

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

Description	Tools Required																				
How to prepare and install a mid-span loop of cable into the mechanical oval port of the closure.	<b>Tools:</b> Large Screwdriver, File, Pilers, Torque Wrench with 5mm Allen key bit.																				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>1 Rubber Seal</b></td> <td style="width: 50%; text-align: right;"><b>Qty 1</b></td> </tr> <tr> <td><b>2 External Plate</b></td> <td style="text-align: right;"><b>Qty 2</b></td> </tr> <tr> <td><b>3 Internal Plate</b></td> <td style="text-align: right;"><b>Qty 2</b></td> </tr> <tr> <td><b>4 Screw M6x50mm</b></td> <td style="text-align: right;"><b>Qty 2</b></td> </tr> <tr> <td><b>5 5mm Allen key</b></td> <td style="text-align: right;"><b>Qty 1</b></td> </tr> </table>	<b>1 Rubber Seal</b>	<b>Qty 1</b>	<b>2 External Plate</b>	<b>Qty 2</b>	<b>3 Internal Plate</b>	<b>Qty 2</b>	<b>4 Screw M6x50mm</b>	<b>Qty 2</b>	<b>5 5mm Allen key</b>	<b>Qty 1</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>6 Velcro Straps</b></td> <td style="width: 50%; text-align: right;"><b>Qty 3</b></td> </tr> <tr> <td><b>7 Grease Sachet</b></td> <td style="text-align: right;"><b>Qty 1</b></td> </tr> <tr> <td><b>8 Plastic sleeve 260mm</b></td> <td style="text-align: right;"><b>Qty 1</b></td> </tr> <tr> <td><b>9 Foam Tape</b></td> <td style="text-align: right;"><b>Qty 2</b></td> </tr> <tr> <td><b>10 Jubilee Clips</b></td> <td style="text-align: right;"><b>Qty 2</b></td> </tr> </table>	<b>6 Velcro Straps</b>	<b>Qty 3</b>	<b>7 Grease Sachet</b>	<b>Qty 1</b>	<b>8 Plastic sleeve 260mm</b>	<b>Qty 1</b>	<b>9 Foam Tape</b>	<b>Qty 2</b>	<b>10 Jubilee Clips</b>	<b>Qty 2</b>
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## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 1



- Knock out the oval port end plate of the Joint from the inside using a large screwdriver and remove any burrs using a file.

## **MECHANICAL OVAL PORT INSTALLATION - GENERAL**

### **Step 2**

# **Mark centre point of mid span window**

- Remove the cables from the footway box and apply a reference mark to the cable where the centre of the window cut will be made.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

**Step 3**

Joint Type	Cable Type	Loop Length	Max. Fibre
LMJ Small	LT	3.6m x 12 elements	144F
LMJ Medium	LT	3.6m x 23 elements	276F
LMJ Large	LT	3.8m x 23 elements	276F
LMJ Small	FT	3.6m x 48 elements	576F
LMJ Medium	FT	3.6m x 60 elements	720F
LMJ Large	FT	3.8m x 60 elements	720F

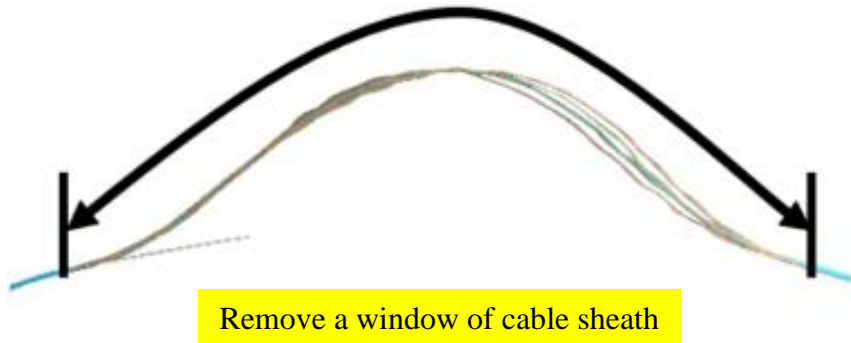
- Identify the length of the mid span window required by identifying the joint and cable type from the table above.

**NOTE:** LT = LOOSE TUBE; FT = FLEX TUBE

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 4

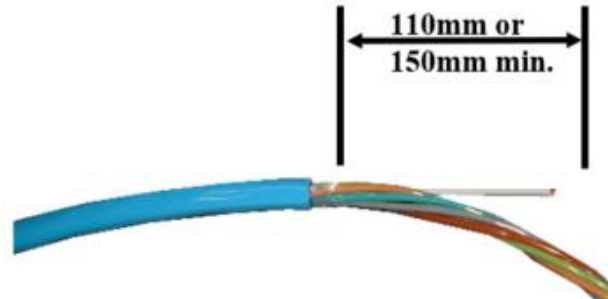
Loop Length (see table Step 3)



- Apply two butt marks back either side of the mid span mark half the distance of the overall loop length. Before removing the sheath double check the two butt marks are the correct distance apart referring to the table in step 3.
- Remove the cable sheath between the two butt marks using approved practices.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

Step 5



	Strength Member	Aramid
<b>Cut Length Minimum</b>	110mm	150mm

- Remove all tapes and binders.
- Access the central strength member or aramid and cut it in the centre.
- Cut each end back to 110mm for strength member or 150mm min for aramid from the cable butt as shown.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 6

### **Determine cable diameter & Identify rubber seal**

- Ensure to check rubber seal diameter against cable diameter.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 7



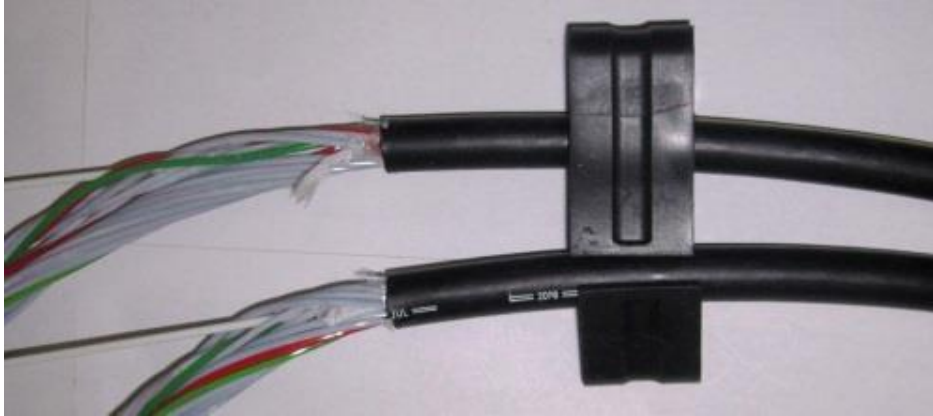
- If cable diameter is larger than '13.0mm' Use pliers to knock out external plate section.
- Repeat with internal plates.
- Ensure all 4 plate pieces are knocked out.

