

 432-003	ENQUIRY VALVES	Bharat Heavy Electricals Limited (A Government of India undertaking) HIGH PRESSURE BOILER PLANT PURCHASE DEPARTMENT/VALVES TIRUCHIRAPPALLI-620 014.		Phone:0431-257 7086/7210 Email: tender_cell@bheltry.co.in vikasverma.p@bhel.in vinum@bhel.in
		ENQUIRY NO.	DATE	DUE DATE FOR QUOTATION
		EN-BPS2172	15.05.2018	24.05.2018 (14.00Hrs)
		Please quote Enquiry No. and due date in all correspondences. This is only a request for quotation and not an order.		
<u>Date , Time & Venue of tender opening :</u> 24.05.2018 at 14.30 Hrs. at The Tender Opening Cell / Valves Room No. 26, Building -24 Bharat Heavy Electricals Limited Tiruchirappalli - 620014, Tamilnadu, India		<u>Scope of supply</u> Supply of fasteners as per the drawings/standards/TDC enclosed. List of Annexures Annexure 1A- Scope of supply Annexure 1B- Drawing & specifications Annexure 2- Enquiry terms & conditions Annexure 3- Schedule of deviation format Annexure 4- RFQ Annexure 5- Supplier confirmation sheet Note: Only manufacturers are requested to quote for this enquiry.		
The rate of GST prevalent on the date of quotation, should be clearly indicated in the quotation itself. Please, submit your lowest quotation subjected to our terms and conditions, so as to reach us on or before the due date. (Latest by 14.00 Hrs. (IST) on the due date). The offers will be opened at 14.30 Hrs. (IST) on the due date in the presence of tenderers who may like to be present. Late tenders will not be considered.		Yours faithfully, For Bharat Heavy Electricals Ltd Vikas Verma Sr.Engineer/Purchase/Valves		

Sl.No:	Material Code	Material Description	Drawing Number	Specification	TDC	Enquiry Qty (in Nos)	UoM
10	411172014000	FT STUD-M20x140 -B7			BPS-41117	2,000	NO
20	412010601200	CHS HD SCRU-M6x12 -4.8-IS1366		IS-1366	BPS-41201	2,500	NO
30	412020804500	SOC HD SCRU-M 8x45 -8.8-IS2269		IS-2269	BPS-41202	500	NO
40	412221202500	HEX HD SCRU-M12x25 -4.6-IS1363-P2		IS-1363-P2	BPS-41222	500	NO
50	412221605500	HEX HD SCRU-M16x55 -4.6-IS1363P2		IS-1363P2	BPS-41222	100	NO
60	412221607500	HEX HD SCRU-M16x75 -4.6-IS1363P2		IS-1363P2	BPS-41222	950	NO
70	412290002000	LIFT EYE BOLT-M20 -CL3-IS4190-1T		IS-4190	BPS-41229	100	NO
80	412371205000	BOLT-M12x50 -8.8-IS1364P1		IS-1364P1	BPS-41237	2,000	NO
90	412371606000	BOLT-M16x60 -8.8-IS1364P1		IS-1364P1	BPS-41237	500	NO
100	412371607000	BOLT-M16x70 -8.8-IS1364P1		IS-1364P1	BPS-41237	500	NO
110	412371608000	BOLT-M16x80 -8.8-IS364P1		IS-364P1	BPS-41237	1,200	NO
120	413190001600	NUT -M16 -2H			BPS-41319	2,000	NO
130	413190002400	Hex Nut Gr B M24 T425 BPS 41319			BPS-41319	2,000	NO
140	413200001200	NUT -M12 -CL8-IS1364P3		IS-1364P3	BPS-41320	1,000	NO
150	413243003600	NUT -M36x3 -GR7			BPS-41324	400	NO
160	414050000600	SPRING WASHER-B 6 -IS3063		IS-3063	BPS-41405	26,650	NO
170	414060001200	MCN WASHER-M12 -IS2016		IS-2016	BPS-41406	1,600	NO
180	414080000600	PUNCHED WASHER A 6.6(ID) IS:2016/LATEST		IS-2016	BPS-41408	10,000	NO
190	414120002000	SPRING WASHER-M20 -IS6735-SQ		IS-6735	BPS-41412	1,700	NO
200	415010401200	PL KEY-4x4x12 -IS2048-A		IS-2048-A	BPS-41501	500	NO
210	419020000900	EXT CIRCLIP-A 9 -IS3075P1-N-d8.4		IS-3075P1	BPS-41902	500	NO
220	419020003000	EXT CIRCLIP-A30 -IS3075P1-N-d27.9		IS-3075P1	BPS-41902	650	NO
230	964564430000	CHS HD SCRU-M4x35 -4.8-K508	4VK50890513/02			300	NO
240	966000020000	Washer - SFJA	4VSFJA27175/00			700	NO
250	966000050000	Washer - SHJA	4VSHJA27175/00			100	NO
260	966000230000	Washer - SIJA	4VSIJA27175/00			150	NO



PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41201

PAGE 1 OF 4

Based on IS: 1366-1982

SLOTTED CHEESE HEAD SCREWS

1.0 SCOPE

Covers the requirements of Slotted Cheese Head Screws in the size range M1.6 to M10.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and Preferred sizes		Table 1 of this standard
Preferred length-size combination		Table 2 of this standard
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Coarse
	Tolerance	6g
	Indian Standard	IS: 4218 (Part 3, 5 & 6)
Material		Steel
Mechanical properties	Property class	4.8
	Indian Standard	IS: 1367 (Part 3)
Sampling and Acceptability	Indian Standard	IS: 2614
General requirements	Screws shall comply with IS: 1366 in respect of requirements not covered in this standard	

2.1 Referred Standards (Only the relevant parts of current versions are applicable)

IS: 1366 Specification for slotted cheese head screws
IS: 1367 Technical supply conditions for threaded steel fasteners
IS: 2614 Methods for sampling of fasteners
IS: 4218 ISO Metric screw threads

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PLANT STANDARD

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BPS: 41201

PAGE 2 OF 4

3.0 DESIGNATION

AGrade A Slotted Cheese Head Screw to this standard of thread size M6 and nominal length 30mm shall be designated as:

3.1 On Drawings:

- i) Material Specification column: IS: 1366
- ii) Description column : SCRU SLT CHS GR A 4.8 M6x30
- iii) Drawing Number column : 4120106030
- iv) Material Code column : 4120106030

3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, the Ordering Description given below shall be followed.

Cheese Head Screw M6x30 IS: 1366-4.8

4.0 ADDITIONAL INFORMATION

4.1 Property class 6.6 is also acceptable

4.2 For Cadmium plated slotted cheese head screws, refer BPS: 41241.

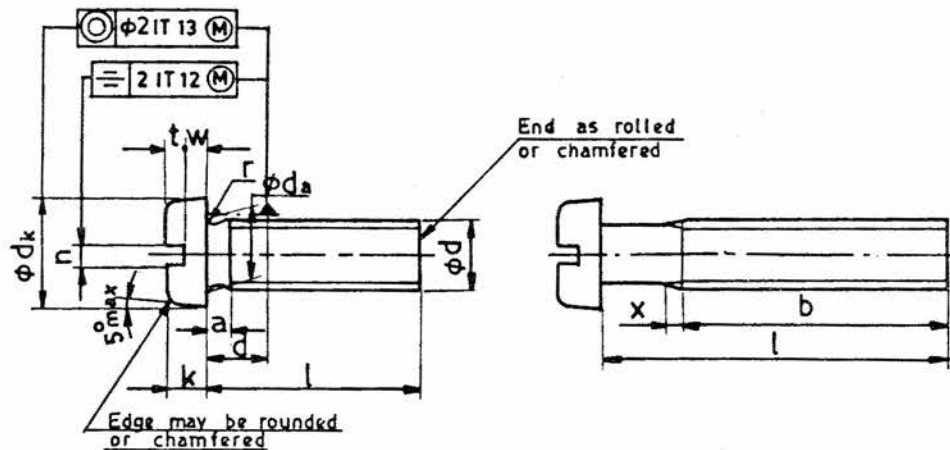
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TABLE 1 DIMENSIONS OF HEAD SCREW

(All dimensions are in mm)



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Thread size	d	M1.6	M2	M3	M4	M5	M6	M8	M10
b	Max	25.7	25.8	26	39.4	39.6	40	40.5	41
	Min	25	25	25	38	38	38	38	38
dk	Max	3	3.8	5.5	7	8.5	10	13	16
	Min	2.86	3.62	5.32	6.78	8.28	9.78	12.73	15.73
da	Max	2	2.6	3.6	4.7	5.7	6.8	9.2	11.2
k	Max	1	1.3	2	2.6	3.3	3.9	5	6
	Min	0.86	1.16	1.86	2.46	3.12	3.6	4.7	5.7
n	Max	0.6	0.7	1	1.51	1.51	1.91	2.31	2.5
	Min	0.46	0.56	0.86	1.26	1.26	1.66	2.06	2.5
r	Min	0.1	0.1	0.1	0.2	0.2	0.25	0.4	0.4
t	Min	0.4	0.55	0.8	1.1	1.3	1.6	2	2.4
w	Min	0.35	0.45	0.8	1.1	1.3	1.6	2	2.4

Note:

1. Shank dia $\approx$ pitch dia = Major dia permissible.
2. a and x according to IS: 1369 'Dimensions for screw thread run outs and undercuts'.
3. Thread end when chamfered shall be according to IS: 1368 'Dimensions for ends of bolts and screws'.

