

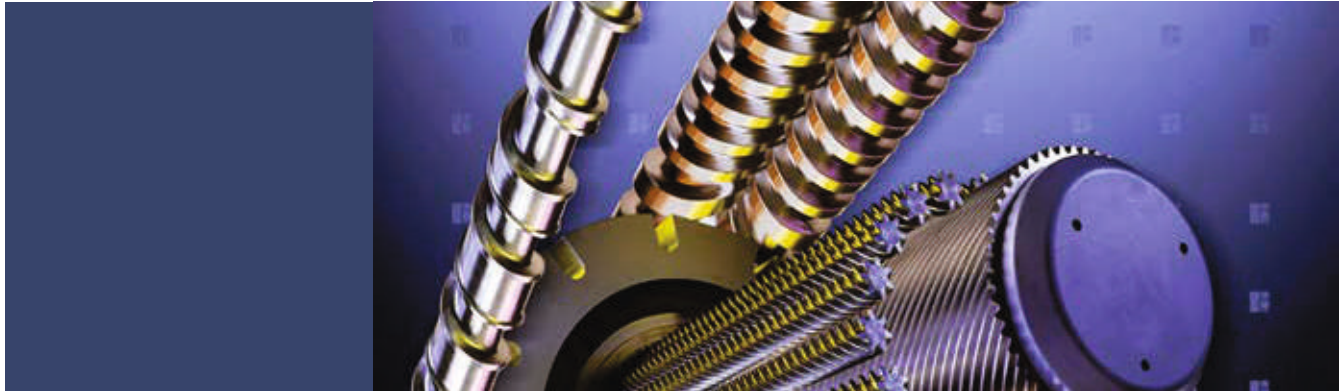


AN IATF 16949 CERTIFIED COMPANY

REDEFINING FASTENING SOLUTION



Price List 13, Effective from 01 April, 2022



Introduction

Caparo is diversified, UK based group, specializing principally in the Manufacture & Supply of Steel, Automotive and General Engineering Products, the group has grown as a global entity. The group was founded in 1968 by Lord Paul and since then Caparo is expanding its business operations in UK, USA, India, Spain, & Dubai. Caparo group has grown by setting up new Greenfield Projects, acquisitions & organic growth of established business. Caparo has now envisaged major expansion plans in India in fields of Fasteners, Stampings, Foundry, Tubes & Forgings.

Caparo India, the Indian business arm of Caparo Group, began its operations in 1994, as a joint venture with India's largest car manufacturer— Maruti Udyog. Today, through its two strategic business entities, Caparo Engineering India Ltd. and Caparo Maruti Ltd, the group offers end-to-end solutions in designing, developing and manufacturing automotive systems, assemblies, advanced composites, modules and components to Indian Automotive OEMs and Engineering Industry.

Caparo India leverages its exhaustive capabilities in metal Stamping, Fastening, Tubing, Forging and Aluminium Foundry businesses, coupled with its state-of-the-art Tool Room and R&D Centre, to service top-notch clients such as GM, Ford, Maruti, Honda, Tata Motors, Ashok Leyland and JCB. The company's ability to offer complete lifecycle solutions backed by a global support system, technological superiority and customer orientation, make it a force to reckon with in its areas of expertise.



CAPARO ENGINEERING INDIA LTD

Having started its operation in 2005 from Chopanki (Rajasthan), CAPARO Engineering India Ltd, is today one of India's fastest growing manufacturers of High Tensile Fasteners.

CEIL's manufacturing facilities are housed in a state of the art plant producing 14000 MT of fasteners per annum. It has established itself as a reliable supplier of fasteners to almost all the Automobile OEMs in the country and their manufacturing locations abroad. Today, Caparo is a strategic source for fasteners to leading OEMs like Ashok Leyland, Asia Motor works, Eicher Motors, VECV, Royal Enfield, Escorts, Internaional Tractors, Vibracaustic India Pvt Ltd, MAN Trucks, PIAGGIO, SML ISUZU, HMSI, Tata Motors and many more.

Certified for TS 16949, CEIL is a process driven company. New product development has been the hallmark of CEIL. A wide range of products catering to the automobile industry and general engineering applications have been developed at CEIL.

It manufactures standard fasteners that conform to the International Standards JIS, Metric, Inch series. The products manufactured are forged from cold headed quality medium carbon steel, alloy steel and stainless steel.





COLD FORGED HIGH TENSILE PRECISION HEXAGONAL HEAD BOLTS/SCREWS

METRIC SERIES (M4 TO M24)

GRADE 8.8 & 10.9



EFFECTIVE FROM 01-04-2022

Diameter	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length	7 mm	8 mm	10 mm	13 mm	16 mm	18 mm	21 mm	24 mm	27 mm	30 mm	34 mm	36 mm
8												
10	351	353	460									
12	375	363	485	699								
14		406	497	728								
16	548	565	488	696	1167	2464						
18		593	521	658	1175							
20	551	464	492	608	1090	1808		4262				
22		504	529	750	1250							
25	570	488	508	688	1167	1952	3146	4262				
30	578	529	548	777	1266	1951	3376	4472				
35		540	590	919	1349	2051	3518	4472		9550		
40		584	622	980	1617	2338	3801	4443	8080	8939		
45		640	670	1054	1888	2561	4092	4732	8445	9358		
50		752	719	1150	1928	2746	4529	5045	8717	9172	13831	16119
55			787	1270	2023	2961	4671	5659	9302	10506	14837	15534
60			866	1415	2205	3102	4885	5931	9626	10631	15400	16901
65			911	1482	2314	3244	5192	6201	10013	11174	16424	18251
70			953	1569	2435	3684	5474	6483	10950	10936	17054	18456
75			1012	1631	2604	3784	5636	7059	11422	12232	17685	19140
80			1069	1695	3044	3988	5636	8014	11672	12631	18386	20876
85			1285	2132	3605	4633		8642		14074	19025	21733
90			1249	2288	3371	4289	6672	8552	12477	13464	19666	22466
95				2515	4188	5179					20341	23474
100				2653	3828	5023	7638	8897	13880	14378	21015	24373
110				3695	4413	5564	8626	9907	14573	15904	22841	25366
120				3947	4846	5946	9173	11462	16128	17383	244 14	26890
125				4152	5280	6475				17908	25754	27501
130				4392	5539	6302	9864	13163	16876	18432	25754	28110
140				4867	6079	7293	12984	13408	17668	19908	27089	29935
150				5464	6630	10315	14244	15745	18894	19933	29714	31193
160				6890	7270	10360	15765	17042	20824	23475	32075	37068
170				7472	7613	12326		18673	22625	27491		40897
180				8073	7957	11365		18658	23076	29154	36509	40168
190					9586							
200					12961	15000		20220		30412	39510	43420
210					17964							
220						21243		26123		41575	56818	62830
240						21716		28122		43693	61169	65362
250												66299
260						23660		28874		47592		67235
270												
280								31764		51501		73738
300								40884				101502
Qty / Box	500	200	100	50	25	10				5		

I Specifications: IS-1364, ISO-4014

II Threads fit: IS-4218

III Supply Conditions: IS-1367, ISO-898

IV For Zinc passivated finish the prices will be on enquiry.

V Plating: No guarantee will be given if Caparo Fasteners are plated outside by the dealer/end-user (due to Hydrogen embrittlement).

