

CUSTOMER INSTALLATION INSTRUCTIONS

Reliability by Design.

IN0155 (R1) Conduit U-Pillar (Underground Service Pillar) Customer
Installation Instructions

19 Mar 2024

1 Purpose

The purpose of this document is to provide guidelines for service cable connecting the Hiko Power Engineering range of pre-assembled Conduit U-Pillar (Type UDPxx02xxxCx up to 3 way) (63A/100A).

Compliance must be maintained to the required regulations, standards, and environmental and safety requirements, including safe work practices as specified in local and national work instructions and codes.

In addition to these instructions, installation must comply with any other relevant general or site specific: regulations, standards, and environmental and safety requirements, including safe work practices, as specified in local and/or national work instructions or codes.

2 Scope

This work instruction assumes all Conduit U-Pillar access works will be undertaken by appropriately trained and qualified persons.

3 References

- EEA Guide to Live LV Electrical Work
- EEA Guide for Livening of Service Connections to Premises

4 Important Safety Information

- Wear appropriate personal protective equipment.
- Ensure all electrical components are isolated before making connections.
- Complete a risk assessment prior to commencing site work.
- Unauthorised modification of the safety critical components such as the lid, or structural supporting components, or sealing components is not permitted. If in doubt, contact Hiko for advice.
- Do not use Conduit U-Pillar if damaged. Always inspect for any visible signs of damage both prior to and following pit access for inspection and/or maintenance.
- The Conduit U-Pillar is an Arc Initiation Protected Zone. To maintain this Safety Zone, holes must not be added to the Pit, Lid or Bell.
- Pre-assembled cable tails are supplied for jointing to network / service cables. These pre-assembled cable tails are water-tight and must not be cut or removed.
- Service cables must be left long enough to allow the stand and bell to be safely lifted for maintenance and connection.



- Always keep Conduit U-Pillar upright onsite from the start of installation until the backfill is complete to avoid contaminating the switch gear with mud and water.



5 Product Technical Information

Tabulated below is dimensional, approximate weight and cable data for the Conduit U-Pillars.

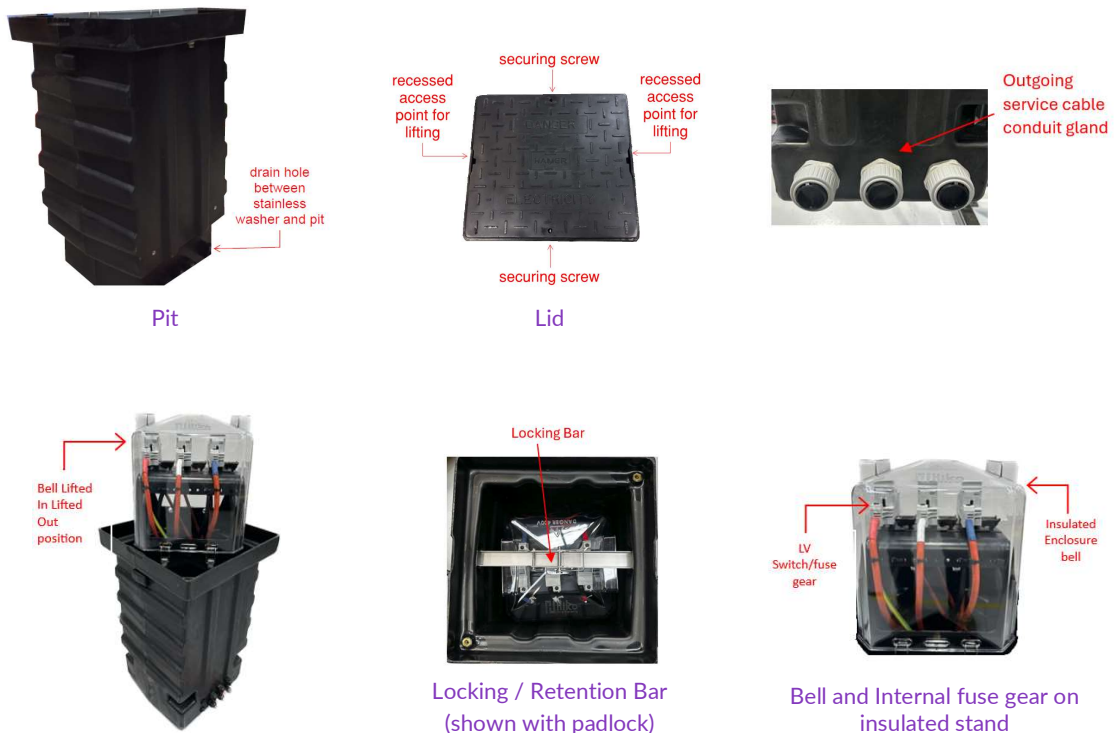
Conduit U-Pillar Product Variant	Approximate Weight (kg) Complete unit including switch/fuse gear and tails	External Dimensions (mm)			Cables (mm ²)	
		Length	Width	Height	Incomers	Services
3 x 63A/100A	20	375	375	613	25	16

