ENGINEERING SPECIFICATION

BMWD Range

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ENGINEERING SPECIFICATION: BMWD Range

0.0 – Contents:

NOTE: Readers should always check the Evolution Fasteners (UK) Ltd website[1] for the latest version of this document.

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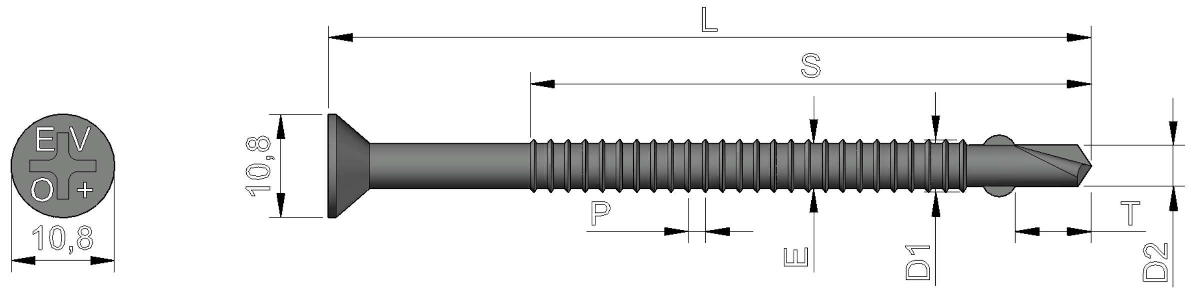
[1] Latest versions can be found at http://www.evolutionfasteners.co.uk,

1.0 – Dimensional and metrological properties:



<table>
<tr><th colspan="8">Table 01: Dimensional properties inc. tolerances (in mm)</th></tr>
<tr><th>SKU[2]</th><th>L</th><th>S</th><th>T</th><th>P</th><th>D1</th><th>D2</th><th>E</th></tr>
<tr><th colspan="8">TEK® 3 Products</th></tr>
<tr><td>BMWD4.8-38-3</td><td>38.0 ± 1.0</td><td rowspan="4">FULL</td><td>6.20 – 7.70</td><td rowspan="6">1.81 (14 TPI)</td><td>3.43 – 3.58</td><td>3.85 – 4.00</td><td>4.62 – 4.80</td></tr>
<tr><td>BMWD5.5-50-3</td><td>50.0 ± 1.0</td><td rowspan="5">7.50 – 9.00</td><td rowspan="5">3.99 – 4.17</td><td rowspan="5">4.55 – 4.70</td><td rowspan="5">5.26 – 5.46</td></tr>
<tr><td>BMWD5.5-62-3</td><td>62.0 ± 1.0</td></tr>
<tr><td>BMWD5.5-80-3</td><td>80.0 ± 1.5</td></tr>
<tr><td>BMWD5.5-100-3</td><td>100.0 ± 1.5</td><td rowspan="2">75.0 ± 1.5</td></tr>
<tr><td>BMWD5.5-120-3</td><td>120.0 ± 2.0</td></tr>
<tr><th colspan="8">TEK® 5 Products</th></tr>
<tr><td>BMWD5.5-65-5</td><td>65.0 ± 1.0</td><td rowspan="2">FULL</td><td rowspan="4">14.50 - 15.50</td><td rowspan="4">1.06 (24 TPI)</td><td rowspan="4">4.70 - 4.75</td><td rowspan="4">4.80 – 5.00</td><td rowspan="4">5.31 – 5.49</td></tr>
<tr><td>BMWD5.5-85-5</td><td>85.0 ± 1.5</td></tr>
<tr><td>BMWD5.5-110-5</td><td>110.0 ± 1.5</td><td rowspan="2">75.0 ± 1.5</td></tr>
<tr><td>BMWD5.5-135-5</td><td>135.0 ± 2.0</td></tr>
</table>

[2] SKU = Stock Keeping Unit (synonymous with “part number”).

