

## Shearbolt terminals for low and medium voltage

|                                                                          |   |
|--------------------------------------------------------------------------|---|
| Shearbolt terminals.....                                                 | 2 |
| Shearbolt connectors 10 - 240 mm <sup>2</sup> (pre-assembled screw)..... | 3 |
| Shearbolt connectors 10 - 630 mm <sup>2</sup> (reversible screw).....    | 3 |
| Filler piece.....                                                        | 4 |
| Shearbolt terminals 10 - 630 mm <sup>2</sup> (pre-assembled screw).....  | 4 |
| Shearbolt terminals 10 - 630 mm <sup>2</sup> (reversible screw).....     | 5 |
| Screw branch clamps.....                                                 | 5 |
| Counterhold tool.....                                                    | 5 |



# Shearbolt terminals

## Shearbolt terminals up to 36 kV

Elpress shearbolt terminals are available as through connectors and terminals for:

- stranded and solid Al and Cu cables
- round cross section 10 to 630 mm<sup>2</sup>
- sector cross section 16 to 240 mm<sup>2</sup>



SL240N-12

The screws used are made of brass, that has the advantage of providing a lower friction compared to aluminium or steel screws. This makes it easier for the user to perform the installation. Installation tools can be a socket wrench or an impact wrench with torque force >100 Nm. We recommend that the fitter uses a counterhold tool to secure the shearbolt terminal more easily when tightening the screws.

### Handles multiple area steps

The advantages of shearbolt terminals are that installation can be done easily without any heavy special tools and that they can manage several area steps in the same through connector/terminal, for example 10-50 mm<sup>2</sup>. The user gets a reduced range of products and a flexible solution.

Shearbolt terminals are made of hardened aluminium with an alloy that allows both copper and aluminium cable to be joined, while preventing the occurrence of galvanic corrosion. To reduce the number of terminal variants, screw terminals are supplied with reduction washers that allow the use of two different bolt sizes.

Washers are always needed for connecting terminals with screw joints to busbars.



Use a socket wrench to tighten the screws. It is also possible to use an impact wrench.

## SC50R50S

On the SC50R50S through connector, the screws are threaded into the sleeve and can handle all their cable areas on one thread length. SC50R50S is also suitable as a screen connector for 10-35 mm<sup>2</sup> Cu/Al.



Through connector SC50R50S with pre-assembled screws.

### Labelling

Elpress marking of shearbolt terminals shows logo, product name, cable area (for stranded and solid conductors) and shearbolt installation order. The terminal palm is marked with screw size M-thread for bolted joints.

#### Cat. no. SL70R70S-10-12

SL = Shearbolt terminal  
70R = max 70 mm<sup>2</sup> round conductor  
70S = max 70 mm<sup>2</sup> sector conductor  
10-12 = screw size 10 and 12 M thread

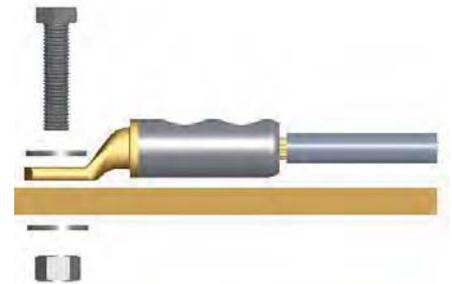
#### Cat. no. SC50R50S

SC = Shearbolt connector  
50R = max 50 mm<sup>2</sup> round conductor  
50S = max 50 mm<sup>2</sup> sector conductor

## Screw and washer

The following apply for bright galvanized type nuts and screws, with strength class 8.8, used for connecting terminals with Cu and Al palms:

- Always use a torque wrench to be certain the right torque is achieved. Make sure it is calibrated at regular intervals according to the supplier's instructions.
- Use the recommended torque according to the screw manufacturer's instructions.
- Always use a hard flat washer to reduce friction against the connection surface and the edge pressure, hardness min HB200.
- Install as illustrated.