VI We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk"

VII Fine pitch bolts / Screws rate will be 5% extra.

VIII Shaded sizes are fully threaded screws.

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION HEXAGONAL HEAD BOLTS/SCREWS

METRIC SERIES (M27 TO M42)

GRADE 8.8 & 10.9



EFFECTIVE FROM 01-04-2022

Diameter	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
Length	41 mm	46 mm	50 mm	55 mm	65 mm
60	33914	45980			
65	34550				
70	34704	45980			
75	37230	46448	63479		
80	38947	47623	67119	82058	
85					
90	42466	51695	71196	87890	124516
95					
100	45934	55633	76241	91432	131672
110	49523	61192	82023	97652	138864
120	50951	62509	83944	99543	139933
125					
130	52763	65674	88451	104756	145845
140	56110	69745	93931	111258	153964
150	59430	73662	99314	116481	177017
160	65351	83341	103944	128810	170169
170					
180	72287	91780	113817	149375	185628
200	78773	100122	123811	161910	194025
220	110220	120798	149733	194122	248875
240	118865	129300	160773	208107	267346
250					
260	132848	137819	172823	222069	285877
270					
280	141003	146316	184815	236061	304366
300	147615	160749	196788	283380	322847
Qty / Box	5				

I Specifications: IS-1364 ISO-4014/4017, DIN-931/933

II Threads fit: IS-4218

III Supply Conditions: IS-1367, ISO-898

IV For Zinc passivated finish the prices will be on enquiry.

V Shaded sizes are fully threaded screws.

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



**COLD FORGED HIGH TENSILE PRECISION
HEXAGONAL HEAD BOLTS/SCREWS**
INCH SERIES(UNC) 1/4" TO 1"
GRADE 5 & 8



EFFECTIVE FROM 01-04-2022

Diameter		1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1"
		Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length		7/16"	1/2"	9/16"	5/8"	3/4"	1.5/16"	1.1/8"	1.5/11"	1.1/2"
1/2"		540	743							
5/8"		677	708	1163						
3/4"		607	678	1008	1455	2175				
7/8"		555	743	1195	1564	2134				
1"		601	735	956	1630	2278	3994			
1 1/4"		612	803	1085	1643	2524	4472			
1 1/2"		678	975	1225	1779	2566	4590	8193	19236	17376
1 3/4"		739	1097	1464	2245	2798	4995	8471	19898	17372
2"		813	1178	1580	2267	3051	5225	9109	21468	18384
2 1/4"			1297	1757	2919	3503	2712	9957		18997
2 1/2"		955	1417	1913	2828	3605	6247	10495	19305	19984
2 3/4"			1605	2144	3473	4030	6753	11410	19451	21241
3"			1575	2235	3190	4353	7273	11910	19939	23287
3 1/4"			1722	2524		4879	7745	12348		24169
3 1/2"			1847	2598	3596	4902	8209	13131	20588	25328
3 3/4"				3192	4592	5317		14357		
4"			2504	3429	4687	5443	9226	14739	22686	27564
4 1/4"						5837			27241	
4 1/2"				3897		6372	10416	16124	25160	30590
4 3/4"						7178		18897		
5"				4467	6465	6969	11251	17100	27119	33952
5 1/2"						8524	12797	19295	28662	36810
6"				5363		10356	13597	19639	30462	38496
6 1/2"						12765	15737	21047	32623	41733
7"						15635	16958	22758	35225	45211
7 1/2"						16763	18221	23247		48697
8"						17094	18588	25032	38794	50204
9"										
10"										62523
Qty / Box	500	200	100	25				10	5	

1. Specification

2. Threads fit

3. Supply Conditions

4. Shaded sizes are fully threaded Screws

5. For smaller dia grade "8" the prices will be on enquiry.

6. For Zinc passivated finish the prices will be on enquiry.

BS-1768, ANSI B-18, 2.1

BS-1580, B1.1

J429 H

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION HEXAGONAL HEAD BOLTS/SCREWS INCH SERIES (UNF/BSW/BSF) 1/4" TO 1" GRADE 5, 8, R, S & T



EFFECTIVE FROM 01-04-2022

Diameter		1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
		Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length		7/16"	1/2"	9/16"	5/8"	3/4"	1.5/16"	1.1/8"	1.1/2"
1/2"		571	769	1367					
5/8"		693	805	1380	1400				
3/4"		681	774	1249	1493				
7/8"		615	794	1467	1606				
1"		675	916	1370	1776	2554	4986		
1 1/4"		743	1011	1461	1980	2795	5328		
1 1/2"		811	1125	1585	2107	2963	5627	10080	
1 3/4"		864	1264	1830	2390	3359	5809	10518	
2"		951	1375	2163	2732	3980	6446	11233	20559
2 1/4"			1515	2234	2924	4248	6872	12249	
2 1/2"			1628	2399	3204	4611	7511	12896	22439
2 3/4"			1779	2568	3473	4981	8110		
3"			1955	2766	3754	5366	8733	14623	25052
3 1/4"				3011	4032	5752	9295		
3 1/2"			2150	3231	4314	6198	10056	16195	28378
3 3/4"				3708	4590	6522			
4"				4114	4974	6908	11384	18167	31276
4 1/4"				4198		7285			
4 1/2"				4557		7661	12276		34391
5"					6079	8430	13786		38160
5 1/2"				5000					
6"									43283
6 1/2"									
7"									48379
7 1/2"									
8"									54226
9"									64510
Qty / Box	500	200	100	25				10	5

1. Specifications**2. Thread fit****3. Supply Conditions****4. Shaded sizes are fully threaded Screws.****5. For smaller dia grade "8" & grade "V" the prices will be on enquiry.****6. For Zinc passivated finish the prices will be on enquiry.**

