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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-10/0263
of 16 December 2025

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Mungo heavy-duty anchor MSB

Product family
to which the construction product belongs

Mechanical fasteners for use in concrete

Manufacturer

Mungo Italia S.r.l.
Via Germania 23
35127 PADOVA (PD)
ITALIEN

Manufacturing plant

Mungo, plant 3 - ITALY

This European Technical Assessment
contains

12 pages including 3 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

EAD 330232-02-0601

This version replaces

ETA-10/0263 issued on 22 August 2014

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Specific Part

1 Technical description of the product

The Mungo heavy-duty anchor MSB (type MSB/MSB-A4, MSB-S/MSB-SA4 and MSB-P) in the range of M6, M8, M10 and M12 is an anchor made of galvanised steel or stainless steel which is placed into a drilled hole and anchored by torque-controlled expansion.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the fastener is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastener of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading), Method A	See Annex C 1
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C 2
Displacements	See Annex C 1 and C 2
Stiffness	No performance assessed
Characteristic resistance and displacements for seismic performance category C1 and C2	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.3 Aspects of durability

Essential characteristic	Performance
Durability	See Annex B 1

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

In accordance with the European Assessment Document EAD 330232-02-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

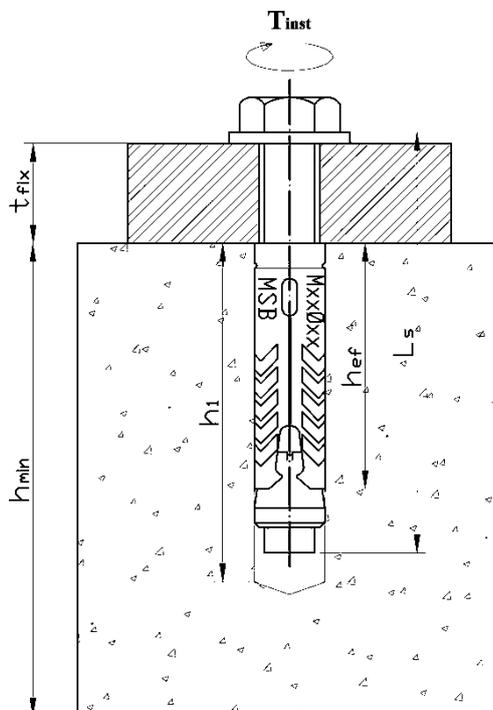
Issued in Berlin on 16 December 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

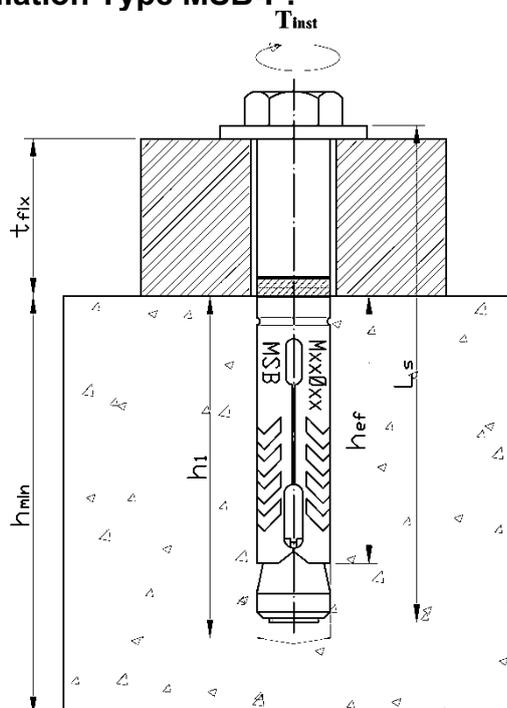
beglaubigt:
Ziegler

Installed conditions

Pre-setting Installation Type MSB/MSB-A4 and Type MSB-S/MSB-SA4:



Through-setting installation Type MSB-P:

