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### 3.1 Selection of the right screw

Selection of the right screw depends on a number of factors determined by the application and the circumstances or conditions under which the screw is to be used. If the application is known, the Hilti screw designation system provides a quick and reliable screw selection aid.



To quickly find the most suitable product for the specific application on hand, simply ask yourself the following questions.

#### 1. Which type of Hilti fastener do you wish to use?

**S:** Screw

|                                                   |
|---------------------------------------------------|
| Example: Example                                  |
| <b>S-</b> always stands for Hilti screw fastening |

#### 2. Which material is to be fastened?

- M:** Metal
- C:** Sandwich panel
- W:** Wood
- I:** Insulation
- A:** Aluminium

|                                        |
|----------------------------------------|
| Example: Fastening metal profile sheet |
| <b>S-M</b>                             |

#### 3. Do you wish to use a self-tapping, self-drilling or pointed self-piercing (chipless) screw?

- S:** Pointed, self-piercing (Speedy function)
- D:** Self-drilling
- DU:** Self-drilling undercut
- DW:** Self-drilling wood
- P:** Pre-drilling (self-tapping)
- T:** Treadfast
- DP:** Plastic plug pre-mounted screw

|                        |
|------------------------|
| Example: Self-drilling |
| <b>S-MD</b>            |

#### 4. Is a sealing washer or a pressed-on washer required?

- 0:** No sealing washer
- 1:** Countersunk head
- 2:** Pressed-on flange
- 3:** 12 mm sealing washer
- 4:** 14 mm sealing washer
- 5:** 16 mm sealing washer
- 6:** 19 mm sealing washer
- 7:** 22 mm sealing washer
- 8:** 29 mm sealing washer

|                               |
|-------------------------------|
| Example: 19 mm sealing washer |
| <b>S-MD 6</b>                 |

## 5. How thick is the material to be drilled through by the screw?

### S-MS stitching screw

1: Drilling capacity 2 x 0.4 mm up to 2 x 1.25 mm

### Self-drilling screw

1: Drilling capacity 1.0 up to 4.0 mm

3: Drilling capacity 2.1 up to 6.0 mm

5: Drilling capacity 4.6 up to 15.0 mm

Example: Drilling capacity 5 mm

S-MD 63

### Self-tapping screw

2: Blunt thread run-out >1.25 mm steel substructure

3: Pointed thread run-out <3 mm steel substructure

Timber substructure

4: Blunt, hardened thread run-out, suitable for S355/ST52  
high strength steel >1.25 mm steel substructure

## 6. Which type of corrosion protection and head geometry are required.

### Material:

Z: Galvanized carbon steel

C: Duplex coated carbon steel

S: A2 grade stainless steel

SS: A4 grade stainless steel

S-A: A2 with alu washer

SS-A: A4 with alu washer

Example: Stainless steel

S-MD 63 S

### Head geometry:

PS: Pan head, stainless steel

PS-A: Pan head with alu washer

LS: Long drill point / A2 Drilling capacity 1.0 to approx. 4.0 mm

LZ: Long drill point / galvanized carbon steel

Drilling capacity 1.0 to approx. 4.0 mm

ZW: Wafer head, galvanized

GZ: Coarse thread galvanized

GS: Coarse thread stainless

Example: 5.5 mm diameter  
length 55 mm

S-MD 63 S 5.5x40

## 7. Dimensions and screw diameter

### Screw diameter:

3.8 / 4.2 mm / 4.8 mm / 5.5 mm / 6.3 mm / 6.5 mm



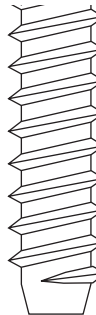
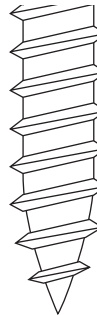
### Screw length:

13 mm – 102 mm S-MD screws

75 mm – 300 mm S-CD screws

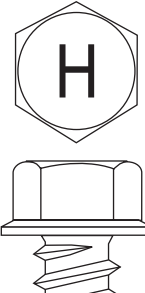
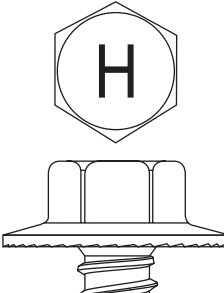
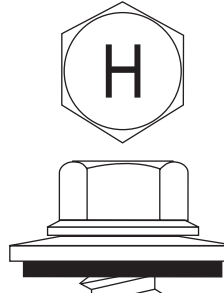