The Conduit U-Pillar is supplied with a lid rated according to AS3996 in line with the maximum load the Conduit U-Pillar will be subjected to in everyday use.

Lid load class	Serviceability design load	Nominal wheel loading	Typical traffic conditions
"B" - Light Duty	53 kN	2,670 kg	Footpaths and driveways

Conduit U-Pillar components supplied consist of:

- Pit and lid for in-ground installation.
- Insulated bell complete with lockable/retention bar.
- Waterproof/sealed pre-assembled in-coming and out-going cable tails
- Preassembled LV switch/fuse gear on insulated stand



6 In Ground Installation

1 Preparing the site

- Complete a risk assessment of the surrounding area.
- Determine required depth of hole as specified in step 2. (Confirm final handover ground levels to assist with determining the required depth of hole).

Note: final ground level may vary between construction and handover stage

2 Excavating

- Excavate a hole suitable for the pit.

For Conduit U-Pillar installations the minimum clearance is 100 mm from all four sides and base of the pit. i.e. For all Conduit U-Pillar types located within a footpath, driveway or berm, the hole must be at least 575 x 575 x 700 mm deep.

Ensure the ends of the excavation will match up to the feed and supply cable trenches.

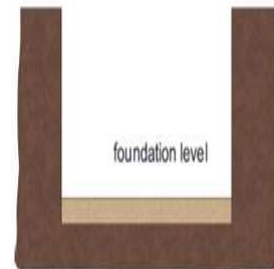
3 Forming Base Level

- Using compacted hard fill, form a level base layer in the hole to a depth such that when positioned, the top of the Conduit U-Pillar will correctly align with the finished ground level.

Ensure the compacted base layer meets the minimum depths above (step 2)

Note: Compaction of all backfilled materials, including the base layer, must be undertaken in accordance with specified compaction criteria for the Conduit U-Pillar location at hand. to the relevant standards for the necessary compaction data.

The Conduit U-Pillar will function satisfactorily up to 5 degrees off the horizontal.



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4 Preparing the Conduit U-Pillar

The conduit connections can be oriented to suit the site.

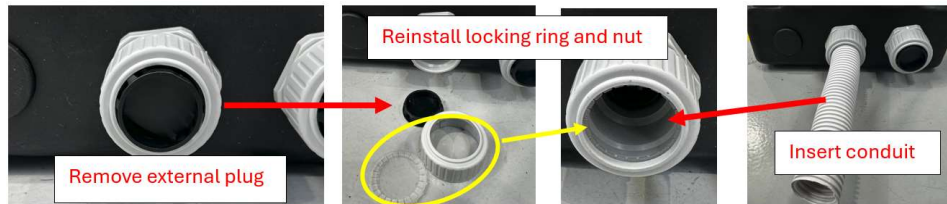
- Knock out the gromet from the new gland position.
- Move the gland assembly the new location.
- Replace the gromet in the vacated position. Note: This is required to maintain the Arc Initiation Protected Zone.



