

# caparo

## FASTENERS

AN ISO/TS 16949 CERTIFIED COMPANY

REDEFINING FASTENING SOLUTION



Price List 06, Effective from 1st July, 2012

# CAPARO

## 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. Under the dynamic leadership of Mr. Angad Paul, Chairman (Caparo India Operation), 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 Pvt. 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.



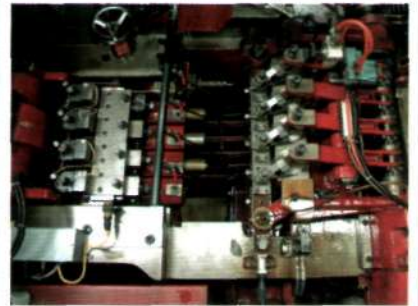
## CAPARO FASTENERS

Having started its operation in 2005 from Chopanki (Rajasthan), Caparo Fasteners India (CFI), is today one of India's fastest growing manufacturers of High Tensile Fasteners. It is backed by complete technical support from the group company Caparo Atlas fastenings, UK, a leading manufacturer of fasteners, catering to the European automobile industry for the last 100 years.

CFI's manufacturing facilities are housed in a state of the art plant with a capacity to produce 26000 MT of fasteners per annum. Within the last two years of operation, 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, Ford, General Motors, HMSI, Tata Motors and many more.

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

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.





EFFECTIVE FROM 01-07-2012

Diameter/ Length	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
	7 mm	8 mm	10 mm	13 mm	16 mm	18 mm	21 mm	24 mm	27 mm	30 mm	34 mm	36 mm
10	230	232	289									
12	247	238	305	443								
14		238	312	462								
16	359	371	307	443	761	1510						
18		330	327	416	767							
20	362	314	310	387	715	1180		2783				
22		330	332	475	816							
25	374	328	320	438	765	1251	2034	2783				
30	380	344*	345*	495	830	1280	2183	2920				
35		355*	370*	585*	880	1345	2275	2920		6238		
40		391*	390*	622*	1042*	1505	2423	2915	5227	5839		
45		421	421*	668*	1210*	1680*	2647	3105	5462	6112		
50		504	451*	729*	1235*	1801*	2930*	3310	5638	6019	8947	10845
55			508	805*	1320*	1933*	3020*	3714*	6018	6769	9598	10452
60			544	898*	1440*	2025*	3160*	3892*	6227	6850	9962	11371
65			572	940	1510*	2080*	3357*	4050*	6478	7333*	10625	12338
70			598	995	1590*	2362*	3541*	4257*	7083	7177*	11032	12477*
75			635	1035	1700*	2471*	3728*	4610*	7062	7990*	11441	12939*
80			672	1075	1988	2605*	3937*	5234*	7551	8250*	11894	14112*
85			807	1353	2355	3026		5644*		9193*	12308	14650*
90			807	1453	2201	2750	4316*	5585*	8071	8794*	12722	15188*
95				1596	2734	3382					13159	15794*
100			882	1684	2499	3280	4941*	5811*	8980	9392*	13595	16399*
110				1926	2804	3634	5581	6472	9428	10388	14777	17068
120				2440	3107	3883	5934	7487	10434	11355	15794	18093
125				2499	3448	4229				11698	16650	18504
130				2557	3618	4116	6381	8598	10918	12040	16661	18914
140				3004	3970	4763	8399	8758	11430	13005	17525	20141
150				3816	4331	6737	9215	10285	12223	13020	19224	20988
160				4813	4748	6767	10199	11132	13472	15334	20751	24941
170					4972	8052		12197	14637	17957		27518
180					5197	7423		12188	15807	19044	23619	27027
200					8466	9797		13208		19866	25561	29215
220						13876		17065		27158	35133	42276
240						14185		18369		28543	37824	43979
260						15456		18862		31089		45240
280								20749		33643		49615
300								26196				68296
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.
- IX \*Marked items can be supplied in fully threaded condition, prices will be on enquiry.



