



SL-PT



SL-PC



SL-PE

## CHARACTERISTICS

- Functioning by friction; install by controlled torque.
- Use for heavy duty loads in tension and shear.
- Easy assembly.
- Use for static or quasi-static loads.
- Hexagonal and countersunk heads.
- Installation through the material to be fixed.
- Assessment for structural uses in cracked and non-cracked concrete.
- It can be disassembled so that the surface is smooth (the expansion tool and cone remain inside the drill).
- Variety of lengths and metrics, flexibly of installation.
- Vds available for sizes from M8 to M20.
- Available in INDEXcal.

## APPLICATIONS

- Structural interior fixing in concrete.
- Fixing pillars and beams.
- Fixing beams, rails, machinery, shelves, scaffolding and corbels.
- Application where fire effects must be taken into account.

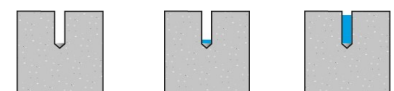
## BASE MATERIAL



## ASSESSMENT



## DRILL CONDITIONS



DRY

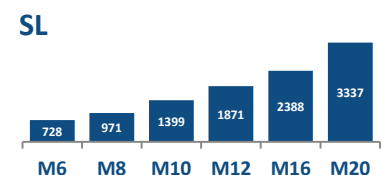
WET

FLOOD

## SIZES

| M6  | M8  | M10 | M12 | M16 | M20 |
|-----|-----|-----|-----|-----|-----|
| Ø10 | Ø12 | Ø16 | Ø18 | Ø24 | Ø28 |
| 10  | 12  | 16  | 18  | 24  | 28  |

## RECOMMENDED TENSION LOADS IN NON CRACKED CONCRETE [kg]



## APPLICATION EXAMPLES

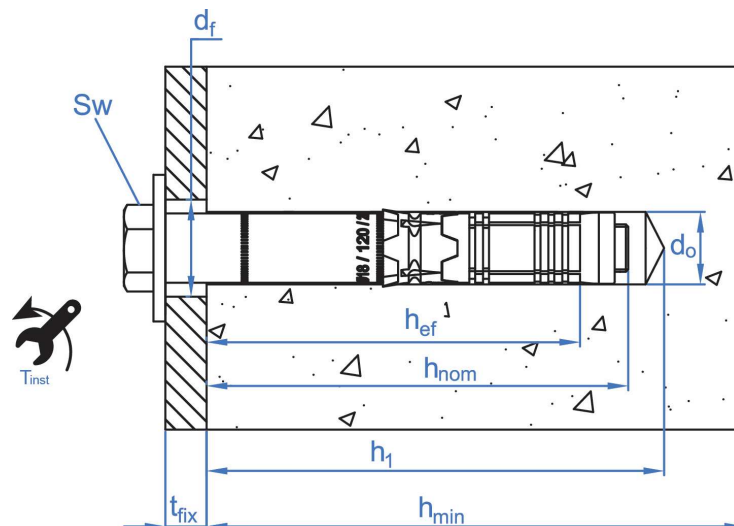


## 1. RANGE

| ITEM | CODE  | ETA | SIZE      | PHOTO                                                                             | COMPONENT        | MATERIAL                      | COATING                                                                             |
|------|-------|-----|-----------|-----------------------------------------------------------------------------------|------------------|-------------------------------|-------------------------------------------------------------------------------------|
| 1    | SL-PT | ✓   | M6 to M20 |  | Bolt             | ISO 898-1 class 8.8           |  |
|      |       |     |           |                                                                                   | Washer           | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Sleeve           | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Nylon ring       | polyoxymethylene(POM)         |                                                                                     |
|      |       |     |           |                                                                                   | Expansion sleeve | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Cone             | Hardened carbon steel         |                                                                                     |
| 2    | SL-PC | ✓   | M6 to M12 |  | Bolt             | DIN 7991 ISO 898-1 class 10.9 |  |
|      |       |     |           |                                                                                   | Washer           | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Nylon ring       | polyoxymethylene(POM)         |                                                                                     |
|      |       |     |           |                                                                                   | Expansion sleeve | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Cone             | Hardened carbon steel         |                                                                                     |
| 3    | SL-PE | ✓   | M8 to M20 |  | Rod              | ISO 898-1 class 8.8           |  |
|      |       |     |           |                                                                                   | Washer           | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Nut              | Carbon Steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Nylon ring       | polyoxymethylene(POM)         |                                                                                     |
|      |       |     |           |                                                                                   | Expansion sleeve | Carbon steel                  |                                                                                     |
|      |       |     |           |                                                                                   | Cone             | Hardened carbon steel         |                                                                                     |

