WDI2R Drop-in Anchor

Reduced-length drop-in anchor with a lip collar

Anchor types

WDI2R   M8x25
WDI2R   M10x25
WDI2R   M12x25

■ The **WDI2R** reduced-length drop-in anchors are easy to install deformation-controlled anchors for medium loads. They are assessed for redundant non-structural systems in cracked and non-cracked concrete and in precast prestressed hollow core slabs.

Features and benefits

■ European Technical Assessment according to EAD 330747-00-0601 (May 2018) for fasteners for use in concrete for redundant non-structural systems.
■ Increased productivity – the reduced 25mm anchor length minimizes drilling depth and speeds up installation

■ Approved applications in precast prestressed hollow core slabs
■ Complies with VdS CEA 4001: 2024-01 (08) for applications with sprinkler systems in concrete elements
■ Fire resistance class R30-R120 for design of anchorages under exposure to fire

Approvals and certificates

■ European Technical Assessment
■ Fire Test Report

ETA-22/0629, 30 September 2022
ETA-22/0629, 30 September 2022

Suitable base materials

■ Reinforced or unreinforced normal weight concrete without fibres according to EN 206-1:2013+A1:2016,
■ Strength classes C20/25 to C50/60 according to EN 206-1:2013+A1:2016,
■ Cracked or uncracked concrete
■ Precast, prestressed hollow core concrete slabs, strength C30/37 to C50/60 according to EN 206:2013+A1:2016
■ Fire-exposed concrete C20/25 to C50/50

Typical applications

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

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Product details

Article	Description	Size	Length	External diameter	Inner thread length
		[-]	[mm]	d_{nom} [mm]	l_g [mm]
6103310825	WDI2R 8x25	M8	25	10	14
6103311025	WDI2R 10x25	M10	25	12	14
6103311225	WDI2R 12x25	M12	25	15	14
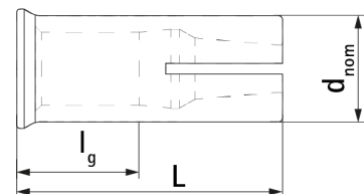
Packaging details

Article	Description	Pack 1		Pack 2	
		[pcs]	EAN13	[pcs]	EAN13
6103310825	WDI2R 8x25	100		1600	
6103311025	WDI2R 10x25	50		800	
6103311225	WDI2R 12x25	50		800	

Mechanical properties

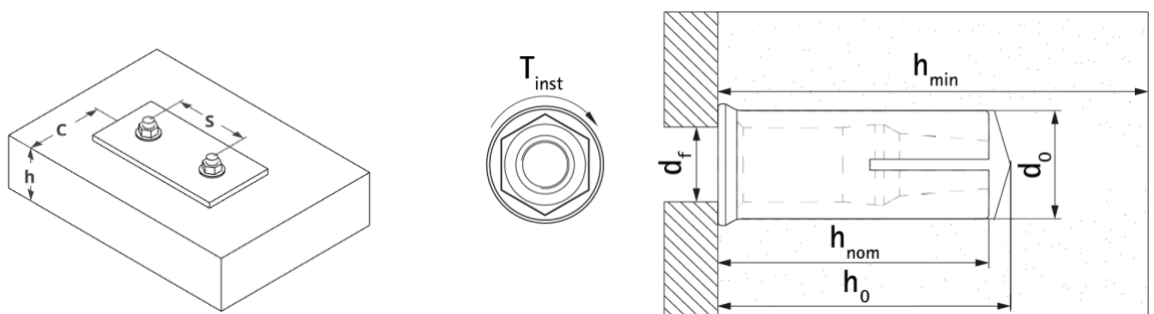| Anchor Type	WDI2L, WDI2R
Material	Carbon steel, zinc plated ≥ 5 µm ISO 4042 Zn5/An/T0
Fastener screw or threaded rod material	the bolt or threaded rod to be used shall be property class 4.6, 5.6, 5.8, 6.8 or 8.8 according to ISO 898-1

Setting tool

Article	Description	D1	D2	Ls
		[mm]	[mm]	d_{nom} [mm]
6103310825	WDI2R 8x25	10	6.4	15
6103311025	WDI2R 10x25	12	8.2	16
6103311225	WDI2R 12x25	15	10.0	10.4

