

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-17/1011
of 22 February 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Trade name of the construction product

Product family
to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment
contains

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

Deutsches Institut für Bautechnik

Mungo Ceiling anchor
MANr

Metal anchor made of galvanised steel and stainless steel
of size 6x45, 6x50 and 6x72 for multiple use for non-
structural applications in concrete

Mungo Befestigungstechnik AG
Bornfeldstrasse 2
4603 OLTEN
SCHWEIZ

Herstellwerk A

8 pages including 3 annexes which form an integral part
of this assessment

ETAG 001 Part 6: "Anchors for multiple use for non-
structural applications", August 2010,
used as EAD according to Article 66 Paragraph 3 of
Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The Mungo Ceiling anchor MANr of size 6x45, 6x50 and 6x72 is an anchor made of zinc-plated steel or stainless steel which is placed into a drilled hole and anchored by load-controlled expansion.

Product and 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 anchor 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 anchor 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)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C 1

3.3 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance in concrete	See Annex C 1
Edge distances and spacing	See Annex C 1

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

In accordance with guideline for European technical approval ETAG 001, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/161/EC].

The system to be applied is: 2+

Installed condition for MANr

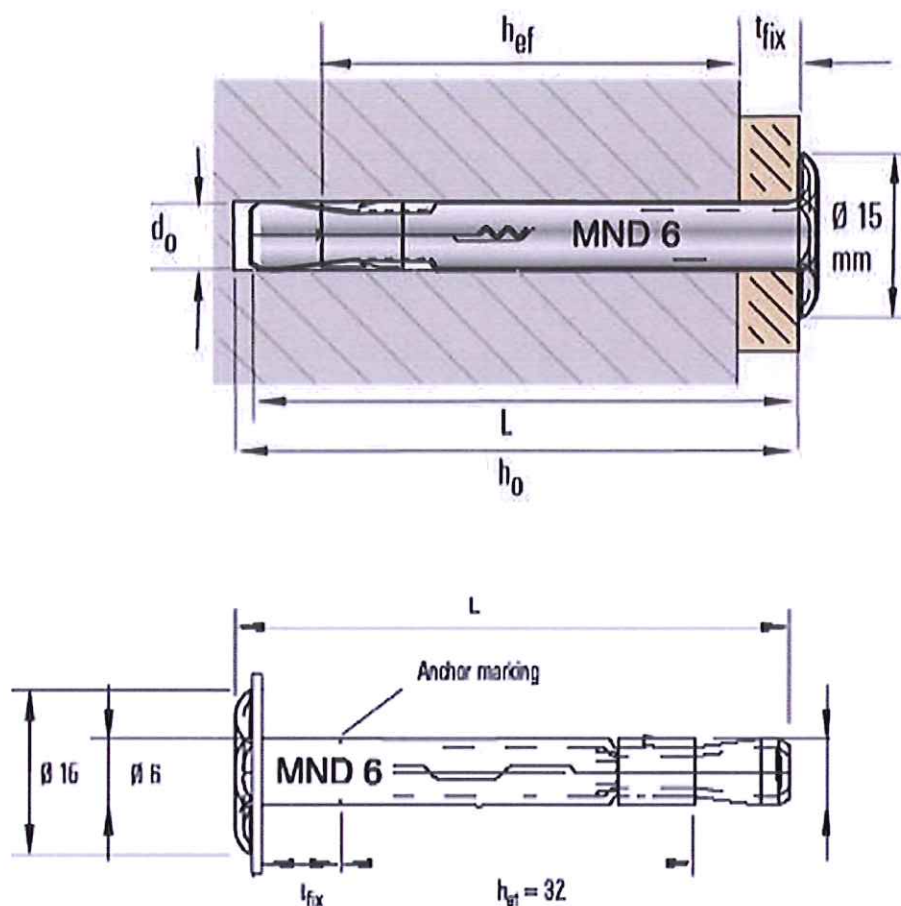


Table A1: Anchor dimension, marking and material

MANr			MANr 6 x 45	MANr 6 x 50	MANr 6 x 70
Marking / embossing			MND 6/5	MND 6/10	MND 6/35
Anchor length	L	[mm]	45	50	70
Material steel galvanized			H340LAD Z100 / H420LAD Z100		
Material stainless steel			1.4301 1.4404 / 1.4571 1.4529		

Mungo Ceiling anchor MANr

Product description
Installed condition, anchor types, dimensions and materials

Annex A 1

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads,
- Used only for multiple use for non-structural applications according to ETAG 001, Part 6,
- Used for anchorages with requirements related to resistance of fire (all anchor types except steel 1.4301).