TABLE PREFERRED LENGTH-SIZE COMBINATION
FOR SLOTTED HEX HEAD SCREWS

(All dimensions are in millimetres)

Nominal length 'l'			Thread size d							
Nom	Max	Min	M1.6	M2	M3	M4	M5	M6	M8	M10
2	2.2	1.8								
2.5	2.7	2.3								
3	3.2	2.8								
4	4.3	3.7								
5	5.3	4.7								
6	6.3	5.7								
8	8.3	7.7								
10	10.3	9.7			0.7	1.3				
12	12.4	11.6						4.1		
(14)	14.4	13.6								
16	16.4	15.6								
20	20.5	19.5				2.2		5.5		
25	25.5	24.5			1.5					
30	30.5	29.5						7.3		
35	35.5	34.5								
40	40.5	39.5								
45	45.5	44.5								
50	50.5	49.5								
55	56	54				4.6				
60	61	59								
(65)	66	64				5.4				
70	71	69								
80	81	79								

Note:

1. Screws with nominal length above the dotted stepped line are threaded up to the head ($b=l-a$)
2. Sizes in brackets are non-preferred.
3. Preferred lengths are in between the stepped bold lines.
4. For stocked sizes refer BPS components book-let.
5. Weights are given in Kg. per 1000 numbers only.



PLANT STANDARD

HPBP TIRUCHIRAPPALLI

BPS 41117

Rev. No. 02

PAGE 1 OF 2

STUD BOLTS FOR TEMPERATURE USE

(For medium of Temperature upto 425°C)

1.0 SCOPE

Covers the requirements for Stud Bolts for use in medium of temperature 425°C in the size range M12 to M39x3.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes	Fig 1 & Table 1 of this standard	
Preferred length size combination	Table 1 of this standard	
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Table 1 of this standard
	Tolerance	6g
	Indian Standard	IS 4218 (Part 3, 5 & 6)
Material	Steel according to ASTM A193 - B7 Certified in quenched and tempered condition	
Manufacture	Thread rolling up to M24	
Mechanical Properties	As specified in ASTM A193-B7	
Marking	All studs shall be stamped B7 on any one side	
General requirements	Studs shall comply with TDC:5:164 in respect of requirements not covered in this standard except for cadmium plating.	

2.1 Referred standards (Only current versions are applicable)

IS 1367 Part 2	Technical supply conditions for threaded steel fasteners
IS 1368	Dimensions for ends of parts with external ISO metric threads
IS 4218 Part 3, 5 & 6	ISO metric screw threads
ASTM A193	Specification for alloy steel and stainless steel bolting material for high temperature service
TDC:5:164	TDC for alloy steel studs to specification ASTM SA193 Gr B7 / B7m / B16 oil field equipment

3.0 DESIGNATION

A Grade 'A' Stud to this standard of thread size M16 and nominal length 90mm shall be designated as:

3.1 On Drawings

i) Material Specification column	A193 - B7
ii) Description Column	STUD BOLT GR A T425 M16x90
iii) Drawing Number Column	BPS 41117
iv) Material Code column:	4111716090

Revisions Brought upto date			Approved STANDARDS SECTION CONTRACT ENGINEERING AND CO-ORDINATION HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. JUN. 1997	Dt.	Year	STANDARDS	STANDARDS	DEC 1986

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PLANT STANDARD

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BPS

41117

Rev. No.

02

PAGE

2 OF 2

3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, Ordering Description given below shall be followed.

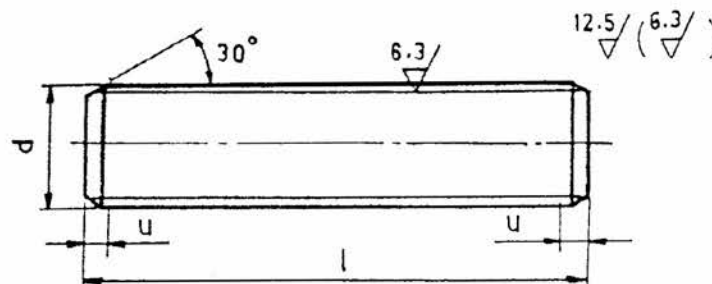
Stud M16x90 - BPS: 41117 A - ASTM A193-B7

