

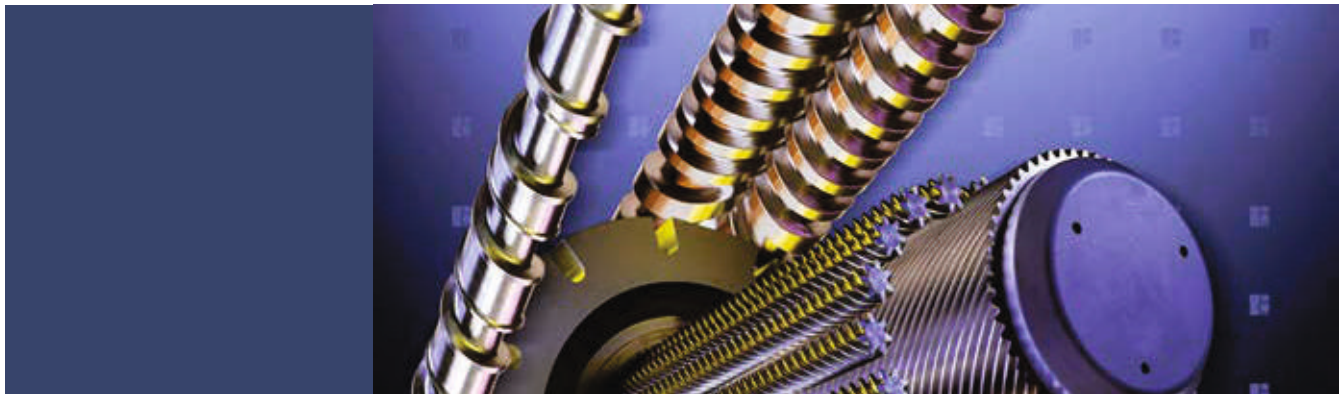


AN IATF 16949 CERTIFIED COMPANY

REDEFINING FASTENING SOLUTION



Price List 10, Effective from 1st January, 2021



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 01-01-2021

Diameter/ Length	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	Wrench 7 mm	Wrench 8 mm	Wrench 10 mm	Wrench 13 mm	Wrench 16 mm	Wrench 18 mm	Wrench 21 mm	Wrench 24 mm	Wrench 27 mm	Wrench 30 mm	Wrench 34 mm	Wrench 36 mm
8												
10	299	302	393									
12	320	309	415	602								
14		346	424	628								
16	467	482	418	602	1016	2148						
18		506	445	566	1024							
20	470	396	422	527	954	1575		3717				
22		430	451	647	1089							
25	486	415	435	596	1021	1701	2716	3717				
30	493	451	470	674	1108	1709	2915	3900				
35		461	503	796	1175	1796	3038	3900		8330		
40		498	530	846	1417	2047	3283	3892	6979	7797		
45		546	572	909	1646	2243	3535	4146	7293	8161		
50		642	613	992	1680	2405	3912	4420	7528	8038	11947	14482
55			673	1095	1763	2582	4033	4959	8035	9206	12816	13956
60			739	1222	1923	2704	4220	5197	8315	9316	13302	15184
65			778	1278	2017	2829	4483	5408	8650	9792	14188	16475
70			814	1354	2123	3212	4728	5654	9458	9583	14732	16660
75			864	1408	2270	3300	4868	6156	9866	10669	15277	17277
80			914	1463	2655	3478	4868	6989	10083	11016	15883	18844
85			1098	1840	3144	4041		7537		12275	16435	19562
90			1067	1976	2939	3740	5763	7458	10778	11743	16988	20280
95				2171	3651	4517					17571	21090
100				2290	3337	4379	6597	7760	11990	12541	18154	21898
110				3191	3848	4853	7452	8641	12589	13871	19731	22790
120				3409	4226	5185	7924	9997	13933	15162	21090	24159
125				3586	4604	5647				15620	22247	24708
130				3793	4831	5496	8520	11481	14578	16077	22247	25256
140				4204	5302	6360	11215	11695	15262	17365	23401	26895
150				4718	5783	8996	12304	13734	16321	17386	25670	28025
160				5951	6340	9035	13619	14865	17989	20476	27709	33303
170				6454	6639	10752		16287	19545	23978		36744
180				6973	6940	9912		16275	19934	25430	31539	36089
190					8360							
200					11304	13082		17637		26527	34132	39010
210					15669							
220						18528		22787		36264	49084	56451
240						18941		24529		38113	52844	58725
250												59567
260						20638		25186		41513		60408
270												
280								27706		44923		66250
300								35628				91196
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 01-01-2021

