HEAVY DUTY INDUSTRIAL-GRADE DUAL REDUNDANCY SURGE REDUCTION FILTERS

(PATENT PENDING)

INSTALLATION HANDBOOK

BEFORE STARTING THE INSTALLATION PROCEDURE, IT IS ESSENTIAL THAT YOU READ AND UNDERSTAND THE INSTRUCTIONS WITHIN THIS DOCUMENT.

IF YOU ARE UNSURE ABOUT ANY ASPECT OF INSTALLING THIS PRODUCT, CONTACT YOUR RESELLER OR PIVOT ELECTRONICS FOR CLARIFICATION.

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ABBREVIATIONS

CSA Cross-Sectional Area

LED Light Emitting Diode

RMI Remote Monitor Interface

SPD Surge Protective Device

SRF Surge Reduction Filter

1) PREPARING THE SRF FOR INSTALLATION

1.1) Check that the SRF has not been damaged during transit.

NOTE 1.1: *Unless Customer-specified otherwise, all cabinets will be supplied with the door hinges located on the right hand side.*

1.2) Unlock the cabinet door (the key is taped to the outside of the door). Remove the SRF chassis from the external cabinet by releasing the M8 Nuts and washers on the four corners of the SRF back panel.

1.3) Release the Earth Bonding Wire from the smaller Spring Clamp terminal (mounted near the bottom of the cabinet next to the door hinges) by lifting the terminal's operating lever through 90°, it will park in that position, leave there for now. Pull the wire clear of the door opening.

1.4) Using the 'D' handle provided on the top of the SRF chassis, lift the whole unit from the cabinet and put it aside – take care not to lose the M8 nuts and washers.

1.5) Remove the Cable Gland Mounting Plate from the enclosure and put it aside.

2) PREPARING THE CABINET FOR MOUNTING

2.1) Position the cabinet where it is intended to be permanently installed, then use the mounting holes to mark the positions of the wall fixings.

2.2) In the event that wall fixings cannot be located in positions that align with the mounting holes already provided in the cabinet, **alternate** fixing holes can be drilled into the cabinet but these new holes **must** be located in positions that do not interfere with the SRF chassis when it is reinstalled.

2.3) You'll find a Drilling Template has been inserted between the SRF Chassis and the back of the cabinet. **Alternate** fixing holes can be drilled anywhere in the areas marked in **white** on the Drilling Template **but nowhere else**.

NOTE 2.1: ***The height of the head of any wall fixing located within the white areas after installation must not exceed 15mm above the rear inside surface of the cabinet****. This is to ensure that any fixings located under the back panel of the SRF do not interfere with the reinstallation of the SRF.*

2.4) When alternate fixing holes are being used, please ensure that plugs are fitted to the originally-provided mounting holes.

3) PREPARING THE GLAND PLATE

3.1) Before installing the cabinet onto the wall, take the supplied disposable Gland Plate drilling template which is also provided for your convenience. Peel-off the adhesive backing cover and carefully apply the template to the ***outside*** surface of the Gland Plate.

3.2) With a sharp center punch, transfer the center point marks through the template and onto the Gland Plate.

3.3) Remove the template and, using the appropriately sized hole saw, drill the Gland Plate to suit the particular Cable Glands which have been chosen to fit the cables being used.

NOTE 3.1: ***So please, before drilling the Gland Plate, check again that you have located the correct gland in its correct place and that the hole you are about to drill is the right size*** ***– check twice & drill once.***

3.4) After machining the Gland Plate, de-burr the holes.

3.5) To make fitting the cable glands a little easier, start with the Centre Earth Gland, followed by the glands for the Neutral cables, and then the outer Active cables. By working outwards from the center you will have the maximum room to operate the spanner to tighten-up the back nuts.

3.5) When you have finished fitting the cable glands, reinstall the gland plate on to the external cabinet, taking care that it is oriented correctly**,** that is glands that accept the Line (external) side cables are on the left**,** and those for the Load (internal) side and Remote Monitor cables are on the right**.**

4) MOUNTING THE CABINET

4.1) Make sure the Cabinet is free of all dust and swarf from drilling.

4.2) Fix the cabinet in position on the wall**.**

4.3) Reinstall the SRF gear-tray into the cabinet and re-fit the retaining nuts.

4.4) Tighten the nuts to 12±1 newton-meters.

4.5) Reconnect the Earth Bonding Wire (4mm^2 green/yellow cable to the enclosure + door) to the smaller Spring Clamp terminal by relaxing the operating lever.

