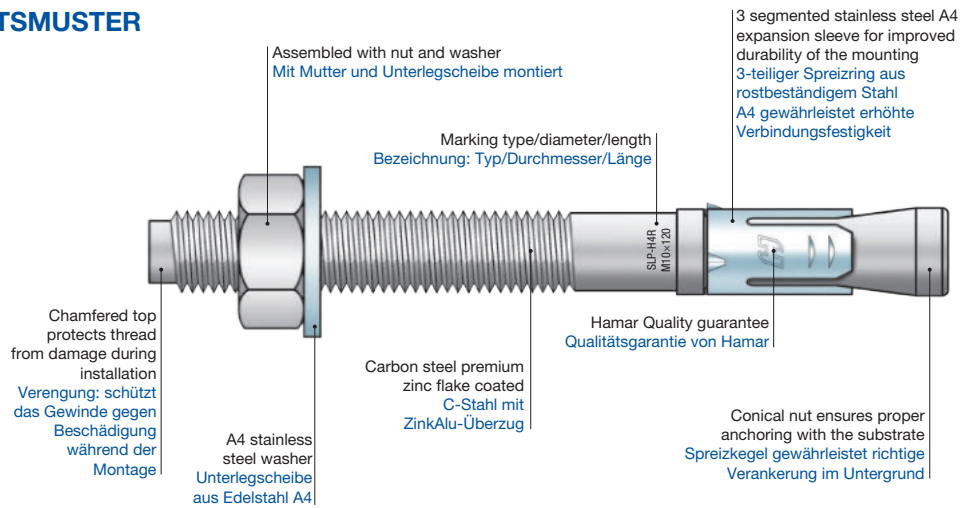
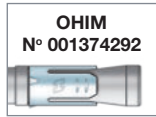




**TORQUE CONTROLLED  
STEEL EXPANSION ANCHORS**  
**KRAFTKONTROLLIERTE BOLZENANKER**

**REGISTERED COMMUNITY DESIGN**  
**EINGETRAGENES GEMEINSCHAFTSMUSTER**



**TORQUE CONTROLLED EXPANSION ANCHORS FOR CRACKED AND NON-CRACKED CONCRETE**  
**KRAFTKONTROLLIERTE BOLZENANKER FÜR GERISSENEN UND UNGERISSENEN BETON**



Available also with enlarged washer  
Erhältlich auch mit vergrößerter Unterlegscheibe

- cracked and non-cracked concrete  
C20/25 to C50/60 acc. to EN 206  
Montage in gerissenem und ungerissenem C20/25- bis C50/60-Beton nach EN 206
- static and quasi-static loads  
statische oder quasi-statische Belastungen
- carbon steel body with a high performance zinc-aluminum flake coating  
Kohlenstoffstahl mit AluZink-Überzug
- intended for use in indoor and outdoor corrosivity categories C1, C2, C3, C4, C5H  
Zum Einsatz in einer Innen- und Außenumgebung mit einer Korrosivitätskategorien: C1, C2, C3, C4, C5H
- setting depth mark to facilitate precise installation  
Markierung der Gründungstiefe im Untergrund
- reaction to fire class A1  
Brandschutzklasse A1
- fire resistance class R30+R120  
Feuerwiderstandsklassen R30+R120

**Protect 1500™**  
**HIGH CORROSION PROTECTION**  
**HOHER KORROSIONSSCHUTZ**



The base coat reacts with the steel surface, generating a well-adhered, conductive and non-toxic zinc-aluminium coating after heating

Die Basisbeschichtung reagiert mit der Stahloberfläche und bildet nach einer Durchwärmung eine gut haftende, stromführende und nicht toxische AluZink-Schicht

The applied layer does not contain lead, mercury, cadmium or chromium Cr(VI)

Eine aufgetragene Lage enthält weder Blei, Quecksilber, Cadmium noch Chrom Cr(VI)

High corrosion resistance of 1500 hours salt spray test acc. to EN-ISO-9227

Hoher Korrosionsbeständigkeit, 1.500 Stunden lange Prüfung in Salzkammer nach EN-ISO-9227

