



COMPANY STANDARDS

TITLE :

SCREW, HEX. HEAD, COARSE PITCH, PRECISION
GRADE, WASHER FACED, CHAMFERED END
(CFS01 - ISSUE-1)

PAGE NO. OF

DATE :
1997-08-20

INFORMATION SHEET-1/1

IMPORTANT NOTE:

1. INFORMATION IN THIS SHEET SHALL BE FOR INTERNAL USE ONLY.
2. REMOVE THIS PAGE BEFORE ISSUE TO THE SUPPLIER

ADDITIONAL INFORMATION

I. OTHER BEML COMPANY STANDARDS ON SCREWS :

1. CFS02 : SLOTTED CHEESE HEAD SCREWS- PRECISION
GRADE, WASHER FACED, COARSE THREAD.
2. CFS11 & 12 : SLOTTED COUNTERSINK HEAD SCREWS-
COARSE PITCH.
3. CFS13 ~ 14 : SCREW, CAP- HEXAGONAL, SOCKET HEAD.
4. CFS15 ~ 17 : SCREW- WITH CROSSED RECESSED HEAD,
COARSE PITCH.
5. CFS22 ~ 25 : SCREW- HEXAGONAL HEAD, METRIC THREAD,
FINE PITCH.

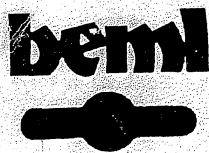
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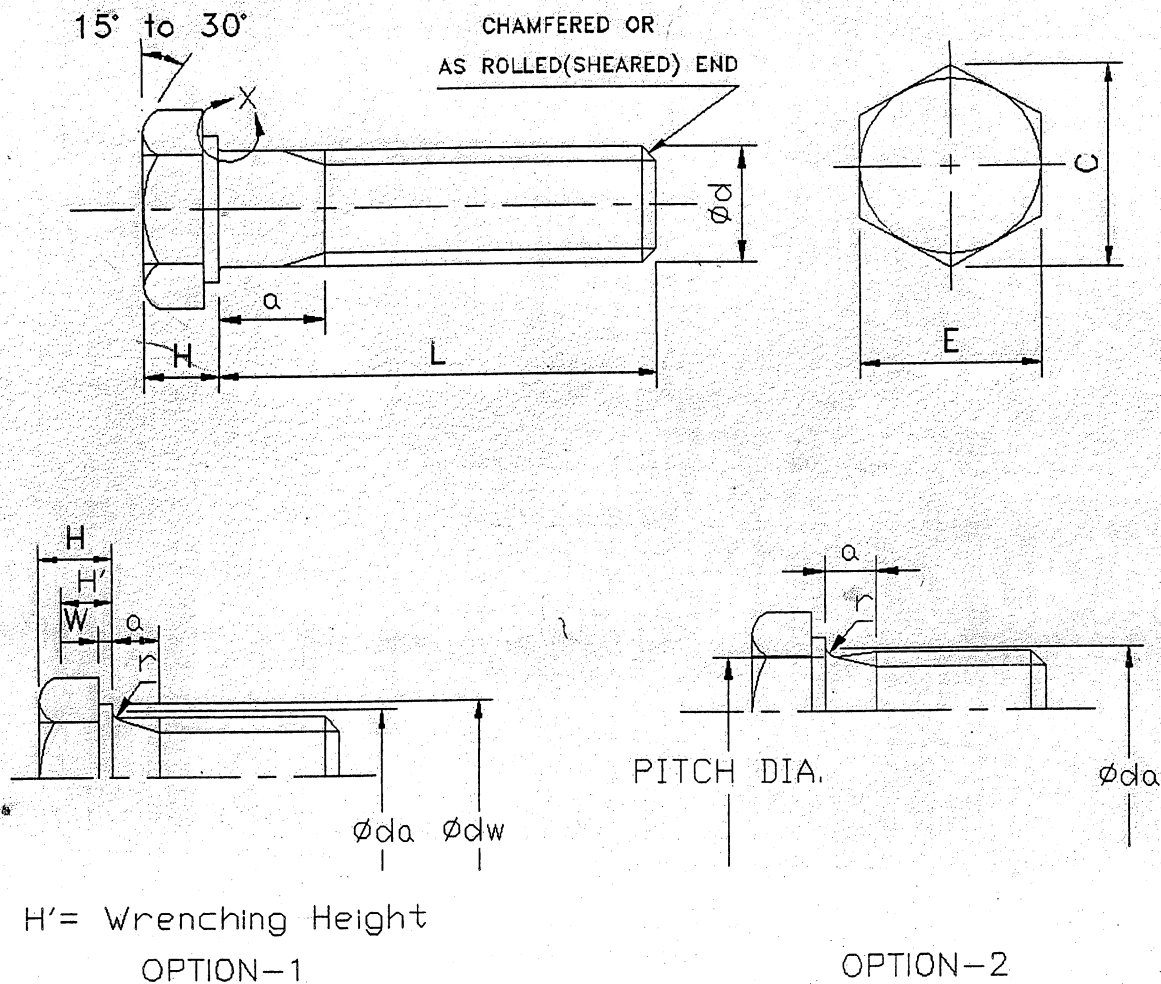
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TITLE :
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H' = Wrenching Height

