

Mechanical Anchors

Wedge Anchor — Throughbolt

A non-bottom-bearing, wedge-style expansion anchor for use in solid concrete or grout-filled masonry. Threaded studs are set by tightening the nut to the specified torque.

Features

Application of the installation torque draws the cone end of the stud into the expansion clip. The expansion clip expands and develops a frictional grip with the sidewalls of the hole. This gives the anchor its resistance to tension loads.

- Economical anchor for medium-duty loads

Applications

- Steel Fixtures
- Brackets
- Facades
- Ladders
- Railing
- Ladders

Base Material

- Uncracked Concrete

Finish

- Carbon Steel, Mechanically Galvanised



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Wedge Anchor Installation



Holes in steel fixtures to be mounted should match the diameter range specified in the table on page 66.

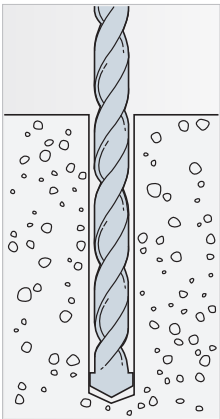


Do not use an impact wrench to set or tighten anchors.

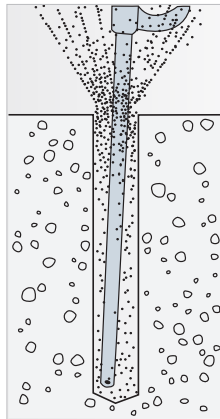


CAUTION: Oversized holes in the base material will make it difficult to set the anchor and will reduce the anchor's load capacity.

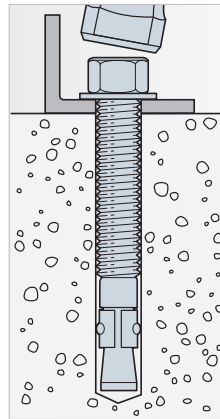
Installation Sequence



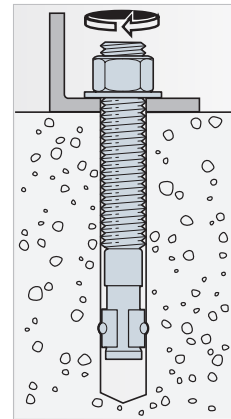
- 1. Drill**
Drill a hole in base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth.



- 2. Blow**
Blow it clean using compressed air. (Overhead installations need not be blown clean.) Alternatively, drill the hole deep enough to accommodate the embedment depth and the dust from drilling.



- 3. Assemble**
Assemble the anchor with nut and washer so the top of the nut is flush with the top of the anchor. Place the anchor in the fixture, and drive it into the hole until the washer and nut are tight against the fixture.



- 4. Tighten**
Tighten to the required installation torque.

Wedge Anchor Product Availability

Mechanical Anchors

Mechanically Galvanised Model No.	Ø x Depth of Drilled Hole (mm) $d_o \times h_1$	Total Length (mm) L	Max. Fixture Thickness (mm) $t_{fix,max}$	Min. Fixture Hole Ø (mm) d_f	Wrench Size (mm)	Box Qty	Carton Qty
WA06060MG	6 x 55	60	5	7	10	500	100
WA06085MG		85	30			500	100
WA08068MG	8 x 65	68	5	9	13	250	50
WA08083MG		83	20			250	50
WA08093MG		93	30			200	50
WA08113MG		113	50			200	50
WA10083MG		83	10			200	50
WA10093MG	10 x 70	93	20	12	17	200	50
WA10103MG		103	30			200	50
WA10123MG		123	50			200	50
WA10143MG		143	70			100	50
WA10213MG		213	140			100	50
WA12085MG	12 x 90	85	5	14	19	125	25
WA12104MG ¹		104	5			100	25
WA12109MG		109	10			100	25
WA12119MG ¹		119	20			100	25
WA12129MG		129	30			100	25
WA12139MG ¹		139	40			100	25
WA12149MG		149	50			100	25
WA12179MG ¹		179	80			100	25
WA12199MG		199	100			50	25
WA16110MG		16 x 110	110			10	18
WA16151MG	151		30	40	20		
WA16171MG	171		50	40	20		
WA16201MG	201		80	20	10		
WA20120MG	120		5	40	10		
WA20173MG	20 x 130	173	30	22	30	40	10
WA20193MG		193	50			40	10
WA20263MG		263	120			20	10

1. Only available in New Zealand.

Wedge Anchor Master Technical Data Sheet

Installation Data

Description	Symbol	Units	Anchor Size				
			M6	M8	M10	M12	M16
Drill Hole Diameter	d_o	mm	6	8	10	12	16
Maximum Diameter of Drill Bit	$d_{cut, max}$		6.45	8.45	10.45	12.5	16.5
Drill Depth	h_1		55	65	70	90	110
Nominal Embedment Depth	h_{nom}		40	45	50	65	80
Anchor Length Range	L		60–85	68–163	78–233	104–259	151–261
Clearance Hole Diameter in Fixture	d_f		7	9	12	14	18
Maximum Thickness of Fixture	$t_{fix, max}$		45	100	160	160	160
Recommended impact screw driver with max. power output specified according to manufacturer's instructions.							
Installation Torque	$T_{inst, max}$	Nm	8	15	30	50	100

Concrete Thickness, Edge Distance and Spacing

Description	Symbol	Units	M6	M8	M10	M12	M16
Minimum Concrete Thickness	h_{min}	mm	100	100	100	130	160
Minimum Edge Distance	c_{min}		40	40	50	70	90
Minimum Spacing	s_{min}		30	40	50	70	90
Critical Edge Distance (cone)	$c_{cr, N}$		1.5 x h_{ef}				
Critical Spacing (cone)	$s_{cr, N}$		3 x h_{ef}				
Critical Edge Distance (splitting)	$c_{cr, sp}$		80	115	125	180	200
Critical Spacing (splitting)	$s_{cr, sp}$		2 x $c_{cr, sp}$				

Design Resistance – Single Anchor, No Concrete Edge or Spacing Influence

Description	Symbol	Units	M6	M8	M10	M12	M16
Embedment Depth	h_{ef}	mm	40	45	50	65	80
Minimum Concrete Thickness	h_{min}		100	100	100	130	160
Uncracked Concrete							
TENSION	N_{Rd}	kN	6.5	9.7	13.0	21.4	29.3
SHEAR	V_{Rd}		4.8	7.6	13.6	20.0	37.6

- Concrete strength is 30 MPa (cylinder) unreinforced.
- Tabulated loads are based on no edge distance, no anchor spacing and installed at min. allowable concrete thickness and embedment depth. **For spacing and edge distance influence, use Simpson's Anchor Designer™ Software for analysis.**
- N_{Rd} and V_{Rd} is based on use of a Carbon Steel, Zinc plated bolt.
- All design resistances are derived from the product's ETA (European Technical Assessment).

