

Ultimate and Allowable Load Capacities for Carbon Steel Drop-In in Normal-Weight Concrete^{1,2,3,4,5}

Rod/Anchor Diameter d in.	Minimum Embedment Depth in.	Tension				Shear			
		4,000 psi		6,000 psi		4000 psi		6000 psi	
		Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.
1/4"	1"	1,306	327	1,630	408	2,024	506	2,410	603
3/8"	1-9/16"	3,621	905	3,769	942	4,757	1,189	5,456	1,364
1/2"	2"	6,782	1,696	7,978	1,995	6,147	1,537	7,791	1,948
5/8"	2-1/2"	7,237	1,810	8,172	2,043	12,862	3,216	12,862	3,216
3/4"	3-3/16"	5,827	1,456	6,358	1,590	17,494	4,374	17,494	4,374

1. Tabulated load values are for Drop-In anchors installed in normal weight concrete.
2. Ultimate load capacities must be reduced by a minimum factor of safety of 4.0 to determine allowable loads.
3. Consideration of safety factors of 10 or higher may be necessary depending on application, such as life safety or overhead.
4. The concrete compressive strength must be at the specified minimum at the time of installation.
5. Design shear capacities may need to be reduced based on the shear strength of the bolt or threaded part being utilized.

Ultimate and Allowable Load Capacities for 304/316 Stainless Steel Drop-In anchors in Normal-Weight Concrete^{1,2,3,4,5,6}

Rod/Anchor Diameter d in.	Minimum Embedment Depth in.	Tension				Shear			
		4,000 psi		6,000 psi		4000 psi		6000 psi	
		Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.
1/4"	1"	1,306	327	1,630	408	2,024	506	2,024	506
3/8"	1-9/16"	3,621	905	3,769	942	4,757	1,189	4,757	1,189
1/2"	2"	6,782	1,696	7,978	1,994	6,147	1,537	6,147	1,537
5/8"	2-1/2"	7,237	1,810	8,172	2,043	12,862	3,216	12,862	3,216
3/4"	3-3/16"	5,827	1,456	6,358	1,590	17,494	4,374	17,494	4,374

1. Tabulated load values are for Drop-In anchors installed in normal weight concrete.
2. Ultimate load capacities must be reduced by a minimum factor of safety of 4.0 to determine allowable loads.
3. Consideration of safety factors of 10 or higher may be necessary depending on application, such as life safety or overhead.
4. The concrete compressive strength must be at the specified minimum at the time of installation.
5. Design shear capacities may need to be reduced based on the shear strength of the bolt or threaded part being utilized.
6. To determine which grade of stainless steel may be more appropriate for your application, please consult a design professional.

Ultimate and Allowable Load Capacities for Coil Threaded Drop-In in Normal-Weight Concrete^{1,2,3,4,5}

Rod/Anchor Diameter d in.	Minimum Embedment Depth in.	Tension				Shear			
		4,000 psi		6,000 psi		4000 psi		6000 psi	
		Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.
1/2"	2"	6,782	1,696	7,978	1,995	6,147	1,537	7,791	1,948
3/4"	3-3/16"	5,827	1,456	6,358	1,590	17,494	4,374	17,494	4,374

1. Tabulated load values are for Drop-In anchors installed in normal weight concrete.
2. Ultimate load capacities must be reduced by a minimum factor of safety of 4.0 to determine allowable loads.
3. Consideration of safety factors of 10 or higher may be necessary depending on application, such as life safety or overhead.
4. The concrete compressive strength must be at the specified minimum at the time of installation.
5. Design shear capacities may need to be reduced based on the shear strength of the bolt or threaded part being utilized.

Ultimate and Allowable Load Capacities for Shallow Embedment Steel Drop-In anchors in Normal-Weight Concrete^{1,2,3,4,5}

Rod/Anchor Diameter d in.	Minimum Embedment Depth in.	Tension				Shear			
		4,000 psi		6,000 psi		4000 psi		6000 psi	
		Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.	Ultimate lbs.	Allowable lbs.
1/4"	5/8"	1,144	286	1,180	295	1,478	370	1,478	370
3/8"	3/4"	1,795	449	2,053	513	2,577	644	2,577	644
1/2"	1"	2,888	722	4,622	1,155	3,310	828	3,310	828

1. Tabulated load values are for Shallow Embedment Steel Drop-In anchors installed in normal weight concrete.
2. Ultimate load capacities must be reduced by a minimum factor of safety of 4.0 to determine allowable loads.
3. Consideration of safety factors of 10 or higher may be necessary depending on application, such as life safety or overhead.
4. The concrete compressive strength must be at the specified minimum at the time of installation.
5. Design shear capacities may need to be reduced based on the shear strength of the bolt or threaded part being utilized.

LOAD ADJUSTMENT FOR NORMAL-WEIGHT CONCRETE DROP-INS Spacing, Tension & Shear

Dia. (in.)		1/4	3/8	1/2	5/8	3/4
h _v (in.)		1	1-1/2	2	2-1/2	3
s _{cr} (in.)		3	4-1/2	6	7-1/2	9
s _{min} (in.)		1-1/2	2-1/4	3	3-3/4	4-1/2
Spacing Distance (inches)	1-1/2	0.50				
	2-1/4	0.75	0.50			
	3	1.00	0.67	0.50		
	3-3/4		0.83	0.63	0.50	
	4		0.89	0.67	0.53	
	4-1/2		1.000	0.75	0.60	0.50
	5			0.83	0.67	0.56
	6			1.00	0.80	0.67
	7-1/2				1.00	0.83
	9					1.00

Edge Distance, Tension (Normal-Weight concrete only)

Dia. (in.)		1/4	3/8	1/2	5/8	3/4
c _{cr} (in.)		3-1/2	5-1/4	7	8-3/4	10-1/2
c _{min} (in.)		1-3/4	2-5/8	3-1/2	4-3/8	5-1/4
Edge Distance, c (inches)	1-3/4	0.90				
	2	0.91				
	2-5/8	0.95	0.90			
	3	0.97	0.91			
	3-1/2	1.00	0.93	0.90		
	4-3/8		0.97	0.93	0.90	
	5-1/4		1.00	0.95	0.92	0.90
	6			0.97	0.94	0.91
	7			1.00	0.96	0.93
	8				0.98	0.95
	8-3/4				1.00	0.97
	10-1/2					1.00