OPTION-1

OPTION-2

DETAIL - X

FIGURE-1

Note : This Issuance has been brought out with a view to harmonize the earlier standard with ISO: 898/IS: 1364 and to indicate permissible material grades, other material & property requirements.

PREPARED BY:

ISSUE No. 1(ONE)

REPLACEMENT FOR:

REFERENCE:

APPROVED BY:

ED(G)

D(G)

D(P)

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TABLE-1 - DIMENSIONS (Unit : mm)

TABLE 1												
Thread ϕ d		03	04	05	06	08	10	12	16	20	24	
Pitch P		0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0	
a Max '#'		1.5	2.1	2.4	3.0	3.75	4.5	5.25	6.0	7.5	9.0	
W	min	0.15							0.2			
	max	0.4		0.5		0.6			0.8			
da (max)		3.6	4.7	5.7	6.8	9.2	11.2	13.7	17.7	22.4	26.4	
dw	L \leq 10d or 150mm	4.6	5.9	6.9	8.9	11.6	14.6	16.6	22.5	28.2	33.6	
	L > 10d or 150mm	-	-	6.7	8.7	11.4	14.4	16.4	22.0	27.7	33.2	
C	Product grade (Min)	A	6.01	7.66	8.79	11.05	14.38	17.77	20.03	26.75	33.53	39.98
	(Min)	B	-	-	-	-	-	-	-	26.17	32.95	39.55
Nom. = (Max)		5.5	7	8	10	13	16	18	24	30	36	
E	Product grade (Min)	A	5.32	6.78	7.78	9.78	12.73	15.73	17.73	23.67	29.67	35.38
	(Min)	B	-	-	-	-	-	-	-	23.16	29.16	35
H' Wrenching height		Min	1.3	1.9	2.28	2.63	3.54	4.28	5.05	6.8	8.5	10.30
r		Min	0.1	0.2	0.25	0.4	0.6	0.8	0.8	0.8	0.8	
H	L = 10d or 150mm	min	1.88	2.68	3.35	3.85	5.15	6.22	7.32	9.82	12.28	14.78
		max	2.12	2.92	3.65	4.15	5.45	6.58	7.68	10.18	12.72	15.22
	L = 10d or 150mm	min	-	-	3.26	3.76	5.06	6.11	7.21	9.71	12.15	14.65
		max	-	-	3.74	4.24	5.54	6.69	7.79	10.29	12.85	15.35

'#' 'a' min. not less than 1 Pitch.

For values of 'L' see Table-3.

'*' Width across flat/corner : Code 'A' is for products with $d \leq M24$ and $L \leq 10d$ or 150 mm whichever is shorter. Code 'B' is for products with $d > M24$ or $L > 10d$ or 150 mm whichever is shorter.



