

# WDI1R Drop-in Anchors

## Reduced-length drop-in anchor with a lip collar

### Anchor types



WDI1R 6x25  
WDI1R 8x25  
WDI1R 10x25  
WDI1R 12x25

- The **WDI1R** reduced-length drop-in anchors are easy to install deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete and in precast prestressed hollow core slabs.

### Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Reduced 25mm anchor length allows approved applications in precast prestressed hollow core slabs
- Collar with a lip for flush anchor setting at any hole depth
- Simple and quick installation procedure
- Medium load capacity
- Fire resistance class R30-R120 for design of anchorages under exposure to fire

### Approvals and certificates

- European Technical Assessment
- Fire Test Report

ETA-17/0623, 7 September 2017  
ETA-17/0623, 7 September 2017



### Suitable base materials

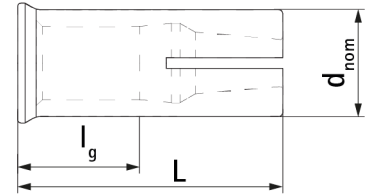
- Non-cracked concrete  
C12/15; C16/20 and C20/25 to C50/60
- Cracked concrete  
C12/15; C16/20 and C20/25 to C50/60
- Precast pre-stressed hollow core slabs  
C30/37 to C50/60
- Fire-exposed concrete  
C20/25 to C50/60

### Typical applications

- Rail and pipe support systems
- Curtain walls
- Racking
- Machinery

## Product details

Article	Description	Size	Length	External diameter	Inner thread length
		[-]	[mm]	$d_{nom}$ [mm]	$l_g$ [mm]
6103206	WDI1R 6x25	M6	25	8	12
6103208	WDI1R 8x25	M8	30	10	12
6103210	WDI1R 10x25	M10	40	12	12
6103212	WDI1R 12x25	M12	50	15	12



## Packaging details

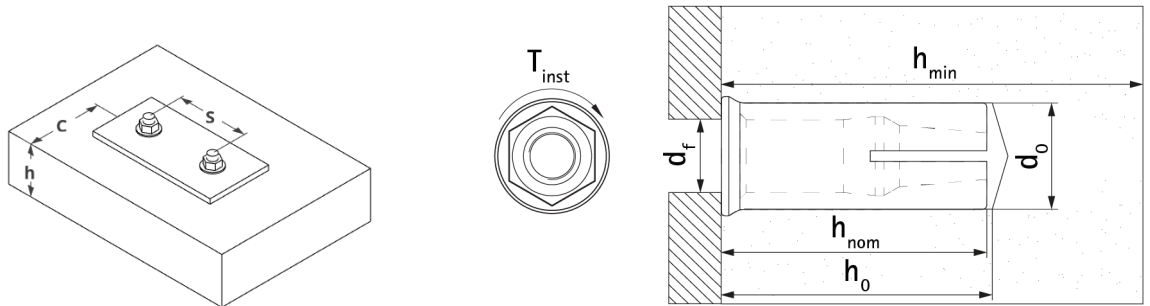
Article	Description	Pack 1		Pack 2	
		[pcs]	EAN13	[pcs]	EAN13
6103206	WDI1R 6x25	100	8712993156245	800	8712993156405
6103208	WDI1R 8x25	100	8712993156252	800	8712993156412
6103210	WDI1R 10x25	50	8712993156269	400	8712993156429
6103212	WDI1R 12x25	50	8712993156276	400	8712993156436