5 Conduit Connection

Conduit may be connected at the time of U-Pillar installation or later.

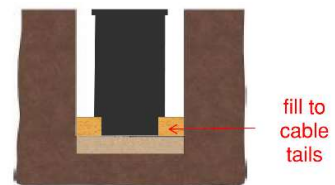
- a. Remove the external plug.
- b. Reinstall the locking ring and nut. (Locking ring fingers outwards)
- c. Insert 40mm flexible conduit.



Note: Do not remove the internal plug until service cable connection.

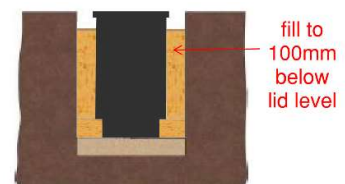
6 Placing the Conduit U-Pillar

- Lower the pit centrally into the hole using a suitable lifting method.
- Orientate the pit parallel to property boundary or kerb (whichever is closest)
- Ensure orientation is such that service conduit glands align correctly
- Backfill and compact the hard fill in the hole around the pit up to the levels of the cable entries.



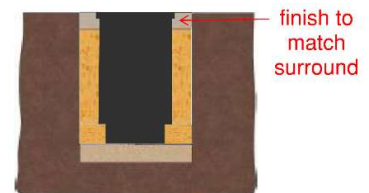
Compaction to be carried out in accordance with the relevant standards as required by the location.

- When all connections complete, backfill and compact around pit to a level approx. 100mm below FFL.



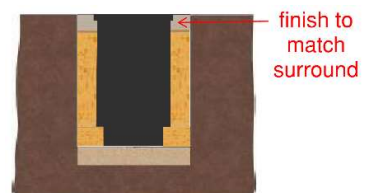
7 Final Backfilling and Reinstatement

- Fill the final stage of the hole around the Conduit U-Pillar with hard-fill
- Compact hard fill according to the relevant standards, or other surface finish as required by the location.



8 Driveway Installation

- Fill the final stage of the hole around the Conduit U-Pillar with concrete as per driveway specifications, minimum 100mm depth.
- Ensure the concrete pour goes under Pit shoulder to support the lid loads.



7 In Access for Inspection and Maintenance Ground Installation

1. Preparing for Access

- Wear the correct PPE at all times when opening the lid for inspection, operation or maintenance.
- Unscrew and the two M8 torx screws.
- Remove the lid by levering the lid up at the two recessed access points



Note: Screw removal will require a screwdriver with a T30 torx bit fitting.

When working on LV network switchgear/fuse gear always follow all operating procedures applicable to the inspection, operation, and maintenance.

Note: The presence of condensation within the clear watertight bell is normal.

2. Removing the Bell and Fuse Assembly

- Remove the padlock / securing screw.
- Release the bell retention bar by gently lifting near the middle of the bar



CAUTION: If the pit has an elevated water level the bell and fuse assembly may float up once the retention bar is removed.

- Lift the bell and fuse assembly up using the two handles situated on top of the bell
- Rotate bell clockwise through 45 degs and rest the assembly base on the internal support frame
- Unlatch the four side clips to release the bell



Note: It is acceptable for condensation to have accumulated on the inside of the bell

- Lift bell off the fuse assembly.
- Store the bell in a suitable location to avoid any risk of accidental damage.



3. Inspection and Maintenance

- Follow all operating procedures applicable to the inspection, operation and maintenance of LV network switchgear / fusegear.
- Perform inspection and maintenance work as below table.

