



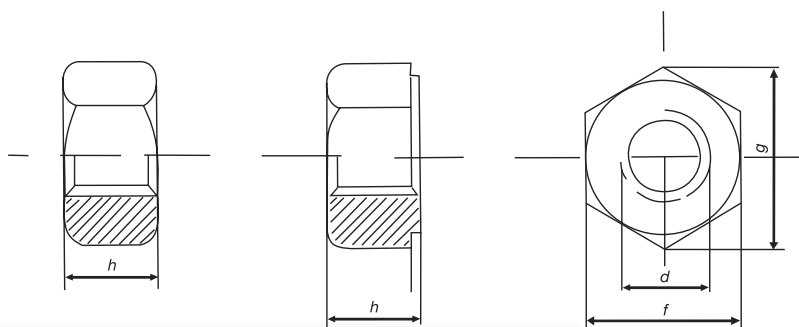


BOLTS

STRUCTURAL BOLTS

A563M – Heavy Hex Nuts (Metric)

Nut Dimension



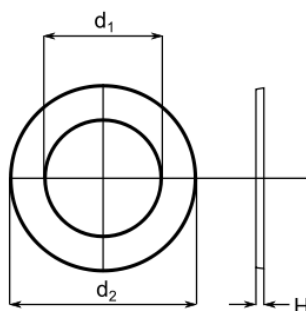
	f		g		h					
Nominal size and thread pitch d	Width across flats		Width across corners		Thickness					
	max	min	max	min	max	min				
M16 x 2	27.00	26.16	31.18	29.56	17.1	16.4				
M20 x 2.5	34.00	33.00	39.26	37.29	20.7	19.4				
M22 x 2.5	36.00	35.00	41.57	39.55	23.6	22.3				
M24 x 3	41.00	40.00	47.34	45.20	24.2	22.9				
M27 x 3	46.00	45.00	53.12	50.85	27.6	26.3				
M30 x 3.5	50.00	49.00	57.74	55.37	30.7	29.1				
M36 x 4	60.00	58.80	69.28	66.44	36.6	35.0				
1) The maximum dw shall not exceed the actual width across flats										

1) The maximum dw shall not exceed the actual width across flats

STRUCTURAL BOLTS

F436M Hardened Steel Washers (Matrix) – for use with ASTM A490M Bolts

A490M Washer Dimensions

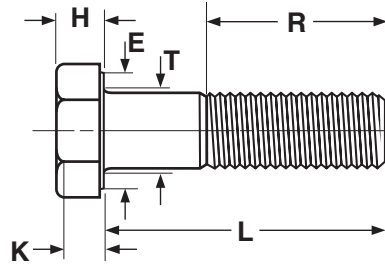


Nominal Washer Size		M16	M20	M22	M24	M27	M30	M36
d1	max	18.4	22.5	24.5	26.5	30.5	33.6	39.6
	min	18.0	22.0	24.0	26.0	30.0	33.0	39.0
d2	max	34.0	42.0	44.0	50.0	56.0	60.0	72.0
	min	32.4	40.4	42.4	48.4	54.1	58.1	70.1
h	max	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	min	3.1	3.1	3.4	3.4	3.4	3.4	3.4

STRUCTURAL BOLTS

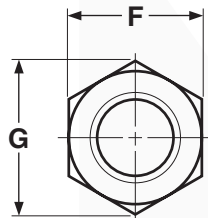
High Strength Friction Grip Bolts (10.9 Gr.)

Standard Specification : BS 4395 Part 2
 Equivalent to DIN 6914, 6915
 Material : alloy Steel
 Strength Grade : Class 10.9
 Threads : 6H of BS 3643 Part 1 & 2
 Surface Finish : Black Hot Dipped Galvanized



DIMENSIONS BOLT

Nominal size and thread diameter d	Pitch of thread P	Diameter of unthreaded shank d		Width across flats S		Width across corner		Transition diameter T	Thickness of head H	
	(Coarse pitch series)	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.	Min.
M 12	1.75	12.70	11.30	22	21.16	21.16	23.70	14.7	8.45	7.55
M 16	2.0	16.70	15.30	27	25.16	31.2	29.30	18.7	10.45	9.55
M 20	2.5	20.84	19.16	32	31.00	34.9	35.03	23.24	13.90	12.10
M 22	2.5	22.84	21.16	36	35.00	41.6	30.55	25.24	14.90	13.10
M 24	3.0	24.84	23.16	41	40.00	47.3	45.20	27.24	15.90	14.10
M 27	3.0	27.84	26.16	46	45.00	53.1	50.85	30.84	17.90	16.10
M 30	3.5	30.84	29.16	50	49.00	57.7	56.37	33.84		17.95
M 36	4.0	37.00	35.00	60	58.80	69.3	66.44	40.00		21.95