Diameter Length	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
	41 mm	46 mm	50 mm	55 mm	65 mm
60	22155	30891			
65	22569				
70	22670	30891			
75	24320	31206	43932		
80	25442	32147	46451	54606	
90	27741	34896	49273	58764	86175
100	30006	37554	52765	61133	91128
110	32351	41307	56737	65291	96106
120	33283	42196	58093	66556	96846
130	34468	44123	61215	70041	100937
140	36654	46859	65009	74038	106556
150	38823	49490	68733	78007	112160
160	42691	55993	71938	85718	117771
180	47221	61663	78771	99403	128470
200	51458	67268	85688	107746	134282
220	72002	81160	103628	129182	172243
240	77649	86871	111269	138488	185027
260	86783	92595	119609	147779	197851
280	92111	98304	127908	157091	210648
300	96431	104001	136194	188580	223438
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.



EFFECTIVE FROM 01-07-2012

Diame- ter/ 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
	7/16"	1/2"	9/16"	5/8"	3/4"	1.5/16"	1.1/8"	1.5/11"	1.1/2"
1/2"	345	489							
5/8"	410	457	758						
3/4"	399	446	671	854	1419				
7/8"	365	484	765	918	1380				
1"	395	479	641	982	1473	2683			
1 1/4"	402	513	728	1124	1648	2920			
1 1/2"	446	629	822	1206	1723	3083	5351	11586	11691
1 3/4"	472	708	956	1401	1934	3324	5585	12639	11798
2"	530	761	1051	1568	2109	3510	5896	14999	12145
2 1/4"		846	1158	1716	2352	3838	6503		12665
2 1/2"		915	1272	1881	2469	4196	6855	12489	13256
2 3/4"		991	1425	2041	2708	4537	7453	12583	14161
3"		1057	1515	2206	3010	4886	7779	12888	15525
3 1/4"		1113	1664		3216	5204	8141		16113
3 1/2"		1183	1712	2536	3357	5515	8822	13699	16826
3 3/4"			2084	2699	3505		9833		
4"		1604	2140	2926	3656	6198	9903	14410	18547
4 1/4"					3922			15861	
4 1/2"			2216		4162	6741	10834	16277	20394
4 3/4"					4219		11109		
5"			2693	3800	4275	7559	11384	17545	22845
5 1/2"					5568	8598	12722	18544	24541
6"			3503		6581	9049	13196	19708	25902
6 1/2"					7697	10002	14140	21709	27321
7"					8170	10494	15290	23002	30142
7 1/2"					8825	10986	15620		29006
8"					9205	11304	16819	25333	33780
9"									
10"									
Pkg Qty	500	200	100		25		10		5

1. Specifications 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.
7. \*Marked items can be supplied in fully threaded condition, prices will be on enquiry.



Diameter/ Length	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
1/2"	352	475	860					
5/8"	427	497	868	881				
3/4"	420	477	786	939				
7/8"	379	490	924	1010				
1"	416	565	862	1117	1608	3140		
1 1/4"	458	623	919	1246	1760	3355		
1 1/2"	500	695	998	1326	1865	3544	6349	
1 3/4"	533	780	1152	1505	2115	3658	6625	
2"	586	849	1362	1720	2506	4060	7076	13339
2 1/4"		935	1406	1840	2675	4328	7715	
2 1/2"		1006	1510	2017	2904	4731	8123	14558
2 3/4"		1098	1616	2187	3137	5108		
3"		1207	1742	2364	3380	5500	9211	16255
3 1/4"			1895	2539	3623	5855		
3 1/2"		1328	2035	2716	3904	6334	10200	18412
3 3/4"			2335	2890	4108			
4"			2591	3133	4351	7170	11443	20292
4 1/4"			2644		4588			
4 1/2"			2870		4825	7732		22313
5"				3829	5310	8683		24759
5 1/2"								
6"								28083
6 1/2"								
7"								31389
7 1/2"								
8"								35183
9"								41856
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