No.	Description
1	Conduct visual inspection of U-Pillar water ingress, damage, loose connections, drain holes and parts corrosion.
2	Check lid, security screws. Replace as required.
3	Check bell for cracks or damage, Check stand. Clean condensation as required.
4	Check Fuse Holder terminals for corrosion, fuse corrosion and signs of overheating. Replace fuses as required.
5	Check E/N bar, E/N cables connection and corrosion.
6	Check for inappropriate water ingress inside pit. Remove water as required.

IMPORTANT

- *Always use insulated tools.*
- *LV network operations must be performed only by persons holding the appropriate competency rating for the type of work.*
- *It is recommended that if condensation is encountered during access, the bell is wiped dry prior to refitting.*

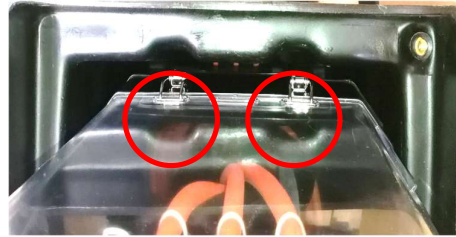


- *Plugs can be removed to gain access for testing*



4. Re-Installing Bell and Fuse Assembly

- Complete the inspection and maintenance
- Replace the bell back into position over the fuse assembly with the correct orientation for the clips.
- Fasten the 4 clips to secure the bell to the fuse assembly

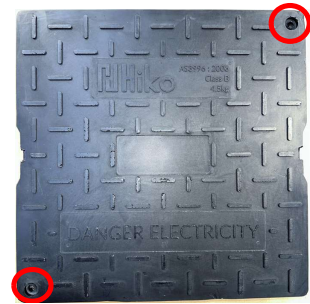


- Rotate the bell/fuse assembly back anti-clockwise through 45deg (ie: reverse of earlier) and lower back into pit.
 - Reinstall the bell retention bar and secure with padlock or bolt.
- Residual water inside the pit does not need to be removed prior to lowering the bell/fuse assembly.*
- When correctly orientated, the bell side catches align with the vertical side slots formed inside the pit body.*

5. Securing Conduit U-Pillar

- Clean around the pit lid recess
- Replace the lid on top of the pit ensuring the writing on the lid is reading left to right when viewed from the road side
- Re-secure with the two M8 torx screws

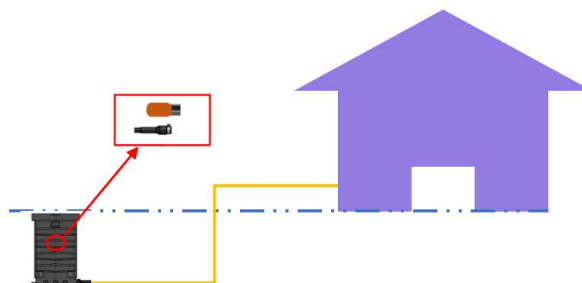
Ensure Conduit U-Pillar is secure before leaving the site.



8 Service Cable Installation from House to Conduit U-Pillar

Service Cable Installation from House to Conduit U-Pillar

- Remove conduit gland internal plug.
- Lay the cable in the trench from the house to the Conduit U-Pillar pushing the end of the cable into conduit to the Conduit U-Pillar.
- Leave more than 1 m cable inside pit to allow the inspector to easily make the connection.
- Electrical connection to the Conduit U-Pillar is made to the shearbolt connectors inside the Conduit U-Pillar by the Electrical Inspector.



9 Service Cable Connection

1. Preparing for Access

- Wear the correct PPE at all times when opening the lid for inspection, operation or maintenance.
- Unscrew and the two M8 torx screws.
- Remove the lid by levering the lid up at the two recessed access points.



Note: Screw removal will require a screwdriver with a T30 torx bit fitting.

When working on LV network switchgear/fuse gear always follow all operating procedures applicable to the inspection, operation and maintenance.

Note: The presence of condensation within the clear watertight bell is normal.