Diameter Length	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
	41 mm	46 mm	50 mm	55 mm	65 mm
60	29583	39721			
65	30137				
70	30272	39721			
75	32475	40126	57033		
80	33972	41336	60303	70214	
85					
90	37042	44871	63967	75562	111873
95					
100	40066	48288	68499	78607	118302
110	43198	53114	73695	83954	124765
120	44443	54257	75421	85580	125725
125					
130	46024	56735	79470	90062	131037
140	48943	60253	84394	95202	138332
150	51840	63637	89230	99670	159043
160	57005	71998	93390	110220	152891
170					
180	63054	79289	102261	127816	166781
200	68712	68496	111240	138544	174325
220	96144	104358	134530	166107	223606
240	103684	111702	144449	178074	240202
250					
260	115881	119063	155276	190020	256851
270					
280	122995	126403	166050	201994	273463
300	128763	138872	176808	242483	290068
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.



Diameter/ Length	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
1/2"	461	634							
5/8"	577	605	1013						
3/4"	518	579	879	1267	1895				
7/8"	474	634	1041	1362	1860				
1"	513	628	832	1421	1986	3483			
1 1/4"	522	685	945	1432	2201	3900			
1 1/2"	579	832	1067	1550	2237	4002	7145	16617	15611
1 3/4"	631	937	1276	1957	2439	4356	7389	17189	15607
2"	695	1006	1377	1977	2659	4557	7945	18545	16517
2 1/4"		1109	1532	2546	3054	4981	8683		17067
2 1/2"	816	1210	1667	2465	3144	5448	9153	16676	17865
2 3/4"		1372	1868	3028	3515	5889	9952	16802	19084
3"		1346	1949	2782	3796	6343	10387	17224	20922
3 1/4"		1473	2201		4254	6756	10770		21715
3 1/2"		1580	2265	3135	4275	7160	11453	17784	22675
3 3/4"			2783	4005	4636		12522		
4"		2141	2990	4087	4746	8046	12856	19598	24765
4 1/4"					5091			23532	
4 1/2"			3398		5558	9085	14064	21734	27484
4 3/4"					6260		16482		
5"			3896	5638	6078	9813	14915	23427	30504
5 1/2"					7434	11162	16830	24761	33072
6"			4677		9032	11859	17130	26315	34587
6 1/2"					11134	13726	18358	28182	37495
7"					13637	14791	19850	30430	40620
7 1/2"					14621	15892	20278		43752
8"					14910	16213	21835	33513	45106
9"									
10"									56174
Qty / Box	500	200	100	25			10	5	

- | | |
|--|-----------------------|
| 1. Specification | BS-1768,ANSI B-18,2.1 |
| 2. Threads fit | BS-1580, B1.1 |
| 3. Supply Conditions | J429 H |
| 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. | |



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



EFFECTIVE FROM 01-01-2021

Diameter/ Length		1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
		Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
1/2"		487	657	1191					
5/8"		592	688	1202	1220				
3/4"		581	661	1088	1300				
7/8"		525	679	1279	1399				
1"		576	783	1194	1547	2227	4348		
1 1/4"		635	863	1273	1726	2437	4646		
1 1/2"		693	962	1382	1836	2583	4907	8792	
1 3/4"		738	1080	1595	2084	2928	5056	9174	
2"		811	1175	1886	2381	3471	5622	9798	18471
2 1/4"			1295	1947	2548	3704	5993	10684	
2 1/2"			1392	2091	2794	4021	6551	11248	20160
2 3/4"			1521	2238	3028	4343	7073		
3"			1671	2412	3273	4680	7616	12755	22508
3 1/4"				2625	3516	5017	8107		
3 1/2"			1839	2817	3761	5405	8771	14125	25496
3 3/4"				3233	4002	5688			
4"				3588	4339	6025	9928	15846	28100
4 1/4"				3661		6353			
4 1/2"				3974		6682	10707		30899
5"					5302	7353	12024		34285
5 1/2"				4359					
6"									38887
6 1/2"									
7"									43467
7 1/2"									
8"									48720
9"									57959
Qty / Box	500	200	100			25		10	5

UNF-ANSI B-18,2.1 **BSF/BSW- BS 1083**
B1.1 **BS 84**
ANSI-B1 1 **BS1960**
J429 H **BS1083**

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.

