



## Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-22/6345 of 10/11/2022
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	R-OCR-55/63, R-ONR-55/63, R-ORR-63/70, R-OTR-63/70
Product family to which the construction product belongs:	Area Code 33, Fastening screws for sandwich panels
Manufacturer:	RAWLPLUG S.A. Kwidzyńska 6 51-416 Wrocław, Poland
Manufacturing plant(s):	Manufacturing Plant No. 2 Manufacturing Plant No. 23 Manufacturing Plant No. 24
This UK Technical Assessment contains:	11 pages including 6 annexes which form an integral part of this assessment
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330047-01-0602 <i>Fastening screws for sandwich panels</i>

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## **1. Technical description of the product**

The fastening screws for sandwich panels R-OCR-55/63, R-ONR-55/63, R-ORR-63/70 and R-OTR-63/70 are a self-drilling and self-tapping screws listed in Table 1. Screws are completed with aluminum washer and an EPDM sealing ring. For details see the Annexes 2 to 5.

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

**Table 1**

<b>No.</b>	<b>Screw</b>	<b>Material</b>	<b>Annex</b>
1	R-OCR-55/63		2
2	R-ONR-55/63	galvanized carbon steel with	3
3	R-ORR-63/70	additional zinc flake coating	4
4	R-OTR-63/70		5

## **2 Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)**

The fastening screws for sandwich panels are intended to be used for fastening sandwich panels to steel or timber substructures. For details see the Annexes 2 to 5. The component to be fastened is component I and the supporting structure is component II. The sandwich panel can either be used as wall or roof cladding or as load bearing wall and roof element.

Fastening screws for sandwich panels are intended to be used in internal environments with C1 corrosion according to EN ISO 12944-2.

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

Example of execution of a connection are given in Annex 1.

The provisions made in this UK 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 Performance of the product and references to the methods used for its assessment**

### **3.1 Mechanical resistance and stability (BWR 1)**

The characteristic values of the shear resistance of connections and tension resistance of connections with the fasteners as well as the maximum head displacement are given in Annex 2 to 5. The values were determined by tests according to EAD 330047-01-0602.

The design values shall be determined according to Annex 6 and EAD 330047-01-0602.

For the corrosion protection the rules given in EN 1993-1-3 shall be taken into account.

### **3.2 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.

### **3.3 Health, hygiene and the environment (BWR 3)**

Not relevant.

### **3.4 Safety and accessibility in use (BWR 4)**

Not relevant.

### **3.5 Protection against noise (BWR 5)**

Not relevant.

### **3.6 Energy economy and heat retention (BWR 6)**

Not relevant.

### **3.7 Sustainable use of natural resources (BWR 7)**

No performance assessed.

### **3.8 Methods used for assessment**

The assessment of the products has been made in accordance with UKAD 330047-01-0602.

## **4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied**

### **4.1 System of assessment and verification of constancy of performance**

According to UKAD No. 330047-01-0602 and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011 as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 2+ applies.

## **5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

### **5.1 UKCA marking for the product/ system must contain the following information:**

- Identification number of the Approved Body
- Name/address of the manufacturer of the product/ system
- Marking with intention of clarification of intended use
- Date of marking
- Number of certificate of constancy of performance
- UKTA number.