2.0 – Standard product details:

Table 02: Product Details	
Designed for/ purpose:	Fastening structural timbers to steel or aluminium[3] structural sections.
Head style and drive:	90˚ Countersunk w/ Phillips No. 2 or 3 female recess.
Thread form:	TEK® 3 SKUs = Coarse (1.80mm pitch), TEK® 5 SKUs = Fine (1.06mm pitch).
Material type and grade:	Bi-Metal™ type construction: Drilling tip = SAE C1022 carbon steel, brazed to, Thread & head = AISI 304[4] austenitic stainless steel.
Coating and corrosion resistance:	1. ≥ 5µm electroplated zinc (for protection of carbon steel drilling tip during transportation and storage). 2. ≥ 2,000 Hour corrosion resistance (when tested in 5% NaCl accelerated corrosion test as per BS EN ISO 9227). 3. For use in atmospheric corrosivity categories of C3, C2 and C1 as per BS EN ISO 12994-2 and BS EN ISO 9223.
Washer details[5]:	None.

3.0 - Installation instructions[6]:

NOTE: Failure to abide by these instructions may void any warranty provided by Evolution Fasteners (UK) Ltd. This document does not alleviate the user, designer or any other party from their respective obligations under the terms of the Warranty[7]. **The use of impact tooling voids the Warranty.**

1. Clear installation area of dirt and debris and ensure that there are no other contaminating substances (i.e. oil, grease, etc),

2. Using a non-impacting TEK screwdriver (such as Makita FS2500), insert the screw into the fixture and substrate material perpendicularly (± 5˚ from the normal) using not greater than 1,500 RPM and a steady pressure on the tooling only (do not force the tool, allow the screw to cut),

3. Stop inserting the screw once the underside of the flange makes contact with the topside of the fixture material for non-washered screws. For washered screws continue inserting until the compression disc of the washer changes from convex to flat. There should be no torque applied to the fasteners post-installation.

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[3] The data presented in the document relates only to common steel grades in the UK, if you require information for mechanical performance in aluminium alloys, please contact the Evolution Technical Department,
[4] Also known as A2-70 as per BS EN ISO 3506-1 or EN 1.4301 as per BS EN 10088-3,
[5] Only relates to products prefixed with BMBW,
[6] Video instructions available on our YouTube™ channel (Evolution Technical Services and Laboratory),
[7] For further information, refer to the Evolution Product Warranty document hosted on our website.

4.0 – General mechanical properties of the screws:

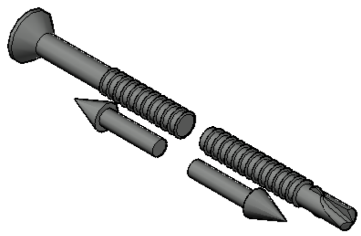
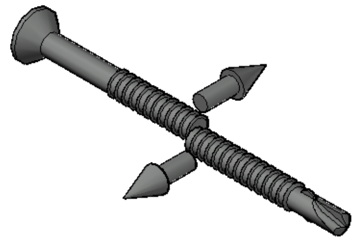
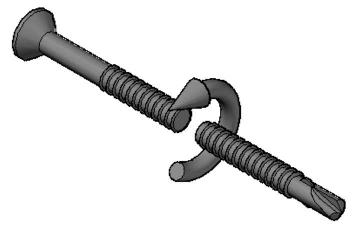
Mechanical Properties of Screws		
		
Tensile Capacity	**Shear Capacity**	**Torque Capacity**

Table 03: Mechanical Properties for Bi-Metal™ (A2-70) Stainless Steel Screws[8]					
Parameter	**Symbol**	**Unit**	**Nominal Diameter/ TEK® Point**		
			4.8mm TEK® 3	**5.5mm TEK® 3**	**5.5mm TEK® 5**
Material yield strength[9]	f_y	N/mm²		450	
Ultimate tensile strength[10]	R_m	N/mm²		700	
Maximum force at elastic limit[10]	F_{eH}	N	4,150	5,620	7,470
Ultimate force at plastic limit[10]	F_m	N	6,460	8,750	11,630
Cross-sectional area	S_0	mm²	9.24	12.50	16.62
Young's modulus of elasticity	E	N/mm²		193,000	
Elastic section modulus	W_{eL}	mm³	5.36	6.14	9.56
Bending moment capacity	$M_{c,Rd}$	Nm	1.92	2.21	3.44
Lateral-torsional buckling resistance	$M_{b,Rd}$	Nm	0.83	0.95	1.48
Polar moment of inertia	J	mm⁴	21.63	24.87	43.93
Modulus of rigidity/ Shear modulus[11]	G	N/mm²		74,000	
Ultimate force at shear failure[12]	V_m	N	4,560	5,250	6,980
Ultimate torsional strength[13]	τ_m	Nm	6.06	6.96	7.67

