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# European Technical Assessment

# ETA-16/0739 of 30/03/2021

## General part

| | |
|---|---|
| **Technical Assessment Body issuing the European Technical Assessment** | Instytut Techniki Budowlanej |
| **Trade name of the construction product** | ESDS, EFS, EVFS, ESTS |
| **Product family to which the construction product belongs** | Fastening screws for metal members and sheeting |
| **Manufacturer** | Van Roij Fasteners Europe B.V.<br>Jan Tooropstraat 16<br>5753 DK Deurne, Netherlands |
| **Manufacturing plant(s)** | Van Roij Fasteners Europe B.V. plants |
| **This European Technical Assessment contains** | 136 pages including 131 Annexes which form an integral part of this Assessment |
| **This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of** | European Assessment Document (EAD) 330046-01-0602 “Fastening screws for metal members and sheeting” |
| **This version replaces** | ETA-16/0739 issued on 30/06/2020 |

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## Specific Part

### 1. Technical description of the product

The fastening screws ESDS, EFS, EVFS and ESTS are the self-drilling and self-tapping screws listed in Table 1. The fastening screws are partly supplied with a metallic washer and an EPDM sealing ring. Some screws can be completed with saddle washers ESW. For details see the Annexes 1 to 130.

The fastening screw and the corresponding connections are subject to tension and shear forces.

**Table 1**

| No. | Screw | Material | Annex |
|---|---|---|---|
| 1 | ESDS-0-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 1, 4 |
| 2 | ESDS-0-P 4.8xL | galvanized carbon steel with PREMIUM coating | 2, 5 |
| 3 | ESDS-0-SP 4.8xL | galvanized carbon steel with SUPER PREMIUM coating | 3, 6 |
| 4 | ESDS-0-B 4.8xL | stainless steel (bi-metal) | 7, 8 |
| 5 | ESDS-PH-0-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 9 |
| 6 | ESDS-PH-0-P 4.8xL | galvanized carbon steel with PREMIUM coating | 10 |
| 7 | ESDS-PH-0-B 4.8xL | stainless steel (bi-metal) | 11, 12 |
| 8 | ESDS-PH-0-B 5.5xL | stainless steel (bi-metal) | 13 |
| 9 | ESDS-0-B 6.3xL | stainless steel (bi-metal) | 14 |
| 10 | EFS-2-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 15 |
| 11 | EFS-2-P 4.8xL | galvanized carbon steel with PREMIUM coating | 16 |
| 12 | EFS-2-SP 4.8xL | galvanized carbon steel with SUPER PREMIUM coating | 17 |
| 13 | EFS-2-B 4.8xL | stainless steel (bi-metal) | 18 |
| 14 | EFS-PH-2-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 19 |
| 15 | EFS-PH-2-P 4.8xL | galvanized carbon steel with PREMIUM coating | 20 |
| 16 | ESDS-3-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 21, 24, 27, 30 |
| 17 | ESDS-3-P 4.8xL | galvanized carbon steel with PREMIUM coating | 22, 25, 28, 31 |
| 18 | ESDS-3-SP 4.8xL | galvanized carbon steel with SUPER PREMIUM coating | 23, 26, 29, 32 |
| 19 | ESDS-3-B 4.8xL | stainless steel (bi-metal) | 33, 34, 35, 36 |
| 20 | ESDS-3-B 5.5xL | stainless steel (bi-metal) | 37, 38, 39, 40, 41 |
| 21 | EVFS-3-B 5.5xL | stainless steel (bi-metal) | 42, 43 |
| 22 | ESDS-PH-3-Z 4.8xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 44 |
| 23 | ESDS-PH-3-P 4.8xL | galvanized carbon steel with PREMIUM coating | 45 |
| 24 | ESDS-5-Z 5.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 46, 49, 52, 55 |
| 25 | ESDS-5-P 5.5xL | galvanized carbon steel with PREMIUM coating | 47, 50, 53, 56 |
| 26 | ESDS-5-SP 5.5xL | galvanized carbon steel with SUPER PREMIUM coating | 48, 51, 54, 57 |
| 27 | ESDS-5-B 5.5xL | stainless steel (bi-metal) | 58, 59, 60, 61 |
| 28 | ESDS-PH-5-B 5.5xL | stainless steel (bi-metal) | 62 |
| 29 | ESDS-PH-5-Z 5.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 63 |
| 30 | ESDS-PH-5-P 5.5xL | galvanized carbon steel with PREMIUM coating | 64 |
| 31 | ESDS-6-Z 6.3xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 65, 68, 71 |
| 32 | ESDS-6-P 6.3xL | galvanized carbon steel with PREMIUM coating | 66, 69, 72 |
| 33 | ESDS-6-SP 6.3xL | galvanized carbon steel with SUPER PREMIUM coating | 67, 70, 73 |
| 34 | ESDS-PH-6-B 6.3xL | stainless steel (bi-metal) | 74 |
| 35 | ESDS-8-Z 5.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 75, 78, 81, 84 |
| 36 | ESDS-8-P 5.5xL | galvanized carbon steel with PREMIUM coating | 76, 79, 82, 85 |
| 37 | ESDS-8-SP 5.5xL | galvanized carbon steel with SUPER PREMIUM coating | 77, 80, 83, 86 |
| 38 | ESDS-12-Z 5.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 87, 90, 93, 96 |