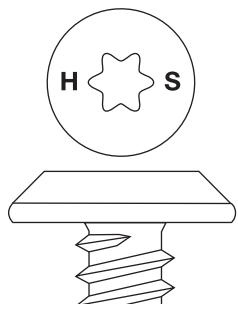
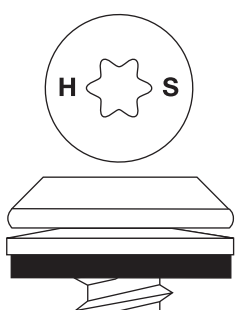
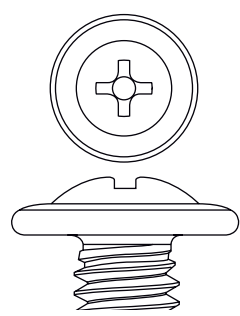
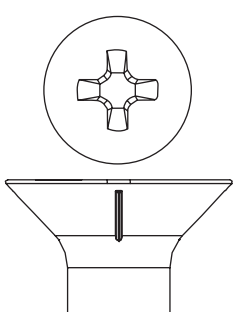
19 mm – 275 mm S-MP screws

### 3.2 Screw type

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| S-MD_1/3/5<br>S-CDW_1<br>S-CD_3/5<br>S-AD 01<br>S-IDP_4.8/6.7                     | S-MS_1                                                                            | S-MP_2<br>S-MP_4                                                                   | S-MP_3<br>S-IT_1                                                                    |

**3**

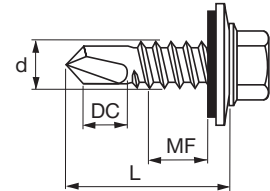
### 3.3 Screw head & recess

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   |   |   |   |
| Hexagon head                                                                        | Hexagon head with pressed-on flange                                                 | Hexagon head with sealing washer                                                     | Hexagon head with sealing washer and supporting thread                                |
|  |  |  |  |
| Pan head                                                                            | Pan head with sealing washer                                                        | Wafer head                                                                           | Countersunk head                                                                      |

## 3.4 Determining the screw length

### 3.4.1 Definition of the screw length (L)

The screw length is measured from the start of the screw (drill point) to below the screw head. However, the screw length alone says nothing about the screw's clamping area.



The screw length is selected depending on

- the thickness of the base material,
- the thickness of the building component to be fastened,
- the thickness of possible intermediate layers such as thermal separation, and
- additional building components such as calottes.

It must also be noted that when determining the screw length, the drill point, thread cut and (if necessary, in the case of bi-metal screws) the welding zone must be taken into account.

### 3.4.2 Definition of the drilling performance (DC)

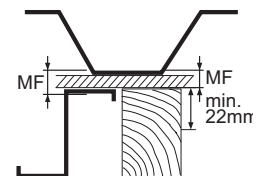
The drilling performance is the sum of the building component thicknesses, consisting of building component I and building component II, which can be drilled through by the drill point. The length of the drill point must always be selected such that the total material thickness is completely drilled through before the thread starts to mold.

### 3.4.3 Calculating the fastening height (MF)

The fastening height MF (clamping area) is understood to mean the total height, consisting of:

- + the thickness of building component I
- + the thickness of possible intermediate layers, such as thermal separation
- + the thickness of additional building components, such as calottes
- + the embedment depth in building component II (steel)

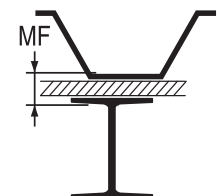
Note: in wood embedment is not part of MF



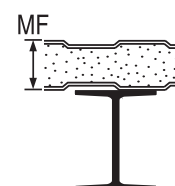
Fastening height in sheet metal with and without an intermediate layer      Fastening height in wood

The embedment depth in building component II depends on the base material thickness and the base material itself. It is calculated as follows:

- Sheet metal or steel < 6 mm ➔ embedment depth = existing material thickness
- Steel ≥ 6 mm ➔ Self-tapping screws: embedment depth = 6 mm  
➔ Self-drilling screws: embedment depth = existing material thickness
- Wood ➔ embedment depth ≥ 22 mm



Fastening height in profile metal sheet on steel



Fastening height in sandwich panel

#### Special features:

- Sandwich elements: The fastening height (MF) or clamping length is only specified with the maximum sandwich element thickness that is relevant to the fastening.
- Calottes: If using calottes, 3 mm must be taken into account when calculating the fastening height (MF).

The fastening height (MF) is not included in the screw approvals.

For this, please refer to the Hilti technical manual for metal construction screws for use in roofs/walls.