[8] $X_{st,m} = \left(\left(\sum X_{st,m} / X_n\right) - 2 \cdot \sigma\right)$, rounded down to nearest 10 N,

[9] Derived from empirical testing performed to BS EN ISO 6892-1 (for the purposes of this document, $f_y = R_{eH}$),

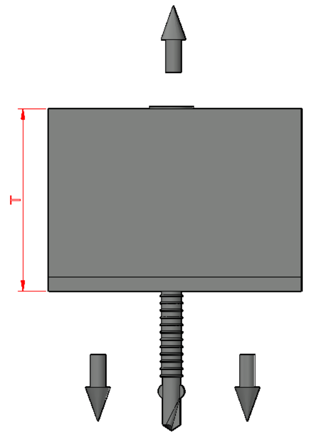
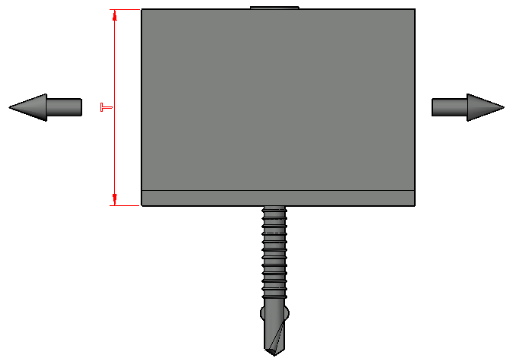
[10] Derived from empirical testing performed to BS EN ISO 6892-1,

[11] As specified in ASTM A240/ A240M,

[12] Derived from empirical testing performed to MIL-STD-1312,

[13] Derived from empirical testing performed to BS EN ISO 10666.

5.0 – Mechanical performance of the screws in various substrates:

Mechanical Properties of Substrate	
	
Withdrawal Resistance	**Lap-shearing Resistance**

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IMPORTANT NOTICE:

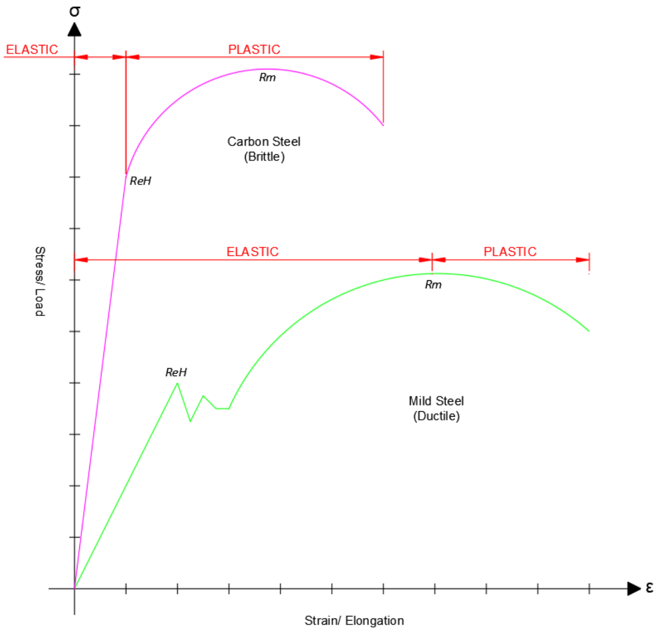
In the following tables, there are two values supplied for each grade of steel at a given thickness, *t*, these values refer to:

Non-bracketed values	=	Load where the substrate reaches upper yield strength,
[Square-bracketed] values	=	Load where the substrate reaches ultimate tensile strength,
"Yield"	=	Load where the fastener reaches upper yield strength (see table 03),
"Ultimate"	=	Load where the fastener reaches ultimate tensile strength (see table 03).

It is recommended by Evolution Fasteners (UK) Ltd that designers ensure that the screws remain in their elastic phase and as such limit themselves to F_{eH} as per Table 03.

Users of this document should be aware that they have to consider the fact that the mechanical properties of the screws and the substrate they are being used in are very different. An example stress/ strain graph is included to the side (indicative use only) to illustrate typical stress/ strain patterns in various steel types.

Carbon steel is generally more brittle and higher tensile strength than either mild or austenitic stainless steels: which are more ductile and lower tensile strength.