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 01-01-2021

Dia/ Length	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
	2.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	14mm	14mm	17mm	17mm	19mm
4													
5	1063	971											
6	915	927	1087	1248									
8	637	705	702	865									
10	531	558	412	613	1146	2024							
12	531	508	409	592	911	1449							
14		672	488	814		1270							
16	554	534	443	561	763	1323	3557						
18		756	480	597	802	1556							
20	561	565	479	613	809	1350	3405	8720	7426				
22	608	762	504	680	874	1502							
25	785	591	504	696	837	1346	2967	7902	7402		17571		
30		710	582	783	993	1466	2845	7820	7390	20910	17700	21471	
35		774	637	863	1088	1592	2907	6540	6233	21221	18026	22163	
40		856	717	921	1152	1938	2936	6711	6229	18569	15839		
45		983	795	1001	1335	2100	3247	6845	6479	18753	16459	26721	21161
50		1141	759	1058	1417	2256	3034	6957	6464	18779	15326	22744	19669
55		1816	1341	1180	1555	2417	3613	7083	6995	18943	16212	24997	22789
60		3935	1716	2187	1681	2607	3696	7453	6783	19143	15534	26213	22622
65		4441	3079	2268	1815	2516	3918	7591	7646	19168	16455	28540	24806
70			3749	2368	1978	3029	4123	8178	8129	20491	17550	29670	25808
75			4171	2590	2068	3223	4411	8651	8614	21814	18701	31438	27302
80			4767	2795	2976	4458	5220	9065	9073	22277	18121	33047	28690
85				3698	4513	5619	6243		9994		22153		35859
90				3006	3436	5159	5878	9243	10125	22827	19963	34121	30663
100				4063	4095	5972	6512	11460	11564	23915	21053	36721	32015
110				4063	5067	7029	7940	132569	12598	26439	23015	39174	35682
120				5926	5907	7134	9129	13592	13610	28894	25415	42313	37491
130				6926	7103	9639	10875	15289	15418	32058	27593	56411	40269
140				8086	7695	10754	12109	16377	16496	34587	29766	64960	42636
150				9143	8310	11797	13384	17442	17651	37119	32712	85645	46869
160				12190	11684	14784	21096	18521	34958	39473	41678	101405	72286
170							24540			45979	47778	108098	87990
180				14141	16178	17039	23185		40004	53615	47947	112191	78986
200				19510	20715	23724	25363		38320	53967	50187		85469
220							29137		49821		51980		91864
240							42062		57586		80897		97113
260											99437		100114
280											116161		
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 01-01-2021

Diameter/ Length	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
	19mm	22mm	24mm	27mm	32mm
60	55194	41159			
65					
70	45145	44525			
75	47440	47711	70532		
80	50621	49512	73212	88959	
85					
90	54180	52049	79462	97125	136782
100	57791	58119	83034	97142	149993
110	61403	61748	87505	102418	154172
120	65016	65377	95520	106839	167676
130	69529	69915	99999	110381	171260
140	72240	72644	106252	121861	185477
150	76762	77193	112181	126255	190872
160	121007	115439	150449	169910	264638
170					
180	133651	127619	167003	189843	280828
200	145398	138569	181807	205738	304170
220	181247	173235	225474	254377	381848
240	200834	186285	244522	261374	399588
260	218758	197769	253905	279925	424515
280	233478	210837	268459	298531	450965
300	246324	223451	288724	326037	491062
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.