## 2. INSTALLATION DATA

### 2.1. INSTALLATION DRAWING



## 2.2. INSTALLATION PARAMETERS

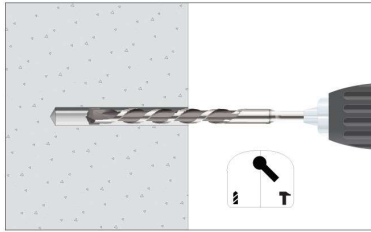
| Family | Code      | Size          | Approved | Drill bit diameter     | Fixture clearance hole | Torque                    | Total length of anchor | Minimum concrete thickness | Depth of drill hole    | Embedment depth          | Effective depth         | Thickness of fixture     | Minimum spacing          | Minimum edge distance    |
|--------|-----------|---------------|----------|------------------------|------------------------|---------------------------|------------------------|----------------------------|------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| [--]   | [--]      | [--]          | ETA      | d <sub>0</sub><br>[mm] | d <sub>f</sub><br>[mm] | T <sub>inst</sub><br>[Nm] | L<br>[mm]              | h <sub>min</sub><br>[mm]   | h <sub>1</sub><br>[mm] | h <sub>nom</sub><br>[mm] | h <sub>ef</sub><br>[mm] | t <sub>fix</sub><br>[mm] | S <sub>min</sub><br>[mm] | C <sub>min</sub><br>[mm] |
| SL-PT  | SLPT10070 | M6 x 70 Ø10   | ✓        | 10                     | 12                     | 15                        | 70                     | 100                        | 70                     | 59                       | 50                      | 10                       | 100                      | 50                       |
|        | SLPT10080 | M6 x 80 Ø10   | ✓        |                        |                        |                           | 80                     |                            |                        |                          |                         | 20                       |                          |                          |
|        | SLPT10100 | M6 x 100 Ø10  | ✓        |                        |                        |                           | 100                    |                            |                        |                          |                         | 40                       |                          |                          |
|        | SLPT10110 | M6 x 110 Ø10  | ✓        |                        |                        |                           | 110                    |                            |                        |                          |                         | 50                       |                          |                          |
|        | SLPT12080 | M8 x 80 Ø12   | ✓        | 12                     | 14                     | 30                        | 80                     | 120                        | 85                     | 72                       | 60                      | 5                        | 120                      | 60                       |
|        | SLPT12090 | M8 x 90 Ø12   | ✓        |                        |                        |                           | 90                     |                            |                        |                          |                         | 15                       |                          |                          |
|        | SLPT12100 | M8 x 100 Ø12  | ✓        |                        |                        |                           | 100                    |                            |                        |                          |                         | 25                       |                          |                          |
|        | SLPT12120 | M8 x 120 Ø12  | ✓        |                        |                        |                           | 120                    |                            |                        |                          |                         | 45                       |                          |                          |
|        | SLPT16100 | M10 x 100 Ø16 | ✓        | 16                     | 18                     | 50                        | 100                    | 140                        | 95                     | 83                       | 70                      | 15                       | 175                      | 70                       |
|        | SLPT16120 | M10 x 120 Ø16 | ✓        |                        |                        |                           | 120                    |                            |                        |                          |                         | 35                       |                          |                          |
|        | SLPT16140 | M10 x 140 Ø16 | ✓        |                        |                        |                           | 140                    |                            |                        |                          |                         | 55                       |                          |                          |
|        | SLPT16160 | M10 x 160 Ø16 | ✓        |                        |                        |                           | 160                    |                            |                        |                          |                         | 75                       |                          |                          |
|        | SLPT18110 | M12 x 110 Ø18 | ✓        | 18                     | 20                     | 80                        | 110                    | 170                        | 110                    | 97                       | 85                      | 10                       | 200                      | 80                       |
|        | SLPT18120 | M12 x 120 Ø18 | ✓        |                        |                        |                           | 120                    |                            |                        |                          |                         | 20                       |                          |                          |
|        | SLPT18140 | M12 x 140 Ø18 | ✓        |                        |                        |                           | 140                    |                            |                        |                          |                         | 40                       |                          |                          |
|        | SLPT18150 | M12 x 150 Ø18 | ✓        |                        |                        |                           | 150                    |                            |                        |                          |                         | 50                       |                          |                          |
|        | SLPT18170 | M12 x 170 Ø18 | ✓        |                        |                        |                           | 170                    |                            |                        |                          |                         | 70                       |                          |                          |
|        | SLPT18200 | M12 x 200 Ø18 | ✓        |                        |                        |                           | 200                    |                            |                        |                          |                         | 100                      |                          |                          |
|        | SLPT24140 | M16 x 140 Ø24 | ✓        | 24                     | 26                     | 160                       | 140                    | 200                        | 130                    | 117                      | 100                     | 20                       | 220                      | 100                      |
|        | SLPT24170 | M16 x 170 Ø24 | ✓        |                        |                        |                           | 170                    |                            |                        |                          |                         | 50                       |                          |                          |
|        | SLPT24200 | M16 x 200 Ø24 | ✓        |                        |                        |                           | 200                    |                            |                        |                          |                         | 80                       |                          |                          |
|        | SLPT24220 | M16 x 220 Ø24 | ✓        |                        |                        |                           | 220                    |                            |                        |                          |                         | 100                      |                          |                          |
|        | SLPT28170 | M20 x 170 Ø28 | ✓        | 28                     | 31                     | 240                       | 170                    | 250                        | 160                    | 146                      | 125                     | 20                       | 320                      | 160                      |
|        | SLPT28200 | M20 x 200 Ø28 | ✓        |                        |                        |                           | 200                    |                            |                        |                          |                         | 50                       |                          |                          |
|        | SLPT28240 | M20 x 240 Ø28 | ✓        |                        |                        |                           | 240                    |                            |                        |                          |                         | 90                       |                          |                          |

