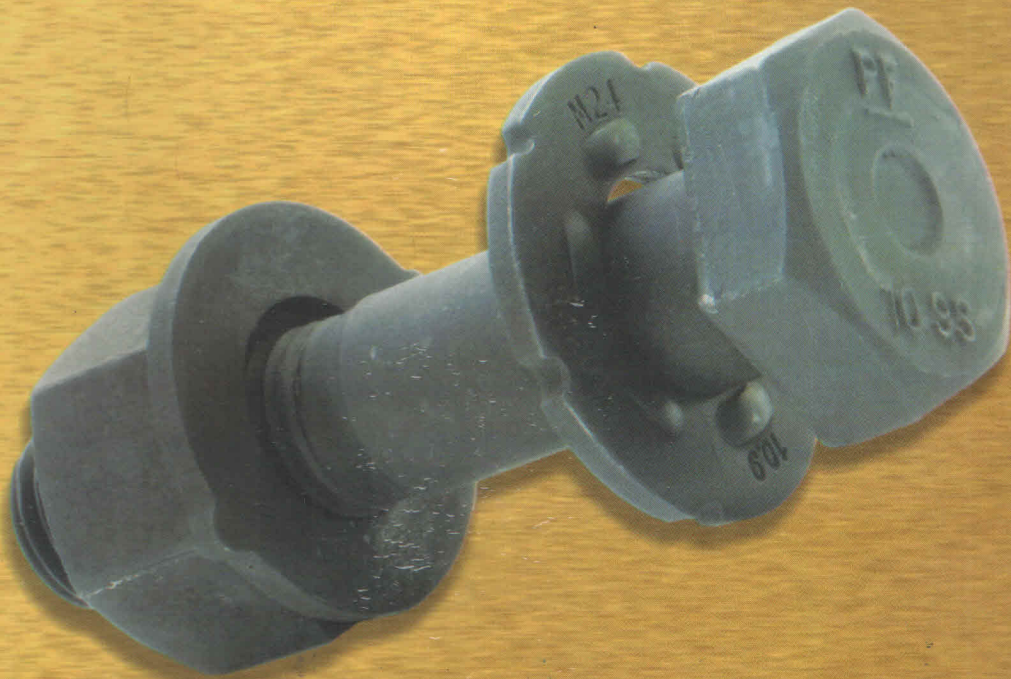


Designer's Manual

"PF" brand high strength structural bolting assemblies & DTI washer

(Reference standards IS-3757, ASTM A 325/ASTM A 325 M, ASTM A 490/ASTM A 490M, EN 14399 and ASTM F 959)



PANCHSHEEL FASTENERS

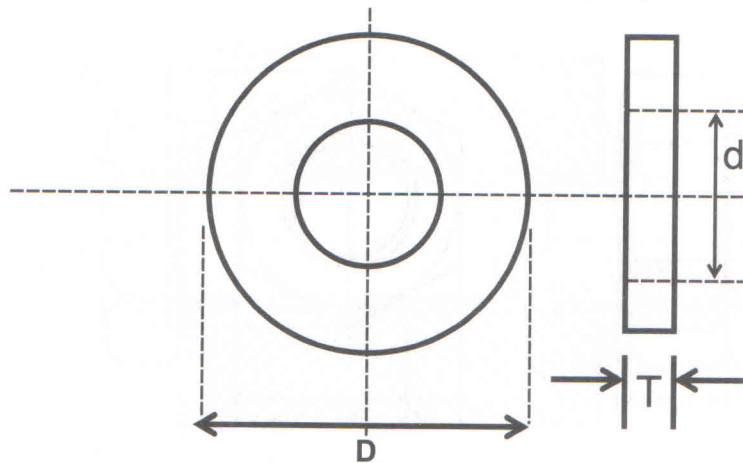
(An ISO 9001:2008 certified company)

5008, Bazar Sirkiwalan, Jaisav Place, Hauz Quazi, Delhi-110006.

Tel: 011-23210486,23218380, www.panchsheelfasteners.com

PANCHSHEEL FASTENERS

PF MAKE HARDENED WASHERS (INCH series) (REFERENCE ASTM F436)



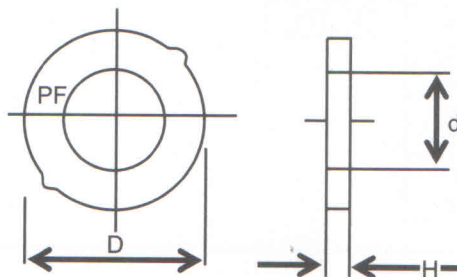
Size	D nom	d nom	T	Hardness
1/2	1.063	0.531	0.097/0.177	38 to 45 HRC
5/8	1.313	0.688	0.122/0.177	
3/4	1.468	0.813	0.122/0.177	
7/8	1.75	0.938	0.136/0.177	
1	2	1.125	0.136/0.177	