4.0 ADDITIONAL INFORMATION

4.1 Copies of this standard and TDC:5:164 shall be enclosed along with the purchase order

FIG. 1. DIMENSIONS FOR STUD BOLTS

(All dimensions are in millimetres)



'u' according to IS:1368

TABLE 1 PREFERRED LENGTH - SIZE COMBINATION FOR STUD BOLTS

(All dimensions are in millimetres)

Thread Size d	Nominal Length (l)																	
	60	70	80	90	100	110	120	130	140	150	160	170	180	200	225	240	250	280
	Weights																	
M12		62	70.9															
M16				135.9	151.7		183.3										357.1	
M20				221.9			280.9		303									
M24							390.4			496.9			603.4					
(M27)									591.4				770.8					
M30									722.9		832.4							
(M33)													1208.6					
(M39x3)														1875.7				

Note:

1. Preferred lengths are in between the stepped bold lines
2. Weights are given in Kg per 1000 numbers only
3. Sizes in brackets are non-preferred

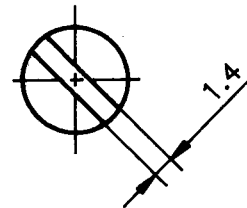
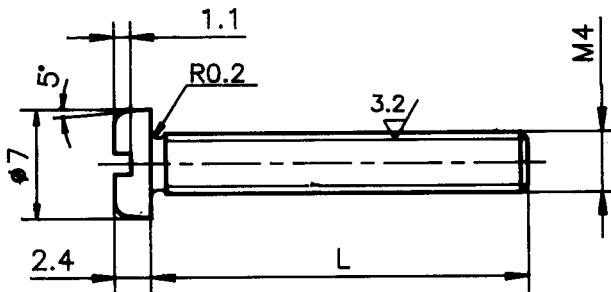
REV	DATE	ALTERED
01	9.7.94	R. Mohan
		CHECKED

DCN: F80235	DT: 21.7.94
REV	DATE
02	15.3.97
DCN: 5850	DT: 24.7.97

QUALITY REFERENCES
REMOVED.

TOLERANCE FOR UNTOLERANCED DIMENSIONS	
UPTO 6 MM	± 0.1 MM
> 6 UPTO 120 MM	± 0.2 MM
MORE THAN 120 MM	± 0.5 MM
ANGULAR TOLERANCE	± 0.5 Deg.
CHAMFER	± 5 Deg.

SL. No.	DRG. No.	COMP. CODE	DIMENSIONS		NET WT. (Kgs.)
			L		
01.	4.V.K502.90513/02	964564420000	25		0.002
02.	4.V.K508.90513/02	964564430000	35		0.003



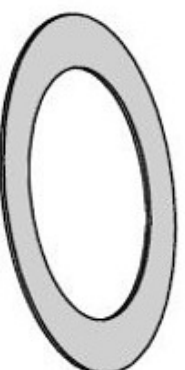
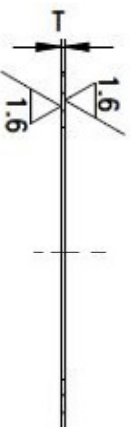
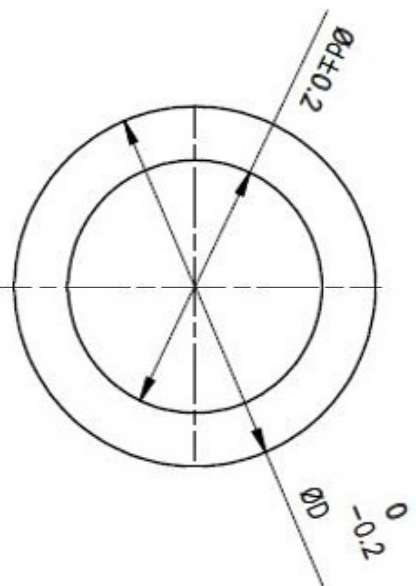
Note :-

01. THE SCREW SHALL COMPLY WITH THE REQUIREMENTS OF LATEST APPLICABLE QUALITY PROCEDURE.
02. MATERIAL :- STEEL TO CLASS 4.8 OF IS-1367 (PART-3)

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	COMP CODE	ITEM No		
 BHARAT HEAVY ELECTRICALS LTD. UNIT: HIGH PRESSURE BOILER PLANT. CHENCHIRAPALLI 680014.					DCN	R. MOHAN	SIGN	R. Mohan	DATE	3.5.93	NO. OF VAR
					CHD	N.P.ESWARAN	SIGN	N.P.ESWARAN	DATE	4.5.93	
					APPD	N.NAGARAJAN	SIGN	N.NAGARAJAN	DATE	6.5.93	
DEPT VL	GRADE OF UNTOL DIM	SCALE	WEIGHT (KG).		REFERENCE INFORMATION					NO. OF ITEMS	
CODE 320	6 / M / F	NTS	-		CAD: F490513						
TITLE					CARD CODE	DRAWING NO.				REV	
INDICATOR SCREW					U 01	4-V-0000-90513				02	