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000
- Strength classes C20/25 to C50/60 according to EN 206-1:2000
- Cracked and uncracked concrete

Use conditions (environmental conditions):

- Structures subject to dry internal conditions (all anchor types),
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (anchors of stainless steel 1.4404, 1.4571, 1.4529),
- Structures subject to particular aggressive conditions (anchors of stainless steel 1.4529).
Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Design:

- The anchorages are to be designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor shall be indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are designed in accordance with:
 - ETAG 001, Annex C, Edition August 2010.
- Anchorages under fire exposure are designed in accordance with:
 - EOTA Technical Report TR 020, Edition May 2004.

Installation:

- Hole drilling by hammer drilling,
- Anchor installation has to be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site,
- The anchor may only be set once.

Mungo Ceiling anchor MANr

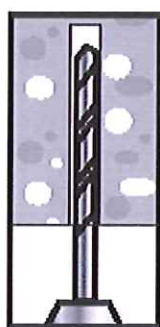
Intended use
Specifications

Annex B 1

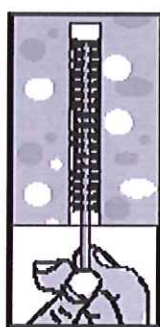
Table B1: Installation parameters

MANr			MANr 6 x 45	MANr 6 x 50	MANr 6 x 70
Nominal drill hole diameter	d_o	[mm]	6	6	6
Drill hole depth	$h_o \geq$	[mm]	$48 - t_{fix}$	$53 - t_{fix}$	$75 - t_{fix}$
Effective anchorage depth	$h_{ef} \geq$	[mm]	32	32	32
Minimum thickness of concrete member	for $t_{fix} > 20\text{mm}$	h_{min}	-	-	80
	for $t_{fix} \leq 20\text{mm}$				100
Maximum thickness of fixture	$\max t_{fix}$	[mm]	5	10	35
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7,5		

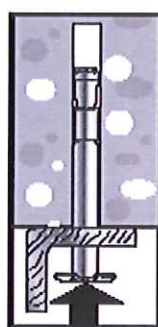
Installation Instructions:



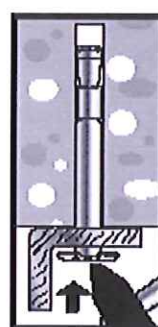
drilling
of hole



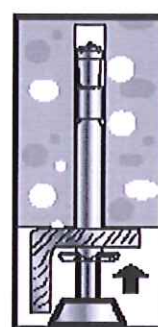
cleaning
of drill hole



setting anchor
through fixture



driving in with
a hammer



or driving in with
a setting tool

Mungo Ceiling anchor MANr

Intended use

Installation parameters, edge distance and spacing
Installation instructions

Annex B 2

Table C1: Characteristic values of resistance in concrete in all load directions without lever arm

MANr			MANr 6 x 45 MANr 6 x 50 MANr 6 x 72	
All load directions			Steel galvanized	Stainless steel 1.4301, 1.4404, 1.4571, 1.4529
Characteristic resistance in concrete C20/25 to C50/60	F_{Rk}	[kN]	3,0	4,0
Partial safety factor	γ_M	[-]	1,5	2,25
Spacing	s_{cr}	[mm]	200	
Edge distance	c_{cr}	[mm]	100	

Table C2: Characteristic values under fire exposure in concrete C20/25 to C50/60 for all load directions without lever arm

Fire resistance class	MANr			Steel galvanized	Stainless steel 1.4404, 1.4571, 1.4529
R30	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,35	1,0
R60				0,25	1,0
R90				0,15	0,6
R120				0,1	0,3
R30 - R120	Spacing	$s_{cr,fi}$	[mm]	200	
	Edge distance ¹⁾	$c_{cr,fi}$	[mm]	100	

¹⁾ The edge distance shall be ≥ 300 mm if there is a fire to more than one side of the concrete member

Mungo Ceiling anchor MANr

Performances
Characteristic resistances in concrete

Annex C 1