UNF-ANSI B-18,2.1

B1.1

ANSI-B1 1

J429 H

BSF/BSW- BS 1083

BS 84

BS1960

BS1083

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION SOCKET HEAD CAP BOLTS/SCREWS METRIC SERIES M3 TO M24

GRADE 12.9



EFFECTIVE FROM 01-04-2022

Diameter	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length	2.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	14mm	14mm	17mm	17mm	19mm
4													
5	1232	1125											
6	1061	1075	1259	1445									
8	740	818	814	1002									
10	616	648	478	711	1329	2232							
12	616	588	475	687	1056	1599							
14		781	566	943		1401							
16	644	620	514	651	885	1460	4041						
18		876	558	693	931	1716							
20	650	655	556	711	938	1489	3869	9904	8434				
22	704	885	584	789	1013	1656							
25	911	686	584	807	970	1485	3371	8974	8408		19955		
30		824	675	908	1151	1617	3232	8882	8393	23746	20102	24384	
35		897	740	1001	1262	1757	3303	7429	7080	24100	20471	25170	
40		992	831	1068	1335	2137	3336	7622	7075	21088	17986		
45		1139	921	1161	1548	2316	3689	7774	7359	21298	18692	41700	24031
50		1322	880	1227	1642	2489	3447	7913	7342	21327	17405	25829	22337
55		2104	1554	1367	1802	2665	4104	8046	4946	21512	18411	28387	25880
60		4556	1989	2533	1948	2874	4198	8465	7703	21741	17642	29768	25690
65		5143	3566	2627	2103	3105	4451	8622	8684	21768	18687	32412	28171
70			4341	2743	2292	3341	4683	9289	9233	23271	19929	33694	29308
75			4829	2999	2396	3554	5010	9825	9783	24773	21239	35702	31005
80			5520	3238	3447	4916	5930	10296	10304	25299	20579	37529	32581
85				4282	5225	6195	7090		11350		25157		40723
90				3480	3979	5689	6676	10498	11498	25924	22670	38749	34821
100				4704	4741	6585	7397	13016	13134	27162	23910	41700	36357
110				4704	5868	7751	9019	14274	14307	30024	26136	44486	40522
120				6862	6840	7866	10368	15437	15456	32814	28862	48051	42575
130				8019	8224	10628	12351	17363	17509	36406	31336	64060	45730
140				9362	8911	11857	13752	18598	18734	39277	33803	73768	48418
150				10587	9622	13008	15200	19808	20046	42153	37148	97258	53225
160				14111	13528	16300	23958	21034	39699	44826	47329	115155	82088
170							27869			52214	54258	122755	99921
180				16371	18730	18786	26329		41608	60885	54449	127403	89696
200				22587	23982	26156	28803		43518	61285	56991		97058
220							33088		56578		59028		104319
240							47765		65394		91866		110282
260											112921		113688
280											131911		
300													
Qty / Box	200				100		50		10		5		

1. Specifications : IS-2269, ISO-4762

2. ISO Metric Threads to 6g Class/IS-4218

3. Mechanical Properties : Confirms to Property class 12.9 grade as per ISO-898

4. Shaded sizes are fully threaded screws.

5. Finish : Black Thermal.

6. We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk"

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



**COLD FORGED HIGH TENSILE PRECISION
SOCKET HEAD CAP BOLTS/SCREWS
METRIC SERIES M27 TO M42
GRADE 12.9**



EFFECTIVE FROM 01-04-2022

Diameter	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
Length	19mm	22mm	24mm	27mm	32mm
60	62678	46740			
70	51268	50563			
75	53873	54182	80096		
80	57485	56226	83139	102003	
90	61527	59107	90236	111365	150803
100	65628	66000	94293	111384	165368
110	69730	70122	99370	117435	169976
120	73832	74242	108741	122503	184865
130	78957	79396	113557	126563	188815
140	82035	82495	120658	139728	204490
150	87171	87660	127392	144766	210437
160	137413	131091	170848	194821	291764
180	151773	144924	189645	217675	309614
200	165112	157357	206457	235900	335348
220	205821	196722	256044	291671	420989
240	228065	211541	277675	299693	440547
260	248417	224583	288330	320962	468029
280	265134	239423	304857	342297	497189
300	279722	253474	327868	373835	541397
Qty / Box	5				

1. Specifications : As per ISO 4762/IS : 2269/DIN : 912
2. ISO Metric Threads to 6g Class/IS-4218
3. Mechanical Properties : Confirms to Property class 12.9 grade as per ISO-898
4. Shaded sizes are fully threaded screws.
5. Finish : Black Thermal.
6. We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk"

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION SOCKET HEAD CAP BOLTS/SCREWS INCH SERIES 3/16" TO 1" GRADE 12.9



EFFECTIVE FROM 01-04-2022

Diameter	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length	5/32"	3/16"	7/32"	5/16"	3/8"	1/2"	9/16"	9/16"	5/8"
3/8"	601	737							
1/2"	603	730	992	1464					
5/8"	562	695	899	1527					
3/4"	606	730	957	1254	3981				
7/8"		775	1023	1418	4000				
1"	678	818	1036	1403	3419	7473	18528		
1.1/4"	747	923	1196	1542	3649	6503	18613		
1.1/2"	855	1031	1333	1721	3693	6771	16581	25577	24568
1.3/4"	1025	1263	1582	2056	3969	7161	17031	26994	24751
2"	1028	1263	1569	2131	4156	7493	16958	26727	26667
2.1/4"		2557	1906	2453	4755	8134	17384	28815	28629
2.1/2"		2630	1918	2561	5029	8219	17302	28927	28629
2.3/4"		2993	2318	2942	5380	9041	19603	32473	32224
3"		2993	2331	2960	5887	9105	19749	32586	32224
3.1/4"		3587	3819	4318	7083	10079	20562		
3.1/2"		3587	3833	4433	7018	10498	20449	36033	35613
4"		3953	4576	5187	8205	12350	21592	38117	39446
4.1/2"			7240	7568	9989	13171	26227	44675	43689
5"			8290	9180	12072	14639	28576	48016	47413
5.1/2"				10985	13318	17927	30854	51474	50840
6"				11327	13692	19578	34654	54829	56483
6.1/2"					26057	41312	44807	96151	90841
7"					27353	41671	46000	93119	94213
7.1/2"					28418	43111	47171	96623	97804
8"					29654	45722	48244	98885	101180
8.1/2"						59636	53732		108133
9"						59942	55824		113670
10"						76256			
Qty / Box	200		100	50	10		5		

“Specifications : Generally conforming to ISO : IS-2269, ISO-4762

Threads : ISO Metric 4g6g IS-4218

Material : High Grade alloy steel.

Mechanical Properties : Property class 12.9 as per IS : 1367, ISO 898 Part-I.

Note : Shaded sizes are fully threaded.”

We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk”

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION SOCKET BUTTON HEAD SCREWS METRIC SERIES M3 TO M12



EFFECTIVE FROM 01-04-2022

Diameter	M3	M4	M5	M6	M8	M10	M12
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length			3mm	4mm	5mm	6mm	8mm
6	1193	1193					
8	1193	1014					
10	1193	1014	791	975	1585		
12	1302	1063	818	975	1273		
16	1343	1109	880	1052	1343	2179	
20	1491	1186	949	1137	1440	1815	5307
25		1253	1105	1334	1650	2110	5043
30			1342	1531	1882	2423	5418
35			1718	1737	2139	2775	6003
40			1495	1988	2436	3178	6690
45				2333	3115	4152	7273
50				2715	3354	4631	7969
55							9287
60							9287
Qty / Box	200				100		

“Specifications : Generally conforming to ISO-7380

Threads : ISO Metric 4g6g IS-4218

Material : High Grade alloy steel.

Mechanical Properties : Property class 12.9 as per IS : 1367, ISO 898 Part-I.

Note : Shaded sizes are fully threaded.”

