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Raylinks Technical specification

Q/BKBT1-1997

Pressurized Joint Splice Closure RSBA 1000

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B1.Scope

This Chapter details the technical requirements for heat shrinkable wraparound splice closure ,for use in the main and distribution non pressurized cable networks.

B2.Applied standards and abbreviations

The following unattached China national &international standard shall be applied &deemed to be an integral part of this specification.

YD/T590.1-92 Splice closure 1 part-General technology

YD/T590.1-92 Splice closure 2 part-Heat shrinkable sleeve

B3.Type and size

B3.1 RSBA type shall be used in pressurized network.

B3.2 All closures shall be capable of in-line and branched applications up to three cables on each side.

B3.3 Size

B3.3.1 D/d-L

D: Maximum splice bundle diameter

d: Minimum cable diameter

L: Nominal sheath opening

B3.3.2 Pressurized closures size shall be as shown （Next Page）

B3.3.3 For example “RSBA1000 62/15-500”, please see product installation sheet.

B3.3.4 Accept special size ordered by customers

B4. Design requirements

B4.1 General description

B4.1.1 Closure shall retain the electrical & mechanical properties in the working temperature range -30 ℃to 60℃ and atmosphere pressure range 86kPa to 106kPa.

B4.1.2 Closure shall be installed at temperatures between –10℃to 45℃.

B4.1.3 Dimension of main parts shall meet YD/T590.2-4.1requirements, please see documents (Q/Raylinks-09-01-1999 process control).

B4.2 Heat shrinkable sleeve

B4.2.1 The sleeve shall be homogenous and free of flaws, defects, pinholes, bubbles, cracks or inclusions visible with the unaided eye.

B4.2.2 The sleeve shall be made of a fibre reinforced high strength composite material .

B4.2.3 The sleeve shall be internally coated with a flexible heat activated adhesive which will melt and adhere to the cable to form an air and water tight seal

B4.2.4 The sleeve shall be coated externally with a heat sensitive thermo chromic indicator which changes colour when adequate heat has been applied.

B4.2.5 A flexible channel to be used to wrap the sleeve shall be manufactured from corrosion resistant stainless steel.

B4.3 Closure components

B4.3.1 Following items shall be provided for straight and branch joints.

B4.3.1.1 Wrap-around fibre re-inforced heat shrinkable sleeve as specified (with or without valve)

B4.3.1.2 A flexible stainless steel closure channel

Cable		Canisters	Module one		Module double		Module trimple	
Pairs	dia	Dia(R)	Splice bundle(r)	size	Splice bundle(r)	size	Splice bundle(r)	size
100	0.4 0.5	62	35	62/15-250	——		——	
200	0.4 0.5	62	——		50 60	62/15-500 62/15-500	——	
400	0.4 0.5	92	——		65 75	92/30-500 92/30-500	——	
600	0.4 0.5	92	——		80 90	92/30-500 92/30-500	65 75	
800	0.4 0.5	122	——		100 105	122/38-500 122/38-500	80 90	
1000	0.4 0.5	122	——		110 120	122/38-500 122/38-500	100 110	122/38-650 122/38-650
1200	0.4 0.5	160	——		125 135	160/55-500 160/55-500	110 120	122/38-650 122/38-650
1600	0.4 0.5	160	——		130 145	160/55-500 160/55-500	125 140	160/55-720 160/55-720
1800	0.4 0.5	160	——		135 155	160/55-500 160/55-500	130 150	160/55-720 160/55-720
2000	0.4 0.5	160	——		160 170	160/55-500 160/55-500	140 155	160/55-720 160/55-720
2400	0.32 0.4 0.5	200	——		165 180 195	200/65-500 200/65-500 200/65-500	150 170 185	200/65-720 200/65-720 200/65-720

B4.3.1.3 A wrap-around metal support canister/variable liner

B4.3.1.4 Branch-off clips (in Branch kits only)

B4.3.1.5 Shield continuity hardware.

B4.3.1.6 Silica gel dessicant in adequate quantity

B4.3.1.7 Cleaning tissure

B4.3.1.8 Abrasive strip(s)

B4.3.1.9 Aluminium foil strips

B4.3.1.10 Aluminium strip for closing canister

B4.3.1.11 PVC tape

B4.3.1.12 Installation gauge

B4.3.1.13 Installation in English language

B4.3.2 In addition to items, the following accessories shall also be provided.

B4.3.2.1 For single branch (one each of following)

B4.3.2.2 For double branch (two each of following)

B4.3.2.3 Branch off clip small for:100-200 pairs

B4.3.2.4 Branch off clip medium for:400-1000 pairs

B4.3.2.5 Branch off clip large for: 1200-2400 pairs

B4.3.2.6 Branch continuity wire

B4.3.2.7 Continuity wire connecting clip

B4.3.2.8 Tie wrap

B4.3.2.9 Cleaning tissue

B4.3.2.10 Aluminium foil

B4.3.2.11 Abrasive strip

B5. Performance requirements of completed joint closures

B5.1 Materials

Item	**Test Condition and method**	**Requirement**
B5.1.1 Bursting Strength	Test Temp:23±5℃	Min 2500N
B5.1.2 Thermal Ageing Bursting Strength	168Hrs at 150±2℃ (After free shrinkage)	Min 2700N
B5.1.4 Dielectric strength	Electrode Surface Dia: 6mm Wight: 50±2gms Voltage steps:2KV/20sec	Min 12 KV/mm
B5.1.5 Split Resistance	Temp: 200±2℃ Test time 23±3℃	No split Propagation
B5.1.6 Carbon Content UV Res of Out/layer	Heating rate:20℃/min Gas flow rate:300cc/min	Min 2.5%
B5.1.8 Cold Crack Resistance	Test temp≤-40℃	No crack
B5.1.9 Resistance to aggressive media Bursting Strength	Test media: Fuel oil,petroleum jelly Test temp: 70±2℃	Min 2000N
B5.1.10 Environmental Stress cracking	10% Igepal Co 630 solution immersion Time 30 days Test Temp: 50±3℃	No cracking
B5.1.11 Temp. indicating paint conversion	Scraped off paint from sleeve	230-250℃