EFFECTIVE FROM 01-07-2012

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	819	748												
6	705	714	837	961										
8	491	543	541	666										
10	409	430	317	460	883	1530								
12	409	391	315	470	682	1095								
14		518	376	627		960								
16	427	411	341	445	599	1000	2740							
18		582	370	460	595	1176								
20	432	435	369	459	600	1020	2574	6471	5561					
22	468	587	388	524	673	1135								
25	605	455	388	521	664	1018	2243	5863	5595		12918			
30		547	448	586	730	1119	2150	5911	5586	15806	13014			
35		596	491	646	793	1214	2197	4944	4711	16041	13253			
40		659	552	690	863	1465	2220	5073	4622	14036	11752			
45		757	612	750	1000	1587	2409	5174	4807	14176	11883	26509	14749	
50		879	585	793	1071	1706	2315	5266	4796	14329	12021	16419	14463	
55		1399	1033	883	1176	1827	2681	5354	5239	14319	12145	18380	16165	
60		3031	1322	1623	1259	1970	2820	5687	5175	14470	12278	18924	16635	
65		3421	2372	1683	1372	2129	2962	5738	5779	14625	12441	20985	18241	
70			2888	1757	1468	2290	3117	6182	6145	15635	13268	21419	19154	
75			3213	1922	1549	2436	3273	6539	6511	16644	14139	22695	20262	
80			3672	2074	2229	3369	3909	6852	6858	16998	13700	23857	21293	
85				2744	3298	4247	4719		7554		16748		25894	
90				2230	2622	3900	4443	7053	7653	17095	14544	25089	22343	
100				3015	3095	4556	4922	8744	8741	18079	15338	26509	23760	
110				3015	3830	5363	5946	9501	9522	19985	16921	28804	25766	
120				4397	4465	5443	6837	10274	10288	21841	18685	31112	27824	
130				5139	5369	7286	8298	11557	11654	24233	20287	40357	29886	
140				6000	5763	8129	9240	12370	12469	26144	21884	46895	31938	
150				6784	6223	9001	10212	13184	13342	28058	24500	61828	34465	
160				9045	9000	11175	16098	14000	26424	29837	30926	72546	54149	
170							18725		29684	34755	35453	77710	65912	
180				10493	12462	13000	17691		29240	40527	35578	83263	59725	
200				14477	15957	18445	19172		32475	40793	37240		64024	
220							21424		38015		38931		68814	
240							32400		43940		59477		72747	
260											72444		74994	
280											85404		78083	
300														
Packing/ Box Nos	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"



EFFECTIVE FROM 01-07-2012

Diameter/ Length	27	30	33	36	42
	Wrench	Wrench	Wrench	Wrench	Wrench
	19mm	22mm	24mm	27mm	32mm
60	42123	30832			
70	33818	33353			
75	35536	35740	52835		
80	36885	37089	54842	64821	
90	40586	38990	59524	70771	103428
100	43291	43536	62200	72768	110296
110	45996	46255	65549	76721	116578
120	48703	48973	71553	80032	123300
130	52083	52373	74908	82685	129499
140	54114	54417	79592	91285	136390
150	57502	57824	84034	94577	142980
160	90645	87290	112700	127278	194600
180	100117	96500	125100	142209	212350
200	108916	104780	136190	154116	230000
220	135770	129768	168900	190551	280790
240	150443	139405	183169	195792	296556
260	163869	149544	190198	209689	321000
280	174896	159425	201100	223626	341000
300	184519	168964	216280	237570	361100
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"



EFFECTIVE FROM 01-07-2012

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	400	467							
1/2	402	462	629	976					
5/8	374	440	571	1018					
3/4	404	462	607	836	2577				
7/8		491	649	945	2589				
1	451	519	657	935	2213	4838	11996		
1.1/4	497	586	759	1028	2362	4210	12050		
1.1/2	570	654	846	1147	2390	4383	10736	17057	15907
1.3/4	683	801	1004	1371	2569	4636	11027	18001.98	16026
2	685	801	996	1421	2690	4851	10979	17824	17266
2.1/4		1623	1209	1635	3078	5266	11255	19216	18536
2.1/2		1669	1218	1708	3255	5321	11203	19292	18536
2.3/4		1900	1471	1961	3482	5854	12692	21656	20864
3		1900	1480	1974	3810	5894	12787	21732	20864
3.1/4		2278	2424	2879	4585	6526	13312		
3.1/2		2278	2434	2956	4543	6797	13240	24031	23059
4		2509	2906	3459	5312	7995	13980	25420	25540
4.1/2			4597	5047	6467	8527	16981	29794	28287
5			5265	6121	7816	9477	18502	32022	30699
5.1/2				7325	8622	11606	19977	34328	32918
6				7554	8865	12675	22437	36566	36572
6.1/2					16871	26748	29012	64125	58818
7					17710	26981	29784	62102	61001
7.1/2					18399	27914	30542	64439	63327
8					19200	29604	31237	65948	65512
8.1/2						38613	34790		70015
9						38811	36144		73600
10						49374			
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"