**NOTE: IF USING KITS 18-20mm OR 20-21.5mm GO TO STEP 8. NO SECTION TO REMOVE.**



## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 8



- Attach rubber seal over the cables.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 9



- Assemble 2 parts of external plate to cable butt end.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 10



- Assemble 2 parts of internal plate to cable butt end.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

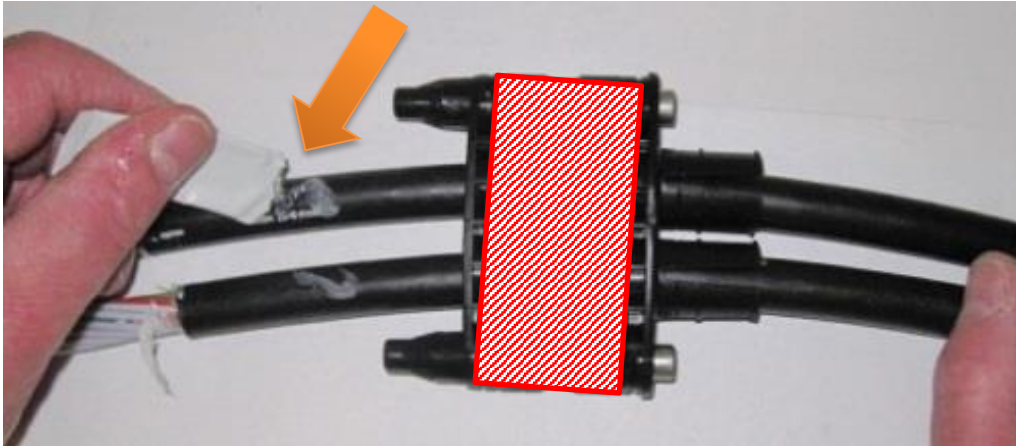
### Step 11



- Insert screws into assembly and lightly screw together in place.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 12



- Add grease to cable butt end.
- Ensure you spread the grease evenly.

**NOTE:** Ensure no grease is applied to external side of the seal.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 13



- Push assembly towards cable butt end.
- Mark the cable sheath in position shown.
- Apply foam tape to cable if cable diameter is less than 11mm. Pull cables through 20mm and apply foam tape to both cables in line with marked positions.
- Push cables back into correct position so the foam tape lays under the anti-torsion pieces.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 14



- Identify the Velcro Straps.

<b>Joint Type</b>	<b>Cover Type</b>
LMJ Small	2x Velcro Straps
LMJ Medium	3x Velcro Straps
LMJ Large	3x Velcro Straps

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 15

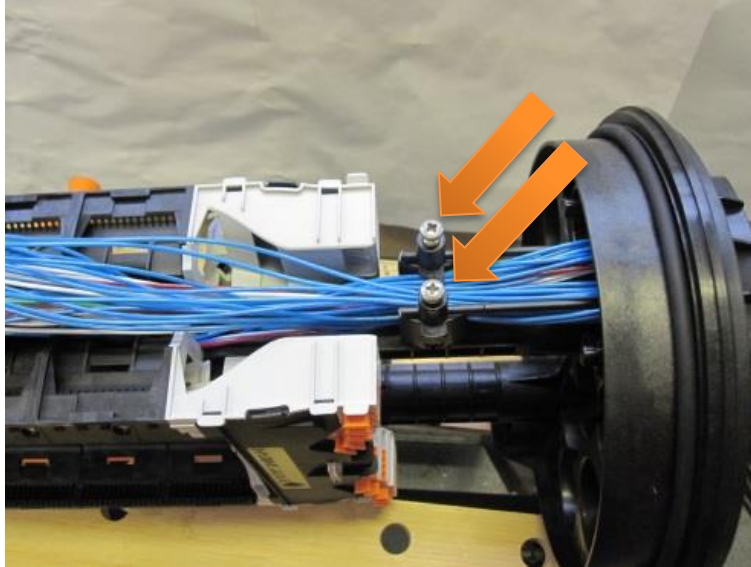


- Carefully insert loop into the oval port.
- **For GRP installation GO TO STEP 16.**
- **For ARAMID installation GO TO STEP 18.**



## MECHANICAL OVAL PORT INSTALLATION - GENERAL

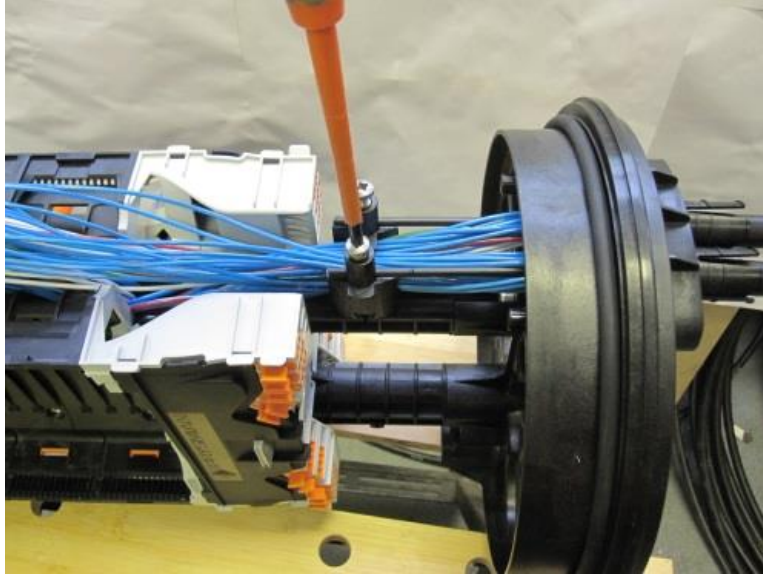
### Step 16



- Fully insert the mechanical oval port assembly into the oval port.
- Ensure GRP is fully inserted in the cable anchor plate.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 17



