ARROW
CATALOGUE-2026
ARROW ANCHOR FASTENERES



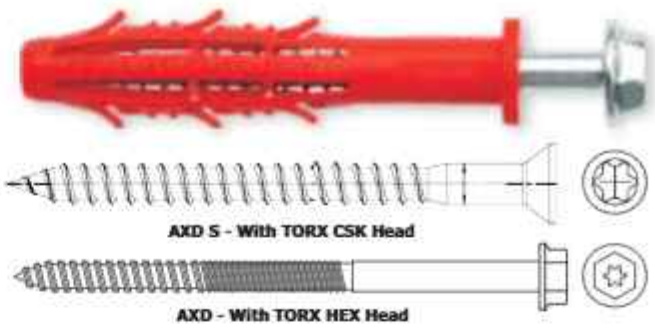


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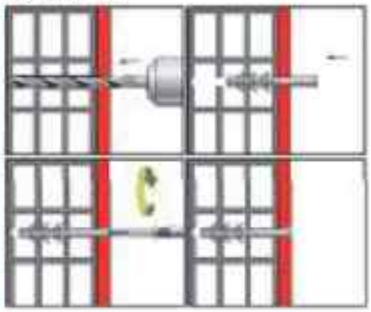
AXD

EUROPEAN TECHNICAL INSTITUTE APPROVED



The AXD Nylon Frame Anchor Fastener has a 4-way expansion area and is suitable for through - fixing into bricks, concrete, etc. The special internal design of 4-way expansion and pure nylon polyamide plug provides a firm and secure fixing into concrete, stone and softer materials such as bricks and low density block work.

INSTALLATION:



APPLICATION

- Hollow Brick
- Brick
- Concrete
- Stone
- Auto Aerated Concrete

MATERIAL

PLUG
Polyamide PA6.6 (Nylon)

Screw
- Carbon Steel Grade 8.8
- SS 304
- SS 316

ADVANTAGES

- Strong Anchoring
- High Temperature Resistance
- 4-way Expansion

TECHNICAL DATA :

Size	Plug Length	Screw Ø	Anchor Length	Drill Bit	Minimal Drill Depth	*
AXD 8x80	70	6.0	80	TORX 30	90	100
AXD 8x100	90	6.0	100	TORX 30	110	100
AXD 10x80	70	6.8	80	TORX 40	90	60
AXD 10x100	90	6.8	100	TORX 40	110	50
AXD 10x120	110	6.8	120	TORX 40	130	50
AXD 10x140	130	6.8	140	TORX 40	150	40
AXD 10x160	150	6.8	160	TORX 40	170	30

All figures are in mm
* Denotes pieces per box

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AXD – LOAD PERFORMANCE DATA

Recommended Load (For Single Anchor)

Type of anchor	Screw size [mm]	Base material	Embedment Depth h_{nom} [mm]	Tensile Strength N_{rec} [kN]
AXD ø8	4.8	Concrete C20/25 ÷ C50/60	40	1.32
		Clay bricks MZ class 20	40	0.4
		Calcium silicate bricks KS class 20	40	0.34
		Calcium silicate hollow blocks SILKA class 15	40	0.3
		Vertically perforated clay bricks class 15	40	0.21
		Autoclaved concrete blocks PP6 600/4	40	0.4
AXD ø10	6.8	Concrete C20/25 ÷ C50/60	58	2.4
		Clay bricks MZ class 20	58	1.7
		Calcium silicate bricks KS class 20	58	1.65
		Calcium silicate hollow blocks SILKA class 15	58	0.8
		Vertically perforated clay bricks class 15	58	0.48
		Autoclaved concrete blocks PP6 600/4	58	1.12

Note: Recommended loads are derived by applying a safety factor of γ=2.5 on the characteristic resistance.
Recommended loads in kN (1kN ≅ 100kg)

100% PURE NYLON POLYAMIDE

4 - WAY EXPANSION



Packaging





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ARROW THROUGH BOLT WEDGE ANCHOR (ATBWA)

MATERIAL:
M.S, S.S.304 & S.S.316
SUTABLE FOR NON CRACKED CONCRETE & CRACKED CONCRETE

APPLICATION
1) Lifts & Car Parking Systems
2) Facade & Cladding Work
3) Heavy Duty Structure
4) Railings
5) Piping
6) Plant Engineering
7) Support Plates Fixing etc.

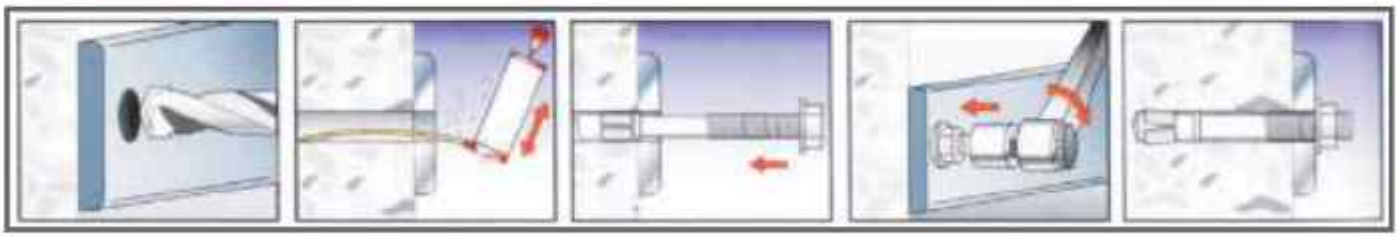


Characteristics:-
- High performances through steel anchor composed of steel pin, nut, washer and expansion clip.
- When the hexagonal nut is tightened, the tapered bolt is pulled into the expansion clip and expands it against the drill hole wall
- Reduced hole diameter
- Suitable for through-setting applications in concrete
- Thread diameter and hole diameter are the same
- Reinforced anchor's head to avoid damaging the thread during the installation
- Special designed expansion clip granting a smooth expansion and avoiding the rotation of the anchor during the installation