KEEP YOUR FINGERS WELL CLEAR OF THE LEVER'S TRAVEL.

5) PREPARING THE SPRING CLAMP TERMINALS FOR CONNECTION

NOTE 5.1: *Each SRF is supplied with a green-handled 8mm hexagonal "T" spanner for operating the Spring Clamp terminals. It is located in a tool holder fastened to the rear face of the cabinet door. Please return the T spanner and, this Installation Handbook to the tool holder after installation is complete.*

NOTE 5.2: *The instructions below must be followed exactly and strictly in the order in which they are presented, take special heed of the warnings that follow.*

DANGER

NEVER EVER put your finger in Spring Clamp terminals' cable entries because you risk injury caused by the cable clamping mechanism. Only ever inspect cable entries by sight.

WARNINGS:

b) The T spanner must only ever be driven **ANTI-CLOCKWISE** from rest or "hold open" as clearly indicated by the "open" arrows marked on the top of the Spring Clamp terminals at each T spanner socket. When the T spanner is engaged in **any** "open" socket **NEVER** drive it **CLOCKWISE** as this will **DESTROY** the terminal's hold-open mechanism.

c) The **UPPER** "open" sockets of any of the Spring Clamp terminals **MUST NOT** be disturbed.

5.1) Insert the T spanner into the Spring Clamp terminal's **LOWER** hexagonal socket.

5.2) With your **LEFT** hand, turn the T spanner **ANTI CLOCKWISE** until it reaches its **end stop** and hold it there. Do not force past the end stop.

5.3) With your right hand, push-in the square **orange** "hold open button" located on the front face of the Spring Clamp terminal (above the cable entry port).

5.4) Keep holding the orange button **IN** with your right hand and at the same time **SLOWLY** relax your left hand, thus allowing the T spanner to rotate **UNAIDED** backwards in a **clockwise** direction. When the T spanner is fully relaxed, the Spring Clamp terminal is **locked** in the Open position.

5.5) Repeat steps 5.1 through 5.4 for all of the other DIN rail-mounted Spring Clamp terminals.

6) CABLE AND SPRING CLAMP TERMINAL SIZES AND RATINGS

Supply input cables (external side) may sometimes be of greater cross-sectional area (CSA) than the load side (internal side) cables. Also, the Earth and Remote Monitor cables are usually smaller in diameter than the supply cables –

Standard-sized Cables

The standard Pivot Electronics SRF is factory-fitted with Spring Clamp terminals that accept cables with CSA in the range 10~50mm^2.

Smaller-sized Cables

Where cables of CSA less than 10mm^2 are to be connected, Pivot can supply and factory-fit to Customer order, special adapters that plug into the Spring Clamp terminals and which can accept cables in the range 0.2~6mm^2. Or else the Customer can order adapters separately for on-site fitting during SRF installation (see **WARNING** below). The Pivot part number for the adapter is-

WGO-285-447.

WARNING

This type of adapter has a metal tongue which is installed by pushing it into the slotted rectangular opening just above the Spring Clamp terminal's cable entry port. An adapter can **ONLY** be fitted when the terminal's Hold Open button is disengaged and the cable entry port is unoccupied.

Larger-sized Cables

In instances where cables of CSA greater than 50mm^2 are to be connected to the line (external) side of the SRF, then to Customer order, Pivot can factory-fit Spring Clamp terminals which can connect cables of CSA in the range 25~95mm^2.

NOTE 6.2: *95mm^2 terminals CANNOT BE RETRO-FITTED IN THE FIELD. They must be specified when the SRF is ordered because of the need for specialised production jigs and tools. If it is later found that 95mm^2 terminals are necessary, the SRF chassis may be returned to Pivot for modification.*

7) PREPARING THE CABLES FOR CONNECTION TO THE SRF

7.1) Firstly remove the caps and rubber sealing rings from the Cable Glands and carefully put them aside.

7.2) Cut the cables to length as required. **MAKE SURE THE CABLE ENDS ARE CUT SQUARE**.

7.3) Thread the gland caps and sealing rings onto the cables. A light spray of silicone ("*Slip & Slide*" or such) will help greatly with this operation.

7.4) The cables must now be stripped to the exact "stripped length =...." indicated on the top surfaces of the appropriate Spring Clamp terminals.

7.5) Before they are passed through the cable glands, ensure the gland caps and sealing rings are all in place on the cables - caps first followed by the sealing rings.