- Ensure cable butts are still in correct position by visually checking inside the port.
- Tighten screws in the cable anchor plate until the GRP is secured.
- **GO TO STEP 21.**

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 18



- Fully insert the mechanical oval port assembly into the oval port.
- Ensure ARAMID is gathered into one strand.
- Ensure the screw is unscrewed.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 19



- Turn the aramid 2 full turns around the base of the screw.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

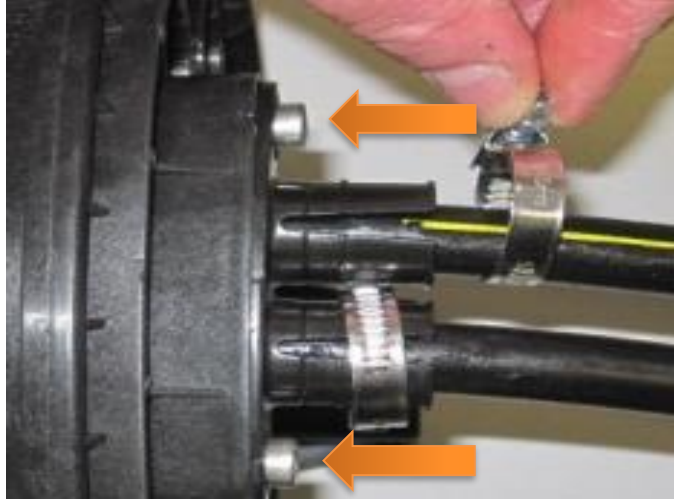
### Step 20



- Ensure cable butts are still in correct position by visually checking inside the port.
- Tighten screws in the cable anchor plate until the ARAMID is secured.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

Step 21

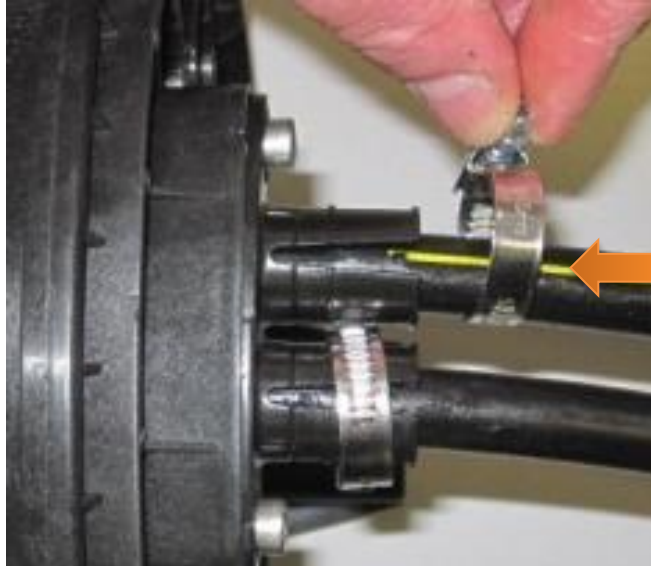


**Tighten screws using a Torque Wrench 3.5 Nm**

- Tighten screws to 3.5 Nm using a Torque Wrench with 5mm Allen key bit.
- Ensure you tighten each screw evenly and in small increments until Torque value is reached.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

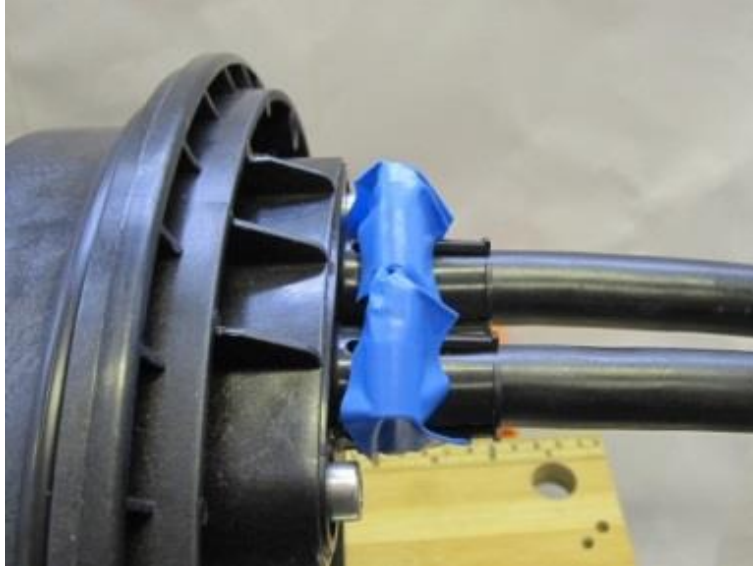
Step 22



- Assemble jubilee clips and tighten using a screwdriver.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 23



- Apply 2 turns or electric tape around the jubilee clip.



## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 24



- Firstly, separate the two ends of the loop. Gently straighten the loop away from the LMJ ready to loop into the spine.

**NOTE:** Take care not to kink the cable elements when installing the loop. Do not rush and follow the instructions precisely. The loop guide is designed to store loose tube elements.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

**Step 25**

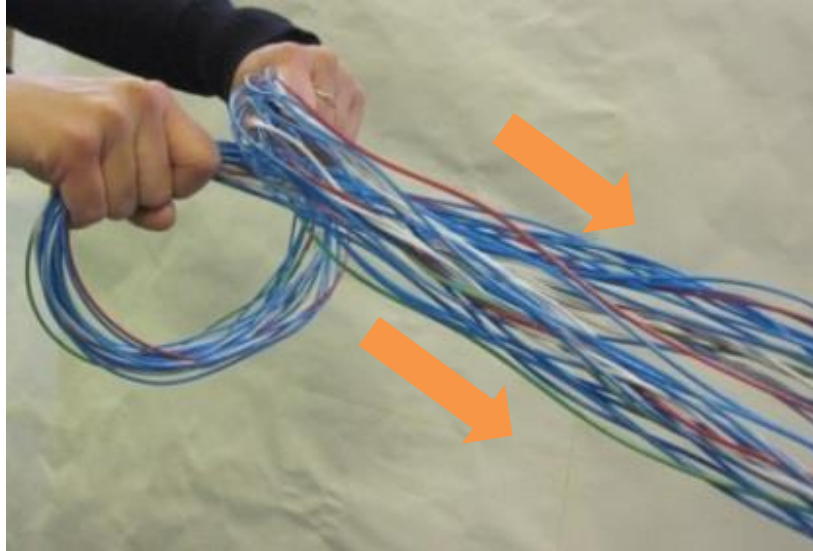


- See Table for number of loops to create.
- For the first loop, cross the elements at the top and flip the loop over to gather the elements.