## 2.2. INSTALLATION VALUES

| Family | Code      | Size          | Approved | Drill bit diameter     | Fixture clearance hole | Torque                    | Total length of anchor | Minimum concrete thickness | Depth of drill hole    | Embedment depth          | Effective depth         | Thickness of fixture     | Minimum spacing          | Minimum edge distance    |
|--------|-----------|---------------|----------|------------------------|------------------------|---------------------------|------------------------|----------------------------|------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| [--]   | [--]      | [--]          | ETA      | d <sub>0</sub><br>[mm] | d <sub>f</sub><br>[mm] | T <sub>inst</sub><br>[mm] | L<br>[mm]              | h <sub>min</sub><br>[mm]   | h <sub>1</sub><br>[mm] | h <sub>nom</sub><br>[mm] | h <sub>ef</sub><br>[mm] | t <sub>fix</sub><br>[mm] | S <sub>min</sub><br>[mm] | C <sub>min</sub><br>[mm] |
| SL-PC  | SLPC10070 | M6 x 70 Ø10   | ✓        | 10                     | 12                     | 15                        | 70                     | 100                        | 70                     | 59                       | 50                      | 10                       | 100                      | 50                       |
|        | SLPC10080 | M6 x 80 Ø10   | ✓        |                        |                        |                           | 80                     |                            |                        |                          |                         | 20                       |                          |                          |
|        | SLPC10100 | M6 x 100 Ø10  | ✓        |                        |                        |                           | 100                    |                            |                        |                          |                         | 40                       |                          |                          |
|        | SLPC12100 | M8 x 100 Ø12  | ✓        | 12                     | 14                     | 30                        | 100                    | 120                        | 85                     | 72                       | 60                      | 25                       | 120                      | 60                       |
|        | SLPC16100 | M10 x 100 Ø16 | ✓        | 16                     | 18                     | 50                        | 100                    | 140                        | 95                     | 83                       | 70                      | 15                       | 175                      | 70                       |
|        | SLPC16120 | M10 x 120 Ø16 | ✓        |                        |                        |                           | 120                    |                            |                        |                          |                         | 35                       |                          |                          |
|        | SLPC18120 | M12 x 120 Ø18 | ✓        | 18                     | 20                     | 80                        | 120                    | 170                        | 110                    | 97                       | 85                      | 20                       | 200                      | 80                       |
| SL-PE  | SLPE12095 | M8 x 95 Ø12   | ✓        | 12                     | 14                     | 30                        | 95                     | 120                        | 85                     | 72                       | 60                      | 20                       | 120                      | 60                       |
|        | SLPE12155 | M8 x 155 Ø12  | ✓        |                        |                        |                           | 155                    |                            |                        |                          |                         | 80                       |                          |                          |
|        | SLPE16125 | M10 x 125 Ø16 | ✓        | 16                     | 18                     | 50                        | 125                    | 140                        | 95                     | 83                       | 70                      | 40                       | 175                      | 70                       |
|        | SLPE16160 | M10 x 160 Ø16 | ✓        |                        |                        |                           | 160                    |                            |                        |                          |                         | 75                       |                          |                          |
|        | SLPE16245 | M10 x 245 Ø16 | ✓        |                        |                        |                           | 245                    |                            |                        |                          |                         | 160                      |                          |                          |
|        | SLPE18150 | M12 x 150 Ø18 | ✓        | 18                     | 20                     | 80                        | 150                    | 170                        | 110                    | 97                       | 85                      | 50                       | 200                      | 80                       |
|        | SLPE18170 | M12 x 170 Ø18 | ✓        |                        |                        |                           | 170                    |                            |                        |                          |                         | 70                       |                          |                          |
|        | SLPE18260 | M12 x 260 Ø18 | ✓        |                        |                        |                           | 260                    |                            |                        |                          |                         | 160                      |                          |                          |
|        | SLPE24145 | M16 x 145 Ø24 | ✓        | 24                     | 26                     | 160                       | 145                    | 200                        | 130                    | 117                      | 100                     | 25                       | 220                      | 100                      |
|        | SLPE24170 | M16 x 170 Ø24 | ✓        |                        |                        |                           | 170                    |                            |                        |                          |                         | 50                       |                          |                          |
|        | SLPE24200 | M16 x 200 Ø24 | ✓        |                        |                        |                           | 200                    |                            |                        |                          |                         | 80                       |                          |                          |
|        | SLPE24280 | M16 x 280 Ø24 | ✓        |                        |                        |                           | 280                    |                            |                        |                          |                         | 160                      |                          |                          |
|        | SLPE28210 | M20 x 210 Ø28 | ✓        | 28                     | 31                     | 240                       | 210                    | 250                        | 160                    | 146                      | 125                     | 60                       | 320                      | 160                      |
|        | SLPE28230 | M20 x 230 Ø28 | ✓        |                        |                        |                           | 230                    |                            |                        |                          |                         | 80                       |                          |                          |
|        | SLPE28310 | M20 x 310 Ø28 | ✓        |                        |                        |                           | 310                    |                            |                        |                          |                         | 160                      |                          |                          |