1. All dimensions are in inches
2. Material: Panchsheel fastener's selected high-grade plain carbon steel.

PF MAKE HARDENED WASHERS (METRIC series) (REFERENCE IS -6649)

Bolt Size		M16	M20	(M22)	M24	(M27)	M30	M36
d	Min.	18.00	22.00	24.00	26.00	30.00	33.00	39.00
	Max.	18.43	22.52	24.52	26.52	30.52	33.62	39.62
D	Max.	34.00	42.00	44.00	50.00	56.00	60.00	72.00
H	Min.	32.40	40.40	42.40	48.40	54.10	58.10	70.10
	Max.	4.60	4.60	4.60	4.60	4.60	4.60	4.60
	Min.	3.10	3.10	3.40	3.40	3.40	3.40	3.40
Weight Kg/1000pcs		20.3	31.3	33.2	44.7	54.8	61.4	89.7

Panchsheel Fasteners High Strength Structural Washers - Dimension

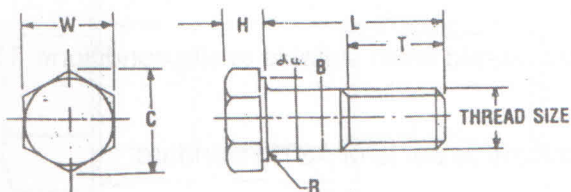


PANCHSHEEL FASTENERS

PF MAKE HEXAGONAL HEAD BOLTS & NUTS(METRIC series)

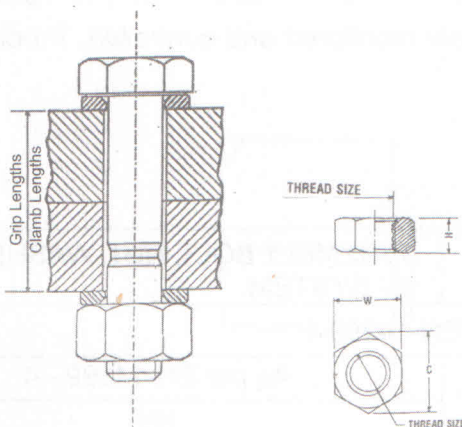
(REFERENCE IS-3757, IS-6623)

P. F. High Strength Structural Bolts - Dimensions



Sizes in brackets are at second preference
T1 Ref - for length < 100 mm
T2 Ref - for lengths > 100 mm

Thread Size	M16	M20	(M22)	M24	(M27)	M30	M36
Pitch	2.0	2.50	2.50	3.00	3.00	3.50	4.00
B	Max.	16.70	20.84	22.84	24.84	27.84	30.84
	Min.	15.30	19.16	21.16	23.16	26.16	29.16
da	Max.	18.70	23.24	25.24	27.64	30.40	33.40
	Min.	27.00	34.00	36.00	41.00	46.00	50.00
W	Max.	27.00	34.00	36.00	41.00	46.00	50.00
	Min.	26.16	33.00	35.00	40.00	45.00	49.00
C	Min.	29.56	37.29	39.55	45.20	50.85	55.37
H	Max.	10.75	13.40	14.90	15.90	17.90	19.75
	Min.	9.25	11.60	13.10	14.10	16.10	17.65
R	Min.	0.60	0.80	0.80	1.00	1.20	1.50
T*	T1 Ref.	31	36	38	41	44	49
	T2 Ref.	38	43	45	48	51	56



P. F. High Strength Structural Nuts – Dimensions

Thread Size	M16	M20	(M22)	M24	(M27)	M30	M36
Pitch	2.0	2.50	2.50	3.00	3.00	3.50	4.00
W	Max.	27.00	34.00	36.00	41.00	46.00	50.00
	Min.	26.16	33.00	35.00	40.00	45.00	49.00
C	Min.	29.56	37.29	39.55	45.20	50.85	55.37
H	Max.	17.10	20.70	23.60	24.20	27.60	30.70
	Min.	16.40	19.40	22.30	22.90	26.30	29.10
Weight Kg./1000Pgs.	60.4	115.3	142.8	197.7	282.3	365.0	600.00

Grip Lengths and Weight of Bolts (Kgs per 1000 pcs.)