Joint Type	Cable Type	No. of Loops
LMJ Small	LT	6 loops
LMJ Medium	LT	4 loops
LMJ Large	LT	3 loops
LMJ Small	FT	6 loops
LMJ Medium	FT	4 loops
LMJ Large	FT	4 loops

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

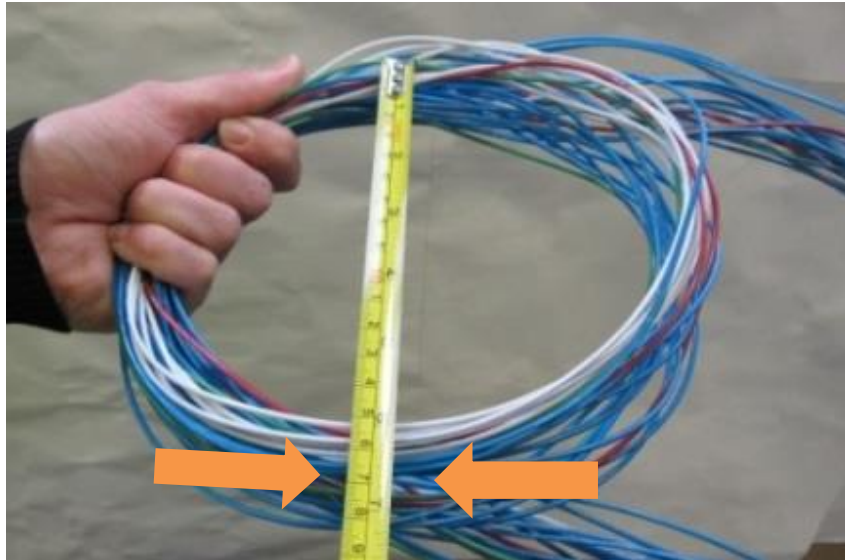
### Step 26



- Ensure the loop lengths are straight, even and crossed over as shown.
- The loop lengths are not crossed at the joint end, only at the top where you are creating a loop each time.
- **Check each loop looks the same.**

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

**Step 27**



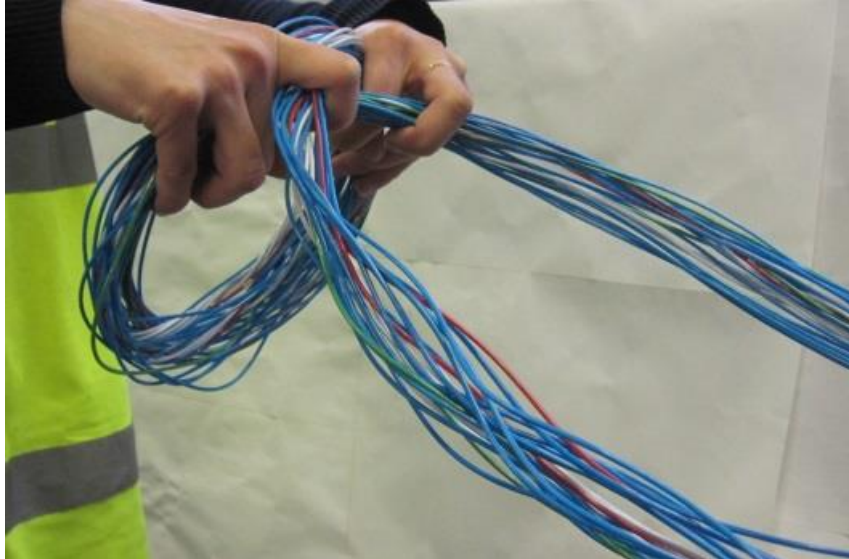
- Loosely holding the elements with one hand measure inside the loop diameter.
- See Table to select correct loop measurement for your joint.
- Return to Step 24 to 26 if you do not have the correct dimension.

Joint Type	Cable Type	Loop Measurement
LMJ Small	LT	150mm
LMJ Medium	LT	150mm
LMJ Large	LT	260mm
LMJ Small	FT	180mm
LMJ Medium	FT	200mm
LMJ Large	FT	200mm

**NOTE:** See table and measure carefully the outside diameter loop stated dimensions.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

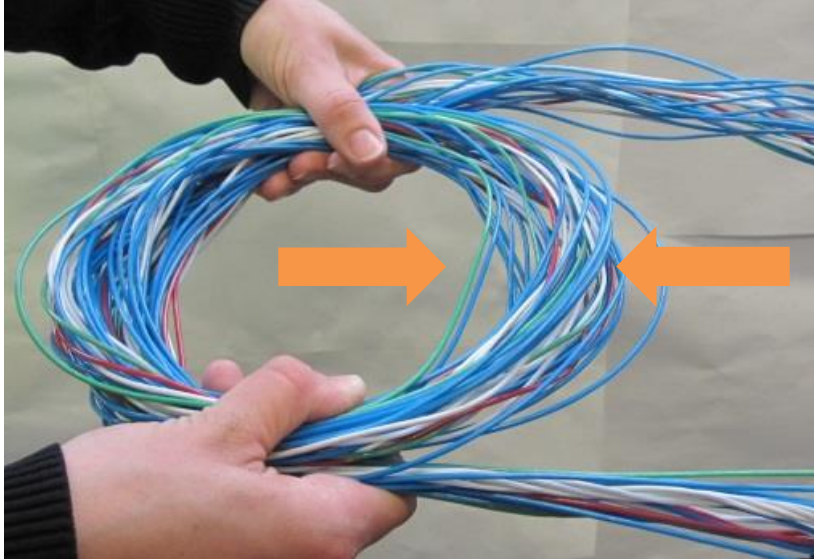
**Step 28**



- For the second loop, cross the elements at the top and flip the loop over to gather the elements.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 29