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TABLE-2 - MATERIAL

Classification code		1	2		3	
Grade Designation		6.8	8.8		10.9	
Size		M3~M24	M3~M16	M18~M24	M3~M16	M18~M24
Material as per Company Standard		C1101	C1101 B1105	C1101 B1105 C1221	C1212 C1221	C1221 C1212 C1215
Q & T hard- ness	Vickers hard- ness HV, $\geq 98N$	190~250	250~320 $\leq M16$	255~335 $> M16$	320 ~ 380	
	Brinell hardn- ess HB, $F=30D^2$	181~238	238~304 $\leq M16$	242~318 $> M16$	304 ~ 361	
	Rockwell hardness- HRC	89 ~ 99 HRB	22 ~ 32 $\leq M16$	23 ~ 34 $> M16$	32 ~ 39	
Tensile Strength N/mm ² (Min)		600	800 $\leq M16$ 830 $> M16$		1040	
Stress under proof Load N/mm ² (Min)		440	580 $\leq M16$ 600 $> M16$		830	
Impact Strength, at 27 \pm 5°C, J-KU-300/2		70 Min	58 Min		56 Min	
Surface Treatment		Zinc plating & Chromate conversion as per Company Std. PR1033-C.			Rust preventive oil ref:co.std. C6001-10/Black Oxide coating as per IS:13212	

NOTE: i) Medium carbon steels with Boron may be used subject to hardenability being equal or superior to the specified grades. Suggested std. grades are SAE 15B35H, SAE 15B37H, SAE 15B41H.

ii) Equivalent specification to IS:1570 and/or other overseas specifications may be used subject to equivalent chemistry & hardenability.

iii) S & P shall be 0.040% max.

iv) Inclusion rating shall be 3 max. (Ref: IS:4163), for thick & thin series unless otherwise agreed to in purchase contract.

Slag inclusion shall not be permitted.

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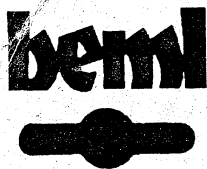
- v) Material specified for higher size and grade may be used for lower size and grade.
- vi) Surface hardness shall not be more than 30 Vickers points above the measured core hardness on product when readings of both surface & core are carried out at HV 0.3. For property class 10.9, any increase in hardness at the surface which indicates that the surface exceeds 390 HV is not acceptable.

TABLE-3 - SIZE CODE

Nom. Size		03	04	05	06	08	10	12	16	20	24
Leng -th L mm	Tol.										
6	±0.29	0306									
8		0308	0408								
10		0310	0410	0510	0610	0810	1010				
12	±0.35	0312	0412	0512	0612	0812	-				
14						0814					
16		0316	0416	0516	0616	0816	1016				
20	±0.42	0320	0420	0520	0620	0820	1020	1220		2020	
22							1022				
25		0325	0425	0525	0625	0825	1025	1225	1625		
30	±0.50	0330	0430	0530	0630	0830	1030	1230	1630		
35		0335	0435	0535	0635	0835	1035	1235	1635	2035	
40		-	0440	0540	0640	0840	1040	1240	1640	2040	2440
45	±0.60	-	-	0545	0645	0845	1045	1245	1645	2045	2445
50		-	-	0550	0650	0850	1050	1250	1650	2050	2450
55		-	-	-	0655	0855	1055	1255	1655	2055	2455
60		-	-	-	0660	0860	1060	1260	1660	2060	2460

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COMPANY STANDARDS

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SCREW, HEX. HEAD, COARSE PITCH,
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TABLE-3 - SIZE CODE (Contd..)

NOM. SIZE	TOL.	03	04	05	06	08	10	12	16	20	24
LENG -TH L mm											
65	±0.60	-	-	-	-	-	1065	1265	1665	2065	2465
70		-	-	-	-	-	-	1270	1670	2070	2470
75		-	-	-	-	-	-	1275	-	-	-
80	±0.70	-	-	-	-	-	-	1280	1680	2080	2480
85		-	-	-	-	0885	-	1285	-	-	-
90		-	-	-	-	-	-	1290	1690	2090	2490

TABLE-4 APPROX. Wt. OF HEX. HEAD SCREWS (Unit:grms)

NOM SIZE	03	04	05	06	08	10	12	16	20	24
LENGTH L mm										
6	0.6									
8	0.7	1.4								
10	0.8	1.5	2.5	4.6	9.4					
12	0.9	1.7	2.8	5.0	10					
14	-	-	-	-	11					
16	1	2	3.2	6.0	12	22				
20	1.2	2.3	3.8	7.0	13	24	35		67	
22	-	-	-	-	-	25	-			
25	1.4	2.7	4.4	8.0	15	27	39	73		
30	1.6	3.0	5	9.0	17	30	43	81		
35	-	3.5	6.5	10	19	33	48	88	154	