## Mechanical properties

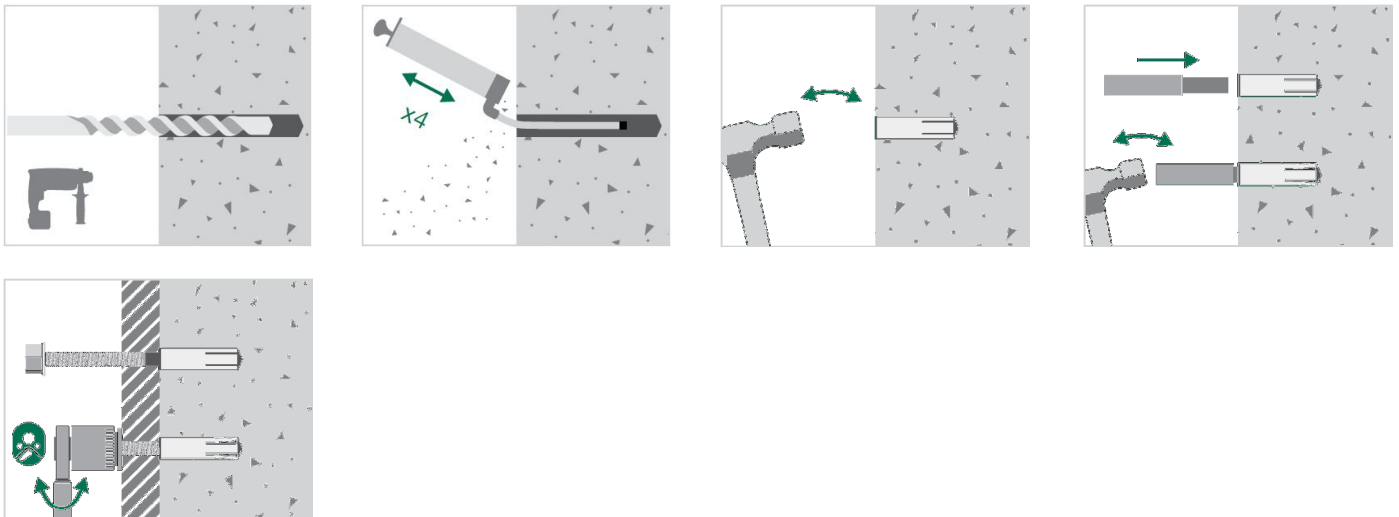
Anchor Type	WDI1R
Material	Cold formed or machining steel, zinc plated, EN ISO 4042:1999
Fastener screw or threaded rod material	Steel, property class $\geq 4.8$ according to EN ISO 898-1:2013 or EN-ISO 898-2:2012, thickness of galvanizing $> 5\mu\text{m}$

**Installation parameters for concrete**

Anchor Type		WDI1R			
Anchor size		M6	M8	M10	M12
Anchor length	L [mm]	25	25	25	25
Drill hole diameter	$d_0$ [mm]	8	10	12	15
Depth of drill hole	$h_0$ [mm]	25	25	25	25
Nominal embedment depth	$h_{nom}$ [mm]	25	25	25	25
Minimum screwing depth	$l_{s,min}$ [mm]	6	8	10	12
Maximum screwing depth	$l_{s,max}$ [mm]	12	12	12	12
Installation torque	$T_{inst}$ [Nm]	4	8	15	35
Diameter clearance of hole in the fixture	$d_f$ [mm]	7	9	12	14
Minimum concrete member thickness	$h_{min,1}$ [mm]	80	80	80	80
Minimum edge distance	$C_{min}$ [mm]	60	100	100	130
Minimum anchor spacing	$S_{min}$ [mm]	30	70	70	100
Standard concrete member thickness	$h_{min,2}$ [mm]	80	80	80	80
Minimum edge distance	$C_{min}$ [mm]	60	100	100	110
Minimum anchor spacing	$S_{min}$ [mm]	30	50	60	100



**Instructions for installation in concrete**



## Recommended loads for multiple use for non-structural applications in concrete for single anchors<sup>1)</sup>

Anchor Type		WDIR			
Anchor size		M6	M8	M10	M12
Concrete C12/C15					
Recommended load in all directions	$F_{rec}$ [kN]	1.19	1.19	1.67	1.67
Concrete C20/25 to C50/C60					
Recommended load in all directions	$F_{rec}$ [kN]	1.67	1.90	2.14	2.14
Characteristic edge distance	$C_{cr}$ [mm]	38	38	38	38
Characteristic anchor spacing distance	$S_{cr}$ [mm]	75	75	75	75

1) Single anchors are anchors not affected by concrete edge and anchor spacing influence.

2) Recommended load includes partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.

## Characteristic values of resistance under fire exposure in C20/25-C50/C60 concrete<sup>1)</sup>

Anchor Type		WDI1R			
Anchor size		M6	M8	M10	M12
All load directions					
R30	Characteristic resistance $F_{Rk,fi}$ [kN]	0.40	0.60	0.60	0.60
R60		0.35	0.60	0.60	0.60
R90		0.30	0.60	0.60	0.60
R120		0.25	0.50	0.50	0.50
R30-R120	Spacing distance $S_{cr,fi}$ [mm]	4 x $h_{ef}$			
R30-R120	Edge distance $C_{cr,fi}$ [mm]	2 x $h_{ef}$ <sup>2)</sup>			