2. Removing the Bell and Fuse Assembly

- Remove the padlock / securing screw.
- Release the bell retention bar by gently lifting near the middle of the bar
- Lift Conduit U-Pillar assembly and rotate 45° to lock into position



CAUTION: If the pit has an elevated water level the bell and fuse assembly may float up once the retention bar is removed.

i.
ii.
ii.

3. The Service Connections

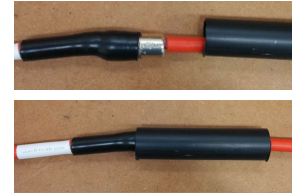
- Untwist cables by rotating bell anti-clockwise till the stand can be placed beside pit and identify the outgoing cables in the orange plastic bags. The outgoing cables are packaged as pairs of phase and neutral.
- Service cables must be long enough to allow the stand to be retracted, but not excessive to prevent reinstallation of the stand approximately 1m.
- Take care to avoid damage.



The pairs of cables have cable number labels and phase colour that matches the fuse holder inside Conduit U-Pillar.

4. Connecting Service Cables and Sealing the Cable Joint

- Insert Adhesive Lined Heat Shrink over the cable.
- Insert the cable into end of the shear bolt.
- Tighten the screw until the head shears off.
- Position the adhesive heat shrink over the joint and heat it.



5. Perform Inspection and Insulation Test

- With the outgoing phase cable removed from the fuse holder.
- Perform safety tests.



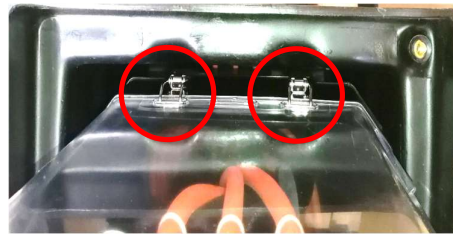
6. Connecting the Phase Cable Inside Conduit U-Pillar

- Check the output voltage of fuse holder using a test instrument with low impedance function (LoZ)* before connection.
*Ghost voltages may be present due to condensation.
- Remove cable cap and connect the outgoing phase cable to the fuse holder.
- Insert screw hole plugs.
- Install the fuse to live.



7. Re-Installing Bell and Fuse Assembly

- Use the expanding foam spray to block conduit gland hole after service connection.
- Replace the bell back into position over the fuse assembly with the correct orientation for the clips.
- Fasten the 4 clips to secure the bell to the fuse assembly
- Rotate the bell/fuse assembly back clockwise two or three turns lower back into the bottom of pit without and cables jammed.
- Reinstall the bell retention bar and secure with padlock or bolt.



Residual water inside the pit does not need to be removed prior to lowering the bell/fuse assembly.

When correctly orientated, the bell side catches align with the vertical side slots formed inside the pit body.

8. Securing Conduit U-Pillar

- Clean around the pit lid recess
- Replace the lid on top of the pit ensuring the writing on the lid is reading left to right when viewed from the roadside
- Re-secure with the two M8 torx screws



Ensure Conduit U-Pillar is secure before leaving the site.

10 Building Temporary Supply

There are two options for connection a building temporary supply (BTS), above ground to through the lid.

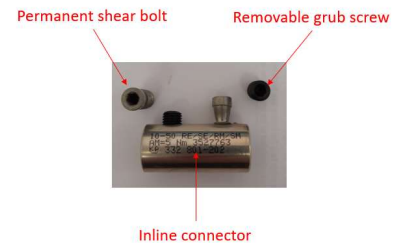
A. Underground connection

- The Conduit U-Pillar is an Arc Initiation Protected Zone. To maintain this Safety Zone, holes must not be added to the Pit, Lid or Bell.
- Pre-assembled cable tails are supplied for jointing to network / service cables. These pre-assembled cable tails are water-tight and must not be cut or removed.