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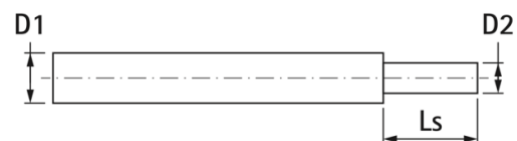
Installation parameters for concrete

Anchor Type			WDI2R		
Anchor size			M8	M10	M12
Anchor length	L	[mm]	25	25	25
Drill hole diameter	d_0	[mm]	10	12	15
Depth of drill hole	h_0	[mm]	28	28	29
Nominal embedment depth	h_{nom}	[mm]	25	25	25
Effective anchorage depth	h_{ef}	[mm]	25	25	25
Minimum screwing depth	$l_{s,min}$	[mm]	7	8	10
Maximum screwing depth	$l_{s,max}$	[mm]	12	13	13
Installation torque	T_{inst}	[Nm]	11	17	38
Diameter clearance of hole in the fixture	d_f	[mm]	9	12	14
Minimum concrete member thickness	h_{min}	[mm]	80	80	80
Minimum edge distance	C_{min}	[mm]	60	60	60
Minimum anchor spacing	S_{min}	[mm]	75	75	75

Instructions for installation in concrete

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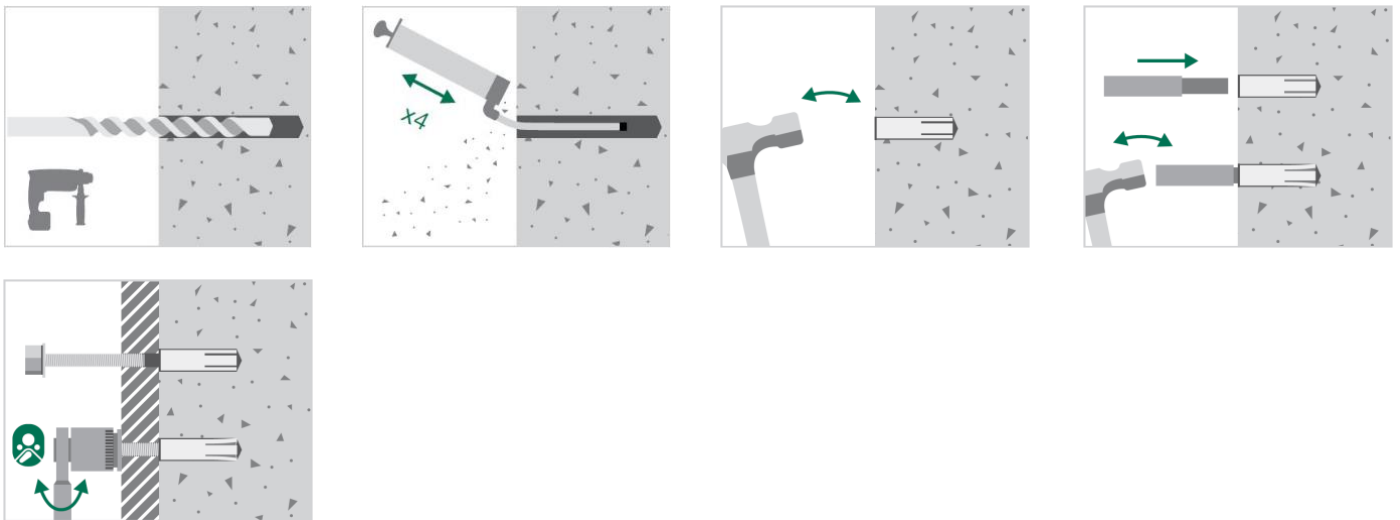
Recommended loads for redundant non-structural systems in concrete for single anchors[1]

Anchor Type			WDI2R		
Anchor size			M8	M10	M12
Concrete C20/25 to C50/C60					
Recommended load in all directions	F_{rec}	[kN]	0.99	1.58	1.58
Characteristic edge distance	C_{cr}	[mm]	60	60	60
Characteristic anchor spacing distance	S_{cr}	[mm]	120	120	120

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[1]