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COMPANY STANDARDS

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DATE :

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TITLE :

SCREW, HEX. HEAD, COARSE PITCH,
PRECISION GRADE, WASHER FACED,
CHAMFERED END

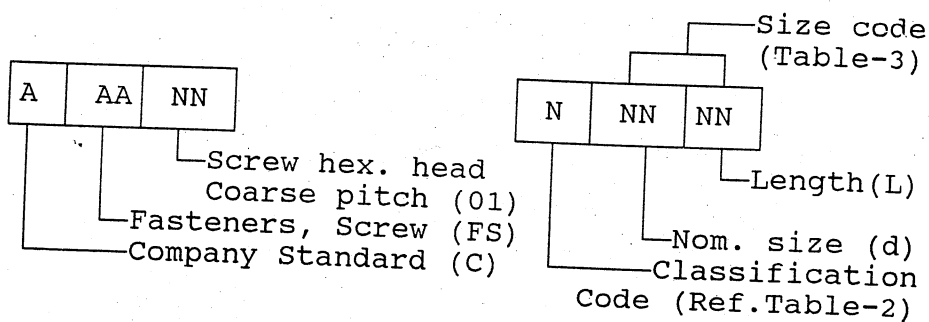
TABLE-4-(Contd..)
APPROX. Wt. OF HEX. HEAD SCREWS (Unit:grms)

NOM.SIZE LENGTH L mm	03	04	05	06	08	10	12	16	20	24
40	-	4	6	10	21	36	52	96	166	252
45	-	-	7	12	23	39	56	103	178	275
50	-	-	7.5	13	25	42	60	114	190	290
55	-	-	-	14	27	45	65	119	202	306
60	-	-	-	15	29	48	70	127	214	324
65	-	-	-	-	-	51	74	135	226	341
70	-	-	-	-	-	-	78	142	238	359
75	-	-	-	-	-	-	82	150	250	376
80	-	-	-	-	-	-	86	157	262	393
85	-	-	-	-	38	-	91	165	274	410
90	-	-	-	-	-	-	95	173	286	428
Qty per bag	2500	1000	500	300	125	60	45	25	15	10

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1. DESIGNATION :

Part number and description shall be as shown below. The first 5 digits appear on the document.



Example : Part number : CFS01 11250
Description : SCREW HEX.HEAD M12 X 50mm length.

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SCREW, HEX. HEAD, COARSE PITCH, PRECISION
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2. For Technical requirements inclusive of dimensions & tolerances not covered in this specification, relevant parts of IS:1367 & IS:1364 - latest issuance shall be referred.
3. Mechanical properties shall conform to Table-2. Test methods in general shall conform to IS:1367 Part 3-"Technical supply condition for threaded fasteners". Impact Strength shall be determined by Charpy Impact Test for Metals, in accordance with IS:1499. Screw defects (surface discontinuities) permissible shall be as per IS:1367 Part 9. For Unit weight Table-4 shall be referred.
4. Material and Surface treatment shall be as per Table-2.
5. Thread Tolerances shall be 6g as per IS: 4218-Part 5.
6. Rolled Threads shall be provided for all Sizes of Screws.
7. DECARBURISATION :

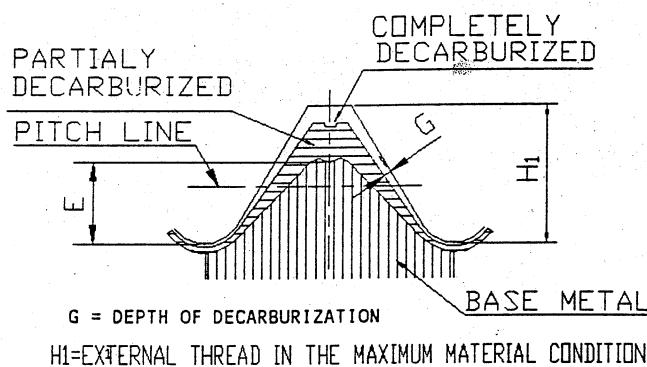


FIGURE-2

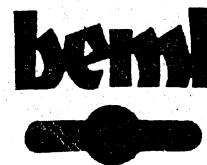
Maximum depth of complete decarburisation shall be 0.015mm maximum.