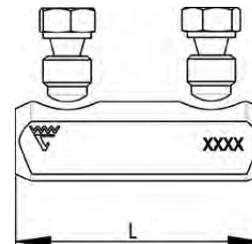
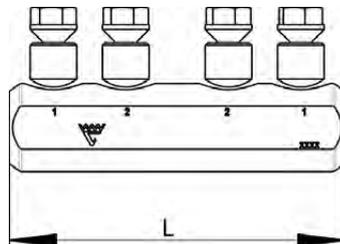
## Tightening torque

Recommended tightening torque for wet lubricated screws and nuts of bright galvanized zinc type with strength class 8.8 and coarse threaded (normal thread), used with corresponding washer for connection of terminals with Cu- and Al palm. See table in Chapter 12.

# Shearbolt connectors 10 - 240 mm<sup>2</sup> (pre-assembled screw)

## Properties:

- screw material: brass, for minimum friction
- partition
- pre-assembled shear-off screws for easy handling
- voltage range: 1 kV
- meets the requirements of standard IEC 61238-1
- PEN is a filler piece for use when connecting the cable's copper screen



Through connector SC50R50S with threaded screws.

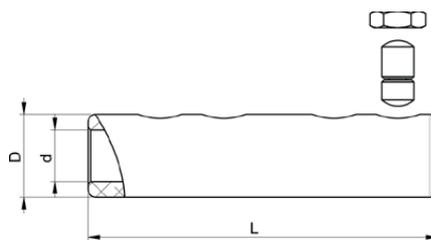
| Cable type round mm <sup>2</sup> | Cable type sector mm <sup>2</sup> | Name     | Screen conductor | Screen conductor (with filling piece) | d    | D    | L   | Pcs/ pack |
|----------------------------------|-----------------------------------|----------|------------------|---------------------------------------|------|------|-----|-----------|
| 10-50                            | 16-50                             | SC50R50S | 10-35            |                                       | 10,7 | 17,3 | 62  | 10        |
| 35-95                            | 50-95                             | SC95N    | 57-95            | 16-50 (SC95N/PEN)                     | 16,8 | 23,0 | 69  | 1         |
| 70-150                           | 70-150                            | SC150N   | 120-146          | 21-95 (SC150N/PEN)                    | 19,5 | 23,0 | 80  | 1         |
| 95-240                           | 120-240                           | SC240N   |                  | 29-146 (SC240/PEN)                    | 25,0 | 33,1 | 144 | 1         |

s = strip length

# Shearbolt connectors 10 - 630 mm<sup>2</sup> (reversible screw)

## Properties:

- screw material: brass, for minimum friction
- partition
- reversible shear-off screws
- voltage range: 1 kV to 36 kV
- meets the requirements of standard IEC 61238-1
- PEN is a filler piece for use when connecting the cable's copper screen



| Cable type round mm <sup>2</sup> | Cable type sector mm <sup>2</sup> | Name       | Screen conductor | Screen conductor (with filling piece) | d    | D    | L   | s   | Pcs/ pack |
|----------------------------------|-----------------------------------|------------|------------------|---------------------------------------|------|------|-----|-----|-----------|
| 50-95                            | 50-95                             | SC95R95S   | 70-95            | 16-57 (SC95N/PEN)                     | 16,0 | 27,0 | 114 | 58  | 1         |
| 95-150                           | 95-120                            | SC150R95S  | 70-95            |                                       | 16,0 | 27,0 | 114 | 58  | 1         |
| 185-240                          | 120-185                           | SC240R185S |                  |                                       | 20,0 | 33,5 | 134 | 64  | 1         |
| 300-400                          | 240                               | SC400R240S |                  |                                       | 25,8 | 41,5 | 175 | 87  | 1         |
| 500-630                          |                                   | SC630R     |                  |                                       | 33,0 | 49,0 | 210 | 106 | 1         |

s = strip length



All Enquiries:  
 tel: +44 (0)1223 655 664  
 email: [info@transitcableproducts.co.uk](mailto:info@transitcableproducts.co.uk)  
 web: [www.transitcableproducts.co.uk](http://www.transitcableproducts.co.uk)



# Filler piece

To splice the copper screen around the conductors, a filler piece is required that is placed between the screw and the screen. To select the correct filler piece, see table. Requires 2 filler pieces per splice.



