

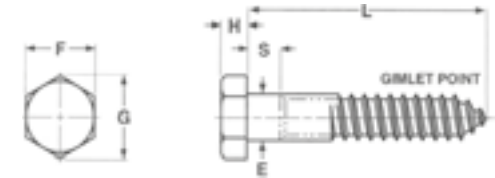
CAP SCREWS





CAP SCREWS

Lag Screws
Hex Head



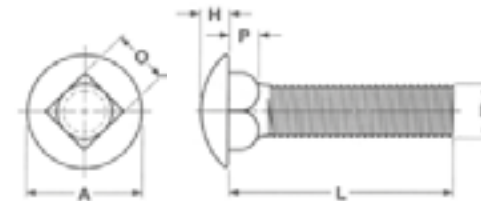
Basic Product Diameter		Threads per Inch	E		F			G		H			S	
			Body or Shoulder Diameter		Width Across Flats			Hex Lag Screws						
								Width Across Corners		Head Height				
Max.	Min.	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Min.				
1/4	0,2500	10	0,260	0,237	7/16	0,438	0,425	0,505	0,484	11/64	0,188	0,150	0,094	
5/16	0,3125	9	0,324	0,298	1/2	0,500	0,484	0,577	0,552	7/32	0,235	0,195	0,125	
3/8	0,3750	7	0,388	0,360	9/16	0,562	0,544	0,650	0,620	1/4	0,268	0,226	0,125	
7/16	0,4375	7	0,452	0,421	5/8	0,625	0,603	0,722	0,687	19/64	0,316	0,272	0,156	
1/2	0,5000	6	0,515	0,482	3/4	0,750	0,725	0,866	0,826	11/32	0,364	0,302	0,156	
5/8	0,6250	5	0,642	0,605	15/16	0,938	0,906	1,083	1,033	27/64	0,444	0,378	0,312	
3/4	0,7500	4-1/2	0,768	0,729	1-1/8	1,125	1,088	1,299	1,240	1/2	0,524	0,455	0,375	



CAP SCREWS

Carriage Bolts

Round Head Square Neck Bolts

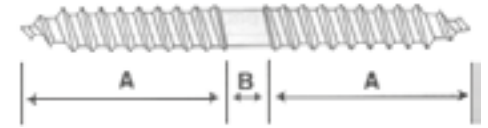


Basic Bolt Diameter		E		A		H		O		P	
		Body Diameter		Head Diameter		Head Height		Square Width		Square Depth	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
10	0,190	0,199	0,182	0,469	0,438	0,114	0,094	0,199	0,185	0,125	0,094
1/4	0,250	0,260	0,237	0,594	0,563	0,145	0,125	0,260	0,245	0,156	0,125
5/16	0,313	0,324	0,298	0,719	0,688	0,176	0,156	0,324	0,307	0,187	0,156
3/8	0,375	0,388	0,360	0,844	0,782	0,208	0,188	0,388	0,368	0,219	0,188
7/16	0,438	0,452	0,421	0,969	0,907	0,239	0,219	0,452	0,431	0,250	0,219
1/2	0,500	0,515	0,483	1,094	1,032	0,270	0,250	0,515	0,492	0,281	0,250
5/8	0,625	0,642	0,605	1,344	1,219	0,344	0,313	0,642	0,616	0,344	0,313
3/4	0,750	0,768	0,729	1,594	1,469	0,406	0,375	0,768	0,741	0,406	0,375



CAP SCREWS

Dowel Screws

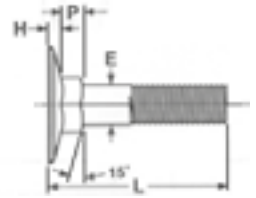


Size		A	B
		Thread Length	Collar Length
3/16-11	x1 1/2	3/4	—
	x2	7/8	1/4
	x2 1/2	11/8	1/4
	x3	1 3/8	1/4
1/4-10	x1 1/2	3/4	—
	x2	7/8	1/4
	x2 1/2	11/8	1/4
	x3	1 3/8	1/4
	x3 1/2	1 5/8	1/4
5/16-9	x1 1/2	3/4	—
	x1 3/4	3/4	1/4
	x2	7/8	1/4
	x2 1/2	1 1/8	1/4
	x3	1 3/8	1/4
	x3 1/2	1 5/8	1/4
	x4	1 5/8	3/4
3/8-7	x2 1/2	1 1/8	1/4
	x3	1 3/8	1/4
	x3 1/2	1 5/8	1/4
	x4	1 5/8	3/4