Underground Connection

- If the Conduit U-Pillar is to be used as a BTS the shear bolts must be removed from the inline connectors and replaced with reusable grub screws to fix the temporary BTS cables.
- Once the BTS has served its function and the Conduit U-Pillar is to be used as a permanent supply, the temporary grub screws must be removed and the original shear bolts re-instated to permanently connect the permanent cables.



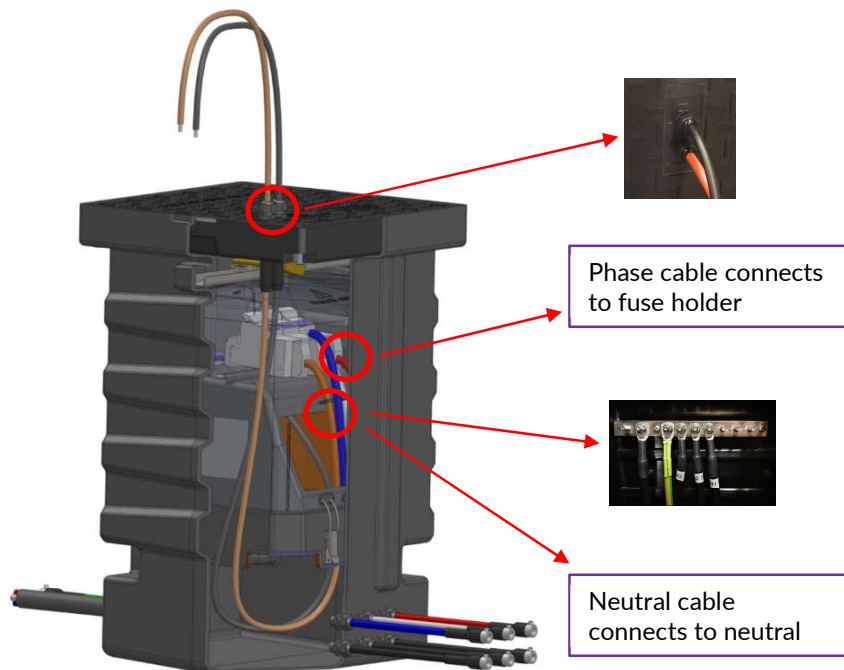
- When removing the BTS connection, take care not to pierce the Conduit U-Pillar cables as this prevents the switchgear from flooding.

- iv. Grub Screw: M8 x 8mm Metric Fine Thread 1.0 pitch Inner Hex Socket 304 Stainless Steel.



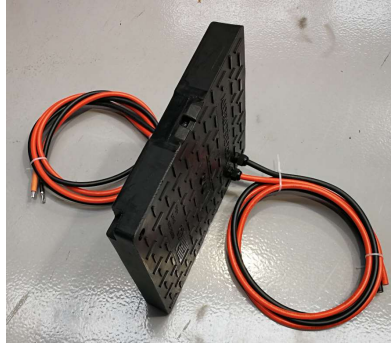
B. Lid Connection

- i. Temporary Connection Parts

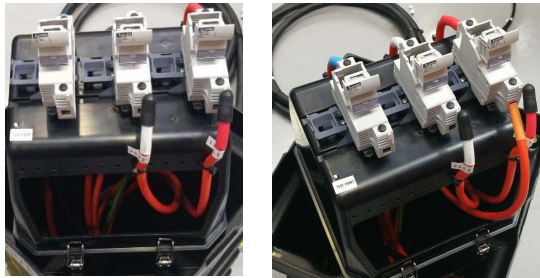


The Conduit U-Pillar temporary connection include a modified Conduit U-Pillar lid and air sealed phase and neutral leads. The leads are secured on the lid by the gland (BOM UDAKT0005).

