

# GC89\_F

## BAR CLAMP FOR HOCKEY PUK DEVICES

- Clamping total thickness of assembly from 2mm to 136mm
- Pre-loaded to the specific clamping force ( $F = 12 \div 24$  kN)
- Maximum device diameter:  $L = 76$ mm
- Surface passivation to provide extra protection
- Various lengths of bolts and insulating cups
- Flat clamping head for even clamping force application
- Four styles available
- User friendly clamping force indicator
- UL94 certified insulation material
- RoHS compliant

| Characteristic |                             | Unit        | Types      | Notes                       | Values          |       |            |
|----------------|-----------------------------|-------------|------------|-----------------------------|-----------------|-------|------------|
|                |                             |             |            |                             | Min             | Typ   | Max        |
| m              | Mass                        | g           | GC89S...F  |                             | 590             |       | 720        |
|                |                             |             | GC89B...F  |                             | 980             |       | 1150       |
| F              | Clamping Force*             | kN          | GC89...12F |                             |                 | 12    |            |
|                |                             |             | GC89...14F |                             |                 | 14    |            |
|                |                             |             | GC89...16F |                             |                 | 16    |            |
|                |                             |             | GC89...18F |                             |                 | 18    |            |
|                |                             |             | GC89...20F |                             |                 | 20    |            |
|                |                             |             | GC89...22F |                             |                 | 22    |            |
|                |                             |             | GC89...24F |                             |                 | 24    |            |
| $\Delta F$     | Clamping Force tolerance    |             |            |                             |                 |       | $\pm 10\%$ |
| $V_{INS}$      | Insulation Voltage          | V           |            | 50 Hz, RMS, 60 s            |                 | 3000  |            |
|                | Insulating Material         |             |            |                             | PPO** or PPS*** |       |            |
|                | UL Files                    |             | PPO        |                             | E121562         |       |            |
|                |                             |             | PPS        |                             | E95746          |       |            |
| T              | Operating temperature range | $^{\circ}C$ | PPO        |                             | -30             |       | 110        |
|                |                             |             | PPS        |                             | -30             |       | 230        |
| $T_{stg}$      | Storage temperature range   | $^{\circ}C$ | PPO        |                             | -20             |       | 135        |
|                |                             |             | PPS        |                             | -40             |       | 210        |
| $D_s$          | Surface creepage distance   | mm          |            |                             |                 | 28    |            |
| $D_a$          | Air strike distance         | mm          |            |                             |                 | 20.3  |            |
| CTI            | Comparative Tracking Index  | V           | PPO        | According to UL746          |                 | 225.0 |            |
|                |                             |             | PPS        | According to IEC112/3rd     |                 | 250.0 |            |
|                | Flammability                | mm          | PPO        | UL94 V-1 Flame class rating |                 | 1.5   |            |
|                |                             |             |            | UL94 V-0 Flame class rating |                 | 6.0   |            |
|                |                             |             | PPS        | UL94 V-0 Flame class rating |                 | 1.6   |            |

\* Other clamping forces available upon request: contact factory

\*\* Polyphenylene Oxide

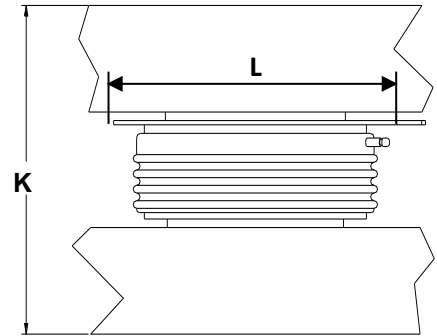
\*\*\* Polyphenylene Sulfide

**ORDERING INFORMATION TABLE**

Use this part numbering system to order

|             |          |          |          |          |           |          |          |          |          |          |
|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|
| <b>GC89</b> | <b>B</b> | <b>N</b> | <b>B</b> | <b>A</b> | <b>20</b> | <b>F</b> | <b>S</b> | <b>H</b> | <b>X</b> | <b>L</b> |
|             | (1)      | (2)      | (3)      | (4)      | (5)       | (6)      | (7)      | (8)      | (9)      |          |