We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk”

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION SOCKET COUNTER SUNK SCREWS METRIC SERIES M3 TO M24

GRADE 12.9



EFFECTIVE FROM 01-04-2022

Diameter/	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length	2mm	2.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	14mm
6	1090									
8	1288	700	908	791						
10	1383	700	627	791						
12	1485	744	651	758	1028					
16	1683	797	698	811	1028	1878				
20	1880	866	751	912	1101	1524	3336			
25	2077	1010	884	1091	1265	1774	2958			
30		1220	1067	1241	1446	2031	3387	7335		
35		2528	1419	1419	1644	2340	3816	7905		
40		2704	2212	2226	1873	2679	4229	8467		
45			2327	2733	2421	3174	4658	9028		
50			2580	3036	3299	3609	5080	9600	19446	
55					3936	4805	5499	10161	20321	
60					4751		5929	10723	20321	34130
65								11286	20888	36560
70								11848	21207	37774
75							7199	12419	22082	40205
80								12981	30079	42642
90								14187	30616	43850
100									31791	46278
110									39657	54791
120									42626	61002
130									45597	65959
140										69678
150										74634
180										96260
Qty / Box	200					100	50	25		

1. Specification : General conforming to IS : IS-6761

2. Threads : ISO Metric, 4g6g as per IS : IS-4218

3. Material : High Grade alloy steel.

4. Mechanical Properties : Property class 12.9 as per ISO : 898 Part-I.

5. Note : Shaded sizes are fully threaded."

6. We do not recommend plating on 12.9 Grade fasteners, however if customer insist the same will be on their own risk

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION SOCKET SET SCREWS METRIC SERIES M3 TO M12



EFFECTIVE FROM 01-04-2022

Diameter	M3	M4	M5	M6	M8	M10	M12
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length	1.5mm	2mm	2.5mm	3mm	4mm	5mm	6mm
3	466						
4	472	431					
5	472	436	325				
6	495	460	334	349			
8	535	466	349	378	415	842	
10	576	515	378	443	422	579	
12	622	554	438	468	524	621	972
16		639	503	599	601	864	1167
20		785	575	599	699	953	1400
25		989	664	727	833	1153	1606
30			990	986	1192	1737	1857
35				1102	1385	1981	
40				1289	1582	2210	
45					1796	2530	
50					2003	2758	
Qty / Box	500				200		

“Specifications : IS-6094

Threads : ISO Metric 4g6g as per IS : 4218, ISO 261, ISO 965

Material : High grade alloy steel.

Mechanical Properties : Property class 45H as per IS : 1367, ISO : 898 Part V.

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION HIGH STRENGTH STRUCTURAL BOLTS METRIC SERIES M16 TO M30

GRADE 8S & 10S



EFFECTIVE FROM 01-04-2022

14

Diameter/ Length	M 16	M 18	M 20	M 22	M 24	M 27	M 30
40	5326						
45	5846		10427				
50	6122	8498	11091	15380	19154		
55	6348	8852	11627	15305	19459		
60	6836	9438	12239	15981	20217	42170	
65	7196	9948	12914	17877	21991	44145	
70	7420	10688	13877	18012	22237	44186	
75	8069	11204	13975	19021	24224	47037	54933
80	8850	12167	14181	19733	24572	49123	58019
90	9416	12910	15042	21637	27086	52315	59523
100	10208	14001	16070	21965	29112	56161	63815
110	10717	15179	16684	23649	29610	58441	69796
120	11923	16557	18329	25229	31006	60407	71580
130	13374	19309	19876	26685	32516	62457	72866
140	13781	19895	20949	27999	34197	66194	77005
150	16357	23850	22111	29407	35254	69890	82705
160	17749	25625	24962	33506	40697	76413	91625
170					43821	83672	101394
180	20276	28718	27204	36450	45458	84108	101006
190			31256				
200	24005	31043	30177	38532	49006	91337	110203
220					53108		124438
260					75960		
NUTS							
DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30
List Price	2838	4586	5708	6663	9006	15602	19129
WASHERS							
DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30
List Price	1757	2295	2235	3231	3395	5406	6726

SPECIFICATIONS

Bolt : Bolt : IS : 3757, Nut: IS: 6623, Washers: IS: 6649

Threads : Bolt : ISO Metric, 6g as per IS : 4218

Nut : ISO Metric, 6H as per IS : 4218

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



COLD FORGED HIGH TENSILE PRECISION ALLEN KEY METRIC SERIES M1.5 TO M32 & INCH SERIES 1/16" TO 5/8"



EFFECTIVE FROM 01-04-2022

S No	Description	Rate/100 Nos
1	ALLEN KEY M- 1.5	1477
2	ALLEN KEY M- 2	1477
3	ALLEN KEY M- 2.5	1477
4	ALLEN KEY M- 3	1669
5	ALLEN KEY M- 4	2685
6	ALLEN KEY M- 5	3272
7	ALLEN KEY M- 6	4817
8	ALLEN KEY M- 8	8788
9	ALLEN KEY M- 10	14667
10	ALLEN KEY M- 12	27602
11	ALLEN KEY M- 14	40612
12	ALLEN KEY M- 17	64242
13	ALLEN KEY M- 19	88634
14	ALLEN KEY M- 22	139723
15	ALLEN KEY M- 24	187853
16	ALLEN KEY M- 27	316264
17	ALLEN KEY M- 32	556192

S No	Description	Rate/100 Nos
1	ALLEN KEY I--1/16	1487
2	ALLEN KEY I--5/64	1615
3	ALLEN KEY I--3/32	1648
4	ALLEN KEY I--1/8	1669
5	ALLEN KEY I--5/32	2022
6	ALLEN KEY I--3/16	2504
7	ALLEN KEY I--7/32	3888
8	ALLEN KEY I--1/4	5623
9	ALLEN KEY I--5/16	8970
10	ALLEN KEY I--3/8	13137
11	ALLEN KEY I--1/2	31880
12	ALLEN KEY I--9/16	36093
13	ALLEN KEY I--5/8	54281

SECIFICATIONS

Material: High Grade Alloy Steel.

Specifications: Inch Series: BS:2470, Metric Series: IS:3082, DIN: 911

Mechanical Properties: Hardness-HRC 47 Min.

Recommended Retail Prices in Rupees per 100 Pieces Exclusive of GST.



SIZE	GRADE	PRICE
NUT M6X1	8	178
NUT M8X1.25	8	242
NUT M10X1.5	8	477
NUT M10X1.5	10	525
NUT M12X1.5	8/10	847
NUT M12X1.75	8	769
NUT M12X1.75	10	852
NUT M14X1.5	8/10	1543
NUT M14X2	8	1402
NUT M14X2	10	1469
NUT M16X1.5	8/10	1781
NUT M16X2	8	1604
NUT M16X2	10	1948
NUT M18X2.5	8/10	2802
NUT M20X2.5	8/10	3715
NUT M22X2.5	10	4249
NUT M24X3	8/10	6450
NUT M 27X3	10	10313
NUT M 30X3.5	8/10	14599
NUT M33X3.5	10	19456
NUT M36X4	10	26417
NUT M42X4.5	10	42661

SIZE	GRADE	PRICE
1/4 UNC	8	226
5/16 UNC	8	315
3/8 UNC	8	468
7/16 UNC	8	881
7/16 BSF	R	949
1/2 UNC	8	1062
1/2 BSF	R	1112
5/8 UNC	8	2245
3/4 UNC	8	3959
7/8 UNC	8	5094
1 UNC	8	7601
1/2 BSW	R	1012
1/2 UNF	T	1113

1. Specification : For Nuts with Metric Threads IS-1364, ISO 4032 DIN 970. for nuts with UNC threads : (ANSI B 18.2.2)
2. Threads : ISO Metric, 6g as per IS-4218, ISO 261, ISO 965
3. Material Mechanical Properties : Metric Nuts property class '8' or '10' as tabulated as per IS : 1367, ISO 898, Part-II.
4. For Zinc passivated finish the prices will be on enquiry.

WHAT IS HYDROGEN EMBRITTLEMENT?