Installation:
- Through-setting anchor

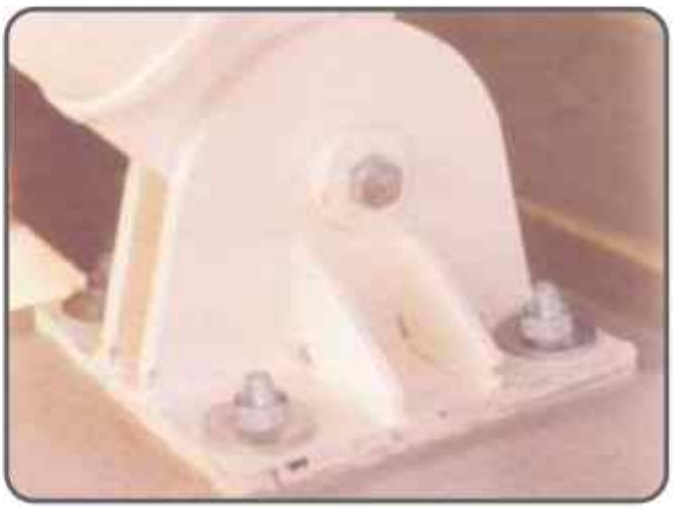
Suggestion for use:
- Choose the right size of the anchor according to the load.
- Always check load bearing capacity values in the table.
- Respect the installation data.
- Clean the hole before the installation.

Installation Method



Application

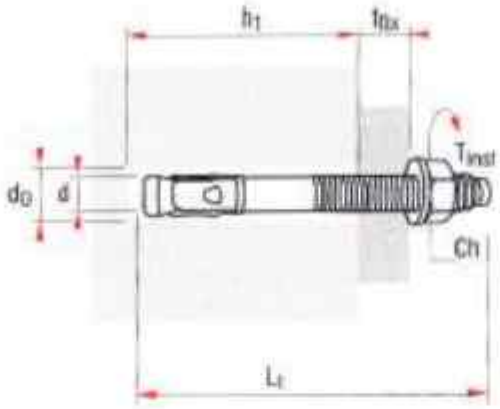




ARROW THROUGH BOLT WEDGE ANCHOR (ATBWA)
Material ? Mild Steel, GI Plated (as per IS 1367) ? SS 304 ? SS 316

04 ATBWA





THREAD SIZE & LENGTH MM

d_0 = Drill hole dia. In base material
L = Anchor Length
h_1 = Min. Hole Depth
d = Base plate hole clearance
h = Effective Embedment depth
Nm = t_{inst} Tightening Torque
t_{fix} = Max. Fastenable Thickness
h_{min} = Min. Concrete Thickness

Technical Data

ORDER CODE No.	THREAD SIZE & LENGTH MM	DRILL HOLE DIA In Base Material d(mm)	ANCHOR LENGTH L(mm)	MIN HOLE DEPTH h(mm)	BASE PLATE HOLE CLEARANCE d (mm)	EFFECTIVE EMBEDMENT DEPTH h (mm)	MAX FASTENABLE THICKNESS t (mm)
ATBWA 6x65mm	M6X65	6	75	40	8	35	10
ATBWA 8x75mm	M8X75	8	75	65	10	45	10
ATBWA 8x100mm	M8X100	8	100	65	10	45	20
ATBWA 8x125mm	M8X125	8	125	65	10	45	40
ATBWA 8x150mm	M8X150	8	150	65	10	45	50
ATBWA 10x90mm	M10X90	10	90	75	12	70	10
ATBWA 10x100mm	M10X100	10	100	75	12	70	25
ATBWA 10x150mm	M10X150	10	150	75	12	70	50
ATBWA 12x100mm	M12X100	12	100	90	14	70	10
ATBWA 12x115mm	M12X115	12	115	90	14	70	25
ATBWA 12x150mm	M12X150	12	150	90	14	70	50
ATBWA 16x125mm	M16X125	16	125	110	18	85	10
ATBWA 16x150mm	M16X150	16	150	110	18	85	25
ATBWA 16x200mm	M16X200	16	200	110	18	85	50
ATBWA 20x150mm	M20X150	20	150	125	22	100	20
ATBWA 20x200mm	M20X200	20	200	125	22	100	50

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ARROW THROUGH BOLT WEDGE ANCHOR (ATBWA)



LOAD DATA (For Single Anchor)

Anchor Type (ATBWA)

ATBWA			M6	M8	M10	M12	M16	M20
Anchor diameter	d	mm	6	8	10	12	16	20
Anchor length	L	mm	50	75-150	90-150	100-150	125-200	150-200
Effective anchorage depth	h	mm	35	45	60	70	85	100
Fixture Thickness	t	mm	06-40	08-50	10-50	10-65	10-100	10-100
Drill hole diameter	d	mm	6	8	10	12	16	20
Drill Hole depth	h	mm	50	65	75	90	110	125
Hole diameter in fixture	d	mm	8	10	12	14	18	22
Minimum axial spacing	S	mm	50	50	55	60	70	100
Minimum edge distance	C	mm	50	50	50	65	85	140
Minimum structural thickness	h	mm	100	100	120	140	170	250

LOAD DATA

ATBWA Mild Steel, GI Plated (as per IS 1367)

All values in this section are based on the following conditions:

? Correct anchor installation (refer to setting instructions)
? No influence from edge distance or anchor spacing
? Minimum concrete member thickness is maintained
? Concrete grade: C25/30- Uncracked concrete substrate
? Dry indoor conditions (unless specified for stainless steel)

Characteristic Resistance R_k In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	6.9	12	19.5	24.6	37.2	51.9
Shear V_{Rk}		[kN]	9.6	15.6	21.9	28.8	54.6	76.8

Characteristic Resistance R_k In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	3	6	12	16.5	27	39
Shear V_{Rk}		[kN]	12	19.5	30	48	81	96
Bending Moment	M_{Rk}	[kN]	12	21	48	72	186	250

Recommended Loads Frec In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		[kN]	2.3	4	6.5	8.2	12.4	17.3
Shear V_{Rec}		[kN]	3.2	5.2	7.3	9.6	18.2	25.6

Recommended Loads Frec In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		[kN]	1	2	4	5.5	9	13
Shear V_{Rec}		[kN]	4	6.5	10	16	27	32
Bending Moment	M_{Rk}	[kN]	9	14	32	48	124	190