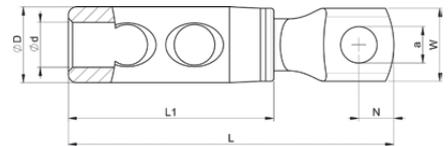
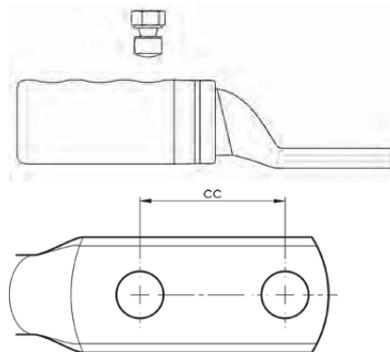
## SC95N PEN

| Name       | Screen conductor | Note                                                              |
|------------|------------------|-------------------------------------------------------------------|
| SC95N/PEN  | 16-57*           | *16-50 mm <sup>2</sup> (SC95N) / 16-57 mm <sup>2</sup> (SC95R95S) |
| SC150N/PEN | 21-95            |                                                                   |
| SC240/PEN  | 29-146           |                                                                   |

# Shearbolt terminals 10 - 630 mm<sup>2</sup> (pre-assembled screw)

## Properties:

- screw material: brass for minimum friction
- pre-assembled shear-off screws for easy handling
- voltage range: 1 kV for SL50N-10-12, SL95N-10-12 and SL240N-10-12, 1-36 kV for the others
- meets the requirements of standard IEC 61238-1
- the terminals are of the bimetallic type



| Cable type round mm <sup>2</sup> | Cable type sector mm <sup>2</sup> | Name           | Screen conductor | Screen conductor (with filling piece) | Screw    | W mm | d    | D       | N    | cc | a     | L    | L1  | t    | s   |
|----------------------------------|-----------------------------------|----------------|------------------|---------------------------------------|----------|------|------|---------|------|----|-------|------|-----|------|-----|
| 10-50                            | 10-50                             | SL50N-10-12    | 10-35            |                                       | M10, M12 | 25,5 | 12   | 20/17,3 | 12,5 | 13 | 87    | 44   | 5,9 | 32   |     |
| 35-95                            | 35-95                             | SL95N-10-12    | 57-95            | 16-50 (SC95N/PEN)                     | M12, M10 | 27,3 | 16   | 17/23   | 12,5 | 13 | 96    | 52,5 | 4,7 | 56   |     |
| 120-240                          | 120-240                           | SL240N-10-12   |                  | 29-146 (SC240/PEN)                    | M12, M10 | 31,5 | 25   | 38/33,1 | 15   | 13 | 144,5 | 86   | 7,6 | 76   |     |
| 185-240                          |                                   | SL240R-12-16   |                  |                                       | M12, M16 | 30   | 20   | 33,5    | 15   | 12 | 134   | 79   | 7,9 | 75   |     |
| 185-240                          |                                   | SL240R-12X2-40 |                  |                                       | M12x2    | 31,5 | 20,0 | 33,5    | 15   | 40 | 12    | 174  | 79  | 7,9  | 75  |
| 300-400                          |                                   | SL400R-12X2-40 |                  |                                       | M12x2    | 42   | 25,8 | 41,5    | 15   | 40 | 12    | 210  | 103 | 9,6  | 99  |
| 630                              |                                   | SL630B-12X2-40 |                  |                                       | M12x2    | 55   | 33,0 | 49,0    | 17   | 40 | 12    | 218  | 115 | 11,7 | 108 |