When atomic hydrogen enters steel, it can cause a loss in ductility or load carrying ability or cracking (usually as sub-microscopic cracks), or catastrophic brittle failures at applied stresses well below the yield strength. The Hydrogen Embrittlement caused failure, the actual breaking of the component into two or more pieces. The fracture is delayed. Problems occur when least expected. Sometimes it occurs within hours after the tensile load is applied; sometimes not for months, but seldom years. But when it happens, it's sudden, with no advance warning or any visible signs of imminence. Failures occurring in service are serious and costly, sometimes catastrophic.

Hydrogen embrittlement is associated with fasteners made of carbon and alloy steels. It is only usually expected to be a risk for higher tensile fasteners with hardness above 320HV. It is caused by the absorption of atomic hydrogen into the fastener's surface during manufacturing and processing, particularly during acid pickling and alkaline cleaning prior to plating, and then during actual electroplating. The deposited metallic coating entraps the hydrogen against the base metal. When load or stress is applied the hydrogen gas migrates towards points of highest stress concentration. Pressure builds until the strength of the base metal is exceeded and minute ruptures occur. Hydrogen is exceptionally mobile and quickly penetrates into any recently formed cracks, lesions or material surface discontinuities, which become high stress areas.

HOW TO MINIMIZE THE RISK OF HYDROGEN EMBRITTLEMENT?

Though the experts recommend various preventive measures, there is no known guaranteed process to eliminate Hydrogen embrittlement 100%. When embrittlement failures do occur, they will usually only affect 2-3% of the components. The embrittling process is a random effect, and the de-embrittling process can be regarded similarly. Whilst prediction is difficult, if the following preventative actions are applied, then the risk should be minimised.

1. Mechanically clean the products if possible.
2. Mechanically plate high strength components.
3. Avoid any embrittling process if possible.
4. Use stringent baking control.

The rapid transfer into the baking oven possibly reduces the opportunity for harmful hydrogen to begin its inward migration. It is the prevention of inward migration that will reduce the probability of embrittlement failure.

PREVENTATIVE ACTIONS TO REDUCE RISKS IN PLATING.

Process	Details	Hydrogen Embrittlement Risk	Preventive Action
Degrease	Solvent		
	Alkali soak		
	Electro Clean	some	Only use anodically
De-rust or De-scale	Acid	High	Use inhibited short time
	Alkaline de-rusts	Low	Poor at de-rusting
	Abrasive clean	None	
Phosphate	Acid process	Medium	Bake – reduces with time
Electro plating	Acid type	Medium	Bake
Electro plating	Alkaline type	High	Bake

Last but not the least is to Consider alternative surface coatings like, Geomet, Delta Tone, Delta Seal, Magni, Mechanical Zinc plating. They will cost more than normal plating.

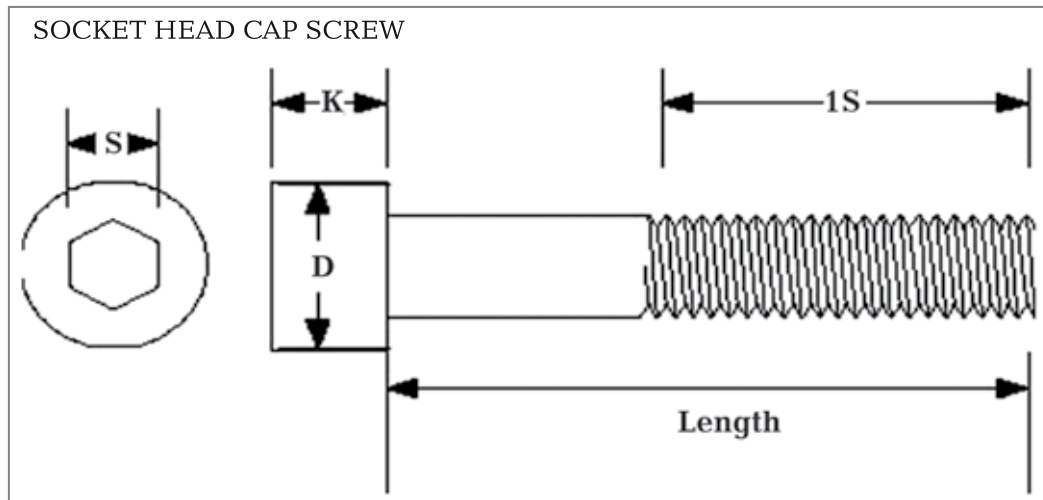
(Ref: ISO 898: Part XII, ISO 4042 :1999(E), IFI-142-1997)



Nominal Dia	Pitch	Stress Area mm ²	Proof Load in 1000 kg			Tightening Torque in kg-m		
			8.8	10.9	12.9	8.8	10.9	12.9
M6	1.0	20.1	1.16	1.59	1.91	1.2	1.7	2.1
M8	1.25	36.6	2.13	2.90	3.48	3.0	4.2	5.1
M10	1.0	39.2	2.28	3.10	3.72	3.2	4.5	5.4
	1.5	58.0	3.38	4.59	5.51	5.9	8.4	10.0
	1.25	61.2	3.55	4.86	5.82	6.3	8.9	10.6
	1.0	64.5	3.74	5.12	6.13	6.6	9.3	11.2
	1.75	84.3	4.90	6.68	8.01	10.4	14.6	17.5
M12	1.5	88.1	5.11	6.99	8.38	10.9	15.3	18.3
	1.25	92.1	5.34	7.29	8.75	11.3	15.9	19.1
M14	2.0	115.0	6.67	9.10	10.90	16.5	23.0	27.8
	1.5	125.0	7.25	9.90	11.90	17.9	25.2	30.2
	2.0	157.0	9.10	12.40	14.90	25.7	36.2	43.4
M16	1.5	167.0	9.69	13.20	15.90	27.4	38.5	46.2
	2.5	192.0	11.50	15.20	18.20	35.4	49.8	59.7
M18	1.5	210.0	13.00	17.10	20.50	38.7	54.4	65.3
	2.5	245.0	14.70	19.40	23.30	50.2	70.6	84.7
M20	1.5	272.0	16.30	21.50	25.80	55.7	78.3	94.0
	2.5	303.0	18.20	24.00	28.80	68.3	96.0	115.2
M22	1.5	333.0	20.00	26.40	31.60	75	105.5	126.6
	3.0	353.0	21.20	28.00	33.50	86.8	122.0	146.4
M24	2.0	384.0	23.00	30.40	36.50	94.4	132.7	159.3
	3.0	459.0	28.03	38.84	45.36	89.40	135.07	158.0
M27	2.0	496.0	30.38	42.00	49.03	93.99	145.26	170.74
	3.5	561.0	34.35	47.50	55.45	12.13	183.49	216.62
M30	2.0	621.0	38.02	52.50	61.37	130.38	206.42	242.10
	3.5	694.0	42.41	58.10	68.60	238.99	350.96	410.67
M33	4.0	817.0	49.95	69.11	80.73	211.21	321.10	377.17
M36	4.5	1121.0	68.50	94.84	-	368.65	541.43	633.49
M42	4.5	1121.0	68.50	94.84	-	368.65	541.43	633.49