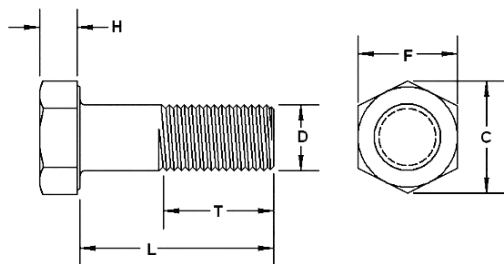
DIMENSIONS HSGG NUT

Nominal size and thread diameter d	Pitch of thread P	Width across flats S		Width across corner G		Diameter of washer face d1		Depth of washer face c	Thickness of nut F	
	(Coarse pitch series)	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Min.
M 12	1.75	22	21.6	25.40	23.70	22	19.91	0.4	11.55	10.45
M 16	2.0	27	26.16	31.20	29.30	27	24.91	0.4	15.55	11.45
M 20	2.5	32	31.00	35.90	35.03	32	29.75	0.4	18.55	17.45
M 22	2.5	36	35.00	41.00	39.55	36	33.75	0.4	19.65	13.35
M 24	3.0	41	40.00	47.30	45.20	41	38.75	0.5	22.65	21.35
M 27	3.0	46	45.00	53.10	50.85	46	43.75	0.5	24.65	23.35
M 30	3.5	50	49.00	57.70	55.37	50	47.75	0.5	26.85	25.35
M 36	4.0	60	58.80	69.30	66.44	60	57.75	0.5	31.80	30.20

HEXAGONAL HEAD BOLT

Hex Head Bolts

Steel: Zinc plated, Yellow plated, Black and H.D. Galvanized, Stainless Steel



d1	M4	M5	M6	M8	M10	M10*
p	0.7	0.8	1	1.25	1.5	1.5
L	7	8	10	13	17	16
H	2.8	3.5	4	5.3	6.4	6.4

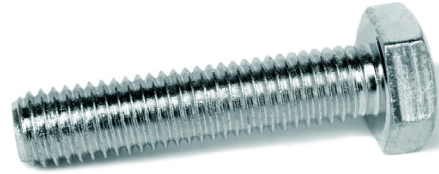
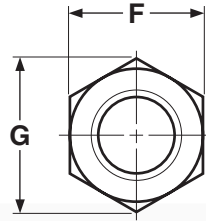
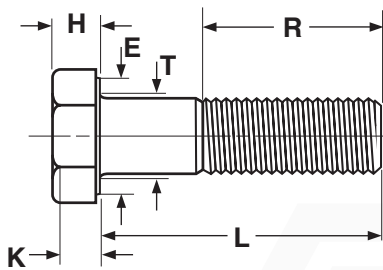
d1	M12	M12*	M14	M14*
p	1.75	1.75	2	2
L	19	18	22	21
H	7.5	7.5	8.8	8.8

SIZE AVAILABLE

D x L	D x L	D x L	D x L	D x L	D x L
M6 x 120	M8 x 110	M10 x 70	M12 x 35	M12 x 130	M14 x 60
M6 x 150	M8 x 120	M10 x 75	M12 x 40	M12 x 140	M14 x 65
M8 x 12	M8 x 130	M10 x 80	M12 x 45	M12 x 150	M14 x 70
M8 x 16	M8 x 140	M10 x 80 x 60	M12 x 50	M12 x 160	M14 x 75
M8 x 20	M8 x 150	M10 x 85	M12 x 50 x 931	M12 x 170	M14 x 80
M8 x 25	M8 x 180	M10 x 90	M12 x 55	M12 x 180	M14 x 85
M8 x 28	M8 x 200	M10 x 90 x 60	M12 x 60	M12 x 200	M14 x 90
M8 x 30		M10 x 95	M12 x 60 x 931	M12 x 220	M14 x 95
M8 x 35	M10 x 16	M10 x 100	M12 x 65	M12 x *240	M14 x 100
M8 x 40	M10 x 20	M10 x 110	M12 x 70	M12 x 250	M14 x 110
M8 x 45	M10 x 25	M10 x 120	M12 x 75	M12 x 260	M14 x 120
M8 x 50	M10 x 30	M10 x 130	M12 x 80	M12 x 300	M14 x 130
M8 x 55	M10 x 35	M10 x 140	M12 x 80 x 60	M12 x 380	M14 x 140
M8 x 60	M10 x 40	M10 x 150	M12 x 85		M14 x 150
M8 x 65	M10 x 45	M10 x 160	M12 x 90	M14 x 25	M14 x 160
M8 x 70	M10 x 50	M10 x 180	M12 x 90 x 60	M14 x 30	M14 x 170
M8 x 75	M10 x 50 x 931	M10 x 200	M12 x 95	M14 x 35	M14 x 200
M8 x 80	M10 x 55		M12 x 100	M14 x 40	M14 x 220
M8 x 85	M10 x 60	M12 x 20	M12 x 110	M14 x 45	M14 x 250
M8 x 90	M10 x 60 x 931	M12 x 25	M12 x 120	M14 x 50	M14 x 280
M8 x 95	M10 x 60 x 933	M12 x 30	M12 x 120 x 15	M14 x 55	M14 x 300
M8 x 100	M10 x 65				