Minimum height of non-decarburised thread zone: E shall be $1/2 H1$ for 8.8 & $2/3 H1$ for 10.9 grade.

8. For inspection & acceptance criteria, Company standard QS1001-C shall be referred.

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9. EVALUATION OF IMPACT STRENGTH FOR SMALL SCREWS :

In case Screws under 16mm diameter whose Impact Testing with standard Test Specimen cannot be carried out, reliability shall be ensured by cleanliness of steel (Inclusion Rating).

10. PACKAGING :

All Sizes of Screws of quantities as mentioned in Table-5 shall be packed in Polyethylene covers & properly heat sealed to protect them from entry of dust & water. The covers containing screws shall in turn be packed in Cartons or Crates depending on the mass.

The mass of a single pack shall not exceed the following:

	Mass in kgs.
Paper or Plastic bag	5
Plastic box or carton	10
Plastic or metal crate/carton	40
Wooden crate or box	50

Other requirements regarding packing shall conform to IS:9141.

11. IDENTIFICATION MARKING :

On the Screw head, Material Grade as per Table-2 & Vendor Code/Logo shall be marked by Embossing as shown in the following Fig-3.

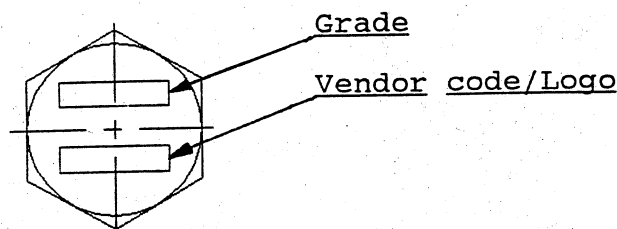
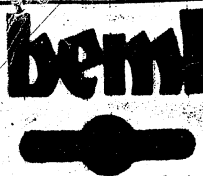


FIGURE-3

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COMPANY STANDARDS

AMENDMENT NO. 01
DATE: 1998-09-08

TITLE: SCREW HEX, HEAD, COARSE PITCH,
PRECISION GRADE, WASHER FACED, CHAMFERED END

STD.NO CFS01

AMENDMENT SHEET -01/01

ISSUE NO ONE

Read clause 5 as follows instead of the existing :

For grade designation 6.8 and 8.8 the thread tolerance shall be 6g before coating and 6h after coating as per IS: 4218 part- 5. However, the coating thickness shall be 8 micrometer (min) as measured on the unthreaded portion.

The threads, after coating, shall not transgress the max. material limit for tolerance specified.

For 10.9 grade, the thread tolerance shall be 6g as per IS: 4218 part- 5.

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M. S. Santhosh
980909

411010

COARSE PITCH.

5. CFS22 ~ 25 : SCREW- HEXAGONAL HEAD, METRIC THREAD,
FINE PITCH.

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COMPANY STANDARDS

AMENDMENT NO.: 02

TITLE : SCREW, HEX. HEAD,
COARSE PITCH, PRECISION GRADE,
WASHER FACED, CHAMFERED END

DATE : 2004-08-23

STD NO.: CFS01

AMENDMENT SHEET - 1 / 1

ISSUE NO.: 01

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I. In Table-2, page 3 of 8 for classification code-2, the material standard B1105 shall be replaced by C1105.

II. In page 7 of 8, clause-5 shall be read as follows instead of the existing :

5. For grade designation 6.8 and 8.8, the thread tolerance shall be 6g before and 6h after coating as per latest issuance of IS: 14962 part-3. However the coating thickness shall be 8 micrometer (min.) as measured on shank.

The threads after coating shall not transgress the maximum material limit for tolerance specified.

For 10.9 grade, the thread tolerance shall be 6g as per IS: 14962 part-3-latest issuance.

III. In page 8 of 8, last para of clause-10 shall be read as follows instead of the existing :

10. PACKAGING :

Other requirements regarding packing shall conform to latest issuance of IS: 1367 part-18.

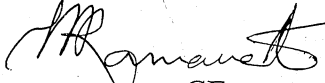
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