No hydrogen embrittlement

Kein Wasserstoffbrüchigkeitsrisiko vorhanden

Cathodic corrosion protection

Kathodischer Korrosionsschutz

**SLP-H4R**

| d × L (mm) | index        |    | h <sub>ef</sub> (mm) |  | max. t <sub>fix</sub> (mm) |  | d <sub>2</sub> (mm) |  | m (mm) |  | d <sub>2</sub> (mm) | s (mm) |     |     |
|------------|--------------|----|----------------------|--|----------------------------|--|---------------------|--|--------|--|---------------------|--------|-----|-----|
| M8 × 60    | SLPH4R-08060 | 8  | 40                   |  | 5                          |  | 13                  |  | 6,5    |  | 16,0                | 1,6    | 100 | 800 |
| M8 × 75    | SLPH4R-08075 | 8  | 40                   |  | 15                         |  | 13                  |  | 6,5    |  | 16,0                | 1,6    | 100 | 800 |
| M8 × 80    | SLPH4R-08080 | 8  | 40                   |  | 20                         |  | 13                  |  | 6,5    |  | 16,0                | 1,6    | 100 | 800 |
| M8 × 100   | SLPH4R-08100 | 8  | 40                   |  | 40                         |  | 13                  |  | 6,5    |  | 16,0                | 1,6    | 50  | 600 |
| M8 × 120   | SLPH4R-08120 | 8  | 40                   |  | 60                         |  | 13                  |  | 6,5    |  | 16,0                | 1,6    | 50  | 400 |
| M10 × 75   | SLPH4R-10075 | 10 | 45                   |  | 10                         |  | 17                  |  | 8,0    |  | 20,0                | 2,0    | 50  | 400 |
| M10 × 90   | SLPH4R-10090 | 10 | 45                   |  | 25                         |  | 17                  |  | 8,0    |  | 20,0                | 2,0    | 50  | 400 |
| M10 × 100  | SLPH4R-10100 | 10 | 45                   |  | 35                         |  | 17                  |  | 8,0    |  | 20,0                | 2,0    | 50  | 400 |
| M10 × 120  | SLPH4R-10120 | 10 | 45                   |  | 55                         |  | 17                  |  | 8,0    |  | 20,0                | 2,0    | 50  | 200 |
| M10 × 140  | SLPH4R-10140 | 10 | 45                   |  | 75                         |  | 17                  |  | 8,0    |  | 20,0                | 2,0    | 25  | 200 |
| M12 × 90   | SLPH4R-12090 | 12 | 70                   |  | 3                          |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 200 |
| M12 × 100  | SLPH4R-12100 | 12 | 70                   |  | 10                         |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 200 |
| M12 × 120  | SLPH4R-12120 | 12 | 70                   |  | 30                         |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 200 |
| M12 × 140  | SLPH4R-12140 | 12 | 70                   |  | 50                         |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 200 |
| M12 × 160  | SLPH4R-12160 | 12 | 70                   |  | 70                         |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 200 |
| M12 × 180  | SLPH4R-12180 | 12 | 70                   |  | 90                         |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 100 |
| M12 × 200  | SLPH4R-12200 | 12 | 70                   |  | 110                        |  | 19                  |  | 10,0   |  | 24,0                | 2,5    | 25  | 100 |



**TORQUE CONTROLLED EXPANSION ANCHORS  
FOR CRACKED AND NON-CRACKED CONCRETE**  
**KRAFTKONTROLLIERTE BOLZENANKER  
FÜR GERISSENEN UND UNGERISSENEN BETON**

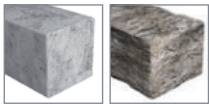


Available also with enlarged washer  
Erhältlich auch mit vergrößerter Unterlegscheibe