Nominal Dia	Pitch	Stress Area mm ²	Proof Load in 1000 kg			Tightening Torque in kg-m		
			R	T	V	R	T	V
1/4	BSW	20.6	1.11	1.34	1.61	1.2	1.4	1.7
	BSF	23.0	1.24	1.49	1.79	1.3	1.5	1.9
5/16	BSW	34.0	1.84	2.21	2.65	2.4	2.8	3.5
	BSF	36.6	1.98	2.38	2.85	2.6	3	3.8
3/8	BSW	50.3	2.71	3.27	3.92	4.2	5	6.3
	BSF	54.1	2.92	3.52	4.22	4.5	5.4	6.8
7/16	BSW	69.0	3.72	4.48	5.38	6.7	8	10.1
	BSF	74.7	4.03	4.86	5.83	7.3	8.6	10.9
1/2	BSW	89.4	4.83	5.81	6.97	10	11.8	14.9
	BSF	98.1	5.3	6.37	7.65	11	13	16.3
5/8	BSW	146.5	7.91	9.52	11.42	20.5	24.2	30.5
	BSF	156.8	8.47	10.19	12.23	21.9	25.9	32.7
3/4	BSW	216.8	11.71	14.09	16.91	36.3	42.9	54.2
	BSF	227.1	12.26	14.46	17.71	38.1	45	56.8
7/8	BSW	298.7	16.13	19.42	23.3	58.4	69	87.1
	BSF	314.2	16.97	20.42	24.41	61.4	72.6	91.6
1	BSW	392.3	21.18	25.5	30.6	87.7	103.6	130.7
	BSF	414.2	22.37	26.92	32.31	92.6	109.4	138

Nominal Dia	Pitch	Stress Area mm ²	Proof Load in 1000 kg			Tightening Torque in kg-m		
			5	7	8	5	7	8
1/4	UNC	20.9	1.36	1.69	1.92	1.4	1.8	2
	UNF	23.7	1.54	1.92	2.18	1.6	2	2.2
5/16	UNC	34.3	2.23	2.78	3.16	2.9	3.6	4
	UNF	37.9	2.46	3.07	3.48	3.2	4	4.4
3/8	UNC	50.7	3.3	4.11	4.67	5.2	6.5	7.1
	UNF	57.2	3.72	4.63	5.26	5.8	7.3	8
7/16	UNC	69.5	4.52	5.63	6.4	8.3	10.3	11.4
	UNF	77.3	5.02	6.26	7.11	9.2	11.5	12.6
1/2	UNC	92.8	6.03	7.52	8.54	12.6	15.7	17.3
	UNF	104.0	6.76	8.42	9.57	14.2	17.6	19.4
5/8	UNC	147.7	9.6	11.97	11.59	25.1	31.3	34.5
	UNF	166.5	10.82	13.48	15.31	28.3	35.3	38.9
3/4	UNC	218.1	14.17	17.66	20.06	44.5	55.5	61.1
	UNF	241.9	15.73	19.6	22.26	49.4	61.6	67.8
7/8	UNC	301.3	19.58	24.4	27.72	71.8	89.5	98.6
	UNF	331.0	21.47	26.81	30.45	78.9	98.3	108.3
1	UNC	394.8	25.66	31.98	36.33	107.5	134	147.6
	UNF	430.3	27.97	34.86	39.59	117.2	146	160.9



FIRM FAITH ON CAPARO SOCKET HEAD CAP SCREW

While using Fasteners all are aware the importance of fasteners technology. Higher Pressure higher Stress and higher Speed demand Strong & reliable joints and its give reliable fasteners only.

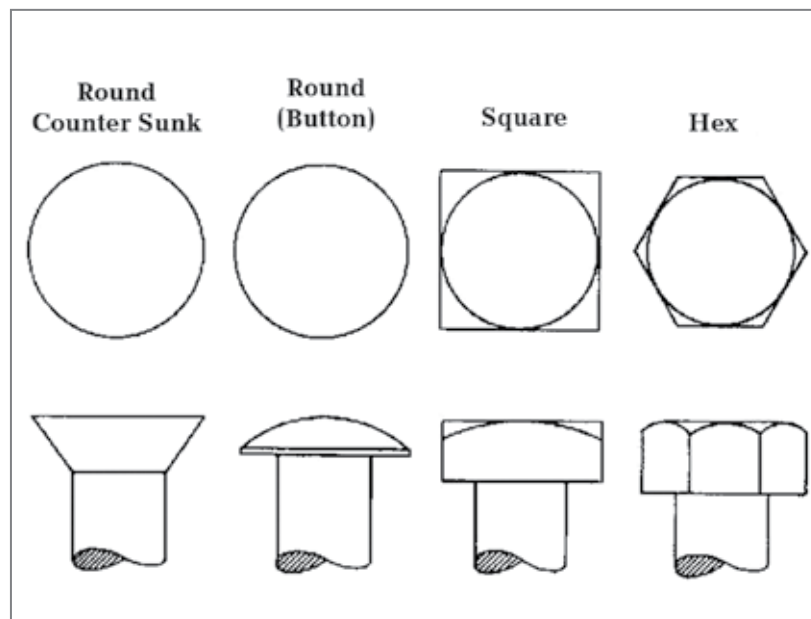
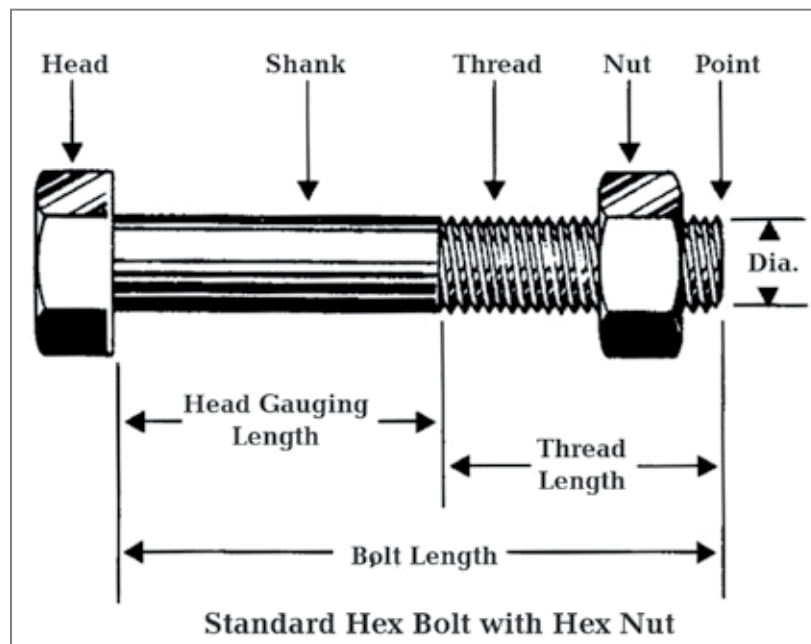
This is the reason Industry is using more and more Socket Head Cap Screw. The Strongest threaded fasteners have the extra strength and fatigue resistance required for complete reliability in high strength fastening.