Diameter/ Length	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
	5/32"	3/16"	7/32"	5/16"	3/8"	1/2"	9/16"	9/16"	5/8"
3/8"	545	635							
1/2"	546	629	856	1327					
5/8"	509	598	776	1384					
3/4"	549	629	825	1137	3504				
7/8"		668	882	1285	3522				
1"	613	705	894	1272	3010	6580	16315		
1.1/4"	676	797	1032	1397	3212	5725	16389		
1.1/2"	775	889	1150	1561	3251	5962	14601	23198	21634
1.3/4"	929	1089	1365	1865	3494	6305	14996	24483	21795
2"	932	1089	1354	1932	3659	6598	14931	24241	23483
2.1/4"		2208	1645	2224	4186	7162	15308	26135	25209
2.1/2"		2270	1656	2323	4427	7237	15236	326237	25209
2.3/4"		2585	2000	2667	4736	7961	17262	29453	28375
3"		2585	2013	2684	5182	8016	17390	29556	28375
3.1/4"		3098	3297	3916	6236	8875	18105		
3.1/2"		3098	3310	4020	6179	9244	18006	32683	31361
4"		3412	3952	4705	7224	10874	19013	34572	34735
4.1/2"			6253	6864	8795	11597	23095	40520	38472
5"			7161	8325	10630	12889	25164	43551	41751
5.1/2"				9962	11726	15785	27169	46688	44769
6"				10273	12057	17238	30515	49731	49738
6.1/2"					22945	36378	39456	87211	79994
7"					24087	36695	40507	84460	82963
7.1/2"					25023	37963	41538	87638	86126
8"					26112	40262	42482	89691	89098
8.1/2"						52515	47315		95222
9"						52784	49157		100098
10"						62150			
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”



Diameter/ Length	M3	M4	M5	M6	M8	M10	M12
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
			3mm	4mm	5mm	6mm	8mm
6	1081	1081					
8	1081	919					
10	1081	919	717	884	1436		
12	1181	963	741	884	1153		
16	1217	1005	797	953	1218	1976	
20	1352	1075	859	1030	1306	1645	4813
25		1135	1001	1210	1495	1913	4573
30			1217	1388	1706	2197	4914
35			1557	1574	1940	2516	5444
40			1354	1803	2209	2881	6067
45				2114	2824	3765	6596
50				2462	3041	4200	7227
55							8422
60							8422
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”



Diameter/ Length	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
	2mm	2.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	14mm
6	926									
8	1094	595	771	672						
10	1175	595	532	672						
12	1262	632	553	643	874					
16	1430	677	593	689	874	1596				
20	1598	735	638	774	936	1295	2836			
25	1766	857	750	927	1074	1508	2515			
30		1036	907	1054	1229	1727	2879	6236		
35		2148	1206	1206	1397	1989	3244	6721		
40		2298	1880	1892	1592	2277	3595	7199		
45			1978	2323	2058	2698	3960	7677		
50			2194	2581	2804	3068	4319	8162	16535	
55					3346	4086	4676	8640	17279	
60					4039		5041	9117	17279	29021
65								9596	17761	31088
70								10074	18033	32120
75							6121	10559	18777	34187
80								11037	25576	36260
90								12063	26034	37286
100									27032	39351
110									33721	46590
120									36246	51872
130									38772	56087
140										59249
150										63464
180										81853
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



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



EFFECTIVE FROM 01-01-2021

Diameter/ Length	M3	M4	M5	M6	M8	M10	M12
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
	1.5mm	2mm	2.5mm	3mm	4mm	5mm	6mm
3	385						
4	390	356					
5	390	361	268				
6	409	380	276	288			
8	442	385	288	313	343	696	
10	476	426	313	365	348	478	
12	514	458	362	387	433	514	804
16		529	416	496	497	714	965
20		649	475	496	578	789	1159
25		818	549	601	689	954	1329
30			819	816	987	1438	1537
35				911	1147	1640	
40				1067	1309	1829	
45					1486	2094	
50					1658	2283	
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 01-01-2021