- suitable for cracked and non-cracked concrete C20/25 to C50/60 acc. to EN 206 / Montage in herkömmlichen, bewehrten oder unbewehrtem, gerissenem oder nicht gerissenem Beton, C20/25- bis C50/60-Beton nach EN 206
- carbon steel body, protective zinc coating, min. 5 µm / Kohlenstoffstahl, Korrosionsschutzschicht aus Zink mit einer Stärke von zumindest 5 µm
- stainless steel A4 expansion sleeve / Spreizring aus Edelstahl A4
- satisfies the requirements of class A1 of reaction to fire acc. to EC 96/603/EC / Sonderanforderungen Brandschutzklasse A1 nach EC 96/603/EC
- fire resistance class R30 ÷ R120 / Feuerwiderstandsklassen R30 ÷ R120

**SLP-H4**

| d × L (mm) | index       |    | h <sub>ef</sub> (mm) | t <sub>fix</sub> max. (mm) | d <sub>2</sub> (mm) | m (mm) | d <sub>2</sub> (mm) | s (mm) |     |     |
|------------|-------------|----|----------------------|----------------------------|---------------------|--------|---------------------|--------|-----|-----|
| M8 × 75    | SLPH4-08075 | 8  | 40                   | 15                         | 13                  | 6,5    | 16,0                | 1,6    | 100 | 800 |
| M8 × 80    | SLPH4-08080 | 8  | 40                   | 20                         | 13                  | 6,5    | 16,0                | 1,6    | 100 | 800 |
| M8 × 100   | SLPH4-08100 | 8  | 40                   | 40                         | 13                  | 6,5    | 16,0                | 1,6    | 50  | 600 |
| M8 × 120   | SLPH4-08120 | 8  | 40                   | 60                         | 13                  | 6,5    | 16,0                | 1,6    | 50  | 400 |
| M10 × 75   | SLPH4-10075 | 10 | 45                   | 10                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 90   | SLPH4-10090 | 10 | 45                   | 25                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 100  | SLPH4-10100 | 10 | 45                   | 35                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 120  | SLPH4-10120 | 10 | 45                   | 55                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 200 |
| M10 × 140  | SLPH4-10140 | 10 | 45                   | 75                         | 17                  | 8,0    | 20,0                | 2,0    | 25  | 200 |
| M12 × 90   | SLPH4-12090 | 12 | 70                   | 2                          | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 100  | SLPH4-12100 | 12 | 70                   | 10                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 120  | SLPH4-12120 | 12 | 70                   | 30                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 140  | SLPH4-12140 | 12 | 70                   | 50                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 160  | SLPH4-12160 | 12 | 70                   | 70                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 180  | SLPH4-12180 | 12 | 70                   | 90                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 100 |
| M12 × 200  | SLPH4-12200 | 12 | 70                   | 110                        | 19                  | 10,0   | 24,0                | 2,5    | 25  | 100 |
| M16 × 115  | SLPH4-16115 | 16 | 80                   | 5                          | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 125  | SLPH4-16125 | 16 | 80                   | 15                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 140  | SLPH4-16140 | 16 | 80                   | 30                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 150  | SLPH4-16150 | 16 | 80                   | 40                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 180  | SLPH4-16180 | 16 | 80                   | 70                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |



**TORQUE CONTROLLED EXPANSION ANCHORS  
FOR NON-CRACKED CONCRETE**  
**KRAFTKONTROLLIERTE BOLZENANKER  
FÜR UNGERISSENEN BETON**






Available also with enlarged washer  
Erhältlich auch mit vergrößerter Unterlegscheibe

- suitable for non-cracked concrete C20/25 to C50/60 acc. to EN 206 / Montage in nicht gerissenem Beton, C20/25- bis C50/60-Beton nach EN 206
- carbon steel body, protective zinc coating, min. 5 µm / Kohlenstoffstahl, Korrosionsschutzschicht aus Zink mit einer Stärke von zumindest 5 µm