## 3. INSTALLATION PROCEDURE

### 3.1. INSTALLATION IN CONCRETE



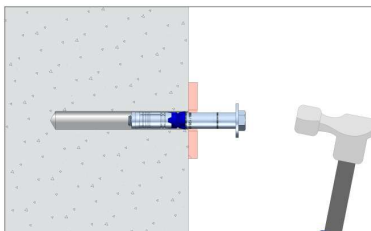
#### 1. DRILL

Check the concrete base is well compacted and porosity insignificant.  
Dry, wet and flood drill allowed.  
Drill at hammer or percussion position.  
Respect specified diameter and depth.



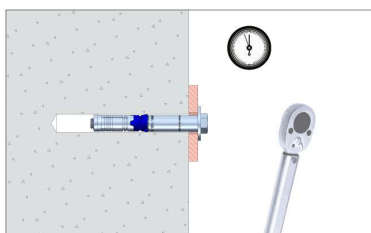
#### 2. BLOW AND CLEAN

Clean hole from dust and drill debris.  
Use air pump and brush.



#### 3. INSTALLATION

Introduce the anchor until the head is in the same level of the fixture material surface.  
Use hammer if necessary.  
The anchor must be introduced through the material to be fixed.



#### 4. APPLY NOMINAL TORQUE

Apply the nominal torque specified by using a dynamometric wrench.

## 4. RESISTANCE

Characteristic resistance in C20/25 concrete for an isolated anchor, without spacing and edge distance effects.