ARROW THROUGH BOLT WEDGE ANCHOR (ATBWA)

06
ATBWA



Technical Data
LOAD DATA for ATBWA SS 304 [A2]

Characteristic Resistance R_k In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	8.4	12.6	20.4	25.2	39.6	55.2
Shear V_{Rk}		[kN]	10.8	16.8	23.7	31.8	61.5	83.4

Characteristic Resistance R_k In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	3	6.9	15	19.5	39	45
Shear V_{Rk}		[kN]	15	21	36	54	84	120
Bending Moment	M_{Rk}	[kN]		21	48	72	186	250

Recommended Loads Frec In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		[kN]	2.8	4.2	6.8	8.4	13.2	18.4
Shear V_{Rec}		[kN]	3.6	5.6	7.9	10.6	20.5	27.8

Recommended Loads Frec In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		Kn	1	2.3	5	6.5	13	15
Shear V_{Rec}		Kn	5	7	12	18	28	40
Bending Moment	M_{Rk}	Kn		14	32	48	124	190

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ARROW THROUGH BOLT WEDGE ANCHOR (ATBWA) SS 316 (A4)



Technical Data
LOAD DATA for ATBWA SS 316 [A4]

Characteristic Resistance R_k In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	8.4	12.6	20.4	25.2	39.6	55.2
Shear V_{Rk}		[kN]	12.9	17.7	25.2	35.4	69.6	93

Characteristic Resistance R_k In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rk}		[kN]	3	6.9	15	19.5	39	45
Shear V_{Rk}		[kN]	18	24	42	60	90	129
Bending Moment	M_{Rk}	[kN]		21	48	72	186	250

Recommended Loads Frec In Non - Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		[kN]	2.8	4.2	6.8	8.4	13.2	18.4
Shear V_{Rec}		[kN]	4.3	5.9	8.4	11.8	23.2	31

Recommended Loads Frec In Cracked Concrete C 25/30 (For Single Anchor)

Anchor size			M6	M8	M10	M 12	M16	M 20
Tensile N_{Rec}		Kn	1	2.3	5	6.5	13	15
Shear V_{Rec}		Kn	5	7	12	18	28	40
Bending Moment	M_{Rk}	Kn		14	32	48	124	190

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ARROW SLEEVE ANCHOR (ASLE)

08
ASLE

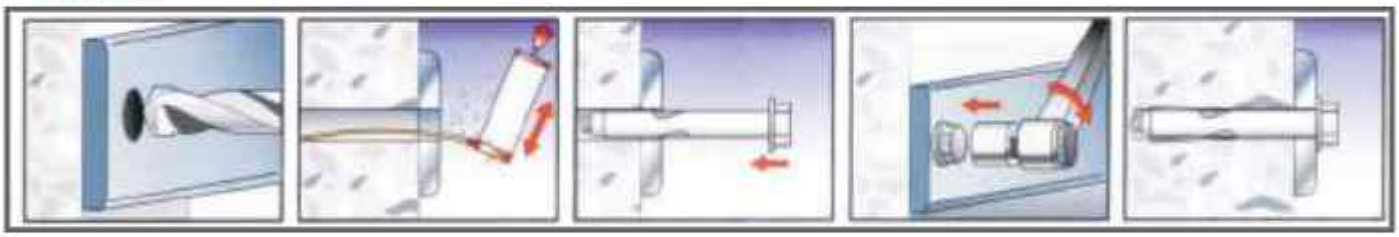


SUITABLE FOR :-
NON-CRACKED CONCRETE
NATURAL STONE
SOLID BRICK
TORQUE CONTROLLED EXPANSION

Material.
Carbon steel
Galvanized to min 5 microns.

Application
1)Cable trays
2)Plates
3)False ceiling
4)Railings
5)Plant engineering
6)Stairs
7)Signs
8)Satellites dishes

Installation



Application

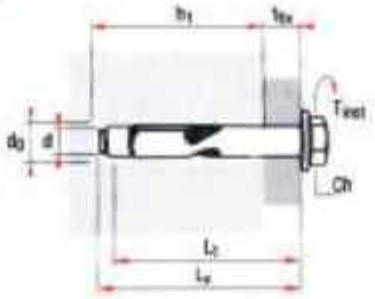




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ARROW SLEEVE ANCHOR (ASLE)





d_0 = Drill hole dia. In base material
L = Anchor Length
h_1 = Min. Hole Depth
d = Base plate hole clearance
h = Effective Embedment depth
Nm = t_{inst} Tightening Torque
t_{fix} = Max. Fastenable Thickness
h_{min} = Min. Concrete Thickness

Technical Data

ARROW SLEEVE ANCHOR (ASLE)

ORDER CODE No.	THREAD SIZE MM	DRILL HOLE DIA In Base Material d_0 (mm)	ANCHOR LENGTH L_1 (mm)	MIN HOLE DEPTH h_1 (mm)	BASE PLATE HOLE CLEARANCE d (mm)	TIGHTENING TORQUE (Nm)	EFFECTIVE EMBEDMENT DEPTH h (mm)	MAX FASTENABLE THICKNESS t_{fix} (mm)	MIN. CONCRETE THICKNESS h_{min} (mm)
ASLE 6.5x40	5	6.5	40	30	8	4	20	5	100
ASLE 6.5x50	5	6.5	50	30	8	4	20	20	100
ASLE 6.5x60	5	6.5	60	30	8	4	20	40	100
ASLE 8x50	6	8	50	40	10	8	30	10	150
ASLE 8x60	6	8	60	40	10	8	30	15	150
ASLE 8x75	6	8	75	40	10	8	30	30	150
ASLE 8x90	6	8	90	40	10	8	30	55	150
ASLE 10x40	8	10	40	50	12	10	35	5	150
ASLE 10x50	8	10	50	50	12	10	35	15	150
ASLE 10x60	8	10	60	50	12	10	35	25	150
ASLE 10x80	8	10	80	50	12	10	35	45	150
ASLE 10x100	8	10	100	50	12	10	35	65	150
ASLE 12x75	10	12	75	60	14	12	40	15	150
ASLE 12x90	10	12	90	60	14	12	40	35	150
ASLE 12x110	10	12	110	60	14	12	40	60	150
ASLE 16x75	12	16	75	75	18	15	50	10	150
ASLE 16x100	12	16	100	75	18	15	50	25	150
ASLE 16x125	12	16	125	75	18	15	50	50	150