|                                    |   |
|------------------------------------|---|
| <b>(1) Construction type:</b>      | <b>B</b> = with reaction bar<br><b>S</b> = without reaction bar   |
| <b>(2) Insulator position:</b>     | <b>N</b> = on load bar<br><b>R</b> = on reaction bar  |
| <b>(3) Insulator code:</b>         | <b>_</b> = no insulating cup<br><b>other</b> : see table below  |
| <b>(4) Bolt code:</b>              | <b>_</b> = no bolt<br><b>other</b> : see table below  |
| <b>(5) Clamping force (in kN):</b> | 12÷24, with step of 1 kN  |
| <b>(6) Special accessories</b>     | <b>blank</b> = no accessories<br><b>S</b> = extra bar spacer (*)<br><b>D</b> = pressure disc in place of distribution bar |
| <b>(7) Insulating cup material</b> | <b>0</b> = standart PPO insulating cup<br><b>H</b> high temperature PPS insulating cup                                    |
| <b>(8) Bolt steel type</b>         | <b>0</b> = standard 8.8 steel bolts<br><b>X</b> = A2 stainless steel bolts (**)   |
| <b>(9) Bar thickness</b>           | <b>0</b> = standart bar thickness (20mm)<br><b>L</b> = low profile bars (15mm)(***)                                       |



**K:** Total thickness of the assembly to be clamped  
**L:** Max inner diameter allowable

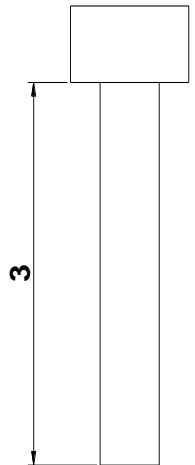
 (\*) Needed to reduce  $S_{Min}$  if a lower allowed clearance is required

(\*\*) Suggested for high current applications, magnetic sensitive applications or any application working in very high E.M. fields

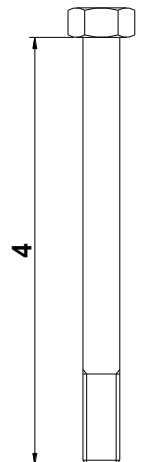
(\*\*\*) Allowed clearance is increased by 5 mm, except for GC89SR

**Type GC89BN...F: suggested insulator/bolt types**

| Allowed clearance <b>S</b> |                | Insulator choice |                  | Bolt choice |                  | Max height |
|----------------------------|----------------|------------------|------------------|-------------|------------------|------------|
| $S_{Min}$ [mm]             | $S_{Max}$ [mm] | (3)              | Ins. Length [mm] | (4)         | Bolt Length [mm] | T [mm]     |
| 2                          | 16             | Z                | 34               | U           | 70               | 92         |
| 7                          | 21             | Z                | 34               | V           | 75               | 97         |
| 12                         | 26             | A                | 50               | W           | 80               | 102        |
| 22                         | 36             | A                | 50               | Y           | 90               | 112        |
| 32                         | 46             | B                | 70               | Z           | 100              | 122        |
| 42                         | 56             | B                | 70               | A           | 110              | 132        |
| 52                         | 66             | B                | 70               | B           | 120              | 142        |
| 56                         | 76             | C                | 95               | C           | 130              | 158        |
| 66                         | 86             | C                | 95               | D           | 140              | 168        |
| 76                         | 96             | C                | 95               | E           | 150              | 178        |
| 86                         | 106            | D                | 120              | F           | 160              | 188        |
| 96                         | 116            | D                | 120              | G           | 170              | 198        |

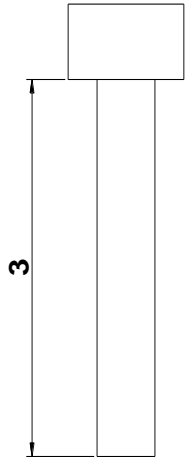

**Type GC89BR...F: suggested insulator/bolt types**

| Allowed clearance <b>S</b> |                | Insulator choice |                  | Bolt choice |                  | Max height |
|----------------------------|----------------|------------------|------------------|-------------|------------------|------------|
| $S_{Min}$ [mm]             | $S_{Max}$ [mm] | (3)              | Ins. Length [mm] | (4)         | Bolt Length [mm] | T [mm]     |
| 2                          | 16             | Z                | 34               | U           | 70               | 104        |
| 7                          | 21             | Z                | 34               | V           | 75               | 109        |
| 12                         | 26             | A                | 50               | W           | 80               | 114        |
| 22                         | 36             | A                | 50               | Y           | 90               | 124        |
| 32                         | 46             | B                | 70               | Z           | 100              | 134        |
| 42                         | 56             | B                | 70               | A           | 110              | 144        |
| 52                         | 66             | B                | 70               | B           | 120              | 154        |
| 56                         | 76             | C                | 95               | C           | 130              | 164        |
| 66                         | 86             | C                | 95               | D           | 140              | 174        |
| 76                         | 96             | C                | 95               | E           | 150              | 184        |
| 86                         | 106            | D                | 120              | F           | 160              | 194        |
| 96                         | 116            | D                | 120              | G           | 170              | 204        |