**Table 1, cont.**

| | | | |
|---|---|---|---|
| 39 | ESDS-12-P 5.5xL | galvanized carbon steel with PREMIUM coating | 88, 91, 94, 97 |
| 40 | ESDS-12-SP 5.5xL | galvanized carbon steel with SUPER PREMIUM coating | 89, 92, 95, 98 |
| 41 | ESDS-12-B 5.5xL | stainless steel (bi-metal) | 99, 100, 101, 102 |
| 42 | ESDS-20-Z 5.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 103, 106, 109, 112 |
| 43 | ESDS-20-P 5.5xL | galvanized carbon steel with PREMIUM coating | 104, 107, 110, 113 |
| 44 | ESDS-20-SP 5.5xL | galvanized carbon steel with SUPER PREMIUM coating | 105, 108, 111, 114 |
| 45 | ESTS-0A-Z 6.5xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 115, 116, 117, 118 |
| 46 | ESTS-0A-S 6.5xL | galvanized stainless steel | 119, 120, 121, 122 |
| 47 | ESTS-0B-Z 6.3xL | galvanized carbon steel with ≥ 12 µm of zinc coating | 123, 125 |
| 48 | ESTS-0B-P 6.3xL | galvanized carbon steel with PREMIUM coating | 124, 126 |
| 49 | ESTS-WH-0-Z 4.2xL | galvanized carbon steel with ≥ 8 µm of zinc coating | 127 |
| 50 | ESTS-WH-0-P 4.2xL | galvanized carbon steel with PREMIUM coating | 128 |
| 51 | ESDS-WH-2-Z 4.2xL | galvanized carbon steel with ≥ 8 µm of zinc coating | 129 |
| 52 | ESDS-WH-2-P 4.2xL | galvanized carbon steel with PREMIUM coating | 130 |

## 2. Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The fastening screws are intended to be used for fastening steel sheeting to steel, aluminum or timber supporting substructures. For details see the Annexes 1 to 130. The component to be fastened is component I and the supporting structure is component II. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge metal members.

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel.

Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The provisions made in this European Technical Assessment are based on an assumed working life of the fasteners of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

## 3. Performances of the product and references to the methods used for their assessment

### 3.1. Performance of the product

#### 3.1.1 Mechanical resistance and stability (BWR 1)

The characteristic values of the shear resistance of connections and tension resistance of connections with the fasteners are given in Annex 1 to 130. The values were determined by tests according to EAD 330046-01-0602.

The design values shall be determined according to Annex 131 and EAD 330046-01-0602.

For the corrosion protection the rules given in EN 1993-1-3, EN 1993-1-4 and EN 1999-1-4 shall be taken into account. Fastening screw which are made of stainless steel are intended to be used in external environments ≥ C2 corrosion according to the standard EN ISO 12944-2.

### 3.1.2. Safety in case of fire (BWR 2)

The fastening screws are considered to satisfy the requirements of performance class A1 of reaction to fire, in accordance with the provisions of the EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that decision.

### 3.2. Methods used for the assessment

The assessment of products has been made in accordance with the EAD 330046-01-0602.

## 4. Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision 1998/214/EC, amended by 2001/596/EC, of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) No 305/2011).

