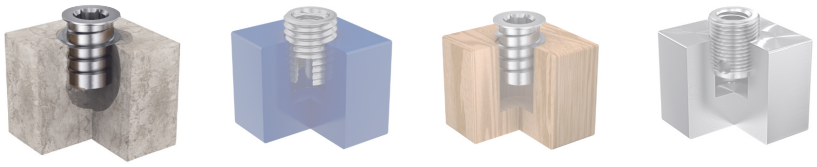

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Strong connections for concrete and masonry

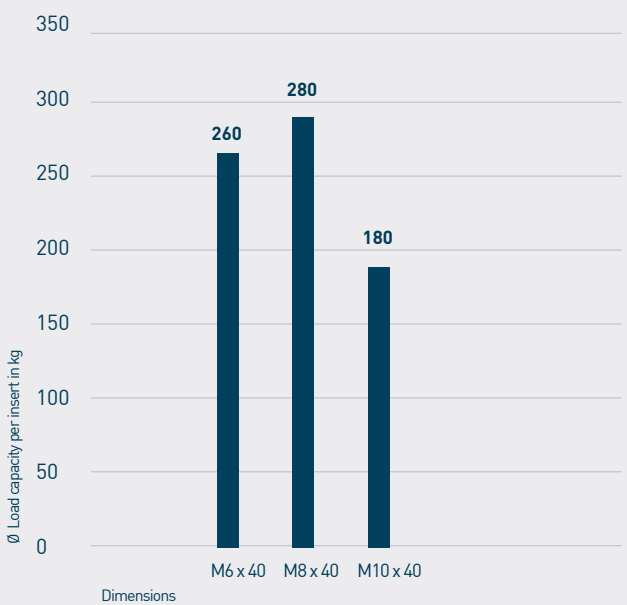
Secure hold. Ideal for:

- ✓ Uncracked concrete
- ✓ Cracked concrete
- ✓ Masonry

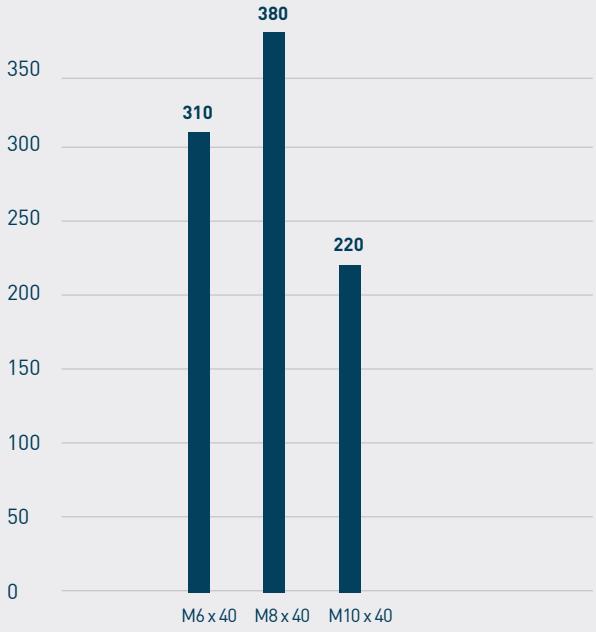
RAMPA®-inserts type: TSM

- Simple, quick and safe assembly/disassembly, especially for overhead work
- Clean installation pattern without interfering elements
- Special thread geometry for secure hold and high loads in concrete
- Metric internal thread for a wide range of applications
- Short edge distances for more flexibility

Permissible tensile loads in cracked concrete [1) 3)]



Permissible tensile loads in non-cracked concrete [1) 3)]



* The above values are guide values which may vary in individual cases due to different mechanical properties.