Design Resistance

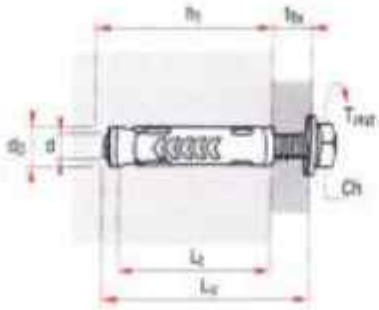
Anchor Size		M5	M6	M8	M10	M12	M16
Tensile load N	(kN)	1.5	3	4	5	6.5	7.5
Shear Load V	(kN)	2	4	5	7	12	13

Recommended Loads[a)]

Anchor Size		M5	M6	M8	M10	M12	M16
Tensile load N	(kN)	1	2	3	4	4.0	6
Shear Load V	(kN)	1.3	3	4	6	8	9

Arrow Tam Anchor (ATA)





d_0 = Drill hole dia. In base material
L = Anchor Length
h_1 = Min. Hole Depth
d = Base plate hole clearance
h = Effective Embedment depth
Nm = t_{inst} Tightening Torque
t_{fix} = Max. Fastenable Thickness
h_{min} = Min. Concrete Thickness

Technical Data

Arrow Tam Anchor (ATA)

ORDER CODE No.	THREAD SIZE & Length MM	DRILL HOLE DIA in Base Material d_0 (mm)	MIN HOLE DEPTH h_1(mm)	ANCHOR LENGTH L(mm)	EFFECTIVE EMBEDMENT DEPTH h (mm)	BASE PLATE HOLE CLEARANCE d (mm)	TIGHTENING TORQUE (Nm)	MAX FASTENABLE THICKNESS t_{fix} (mm)	MIN. CONCRETE THICKNESS h_{min} (mm)
ATA 6x50mm	6 X 50	10	50	50	50	8	8	5	100
ATA 6x60mm	6 X 60	10	60	60	50	8	8	5	100
ATA 6x75mm	6 X 75	10	75	75	50	8	8	10	100
ATA 8x60mm	8 X 60	13	60	60	60	10	15	5	150
ATA 8x75mm	8 X 75	13	75	75	60	10	15	10	150
ATA 8x100mm	8 X 100	13	100	100	60	10	15	10	150
ATA 10x75mm	10 X 75	16	75	75	75	12	27	5	150
ATA 10x100mm	10 X100	16	100	100	75	12	27	10	150

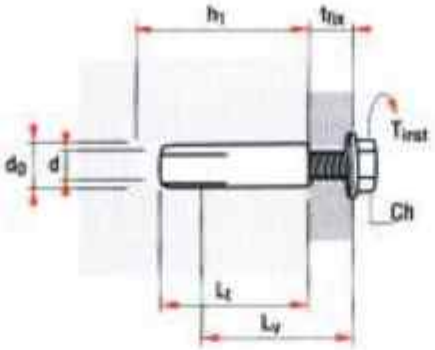
RECOMMENDED LOAD (Kn) in concrete grade M25

Order Code No.	Anchor size mm	Tensile loan N	Shear load V
ATA	6 X 50	3.7	5
ATA	6 X 60	3.7	5
ATA	6 X 75	3.7	5
ATA	8 X 60	5	7
ATA	8 X 75	5	7
ATA	8 X 100	5	7
ATA	10 X 75	8	10
ATA	10 X 100	8	10

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ARROW DROP-IN ANCHOR (ADIN)
Material --- Mild Steel Galvanized





d_0 = Drill hole dia. In base material
L = Anchor Length
h_1 = Min. Hole Depth
d = Base plate hole clearance
h = Effective Embedment depth
Nm = t_{inst} Tightening Torque
t_{fix} = Max. Fastenable Thickness
h_{min} = Min. Concrete Thickness

ARROW DROP-IN ANCHOR (ADIN)
Material --- Mild Steel Galvanized

Order Code No.	Anchor Thread Size mm	Drill Hole Diameter d0mm	Min. Hole Depth h1mm	Anchor Length L mm	Min Anchorage Depth h mm	Hole In the Fixture Plate T mm	Tightening Torque Nm	Min Concrete Thickness h_{min} mm
ADIN	6	8	27	25	25	8	4	100
ADIN	8	10	32	30	30	10	7	100
ADIN	10	12	42	40	40	12	13	100
ADIN	12	16	53	50	50	14	30	150
ADIN	16	20	68	65	65	18	55	150
ADIN	20	25	85	80	80	22	110	200

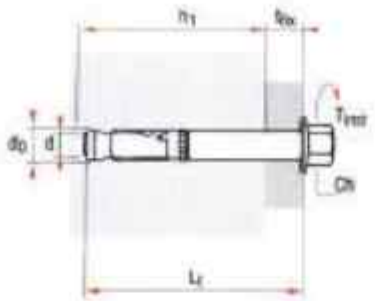
RECOMMENDED LOAD (Kn) in concrete grade M25

Order Code No.	Anchor Size MM	Tensile Load N	Sher Load V
ADIN	6 X 25	1.5	3
ADIN	8 X 30	2.5	4
ADIN	10 X 40	3.5	6
ADIN	12 X 50	5.5	10
ADIN	16 X 65	8.5	14
ADIN	20 X 80	10.1	17

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Arrow Heavy Duty Anchor (AHDA)





d_0 = Drill hole dia. In base material
L = Anchor Length
h_1 = Min. Hole Depth
d = Base plate hole clearance
h = Effective Embedment depth
Nm = t_{inst} Tightening Torque
t_{fix} = Max. Fastenable Thickness
h_{min} = Min. Concrete Thickness

Technical Data

Arrow Heavy Duty Anchor (AHDA)