### 4.1 CHARACTERISTIC RESISTANCE [kN]

| General parameters |           |               |          | Non cracked concrete       |                          | Cracked concrete           |                          |
|--------------------|-----------|---------------|----------|----------------------------|--------------------------|----------------------------|--------------------------|
| Family             | Code      | Size          | Approved | Tension<br>N <sub>Rk</sub> | Shear<br>V <sub>Rk</sub> | Tension<br>N <sub>Rk</sub> | Shear<br>V <sub>Rk</sub> |
| SL-PT              | SLPT10070 | M6 x 70 Ø10   | ✓        | 15,00                      | <u>20,20</u>             | <b>12,17</b>               | <u>20,20</u>             |
|                    | SLPT10080 | M6 x 80 Ø10   | ✓        |                            |                          |                            |                          |
|                    | SLPT10100 | M6 x 100 Ø10  | ✓        |                            |                          |                            |                          |
|                    | SLPT10110 | M6 x 110 Ø10  | ✓        |                            |                          |                            |                          |
|                    | SLPT12080 | M8 x 80 Ø12   | ✓        | 20,00                      | <u>33,00</u>             | <b>16,00</b>               | <u>33,00</u>             |
|                    | SLPT12090 | M8 x 90 Ø12   | ✓        |                            |                          |                            |                          |
|                    | SLPT12100 | M8 x 100 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPT12120 | M8 x 120 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPT16100 | M10 x 100 Ø16 | ✓        | <b>28,81</b>               | <u>62,20</u>             | <b>20,17</b>               | <b>68,57</b>             |
|                    | SLPT16120 | M10 x 120 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPT16140 | M10 x 140 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPT16160 | M10 x 160 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPT18110 | M12 x 110 Ø18 | ✓        | <b>38,55</b>               | <u>75,10</u>             | <b>26,99</b>               | <u>75,10</u>             |
|                    | SLPT18120 | M12 x 120 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18140 | M12 x 140 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18150 | M12 x 150 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18170 | M12 x 170 Ø18 | ✓        | <b>49,19</b>               | <u>111,20</u>            | <b>34,44</b>               | <u>111,20</u>            |
|                    | SLPT18200 | M12 x 200 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT24140 | M16 x 140 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT24170 | M16 x 170 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT24200 | M16 x 200 Ø24 | ✓        | <b>68,75</b>               | <u>141,70</u>            | <b>48,13</b>               | <u>141,70</u>            |
|                    | SLPT24220 | M16 x 220 Ø24 | ✓        |                            |                          |                            |                          |
| SL-PC              | SLPC10070 | M6 x 70 Ø10   | ✓        | 15,00                      | <u>20,20</u>             | <b>12,17</b>               | <u>20,20</u>             |
|                    | SLPC10080 | M6 x 80 Ø10   | ✓        |                            |                          |                            |                          |
|                    | SLPC10100 | M6 x 100 Ø10  | ✓        |                            |                          |                            |                          |
|                    | SLPC12100 | M8 x 100 Ø12  | ✓        | 20,00                      | <u>33,00</u>             | <b>16,00</b>               | <u>33,00</u>             |
|                    | SLPC16100 | M10 x 100 Ø16 | ✓        | <b>28,81</b>               | <u>62,20</u>             | <b>20,17</b>               | <b>68,57</b>             |
|                    | SLPC16120 | M10 x 120 Ø16 | ✓        | <b>38,55</b>               | <u>75,10</u>             | <b>26,99</b>               | <u>75,10</u>             |
| SL-PE              | SLPE12095 | M8 x 95 Ø12   | ✓        | 20,00                      | <u>33,00</u>             | <b>16,00</b>               | <u>33,00</u>             |
|                    | SLPE12155 | M8 x 155 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPE16125 | M10 x 125 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPE16160 | M10 x 160 Ø16 | ✓        | <b>28,81</b>               | <u>62,20</u>             | <b>20,17</b>               | <b>68,57</b>             |
|                    | SLPE16245 | M10 x 245 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPE18150 | M12 x 150 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPE18170 | M12 x 170 Ø18 | ✓        | <b>38,55</b>               | <u>75,10</u>             | <b>26,99</b>               | <u>75,10</u>             |
|                    | SLPE18260 | M12 x 260 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPE24145 | M16 x 145 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE24170 | M16 x 170 Ø24 | ✓        | <b>49,19</b>               | <u>111,20</u>            | <b>34,44</b>               | <u>111,20</u>            |
|                    | SLPE24200 | M16 x 200 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE24280 | M16 x 280 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE28210 | M20 x 210 Ø28 | ✓        | <b>68,75</b>               | <u>141,70</u>            | <b>48,13</b>               | <u>141,70</u>            |
|                    | SLPE28230 | M20 x 230 Ø28 | ✓        |                            |                          |                            |                          |
|                    | SLPE28310 | M20 x 310 Ø28 | ✓        |                            |                          |                            |                          |

1 kN ≈ 100 kg

Underlined and cursive values mean Steel failure, **bolded** values mean failure in concrete, and others mean failure in pullout.