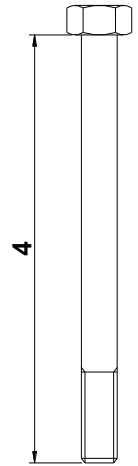
**Type GC89SN...F: suggested insulator/bolt types**

| Allowed clearance S   |                       | Insulator choice |                  | Bolt choice |                  | Max height |
|-----------------------|-----------------------|------------------|------------------|-------------|------------------|------------|
| S <sub>Min</sub> [mm] | S <sub>Max</sub> [mm] | (3)              | Ins. Length [mm] | (4)         | Bolt Length [mm] | T [mm]     |
| 2                     | 16                    | Z                | 34               | U           | 70               | 78         |
| 7                     | 21                    | Z                | 34               | V           | 75               | 83         |
| 12                    | 26                    | A                | 50               | W           | 80               | 88         |
| 22                    | 36                    | A                | 50               | Y           | 90               | 98         |
| 32                    | 46                    | B                | 70               | Z           | 100              | 108        |
| 42                    | 56                    | B                | 70               | A           | 110              | 118        |
| 52                    | 66                    | B                | 70               | B           | 120              | 128        |
| 56                    | 76                    | C                | 95               | C           | 130              | 138        |
| 66                    | 86                    | C                | 95               | D           | 140              | 148        |
| 76                    | 96                    | C                | 95               | E           | 150              | 158        |
| 86                    | 106                   | D                | 120              | F           | 160              | 168        |
| 96                    | 116                   | D                | 120              | G           | 170              | 178        |