5.1 - Hot-rolled mild structural steel (as per BS EN 10025-1):

Table 04: Characteristic withdrawal resistance[14,15] of TEK® 3 products from hot-rolled mild structural steels[16] (in Newtons)							
Grade	**Substrate thickness, *t***						
	1.2mm	**1.5mm**	**2.0mm**	**2.5mm**	**3.0mm**	**4.0mm**	**5.0mm**
S235JR	970 [1,490]	1,220 [1,870]	1,620 [2,490]	2,030 [3,120]	2,440 [3,740]	3,250 [4,990]	4,070 [6,240]
S275JR	1,140 [1,700]	1,430 [2,130]	1,900 [2,840]	2,380 [3,550]	2,860 [4,260]	3,810 [5,680]	Yield[17] [7,100]
S355JR	1,470 [1,950]	1,840 [2,440]	2,460 [3,250]	3,070 [4,070]	3,690 [4,880]	Yield[17] [6,510]	Yield[17] [8,140]
S450J0	1,780 [2,280]	2,230 [2,860]	2,980 [3,810]	3,720 [4,760]	Yield[17] [5,720]	Yield[17] [7,620]	Yield[17] [9,530]
E295	1,220 [2,030]	1,530 [2,540]	2,040 [3,390]	2,550 [4,240]	3,060 [5,090]	4,090 [6,790]	Yield[17] [8,490]
E335	1,390 [2,450]	1,740 [3,060]	2,320 [4,090]	2,900 [5,110]	3,480 [6,130]	Yield[17] [8,180]	Yield[17] [Ultimate[18]]
E360	1,490 [2,870]	1,870 [3,580]	2,490 [4,780]	3,120 [5,980]	3,740 [7,170]	Yield[17] [9,560]	Yield[17] [Ultimate[19]]

[CONTINUED ON NEXT PAGE]

[14] Values without brackets refer to characteristic value at R_{eH} of substrate and values in [brackets] refer to characteristic value at R_m of substrate (tested in accordance with BS EN ISO 6892-1), rounded down to nearest 10 N,
[15] Derived from empirical tests as per BS EN 14566: 2008 & A1: 2012,
[16] Conforming to BS EN 10025-1,
[17] Fastener reaches upper yield strength failure in tension (see Table 03),
[18] Fastener reaches ultimate tensile failure (see Table 03).
[19] Fastener reaches ultimate tensile failure (see Table 03).

Table 05: Characteristic lap-shearing resistance[20,21] of TEK® 3 products from hot-rolled mild structural steels[16] (in Newtons)							
Grade	Substrate thickness, *t*						
	1.2mm	1.5mm	2.0mm	2.5mm	3.0mm	4.0mm	5.0mm
S235JR	580 [890]	730 [1,120]	970 [1,490]	1,220 [1,870]	1,460 [2,240]	1,950 [2,990]	2,440 [3,740]
S275JR	680 [1,020]	850 [1,270]	1,140 [1,700]	1,430 [2,130]	1,710 [2,550]	2,280 [3,400]	Yield[22] [4,260]
S355JR	880 [1,170]	1,100 [1,460]	1,470 [1,950]	1,840 [2,440]	2,210 [2,930]	Yield[22] [3,910]	Yield[22] [4,880]
S450J0	1,070 [1,370]	1,340 [1,710]	1,780 [2,280]	2,230 [2,860]	Yield[22] [3,430]	Yield[22] [4,570]	Yield[22] [5,720]
E295	730 [1,220]	920 [1,520]	1,220 [2,030]	1,530 [2,540]	1,840 [3,050]	2,450 [4,070]	Yield[22] [5,090]
E335	830 [1,470]	1,040 [1,840]	1,390 [2,450]	1,740 [3,060]	2,090 [3,680]	Yield[22] [4,900]	Yield[22] [Ultimate[23]]
E360	890 [1,720]	1,120 [2,150]	1,490 [2,870]	1,870 [3,580]	2,240 [4,300]	Yield[22] [5,740]	Yield[22] [Ultimate[23]]

Table 06: Characteristic withdrawal resistance[14,15] of TEK® 5 products from hot-rolled mild structural steels[16] (in Newtons)					
Grade	Substrate thickness, *t*				
	4.0mm	5.0mm	8.0mm	10.0mm	12.5mm
S235JR	2,220 [3,410]	2,780 [4,260]	Yield[17] [6,820]	Yield[17] [8,520]	Yield[17] [Ultimate[18]]
S275JR	2,600 [3,880]	3,250 [4,850]	Yield[17] [7,760]	Yield[17] [9,700]	Yield[17] [Ultimate[18]]
S355JR	3,360 [4,450]	4,200 [5,560]	Yield[17] [8,900]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]
S450J0	4,070 [5,200]	Yield[17] [6,510]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]
E295	2,790 [4,640]	3,490 [5,800]	Yield[17] [9,280]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]
E335	3,170 [5,580]	3,960 [6,980]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]
E360	3,410 [6,530]	4,260 [8,160]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]	Yield[17] [Ultimate[18]]