## 4.2 DESIGN RESISTANCES [kN]

| General parameters |           |               |          | Non cracked concrete       |                          | Cracked concrete           |                          |
|--------------------|-----------|---------------|----------|----------------------------|--------------------------|----------------------------|--------------------------|
| Family             | Code      | Size          | Approved | Tension<br>N <sub>Rd</sub> | Shear<br>V <sub>Rd</sub> | Tension<br>N <sub>Rd</sub> | Shear<br>V <sub>Rd</sub> |
| SL-PT              | SLPT10070 | M6 x 70 Ø10   | ✓        | 10,00                      | <u>16,16</u>             | <b>8,12</b>                | <u>16,16</u>             |
|                    | SLPT10080 | M6 x 80 Ø10   | ✓        |                            |                          |                            |                          |
|                    | SLPT10100 | M6 x 100 Ø10  | ✓        |                            |                          |                            |                          |
|                    | SLPT10110 | M6 x 110 Ø10  | ✓        | 13,33                      | <u>26,40</u>             | <b>10,67</b>               | <u>26,40</u>             |
|                    | SLPT12080 | M8 x 80 Ø12   | ✓        |                            |                          |                            |                          |
|                    | SLPT12090 | M8 x 90 Ø12   | ✓        |                            |                          |                            |                          |
|                    | SLPT12100 | M8 x 100 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPT12120 | M8 x 120 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPT16100 | M10 x 100 Ø16 | ✓        | <b>19,21</b>               | <u>49,76</u>             | <b>13,45</b>               | <b>45,71</b>             |
|                    | SLPT16120 | M10 x 120 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPT16140 | M10 x 140 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPT16160 | M10 x 160 Ø16 | ✓        | <b>25,70</b>               | <u>60,08</u>             | <b>17,99</b>               | <u>60,08</u>             |
|                    | SLPT18110 | M12 x 110 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18120 | M12 x 120 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18140 | M12 x 140 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18150 | M12 x 150 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18170 | M12 x 170 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPT18200 | M12 x 200 Ø18 | ✓        | <b>32,80</b>               | <u>88,96</u>             | <b>22,96</b>               | <u>88,96</u>             |
|                    | SLPT24140 | M16 x 140 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT24170 | M16 x 170 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT24200 | M16 x 200 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT24220 | M16 x 220 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPT28170 | M20 x 170 Ø28 | ✓        | <b>45,83</b>               | <u>113,36</u>            | <b>32,08</b>               | <u>113,36</u>            |
|                    | SLPT28200 | M20 x 200 Ø28 | ✓        |                            |                          |                            |                          |
|                    | SLPT28240 | M20 x 240 Ø28 | ✓        |                            |                          |                            |                          |
| SL-PC              | SLPC10070 | M6 x 70 Ø10   | ✓        | 10,00                      | <u>16,16</u>             | <b>8,12</b>                | <u>16,16</u>             |
|                    | SLPC10080 | M6 x 80 Ø10   | ✓        |                            |                          |                            |                          |
|                    | SLPC10100 | M6 x 100 Ø10  | ✓        |                            |                          |                            |                          |
|                    | SLPC12100 | M8 x 100 Ø12  | ✓        | 13,33                      | <u>26,40</u>             | <b>10,67</b>               | <u>26,40</u>             |
|                    | SLPC16100 | M10 x 100 Ø16 | ✓        | <b>19,21</b>               | <u>49,76</u>             | <b>13,45</b>               | <b>45,71</b>             |
|                    | SLPC16120 | M10 x 120 Ø16 | ✓        | <b>19,21</b>               | <u>49,76</u>             | <b>13,45</b>               | <b>45,71</b>             |
| SL-PE              | SLPC18120 | M12 x 120 Ø18 | ✓        | <b>25,70</b>               | <u>60,08</u>             | <b>17,99</b>               | <u>60,08</u>             |
|                    | SLPE12095 | M8 x 95 Ø12   | ✓        | 13,33                      | <u>26,40</u>             | <b>10,67</b>               | <u>26,40</u>             |
|                    | SLPE12155 | M8 x 155 Ø12  | ✓        |                            |                          |                            |                          |
|                    | SLPE16125 | M10 x 125 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPE16160 | M10 x 160 Ø16 | ✓        | <b>19,21</b>               | <u>49,76</u>             | <b>13,45</b>               | <b>45,71</b>             |
|                    | SLPE16245 | M10 x 245 Ø16 | ✓        |                            |                          |                            |                          |
|                    | SLPE18150 | M12 x 150 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPE18170 | M12 x 170 Ø18 | ✓        | <b>25,70</b>               | <u>60,08</u>             | <b>17,99</b>               | <u>60,08</u>             |
|                    | SLPE18260 | M12 x 260 Ø18 | ✓        |                            |                          |                            |                          |
|                    | SLPE24145 | M16 x 145 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE24170 | M16 x 170 Ø24 | ✓        | <b>32,80</b>               | <u>88,96</u>             | <b>22,96</b>               | <u>88,96</u>             |
|                    | SLPE24200 | M16 x 200 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE24280 | M16 x 280 Ø24 | ✓        |                            |                          |                            |                          |
|                    | SLPE28210 | M20 x 210 Ø28 | ✓        | <b>45,83</b>               | <u>113,36</u>            | <b>32,08</b>               | <u>113,36</u>            |
|                    | SLPE28230 | M20 x 230 Ø28 | ✓        |                            |                          |                            |                          |
|                    | SLPE28310 | M20 x 310 Ø28 | ✓        |                            |                          |                            |                          |