HEXAGONAL HEAD BOLT

Steel, Steel Zinc Plated, Hot Dip Coated or Yellow Passivated



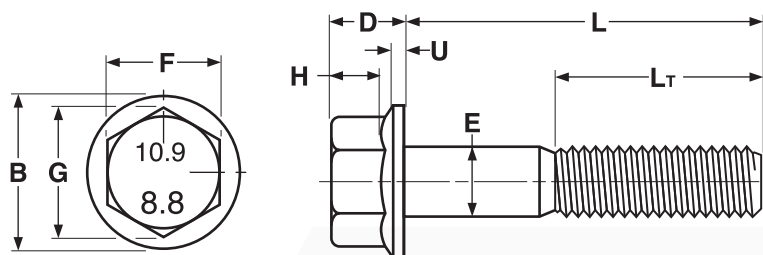
SIZE AVAILABLE

T x L	T x L	T x L	T x L	T x L	T x L	T x L	T x L
M6 x 30	M7 x 30	M8 x 70	M10 x 40/d2=17	M10 x 80/d2=17	M10 x 130/d2=17	M12 x 60/d2=18	M12 x 120/d2=19
M6 x 33	M7 x 35	M8 x 75	M10 x 40/d2=16	M10 x 80/d2=16	M10 x 140/d2=17	M12 x 65/d2=19	M12 x 120/d2=18
M6 x 40	M7 x 40	M8 x 80	M10 x 45/d2=17	M10 x 85/d2=17	M10 x 150/d2=17	M12 x 65/d2=18	M12 x 130/d2=19
M6 x 45	M7 x 45	M8 x 90	M10 x 45/d2=16	M10 x 85/d2=16	M10 x 160/d2=17	M12 x 70/d2=19	M12 x 140/d2=19
M6 x 50	M7 x 50	M8 x 100	M10 x 50/ d2=17	M10 x 90/d2=17	M10 x 170/d2=17	M12 x 70/d2=18	M12 x 150/d2=19
M6 x 55	M7 x 50	M8 x 110	M10 x 50/ d2=16	M10 x 90/d2=16	M10 x 180/d2=17	M12 x 75/d2=19	M12 x 160/d2=19
M6 x 60	M7 x 60	M8 x 120	M10 x 55/ d2=17	M10 x 100/d2=17	M10 x 200/d2=17	M12 x 75/d2=18	M12 x 170/d2=19
M6 x 65	M7 x 70	M8 x 130	M10 x 55/ d2=16	M10 x 100/d2=16	M10 x 220/d2=17	M12 x 80/d2=19	M12 x 180/d2=19
M6 x 70		M8 x 140	M10 x 60/ d2=17	M10 x 110/d2=17		M12 x 80/d2=18	M12 x 190/d2=19
M6 x 75	M8 x 35	M8 x 150	M10 x 60/ d2=16	M10 x 110/d2=16	M12 x 45/d2=19	M12 x 90/d2=19	M12 x 200/d2=19
M6 x 80	M8 x 40	M8 x 160	M10 x 65/ d2=17	M10 x 100/d2=17	M12 x 45/d2=18	M12 x 90/d2=18	M12 x 220/d2=19
M6 x 90	M8 x 45	M8 x 170	M10 x 65/ d2=16	M10 x 100/d2=16	M12 x 50/d2=19	M12 x 100/d2=19	M12 x 240/d2=19
M6 x 100	M8 x 50	M8 x 180	M10 x 70/ d2=17	M10 x 110/d2=17	M12 x 50/d2=18	M12 x 100/d2=18	M12 x 260/d2=19
M6 x 110	M8 x 55	M8 x 190	M10 x 70/ d2=16	M10 x 110/d2=16	M12 x 55/d2=19	M12 x 110/d2=19	M12 x 280/d2=19
M6 x 120	M8 x 60	M8 x 200	M10 x 75/ d2=17	M10 x 120/d2=17	M12 x 55/d2=18	M12 x 100/d2=18	M12 x 300/d2=19
	M8 x 65		M10 x 75/ d2=16	M10 x 120/d2=16	M12 x 60/d2=19		