t = palm thickness, s = strip length



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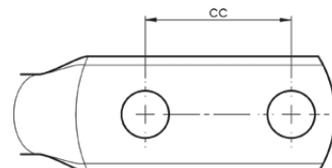
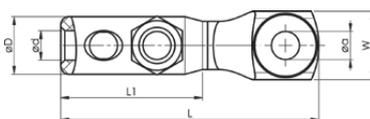
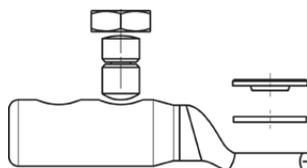
# Shearbolt terminals 10 - 630 mm<sup>2</sup> (reversible screw)

## Properties:

- screw material: brass for minimum friction
- reversible shear-off screws
- voltage range: 1 kV to 36 kV
- meets the requirements of standard IEC 61238-1
- the terminals are of the bimetallic type for best functionality



Shearbolt terminal



| Cable type round mm <sup>2</sup> | Cable type sector mm <sup>2</sup> | Name                | Screen conductor | Screw    | W mm | d    | D    | N    | cc | a   | L     | L1   |
|----------------------------------|-----------------------------------|---------------------|------------------|----------|------|------|------|------|----|-----|-------|------|
| 10-70                            | 25-70                             | SL70R70S-10-12      | 10-57            | M10, M12 | 25,5 | 11,0 | 21   | 12,5 | 12 | 97  | 59    |      |
| 95-150                           | 95                                | SL150R95S-10-12     | 70-95            | M10, M12 | 26   | 16   | 27   | 12,5 | 12 | 116 | 75,5  |      |
| 95-150                           | 95                                | SL150R95S-12X2-40   | 70-95            | M12x2    | 30,5 | 16   | 27   | 15   | 40 | 12  | 172   | 75,5 |
| 185-240                          | 120-185                           | SL240R185S-12-16    |                  | M12, M16 | 31,5 | 20   | 33,5 | 15   |    | 16  | 134   | 78,5 |
| 300-400                          | 240                               | SL400R240S-16       |                  | M16      | 41,5 | 25,8 | 41,5 | 21   |    | 16  | 182   | 103  |
| 300-400                          | 240                               | SL400R240S-20       |                  | M20      | 41,5 | 25,8 | 41,5 | 21   |    | 20  | 182   | 103  |
| 300-400                          | 240                               | SL400R240S-00       |                  |          | 41,5 | 33   | 49   |      |    |     | 187   | 103  |
| 500-630                          |                                   | SL500B-630B-12X2-40 |                  | M12x2    | 55   | 33   | 49   | 12   | 40 | 12  | 218   | 115  |
| 500-630                          |                                   | SL630R-1            |                  |          | 55   | 33   | 49   |      |    |     | 243   | 129  |
| 500-630                          |                                   | SL630R-16           |                  | M16      | 55   | 33   | 49   | 30   |    | 16  | 241,5 | 129  |
| 500-630                          |                                   | SL630R-14           |                  | M14      | 55   | 33   | 49   | 30   |    | 14  | 243   | 129  |
| 500-630                          |                                   | SL630R-12X2-40      |                  | M12x2    | 55   | 33   | 49   | 15   | 40 | 12  | 243   | 129  |

t = palm thickness, s = strip length

## Screw branch clamps

Screw clamps for earthing applications. Enables branching of reinforcing bars with a stranded earth line in Cu or Fe.



| Name  | Pcs/pack |
|-------|----------|
| SBC50 | 1        |

## Counterhold tool

Counterhold tool for stable and safe installation of shearbolt terminals. Tools are made from durable material and are easily adjustable for terminals up to 400 mm<sup>2</sup>.



ISL2201

| Name    | Pcs/pack |
|---------|----------|
| ISL2201 | 1        |



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