B5.2 Hot melt adhesive

Item	Test method and conditions	Requirements
B5.2.1 Peel Strength	-PE at 23±2°C -PE at 23±2°C -Pb at 23±2°C	Min 100N/25mm
B5.2.2 Shear Strength	At 23±2°C	Min200N
B5.2.4 Corrosive Effect	Copper Mirror test Test time:16hrs Test temp:60±2°C	No effect

B5.3 Completed Closure

B5.3.1 Test environment conditions

temperature:15-35℃

relatively humidity:45-75%

atmosphere pressure:80-106kPa

Item	Test methods and conditions	Requirement
B5.3.2Appearance	According to YD/T590-1 requirements The sleeve shall be homogenous and free of flaws, defects, pinholes, bubbles, cracks or inclusions visible with the unaided eye.	No defects which will affect the product performance
B5.3.3 Tightness test	According to YD/T590-1 requirements Immerse in water bath at Temp: 23±3℃ Time:15 min Internal Regulated Pressure: 70±2Kpa	No leakage
B5.3.4 Temperature cycling test	According to YD/T590-1 requirements Highest Temp: 60±2℃ Lowest temp: -30℃±2℃ Dwell time: 4hours Transition time: 2 hours Cycle duration; 12 hours Internal regulated Pressure; 70±2Kpa Number of cycles: 10	Tightness as per 5.3.3
B5.3.5 High temperature tightness test	According to YD/T590-1-5.5 requirements Temp: 60±2℃ Pressure; 70±2Kpa Time: 168h	Tightness as per 5.3.3
B5.3.6 Axial tension test	According to YD/T590-1-5.6 requirements Time: 8 hours each cable Load: D/45×1000N	Tightness as per 5.3.3

	(700N±10N max) Internal Regulated Pressure: 70±2Kpa	
B5.3.7 Bending test	According to YD/T590-1-5.7 requirements Clamping distance: 10×D from closure edge(min 250 mm) Force: max 500N or 45 deg Bend. Internal regulated Pressure: 70±2Kpa Bending cycle: 2 cable cycle: bend cable & hold for 5 minutes, bring to normal & bend in opposite direction, hold 5 minutes & bring to normal position	Tightness as per 5.3.3
B5.3.8 Tension test	According to YD/T590-1-5.7 requirements Torque: 50 Nm. Or 90 deg rotation Clamping distance: 10×D from closure edge(D=outer dia Of cable) 2 complete torsion cycles per cable. Internal regulated Pressure: 70±2Kpa cycle: Twist cable and hold for 5 minutes; bring cable back to starting position	Tightness as per 5.3.3
B5.3.10 Static Load test	According to YD/T590-1-5.7 requirements Load: 1000N/5sq cm Load application: 90° from seam, Int, regulated pressure: 70±2Kpa Time: 5 min remove load, turn sample through 180°, reapply load for 5 min	Tightness as per 5.3.3
B5.3.11 Impact test Steel ball test	According to YD/T590-1-5.7 requirements steel ball Weight: 1Kg Drop height 1m Impact: 90Deg. From seam (sleeve middle) Internal regulated Pressure: 70±2Kpa Temp: -15℃ Internal regulated Pressure: 70±2Kpa (Channel closing)	Tightness as per 5.3.3
B5.3.12 Vibration test	According to YD/T590-1-5.7 requirements Vibration: 10Hz Amplitude: 3mm (6mm peak to peak) Time: 6 days Clamping distance:10×D from closure edge.(D=the cable outer dia) Internal regulated Pressure: 70±2Kpa	Tightness as per 5.3.3
B5.3.13 Resistance to stress cracking	According to YD/T590-1-5.7 requirements Test temp: 50±2℃ Internal regulated pressure: 70±2Kpa Test medium: 10% igepal Solution test time: 7 days	Tightness as per 5.3.3

B6.Inspection, please see documents (Q/**Raylinks**-12-01-1999 Inspection and Test Status)

B7. Marking package transportation and storage

B7.1 Printed marking shall be distinct even after shrinking.

B7.1.1 On the outer surface of the sleeve, following shall be printed

i) Product size

ii) Manufacture logo or name

iii) Manufacturing batch

iv) Or Purchase order No& date

7.1.2 The closure shall be supplied in a kit form, marking and documentation within and outside the packages shall comply strictly with following requirements or shall be expressly provided for in the contract

v) Manufacturer

vi) Product name

vii) Size

viii) Manufacturing date or batch

ix) Manufacturing batch

x) Suitable cable's diameter

xi) Checker stamp

B7.2 Package

B7.2.1 The packing unit is paper case which shall be sufficient to with stand during transit and upon storage.

B7.2.2 Packing case size and weight shall take into consideration, where appropriate, the remoteness of the goods final destination aid the absence of heavy handling faculties at all point in transit.

B7.2.3 The packing list and operation instruction shall be inside.

B7.2.4 The closure offered shall be proven one unit, marking and documentation within and outside the packages shall comply strictly with following requirements or shall be expressly provided for in the contract

xii) Manufacturer

xiii) Product name

xiv) Size

xv) Manufacturing date or batch

xvi) Marking for keeping from dry and hot

B7.3 Transportation and storage

B7.3.1 Package shall be prevent from exposure to extreme environment, and precipitation during transit and upon storage.

B7.3.2 Products shall be storage in house.