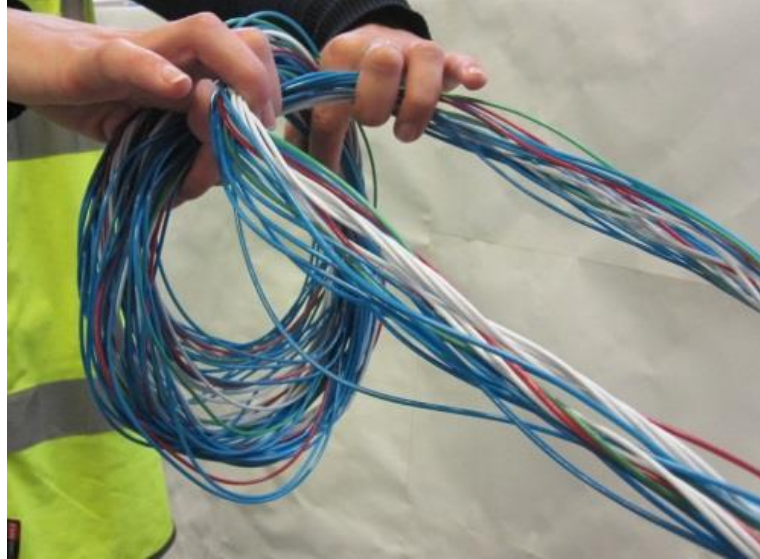


- Make the second loop, but ensure the loop is slightly larger than the first loop as shown in the photo.

**NOTE:** The loop diameter is now slightly wider than the first loop.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

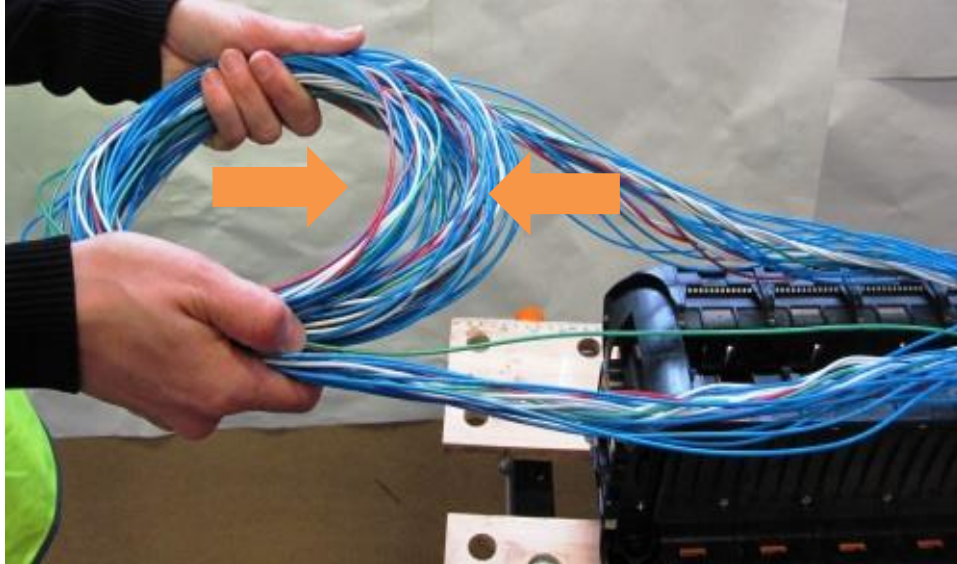
### Step 30



- For the third loop, cross the elements at the top and flip the loop over to gather the elements.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 31



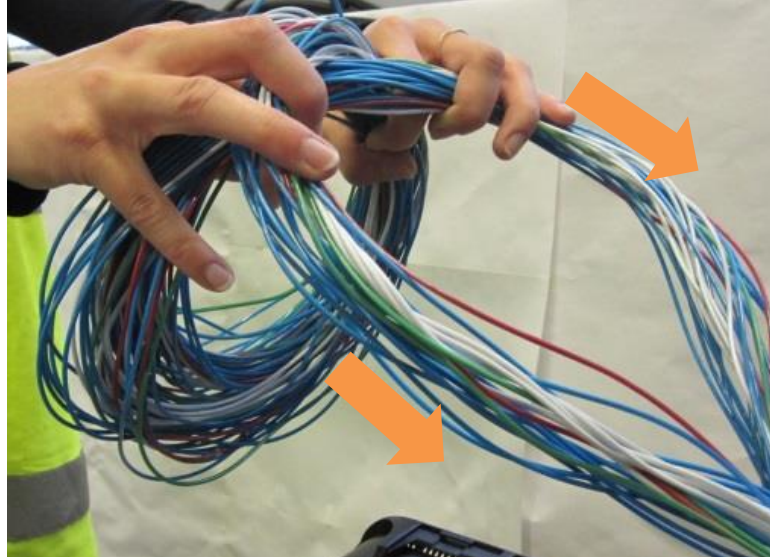
- Make the third loop, but ensure the loop is slightly larger than the first & second loop as shown in the photo.

**NOTE:** The loop diameter is now slightly wider than the second loop.



## MECHANICAL OVAL PORT INSTALLATION - GENERAL

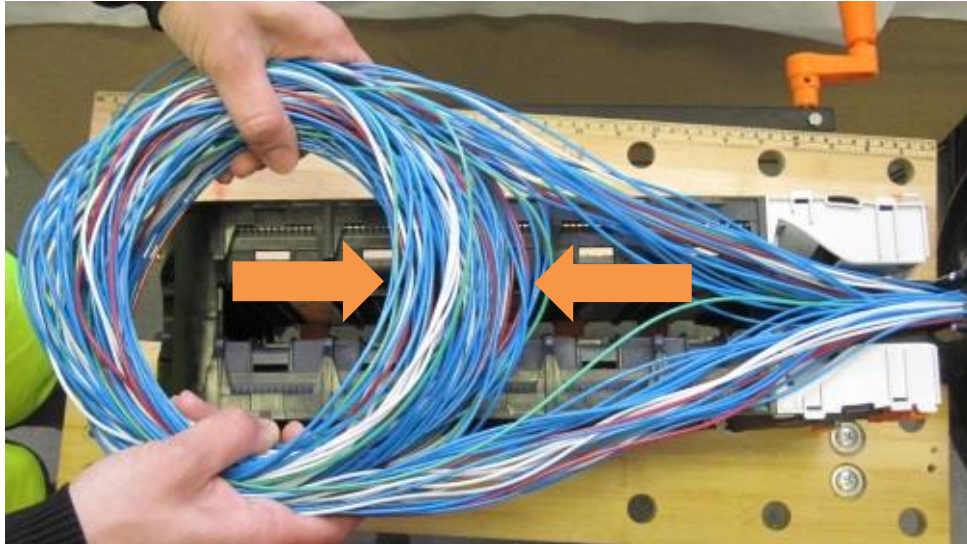
### Step 32



- For the fourth (& final) loop, cross the elements at the top and flip the loop over to gather the elements.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 33