## 5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 30/03/2021 by Instytut Techniki Budowlanej

Anna Panek, MSc
Deputy Director of ITB

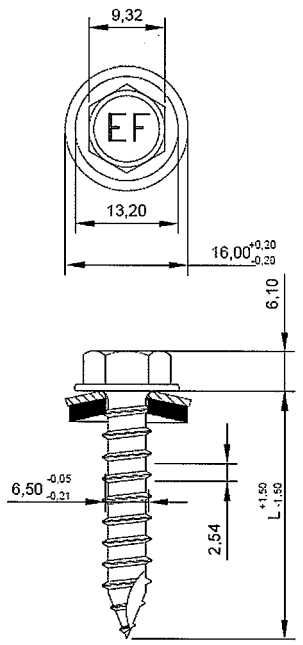
Materials

| | |
|---|---|
| Fastener: | carbon steel – SAE1022, quenched, tempered and coated: galvanized (12 µm) |
| Washer: | Z16 – galvanized carbon steel washer with EPDM ring |
| Component I: | S280GD, S320GD or S350GD – EN 10326 |
| Component II: | S280GD, S320GD or S350GD – EN 10326 or structural wood C24 – EN 14081 |
| Drilling capacity: | - |

Timber substructures

For timber structures performance assessed with:

$M_{y,Rk}$ = 9,66 Nm
$f_{ax,k}$ = 14,538 N/mm² dla $l_{ef} \geq$ 40 mm




| $t_{N,II}$ [mm] | | 0,63 | 0,70 | 0,75 | 0,80 | 0,88 | 1,00 | 1,15 | 1,25 | 1,50 | 2,00 | 3,00 | Wood class ≥ C24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drill Ø | | 3,00 | | 3,50 | | 4,50 | | | | 5,00 | 5,30 | | |
| $M_{t,nom}$ | | 3 Nm | | | | | | | 5 Nm | | | | |
| $V_{R,k}$ [kN] for $t_{N,I}$ [mm] | 0,50 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 |
| | 0,55 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 |
| | 0,60 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,63 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,70 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,75 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,80 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,88 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 1,00 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| $N_{R,k}$ [kN] for $t_{N,I}$ [mm] | 0,50 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,55 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,60 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,63 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,70 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,75 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,80 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,88 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 1,00 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

**Fastening screws for metal members and sheeting**

Self-tapping screws ESTS-0A-Z 6.5xL
with hexagon head and washer Z16

**Annex 115**

of European
Technical Assessment
ETA-16/0739

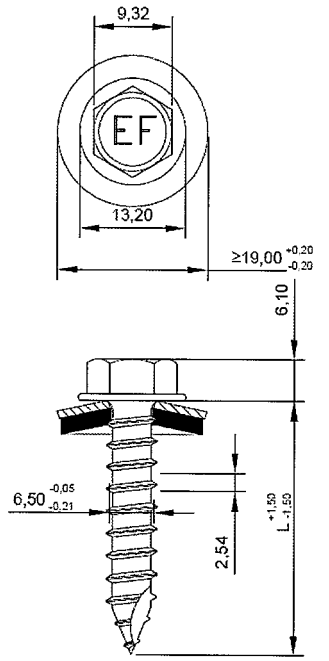
Materials

| | |
|---|---|
| Fastener: | carbon steel – SAE1022, quenched, tempered and coated: galvanized (12 µm) |
| Washer: | Z19 – galvanized carbon steel washer with EPDM ring |
| Component I: | S280GD, S320GD or S350GD – EN 10326 |
| Component II: | S280GD, S320GD or S350GD – EN 10326 or structural wood C24 – EN 14081 |
| Drilling capacity: | - |

Timber substructures

For timber structures performance assessed with:

$M_{y,Rk}$ = 9,66 Nm
$f_{ax,k}$ = 14,538 N/mm$^2$ dla $l_{ef} \geq 40$ mm




| $t_{N,II}$ [mm] | | 0,63 | 0,70 | 0,75 | 0,80 | 0,88 | 1,00 | 1,15 | 1,25 | 1,50 | 2,00 | 3,00 | Wood class ≥ C24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drill Ø | | 3,00 | | 3,50 | | 4,50 | | | | 5,00 | 5,30 | | |
| $M_{t,nom}$ | | 3 Nm | | | | | | | 5 Nm | | | | |
| $V_{R,k}$ [kN] for $t_{N,I}$ [mm] | 0,50 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 |
| | 0,55 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 | 2,52 |
| | 0,60 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,63 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,70 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,75 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,80 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 0,88 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| | 1,00 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 | 3,16 |
| $N_{R,k}$ [kN] for $t_{N,I}$ [mm] | 0,50 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,55 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,60 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,63 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,70 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,75 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,80 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 0,88 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |
| | 1,00 | 0,68 | 0,68 | 0,95 | 0,95 | 0,95 | 1,39 | 1,39 | 1,39 | 1,57 | 2,00 | 2,00 | 1,61 |

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

**Fastening screws for metal members and sheeting**

Self-tapping screws ESTS-0A-Z 6.5xL
with hexagon head and washer Z19

**Annex 117**

of European
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