1 kN ≈ 100 kg

Underlined and cursive values mean Steel failure, **bolded** values mean failure in concrete, and others mean failure in pullout.

## 4.3 MAXIMUM RECOMMENDED LOADS [kN]

| General parameters |           |               |          | Non cracked concrete        |                           | Cracked concrete            |                           |
|--------------------|-----------|---------------|----------|-----------------------------|---------------------------|-----------------------------|---------------------------|
| Family             | Code      | Size          | Approved | Tension<br>N <sub>rec</sub> | Shear<br>V <sub>rec</sub> | Tension<br>N <sub>rec</sub> | Shear<br>V <sub>rec</sub> |
| SL-PT              | SLPT10070 | M6 x 70 Ø10   | ✓        | 7,14                        | <u>11,54</u>              | 5,80                        | <u>11,54</u>              |
|                    | SLPT10080 | M6 x 80 Ø10   | ✓        |                             |                           |                             |                           |
|                    | SLPT10100 | M6 x 100 Ø10  | ✓        |                             |                           |                             |                           |
|                    | SLPT10110 | M6 x 110 Ø10  | ✓        |                             |                           |                             |                           |
|                    | SLPT12080 | M8 x 80 Ø12   | ✓        | 9,52                        | <u>18,86</u>              | 7,62                        | <u>18,86</u>              |
|                    | SLPT12090 | M8 x 90 Ø12   | ✓        |                             |                           |                             |                           |
|                    | SLPT12100 | M8 x 100 Ø12  | ✓        |                             |                           |                             |                           |
|                    | SLPT12120 | M8 x 120 Ø12  | ✓        |                             |                           |                             |                           |
|                    | SLPT16100 | M10 x 100 Ø16 | ✓        | 13,72                       | <u>35,54</u>              | 9,60                        | 32,65                     |
|                    | SLPT16120 | M10 x 120 Ø16 | ✓        |                             |                           |                             |                           |
|                    | SLPT16140 | M10 x 140 Ø16 | ✓        |                             |                           |                             |                           |
|                    | SLPT16160 | M10 x 160 Ø16 | ✓        |                             |                           |                             |                           |
|                    | SLPT18110 | M12 x 110 Ø18 | ✓        | 18,36                       | <u>42,91</u>              | 12,85                       | <u>42,91</u>              |
|                    | SLPT18120 | M12 x 120 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPT18140 | M12 x 140 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPT18150 | M12 x 150 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPT18170 | M12 x 170 Ø18 | ✓        | 23,43                       | <u>63,54</u>              | 16,40                       | <u>63,54</u>              |
|                    | SLPT18200 | M12 x 200 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPT24140 | M16 x 140 Ø24 | ✓        |                             |                           |                             |                           |
|                    | SLPT24170 | M16 x 170 Ø24 | ✓        |                             |                           |                             |                           |
|                    | SLPT24200 | M16 x 200 Ø24 | ✓        | 32,74                       | <u>80,97</u>              | 22,92                       | <u>80,97</u>              |
|                    | SLPT24220 | M16 x 220 Ø24 | ✓        |                             |                           |                             |                           |
| SL-PC              | SLPT28170 | M20 x 170 Ø28 | ✓        |                             |                           |                             |                           |
|                    | SLPT28200 | M20 x 200 Ø28 | ✓        |                             |                           |                             |                           |
|                    | SLPT28240 | M20 x 240 Ø28 | ✓        |                             |                           |                             |                           |
|                    | SLPC10070 | M6 x 70 Ø10   | ✓        | 7,14                        | <u>11,54</u>              | 5,80                        | <u>11,54</u>              |
|                    | SLPC10080 | M6 x 80 Ø10   | ✓        |                             |                           |                             |                           |
|                    | SLPC10100 | M6 x 100 Ø10  | ✓        |                             |                           |                             |                           |
| SL-PE              | SLPC12100 | M8 x 100 Ø12  | ✓        | 9,52                        | <u>18,86</u>              | 7,62                        | <u>18,86</u>              |
|                    | SLPC16100 | M10 x 100 Ø16 | ✓        | 13,72                       | <u>35,54</u>              | 9,60                        | 32,65                     |
|                    | SLPC16120 | M10 x 120 Ø16 | ✓        | 18,36                       | <u>42,91</u>              | 12,85                       | <u>42,91</u>              |
|                    | SLPC18120 | M12 x 120 Ø18 | ✓        | 9,52                        | <u>18,86</u>              | 7,62                        | <u>18,86</u>              |
|                    | SLPE12095 | M8 x 95 Ø12   | ✓        |                             |                           |                             |                           |
|                    | SLPE12155 | M8 x 155 Ø12  | ✓        |                             |                           |                             |                           |
|                    | SLPE16125 | M10 x 125 Ø16 | ✓        | 13,72                       | <u>35,54</u>              | 9,60                        | 32,65                     |
|                    | SLPE16160 | M10 x 160 Ø16 | ✓        |                             |                           |                             |                           |
|                    | SLPE16245 | M10 x 245 Ø16 | ✓        |                             |                           |                             |                           |
|                    | SLPE18150 | M12 x 150 Ø18 | ✓        | 18,36                       | <u>42,91</u>              | 12,85                       | <u>42,91</u>              |
|                    | SLPE18170 | M12 x 170 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPE18260 | M12 x 260 Ø18 | ✓        |                             |                           |                             |                           |
|                    | SLPE24145 | M16 x 145 Ø24 | ✓        | 23,43                       | <u>63,54</u>              | 16,40                       | <u>63,54</u>              |
|                    | SLPE24170 | M16 x 170 Ø24 | ✓        |                             |                           |                             |                           |
|                    | SLPE24200 | M16 x 200 Ø24 | ✓        |                             |                           |                             |                           |
|                    | SLPE24280 | M16 x 280 Ø24 | ✓        | 32,74                       | <u>80,97</u>              | 22,92                       | <u>80,97</u>              |
|                    | SLPE28210 | M20 x 210 Ø28 | ✓        |                             |                           |                             |                           |
|                    | SLPE28230 | M20 x 230 Ø28 | ✓        |                             |                           |                             |                           |
|                    | SLPE28310 | M20 x 310 Ø28 | ✓        |                             |                           |                             |                           |