- Make the fourth (& final) loop, but ensure the loop is slightly larger than the first, second & third loop as shown in the photo.

**NOTE:** The loop diameter is now slightly wider than the third loop.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

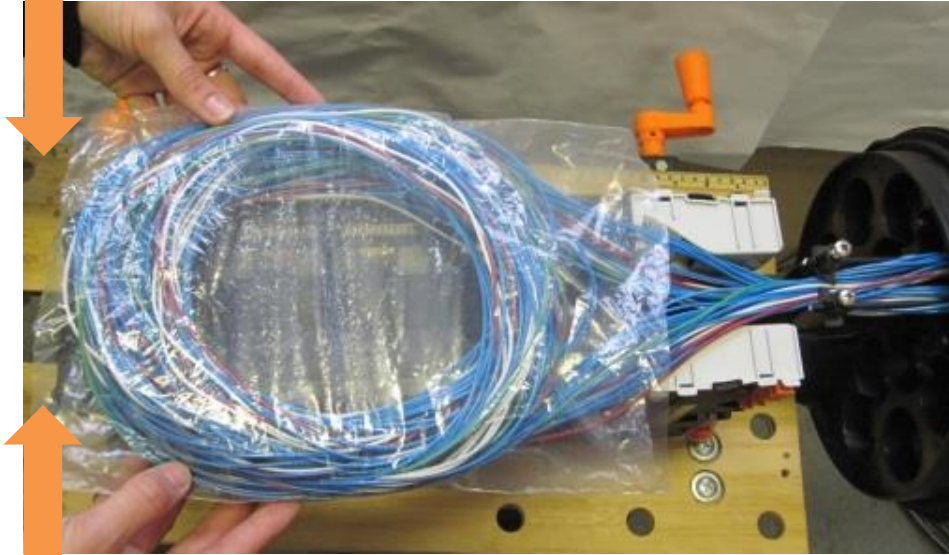
### Step 34



- Gather the loop in place with one hand.
- Locate the plastic sleeve.
- If the plastic sleeve is being used with SMALL LMJ, cut the sleeve in half.
- Place your hand through the sleeve and hold onto the loop at the top.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

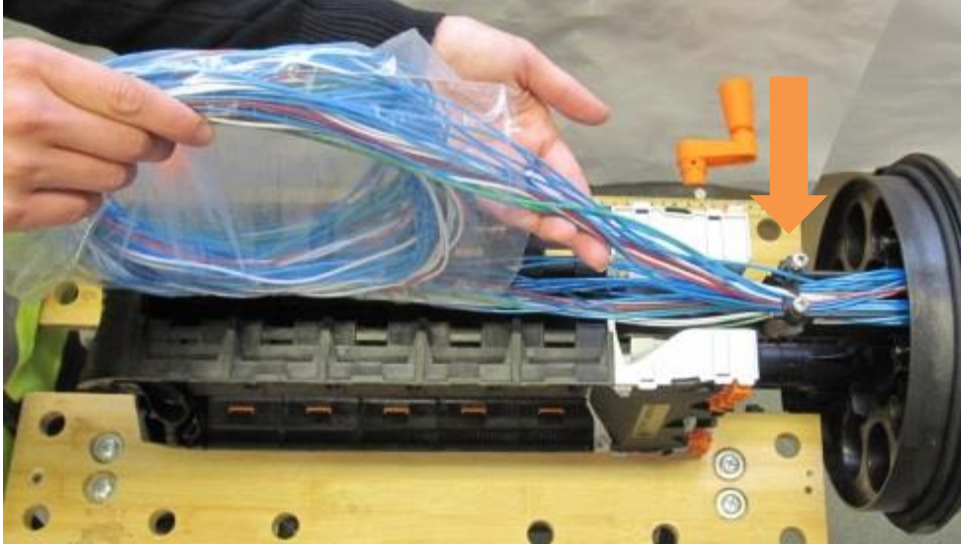
Step 35



- Using your free hand, carefully pull the plastic sleeve over the entire loop until the edge of the sleeve is in line with the top of loop.
- If using Flex Tube leave a 40-50mm gap from the top to hang the loop.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

**Step 36**

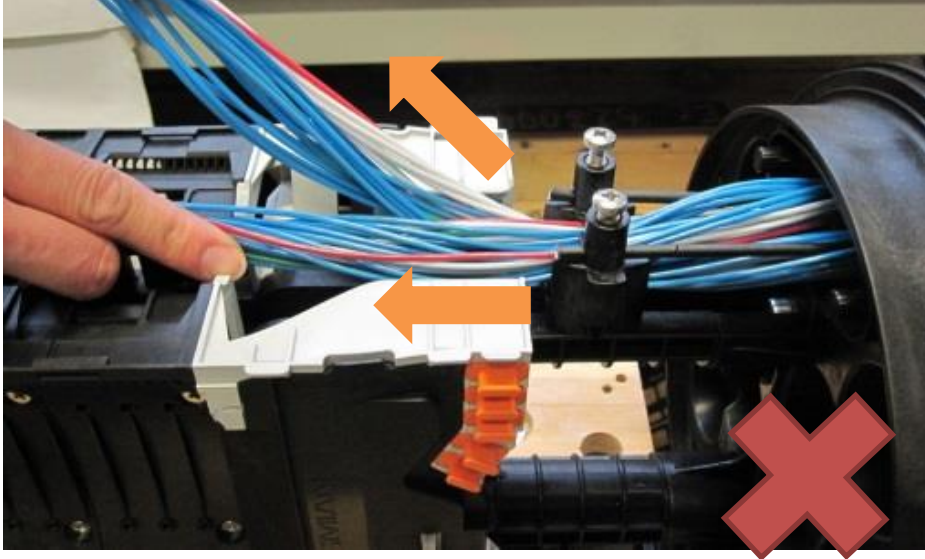


- Twist the loop 90 degrees ensuring elements are twisted in the natural direction that the element lay in the cable anchor position. See Step 37 & 38 for incorrect and correct twist.