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SL.NO	MATERIAL CODE	DRAWING NO	ØD	Ød	T	WEIGHT(gram)
01	966000020000	4-V-SFJA-27175	45.5	32	0.5	3.213
02	966000050000	4-V-SHJA-27175	50.67	42	0.5	2.534
03	9660000230000	4-V-SLJA-27175	61.45	50.8	0.5	3.77

Size A4



PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41202

PAGE 1 OF 5

Based on IS: 2269-1981

HEXAGON SOCKET HEAD CAP SCREWS

1.0 SCOPE

Covers the requirements of Hexagon Socket Head Cap Screws in the size range M3 to M30.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes		Table 1 of this standard
Preferred length-size combination		Table 2 of this standard
Tolerance	Product grade	A
	Indian Standard	IS: 1367 (Part 2)
Thread	Pitch	Coarse
	Tolerance	6g
	Indian Standard	IS: 4218 (Part 3, 5 & 6)
Material		Steel
Mechanical properties	Property class	8.8
	Indian Standard	IS: 1367 (Part 3)
Sampling and Acceptability	Indian Standard	IS: 2614
General requirements	Screws shall comply with IS: 2269 in respect of requirements not covered in this standard	

2.1 Referred Standards (Only the relevant parts of current versions are applicable)

IS: 1367 Technical supply conditions for threaded steel fasteners

IS: 2269 Specification for hexagon socket head cap screws

IS: 2614 Methods for sampling of fasteners

IS: 4218 ISO Metric screw threads

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PLANT STANDARD

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BPS: 41202

PAGE 2 OF 5

3.0 DESIGNATION

A Grade A Hexagon Socket Head Cap Screw to this standard of thread size M10 and nominal length 60mm shall be designated as:

3.1 On Drawings:

- i) Material specification column : IS: 2269
- ii) Description column : SCRU CAP SOC GR A -3.8-M10x60
- iii) Drawing Number column : 4120210060
- iv) Material Code column : 4120210060

3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, the Ordering Description given below shall be followed.

Hexagon Socket Head Cap Screw M10x60-IS: 2269-8.8

4.0 ADDITIONAL INFORMATION

- 4.1 Property class 10.9 is also acceptable
- 4.2 Cap screws supplied with knurled heads are acceptable
- 4.3 For cadmium plated hexagon socket head cap screws, refer BPS: 41242.

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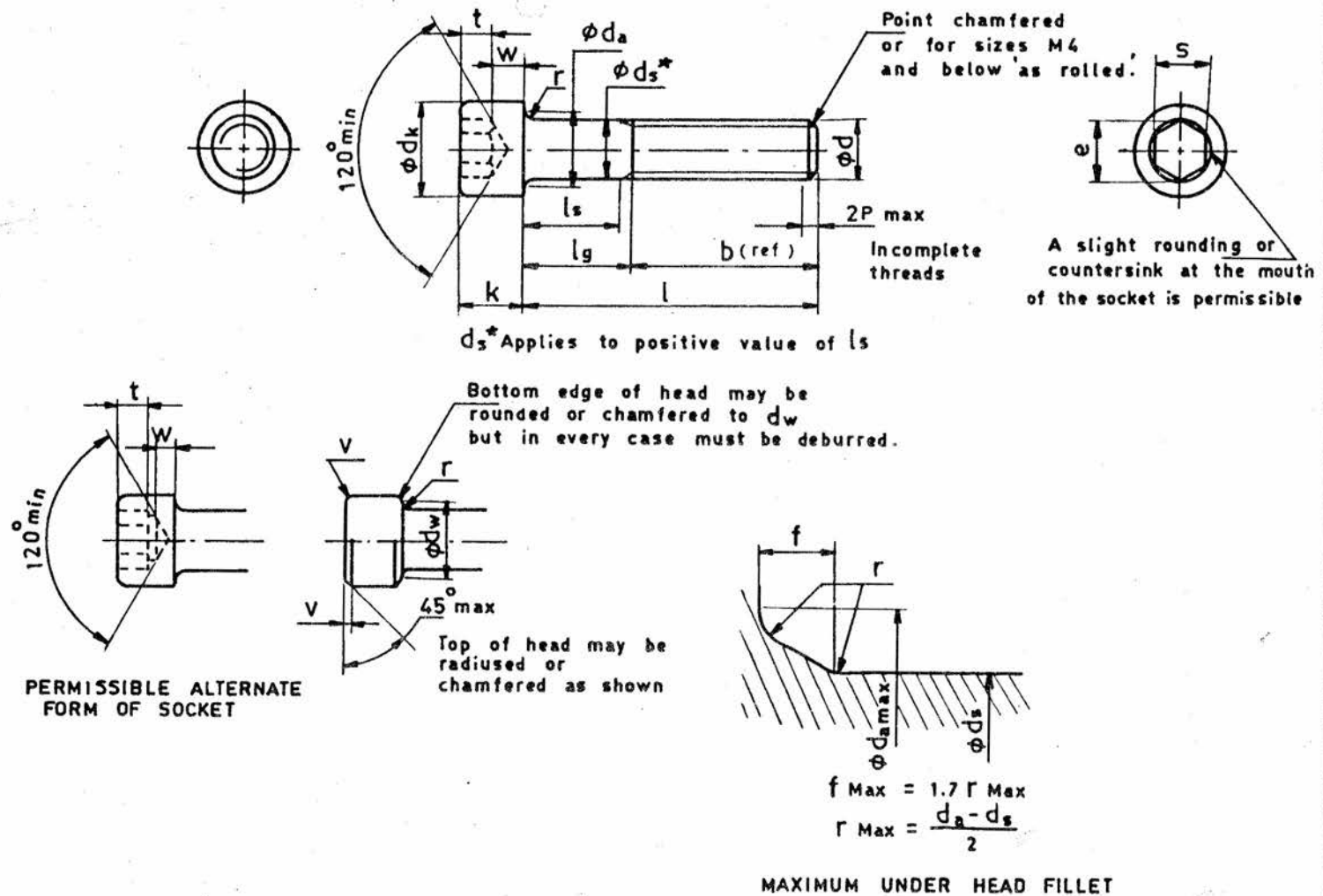
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HEXAGON SOCKET HEAD CAP SCREWS