- Length 4m 16mm² orange and black cable.
- 2 x KP435 shear bolts
- 2 x FASGD00001 Gland
- 1 x HTCL166BM
- 1 x UDALD03

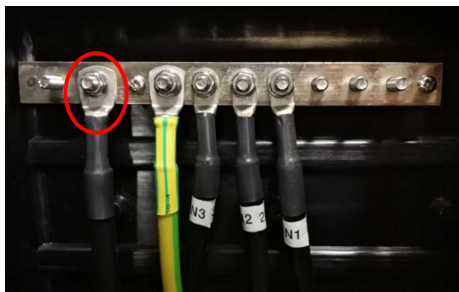


- ii. Terminate the outgoing cables to the customer supply equipment.
- iii. Connect BST Phase Cable



Remove black screw hole plug and connect the BST phase cable to the fuse holder, then replace the screw hole plug.

- iv. Connect BST Neutral Cable

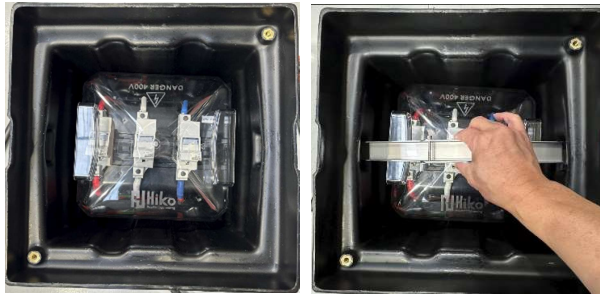


Connect the BST neutral lead to the neutral bar (underneath stand).

- v. Install the Bell on the Stand and Spring latches.



- vi. Rotate the bell/fuse assembly back anti-clockwise through 45deg (ie: reverse of earlier) and lower back into pit.



Install the Locking Bar by inserting the bar ends to slots on the pit wall and secure the bar with a padlock or bolt.

- vii. Refit the Lid



Use 2 x M8 x 50mm stainless steel security screws.

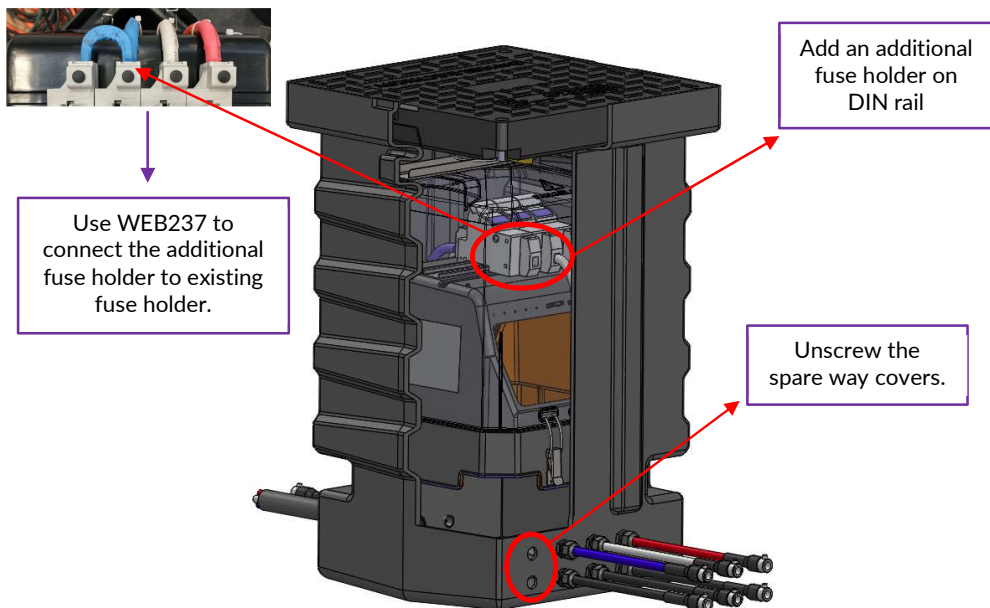
11 Service Cable Connection

1. Service Cable Kit (WECA0011):

- a) 1x FB03A1P - Lovato 1P 100A Fuse Holder 22x58mm Fuse
- b) 1 x1.7m x 16mm² phase cable
- c) 1 x1.7m x 16mm² neutral cable
- d) 1 x WEB237 - Link Bar for Ferraz CMS221 Fuse Holder (HORSESHOE LINK BAR-R)
- e) Red, White, Blue heat shrink.



