DROP-IN ANCHOR

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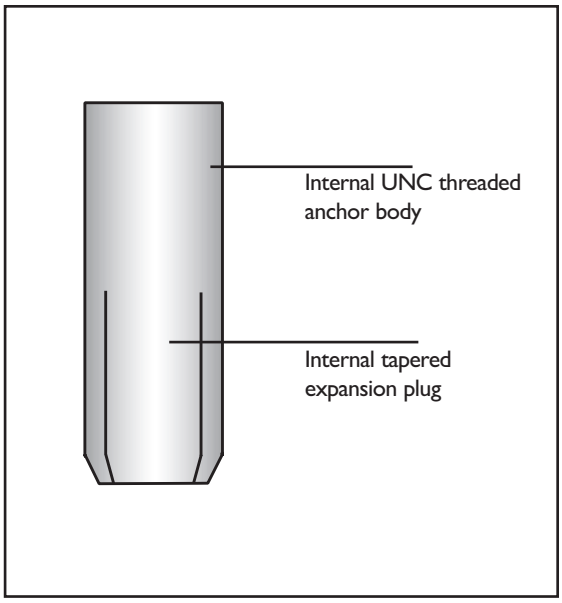
DESCRIPTION

The UCAN drop-in anchor is an internally threaded anchor which is pre-assembled with an internal expansion plug. These fire resistant anchors are available in both carbon steel and stainless steel. The carbon steel anchor is zinc plated to extend corrosion protection. The stepped installation tool allows for correct anchor setting. The anchor is designed to deliver consistent holding power at shallow embedment.



FEATURES

- Pre-assembled design
- Can be used in flush or countersunk applications

LIMITATIONS

- Not recommended for uncured concrete (less than 7 days old), light weight concrete, masonry block or brick

TYPICAL APPLICATIONS

- Sprinkler systems
- Cable trays
- Pipes and valves support
- Pallet racking
- Machinery Installation
- Precast wall inserts

APPROVAL / LISTINGS

- FM (Factory Mutual)
  Project identifier # 3015451

MATERIAL SPECIFICATIONS

Anchor Component	Material Standard	Mechanical Properties	
		F_y	F_u
Carbon steel anchor body	AISI C 1008R	248.2 MPa (36 ksi)	413.7 MPa (60 ksi)
Stainless steel (304) anchor body	AISI grade 304	241.3 MPa (35 ksi)	586.1 MPa (85 ksi)
Corrosion protection (carbon steel anchors)	ASTM B633 - 07	0.0002" (5 micron) electrodeposited	

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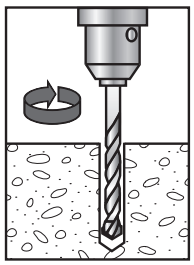
DROP-IN ANCHOR

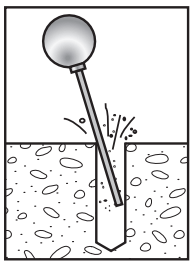
INSTALLATION

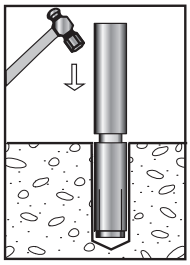
Details	Anchor size				
	1/4	3/8	1/2	5/8	3/4
Anchor size / Internal thread dia. d_a (in)	1/4	3/8	1/2	5/8	3/4
Drill bit / hole nominal diameter d_o (in)	3/8	1/2	5/8	7/8	1
Drill bit / hole nominal diameter for metric drop-ins d_o (mm)	8	12	n/a	20	n/a
Effective embedment / hole depth h_{ef} / h_1 (in)	1	1-1/2	2	2-1/2	3
Required anchor spacing for 100% performance s (in)	2-1/2	3-3/4	5	6-1/4	7-1/2
Minimum anchor spacing s_{min}	1-1/4	1-3/4	2-1/2	3-1/8	3-3/4
Required edge distance for 100% performance c (in)	3	4-1/2	6	7-1/2	9
Minimum edge distance c_{min}	1-1/2	3	4	5	6
Minimum bas material thickness h (in)	3	3-1/2	4	5	6
Max. installation torque T_{inst} (ft x lbf)	4	10	22	35	80