Diameter/ Length	M 16	M 18	M 20	M 22	M 24	M 27	M 30	
40	4645							
45	5098		9094					
50	5339	7412	9673	13415	16706			
55	5535	7720	10141	13349	16973			
60	5962	8232	10675	13939	17635	36784		
65	6276	8677	11263	15593	19181	38506		
70	6471	9322	12104	15711	19396	38542		
75	7037	972	12190	16591	21130	41029	47917	
80	7719	10612	12369	17212	21433	42848	50607	
90	8212	11260	13119	18872	23626	45632	51921	
100	8902	12212	14017	19157	25393	48988	55664	
110	9347	13239	14552	20628	25828	50977	60882	
120	10399	14441	15988	2206	27045	52672	62439	
130	11665	16842	17337	23276	28363	54480	63560	
140	12019	17354	18273	24422	29829	57739	67170	
150	14268	20804	19286	25650	30751	60964	72142	
160	15481	22352	21773	29226	35499	66655	79924	
170					38224	72986	88445	
180	17685	25049	23729	31794	39652	73366	88107	
190			27264					
200	20938	27077	26323	33611	42747	79673	96130	
220					46325		108546	
260					66258			

NUTS

DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30	
List Price	2474	3998	4978	5811	7855	13609	16685	

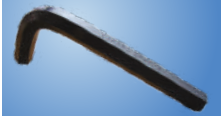
WASHERS

DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30	
List Price	1532	2000	1949	2818	2960	4714	5865	

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.



S No	Description	Rate/100 Nos
1	ALLEN KEY M- 1.5	1278
2	ALLEN KEY M- 2	1278
3	ALLEN KEY M- 2.5	1278
4	ALLEN KEY M- 3	1444
5	ALLEN KEY M- 4	2324
6	ALLEN KEY M- 5	2832
7	ALLEN KEY M- 6	4169
8	ALLEN KEY M- 8	7608
9	ALLEN KEY M- 10	12698
10	ALLEN KEY M- 12	23897
11	ALLEN KEY M- 14	35162
12	ALLEN KEY M- 17	55619
13	ALLEN KEY M- 19	76739
14	ALLEN KEY M- 22	120972
15	ALLEN KEY M- 24	162642
16	ALLEN KEY M- 27	273820
17	ALLEN KEY M- 32	481550

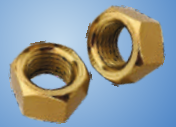
S No	Description	Rate/100 Nos
1	ALLEN KEY I--1/16	1287
2	ALLEN KEY I--5/64	1398
3	ALLEN KEY I--3/32	1426
4	ALLEN KEY I--1/8	1444
5	ALLEN KEY I--5/32	1750
6	ALLEN KEY I--3/16	2167
7	ALLEN KEY I--7/32	3365
8	ALLEN KEY I--1/4	4868
9	ALLEN KEY I--5/16	7765
10	ALLEN KEY I--3/8	11373
11	ALLEN KEY I--1/2	27600
12	ALLEN KEY I--9/16	31249
13	ALLEN KEY I--5/8	47463

SECIFICATIONS

Material: High Grade Alloy Steel.

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

Mechanical Properties: Hardness-HRC 47 Min.



EFFECTIVE FROM 01-01-2021

SIZE	GRADE	PRICE
NUT M6X1	8	152
NUT M8X1.25	8	208
NUT M10X1.5	8	410
NUT M12X1.75	8	663
NUT M12X1.5	8	657
NUT M12X1.5/1.75	10	734
NUT M14X1.5/2	8	1210
NUT M14X2	10	1269
NUT M16X1.5 / 2	8	1385
NUT M16X2	10	1681
NUT M18X2.5	Gr 8/10	2420
NUT M20X2.5	Gr 8/10	3208
NUT M22X2.5	10	3670
NUT M24X3	Gr 8/10	5570
NUT M 27X3	10	8908
NUT M 30X3.5	Gr 8/10	.12611
NUT M33X3.5	10	16807
NUT M36X4	10	22821
NUT M42X4.5	10	36854

SIZE	GRADE	PRICE
1/4 UNC	8	195
5/16 UNC	8	271
3/8 UNC	8	404
7/16 UNC	8	761
7/16 BSF	R	819
1/2 UNC	8	917
1/2 BSF	R	960
5/8 UNC	8	1939
3/4 UNC	8	3420
7/8 UNC	8	4399
1 UNC	8	6567
1/2 BSW	R	873
1/2 UNF	T	961

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.