(Figure)



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HPBP TIRUCHIRAPALLI

BPS: 41202

PAGE 3 OF 5

DEC 1986

TABLE 1 - DIMENSIONS FOR HEXAGON SOCKET HEAD CAP SCREWS

(All dimensions in millimetres)

Thread size d	M3	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
Pitch P	0.5	0.7	0.8	1.0	1.25	1.5	1.75	2.0	2.5	3.0	3.5
b Ref	18	20	22	24	28	32	36	44	52	60	72
d _k	* Max	5.5	7.0	8.5	10.0	13	16	18	24	30	45
	** Max	5.68	7.22	8.72	10.22	13.27	16.27	18.27	24.33	30.33	45.39
	Min	5.32	6.78	8.28	9.78	12.73	15.73	17.73	23.67	29.67	44.61
d _a Max	3.6	4.7	5.7	6.8	9.2	11.2	14.2	18.2	22.4	26.4	33.4
d _s h13	Max	3	4	5	6	8	10	12	16	20	30
	Min	2.86	3.82	4.82	5.82	7.78	9.78	11.73	15.73	19.67	29.67
e @ Min	2.87	3.44	4.58	5.72	6.86	9.15	11.43	16.00	19.44	21.73	25.15
f Max	0.51	0.60	0.60	0.68	1.02	1.02	1.87	1.87	2.04	2.04	2.89
k h13/h14	Max	3	4	5	6	8	10	12	16	20	30
	Min	2.86	3.82	4.82	5.70	7.64	9.64	11.57	15.57	19.48	29.48
r Min	0.1	0.2	0.2	0.25	0.4	0.4	0.6	0.6	0.8	0.8	1.0
s h13	Nom	2.5	3	4	5	6	8	10	14	17	22
	Min	2.52	3.02	4.02	5.02	6.02	8.025	10.025	14.032	17.05	22.065
	Max	2.58	3.071	4.084	5.084	6.14	8.175	10.127	14.159	17.216	22.275
t Min	1.3	2	2.5	3	4	5	6	8	10	12	15.5
v Max	0.3	0.4	0.5	0.6	0.8	1	1.2	1.6	2	2.4	3
d _w Min	5.07	6.53	8.03	9.38	12.33	15.53	17.23	23.17	28.87	34.81	43.61
w Min	1.15	1.4	1.9	2.3	3.3	4	4.8	6.8	8.6	10.4	13.1

