

Toggle Bolt *Hollow Wall Anchor*

PRODUCT DESCRIPTION

The Toggle Bolt is a spring wing type hollow wall anchor designed for use in block, wallboard and other hollow base materials. The Toggle Bolt is a two-part assembly consisting of a machine screw and a spring wing toggle. Sizes range from 1/8" diameter x 2" length to 1/2" diameter x 6" length with combo round, flat mushroom, tie-wire or slotted hex head styles.

FEATURES AND BENEFITS

- Adjustable to accommodate various wall thickness up to 2 1/2"
- Easy to use and works in a variety of base materials

MATERIAL SPECIFICATIONS

Anchor Component	Component Material
Wing	AISI 1010
1/8"-3/8" Trunion Nut	AISI 1010
1/2" Trunion Nut	Zamac Alloy
Bolt	Carbon Steel – ANSI B18.6.3
Zinc Plating	ASTM B633, SC1, Type III, (Fe/Zn 5)

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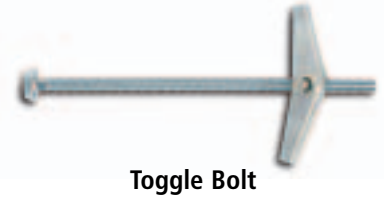
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Toggle Bolt

ANCHOR MATERIALS

Carbon Steel

ANCHOR SIZE RANGE (TYP.)

1/8" diameter x 2" length to
1/2" diameter x 6" length

SUITABLE BASE MATERIALS

Wallboard
Plaster
Hollow Concrete Masonry

INSTALLATION SPECIFICATIONS

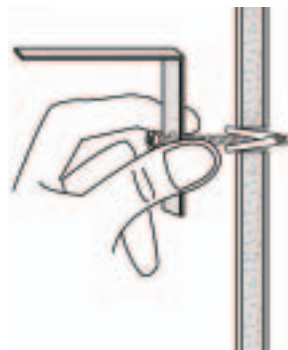
Dimension	Anchor Diameter, <i>d</i>					
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
ANSI Drill Bit Size, <i>d_{bit}</i> (in.)	3/8	1/2	5/8	7/8	7/8	1 1/4
Wing Clearance (in.)	1 1/16	1 3/8	1 1/2	2 1/8	2 1/8	3
Thread Size (UNC)	6-32	10-24	1/4-20	5/16-18	3/8-16	1/2-13

Installation Guidelines

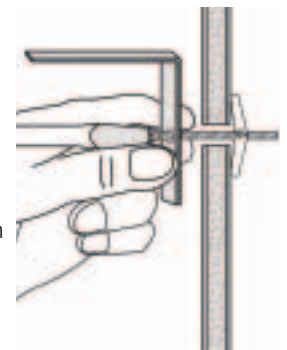
Drill the required hole through the base material. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.14. In denser materials such as high strength concrete, drill the hole 1/16" larger.



Insert the bolt through the fixture to be fastened, thread on wings, then fold the wings completely back and insert through the hole until wings spring open.



Pull back on assembly to hold the wings inside the wall to prevent the wings from spinning while tightening bolt. Turn the bolt with the screwdriver until firmly tightened.



WALL ANCHORS

PERFORMANCE DATA

Ultimate Load Capacities for Toggle Bolt in Wallboard¹

Anchor Diameter <i>d</i> in. (mm)	3/8" Wallboard		1/2" Wallboard		5/8" Wallboard		3/4" Wallboard	
	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/8 (3.2)	115 (0.5)	120 (0.5)	150 (0.7)	135 (0.6)	190 (0.9)	180 (0.8)	220 (1.0)	210 (0.9)
3/16 (4.8)	130 (0.6)	140 (0.6)	185 (0.8)	190 (0.9)	235 (1.1)	235 (1.1)	290 (1.3)	280 (1.3)
1/4 ² (6.4)	215 (1.0)	210 (0.9)	235 (1.1)	235 (1.1)	265 (1.2)	260 (1.2)	315 (1.4)	300 (1.4)
5/16 (7.9)	240 (1.1)	240 (1.1)	250 (1.1)	280 (1.3)	275 (1.2)	300 (1.4)	320 (1.4)	340 (1.5)
3/8 (9.5)	245 (1.1)	250 (1.1)	255 (1.1)	295 (1.3)	290 (1.3)	315 (1.4)	340 (1.5)	355 (1.6)
1/2 (12.7)	255 (1.1)	275 (1.2)	325 (1.5)	315 (1.4)	390 (1.8)	375 (1.7)	415 (1.9)	400 (1.8)

1. The values listed above are ultimate load capacities which should be reduced by a minimum safety factor of 4.0 or greater to determine the allowable working load.
2. Also applies to the 1/4" Tie-Wire Acoustical Toggle.

Allowable Load Capacities for Toggle Bolt in Wallboard¹

Anchor Diameter <i>d</i> in. (mm)	3/8" Wallboard		1/2" Wallboard		5/8" Wallboard		3/4" Wallboard	
	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/8 (3.2)	30 (0.1)	30 (0.1)	40 (0.2)	35 (0.2)	50 (0.2)	45 (0.2)	55 (0.2)	55 (0.2)
3/16 (4.8)	35 (0.2)	35 (0.2)	45 (0.2)	50 (0.2)	60 (0.3)	60 (0.3)	75 (0.3)	70 (0.3)
1/4 ² (6.4)	55 (0.2)	55 (0.2)	60 (0.3)	60 (0.3)	65 (0.3)	65 (0.3)	80 (0.4)	75 (0.3)
5/16 (7.9)	60 (0.3)	60 (0.3)	65 (0.3)	70 (0.3)	70 (0.3)	75 (0.3)	80 (0.4)	85 (0.4)
3/8 (9.5)	60 (0.3)	65 (0.3)	65 (0.3)	75 (0.3)	75 (0.3)	80 (0.4)	85 (0.4)	90 (0.4)
1/2 (12.7)	65 (0.3)	70 (0.3)	80 (0.4)	80 (0.4)	100 (0.5)	95 (0.4)	105 (0.5)	100 (0.5)

1. Allowable load capacities listed are calculated using an applied safety factor of 4.0.
2. Also applies to the 1/4" Tie-Wire Acoustical Toggle.

