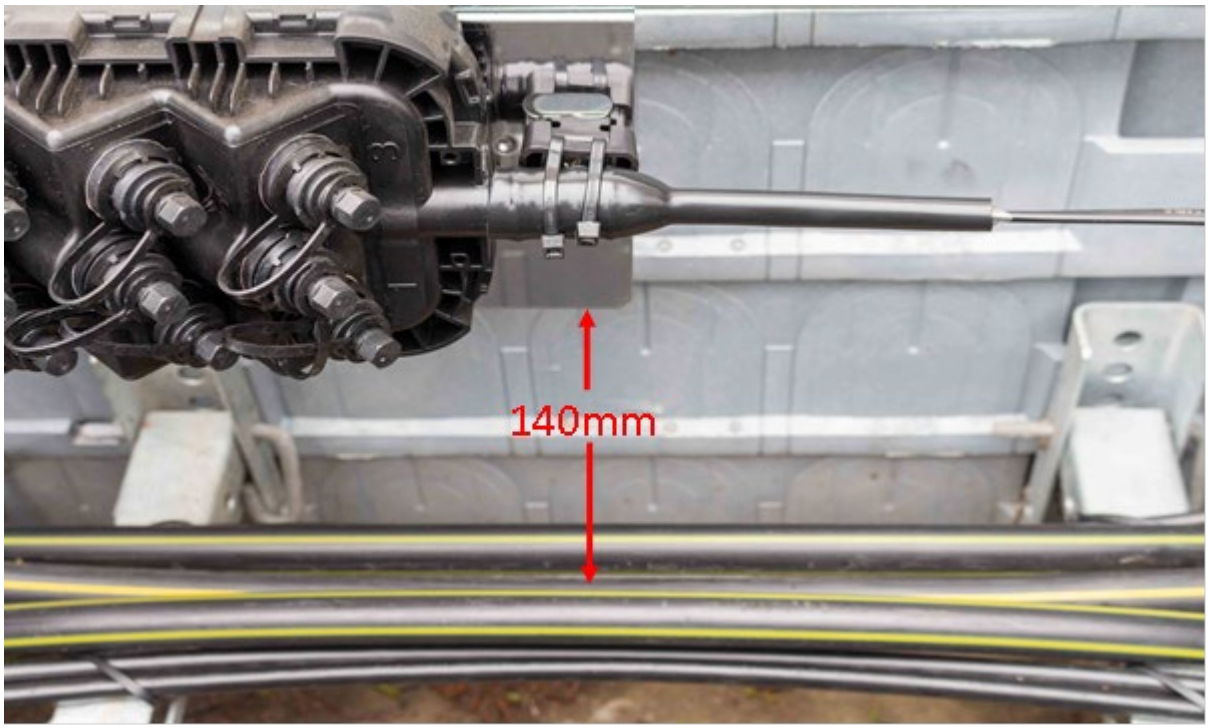
Once installed into the CBT and dressed correctly, the bend in the customer drop cable will be greater than the recommended minimum bend radius, thus reducing chance of damage to the cable at that point.

Note: The customer drop cables that enter from the opposite end to the CBT position should be installed so that the cable swan necks in the joint box



6.2 CBT on a UG Back-to-Back Bracket

The minimum recommended distance between the edge of the UG bracket and other existing cables/ joints or the wall of the box is 140mm. This will ensure that when the optitap connectors of either the Corning Rocdrop or the Commscopes Ezaxs are fitted into the CBT the cable will not be compromised passed the minimum bend radius for those cables.



When the customer drop cables are installed into the CBT the minimum bend radius is not exceeded when dressed correctly in the joint box.

7 Miscellaneous

7.1 Labelling

All cables must be labelled in accordance with:

- ISIS: EPT/COF/D525 - Identification Marking of Optical Fibre Cables.

7.2 Resilience

Resilience is installing additional slack. Should an engineer break or damage a circuit or cable they would be able to re-introduce the same cable into the node without having to install a new length of cable from Jointbox to Jointbox which has a daisy chain effect such that the serving node will have to be broken into and new cable installed. The risk is there is a higher chance of disturbing other circuits.

7.3 Safety

For safety reasons, always use the approved practice available in:

7.4 Investment Governance

All investment costs must be booked in accordance with:

- ISIS: LNK/NNS/A001 - Access Network Booking Practices.

7.5 Accreditation, Compliance and Audit

Infrastructure should be planned by accredited people only. Designs will be audited to ensure policy compliance. Details of Accreditation and Quality Standards can be found at: Quality Standards & Guidance. **Slack management needs to be included**

7.6 Physical Network Security

For securing network components against criminal damage consult with following ISIS for policy and directives on physical protecting plant:

- ISIS: SEC/STD/A033 - Security Standard - The Core and Access Networks

7.7 Wayleaves

Wayleave Wise Homepage

7.8 Tools:

Standard network installation tools.

7.9 Internal sites:

7.10 Published information:

8 *Glossary*

For a comprehensive list of abbreviations follow this Glossary of terms link.

END OF DOCUMENT