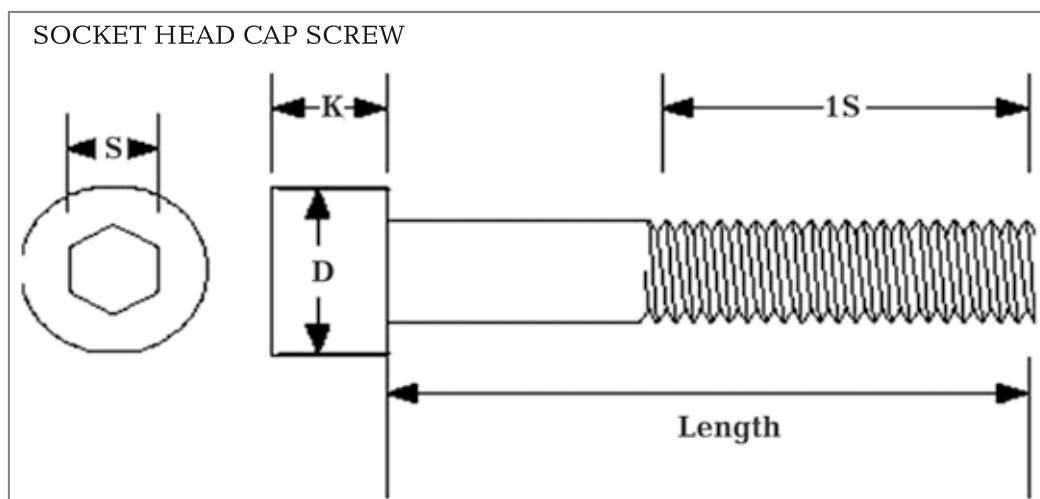
Process	Details	Hydrogen Embrittlement Risk	Preventive Action
Degrease	Solvent		
	Alkali soak		
	Electro Clean	some	Only use anodically
De-rust or De-scale	Acid	High	Use inhibited short time
	Alkaline de-rusts	Low	Poor at de-rusting
	Abrasive clean	None	
Phosphate	Acid process	Medium	Bake – reduces with 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
M12	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
M14	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
	2.0	115.0	6.67	9.10	10.90	16.5	23.0	27.8
M16	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
M18	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
M20	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
M22	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
M24	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
M27	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
M30	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
M33	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
M36	4.0	817.0	49.95	69.11	80.73	211.21	321.10	377.17
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.