On behalf of the British Board of Agrément	
	
Date of Issue: 10 November 2022	<b>Hardy Giesler</b> Chief Executive Officer

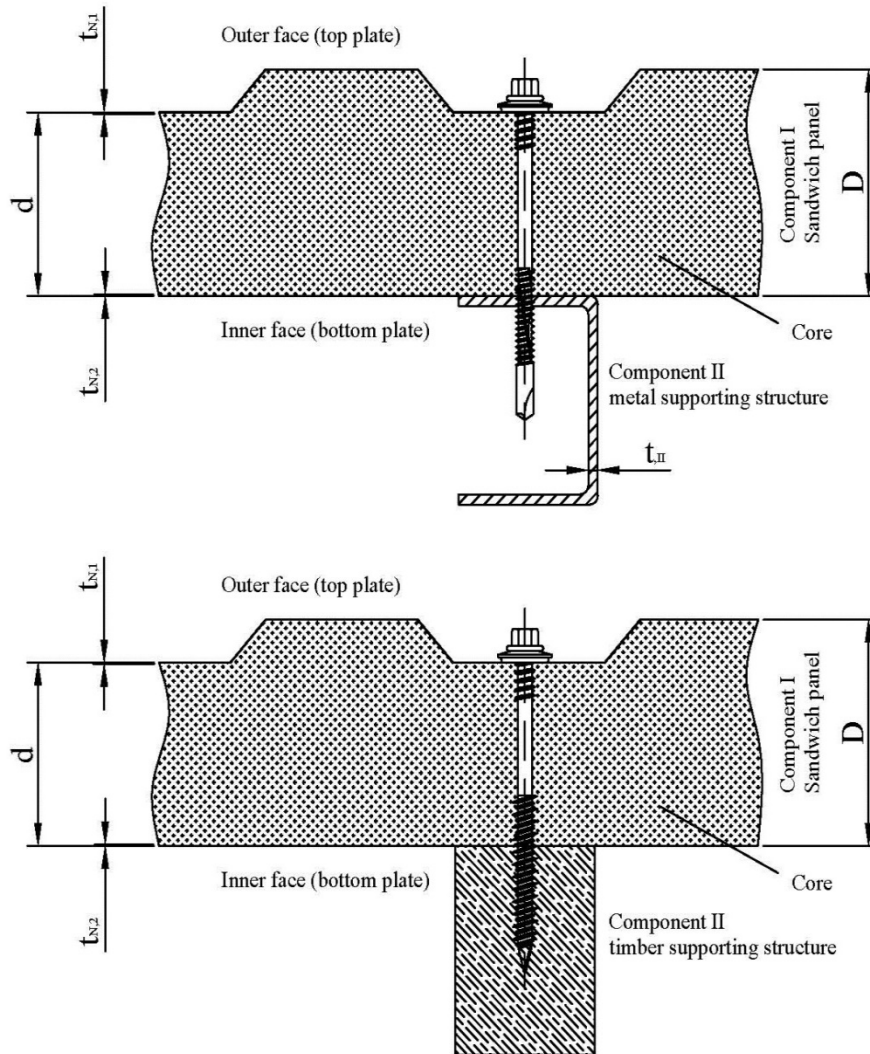


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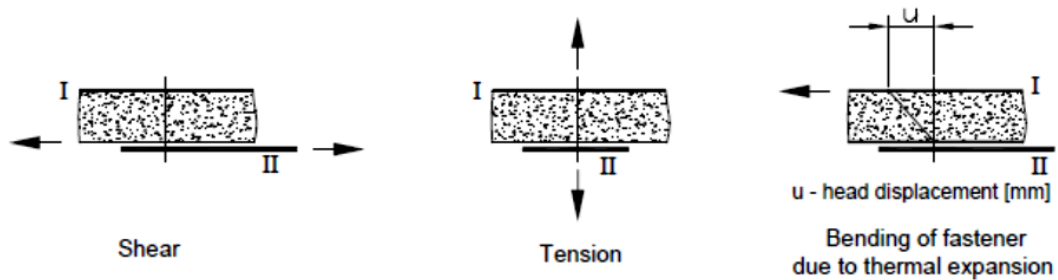
**ANNEXES**

This annex applies to the product described in the main body of the UK Technical Assessment.

**Example of execution of a connection**



**Loading conditions**

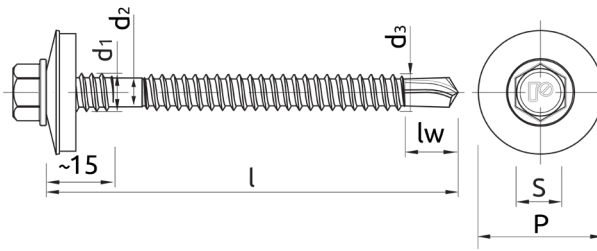


**Fastening screws for sandwich panels**

**Product description**

Example of execution of a connection. Loading conditions.