EFFECTIVE FROM 01-07-2012

Diameter/ Length	M3	M4	M5	M6	M8	M10	M12
	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench	Wrench
Length			3mm	4mm	5mm	6mm	8mm
6	821	821					
8	821	698					
10	821	698	545	671	1091		
12	897	731	563	671	876		
16	925	764	606	724	925	1501	
20	1027	817	653	782	992	1249	3656
25		863	761	919	1136	1453	3473
30			924	1054	1296	1669	3733
35			1183	1196	1473	1911	4135
40			1029	1369	1678	2188	4609
45				1606	2145	2860	5010
50				1870	2310	3190	5489
55							6397
60							6397
Qty.per 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"



EFFECTIVE FROM 01-07-2012

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	736									
8	869	472	612	533						
10	933	472	423	533						
12	1002	502	439	511	694					
16	1136	538	471	547	694	1267				
20	1269	584	507	615	743	1028	2252			
25	1402	681	596	736	853	1197	1997			
30		823	720	837	976	1371	2286	4952		
35		1706	957	957	1109	1579	2576	5337		
40		1825	1493	1503	1264	1808	2855	5717		
45			1571	1844	1634	2143	3145	6096		
50			1742	2049	2227	2436	3430	6481	13131	
55					2657	3244	3713	6861	13721	
60					3207		4003	7240	13721	23046
65								7621	14104	24687
70								8000	14320	25507
75								8385	14911	27148
80								8765	20310	28794
90								9579	20674	29609
100									21466	31249
110									26778	36997
120									29205	41192
130									31633	44539
140									34134	47050
150									37387	50397
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"



EFFECTIVE FROM 01-07-2012

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	252						
4	255	233					
5	255	236	175				
6	267	249	180	189			
8	289	252	189	205	224	455	
10	311	278	205	239	228	313	
12	336	299	237	253	283	336	526
16		346	272	324	325	467	631
20		425	311	324	378	516	758
25		535	359	393	450	624	869
30			535	534	645	941	1005
35				596	750	1073	
40				698	856	1196	
45					972	1370	
50					1084	1493	
Qty.per Box	500					200	

1. Specifications :IS-6094
2. Threads : ISO Metric, 4g6g as per IS : 4218, ISO 261, ISO 965
3. Material : High grade alloy steel.
4. Mechanical Properties : Property class 45H as per IS : 1367, ISO : 898 Part V".



EFFECTIVE FROM 01-07-2012

Diameter/ Length	M16	M18	M20	M22	M24	M27	M30
40	3684						
45	4003		7211				
50	4233	5764	7824	9954	13512		
55	4477	6004	8202	10797	13728		
60	4822	6402	8634	11274	14263	29751	
65	5076	6748	8760	12612	15063	31144	
70	5324	7250	9065	12707	15688	31173	
75	5581	7600	9475	13156	16755	33185	37627
80	6061	8253	10004	13648	17335	34656	40933
90	6642	8757	10611	14965	18553	36908	41994
100	7200	9497	11337	15496	19940	39622	45022
110	7560	10296	11770	16684	20087	41231	49242
120	8247	11231	12932	17799	21237	42618	50501
130	9160	13098	14022	18826	22490	44064	51408
140	9438	13496	14779	19753	23653	46700	54328
150	11314	16179	15599	20746	24872	49308	55571
160	12156	17383	16933	23175	27876	53911	58766
170					30016	59032	67486
180	13623	19481	18454	25211	30256	59339	67869
190			19175				
200	14726	21058	19897	27185	32617	64440	73350

**NUTS**

DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30
List Price	2001	2812	3893	4577	6051	11007	13495