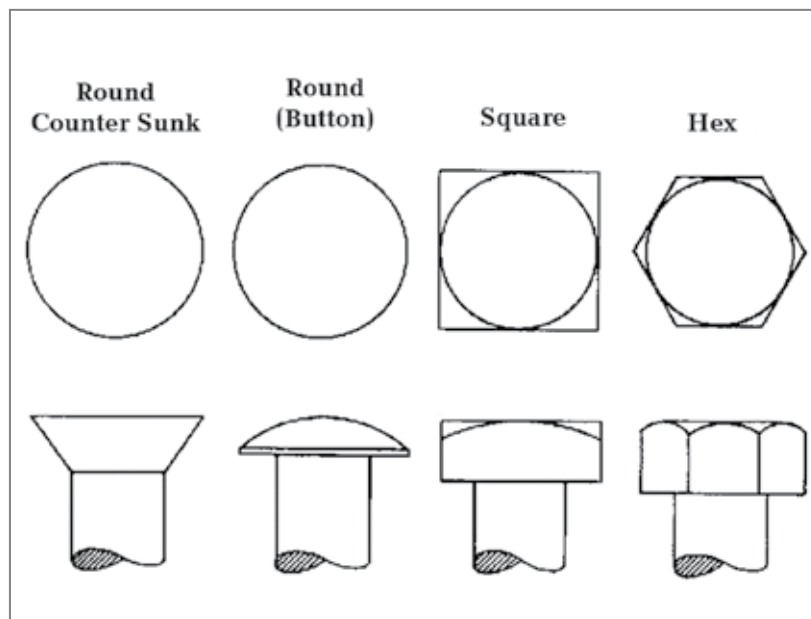
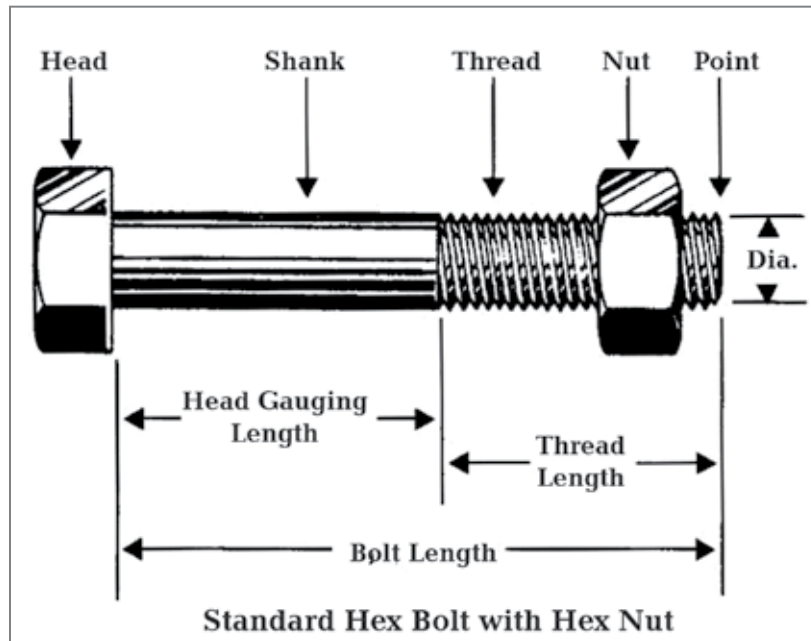
This is the reason Industry is using more and more Socket Head Cap Screw. The Strongest threaded fasteners have the extra strength and fatigue resistance required for complete reliability in high strength fastening.

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																			
max.	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

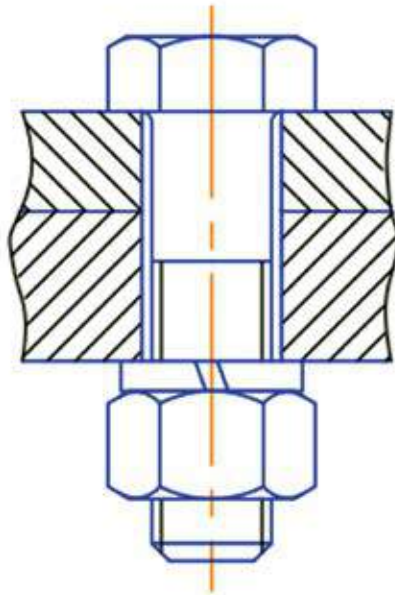
Diameter of all bolts is measured as the outside of major diameter of the thread. The length of a headed bolt is measured from the largest diameter of the bearing surface of the head to the extreme end of the point in a line parallel to the axis of the bolt. For example, square or hex head bolts are 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.

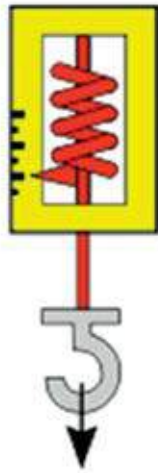
Bolted joints are one of the most common elements in construction and machine design. They consist of fasteners that capture and join other parts, and are secured with the mating of screw threads.

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.



Pre Load =
1000 lbf

A 1000 lbf
Pre-load is
applied to a
scale.



External Load
Removed

A block is
inserted &
the load is
removed. The
Spring Scale is
unaffected.



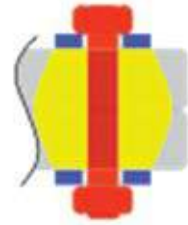
External Load =
0 – 1000 lbf

Any load may
be applied, up
to the pre-load,
& the spring
scale will not
move, as long as
the block is stiff.



External Load >
1000 lbf

Only when the
external load
exceeds the
pre-load does
the spring scale
move.



This analogy may
be applied to bolted
joints when the
members being
clamped are much
more stiff than the
bolt.

- 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.

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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