**Annex 1**



**Materials**

Fastener: carbon steel – SAE1022 quenched, tempered and galvanized with additional zinc flake coating

Washer: metallic washer made of aluminium with EPDM sealing ring

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1

S280GD, S320GD or S350GD – EN 10346

Drilling capacity:  $\Sigma(t_{N2} + t_{II}) \leq 6 \text{ mm}$

**Timber substructures**

no performance assessed

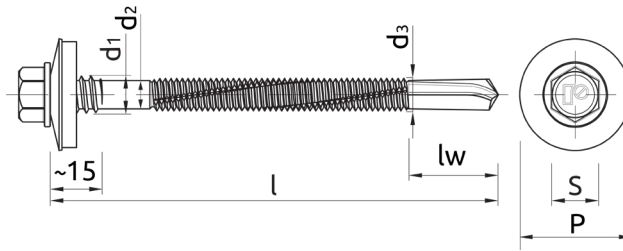
$t_{N,II}$ [mm]		1.50	2.00	2.50	3.00	4.00	$\geq 5.00$
$N_{R,k}$ [kN] for $t_{N,1}$ [mm]	0.40	1.86	1.86	1.86	1.86	1.86	1.86
	0.50	2.13	2.13	2.13	2.13	3.19	3.19
	0.55	2.13	2.13	2.13	2.13	3.19	3.19
	0.63	2.13	2.13	2.13	2.13	4.04	4.04
	0.75	2.13	2.13	2.13	2.13	4.15	4.15
	0.88	2.13	2.13	2.13	2.13	4.15	4.15
	1.00	2.13	2.13	2.13	2.13	4.15	4.15
$V_{R,k}$ [kN] for $t_{N,2}$ [mm]	0.40	0.86	0.86	0.86	0.86	0.86	0.86
	0.50	1.38	1.38	1.38	1.38	1.38	1.38
	0.55	1.38	1.38	1.38	1.38	1.38	1.38
	0.63	1.80	1.80	1.80	1.80	1.80	1.80
	0.75	2.23	2.23	2.23	2.23	2.23	2.23
	0.88	2.23	2.23	2.23	2.23	2.23	2.23
	1.00	2.23	2.23	2.23	2.23	2.23	2.23
max. head displacement "u" depending on sandwich panel thickness [mm]	30	12	12	12	12	1.5	1.5
	40	12	12	12	12	1.5	1.5
	50	12	12	12	12	1.5	1.5
	60	18	18	18	18	4	4
	70	18	18	18	18	4	4
	80	18	18	18	18	4	4
	90	23	23	23	23	10	10
	100	23	23	23	23	10	10
	110	23	23	23	23	10	10
	120	23	23	23	23	10	10
	130	23	23	23	23	10	10
$\geq 140$	23	23	23	23	10	10	

**Fastening screws for sandwich panels**

**Product description**

Self-drilling screws R-OCR-55/63 with hexagon head and aluminium washer  $\geq \text{Ø } 19$

**Annex 2**



**Materials**

Fastener: carbon steel – SAE1022 quenched, tempered and galvanized with additional zinc flake coating