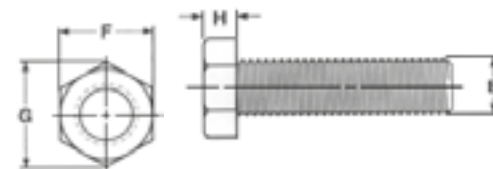


CAP SCREWS

Elevator Bolts



Nominal Size or Basic Bolt Diameter		EBody Diameter		A			Head Height		O		P	
				Head Diameter					Square Width		Square Depth	
				Max. Edge Sharp	Min. Edge Sharp	Min. Edge Flat						
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.					
1/4	0,2500	0,260	0,237	1,008	0,969	0,938	0,098	0,087	0,280	0,245	0,219	0,188
5/16	0,3125	0,324	0,298	1,227	1,188	1,157	0,114	0,094	0,342	0,307	0,250	0,219
3/8	0,3750	0,388	0,360	1,352	1,312	1,272	0,145	0,125	0,405	0,368	0,250	0,219



CAP SCREWS

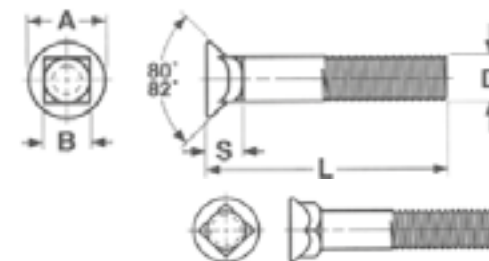
Tap Bolts

Nominal Or Basic		E		F			G		H		
		Body	Diameter	Width Across Flats			Width Across Corners		Head Height		
Product Diam.		Max.	Min.	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.
1/4	0,2500	0,2500	0,2450	7/16	0,438	0,428	0,505	0,488	5/32	0,163	0,150
5/16	0,3125	0,3125	0,3065	1/2	0,500	0,489	0,577	0,557	13/64	0,211	0,195
3/8	0,3750	0,3750	0,3690	9/16	0,562	0,551	0,650	0,628	15/64	0,243	0,226
7/16	0,4375	0,4375	0,4305	5/8	0,625	0,612	0,722	0,698	9/32	0,291	0,272
1/2	0,5000	0,5000	0,4930	3/4	0,750	0,736	0,866	0,840	5/16	0,323	0,302
9/16	0,5625	0,5625	0,5545	13/16	0,812	0,798	0,938	0,910	23/64	0,371	0,348
5/8	0,6250	0,6250	0,6170	15/16	0,938	0,922	1,083	1,051	25/64	0,403	0,378
3/4	0,7500	0,7500	0,7410	1-1/8	1,125	1,100	1,299	1,254	15/32	0,483	0,455
7/8	0,8750	0,8750	0,8660	1-5/16	1,312	1,285	1,516	1,465	35/64	0,563	0,531
1	1,0000	1,0000	0,9900	1-1/2	1,500	1,469	1,732	1,675	39/64	0,627	0,591
1-1/8	1,1250	1,1250	1,1140	1-11/16	1,688	1,631	1,949	1,859	11/16	0,718	0,658
1-1/4	1,2500	1,2500	1,2390	1-7/8	1,875	1,812	2,165	2,066	25/32	0,813	0,749
1-3/8	1,3750	1,3750	1,3630	2-1/6	2,062	1,994	2,382	2,273	27/32	0,878	0,810
1-1/2	1,5000	1,5000	1,4880	2-1/4	2,250	2,175	2,598	2,480	15/16	0,974	0,902



CAP SCREWS

No.3 Head Plow Bolts

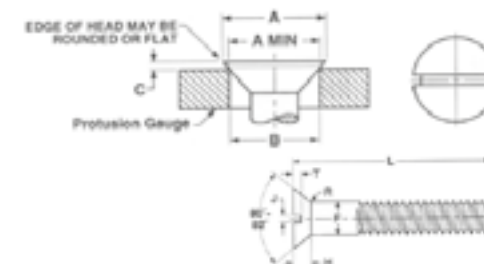


D	A			L	S		B	
	Diameter of Head			Feed Thickness	Depth of Square and Head		Width of Square	
	Max.	Min. Sharp	Abs. Min. With Flat	Max.	Max.	Min.	Max.	Min. (Basic)
3/8	0,708	0,671	0,656	0,031	0,312	0,281	0,387	0,375
7/16	0,826	0,781	0,766	0,036	0,364	0,328	0,450	0,438
1/2	0,945	0,890	0,875	0,042	0,417	0,375	0,515	0,500
5/8	1,147	1,094	1,063	0,050	0,506	0,456	0,640	0,625
3/4	1,303	1,250	1,219	0,050	0,541	0,491	0,765	0,750