Note: Carbide tipped drill bits shall conform to ANSI B 212.15

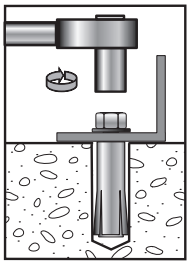


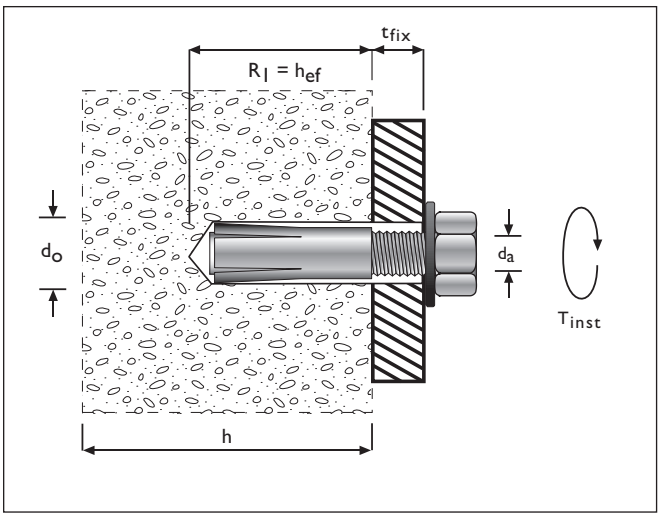
Set drilling depth so that anchor will be flush with concrete.

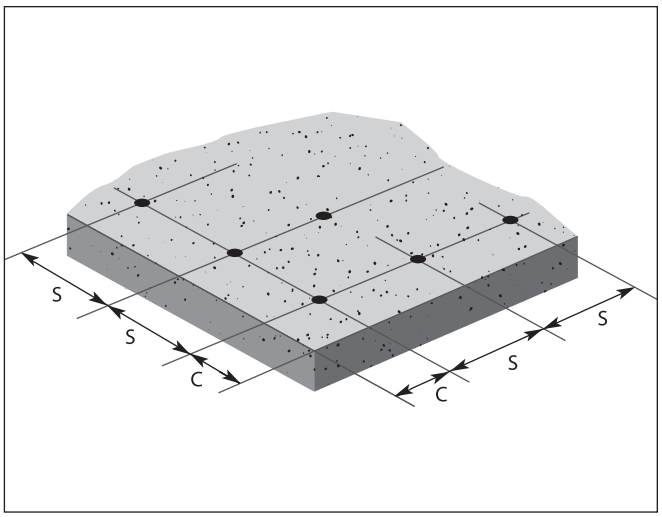




Use proper setting tool to drive plug down until tool's shoulder is flush with top of anchor.







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ANCHOR SELECTION

Size	Part Number	Thread Size inch	Thread Depth inch	Drill (hole) dia. inch	Anchor length inch
Carbon Steel / Zinc Plated					
1/4	IPA 1438	1/4 -20	7/16	3/8	1
1/4	IPA 14516	1/4 -20	7/16	8 mm	1
3/8	IPA 3812	3/8 -16	5/8	1/2	1-1/2
3/8	IPA 381532	3/8 -16	5/8	12 mm	1-1/2
1/2	IPA 1258	1/2 -13	3/4	5/8	2
5/8	IPA 5878	5/8 -11	1	7/8	2-1/2
5/8	IPA 582532	5/8 -11	1	20 mm	2-1/2
3/4	IPA 341	3/4 -10	1-1/4	1	3-1/8
Stainless Steel / AISI 304					
1/4	IPS 1438	1/4 -20	7/16	3/8	1
3/8	IPS 3812	3/8 -16	5/8	1/2	1-1/2
1/2	IPS 1258	1/2 -13	3/4	5/8	2
5/8	IPS 5878	5/8 -11	1	7/8	2-1/2
3/4	IPS 341	3/4 -10	1-1/4	1	3-1/8

DESIGN DATA

AVERAGE ULTIMATE LOADS
Normal weight stone aggregate concrete

Anchor Size	Emb.	2000 psi (14 MPa)				4000 psi (27.6 MPa)				6000 psi (41 MPa)			
		Tension		Shear		Tension		Shear		Tension		Shear	
inch	inch	lbs	kN	lbs	kN	lbs	kN	lbs	kN	lbs	kN	lbs	kN
1/4	1	2,115	9.41	1,850	8.23	2,167	9.64	2,150	9.56	3,045	13.54	2,350	10.45
3/8	1-1/2	2,630	11.70	3,950	17.57	3,960	17.61	5,250	23.35	5,367	23.87	5,300	23.58
1/2	2	5,045	22.44	6,090	27.09	6,239	27.75	8,150	36.25	8,814	39.21	9,420	41.90
5/8	2-1/2	5,450	24.24	10,068	44.78	8,681	38.61	13,000	57.83	13,553	60.29	14,700	65.39
3/4	3	10,665	47.44	16,500	73.40	12,080	53.73	19,500	86.74	16,028	71.30	21,200	94.30