Washer: metallic washer made of aluminium with EPDM sealing ring

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1

S280GD, S320GD or S350GD – EN 10346

Drilling capacity:  $\Sigma(t_{N2} + t_{II}) \leq 12 \text{ mm}$

**Timber substructures**

no performance assessed

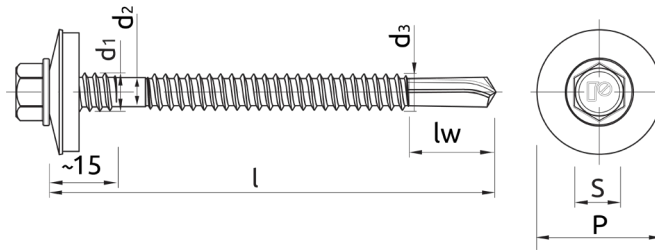
$t_{N,II}$ [mm]		4.00	5.00	6.00	7.00	$\geq 8.00$
N <sub>R,k</sub> [kN] for t <sub>N,1</sub> [mm]	0.40	1.86	1.86	1.86	1.86	1.86
	0.50	3.19	3.19	3.19	3.19	3.19
	0.55	3.19	3.19	3.19	3.19	3.19
	0.63	4.04	4.04	4.04	4.04	4.04
	0.75	4.15	4.15	4.15	4.15	4.15
	0.88	4.15	4.15	4.15	4.15	4.15
	1.00	4.15	4.15	4.15	4.15	4.15
	V <sub>R,k</sub> [kN] for t <sub>N,2</sub> [mm]	0.40	0.86	0.86	0.86	0.86
0.50		1.38	1.38	1.38	1.38	1.38
0.55		1.38	1.38	1.38	1.38	1.38
0.63		1.80	1.80	1.80	1.80	1.80
0.75		2.23	2.23	2.23	2.23	2.23
0.88		2.23	2.23	2.23	2.23	2.23
1.00		2.23	2.23	2.23	2.23	2.23
max. head displacement "u" depending on sandwich panel thickness [mm]		30	1.5	1.5	1.5	1.5
	40	1.5	1.5	1.5	1.5	1.5
	50	1.5	1.5	1.5	1.5	1.5
	60	4	4	4	4	4
	70	4	4	4	4	4
	80	4	4	4	4	4
	90	10	10	10	10	10
	100	10	10	10	10	10
	110	10	10	10	10	10
	120	10	10	10	10	10
	130	10	10	10	10	10
$\geq 140$	10	10	10	10	10	

**Fastening screws for sandwich panels**

**Product description**

Self-drilling screws R-ONR-55/63 with hexagon head and aluminium washer  $\geq \text{Ø } 19$

**Annex 3**



**Materials**

Fastener: carbon steel – SAE1022 quenched, tempered and galvanized with additional zinc flake coating

Washer: metallic washer made of aluminium with EPDM sealing ring

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1

S280GD, S320GD or S350GD – EN 10346

Drilling capacity:  $\Sigma(t_{N2} + t_{II}) \leq 18 \text{ mm}$

**Timber substructures**

no performance assessed

$t_{N,II}$ [mm]		8.00	9.00	10.00	11.00	$\geq 12.00$
N <sub>R,k</sub> [kN] for t <sub>N,1</sub> [mm]	0.40	1.86	1.86	1.86	1.86	1.86
	0.50	3.19	3.19	3.19	3.19	3.19
	0.55	3.19	3.19	3.19	3.19	3.19
	0.63	4.04	4.04	4.04	4.04	4.04
	0.75	4.15	4.15	4.15	4.15	4.15
	0.88	4.15	4.15	4.15	4.15	4.15
	1.00	4.15	4.15	4.15	4.15	4.15
V <sub>R,k</sub> [kN] for t <sub>N,2</sub> [mm]	0.40	1.10	1.10	1.10	1.10	1.10
	0.50	1.81	1.81	1.81	1.81	1.81
	0.55	1.81	1.81	1.81	1.81	1.81
	0.63	2.24	2.24	2.24	2.24	2.24
	0.75	2.84	2.84	2.84	2.84	2.84
	0.88	2.84	2.84	2.84	2.84	2.84
	1.00	2.84	2.84	2.84	2.84	2.84
max. head displacement "u" depending on sandwich panel thickness [mm]	30	1.5	1.5	1.5	1.5	1.5
	40	1.5	1.5	1.5	1.5	1.5
	50	1.5	1.5	1.5	1.5	1.5
	60	4	4	4	4	4
	70	4	4	4	4	4
	80	4	4	4	4	4
	90	10	10	10	10	10
	100	10	10	10	10	10
	110	10	10	10	10	10
	120	10	10	10	10	10
	130	10	10	10	10	10
$\geq 140$	10	10	10	10	10	

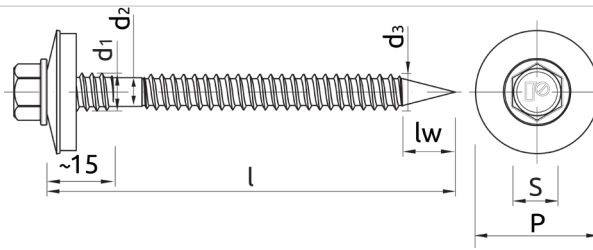
**Fastening screws for sandwich panels**