**SLP-H**

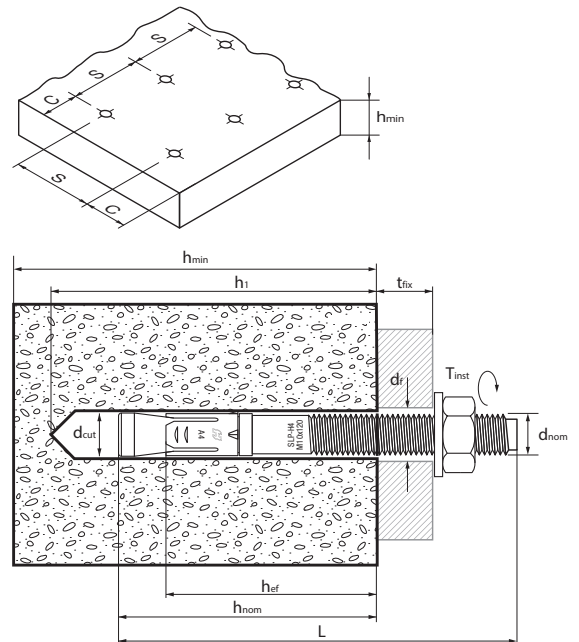
| d × L (mm) | index      |    | h <sub>ef</sub> (mm) | t <sub>fix</sub> max. (mm) | d <sub>2</sub> (mm) | m (mm) | d <sub>2</sub> (mm) | s (mm) |     |     |
|------------|------------|----|----------------------|----------------------------|---------------------|--------|---------------------|--------|-----|-----|
| M8 × 75    | SLPH-08075 | 8  | 40                   | 15                         | 13                  | 6,5    | 16,0                | 1,6    | 100 | 800 |
| M8 × 80    | SLPH-08080 | 8  | 40                   | 20                         | 13                  | 6,5    | 16,0                | 1,6    | 100 | 800 |
| M8 × 100   | SLPH-08100 | 8  | 40                   | 40                         | 13                  | 6,5    | 16,0                | 1,6    | 50  | 600 |
| M8 × 120   | SLPH-08120 | 8  | 40                   | 60                         | 13                  | 6,5    | 16,0                | 1,6    | 50  | 400 |
| M10 × 75   | SLPH-10075 | 10 | 45                   | 10                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 90   | SLPH-10090 | 10 | 45                   | 25                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 100  | SLPH-10100 | 10 | 45                   | 35                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 400 |
| M10 × 120  | SLPH-10120 | 10 | 45                   | 55                         | 17                  | 8,0    | 20,0                | 2,0    | 50  | 200 |
| M10 × 140  | SLPH-10140 | 10 | 45                   | 75                         | 17                  | 8,0    | 20,0                | 2,0    | 25  | 200 |
| M12 × 90   | SLPH-12090 | 12 | 70                   | 2                          | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 100  | SLPH-12100 | 12 | 70                   | 10                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 120  | SLPH-12120 | 12 | 70                   | 30                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 140  | SLPH-12140 | 12 | 70                   | 50                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 160  | SLPH-12160 | 12 | 70                   | 70                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 200 |
| M12 × 180  | SLPH-12180 | 12 | 70                   | 90                         | 19                  | 10,0   | 24,0                | 2,5    | 25  | 100 |
| M12 × 200  | SLPH-12200 | 12 | 70                   | 110                        | 19                  | 10,0   | 24,0                | 2,5    | 25  | 100 |
| M16 × 115  | SLPH-16115 | 16 | 80                   | 5                          | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 125  | SLPH-16125 | 16 | 80                   | 15                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 140  | SLPH-16140 | 16 | 80                   | 30                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 150  | SLPH-16150 | 16 | 80                   | 40                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 160  | SLPH-16160 | 16 | 80                   | 50                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |
| M16 × 180  | SLPH-16180 | 16 | 80                   | 70                         | 24                  | 13,0   | 30,0                | 3,0    | 20  | 80  |

## CHARACTERISTICS EIGENSCHAFTEN

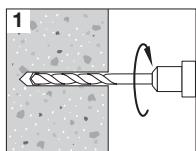
|         |   | Technical Assessment (ETA)<br>Europäische Technische<br>Bewertung (ETA) | CE mark<br>CE-Zeichen | Direct load<br>Sofortige Laden | Installation depth indicator<br>Markierung der Montagetiefe<br>im Untergrund | Fire resistant<br>Feuerwiderstandsfähig | Increased corrosion resistance<br>Erhöhte<br>Korrosionschutzbeständigkeit | Non-cracked concrete Option 7<br>Ungerissener Beton Option 7 | Cracked concrete Option 1<br>Gerissener Beton Option 1 | Natural stone<br>Naturstein |
|---------|---|---|-----------------------|--------------------------------|--|---|---|--|--|-----------------------------|
| SLP-H4R |  | ✓   | ✓                     | ✓                              | ✓  | ✓                                       | ✓   | ✓  | ✓  | ✓                           |
| SLP-H4  |  | ✓   | ✓                     | ✓                              | ✓  | ✓                                       |   | ✓  | ✓  | ✓                           |
| SLP-H   |  | ✓   | ✓                     | ✓                              | ✓  |   |   | ✓  |  | ✓                           |