Ultimate and Allowable Load Capacities for Toggle Bolt in Hollow Concrete Masonry^{1,2}

Anchor Diameter <i>d</i> in. (mm)	Drill Bit Diameter <i>d_{bit}</i> in. (mm)	<i>f'_m</i> ≥ 1,500 psi (10.4 MPa)			
		Ultimate Load		Allowable Load	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/8 (3.2)	3/8 (9.5)	195 (0.9)	180 (0.8)	40 (0.2)	35 (0.2)
3/16 (4.8)	1/2 (12.7)	340 (1.5)	355 (1.6)	70 (0.3)	70 (0.3)
1/4 ³ (6.4)	5/8 (15.9)	350 (1.6)	595 (2.7)	70 (0.3)	120 (0.5)
5/16 (7.9)	7/8 (22.2)	430 (1.9)	680 (3.1)	85 (0.4)	135 (0.6)
3/8 (9.5)	7/8 (22.2)	970 (4.4)	705 (3.2)	195 (0.9)	140 (0.6)
1/2 (12.7)	1 1/4 (31.8)	1,160 (5.2)	800 (3.6)	230 (1.0)	160 (0.7)

1. Tabulated load values are for anchors installed in minimum 6-inch wide, Grade N, Type II, medium and normal-weight concrete masonry units. Mortar must be minimum Type N.
2. Allowable loads are based on average ultimate values using a safety factor of 5.0.
3. Also applies to the 1/4" Tie-Wire Acoustical Toggle.

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ORDERING INFORMATION

Mushroom and Slotted Hex Head Toggle Bolt

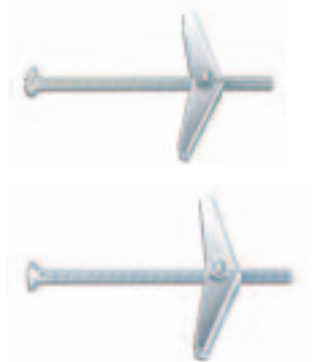
Catalog Number		Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./100
MH	SHH					
4023	4028	1/8" x 2"	3/8"	50	500	1 1/4
4033	4038	1/8" x 3"	3/8"	50	500	1 1/2
4043	-	1/8" x 4"	3/8"	50	500	2
4133	-	3/16" x 3"	1/2"	50	500	4
4143	-	3/16" x 4"	1/2"	50	500	5
4233	-	1/4" x 3"	5/8"	50	500	6 1/2
4243	-	1/4" x 4"	5/8"	50	500	7 1/2

MH = Mushroom Head
SHH = Slotted Hex Head



Round and Flat Hex Head Toggle Bolt

Catalog Number		Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./100
Round	Flat					
4021	-	1/8" x 2"	3/8"	50	500	1 1/4
4031	4033	1/8" x 3"	3/8"	50	500	1 1/2
4041	4042	1/8" x 4"	3/8"	50	500	2
4121	-	3/16" x 2"	1/2"	50	500	3 1/4
4131	4132	3/16" x 3"	1/2"	50	500	4
4141	4142	3/16" x 4"	1/2"	50	500	5
4151	-	3/16" x 5"	1/2"	50	500	5 1/2
4161	-	3/16" x 6"	1/2"	50	500	6 1/4
4231	4232	1/4" x 3"	5/8"	50	500	6 1/2
4241	4242	1/4" x 4"	5/8"	50	500	7 1/2
4251	-	1/4" x 5"	5/8"	50	500	8 1/2
4261	-	1/4" x 6"	5/8"	50	500	9 1/2
4331	-	5/16" x 3"	7/8"	25	250	13
4341	-	5/16" x 4"	7/8"	25	250	14
4351	-	5/16" x 5"	7/8"	25	250	16
4361	-	5/16" x 6"	7/8"	25	250	18
4431	-	3/8" x 3"	7/8"	25	250	16
4441	-	3/8" x 4"	7/8"	25	250	18
4451	-	3/8" x 5"	7/8"	25	125	20
4461	-	3/8" x 6"	7/8"	25	125	23
4541	-	1/2" x 4"	1 1/4"	25	25	42
4561	-	1/2" x 6"	1 1/4"	25	25	50



WALL ANCHORS

Toggle Wings Only

Catalog Number	Anchor Size	Drill Dia.	Std. Box	Std. Carton	Wt./100
4000	1/8"	3/8"	100	500	1
4020	3/16"	1/2"	100	1,000	2
4220	1/4"	5/8"	100	1,000	3
4330	5/16"	7/8"	50	500	7
4430	3/8"	7/8"	50	500	7
4540	1/2"	1 1/4"	25	25	19



Tie Wire Acoustical Toggle

Catalog Number	Anchor Size	Tie Wire Hole Size	Drill Dia.	Std. Box	Std. Carton	Wt./100
4247	1/4" x 4"	7/32"	5/8"	100	100	9
4257	1/4" x 5"	7/32"	5/8"	100	100	12