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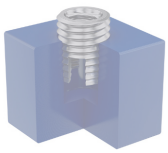

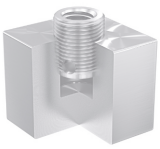

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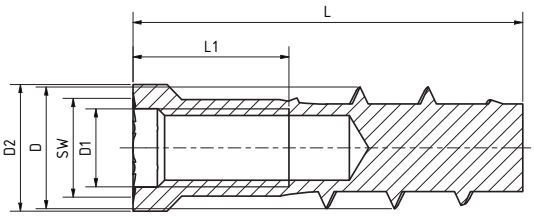
RAMPA®-inserts type: TSM

Art. No.	Outer-Ø D (mm)	Length L (mm)	Depth Internal thread L1 (mm)	Thread-size D1 (mm)	Head-Ø D2 (mm)	Hex Drive SW	Predrill Ø (mm)	Steel galva-nized
345640001	10,5	40	8	M6	11	T50	8	✓
345840001	12,5	40	8	M8	13	T55	10	✓
345140001	14,5	40	8	M10	16	T60	12	✓

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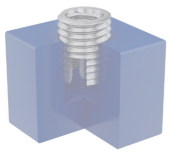

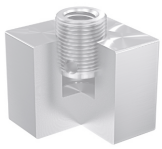

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The right insert for concrete and masonry

Screw size TSM			M6	M8	M10
Nominal screw-in depth	h_{nom}	mm	40	40	40
Drill core diameter	d_0	mm	8	10	12
Drill hole depth	h_1 min	mm	50	50	50
Effective anchoring depth	h_{ef}	mm	31	31	30
Through hole in the attachment to be connected	d_f max	mm	7	9	12
Minimum edge distance	c_{min}	mm	40	40	40
Minimum center distance	s_{min}	mm	30	40	40
Minimum component thickness	h_{min}	mm	80	80	80
Tightening torque screw or threaded rod	T_{inst}	Nm	4	8	15
Minimum screw-in depth Screw or threaded rod		mm	8	8	8
Max. Torque (set with impact wrench)		Nm	180	180	180
Permissible loads with metric thread of strength class 4.8					
Permissible tensile loads in cracked concrete [1) 3)]	N_{zul}	kN	2,6	2,8	1,8
Permissible shear loads in cracked concrete [2) 3)]	V_{zul}	kN	2,3	2,8	2,3
Permissible tensile loads in non-cracked concrete [1) 3)]	N_{zul}	kN	3,1	3,8	2,2
Permissible shear loads in non-cracked concrete [2) 3)]	V_{zul}	kN	2,3	4,0	3,2
Permissible bending moment [2) 3)]	M_{zul}	kN	2,9	7,1	13,7
Permissible loads with metric thread of strength class 5.8					
Permissible tensile loads in cracked concrete [1) 3)]	N_{zul}	kN	2,6	2,8	1,8
Permissible shear loads in cracked concrete [2) 3)]	V_{zul}	kN	2,8	2,8	2,3
Permissible tensile loads in non-cracked concrete [1) 3)]	N_{zul}	kN	3,1	3,8	2,2
Permissible shear loads in non-cracked concrete [2) 3)]	V_{zul}	kN	2,9	4,0	3,2
Permissible bending moment [2) 3)]	M_{zul}	kN	3,6	8,8	13,7
Permissible loads with metric thread of strength class 8.8					
Permissible tensile loads in cracked concrete [1) 3)]	N_{zul}	kN	2,6	2,8	1,8
Permissible shear loads in cracked concrete [2) 3)]	V_{zul}	kN	2,8	2,8	2,3
Permissible tensile loads in non-cracked concrete [1) 3)]	N_{zul}	kN	3,1	3,8	2,2
Permissible shear loads in non-cracked concrete [2) 3)]	V_{zul}	kN	3,4	4,0	3,2
Permissible bending moment [2) 3)]	M_{zul}	kN	5,0	8,8	13,7

1) To determine the permissible load, the partial safety factor from the approval yM=1.5 was taken into account on the resistance side. yM=1.5 on the resistance side and a partial safety factor yF=1.4 on the action side.

2) To determine the permissible load, on the resistance side the partial safety factor from the approval yM=1.25 on the resistance side and a partial safety factor yF=1.4 on the action side.

3) The specified values apply irrespective of center distances and edge distances.