## INSTALLATION PARAMETERS INSTALLATIONSPARAMETER

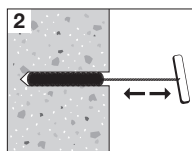
| Anchor size<br>Bolzenankergröße | SLP-H4R |      |      | SLP-H4 |      |      |      | SLP-H |      |      |      |
|---------------------------------|---------|------|------|--------|------|------|------|-------|------|------|------|
|                                 | M8      | M10  | M12  | M8     | M10  | M12  | M16  | M8    | M10  | M12  | M16  |
| $d_{nom}$ [mm]                  | 8       | 10   | 12   | 8      | 10   | 12   | 16   | 8     | 10   | 12   | 16   |
| $d_{cut}$ [mm]                  | 8,45    | 10,5 | 12,5 | 8,45   | 10,5 | 12,5 | 16,5 | 8,45  | 10,5 | 12,5 | 16,5 |
| $h_1$ [mm]                      | 55      | 60   | 95   | 55     | 60   | 95   | 110  | 55    | 60   | 95   | 110  |
| $h_{nom}$ [mm]                  | 48      | 55   | 82   | 48     | 55   | 82   | 96   | 48    | 55   | 82   | 96   |
| $d_f$ [mm]                      | 9       | 11   | 13   | 9      | 11   | 13   | 17   | 9     | 12   | 14   | 18   |
| $h_{min}$ [mm]                  | 100     | 100  | 150  | 100    | 100  | 150  | 170  | 100   | 120  | 150  | 170  |
| $T_{inst}$ [Nm]                 | 20      | 30   | 50   | 20     | 30   | 50   | 120  | 20    | 30   | 50   | 120  |
| $h_{ef}$ [mm]                   | 40      | 45   | 70   | 40     | 45   | 70   | 80   | 40    | 45   | 70   | 80   |
| $S_{min}$ [mm]                  | 40      | 45   | 70   | 40     | 45   | 70   | 80   | 40    | 45   | 70   | 80   |
| $C_{min}$ [mm]                  | 60      | 67,5 | 105  | 60     | 67,5 | 105  | 120  | 60    | 67,5 | 105  | 120  |



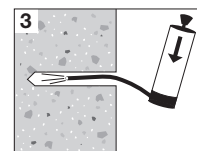
## INSTALLATION MONTAGE



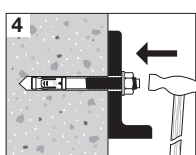
1 Drill the hole of required diameter and depth.  
Eine Bohrung mit erforderlichem Durchmesser und Tiefe herstellen.



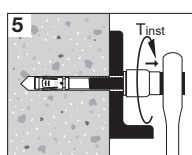
2 Clean the hole from dust using brush.  
Die Bohrung mit Hilfe einer Bürste reinigen.



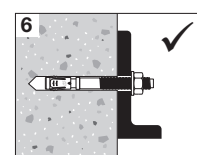
3 Clean the hole from dust using blow out pump.  
Die Bohrung mit Hilfe einer Pumpe reinigen.



4 Insert the anchor into the hole with a hammer, reaching the appropriate depth.  
Den Bolzenanker in der Bohrung einlegen und sie mit Hammer entsprechend tief einschlagen.



5 Tighten the nut and apply the required installation torque.  
Die Mutter anziehen, wobei ein Drehmomentenschlüssel mit geeignetem Anzugsmoment anzuwenden ist.



6 Properly installed.  
Die Befestigung ist richtig hergestellt.