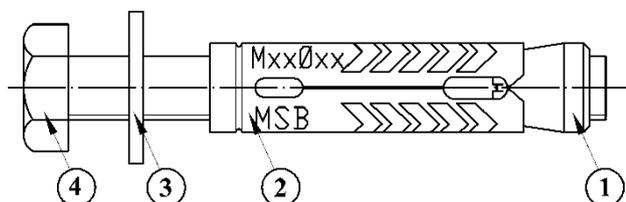


Mungo heavy-duty anchor MSB

Product description
Installed product

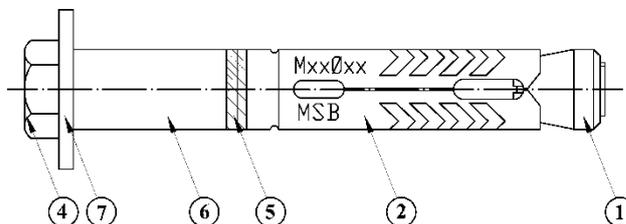
Annex A 1

**Type MSB/MSB-A4 ¹⁾ and
Type MSB-S/MSB-SA4 ²⁾**



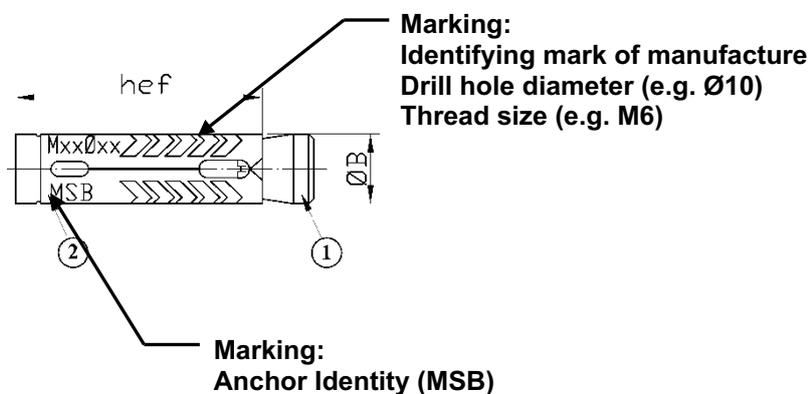
- ① Conical nut
- ② Expander
- ③ Washer
- ④ Hexagonal head bolt

Type MSB-P



- ① Conical nut
- ② Expander
- ④ Hexagonal head bolt
- ⑤ Spacer ring
- ⑥ Distance sleeve
- ⑦ Washer

- 1) The hexagon head bolt and the washer according to Table A1 and B1 must be purchased by the user.
- 2) The hexagon head bolt and the washer is provided by the manufacturer together with the anchor.



Mungo heavy-duty anchor MSB

Product description
Marking and denomination

Annex A 2

Table A1: Materials

Comp.	Denomination	Type	Material
1	Conical nut	MSB MSB-S MSB-P	Steel, EN 10139:2016+A1:2020 Electrolytic zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022
		MSB-A4 MSB-SA4	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10088-1:2014
2	Expander	MSB MSB-S MSB-P	Cold formed steel, EN 10111:2008 Electrolytic zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022
		MSB-A4 MSB-SA4	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10088-1:2014
3 / 7	Washer	MSB MSB-S MSB-P	Steel min. 140 HV Electrolytic zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022
		MSB-A4 MSB-SA4	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10088-1:2014
4	Hexagonal head bolt	MSB MSB-S MSB-P	Steel, property class 8.8 EN ISO 898-1:2012 Electrolytic zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022
		MSB-A4 MSB-SA4	Stainless steel 1.4401, 1.4404 or 1.4571 according to EN 10088-1:2014
5	Spacer ring	MSB-P	Polypropylene
6	Distance sleeve	MSB-P	Cold formed steel, EN 10111:2008 or Drawn pipe E235+C, EN 10305-2:2016 Electrolytic zinc plated $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022

Mungo heavy-duty anchor MSB

Product description
Materials

Annex A 3

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads.

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013+A2:2021.
- Strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021.
- Uncracked concrete.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (all materials).
- For all other conditions according to EN 1993-1-4:2006 + A1:2015 corresponding to corrosion resistance class CRC III: MSB/MSB-A4 and MSB-S/MSB-SA4 (stainless steel).

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed in accordance with EN 1992-4:2018

Installation:

- Hole drilling by hammer drilling only.
- Clean the drill hole.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- Anchor installation such that the effective anchorage depth is complied with. This compliance is ensured, if the leading edge of expander does not more exceed the concrete surface.

