

U-Pillar

(Underground Service Pillar)

User Manual & Operating Instructions

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1 Purpose

The purpose of this document is to provide guidelines for service cable connecting the Hiko Power Engineering range of pre-assembled U-Pillars (Type UDPxx02xxx) (63A/100A/160A).

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

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

2 References

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

3 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 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 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.
- The Pre-assembled cable tails must not be extended by pulling the cables through for the insides of the Pit as this will prevent the bell and stand from being safety lifted for maintenance and connection.



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





4 Technical Information

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

U-Pillar Product	Approximate Weight (kg)	External Dimensions (mm)			Cables (mm2)	
vanant	Complete unit including switch/fuse gear and tails	Length	Width	Height	Incomers	Services
6 x 63A	20	375	375	613	25	16
4 x 100A	20	375	375	613	25	16
3 x 160A	25	375	375	613	70	70

The U-Pillar is supplied with a lid rated according to AS3996 in line with the maximum load the 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

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 •



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5 In Ground Installation

Below are step by step instructions for the physical installation of the Hiko Power Engineering range of U-Pillars. Instructions are standard across the range of U-Pillars unless specifically noted otherwise.

No.	Description
1	 <u>Preparing the site</u> 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	• <u>Excavating</u>
	 Excavate a hole suitable for the pit
	For U-Pillar installations the minimum clearance is 100 mm.to all four sides and base of the
	prt.
	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 U-Pillar will correctly align with the finished ground level.
	Ensure the compacted base layer meets the minimum depths noted above (step 2) foundation level
	Note: Compaction of all backfilled materials, including the initial base layer, must be undertaken in accordance with specified compaction criteria for the U-Pillar location at
	hand. Refer to the relevant standards for the necessary compaction data.
	The U-Pillar will function satisfactorily up to 5 degrees off the horizontal
4	Preparing the U-Pillar
	$\circ~$ Visually inspect the U-Pillar for any signs of damage prior to installation
	• Tape service side flexible cable tails for future use back to the pit for protection if final service connections are not scheduled to be undertaken as part of the U-Pillar installation.

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No.	Description
5	 <u>Placing and Connecting the U-Pillar</u> 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 tails 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. Connect the flexible cable tails to service and or network cables using suitable in-line joints. When all connections complete, backfill and compact around pit to a level approx. 100mm below FFL.
6	 <u>Final Backfilling and Reinstatement</u> Fill the final stage of the hole around the U-Pillar with hard-fill Compact hard fill according to the relevant standards, or other surface finish as required by the location.
7	 <u>Driveway Installation</u> Fill the final stage of the hole around the U-Pillar with concrete as per driveway specifications, minimum 100mm depth. Ensure the concrete pour goes under Pit shoulder to support the lid loads.



6 Access for Inspection and Maintenance

No.	Description			
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	 <u>Removing the Bell and Fuse Assembly</u> 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 			



	scription				
0	Lift bell off th Store the bel of accidental	he fuse assembly. I in a suitable location to avoid any risk damage.			
Ins	pection and N	<u>Aaintenance</u>			
0	Follow all ope of LV networ Perform insp	erating procedures applicable to the inspection, operation and maintenance k switchgear / fusegear ection and maintenance work as below table.			
In M	spection/ laintenance	Description			
	1	Conduct visual inspection of U-Pilar water ingress, damage, loose connections, drain holes and parts corrosion.			
	2	Check lid, security screws. Replace as required.			
	3	Check bell, stand. Clean condensation as required.			
	4	Check Fuse holder terminals corrosion, fuse corrosion and signs of overheating. Replace fuses as required.			
	5	Check E/N bar, E/N cables connection and corrosion.			

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



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No.	Description				
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 fo the clips. 				
	 Fasten the 4 clips to secure the bell to the fuse assembly 				
	 Rotate the bell/fuse assembly back anti-clockwise through 45degs (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 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				
	Ensure U-Pillar is secure before leaving the site.				

7 Service Cable Installation from House to U-Pillar

No.	Description					
1	Service Cable Installation from House to U-Pillar					
	 Lay the cable in the trench from the house to the U-Pillar coiling the end of the cable next to the U-Pillar. The cable or conduit must not enter the U-Pillar. 					
	 Leave enough extra cable to allow the inspector to easily make the connection. 					
	 Electrical connection to the U-Pillar is made to the shearbolt connectors outside the U-Pillar by the Electrical Inspector. 					



8 Service Cable Connection

No.	Description						
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 (T40). 						
	 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 U-Pillar assembly and rotate 45° to lock into poaition 						
	Caution: If the pit has an elevated water level the bell and fuse assembly may float up once the retention bar is removed.						
3	Excavate the soil and locate the Service Connections						
	 Excavate the soil by hand on the outgoing side of the U-Pillar and identify the outgoing cables in the orange plastic bags. The outgoing cables are packaged as pairs of phase and neutral. Take care to avoid damaging The pairs of cables have cable number labels and phase colour that matches the fuse holder inside U-Pillar. 						
	Warning: Do not pull the outgoing or incoming cables out from the pit or loosen glands.						

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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 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 liven.
7	 <u>Re-Installing Bell and Fuse Assembly</u> 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 45degs (i.e.: 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
	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.

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8	Securing 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 U-Pillar is secure before leaving the site.	

9 Building Temporary Supply

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

A. Underground connection

No.	Description		
	• The 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.		
1	Underground Connection		
	Permanent shear bolt Removable grub screw		
	 If the 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 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 U-Pillar cables as this prevents the switchgear from flooding 		
	Grub Screw: M8 x 8mm Metric Fine Thread 1.0 pitch Inner Hex Socket 304 Stainless Steel.		

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B. Lid Connection



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6 Rotate the bell/fuse assembly back anti-clockwise through 45degs (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.

7 Refit the Lid



Use 2 x M8 x 50mm stainless Stel security screws

10 Accessories

Hiko Code	Description	Unit
UDAPT03	Pit U-Pillar 382x382x613mm	EA
UDALD03	Lid (Class B) for UDAPT03 382x382 pit	EA
UDP005	U-Pillar Bell Injection Moulded Transparent	EA
UDAAS0001	U Pillar Stand Sub Assembly	EA
UDAKT0003	U-Pillar locking Bar Assembly	EA
FASSC00002	M8x50mm SS 304 Security Screw Torx-with-pin drive T40	EA
WECA0011	U-Pillar Outgoing 16mm2 x 1.7m 1 Way Cable Kit	EA
UDAKT0005	U-Pillar Lid Mounted BTS Cable Connection Kit (Lid and Connection Cables Only)	EA

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