**Product description**

Self-drilling screws R-ORR-63/70 with hexagon head and aluminium washer  $\geq \text{Ø } 19$

**Annex 4**





**Materials**

Fastener: carbon steel – SAE1022 quenched, tempered and galvanized with additional zinc flake coating  
 Washer: metallic washer made of aluminium with EPDM sealing ring  
 Component I: S280GD, S320GD or S350GD – EN 10346  
 Component II: construction wood C24 – EN 14081

Drilling capacity: -

**Timber substructures**

for timber structures performance assessed with:

$M_{y,Rk} = 8.91 \text{ Nm}$

$f_{ax,k} = 17.362 \text{ N.mm}^{-2}$  for  $l_{ef} \geq 30 \text{ mm}$

Component II: wood class $\geq$ C24		Effective length $l_{ef}$ [mm]
		$\geq 30$
N <sub>R,k</sub> [kN] for t <sub>N,1</sub> [mm]	0.40	1.86
	0.50	3.19
	0.55	3.19
	0.63	3.28
	0.75	3.28
	0.88	3.28
	1.00	3.28
	V <sub>R,k</sub> [kN] for t <sub>N,2</sub> [mm]	0.40
0.50		1.38
0.55		1.38
0.63		1.66
0.75		2.03
0.88		2.03
1.00		2.03
max. head displacement "u" depending on sandwich panel thickness [mm]		30
	40	1
	50	1
	60	1.5
	70	1.5
	80	1.5
	90	2
	100	2
	110	2
	120	2
	130	2
$\geq 140$	2	

**Fastening screws for sandwich panels**

**Product description**

Self-drilling screws R-OTR-63/70 with hexagon head and aluminium washer  $\geq \text{Ø } 19$

**Annex 5**

## Determination of design values

### 1. Determination of Design Shear Resistance

The determination of the design values of the shear resistance depends on the type of substructure.

For Metal Supporting Substructures the following applies:

The design values  $V_{R,d}$  of the shear resistance are the characteristic values of the shear resistance divided by the recommended partial safety factor  $\gamma_M = 1.33$ . The recommended partial safety factor  $\gamma_M$  should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

For Timber Supporting Substructures the following applies:

The design values  $V_{R,d}$  of the shear resistance are the characteristic values of the shear resistance multiplied by  $k_{mod}$  according to EN 1995-1-1 Section 8.7 (Screwed connections), Table 3.1, and divided by the recommended partial safety factor  $\gamma_M = 1.33$ . If failure of the inner face with the thickness  $t_{N2}$  and not failure of the timber substructure is the relevant failure mode then  $k_{mod} = 1.0$ .

The recommended partial safety factor  $\gamma_M$  should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

### 2. Determination of Design Pull-through, Pull-out and Tension Resistance

The design values of the pull-through resistance are the characteristic values of the pull-through resistance divided by the recommended partial safety factor  $\gamma_M = 1.33$ . The recommended partial safety factor  $\gamma_M$  should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

The determination of the design values of the pull-out resistance depends on the type of substructure.

For Metal Supporting Substructures the following applies:

The design values of the pull-out resistance are the characteristic values of the pull-out resistance divided by the recommended partial safety factor  $\gamma_M = 1.33$ . The recommended partial safety factor  $\gamma_M$  should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

For Timber Supporting Substructures the following applies:

The design values of the pull-out resistance are the characteristic values of the pull-out resistance multiplied by  $k_{mod}$  according to EN 1995-1-1 Section 8.7 (Screwed connections), Table 3.1, and divided by the recommended partial safety factor  $\gamma_M = 1.33$ . The recommended partial safety factor  $\gamma_M$  should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

The design tension resistance  $N_{R,d}$  is the minimum value of the design values of either pull-through resistance or relevant pull-out resistance for the corresponding connection.

### 3. Design Resistance in case of combined Tension and Shear Forces (interaction)

In case of combined tension and shear forces the linear interaction formula according to EN 1993-1-3, section 8.3 (8) should be taken into account.

**Fastening screws for sandwich panels**

**Specification**  
Determination of design values

**Annex 6**



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