NOTE 7.2: ***SAFETY FIRST*** *Always connect the* ***Earth*** *cable* ***first****. Always disconnect the* ***Earth*** *cable* ***last****.*

7.6) Starting with the **Earth** wire, bring it up through the previously installed cable gland, and on into the cable entry of the **Earth** Spring Clamp terminal.

7.7) Insert the T spanner into the **Earth** Spring Clamp terminal's lower hexagonal socket.

7.8) With your right hand, firmly hold the **Earth** cable fully inserted into the Spring Clamp terminal's cable entry.

7.9) **While strictly heeding the warnings given at the start of Section 5**, with your left hand, drive the T spanner **anti-clockwise** again until the orange "hold open" button releases the Spring Clamp mechanism, you will hear a "click" as it does so.

7.10) **Slowly** allow the T spanner to rotate **clockwise** by itself, don't let it snap back. When it stops rotating the Spring Clamp terminal has firmly locked on to the cable and the connection is complete.

7.11) Check that no bare copper conductor is visible in the Cable Clamp entry and that as a result the connection is fully "finger safe".

7.12) If the check at Clause 7.11 proves negative, proceed to Clause 7.13 below, else proceed to Clause 7.17.

7.13) Hold the cable with your right hand and with the other drive the T spanner
anti-clockwise until the cable is released.

7.14) Withdraw the cable, then slowly let the T spanner return to the Spring Clamp terminal's rest position.

7.15) Check, and if necessary correct the cable-end termination,

7.16) Restart the Installation Procedure from Clause 7.4.

7.17) Withdraw the T spanner from the Spring Clamp terminal's socket.

7.18) Slide the sealing ring up the cable and into the cable gland, followed by the gland cap.

NOTE 7.3: *Don't forget it's far easier to install and tighten the cable gland back nuts and gland caps from the center, and progressively work your way outwards on each side. In this way you will give yourself the maximum amount of room to operate spanners.*

7.19) **Before fully tightening the Gland Cap**, make sure the cable is fully inserted into the terminal and that the Spring Clamp terminal is fully locked-on so the connection is complete.

7.20) Check again that you can see no bare copper in the cable entry.

7.21) If all is OK, the gland cap can now be tightened-up to form a watertight seal, and also to provide effective strain relief for the cable. Installation of the **Earth** cable is now complete.

7.22) Starting from Clause 7.4, apply the same procedure to the **Neutral** cables on the left- and right-hand sides of the **Earth** cable, then proceed to Clause 7.23.

7.23) When the Neutral cables have been fully installed and the gland caps tightened up, install the LINE 1 or **Active** cables in the case of the single phase unit, or for a three phase unit, LINE 3 cables, followed by LINE 2, and then LINE 1 cables (working outwards), then proceed to Section 8.

8) BEFORE ENERGISING THE INSTALLATION

8.1) Check that everything has been installed correctly and safely, and in compliance with any regulations under which the Installation might fall.

8.2) In particular confirm that no bare conductor is visible; no cable or insulation offcuts have been left inside the cabinet, or anything else that might cause problems.

8.3) **Again check that all fastening nuts are correctly installed and tightened.**

8.4) Check that all SPD Cartridges are firmly in place and that their two BLUE retention latches are firmly engaged to their corresponding Cartridge trays on the SRF chassis.

8.5) Use a Digital Multimeter to check that there is continuity from the 4mm Test Socket in the top of the Earth Spring Clamp terminal to the stud on the SRF's door to which is connected to an Earth wire.

9) AFTER ENERGISING THE INSTALLATION

9.1) Check that the LEDs in the SPD Cartridge handles glow green steadily thereby confirming that the SRF is now fully functional.

9.2) Though it is extremely unlikely, if any such LED does not glow green steadily, take whatever action is indicated in the "**SPD CARTRIDGE AND SRF CONDITION**" section of the labels fastened to the SRF's door and on the internal Safety Cover.

NOTE 9.1: *Removing the SPD Cartridge **DOES NOT** disrupt power to the load that is connected to the Installation.*

9.3) If the SRF has been fitted with a Remote Monitor Interface (RMI), check that when the SPD Cartridge LED glows green, so does the RMI LED.

9.4) If the check at Clause 9.3 proves negative, check that the RMI connector is properly plugged into its mating part about half-way up the right-hand side of the Safety Cover.

END

REVISION RECORD		
DATE	**ISSUE**	**DETAILS**
02APR2014	1	originated
07JAN2015	2	Corrections & formatting
08MAR2017	3	New logo

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