1 kN ≈ 100 kg

Underlined and cursive values mean Steel failure, **bolded** values mean failure in concrete, and others mean failure in pullout.

| SAFETY COEFFICIENTS IN PULLOUT<br>FOR TENSION LOAD IN HIGH RESISTANCE CONCRETE |     |        |        |        |
|--------------------------------------------------------------------------------|-----|--------|--------|--------|
| CONCRETE FACTOR                                                                |     | C30/37 | C40/50 | C50/60 |
| $\Psi_c$ (Cracked and non-cracked)                                             | M6  | 1,22   | 1,41   | 1,58   |
|                                                                                | M8  | 1,22   | 1,41   | 1,58   |
|                                                                                | M10 | 1,22   | 1,41   | 1,58   |
|                                                                                | M12 | 1,22   | 1,41   | 1,58   |
|                                                                                | M16 | 1,08   | 1,15   | 1,20   |
|                                                                                | M20 | 1,08   | 1,15   | 1,20   |

## 5. OFFICIAL DOCUMENTATION

You can obtain the following documents by means of our commercial department or our web page [www.indexfix.com](http://www.indexfix.com) :

- European assessment ETA 18/1108 for installation in cracked and non-cracked concrete according to EAD 330232-02-0601, option 1, de M6 a M20.
- Declaration of performance DoP SL.
- Certificate VdS CEA 4001:2021-01(07) *Guidelines for sprinklers systems. Planning and installation for applications of water extinguishing systems on concrete elements* from M8 to M20.
- Available for anchor calculation program INDEXcal.