Dia	M16		M20		(M22)		M24		(M27)		M30		M36	
	L	Gl	Wt.	Gl	Wt.	Gl	Wt.	Gl	Wt.	Gl	Wt.	Gl	Wt.	
40	10 to 14		1028											
45	15 to 19	110.7		11 to 15	180.3									
50	20 to 24	118.6		16 to 20	192.6									
55	25 to 29	1265		21 to 25	205.0	12 to 16	252.0							
60	30 to 34	1344		26 to 30	217.3	17 to 21	266.9	15 to 19	337.4					
65	35 to 39	142.3		31 to 35	229	22 to 26	281.8	20 to 24	352.2	17 to 21	480.9			
70	40 to 44	1502		36 to 40	241.9	27 to 31	296.7	25 to 29	372.9	22 to 26	503.4			
75	45 to 49	1581		41 to 45	254.3	30 to 34	311.6	30 to 34	390.7	27 to 31	525.8	24 to 28	672.5	
80	50 to 54	1660		46 to 50	266.6	37 to 41	326.6	35 to 39	408.4	32 to 36	548.3	29 to 33	700.3	
85	55 to 59	1739		51 to 55	278.9	42 to 46	341.5	40 to 44	426.2	37 to 41	570.8	30 to 38	728.0	
90	60 to 64	181.7		56 to 60	291.3	44 to 48	356.4	45 to 49	443.9	42 to 46	593.2	39 to 43	755.7	
95	65 to 69	189.6		61 to 65	303.6	47 to 51	371.3	50 to 54	461.7	47 to 51	615.7	44 to 48	783.5	
100	70 to 74	1975		66 to 70	315.9	52 to 56	386.2	55 to 59	479.4	52 to 56	638.2	49 to 53	811.2	
110	75 to 84	211.4		71 to 80	337.7	57 to 61	401.2	60 to 64	497.2	57 to 61	660.7	54 to 58	839.0	
120	85 to 94	2272		81 to 90	362.4	62 to 66	427.8	65 to 74	528.5	62 to 71	685.6	59 to 68	888.4	
130	95 to 104	2430		91 to 100	387.0	67 to 76	457.7	75 to 84	564.1	72 to 81	730.6	69 to 78	943.9	
140	105 to 114	258.8		101 to 110	411.7	77 to 86	487.5	85 to 94	599.6	82 to 91	775.5	79 to 88	999.4	
150	115 to 124	274.6		111 to 120	439.3	87 to 96	517.3	95 to 104	635.1	92 to 101	820.5	89 to 98	1054.9	
160	125 to 134	290.3		121 to 130	461.0	97 to 106	547.2	105 to 114	670.6	102 to 111	865.4	99 to 108	1110.4	
170	135 to 144	306.1		131 to 140	485.7	107 to 116	577.0	115 to 124	706.1	112 to 121	910.4	109 to 118	1165.8	
180	145 to 154	321.9		141 to 150	510.3	117 to 126	606.9	125 to 134	741.6	122 to 131	955.3	119 to 128	1121.3	
190	155 to 164	337.7		151 to 160	535.0	127 to 136	636.7	134 to 144	777.1	132 to 141	1000.2	129 to 138	1276.8	
200	165 to 174	3535		161 to 170	559.6	137 to 146	666.5	145 to 154	812.6	142 to 151	1045.2	139 to 148	1332.3	
210						147 to 155	694.4	155 to 164	848.2	152 to 161	1090.2	149 to 158	1387.8	
220						157 to 166				162 to 171	1135.2	159 to 168	1443.3	
230										172 to 181	1180.1	169 to 178	1498.8	
240										182 to 191	1225.0	179 to 188	1554.3	
250										192 to 201	1270.0	189 to 198	1609.8	
260										202 to 211	1314.0	199 to 208	1665.3	
270										212 to 221	1359.9	209 to 218	1720.7	
280										222 to 231	1404.9	219 to 228	1776.2	
290										232 to 241	1449.8	229 to 238	1831.7	
300										242 to 251	1493.9	239 to 248	1887.2	
										252 to 261	1538.9	249 to 258	1942.7	

FASTENERS SUPPLIED TO PRESTIGIOUS PROJECTS

1. Steel Building - ICICI Regional HQ Building at Hyderabad, Flipkart Office at Bangalore
2. IAF Base Station at Hindon, GZBD
3. Metro Rail Projects - Delhi, Kolkata, Lucknow, Chennai
4. Indian Railways - Dedicated Freight Corridor Corporation Projects
5. Rail Cum Road Bridges - Ganga Bridge, Munger; Bogibeel, Assam
6. Chenab Rail Bridge, J & K
7. Elevated Corridor Projects - PWD, Delhi (Mukerba Chowk to Wazirabad), KMDA, Kolkata (Park Circus to E.M. Bye Pass)
8. Fly Over Project - VIP Road Fly over, PW (Road) Directorate, Kolkata; Agra - Lucknow Expressway, U.P.
9. Delhi International Airport Project
10. Mumbai International Airport Project
11. NTPC Power Projects
12. Nuclear Power Projects, Kota & Kalpakkam



PANCHSHEEL FASTENERS

(An ISO 9001:2008 certified company)

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