[20] Values without brackets refer to characteristic value at R_{eH} of substrate and values in [brackets] refer to characteristic value at R_m of substrate (tested in accordance with BS EN ISO 6892-1), rounded down to nearest 10 N,

[21] Derived from empirical tests as per EAD No. 330046-01-0602 (as published by EOTA – European Organisation for Technical Approvals),

[22] Fastener reaches upper yield strength failure in shear (see Table 03),

[23] Fastener reaches ultimate shear failure (see Table 03).

Table 07: Characteristic lap-shearing resistance[19,20] of TEK® 5 products from hot-rolled mild structural steels[16] (in Newtons)					
Grade	Substrate thickness, *t*				
	4.0mm	5.0mm	8.0mm	10.0mm	12.5mm
S235JR	1,330 [2,040]	1,660 [2,550]	Yield[22] [4,090]	Yield[22] [5,110]	Yield[22] [Ultimate[23]]
S275JR	1,560 [2,330]	1,950 [2,910]	Yield[22] [4,660]	Yield[22] [5,825]	Yield[22] [Ultimate[23]]
S355JR	2,010 [2,670]	2,520 [3,330]	Yield[22] [5,340]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]
S450J0	2,440 [3,120]	Yield[22] [3,900]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]
E295	1,670 [2,780]	2,090 [3,480]	Yield[22] [5,560]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]
E335	1,900 [3,350]	2,380 [4,190]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]
E360	2,040 [3,920]	2,550 [4,900]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]	Yield[22] [Ultimate[23]]

5.2 - Cold-rolled mild structural steel (as per BS EN 10346):

Table 08: Characteristic withdrawal resistance[14,15] of TEK® 3 products from cold-rolled mild structural steels[24] (in Newtons)							
Grade	Substrate thickness, *t*						
	1.2mm	1.5mm	2.0mm	2.5mm	3.0mm	4.0mm	5.0mm
DX52D	910 [1,435]	1,140 [1,790]	1,520 [2,390]	1,900 [2,990]	2,280 [3,580]	3,050 [4,780]	3,810 [5,980]
DX54D	700 [1,260]	880 [1,580]	1,170 [2,110]	1,470 [2,640]	1,760 [3,170]	2,350 [4,220]	2,940 [5,280]
DX56D	620 [1,240]	780 [1,560]	1,040 [2,080]	1,300 [2,600]	1,560 [3,120]	2,080 [4,160]	2,600 [5,200]
S220GD	910 [1,250]	1,140 [1,570]	1,520 [2,090]	1,900 [2,610]	2,280 [3,130]	3,050 [4,170]	3,810 [5,210]
S280GD	1,160 [1,490]	1,450 [1,870]	1,940 [2,490]	2,420 [3,120]	2,910 [3,740]	2,880 [4,990]	Yield[17] [6,240]
S320GD	1,330 [1,620]	1,660 [2,020]	2,210 [2,700]	2,770 [3,380]	3,320 [4,050]	Yield[17] [5,400]	Yield[17] [6,760]
S350GD	1,450 [1,740]	1,820 [2,180]	2,420 [2,910]	3,030 [3,640]	3,640 [4,360]	Yield[17] [5,820]	Yield[17] [7,280]

[24] Conforming to BS EN 10346.