### 3.5 Services offered

#### Screws with colored heads and washers

All screws can be supplied with powder-coated heads and washers.

**Delivery period:**

Standard RAL: 1 to 2 weeks

Other RAL: 3 to 4 weeks



#### Saddle washers for trapezoidal and wave profiles

All saddle washers can be supplied with powder coating.

**Delivery period:**

Standard RAL: 2 weeks

Other RAL: 3 to 4 weeks

| The following RAL colors fall under the „Standard“ category: |                 |  |      |                 |  |
|--------------------------------------------------------------|-----------------|--|------|-----------------|--|
| 1015                                                         | Light ivory     |  | 6011 | Reseda green    |  |
| 3000                                                         | Flame red       |  | 6020 | Chrome green    |  |
| 3005                                                         | Wine red        |  | 6021 | Pale green      |  |
| 3009                                                         | Oxide red       |  | 7005 | Mouse grey      |  |
| 3011                                                         | Brown red       |  | 7012 | Basalt grey     |  |
| 5008                                                         | Grey blue       |  | 7015 | Slate grey      |  |
| 5009                                                         | Azure blue      |  | 7016 | Anthracite grey |  |
| 5010                                                         | Gentian blue    |  | 7022 | Umbra grey      |  |
| 5014                                                         | Sky blue        |  | 7024 | Graphite grey   |  |
| 5017                                                         | Traffic blue    |  | 7031 | Blue grey       |  |
| 6003                                                         | Olive green     |  | 7032 | Pebble grey     |  |
| 6005                                                         | Moos green      |  | 7035 | Light grey      |  |
| 6006                                                         | Gray olive      |  | 7038 | Agate grey      |  |
| 6007                                                         | Battle green    |  | 7042 | Traffic grey A  |  |
| 8004                                                         | Copper brown    |  | 8011 | Nut brown       |  |
| 8012                                                         | Red brown       |  | 8014 | Sepia brown     |  |
| 8016                                                         | Mahogany brown  |  | 8017 | Chocolate brown |  |
| 8019                                                         | Grey brown      |  | 9001 | Cream           |  |
| 9002                                                         | Grey white      |  | 9005 | Jet black       |  |
| 9006                                                         | White aluminium |  | 9007 | Gray aluminium  |  |
| 9010                                                         | Pure white      |  | 9011 | Graphite black  |  |

### 3.6 Hilti Screw Nomenclature

The easy way to find the right screw

|          |   |          |          |          |          |          |               |          |
|----------|---|----------|----------|----------|----------|----------|---------------|----------|
| <b>S</b> | - | <b>M</b> | <b>D</b> | <b>5</b> | <b>3</b> | <b>Z</b> | <b>5,5x25</b> | <b>M</b> |
|----------|---|----------|----------|----------|----------|----------|---------------|----------|

**Screw Fastening**

**Application**  
M: Metall  
C: Composite/Sandwich  
W: Wood  
I: Insulation  
A: Aluminium

**Function**  
S: Speedy function  
D: Self-drilling  
DU: Self-drilling undercut  
DW: Self-drilling wood  
P: Pre-drilling  
T: Treadfast  
DP: Plastic plug pre-mounted screw

**Information about washers**  
0: No washer  
1: Countersunk head  
2: Pressed on flange  
3: Washer 12 mm  
4: Washer 14 mm  
5: Washer 16 mm  
6: Washer 19 mm  
7: Washer 22 mm  
8: Washer 29 mm

**Dimensions**  
Thread Diameter x Length

**Material**  
Z: Galvanized  
C: Duplex coated  
S: Stainless (A2)  
SS: Stainless (A4)  
S-A: A2 with alu  
SS-A: A4 with alu

**Add on**  
PS: Pan head / Stainless  
PS-A: Pan head / Alu  
LS: Long point / Stainless  
LZ: Long point / galvanized  
ZW: Wafer head / galvanized  
GZ: Coarse thread galvanized  
GS: Coarse thread stainless

**Information about the screw point**  
**Self-piercing (S-MS)**  
1: Drilling capacity 2 x 0.4mm – 2 x 1.25 mm

**Self-drilling screw (S-MD / S-CD)**  
1: Drilling capacity 1.0 – 4.0 mm  
3: Drilling capacity 2.1 – 6.0 mm  
5: Drilling capacity 4.6 – 15.0 mm

**Self-tapping screw (S-MP)**  
2: >1.25 mm steel base material  
3: <3.00 mm steel base material and wood base material  
4: >1.25 mm steel base material, in high strength

**Further Information**  
M: Collated  
RAL: Color Code

3