**WASHERS**

DIA	M 16	M 18	M 20	M 22	M 24	M 27	M 30
List Price	1239	1407	1591	2279	2394	3848	4797

**SECIFICATIONS**

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



S No	Description	Rate/100 Nos
1	ALLEN KEY M- 1.5	906
2	ALLEN KEY M- 2	906
3	ALLEN KEY M- 2.5	906
4	ALLEN KEY M- 3	1024
5	ALLEN KEY M- 4	1647
6	ALLEN KEY M- 5	2008
7	ALLEN KEY M- 6	2955
8	ALLEN KEY M- 8	5393
9	ALLEN KEY M- 10	9000
10	ALLEN KEY M- 12	16938
11	ALLEN KEY M- 14	24922
12	ALLEN KEY M- 17	39422
13	ALLEN KEY M- 19	54391
14	ALLEN KEY M- 22	85742
15	ALLEN KEY M- 24	115278
16	ALLEN KEY M- 27	194078
17	ALLEN KEY M- 32	341313

S No	Description	Rate/100 Nos
1	ALLEN KEY I--1/16	912
2	ALLEN KEY I--5/64	991
3	ALLEN KEY I--3/32	1011
4	ALLEN KEY I--1/8	1024
5	ALLEN KEY I--5/32	1240
6	ALLEN KEY I--3/16	1536
7	ALLEN KEY I--7/32	2385
8	ALLEN KEY I--1/4	3450
9	ALLEN KEY I--5/16	5504
10	ALLEN KEY I--3/8	8061
11	ALLEN KEY I--1/2	19563
12	ALLEN KEY I--9/16	22148
13	ALLEN KEY I--5/8	33641

**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 01-07-2012

IZE	GRADE	PRICE
NUT M6X1	8	115
NUT M8X1.25	8	157
NUT M10X1.5	8	325
NUT M12X1.75	8	501
NUT M12X1.5 GR8	8	501
NUT M14X1.5 GR8	8	882
NUT M14X2	10	1026
NUT M16X1.5 / 2 GR8	8	1100
NUT M16X2	10	1310

SIZE	GRADE	PRICE
NUT M18X2.5	10	1919
NUT M20X2.5	10	2510
NUT M22X2.5	10	2910
NUT M24X3	10	4310
NUT M 27X3	10	6867
NUT M 30X3.5	10	9350
NUT M33X3.5	10	12947
NUT M36X4	10	18096
NUT M42X4.5	10	28662



EFFECTIVE FROM 01-07-2012

IZE	GRADE	PRICE
1/4 UNC		149
5/16 UNC		207
3/8 UNC		308
7/16 UNC		581
7/16 BSF		625
1/2 UNC		700
1/2 BSF		733
5/8 UNC		1479
3/4 UNC		2609
7/8 UNC		3357
1 UNC		5011

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 cause 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 hardnesses above 320HV. It is caused by the absorption of atomic hydrogen into the fastener's surface during manufacture 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 Consider alternative surface coatings like, Geomet, Delta Tone, Delta Seal, Magni, Mechanical Zinc plating. Of course 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 <sup>2</sup>	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
M12	1.75	84.3	4.90	6.68	8.01	10.4	14.6	17.5
	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
	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
	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
	2.0	384.0	23.00	30.40	36.50	94.4	132.7	159.3
	Nominal Dia	Pitch	Stress Area mm <sup>2</sup>	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 <sup>2</sup>	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

**Note:**

1. The Torques figures are average Figures and apply to Fasteners before plating only.
2. Lubricants, Plating etc. will reduce frictional condition and have significant effect on torque value.
3. The Torque values are calculated considering bolt load as 80% of yield strength of the material.

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 fasteners (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 Excise duty, Educational Cess & Sales taxes & 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.  
Gurgaon, Bawal, Halol

Caparo Engineering India Pvt. Ltd.  
Caparo Fastners  
Chopanki

Caparo Tubes India, Dewas

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

Caparo Aluminium Foundry, Chennai

Caparo Forge, Chennai

Caparo R & D Centre, Chennai

Caparo MI Steel  
Processors Pvt. Ltd., Bawal

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# CAPARO

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