Material - Steel Strength 8.8 grade galvanized to min 5 microns

ORDER CODE No.	THREAD SIZE & Length MM	DRILL HOLE DIA In Base Material d_0 (mm)	ANCHOR LENGTH L(mm)	Hole Depth h(mm)	t_{fix} (mm)	Tightening Torque Nm	MIN. CONCRETE THICKNESS h_{min} (mm)
AHDA 10/70	M6 x 10 x 70	10	70	80	5	15	200
AHDA 10/100	M6 x 10 x 100	10	100	80	35	15	200
AHDA 12/100	M8 x 12 x 100	12	100	90	30	30	200
AHDA 12/120	M8 x 12 x 120	12	120	90	50	30	200
AHDA 16/120	M10 x 16 x 120	16	120	100	40	50	200
AHDA 16/140	M10 x 16 x 140	16	140	100	60	50	200
AHDA 18/120	M12 x 18 x 120	18	120	120	20	100	200
AHDA 18/150	M12 x 18 x 150	18	150	120	50	100	250
AHDA 24/140	M16 x 24 x 140	24	140	140	20	160	250
AHDA 24/170	M16 x 24 x 170	24	170	140	50	160	250

RECOMMENDED LOAD (Kn) in concrete grade M25 (non-cracked concrete)

Anchor size mm	M8 Ø 12	M10 Ø 15	M12 Ø 18	M16 Ø 24
Tensile load N	10	12	15	20
Shear load V	15	25	35	48

RECOMMENDED LOAD (Kn) in concrete grade M25 (in-cracked concrete)

Anchor size mm	M8 Ø 12	M10 Ø 15	M12 Ø 18	M16 Ø 24
Tensile load N	5	6	7.5	11
Shear load V	15	25	35	48

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ARROW Zinc plated Hex with Flange Concrete Screw Anchor

Self-tapping concrete screwbolt



Product information

Features and benefits

- Time-efficient through-fixing installation with streamlined procedure - simply drill and drive.
- Completely removable with possibility of reuse
- Unique design with patented threadform ensures high performance for relatively small hole diameter
- Non-expansion functioning ensures low risk of damage to base material and makes R-LX ideal for installation near edges and adjacent anchors
- High performance in both uncracked and cracked concrete
- Different head types for any application
- Oversize head for fixtures with elongated holes
- Excellent product for temporary fixing
- Suitable for standard and reduced embedment depth

Applications

- Through-fixing
- Temporary anchorages
- Formwork support systems
- Balustrading & handrails
- Fencing & gates manufacturing and installation
- Racking systems
- Public seating
- Scaffolding

Base materials

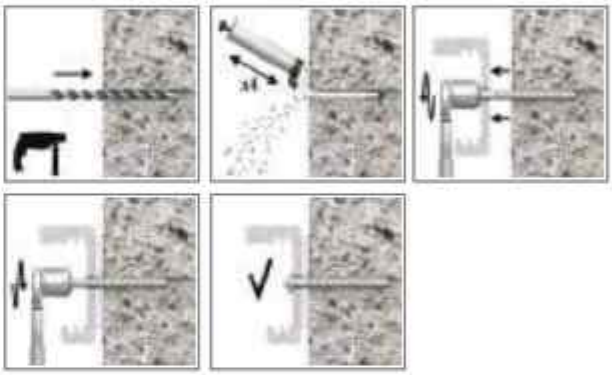
Approved for use in:

- Cracked concrete C20/25-C50/60
- Non-cracked concrete C20/25-C50/60
- Reinforced concrete
- Unreinforced concrete

Also suitable for use in:

- Natural Stone (after site testing)

Installation guide

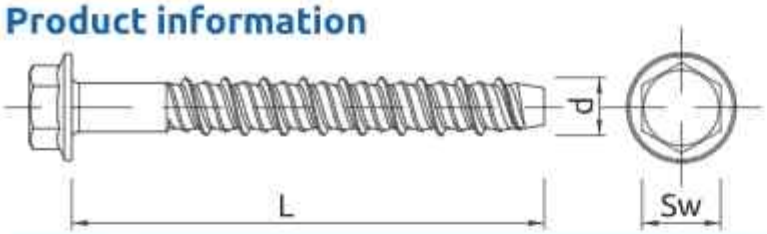


1. Drill the hole with rotary hammer drilling machine. Drill to a required depth.
2. Blow out dust at least 4 times with a hand pump.
3. Possibility of unscrewing and re-screwing.
4. Tighten to the recommended torque.
5. After installation.

Basic performance data

Size		8	10	12	14
MEAN ULTIMATE LOAD					
TENSION LOAD $N_{Ru,m}$					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	26.04	35.37	44.72	59.96
Reduced embedment depth	[kN]	14.58	17.08	18.37	26.79
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	16.10	24.89	31.47	41.92
Reduced embedment depth	[kN]	10.10	10.70	10.80	17.40
SHEAR LOAD $V_{Ru,m}$					
NON-CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	26.04	51.91	71.19	98.91
Reduced embedment depth	[kN]	14.58	17.08	18.37	26.79
CRACKED CONCRETE C20/25					
Standard embedment depth	[kN]	18.33	49.78	62.94	83.83
Reduced embedment depth	[kN]	10.26	12.02	12.93	18.85