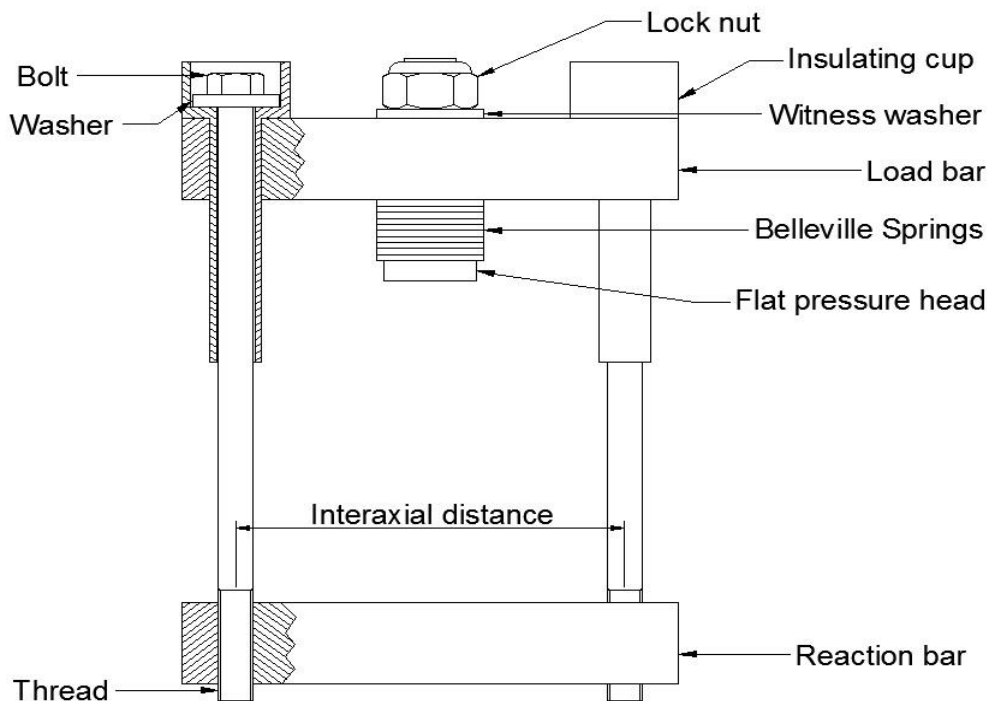


**Type GC89SR...F: suggested insulator/bolt types**

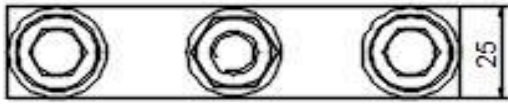
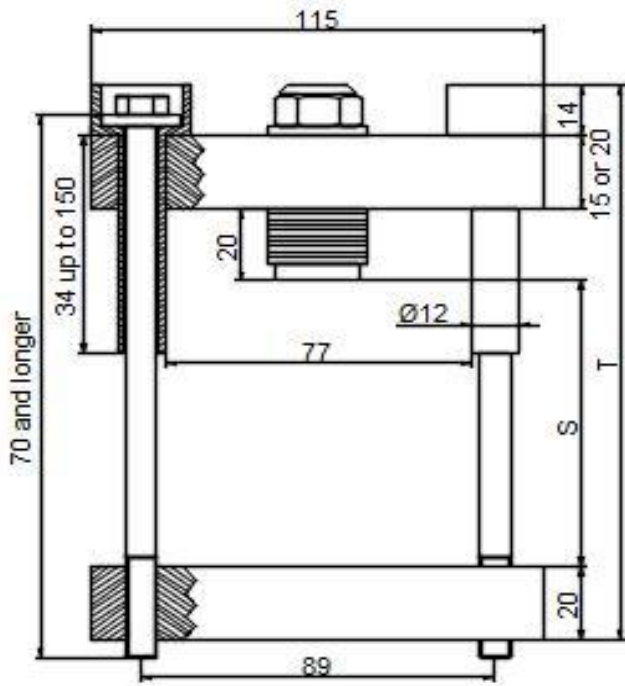
| Allowed clearance S   |                       | Insulator choice |                  | Bolt choice |                  | Max height |
|-----------------------|-----------------------|------------------|------------------|-------------|------------------|------------|
| S <sub>Min</sub> [mm] | S <sub>Max</sub> [mm] | (3)              | Ins. Length [mm] | (4)         | Bolt Length [mm] | T [mm]     |
| 22                    | 36                    | Z                | 34               | U           | 70               | 104        |
| 27                    | 41                    | Z                | 34               | V           | 75               | 109        |
| 32                    | 46                    | A                | 50               | W           | 80               | 114        |
| 42                    | 56                    | A                | 50               | Y           | 90               | 124        |
| 52                    | 66                    | B                | 70               | Z           | 100              | 134        |
| 62                    | 76                    | B                | 70               | A           | 110              | 144        |
| 72                    | 86                    | B                | 70               | B           | 120              | 154        |
| 76                    | 96                    | C                | 95               | C           | 130              | 164        |
| 86                    | 106                   | C                | 95               | D           | 140              | 174        |
| 96                    | 116                   | C                | 95               | E           | 150              | 184        |
| 106                   | 126                   | D                | 120              | F           | 160              | 194        |
| 116                   | 136                   | D                | 120              | G           | 170              | 204        |



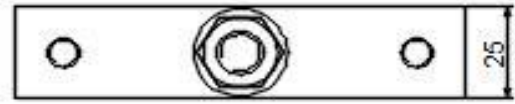
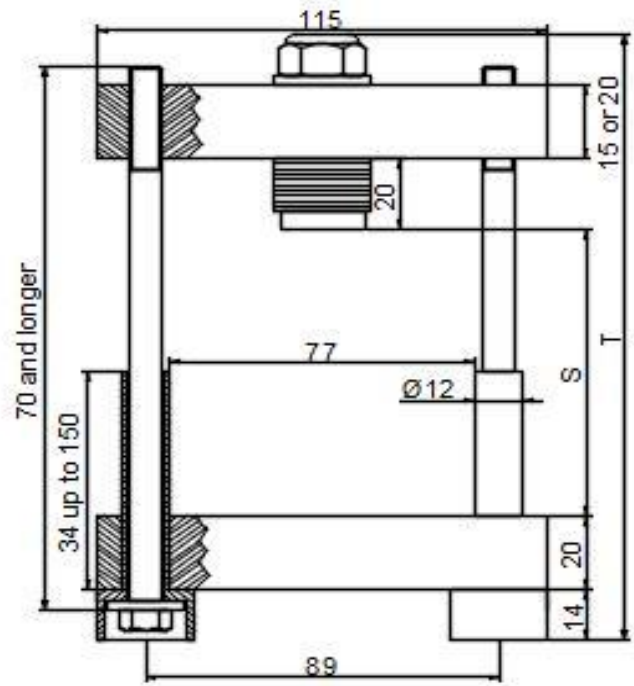
**BAR CLAMP COMPONENTS LEGEND**