Notes: Tested for Seismic loading by Trow/Ryerson report # BRBS0066591E.
The ultimate shear values are are based on SAE Grade 5 (F_u=120ksi) bolts.

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DROP-IN ANCHOR

DESIGN DATA

ALLOWABLE LOADS
Normal weight stone aggregate concrete

Anchor Size	Emb.	2000 psi (14 MPa)				4000 psi (27.6 MPa)				6000 psi (41 MPa)			
		Tension		Shear		Tension		Shear		Tension		Shear	
inch	inch	lbs	kN	lbs	kN	lbs	kN	lbs	kN	lbs	kN	lbs	kN
1/4	1	529	2.35	463	2.06	542	2.41	538	2.39	761	3.39	588	2.61
3/8	1-1/2	658	2.92	988	4.39	990	4.40	1,313	5.84	1,342	5.97	1,325	5.89
1/2	2	1,261	5.61	1,523	6.77	1,560	6.94	2,038	9.06	2,204	9.80	2,355	10.48
5/8	2-1/2	1,363	6.06	2,517	11.20	2,170	9.65	3,250	14.46	3,388	15.07	3,675	16.35
3/4	3	2,666	11.86	4,125	18.35	3,020	13.43	4,875	21.69	4,007	17.82	5,300	23.58

Note: Allowable loads maybe increased by 33⅓ % for short term loading due to Seismic forces.
The allowable shear values are are based on SAE Grade 5 (F_u=120ksi) bolts.

LOAD ADJUSTMENT FACTORS ANCHOR SPACING
(Tension & Shear Loads)

Anchor Spacing	Anchor Diameter				
inch	1/4	3/8	1/2	5/8	3/4
1-1/4	0.50				
1-1/2	0.60				
1-3/4	0.70	0.50			
2	0.80	0.65			
2-1/2	1.00	0.69	0.50		
3-1/8		0.84	0.63	0.50	
3-3/4		1.00	0.75	0.60	0.50
4-1/4			0.85	0.68	0.57
5			1.00	0.80	0.67
5-3/4				0.92	0.77
6-1/4				1.00	0.83
7					0.93
7-1/2					1.00

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LOAD ADJUSTMENT FACTORS - EDGE DISTANCE (Tension Load)

Edge Distance	Anchor Diameter				
inch	1/4	3/8	1/2	5/8	3/4
1-1/2	0.80				
2	0.87				
2-1/2	0.93				
3	1.00	0.80			
3-1/2		0.87			
4		0.93	0.80		
4-1/2		1.00	0.85		
5			0.90	0.80	
6			1.00	0.88	0.80
6-1/2				0.92	0.83
7				0.96	0.87
7-1/2				1.00	0.90
8					0.93
9					1.00

LOAD ADJUSTMENT FACTORS - EDGE DISTANCE (Shear Load)

Edge Distance	Anchor Diameter				
inch	1/4	3/8	1/2	5/8	3/4
1-1/2	0.50				
2	0.67				
2-1/2	0.83				
3	1.00	0.50			
3-1/2		0.67			
4		0.83	0.50		
4-1/2		1.00	0.63		
5			0.75	0.50	
6			1.00	0.70	0.50
6-1/2				0.80	0.58
7				0.90	0.67
7-1/2				1.00	0.75
8					0.83
9					1.00

SPECIFICATION

The following sample specification clause is arranged for inclusion in any one of a variety of master specification sections utilizing the Construction Specifications Canada (CSC) format. Square brackets [...] indicate alternatives, data required, or need for the specifier to fill in information.

ANCHORS (FASTENERS)

Expansion anchors shall be [diameter and length to suit load and fixture requirements] UCAN Drop-in Anchors, supplied by UCAN Fastening Products. Anchors to be [zinc plated and have grade AISI C1008R carbon steel]
[Type 304 Stainless Steel] anchor body, and installed according to the manufacturers published instructions.