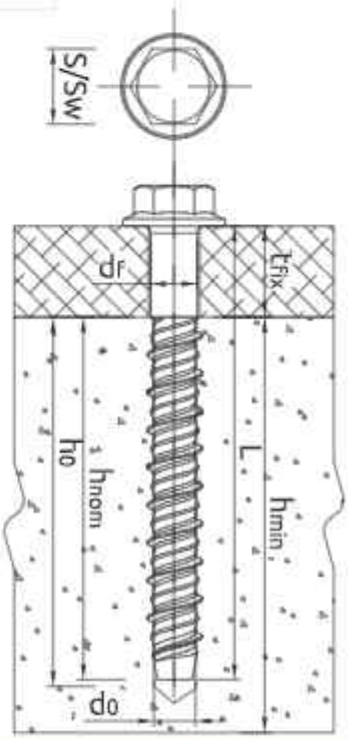
Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness t_{fix} for:		Hole diameter
		d	L	$h_{nom,cut}$	$h_{nom,bol}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
8	ARROW 08X060	10	60	10	-	12
	ARROW 08X075	10	75	25	5	12
	ARROW 08X090	10	90	40	20	12
	ARROW 08X100	10	100	50	30	12
	ARROW 08X120	10	120	70	50	12
	ARROW 08X130	10	130	80	60	12
	ARROW 08X150	10	150	100	80	12
10	ARROW 10X060	12.5	60	5	-	14
	ARROW 10X065	12.5	65	10	-	14
	ARROW 10X075	12.5	75	20	-	14
	ARROW 10X085	12.5	85	30	-	14
	ARROW 10X090	12.5	90	35	5	14
	ARROW 10X100	12.5	100	45	15	14
	ARROW 10X110	12.5	110	55	25	14
	ARROW 10X120	12.5	120	65	35	14
	ARROW 10X130	12.5	130	75	45	14
	ARROW 10X140	12.5	140	85	55	14
	ARROW 10X150	12.5	150	95	65	14
12	ARROW 12X075	14.9	75	15	-	16
	ARROW 12X100	14.9	100	40	-	16
	ARROW 12X130	14.9	130	70	30	16
	ARROW 12X150	14.9	150	90	50	16
14	ARROW 14X080	17	80	5	-	18
	ARROW 14X105	17	105	30	-	18
	ARROW 14X115	17	115	40	-	18
	ARROW 14X135	17	135	60	15	18
	ARROW 14X160	17	160	85	40	18

Installation data

Size			8	10	12	14
Thread diameter	d	[mm]	10	12.5	14.9	17
Hole diameter in substrate	d_0	[mm]	8	10	12	14
Wrench size	Sw	[mm]	13	15	16	19
External diameter of washer		[mm]	18	22	27	32
Max. torque for impact screw driver	$T_{max,max}$	[Nm]	900	950	950	950
STANDARD EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,s}$	[mm]	80	95	110	130
Real hole depth in substrate	h_0	[mm]	L + 10 - t_{fix}	L + 10 - t_{fix}	L + 10 - t_{fix}	L + 10 - t_{fix}
Min. installation depth	$h_{nom,s}$	[mm]	70	85	100	120
Min. substrate thickness	$h_{min,s}$	[mm]	110	130	155	190
Min. spacing	$s_{min,s}$	[mm]	50	60	80	100
Min. edge distance	$c_{min,s}$	[mm]	50	60	80	100
REDUCED EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,r}$	[mm]	60	65	70	85
Real hole depth in substrate	h_0	[mm]	L + 10 - t_{fix}	L + 10 - t_{fix}	L + 10 - t_{fix}	L + 10 - t_{fix}
Min. installation depth	$h_{nom,r}$	[mm]	50	55	60	75
Min. substrate thickness	$h_{min,r}$	[mm]	100	100	110	110
Min. spacing	$s_{min,r}$	[mm]	50	60	80	100
Min. edge distance	$c_{min,r}$	[mm]	50	60	80	100



ARROW CHEMICAL ANCHOR ROD (ACAR)



Technical Data

Material

1) MS (Mild Steel)
2) SS 304 (A2)
3) SS316 (A4)

Order code	Thread size	Drill hole dia-	Anchor Rod Length	Min. Hole depth	Hole Clearance In base plate	Max. Fastenable thickness	Min. Base Material thickness
ACAR 8x110	8	10	110	80	10	15	150
ACAR 10x130	10	12	130	90	12	20	150
ACAR 12x160	12	14	160	110	14	25	150
ACAR 14x200	14	16	200	125	16	40	180
ACAR 16x190	16	18	190	125	18	35	175
ACAR 20x240	20	24	240	170	24	45	250

Recommended Load (Kn) in concrete Grade M25 with Maximum Emendment Depth
Material M.S. 5.8 Grade

Order code	Anchor Size (mm)	Tensile Load (Kn)
ACAR	8 X 110	6
ACAR	10 X 130	9
ACAR	12 X 160	11
ACAR	14 X 200	14
ACAR	16 X 190	19
ACAR	20 X 240	27

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Highlights 2018
R-KER II

"STRENGTH AND SAFETY OF FIXING



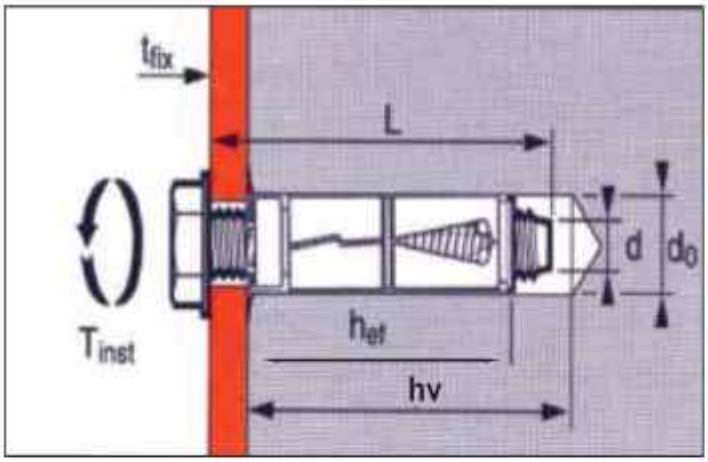


ETA · CE · EARTHQUAKE · C1 - C5 · ZP ZINC-PLATED · ZF ZINC FLAKE COATING · UNSZF · HDG · HCR · A2 · A4

Hybrid bonded anchor
R-KER II

Efficiency and comfort of use, high technical parameters confirmed by recognised certificates and a wide range of applications with different rod types guarantee durable and secure anchoring. It is the needs of our clients that inspired us to develop the R-KER II.