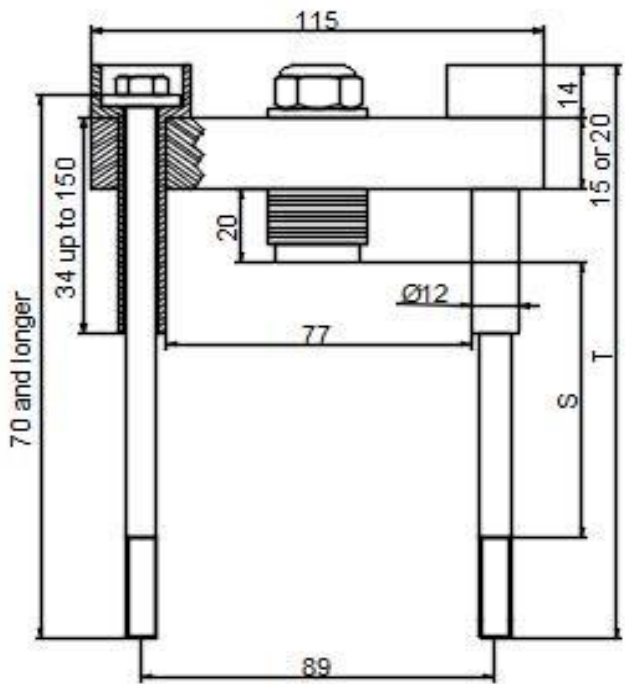
BAR CLAMP OUTLINES



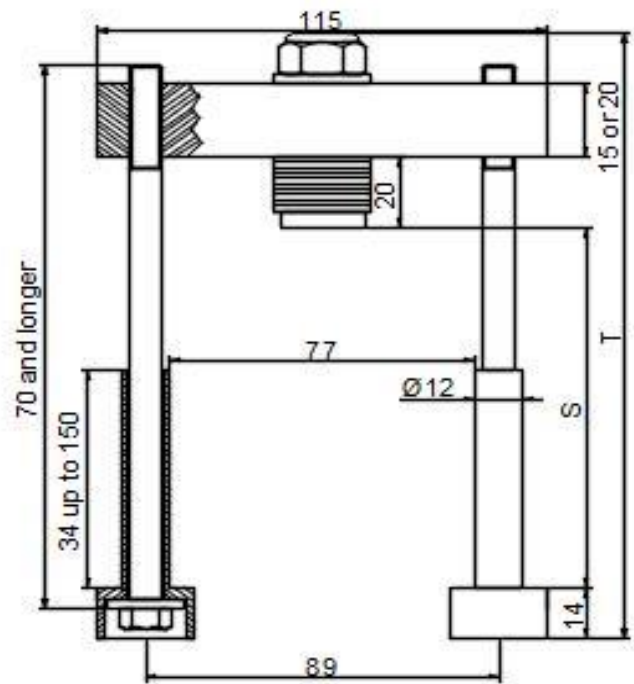
GC89BN...F



GC89BR...F

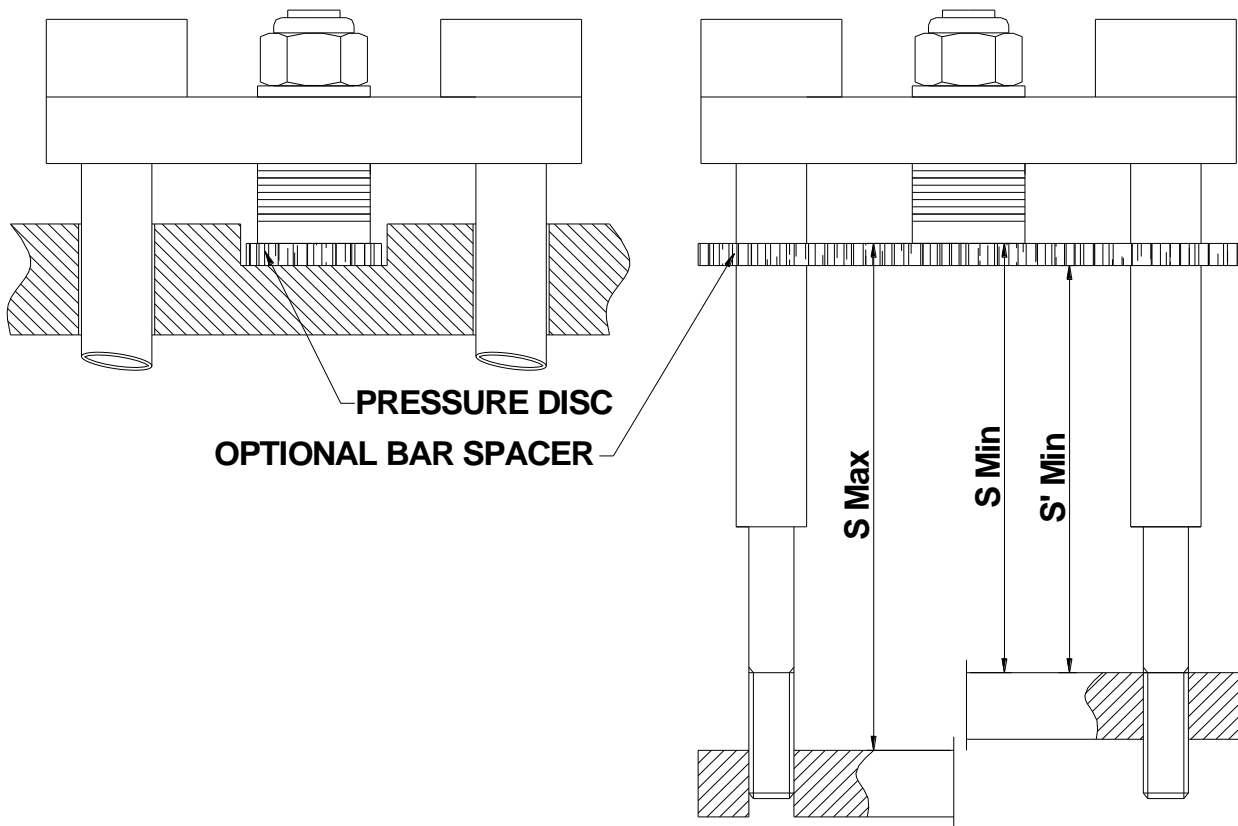


GC89SN...F



GC89SR...F

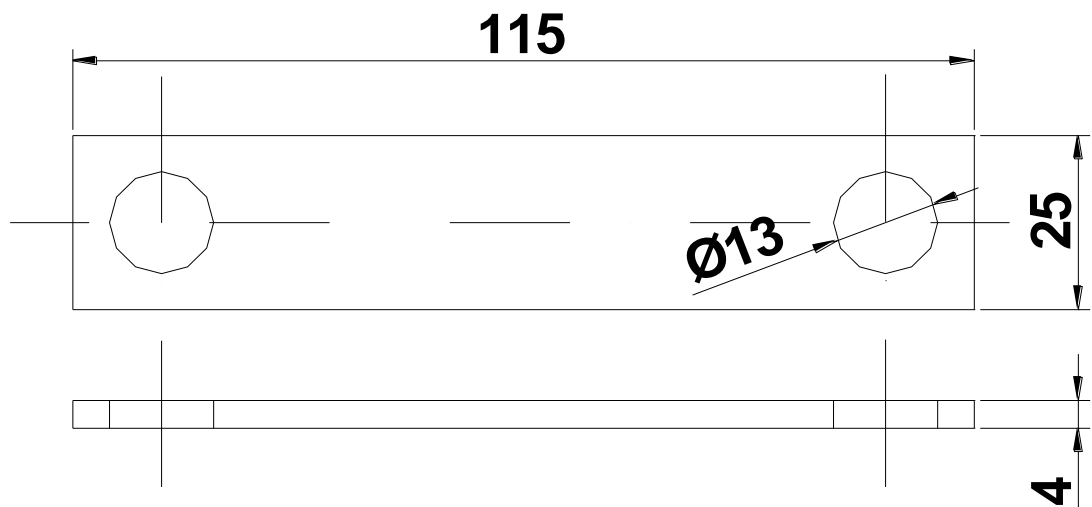
Dimensions in mm - Tolerances according to ISO 2768 MK



**SPECIAL ACCESSORIES**

The following special accessories are available on request (see ordering information table)

**Bar spacer**



**Dimensions in mm - Tolerances according to ISO 2768 MK**

In the interest of product improvement Green Power Solutions reserves the right to change any specification given in this data sheet without notice.