CAP SCREWS

Slotted Flat Countersunk Head Cap Screws



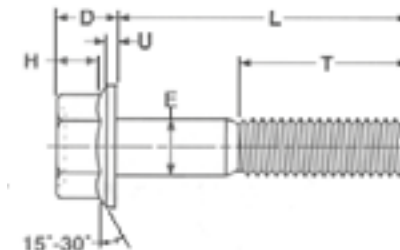
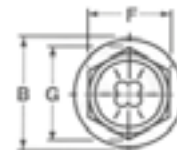
Nominal Size or Basic Screw Diameter	F		A		H	J		T		R	C		B	
	Body Diameter		Head Diameter		Head Height	Slot Width		Slot Depth		Fillet Radius	Protrusion Above Gaging Diameter		Gaging Dia.	
			Max, Edge Sharp	Min, Edge Rounded or Flat		Ref	Max	Min	Max		Min	Max		Min
Max	Min	Max	Min	Max	Min	Ref	Max	Min	Max	Min	Max	Min	Max	
1/4	0,2500	0,2500	0,2450	0,500	0,452	0,140	0,075	0,064	0,680	0,045	0,100	0,046	0,030	0,424
5/16	0,3125	0,3125	0,3070	0,625	0,567	0,177	0,084	0,072	0,086	0,057	0,125	0,053	0,035	0,538
3/8	0,3750	0,3750	0,3690	0,750	0,682	0,210	0,094	0,081	0,103	0,068	0,150	0,060	0,040	0,651
1/16	0,4375	0,4375	0,4310	0,812	0,736	0,210	0,094	0,081	0,103	0,068	0,175	0,065	0,044	0,703
1/2	0,5000	0,5000	0,4930	0,875	0,791	0,210	0,106	0,091	0,103	0,068	0,200	0,071	0,049	0,756
9/16	0,5625	0,5625	0,5550	1,000	0,906	0,244	0,118	0,102	0,120	0,080	0,225	0,078	0,054	0,869
5/8	0,6250	0,6250	0,6170	1,125	1,020	0,281	0,133	0,116	0,137	0,091	0,250	0,085	0,058	0,982
3/4	0,7500	0,7500	0,7420	1,375	1,251	0,352	0,149	0,131	0,171	0,115	0,300	0,099	0,068	1,208
7/8	0,8750	0,8750	0,8660	1,625	1,480	0,423	0,167	0,147	0,206	0,138	0,350	0,113	0,077	1,435
1	1,0000	1,0000	0,9900	1,875	1,711	0,494	0,188	0,166	0,240	0,162	0,400	0,127	0,087	1,661
1-1/8	1,1250	1,1250	1,1140	2,062	1,880	0,529	0,196	0,178	0,257	0,173	0,450	0,141	0,096	1,826
1-1/4	1,2500	1,2500	1,2390	2,312	2,110	0,600	0,211	0,193	0,291	0,197	0,500	0,155	0,105	2,052
1-3/8	1,3750	1,3750	1,3630	2,562	2,340	0,665	0,226	0,208	0,326	0,220	0,550	0,169	0,115	2,279
1-1/2	1,5000	1,5000	1,4880	2,812	2,570	0,742	0,258	0,240	0,360	0,244	0,600	0,183	0,124	2,505