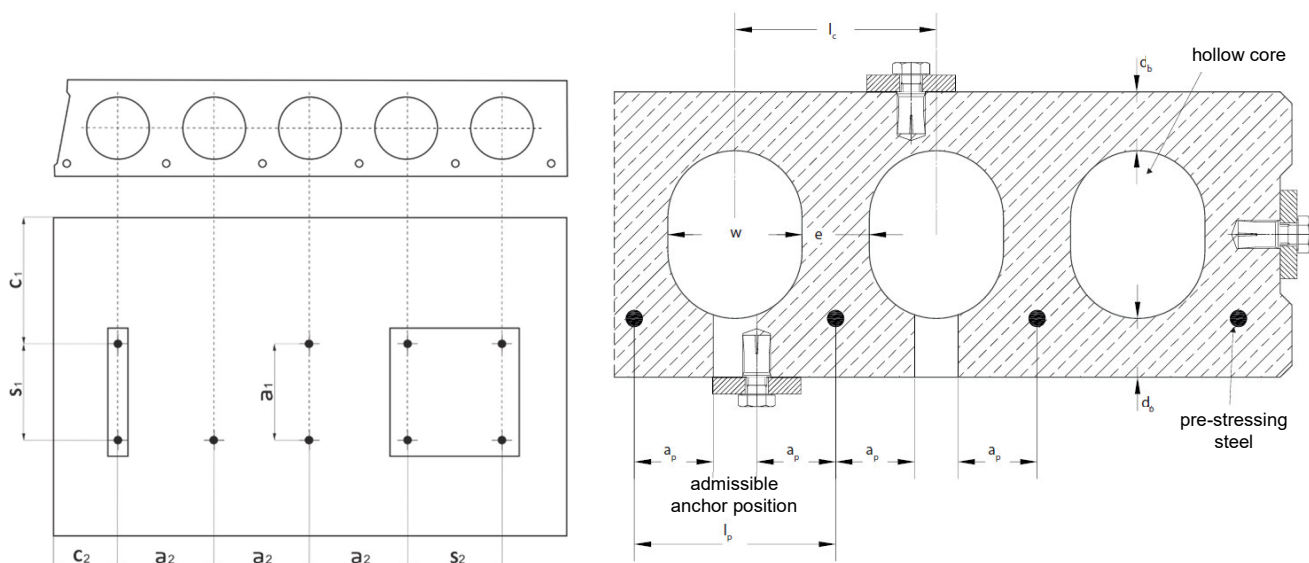
1) In absence of other national regulations the partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1,0$  is recommended

2) If the fire attack is from more than one side, the edge distance of the anchor has to be  $\geq 300$  mm and  $\geq 2 \times h_{ef}$

## Installation parameters for precast pre-stressed hollow core slabs

Anchor Type		WDI1R			
Anchor size		M6	M8	M10	M12
Minimum edge distance	$C_{min}$ [mm]	150	150	150	150
Minimum anchor spacing	$S_{min}$ [mm]	200	200	200	200
Flange thickness <sup>1)</sup>	$d_b$ [mm]	35	35	35	35
Core distance	$l_c$ [mm]	100	100	100	100
Pre-stressing steel distance	$l_p$ [mm]	100	100	100	100
Distance between anchor positions and pre-stressing steel	$a_p$ [mm]	50	50	50	50

1) The anchor may be set in a flange thickness of 30mm if the drill hole does not cut into the hollow core.



## Recommended loads for multiple use for non-structural applications in precast pre-stressed hollow core slabs for single anchors<sup>1)</sup>

Anchor Type		WDIR			
Anchor size		M6	M8	M10	M12
Precast pre-stressed hollow core slabs C30/37 to C50/60					
Recommended load in all directions	$F_{rec}$ [kN]	1.67	1.90	2.14	2.14
Characteristic edge distance	$C_{cr}$ [mm]	150	150	150	150
Characteristic anchor spacing distance	$S_{cr}$ [mm]	200	200	200	200

1) Single anchors are anchors not affected by concrete edge and anchor spacing influence.

2) Recommended load includes partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.

## The definition and requirements of multiple use for non-structural applications

The definition of multiple use according to the Member States is given in ETAG 001 Part 6, Annex 1. In the absence of a definition by a Member State the following default values may be taken:

Minimum number of anchors per fixing point	Minimum number of fixing points	Maximum design value of actions per fixing point
$[n_1]$	$[n_2]$	$[n_3]$
3	1	2.0 kN
4	1	3.0 kN

The maximum design value of actions per fixing point might be increased if in the design it is shown that the requirements on the strength and stiffness of the fixture in the serviceability and ultimate states after the failure of one anchor are fulfilled.

## Design method for anchorages for multiple use for non-structural applications

The design of the fixture is such that, in the case of excessive slip or failure of one anchor, the load can be transmitted to neighbouring anchors without significantly violating the requirements on the fixture in the serviceability and ultimate limit state.

For example the design of the fixture may specify the number  $n_1$  of fixing points to fasten the fixture and the number  $n_2$  of anchors per fixing point. Furthermore by specifying the design value of actions  $N_{sd}$  on a fixing point to a value  $\leq n_3$  (kN) up to which the strength and stiffness of the fixture are fulfilled and the load transfer in the case of excessive slip or failure of one anchor need not to be taken into account in the design of the fixture.