Mungo heavy-duty anchor MSB

Intended Use
Specifications

Annex B 1

Table B1: Installation Parameters

Anchor size			M6	M8	M10	M12	
Effective anchorage depth	h_{ef}	[mm]	39,5	44,5	51,5	63,0	
Nominal drill hole diameter	d_0	[mm]	10	12	14	18	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10,45	12,50	14,50	18,50	
Drill hole depth	$h_1 \geq$	[mm]	$L_S - t_{fix} + 10$				
Clearance hole diameter in the fixture	MSB/MSB-A4 MSB-S/ MSB-SA4	$d_f \leq$	[mm]	7	9	12	14
	MSB-P	$d_f \leq$	[mm]	12	14	18	20
Torque moment	T_{inst}	[Nm]	10	25	40	75	
Minimum fixture thickness	MSB/MSB-A4 MSB-S/ MSB-SA4 MSB-P	$t_{fix,min}$	[mm]	1	1	1	1
Maximum fixture thickness	MSB	$t_{fix,max}$	[mm]	150	200	250	300
	MSB-A4	$t_{fix,max}$	[mm]	50	65	85	70
	MSB-S MSB-SA4	$t_{fix,max}$	[mm]	10	14	20	25
	MSB-P	$t_{fix,max}$	[mm]	30	35	38	43
Hexagonal head bolt length	MSB/MSB-A4	$L_S \geq$	[mm]	$t_{fix}+45$	$t_{fix}+51$	$t_{fix}+60$	$t_{fix}+75$
	MSB-S/ MSB-SA4	L_S	[mm]	55	65	80	100
	MSB-P	L_S	[mm]	80	90	100	120

Table B2: Minimum thickness of concrete member, minimum spacing and edge distances

Anchor size			M6	M8	M10	M12
Minimum member thickness	h_{min}	[mm]	135	135	140	160
Minimum spacing	s_{min}	[mm]	65	90	135	165
Minimum edge distance	c_{min}	[mm]	45	70	85	115

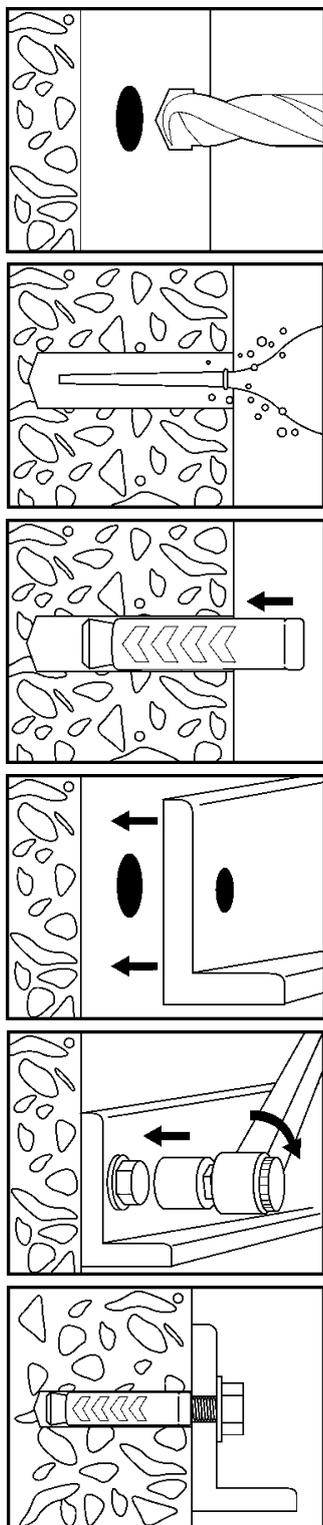
Mungo heavy-duty anchor MSB

Intended Use

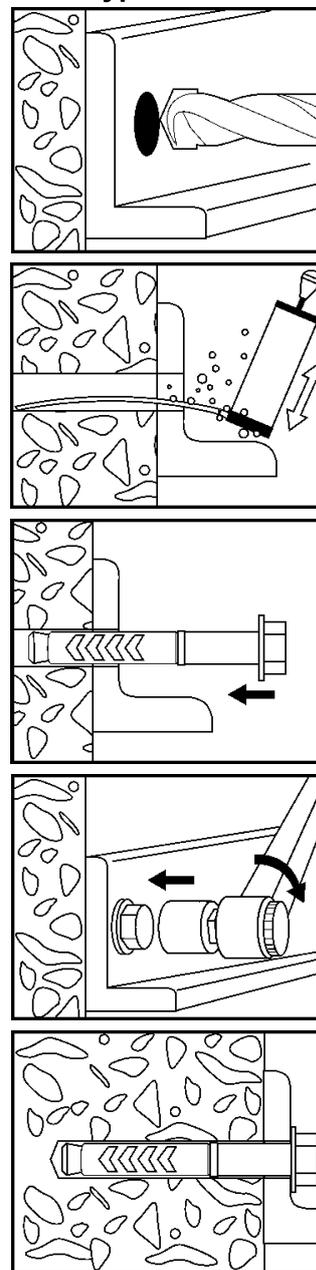
Installation parameters
Minimum thickness of concrete member, minimum spacing and edge distances