NOM. THREAD DIAMETER	M 3	M 4	M 5	M 6	M 8	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 27	M 30	M 33	M 36	M 39	M 42
THREAD PITCH	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5	3.5	4	4	4.5
HEAD Max.	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45	50	54	-	63
DIAMETER																			
D Min.	5.32	6.78	8.28	9.78	12.73	15.73	17.73	20.67	23.67	26.67	29.67	32.61	35.61	39.61	44.61	49.61	53.54	-	62.54
HEAD HEIGHT Max.	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30	33	36	-	42
K																			
Min.	2.86	3.82	4.82	5.70	7.64	9.64	11.57	13.57	15.57	17.57	19.48	21.48	23.48	26.48	29.48	32.38	35.38	-	41.38
Nominal Key Size	2.5	3	4	5	6	8	10	12	14	14	17	17	19	19	22	24	27	-	32
max.	2.58	3.071	4.084	5.084	6.14	8.175	10.127	12.146	14.159	14.212	17.216	17.23	19.275	19.275	22.275	24.275	27.275	-	32.33
S																			
Min.	2.52	3.02	4.02	5.02	6.02	8.025	10.025	12.032	14.032	14.032	17.05	17.05	19.065	19.065	22.065	24.065	27.065	-	32.08
SOCKET DEPTH	1.3	2	2.5	3	4	5	6	7	8	9	10	11	12	13.5	15.5	18	19	-	24
RADIUS Under Head	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.6	0.6	0.8	0.8	0.8	1	1	1	1	-	1.2

1. High life Rolled Threads are more uniform and have closer tolerance because CAPARO roll thread dies and techniques produce smoother surface and better size control. Fully formed radius root run out increase fatigue life of threads by reducing stress concentration and avoiding sharp corner where failures may start.
2. **Socket Depth:** - Controlled Socket depth gives optimum wrench engagement, permit full tightening without cracking.
3. **Specially formed Head:** - Controlled head forging forms uniform grain flow without crack flow lines. It makes Head stronger & prevents failure in vital fitted area.
4. **Heat Treatment:** - Heat Treatment is tailored to suit the specific chemistry of every lot of Steel. Atmosphere controlled furnace eliminate possibilities of surface carburization or decarburization to ensure maximum strength and toughness.

MEASUREMENT STYLES OF HEAD

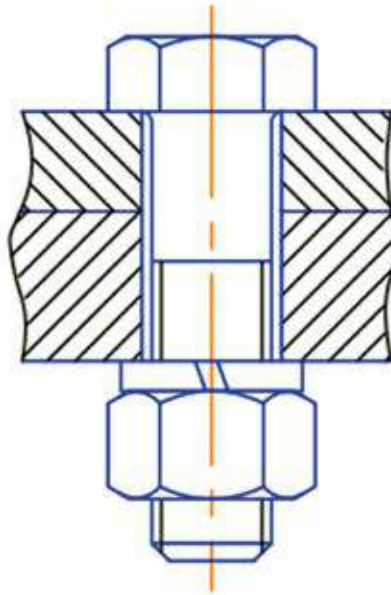
Diameter of all bolts is measured as the outside of major diameter of the thread. The length of a headed bolt is measured from the largest diameter of the bearing surface of the head to the extreme end of the point in a line parallel to the axis of the bolt. For example, square or hex head bolts are measured from under the head to the end of the bolt; a bolt with a countersunk head is measured overall. The point of a bolt is always included in the measured length. Headless fasteners such as studs are measured overall, including points, except for continuous-thread alloy studs made to ASTM Specification A193. This type is measured from first thread to first thread.



'Caparo' High Strength Friction Grip(Structural) Bolts, Nuts and Washers in Friction Grip Joints.

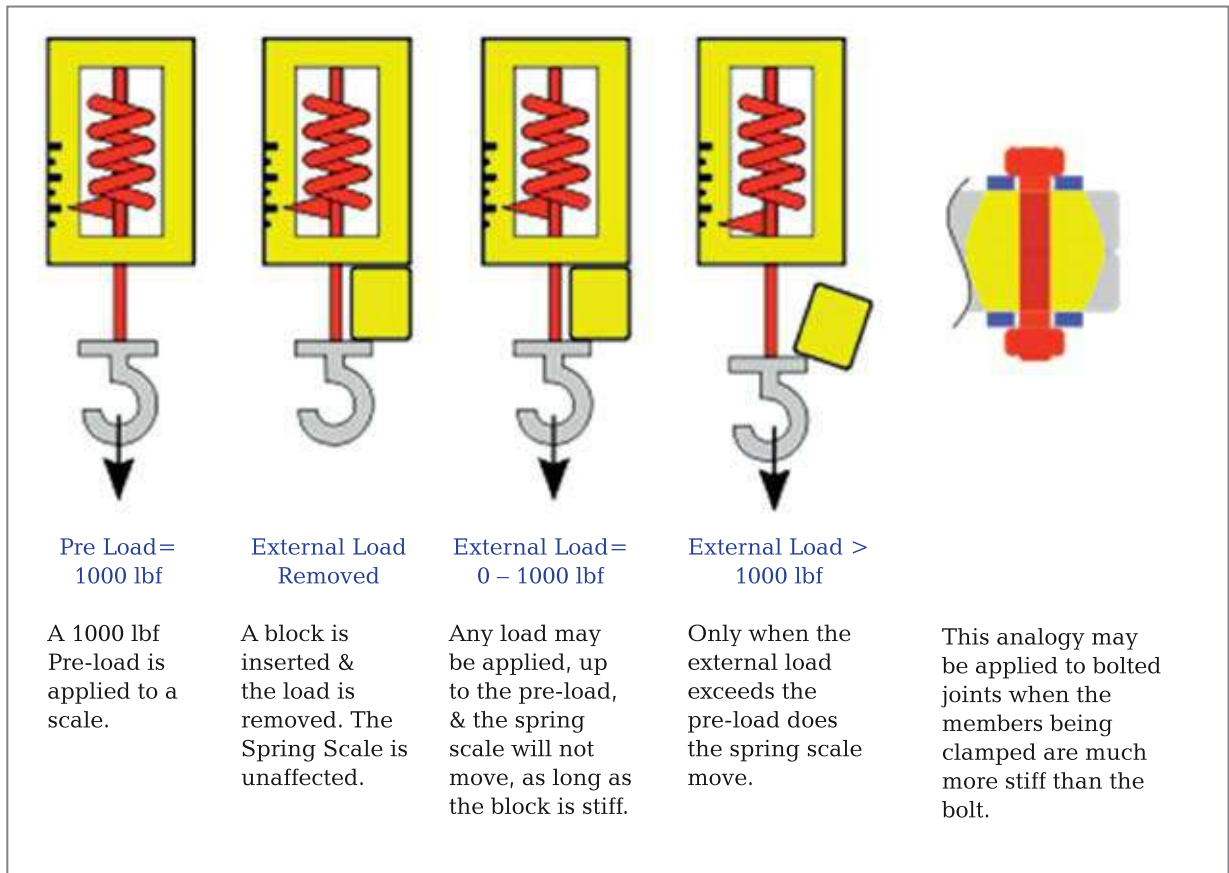
Bolted joints are one of the most common elements in construction and machine design. They consist of fasteners that capture and join other parts, and are secured with the mating of screw threads.

There are two main types of bolted joint designs. In one method the bolt is tightened to a calculated clamp load, usually by applying a measured torque load. The joint will be designed in such a way that the clamp load is never overcome by the forces acting on the joint (and therefore the joined parts see no relative motion).