**NOTE:** Do not twist against the elements.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

Step 37

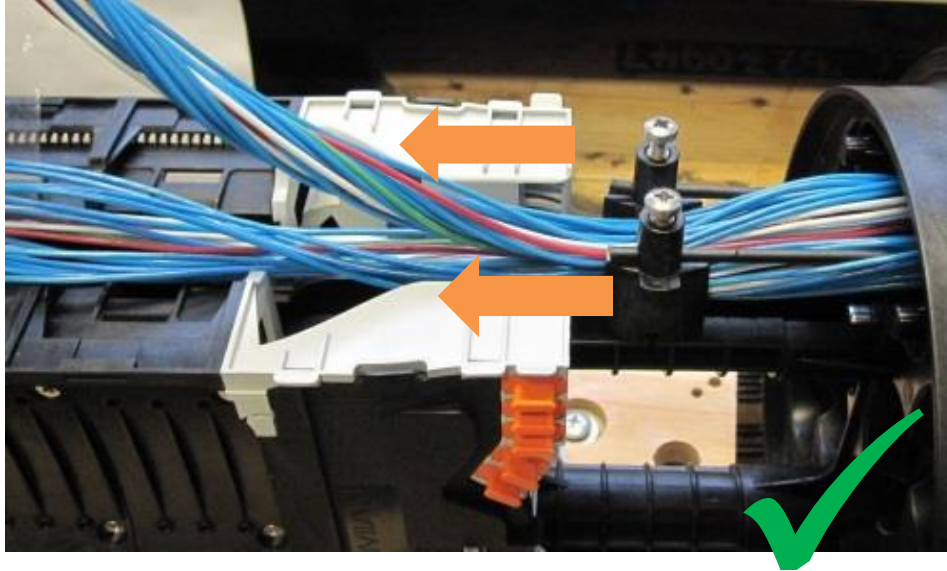


- Incorrect (unnatural) twist loop twist.

**NOTE:** The elements are twisted and do not sit neatly on top of one another.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

Step 38

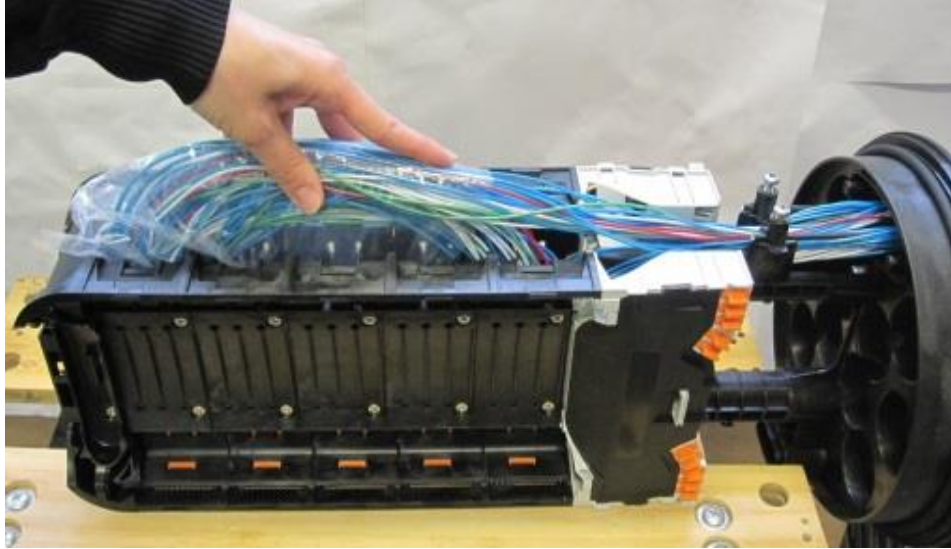


- Correct (natural) loop twist.

**NOTE:** The elements lay flat and neatly on top of one another.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 39



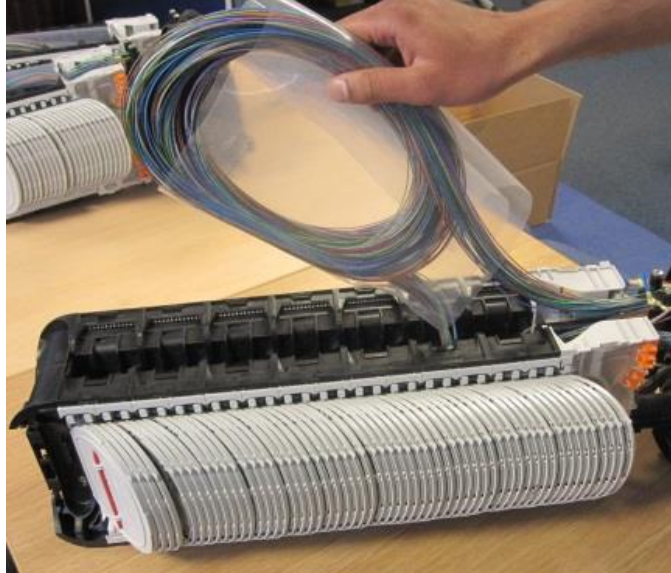
- Carefully push the loop into the open side of the loop storage area.
- If using Flex Tube loop to go STEP 40 on how to hang the loop, otherwise go to STEP 43.

**NOTE:** Ensure to get the entire loop within the side walls of the spine  
Ensure the plastic sleeve is pushed through evenly and without it twisting.