Annex B 2

**Pre-setting installation instruction for
Type MSB/MSB-A4 and MSB-S/MSB-SA4**



**Through-setting installation instruction for
Type MSB-P**



Mungo heavy-duty anchor MSB

Intended Use
Installation instructions

Annex B 3

Table C1: Design method A, Characteristic values for tension loads

Anchor size			M6	M8	M10	M12
Steel failure						
Characteristic resistance, Anchor type MSB, MSB-S, MSB-P	$N_{Rk,s}$	[kN]	16,1	29,3	46,4	67,4
Partial safety factor	$\gamma_{Ms}^{1)}$		1,5			
Characteristic resistance, Anchor type MSB-A4, MSB-SA4	$N_{Rk,s}$	[kN]	14,1	25,6	40,6	59,0
Partial safety factor	$\gamma_{Ms}^{1)}$		1,87			
Pullout failure						
Characteristic resistance in uncracked concrete C20/25, Anchor type MSB, MSB-S, MSB-P	$N_{Rk,p}$	[kN]	9	12	16	20
Characteristic resistance in uncracked concrete C20/25, Anchor type MSB-A4, MSB-SA4	$N_{Rk,p}$	[kN]	7,5	9	12	16
Increasing factors for $N_{Rk,p}$ (uncracked concrete) $\psi_c = (f_{ck}/20)^{0,5}$	ψ_c	C30/37	[-]	1,17	1,08	1,22
		C40/50	[-]	1,33	1,15	1,41
		C50/60	[-]	1,50	1,23	1,55
Concrete cone failure						
Effective anchoring depth	h_{ef}	[mm]	39,5	44,5	51,5	63,0
Factor uncracked concrete	$k_{ucr,N}$	[-]	11,0			
Spacing	$s_{cr,N}$	[mm]	3 h_{ef}			
Edge distance	$c_{cr,N}$	[mm]	1,5 h_{ef}			
Splitting failure						
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,sp}^0$	[kN]	Min ($N_{Rk,p}$; $N_{Rk,c}^{2)}$)			
Spacing	$s_{cr,sp}$	[mm]	160	200	260	280
Edge distance	$c_{cr,sp}$	[mm]	80	100	130	140
Installation factor (MSB, MSB-S, MSB-P)	γ_{inst}	[-]	1,2	1,4	1,4	1,0
Installation factor (MSB-A4, MSB-SA4)	γ_{inst}	[-]	1,0	1,2	1,2	1,2

¹⁾ In absence of other national regulations.

²⁾ $N_{Rk,c}^0$ according to EN 1992-4:2018

Table C2: Displacements under tension loads

Anchor size			M6	M8	M10	M12
Tension load	N	[kN]	3,6	4,1	5,4	9,5
Displacement	δ_{N0}	[mm]	0,4	0,3	0,3	0,3
	$\delta_{N\infty}$	[mm]	1,2			

Mungo heavy-duty anchor MSB

Performances

Design method A, Characteristic values of resistance under tension loads
Displacements under tension loads

Annex C 1

Table C3: Design method A, Characteristic values for shear loads

Anchor size			M6	M8	M10	M12
Steel failure without lever arm						
Characteristic resistance, Anchor type MSB, MSB-S, MSB-P	$V_{Rk,s}^0$	[kN]	8,0	14,6	23,2	33,7
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25			
Characteristic resistance, Anchor type MSB-A4, MSB-SA4	$V_{Rk,s}^0$	[kN]	7,0	12,8	20,3	29,5
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,56			
Ductility factor	k_7	[-]	1,0			
Steel failure with lever arm						
Characteristic bending moment, Anchor type MSB, MSB-S, MSB-P	$M_{Rk,s}^0$	[Nm]	12,2	30,0	59,8	104,8
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25			
Characteristic bending moment, Anchor type MSB-A4, MSB-SA4	$M_{Rk,s}^0$	[Nm]	10,7	26,2	52,3	91,7
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,56			
Concrete pry out failure						
Pryout factor	k_8	[-]	1,0	1,0	1,0	2,0
Concrete edge failure						
Effective length of anchor in shear loading	l_f	[mm]	39,5	44,5	51,5	63,0
Effective external diameter of anchor	d_{nom}	[mm]	10	12	14	18

¹⁾ In absence of other national regulations.

Table C4: Displacements under shear loads

Anchor size			M6	M8	M10	M12
Shear load	V	[kN]	5,1	6,9	7,6	9,5
Displacement	δ_{V0}	[mm]	6,0	5,3	5,3	5,0
	$\delta_{V\infty}$	[mm]	9,0	8,0	8,0	7,5

Mungo heavy-duty anchor MSB

Performances

Design method A, Characteristic values of resistance under shear loads
Displacements under shear loads

Annex C 2