* For plain head tol h13

** For knurled heads tol $\pm$ IT13

● e Min = 1.14 s Min



PLANT STANDARD
HPBP TIRUCHIRAPALLI

BPS: 41202

PAGE 4 OF 5



PLANT STANDARD

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BPS: 41202

PAGE 5 OF 5

**TABLE 2 - PREFERRED LENGTH SIZE COMBINATIONS FOR
HEXAGON SOCKET HEAD CAP SCREWS**

(All dimensions in millimetres)

size d			M3	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
1													
Nom	Min	Max											
2.5	2.30	2.70											
3	2.80	3.20											
4	3.76	4.24											
5	4.76	5.24											
6	5.76	6.24											
8	7.71	8.29				4.4							
10	9.71	10.29											
12	11.65	12.35				5.1	9.5						
16	15.65	16.35			2.8	5.8	11.1						
20	19.58	20.42				6.5	12.7	21.3	32.4				
25	24.58	25.42						23.8					
30	29.58	30.42				8.8		26.3	41.1	81.7			
35	34.5	35.5					18.4		43.2				
40	39.5	40.5				10.9		32.7		100			
45	44.5	45.5					22.2	35.8	53.8		188		
50	49.5	50.5							57.9		182.2		
55	54.4	55.6					26.0						
60	59.4	60.6				13.2		44.9			224		
65	64.4	65.6							70.2				
70	69.4	70.6									266		
80	79.4	80.6						57.1			272		
90	89.3	90.7											
100	99.3	100.7											
110	109.3	110.7											
120	119.3	120.7											
130	129.2	130.8											
140	139.2	140.8											
150	149.2	150.8											
160	159.2	160.8											
180	179.2	180.8											

Note:

1. Preferred lengths are in between the stepped bold lines.
2. For stocked sizes and weights refer BPS components book-let.
3. Lengths above the dotted line are threaded to the head within $3 \times \text{Pitch}$. Lengths below the dotted line have values l_g and l_s according to the following formulae:

$$l_g \text{ Max} = l \text{ Nom} - b \text{ ref.}$$

$$l_s \text{ Min} = l_g \text{ Max} - 5P.$$

MAR 1987

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PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41222

PAGE 1 OF 4

Based on IS: 1363(Part 2)-1984

HEXAGON HEAD SCREWS-PRODUCT GRADE C (Property Class 4.6)

1.0 SCOPE

Covers the requirements for Hexagon Head Screws of product grade C in the size range M5 to M24.

2.0 SPECIFICATION AND REFERENCE STANDARDS

Dimensions and preferred sizes		Table 1 of this standard
Preferred length-size combination		Table 2 of this standard
Tolerance	Product grade	C
	Indian Standard	IS: 1367(Part 2)
Thread	Pitch	Coarse
	Tolerance	8g
	Indian Standard	IS: 4218(Part 3,5 & 6)
Material		Steel
Mechanical properties	Property class	4.6
	Indian Standard	IS: 1367(Part 3)
Sampling and Acceptability	Indian Standard	IS: 2614
General requirements	Screws shall comply with IS: 1363 in respect of requirements not covered in this standard	

2.1 Referred Standards (Only the relevant parts of current versions are applicable).

IS: 1363 Specification for hexagon head bolts, screws & nuts (Part 2) of product grade C. Part 2 Hexagon head screws.

IS: 1367 Technical supply conditions for threaded steel fasteners

IS: 2614 Methods for sampling of fasteners

IS: 4218 ISO Metric screw threads

REVISIONS

DATE

APPROVED

STANDARDS SECTION
ENGINEERING AND DEVELOPMENT CENTRE
HPBP TIRUCHIRAPALLI

PREPARED

HPBP TIRUCHY

ISSUED

STANDARDS
ENGG

DATE

DEC 1986

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PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41222

PAGE 2 OF 4

3.0 DESIGNATION

A Grade C Hexagon Head Screw to this standard of thread size M12 and nominal length 60mm shall be designated as:

3.1 On Drawings:

- i) Material Specification column: IS: 1363
- ii) Description column : SCRU HEX GR C 4.6 -M12x60
- iii) Drawing Number column : 4122212060
- iv) Material Code column : 4122212060

3.2 Ordering Description

For placing indents, issuing enquiries and on purchase order, the Ordering Description given below shall be followed.