Table 09: Characteristic lap-shearing resistance[19,20] of TEK® 3 products from cold-rolled mild structural steels[23] (in Newtons)							
Grade	**Substrate thickness, *t***						
	1.2mm	**1.5mm**	**2.0mm**	**2.5mm**	**3.0mm**	**4.0mm**	**5.0mm**
DX52D	540 [860]	680 [1,070]	910 [1,430]	1,140 [1,790]	1,370 [2,150]	1,830 [2,870]	2,280 [3,580]
DX54D	420 [760]	530 [950]	700 [1,260]	880 [1,580]	1,060 [1,900]	1,410 [2,530]	1,760 [3,170]
DX56D	370 [740]	460 [930]	620 [1,240]	780 [1,560]	930 [1,870]	1,240 [2,490]	1,560 [3,120]
S220GD	540 [750]	680 [940]	910 [1,250]	1,140 [1,570]	1,370 [1,880]	1,830 [2,500]	2,280 [3,130]
S280GD	690 [890]	870 [1,120]	1,160 [1,490]	1,450 [1,870]	1,740 [2,240]	2,330 [2,990]	Yield[22] [3,740]
S320GD	790 [970]	990 [1,210]	1,330 [1,620]	1,660 [2,020]	1,990 [2,430]	Yield[22] [3,240]	Yield[22] [4,050]
S350GD	870 [1,040]	1,090 [1,310]	1,450 [1,740]	1,820 [2,180]	2,180 [2,620]	Yield[22] [3,490]	Yield[22] [4,360]

NOTE: TEK 5 products are not used in cold-rolled grades of steel as cold rolling generally does not occur above thicknesses of 5.0mm.

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5.3 – Extruded aluminium (as per BS EN 485-2):

Table 10: Characteristic withdrawal resistance[14,15] of TEK® 3 products from extruded aluminium[25] (in Newtons)							
Grade	**Substrate thickness, *t***						
	1.2mm	**1.5mm**	**2.0mm**	**2.5mm**	**3.0mm**	**4.0mm**	**5.0mm**
6061 – T6	990 [1,200]	1,240 [1,500]	1,660 [2,010]	2,080 [2,510]	2,490 [3,010]	3,320 [4,020]	4,160 [5,020]
6063 – T6	870 [1,010]	1,090 [1,270]	1,450 [1,690]	1,820 [2,120]	2,180 [2,540]	2,910 [3,390]	3,640 [4,240]
6082 – T6	1,290 [1,410]	1,610 [1,760]	2,140 [2,350]	2,680 [2,940]	3,220 [3,530]	Yield[17] [4,710]	Yield[17] [5,890]
6262 – T9	1,370 [1,490]	1,710 [1,870]	2,280 [2,490]	2,860 [3,120]	3,430 [3,740]	Yield[17] [4,990]	Yield[17] [6,240]

Table 11: Characteristic lap-shearing resistance[19,20] of TEK® 3 products from hot-rolled mild structural steels[24] (in Newtons)							
Grade & Temper	**Substrate thickness, *t***						
	1.2mm	**1.5mm**	**2.0mm**	**2.5mm**	**3.0mm**	**4.0mm**	**5.0mm**
6061 – T6	590 [720]	740 [900]	990 [1,200]	1,240 [1,500]	1,490 [1,810]	1,990 [2,410]	2,490 [3,010]
6063 – T6	520 [610]	650 [760]	870 [1,010]	1,090 [1,270]	1,310 [1,520]	1,740 [2,030]	2,180 [2,540]
6082 – T6	770 [840]	960 [1,060]	1,290 [1,410]	1,610 [1,760]	1,930 [2,120]	Yield[22] [2,820]	Yield[22] [3,530]
6262 – T9	820 [890]	1,030 [1,120]	1,370 [1,490]	1,710 [1,870]	2,050 [2,240]	Yield[22] [2,990]	Yield[22] [3,740]

NOTE: Due to the lack of commercially available extruded aluminium sections of grades commonly used in the UK construction industry, we are unable to provide enough results for TEK 5 products. However, should anyone have such thicknesses of aluminium (or different grades of aluminium to that which is shown in this document) in their system, please contact the Evolution Technical Department to arrange bespoke tests in our laboratory

[25] Conforming to BS EN 485-2: 2016 & A1: 2018.

6.0 – **Normative references and notes**:

IMPORTANT NOTICE 01:

All values provided in this document are **characteristic values**, specifically meaning that they are expressed as the mean ultimate value (from a dataset generated from the results of empirical testing in our UKAS accredited testing laboratory) minus two standard deviations. This is in-line with standard practice using Central Limit Theorem in accordance with UKAS Document M3003 "*The Expression of Uncertainty and Confidence in Measurement*" (3rd Edition).

Individual test results are validated using the Z-score method in ISO/IEC Guide No. 43-1 "Proficiency testing by interlaboratory comparisons" and the EN ratio method in UKAS Document LAB 46 "*UKAS Policy for Participation in Measurement Audits and Interlaboratory Comparisons*" (3rd Edition).