This type of joint design provides several properties:

- Greater preloads in bolted joints reduce the fatigue loading of the fastener.
- For cyclic loads, the fastener is not subjected to the full amplitude of the load; as a result, the fastener's fatigue life can be increased or—if the material exhibits an endurance limit—extended indefinitely.
- As long as the external loads on a joint don't exceed the clamp load, the fastener is not subjected to any motion and will not come loose, obviating the need for locking mechanisms.
- The other type of bolted joint does not have a designed clamp load but relies on the shear strength of the bolt shaft. This may include clevis linkages, joints that can move, and joints that rely on a locking mechanism (like lock washers, thread adhesives, and lock nuts).
- The clamp load, also called preload, of a fastener is created when a torque is applied, and is generally a percentage of the fastener's proof strength; a fastener is manufactured to various standards that define, among other things, its strength and clamp load.
- When a fastener is tightened, it is stretched and the parts being fastened are compressed; this can be modeled as a spring-like assembly that has a non-intuitive distribution of strain. External forces are designed to act on the fastened parts rather than on the fastener, and as long as the forces acting on the fastened parts do not exceed the clamp load, the fastener is not subjected to any increased load.



- However, this is a simplified model that is only valid when the fastened parts are much stiffer than the fastener. In reality, the fastener is subjected to a small fraction of the external load even if that external load does not exceed the clamp load. When the fastened parts are less stiff than the fastener (soft, compressed gaskets for example), this model breaks down; the fastener is subjected to a load that is the sum of the pre-load and the external load.



Pic – Rolling of Grip Bolts in a Circular rolling machine.



GENERAL CONDITION FOR

Price List 13, Effective from 01 April, 2022

All enquiries, quotations, orders or contracts are entitled to follow the conditions as per the enclosures given below unless otherwise accepted in writing by CAPARO Engineering India Ltd (Herein after called the COMPANY).

PRICES

Prices will be charged as per the prevailing price list at the time of dispatch, unless otherwise specially agreed to prices are F.O.R Destination/Chopanki basis as mutually agreed. Excise duty, educational cess. Sales taxes & other government levies & duties to the purchasers account as per prevailing norm during the dispatches

LOSS OR DAMAGE

The Company accepts no responsibility once the goods is handed over to the transporters. Company does not own any responsibility for any loss or damages to the goods during the transit.

PACKAGING

Prices are inclusive of goods in packed cartoons.

PAYMENT

Payment are as per mutually agreed terms & any payment made delay after due date shall attract penal interest as per banking norm.

DELIVERY

All offers for executing orders are from the stock, provided the same is available in ex-stock. For forward delivery, the dates are given without any assurance & no responsibility is guaranteed by the Company as the delivery failure may arise due to circumstances beyond the Company's control.

FORCE MAJEURE

The Company shall not be responsible for failure or delay in delivering the goods or any part thereof (or any consequential damages) due to acts of GOD. enemies of Government of India, Wars, embargo, riots, civil or political disturbances, strikes, lockouts, stoppages of labour, shortages of raw material and/or labour shortage of motive-power, non availability of shipping spaces or import or export license, breakdown of machinery, restraints imposed on the company by the Government, municipality or any other cause beyond the Company's control, such failure/delay shall not entitle the purchasers to cancel the contract nor is the Company liable to make good any damage arising from such failure to delivery or delay in delivery.

INFRINGEMENT OF PATENT & TRADE MARK

Any ordered goods are manufactured to customer's drawings or specifications, the responsibilities to ensure that these do not result in infringement of any patent or trade mark will lie entirely with the customer's concerned & customer shall be solely responsible for the consequence in case of any such infringement.

ACCEPTANCE OR RETURNS

In case of wrong dispatches the customers should intimate to the Company within 15 days of receipt of goods & prior confirmation should be obtained from the Company in writing before returning the wrong dispatches.

CONFIRMATION

The company shall not be responsible for any order booked by Sales man & agents which is not confirmed by company in writing

GUARANTEE

The company shall undertake the free replacement of goods against defects due to workmanship by the company after returning the defective products to the company's premises. But the Company shall not entertain the defective product for free replacement, arises due to improper use/ process or processes at customers end. The Company also accepts no responsibilities for any contingent or resulting liabilities or losses arising through any defective goods supplied. Any claim for such replacement under this clause will arise only if the material is returned in good condition within three months from the date of supply. The Company's decision on the cause for any such defects is final & binding.

CANCELLATION OF ORDERS

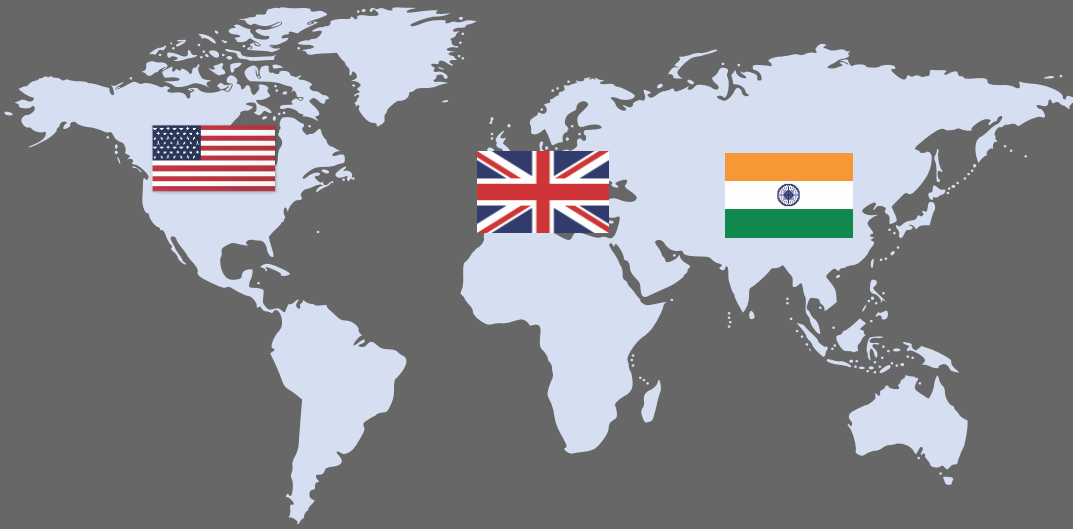
The company reserves the right to refuse the cancellation of orders once it has been accepted. Failure on the part of purchaser to accept the delivery and remit the payment will be considered a breach of contracts & Company is entitled to cancel the contract & proceed legally for recovering the payment if any.

Supplies shall be made in Blackened / phosphating finish. Other special finishes are at extra cost.

Maximum retail selling prices (Exclusive of GST & other levies as applicable) shall not exceed the printed prices on the cartoon boxes. However the customer is free to sell the product less than printed prices.

The company will not stand guarantee for socket products above 10.9 grade used in plated condition which has been plated at customer's end.

Any dispute or claim arising on or out of, or in connection with quotation, contracts, for supplies by the company shall be referred to the sole Arbitrator appointed by the Managing Director of the Company and the decision made by such our Arbitrator shall be final & binding on both the parties.



CAPARO OPERATIONS IN INDIA

Caparo Maruti Ltd.
Gurugram, Bawal, Halol

Caparo Engineering India Ltd.
Chopanki

Caparo Tubes India, **Dewas**

Caparo Stampings
Pithampur, NOIDA, Pune, Chennai,
Halol, Jamshedpur & Bawal

Caparo Aluminium Foundry, **Chennai**

Caparo Forge, **Chennai**

Caparo MI Steel
Processors Pvt. Ltd., **Bawal**



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