www.rawlplug.com





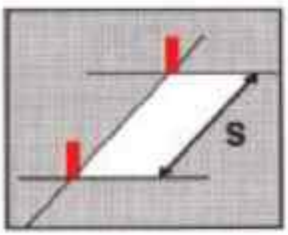


TECHNICAL SPECIFICATION

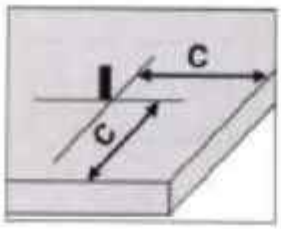
Order Ref No.	Bolt dia & length in d x L (mm)	Hole dia in concrete in do (mm)	Anchorage depth (hv)	Sheild length (mm) hef	Fixture thickness t fix		Bolt tightening torque Tinst	Working load in concrete 30 N/mm²				Edge distance c (mm)	Anchor spacing s (mm)
								Safe static load (kN)		ulimate load (kN)			
					Max	Min		Tension	shear	tension	shear		
A GRIP-M 6	6 x 50 6 x 60 6 x 75	12	50	45	5 10 25	10	6.5	2.5	5	7	10	96	120
A GRIP-M 8	8 x 60 8 x75 8 x 100	14	55	50	5 20 50	10	15	3.5	7	10	20	104	130
A GRIP-M 10	10 x 75 10 x 100	16	60	55	10 35	10	27	5	10	15	30	125	160
A GRIP-M 12	12 X 90	20	85	75	10	10	50	10	16	25	40	160	200
A GRIP-M 16	16 X 150	25	125	115	25	10	120	20	25	40	55	200	250
A GRIP-M 20	20 X 175	32	140	130	35	10	200	25	30	50	65	240	350

NOTE : EXTRA LENGTH AVAILABLE ON REQUEST

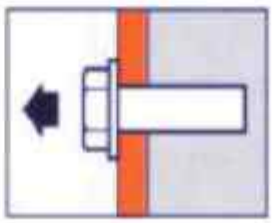
ANCHOR SPACING



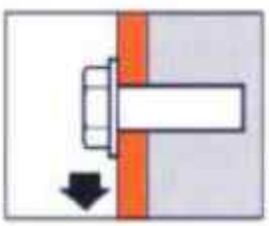
DISTANCE FROM EDGE



TENSILE LOAD



SHEAR LOAD

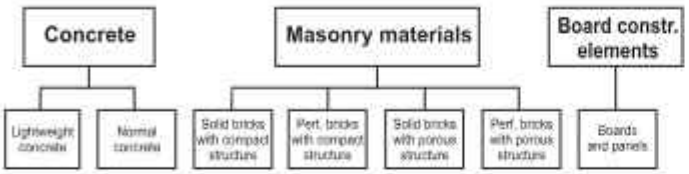


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Basic principals of fixing and anchor technology

1. Building material (Anchor base)

Classification of the most common building materials



1.1 Concrete

- **Lightweight concrete**
- **Normal concrete**
- **Compressed concrete**

e.g. B25= compressive strength of 25 N/mm² (concrete)
Lb10= compressive strength of 10N/mm² (lightweight) concrete)

▸ The higher the compressive strengths the higher the load. bearing capacity of the anchor.

2. Installation advice

2.1 Drilling methods according to the building material

- **Percussion drilling** with carbide drills
  Drilling at high speed with fast, short actions. Application: brickwork made of solid blocks.



- **Hammer drilling** with SDS-drills:
  Drilling at low speed with slow, strong actions. Application: concrete and natural stone.



2.2 Drilling-hole depth

- Larger than the anchorage depth of the fixing
  = sufficient space for dill dust and tip of the screw

2.3 Drill-hole cleaning

- Remove drill dust
- A clean drill-hole increases the strength characteristics

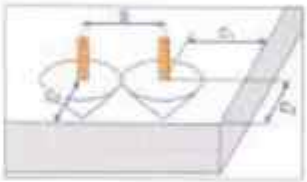


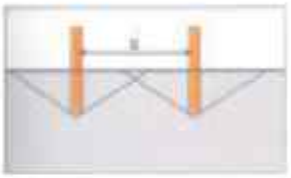
2.4 Anchorage depth/fixing thickness

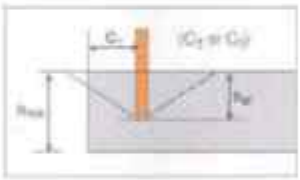
- Anchorage depth =h_v
  = distance between the upper edge of the load-bearing component and the end of the fixing
- Fixing thickness (through fixing) = t_{fix}
  = thickness of component to be attached

2.5 Edge and axial spacing

Compliance with edge and axial spacing prevents splitting or formation of cracks in the substrate.







Taking into account the stress values created by the expansion of anchors and the loads they are designed to support, the following points must be respected when establishing the performance of each individual product (recommended load):

☒ the minimum thickness of the base material
(detemined by anchor depth h_{ef})

☒ the minimum distance between anchors (S)

☒ the distance of anchors from edges of the slab or structure (C_1, C_2) and corners (C_3)

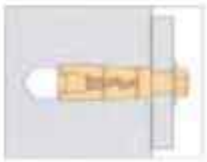
The coincidence of stress cones of adjacent anchor in concrete reduces their tensile performance.

☒ Anchor depth : h_{ef}

Each anchor has a minimum anchorage depth which guarantees its safe working load.

2.6 Installation methods

- **Flush fixing**
  - → Drill hole
  - → Install fixing flush with the surface
  - → Driver screw through the component to be attached and into the fixing

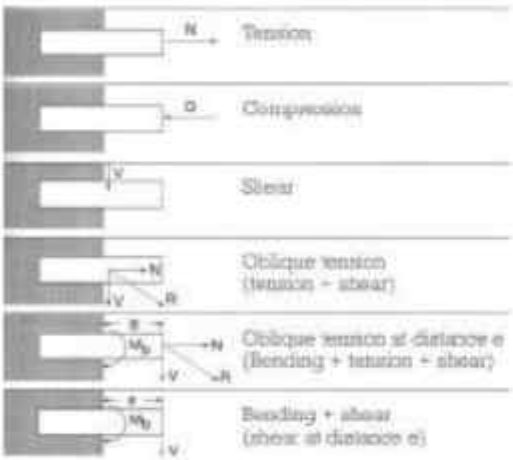


- **Trough fixing**
  - → Drill hole
  - → Insert fixing through the component to be attached and into the drill-hole, and expand



3. Loads

3.1 Types of load



3.2 Ultimate loads - safety coeffi cients - permissible loads

We distinguish between different types of loads :

- **Ultimate load** (mean value from at least 5 individual tests in uncracked building material). Failure criteria may be : splitting of the anchor base material, the fixing being pulled out, failure of the base material itself or steel failure.
- **Characteristic ultimate load** (5% fractile, i.e. where 95% of all ultimate loads are either reached or exceeded).
- **Permissible loads.** These are working loads, which already contain an appropriate safety coefficient.
- **Recommended loads.** These are working loads, which already contain an appropriate safety factor.