## MECHANICAL OVAL PORT INSTALLATION - GENERAL

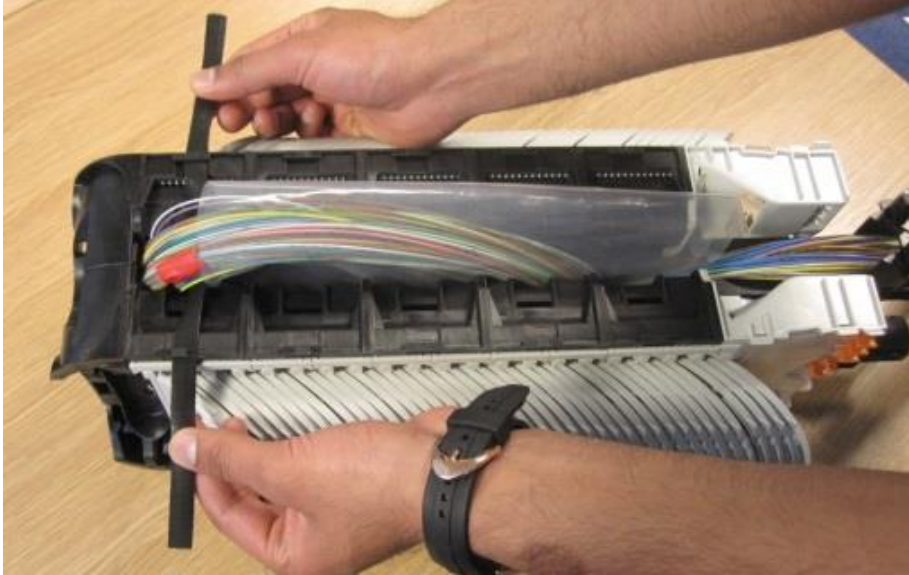
### Step 40



- When installing a Flex Tube Loop ensure the plastic sleeve is 40-50mm lower from the top of the loop.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 41



- Using 1x piece of Velcro push it into one side of the top position slot, soft side down.
- Carefully thread it through the loop.
- Push it into the other side of the slot.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

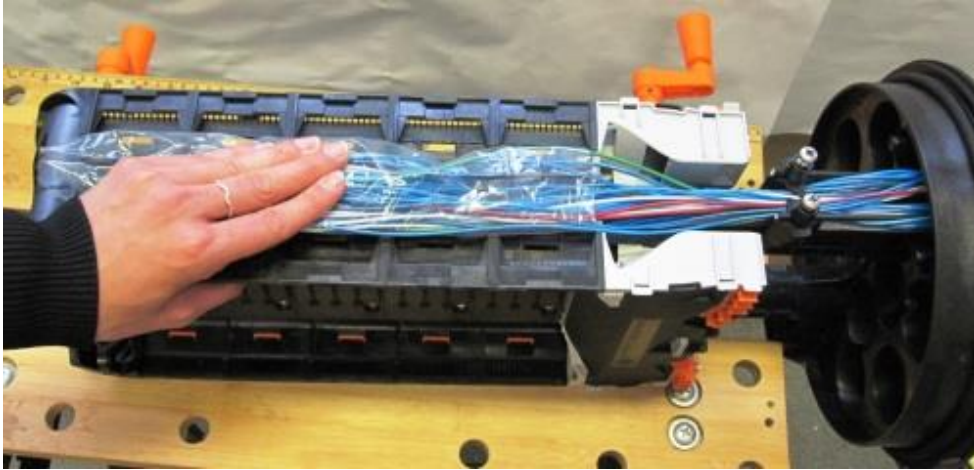
**Step 42**



- Ensure the loop is hanging evenly.
- Hang and secure the loop in the top position.
- Go To Step 45.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 43

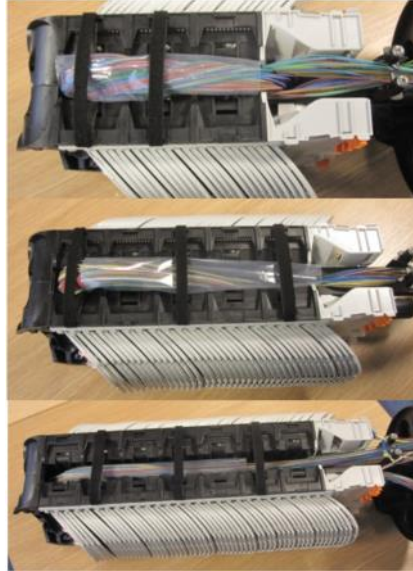


- Gently hold in place whilst you locate the Velcro.

**NOTE:** Take care not to kink the cable elements when installing the loop. Do not rush and follow the instructions precisely.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

**Step 44**



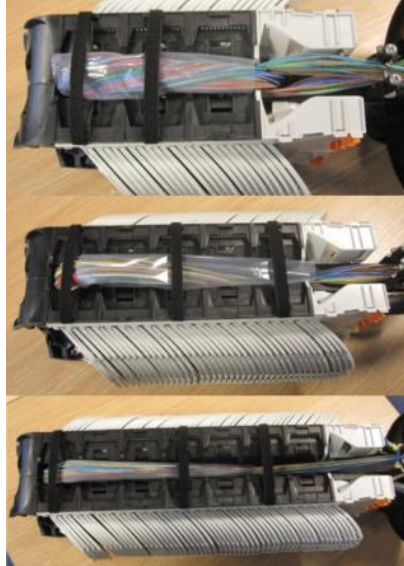
- For Loose Tube...
- Install Velcro straps (see table for how many per LMJ).
- Push the velcro into the slots, soft side down.
- Ensure loop is gently pushed down to ensure the vlcro is as tight as possible securing the loop.

Joint Type	Cover Type
LMJ Small	2x Velcro Straps
LMJ Medium	3x Velcro Straps
LMJ Large	3x Velcro Straps

**NOTE:** Take care not to kink or catch the cable elements when installing the loop. Do not rush and follow the instructions precisely.

## MECHANICAL OVAL PORT INSTALLATION - GENERAL

### Step 45



- For Flex Tube...
- Install Velcro straps.
- Push the velcro into the slots, soft side down.
- Ensure loop is gently pushed down to ensure the velcro is as tight as possible securing the loop.

Joint Type	Cover Type
LMJ Small	2x Velcro Straps
LMJ Medium	3x Velcro Straps
LMJ Large	3x Velcro Straps

**NOTE:** Small joint the velcro will be central. Large joint the velcro will be central, and every other position top and bottom.