2. Service Cable Kit Connection



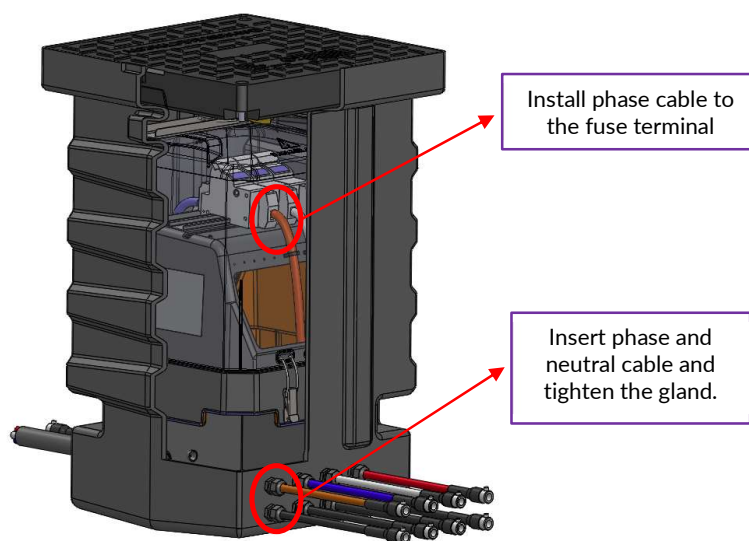
Service Cable Kit Connection - Step 1

- a) Install FB03A1P on the DIN rail.
- b) Remove the spare service way hole covers.
- c) Install WEB237 - Link Bar from existing fuse holder incomer side terminal to the additional fuse holder incomer terminal (shown in above photo)
- d) Choose suitable colour heat shrink to add on the additional phase cable to match the fuse holder connected to.



Service Cable Kit Connection - Step 2

- a) Insert the phase and neutral cable to the spare service way hole. The phase cable is in top, and the neutral cable is on bottom.

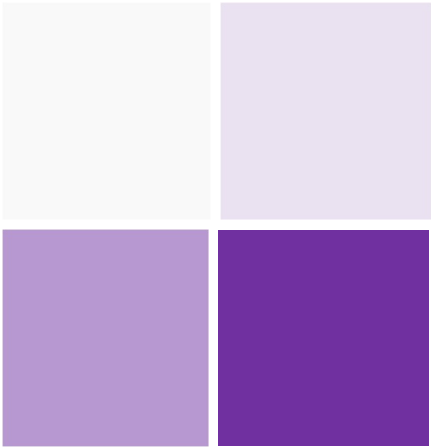


- b) Install additional way phase cable to the fuse holder by apply 4Nm torque.
- c) Then place the screw hole plug.
- d) Connect additional neutral cable to the neutral bar (underneath stand).



12 Accessories

Hiko Code	Description	Unit
UDAPT03	Pit Conduit U-Pillar 382x382x613mm	EA
UDALD03	Lid (Class B) for UDAPT03 382x382 pit	EA
UDP005	Conduit U-Pillar Bell Injection Moulded Transparent	EA
UDAAS0001	U Pillar Stand Sub Assembly	EA
UDAKT0003	Conduit U-Pillar locking Bar Assembly	EA
FASSC00002	M8x50mm SS 304 Security Screw Torx-with-pin drive T40	EA
WECA0011	Conduit U-Pillar Outgoing 16mm ² x 1.7m 1 Way Cable Kit	EA
UDAKT0005	Conduit U-Pillar Lid Mounted BTS Cable Connection Kit (Lid and Connection Cables Only)	EA
FASLP08002	M8 x 50mm Square Locking Pin Stainless T316	EA



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