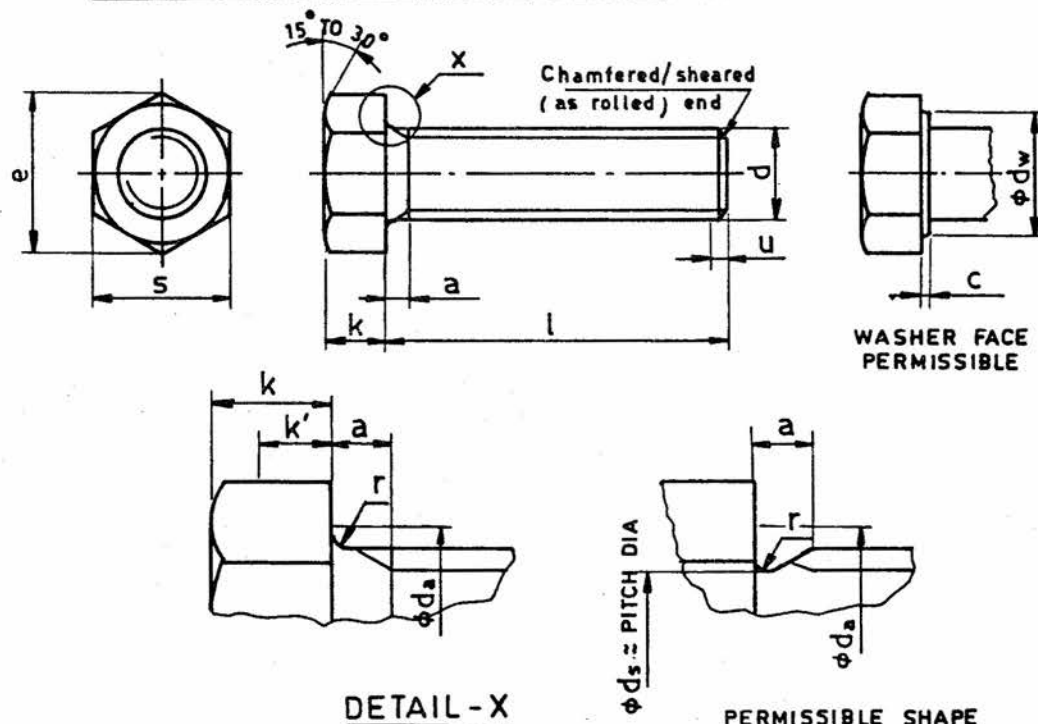
Hexagon Head Screw M12x60 IS: 1363(Part 2)-4.6

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TABLE 1 DIMENSIONS FOR HEXAGON HEAD SCREWS



(All dimensions are in mm)

Thread size d	M5	M6	M8	M10	M12	M16	M20	M24
Pitch P	0.8	1	1.25	1.5	1.75	2	2.5	3
* a Max	3.2	4	5	6	7	8	10	12
c Max	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
d _a Max	6	7.2	10.2	12.2	14.7	18.7	24.4	28.4
d _w Min	6.7	8.7	11.4	14.4	16.4	22	27.7	33.2
e Min	8.63	10.89	14.20	17.59	19.85	26.17	32.95	39.55
Nom	3.5	4	5.3	6.4	7.5	10	12.5	15
k Min	3.12	3.62	4.92	5.95	7.05	9.25	11.6	14.1
Max	3.88	4.38	5.68	6.85	7.95	10.75	13.4	15.9
k' Min	2.2	2.5	3.45	4.2	4.95	6.5	8.1	9.9
r Min	0.2	0.25	0.4	0.6	0.6	0.6	0.8	0.8
Max	8	10	13	16	18	24	30	36
s Min	7.64	9.64	12.57	15.57	17.57	23.16	29.16	35

u according to CE of IS: 1368 - 'Dimensions of ends of bolts and screws.

* a Min not less than 1P.

k'=Effective gauging height.



PLANT STANDARD

HPBP TIRUCHIRAPALLI

BPS: 41222

PAGE 4 OF 4

**TABLE 2 PREFERRED LENGTH-SIZE COMBINATIONS
FOR HEXAGON HEAD SCREWS**

(All dimensions are in mm)

Nominal length l			Thread size d							
Nom	Min	Max	M5	M6	M8	M10	M12	M16	M20	M24
10	9.10	10.90		4.4						
12	11.10	12.90								
16	15.10	16.90		5.5	11.2	20.8				
20	18.95	21.05			12.3	23.2				
25	23.95	26.05		7.4	14.3	25.9	37.3	71.3		
30	28.95	31.05			16.3		41			
35	33.75	36.25			18.3	31		85		
40	38.75	41.25					49.9	92.2		
45	43.75	46.25				38.5		100	167	264
50	48.75	51.25		14			58.7	108		
55	53.5	56.5						115	196	
60	58.5	61.5					68.2		208	
65	63.5	66.5							213	324
70	68.5	71.5								
(75)	73.5	76.5						138		
80	78.5	81.5								
90	88.25	91.75								
100	98.25	101.75					83.4			463
(110)	108.25	111.75						203		
(125)	123	127					92.9			

Note:

1. Sizes in brackets are non-preferred. (Not covered by IS:1363 - Part 2)
2. Preferred lengths are in between the stepped bold lines.
3. Weights are given in Kg per 1000 numbers only.
4. For stocked sizes refer BPS components book-let.