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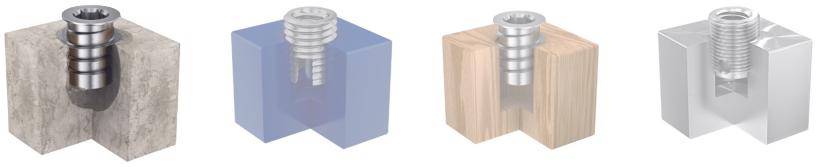

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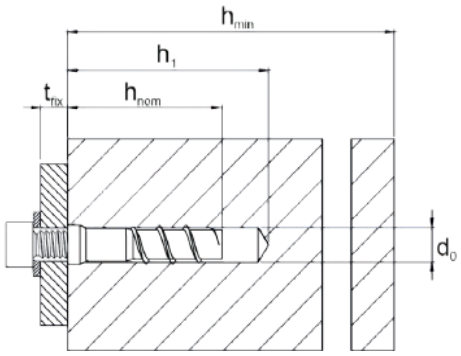

Technical characteristics
Multiple fastening with fire exposure, steel

Screw size TSM				M6	M8	M10
Screw-in depth		h_{nom}	mm	40	40	40
Permissible load for tensile and shear loading (Fzul,fi = Nzul,fi = Vzul,fi) [1] [2]						
Fire resistance class						
R 30	Approved resistance	$F_{zul,fi\ 30}$	kN	0,9	0,9	0,8
R 60		$F_{zul,fi\ 60}$	kN	0,9	0,9	0,8
R 90		$F_{zul,fi\ 90}$	kN	0,9	0,9	0,8
R 120		$F_{zul,fi\ 120}$	kN	0,7	0,7	0,7
R 30		$M_{zul,fi\ 30}$	Nm	0,63	1,81	4,28
R 60		$M_{zul,fi\ 60}$	Nm	0,49	1,36	3,12
R 90		$M_{zul,fi\ 90}$	Nm	0,34	0,91	1,97
R 120		$M_{zul,fi\ 120}$	Nm	0,27	0,68	1,39
Edge distance						
R 30 bis R 120		$C_{cr,fi}$	mm	62		
The edge distance must be at least 300 mm if the fire load is applied from more than one side.						
Center distance						
R 30 bis R 120		$S_{cr,fi}$	mm	124		
Concrete break-out on the side facing away from the load						
R 30 bis R 120		k	-	1,0		
If the concrete is damp, the anchoring depth must be increased by at least 30 mm.						

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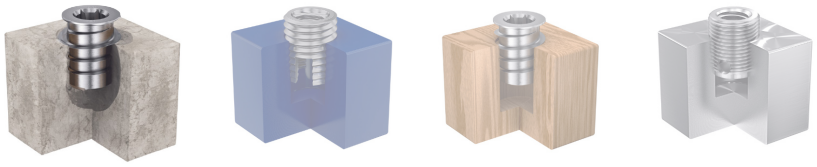

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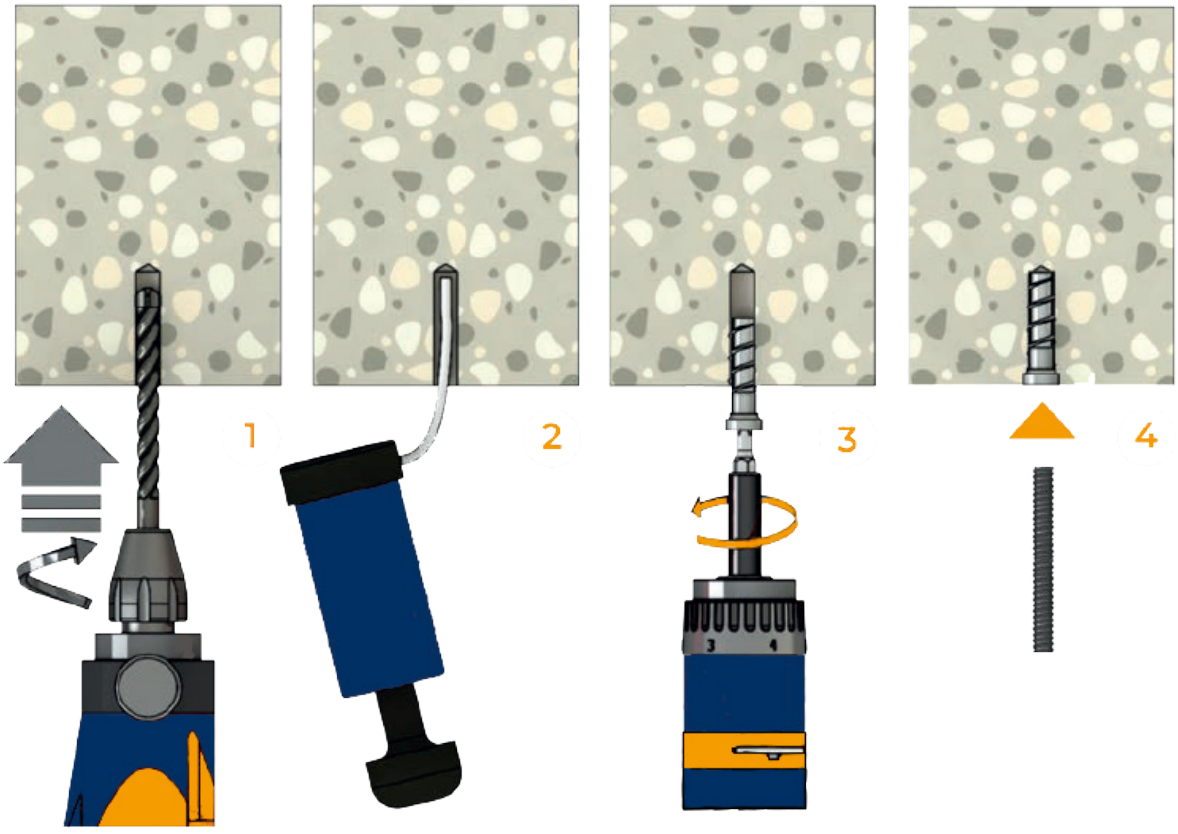
Assembly instructions