As such **no values provided in this datasheet have been treated with a factor of safety**. It is the responsibility of the user of this document to use a factor of safety appropriate to their designs.

From our experience[26], designers have their own favoured approach. Some prefer to use a conservative approach as (1) below, others prefer a method used in Eurocodes[27] as per (2) below:

(1) $y_m = 3.0$

(2) $\gamma_m = (\gamma_{gk} \cdot \gamma_{qk}) = (1.35 \times 1.50) = 2.025$

IMPORTANT NOTICE 02:

Applicable DoPs (Declaration of Performance) and ETAs (European Technical Assessments) for Evolution Fasteners products can be found on our website (www.evolutionfasteners.co.uk). Please note that not all products fall under the mandatory CE marking requirements pursuant to European Regulation No. 305/2011 (commonly referred to as the Construction Products Regulations).

Certificates of Conformance are available upon request from the Evolution Technical Department and follow the form of F2.1 "Fastener Inspection Documents" pursuant to the requirements of BS EN ISO 16228: 2018 (and subsequently BS EN ISO 3269: 2001).

For further information or to discuss details relating to the information published in this document, please contact the Evolution Technical Department.

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[26] This is not an instruction nor does it alleviate the responsibilities of the reader, designer or any other third party,
[27] BS EN 1993-1-1 (Eurocode 3).

NORMATIVE REFERENCES:

BS EN ISO 9001: 2015	*"Quality management systems. Requirements.",*
BS EN ISO/IEC 17025: 2017	*"General requirements for the competence of testing and calibration laboratories.",*
BS EN ISO 9227: 2017	*"Corrosion tests in artificial atmospheres. Salt spray tests.",*
BS EN ISO 12944-2: 2017	*"Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Classification of environments.",*
BS EN ISO 9223: 2012	*"Corrosion of metals and alloys. Corrosivity of atmospheres. Classification, determination and estimation.",*
BS EN 3506-1: 2009	*"Mechanical properties of corrosion-resistant stainless-steel fasteners. Bolts, screws and studs.",*
BS EN 10088-3: 2014	*"Stainless steels. Technical delivery conditions for semi-finished products, bards, rods, wires, sections and bright products of corrosion resisting steels for general purposes.",*
BS EN ISO 6892-1: 2016[NC]	*"Metallic materials. Tensile testing. Method of test at room temperature.",*
BS ISO/IEC Guide 43-1: 1997	*"Proficiency testing by interlaboratory comparisons. Part 1: Development and operation of proficiency testing schemes.",*
UKAS Document M3003	*"The expression of uncertainty and confidence in measurement. 3rd Edition.". Published by the United Kingdom Accreditation Service on behalf of HM Government's Department for Business, Innovation and Skills,*
MIL-STD-1312-13[NC]	*"Military Standard: Fastener test methods (method 13), double shear test.". Published by the United States Department of Defence,*
BS EN ISO 10666: 1999[NC]	*"Drilling screws with tapping screw threads. Mechanical and functional properties.",*
BS EN 10025-1: 2004	*"Hot rolled products of structural steels. General technical delivery conditions.",*
BS EN 14566: 2008 & A1: 2009	*"Mechanical fasteners for gypsum plasterboard systems. Definitions, requirements and test methods.",*
EAD 330046-01-0602	*"European Assessment Document: Fastening screws for metal members and sheeting.". Published by the European Organisation for Technical Assessments,*

BS EN 10346: 2015	*"Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions.",*
BS EN 485-2: 2016 & A1: 2018	*"Aluminium and aluminium alloys. Sheet, strip and plate. Mechanical properties.",*
BS EN 1993-1-1: 2005 & A1: 2014	*"Eurocode 3: Design of steel structures. General rules and rules for buildings.",*
UKAS Document LAB 46	*"UKAS policy for participation in measurement audits and interlaboratory comparisons. 3rd Edition.". Published by the United Kingdom Accreditation Service on behalf of HM Government's Department for Business, Innovation and Skills,*
BS EN ISO 16228: 2018	*"Fasteners. Types of inspection documents.",*
BS EN ISO 3269: 2001	*"Fasteners. Acceptance inspection.".*

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It is the recommendation of Evolution Fasteners (UK) Ltd that any third party seeking to use our products should enquire directly with the Evolution Technical Department either by e-mail to technical@evolutionfasteners.co.uk or phone call to +44 (0) 141 647 7100. Written enquires can be made to:

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