Table 1 Dimensions of Slotted Flat Countersunk Head Cap Screws



CAP SCREWS

Reliant Frame Bolts Grade 8 – Alloy

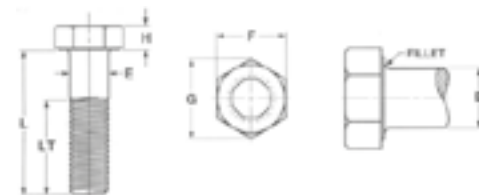


Nominal Size Or Basic Major Dia. Of Thread		E		F			G		B	U	H		LT	
		Body Dia.		Width Across Flats			Width Across Corners		Flange Dia.	Flange Thick- ness	Head Height		Thread Lngth.	
		Max.	Min.	Basic	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	L<6 In.	L>6 In.
3/8	0,3750	0,3750	0,3690	9/16	0,563	0,551	0,650	0,618	0,810	0,060	0,390	0,250	1,000	1,250
1/2	0,5000	0,5000	0,4930	3/4	0,750	0,736	0,866	0,825	1,070	0,080	0,510	0,340	1,250	1,500
5/8	0,6250	0,6250	0,6170	15/16	0,938	0,922	1,083	1,034	1,330	0,100	0,620	0,420	1,500	1,750
3/4	0,7500	0,7500	0,7410	1-1/8	1,125	1,100	1,299	1,234	1,590	0,110	0,730	0,510	1,750	2,000



CAP SCREWS

Hex Cap Screws



Nominal Or Basic Product Dia.		E		F			G		H			R	LT	
		Body Diameter		Width Across Flats			Width Across Corners		Head Height			Radius of Fillet	Thread	Lngh.
													For Screw Lengths < 6 In.	For Screw Lengths > 6 In.
Max.	Min.	Basic	Max.	Min.	Max.	Min.	Basic	Max.	Min.	Min.	Basic	Basic		
1/4	0,2500	0,2500	0,2450	7/16	0,438	0,428	0,505	0,488	5/32	0,163	0,150	0,015	0,750	1,000
5/16	0,3125	0,3125	0,3065	1/2	0,500	0,489	0,577	0,557	13/64	0,211	0,195	0,015	0,875	1,125
3/8	0,3750	0,3750	0,3690	9/16	0,562	0,551	0,650	0,628	15/64	0,243	0,226	0,015	1,000	1,250
7/16	0,4375	0,4375	0,4305	5/8	0,625	0,612	0,722	0,698	9/32	0,291	0,272	0,015	1,125	1,375
1/2	0,5000	0,5000	0,4930	3/4	0,750	0,736	0,866	0,840	5/16	0,323	0,302	0,015	1,250	1,500
9/16	0,5625	0,5625	0,5545	13/16	0,812	0,798	0,938	0,910	23/64	0,371	0,348	0,020	1,375	1,625
5/8	0,6250	0,6250	0,6170	15/16	0,938	0,922	1,083	1,051	25/64	0,403	0,378	0,020	1,500	1,750
3/4	0,7500	0,7500	0,7410	1-1/8	1,125	1,100	1,299	1,254	15/32	0,483	0,455	0,020	1,750	2,000
7/8	0,8750	0,8750	0,8660	1-5/16	1,312	1,285	1,516	1,465	35/64	0,563	0,531	0,040	2,000	2,250
1	1,0000	1,0000	0,9900	1-1/2	1,500	1,469	1,732	1,675	39/64	0,627	0,591	0,060	2,250	2,500
1-1/8	1,1250	1,1250	1,1140	1-11/16	1,688	1,631	1,949	1,859	11/16	0,718	0,658	0,060	2,500	2,750
1-1/4	1,2500	1,2500	1,2390	1-7/8	1,875	1,812	2,165	2,066	25/32	0,813	0,749	0,060	2,750	3,000
1-3/8	1,3750	1,3750	1,3630	2-1/6	2,062	1,994	2,382	2,273	27/32	0,878	0,810	0,060	3,000	3,250
1-1/2	1,5000	1,5000	1,4880	2-1/4	2,250	2,175	2,598	2,480	15/16	0,974	0,902	0,060	3,250	3,500



CAP SCREWS

Mechanical and Material Requirements For Grades 2, 5 & 8 Hex Head Cap Screws

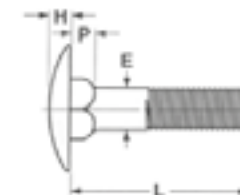
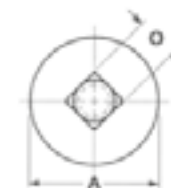
Grade Designation	Products	Nominal Size Dia., In.	Full Size Bolts, Screws Studs, Sems		Machine Test Specimens of Bolts, Screws and Studs				Surface Hardness	Core Hardness		Grade Identification Marking L
			Proof Load (Stress) psi	Tensile Strength (Stress) Min., psi	Yield Strength (Stress) Min., psi	Tensile Strength (Stress) Min., psi	Elongation Min., %	Reduction of Area Min, %	Rockwell 30N Max.	Rockwell		
										Min.	Max.	
2	Bolts, Screws, Studs	1/4 thru 3/4	55,000	74,000	57,000	74,000	18	35	—	B80	B100	None
		Over 3/4 to 1-1/2	33,000	60,000	36,000	60,000	18	35	—	B70	B100	
5	Bolts, Screws, Studs	1/4 thru 3/4	85,000	120,000	92,000	120,000	14	35	54	C25	C34	
		Over 3/4 to 1-1/2	74,000	105,000	81,000	105,000	14	35	50	C19	C30	
8	Bolts, Screws, Studs	1/4 thru 1-1/2	120,000	150,000	130,000	150,000	12	35	58,6	C33	C39	