Anchor Type				WDI2R		
Anchor size				M8	M10	M12
All load directions						
R30				0.54	0.54	0.54
R60	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0.54	0.54	0.54
R90				0.44	0.54	0.54
R120				0.37	0.43	0.43
R30-R120	Spacing distance	$S_{cr,fi}$	[mm]	4 x h_{ef}		
R30-R120	Edge distance	$C_{cr,fi}$	[mm]	2 x h_{ef} [2]		

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 ≥ 300 mm and ≥ 2 x h_{ef}

Installation parameters for precast pre-stressed hollow core slabs

Anchor Type			WDI2R		
Anchor size			M8	M10	M12
Minimum edge distance	C_{min}	[mm]	150	150	150
Minimum anchor spacing	S_{min}	[mm]	200	200	200
Flange thickness ≥	d_b	[mm]	35	35	35
Core distance ≥	l_c	[mm]	100	100	100
Pre-stressing steel distance ≥	l_p	[mm]	100	100	100
Distance between anchor positions and pre-stressing steel ≥	a_p	[mm]	50	50	50

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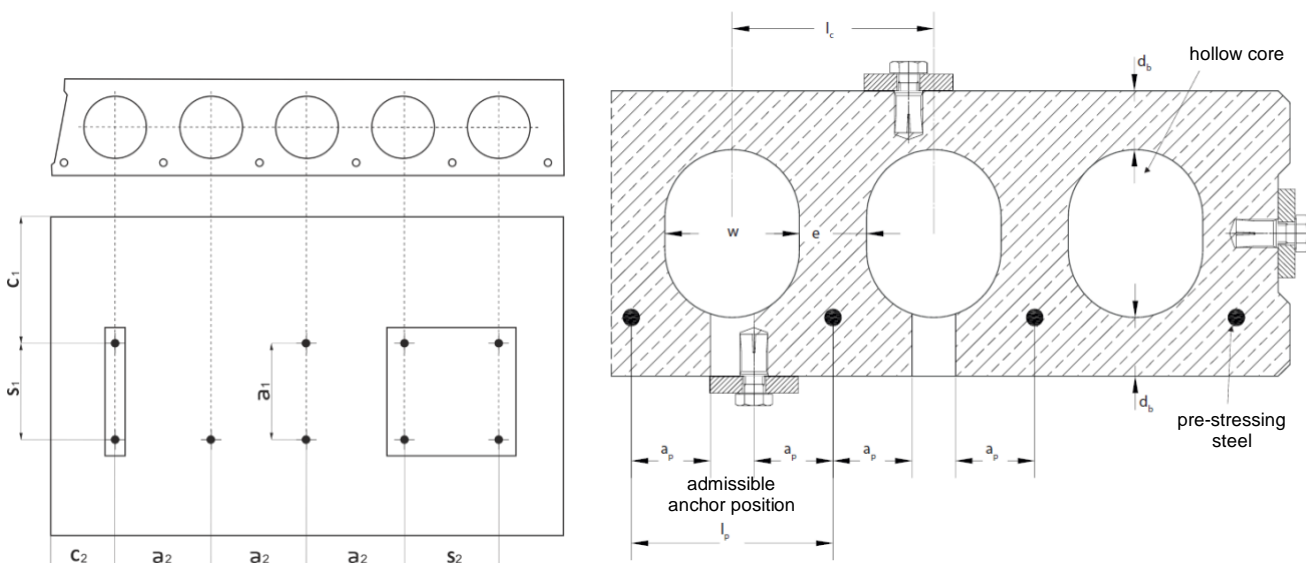
Recommended loads for redundant for non-structural systems in precast pre-stressed hollow core slabs for single anchors[1]

Anchor Type			WDI2R		
Anchor size			M8	M10	M12
Precast pre-stressed hollow core slabs C30/37 to C50/60					
Recommended load in all directions	F_{rec}	[kN]	2.18	2.04	2.21
Characteristic edge distance	C_{cr}	[mm]	150	150	150
Characteristic anchor spacing distance	S_{cr}	[mm]	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 redundant non-structural systems

The definition of multiple use according to the Member States is given in CEN / TR 17079. In the absence of a definition by a Member State the following default values may be taken:

Minimum number of fixing points	Minimum number of anchors per fixing point	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 redundant non-structural systems

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 ≤ 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.

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