1) Drill a hole with a hammer drill or hollow drill.

2) Clean the drill hole thoroughly.

3) Screw in RAMPA inserts type TSM using a tangential screwdriver or ratchet.

4) The screw must be screwed in flush with the surface of the concrete. The attachment is fastened with a standard metric screw or threaded rod.
The tightening torque of the metric thread must be observed.

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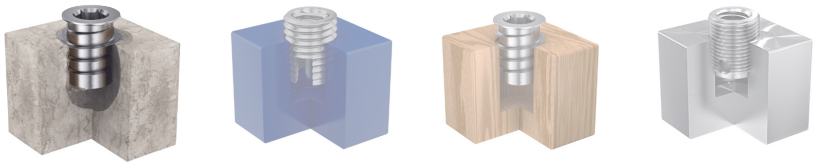

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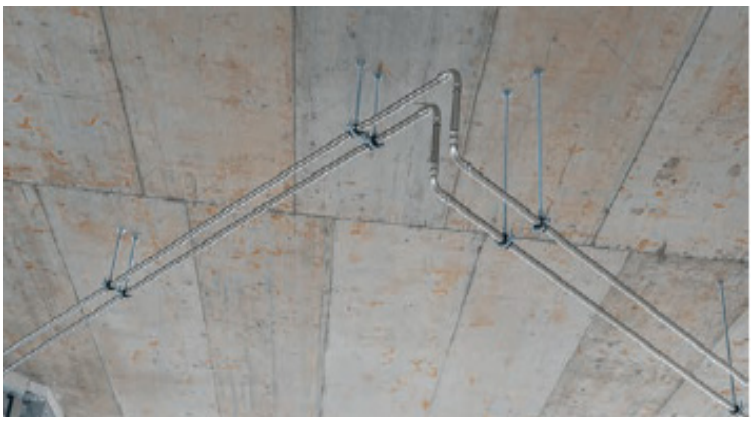
References



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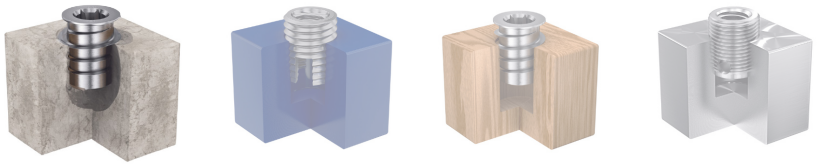

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Recommended RAMPA® assembling tools:

Driver | Type 346
1/2" driver

Suitable RAMPA® connecting materials:

Flat-head screws | Type KF

Pan-head screws | Type KC

Pan-head screws | Type KS

Mushroom-head screws | Type KT

Grub screws | Type G

Pan-head screws | Type KFTX

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