To determine the maximum recommended load the ultimate load is divided by a safety coefficient, e.g. for a steel fixing of 100kN breaking force:

$$\text{Max. recommended load} = \frac{\text{Ultimate load (F)}}{\text{Safety coefficient } (\gamma)}$$

$$\text{F work} = \frac{100\text{kN}}{4} = 25 \text{ kN } (1\text{kN} \simeq 100\text{kp})$$

As a safety factor we recommend :

a) in relation to ultimate load mean value : Steel anchor $\gamma \geq 4$

4. Load transfer mechanism (function)

examples from the arrow ranges of products

- **Mechanical interlock (friction)**

The expanding part of the fixing in pressed against the drill-hole wall.

Expansion achieved by application of torque.



- **Bonding (stress-free)**

Resin Capsule & Chemical Anchor

The anchor consists of a fixing elemant (male or female stud) and a synthetic - based mortar. Manufactured from 2 components, hardener and resin which when mixed together, which hardens to create the fixing by bonding to the base material.

Adhesive anchor do not generate stress in the building material.



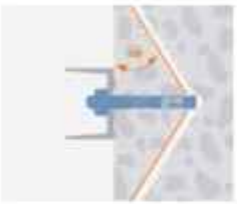
5. Modes of failure

Excessive loads, incorrect installation and a poor substrates can all lead to the failure of fixing systems.

Mode of failure **Cause**

Failure of the anchorage substrate

- load "N" too high
- anchorage substrate not strong enough
- anchorage depth insufficient



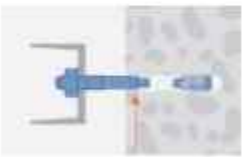
Splitting of the base material

- component dimentions too small
- edge-and axial spacing not observed
- expansion force to high



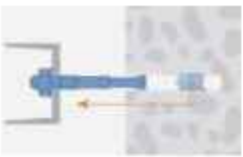
Pull-out of the fixing

- bond interlock fails due to excessive load or incorrect installation



Steel failure

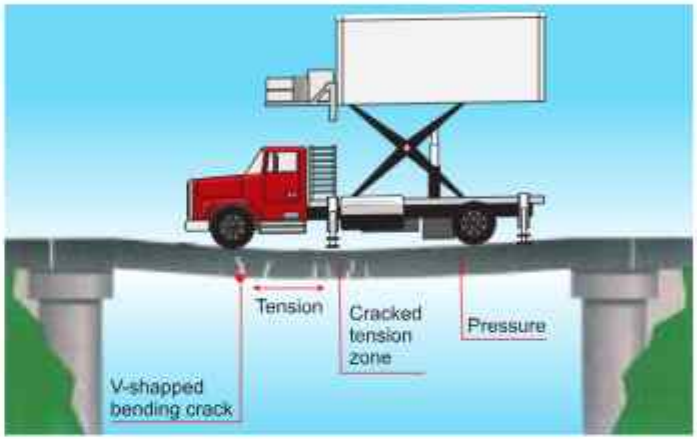
- steel component part insufficient strength for the required load



6. Cracks in concrete

6.1 Reasons for cracks caused by :

- Shrinkage and Loading of the concrete
- External influence such as earthquakes
- Inherent weight, traffic and wind loads, fluctuating temperatures
- Tension, deformation



- Concrete cannot expand
- This leads to the formation of countless, barely visible cracks **(= cracked tensile zone)**
- Cracks can also develop in buildings which have been in use for many years

6. 2 Steel anchors suitable for cracks

- Anchors which automatically continue to expand, where a crack occurs (=post-expansion), e.g. Arrow (ATBWA)



ARROW

ANCHOR FASTENER

FOR ARCHITECT INTERIOR DECORATORS AND FALSE CEILING CONTRACTORS

THE NEW GENERATION FALSE CEILING FASTENERS HAS ARRIVED

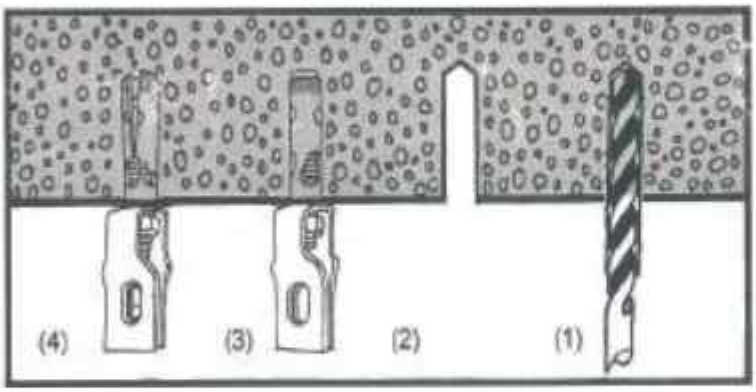
SPECIAL FEATURES

(1) The only single piece sleeve anchor with assembled hanger, taper bolt and nut, which has smaller drill dia, hence, low & economical drilling cost, Example 5 mm Fastener with 1/4" or 8 mm drill dia & 40 mm deep and having a safe load of 200 kgs in 30 N/mm² concrete.

(2) Economically priced to suit all budgets.

(3) Most suitable for false ceilings as well as light fixture hanging.

(4) Material mild steel (Zinc Plated).





FIXING METHOD

(1) Drill a hole of 1/4" or 8dia / 40 mm deep in the ceiling.

(2) Remove the dust with brush

(3) Insert the full assembly with sleeve in concrete and hanger projecting out as shown in the figure

(4) Now tighten the sleeve anchor by rotating the hanger with the spanner. In 3 to 5 turns the sleeve will slip on the taper bolt as the sleeve is provided with slits it will expand on tightening and take the grip

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*Note : More than 25,000 pcs of **ARROW FALSE CEILING FASTENER** have been used at ICICI site at Bandra - Kurla Complex, Mumbai*



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