Abstract of SAE J429 1985



CAP SCREWS

Step Bolts



Nominal Size or Basic Bolt Diameter		E		A		H		O		P	
		Body Diameter		Head Diameter		Head Height		Square Width		Square Depth	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
10	0,1900	0,199	0,182	0,656	0,625	0,114	0,094	0,199	0,185	0,125	0,094
1/4	0,2500	0,260	0,237	0,844	0,813	0,145	0,125	0,260	0,245	0,156	0,125
5/16	0,3125	0,324	0,298	1,031	1,000	0,176	0,156	0,324	0,307	0,187	0,156
3/8	0,3750	0,388	0,360	1,219	1,188	0,208	0,188	0,388	0,368	0,219	0,188



CAP SCREWS

Hanger Bolts



Size		A	B	C	D
		Standard Length	Machine Length	Lag Thread Length	Center Space
10-24	x1-1/2	1-1/2	5/8	7/8	—
	x1-3/4	1-3/4	3/4	1	—
	x2	2	1	1	—
	x2-1/2	2-1/2	1	1-1/2	—
	x3	3	1-1/2	1-1/2	—
1/4-20	x1-1/2	1-1/2	1/2	3/4	—
	x1-3/4	1-3/4	3/4	1	—
	x2	2	1	1	—
	x2-1/4	2-1/4	1	1-1/4	—
	x2-1/2	2-1/2	1	1-1/2	—
	x3	3	1-1/2	1-1/2	—
	x3-1/2	3-1/2	1-1/2	2	—
	x4	4	2	2	—
	x4-1/2	4-1/2	1-1/8	3	3/8
	x5	5	1-1/8	3	7/8
x6	6	1-1/4	3	1-3/4	



CAP SCREWS

Hanger Bolts

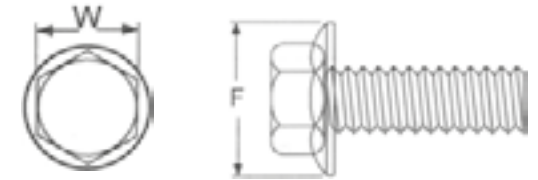


Size	A	B	C	D	
	Standard Length	Machine Length	Lag Thread Length	Center Space	
5/16-18	x1-1/2	1-1/2	5/8	7/8	—
	x1-3/4	1-3/4	3/4	1	—
	x2	2	1	1	—
	x2-1/4	2-1/4	1	1-1/4	—
	x2-1/2	2-1/2	1	1-1/2	—
	x2-3/4	2-3/4	1-1/4	1-1/2	—
	x3	3	1-1/2	1-1/2	—
	x3-1/2	3-1/2	1-1/2	2	—
	x4	4	2	2	—
	x4-1/2	4-1/2	1-1/8	2	7/8
	x5	5	1-1/8	3	7/8
x5-1/2	5-1/2	1-1/8	3	1-3/8	
x6	6	1-1/4	3	1-3/4	
3/8-16	x2	2	1	1	—
	x2-1/2	2-1/2	1	1-1/2	—
	x3	3	1-1/2	1-1/2	—
	x3-1/2	3-1/2	1-1/2	2	—
	x4	4	2	2	—
	x4-1/2	4-1/2	1-1/8	3	3/8
	x5	5	1-1/8	3	3/8
	x5-1/2	5-1/2	1-1/8	3	1-3/8
	x6	6	1-1/4	3	1-3/8
	x8	8	2-1/2	3	2-1/2
x10	10	2-1/2	3	4-1/2	



CAP SCREWS

Serrated Flange Screws



Whiz-Lock® Equivalents

®Whiz-Lock is a registered trademark of the MacLean-Fogg Co.

Size	W	F
	Width Across Flats	Flange Data
6	.187	.260
8	.250	.348
10	.312	.433
1/4	.375	.522
5/16	.500	.696
3/8	.562	.782