HEXAGONAL HEAD BOLT

TENSILOCK-SELF LOCKING HEXAGON FLANGE BOLTS

Steel Full Threaded – Hot Dip Coated or Zinc Plated



SIZE AVAILABLE

E x L	E x L	E x L	E x L	E x L	E x L	E x L	E x L
M6 x 10	M6 x 25	M8 x 20	M10 x 16	M10 x 40	M12 x 35	M16 x 25	M16 x 50
M6 x 12	M6 x 30	M8 x 25	M10 x 20		M12 x 40	M16 x 30	M16 x 55
M6 x 16		M8 x 30	M10 x 25	M12 x 20	M12 x 45	M16 x 35	M16 x 60
M6 x 20	M8 x 12	M8 x 35	M10 x 30	M12 x 25	M12 x 50	M16 x 40	M16 x 70
	M8 x 16	M8 x 40	M10 x 35	M12 x 30		M16 x 45	



NUTS

HEX NUTS

A 194 GRADE 2H - Steel



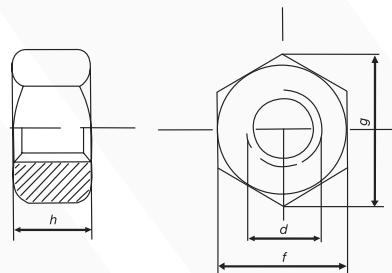
d	M10	M12	M14	M16	M20	M22	M24	M27
P	1.5	1.75	2	6	2.5	2.5	3	3
m = d	10	12	14	16	20	22	24	27
d2	17	19	22	24	30	32	36	41
d	M30	M33	M36	M39	M42	M45	M48	M52
P	3.5	3.5	4	4	4.5	4.5	5	5
m = d	30	33	36	39	42	45	48	52
d2	46	50	55	60	65	70	75	80

SIZE AVAILABLE

d	d	d
M10	M24	M39
M12	M27	M42
M14	M30	M45
M16	M33	M48
M20	M36	M52
M22		

HEX NUTS

A 194 GRADE 2H - Steel



d	Inch	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
	Mm	12.7	15.9	19.05	22.2	25.4	28.6	31.75
Thread per inch		13	11	10	9	8	8	8
H		12.3	15.5	18.65	21.85	25	28.2	31.75
F	inch	7/8	11/16	11/4	17/16	15/8	1.13/16	2
	mm	22.2	27	31.75	36.5	41.3	46.05	50.8

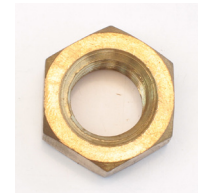
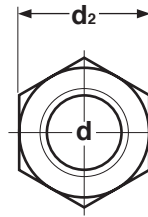
d	Inch	13/8	11/2	15/8	13/4	17/8	2	
	mm	34.9	38.1	41.3	44.45	47.65	50.8	
Thread per inch		8	8	8	8	8	8	
H		34.15	37.3	40.5	43.65	46.85	50	
F	inch	23/16	23/8	29/16	23/4	215/16	31/8	
	mm	55.55	60.3	65.1	69.85	74.6	79.4	

SIZE AVAILABLE

d	d	d
1/2	11/8	13/4
5/8	11/4	17/8
3/4	13/8	2*
7/8	11/2	
1*	15/8	

HEX NUTS- UNF

Yellow Passivated



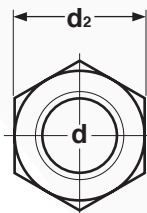
d x P	M4x0.75*	M5x0.90*	M6x0.75*	M8x1	M10x1	M10x1.25	M12x1*	M12x1.25	M12x1.5	M14x1.5	M16x1
m	3.2	4	5	6.5	8	8	10	10	10	11	13
d2	7	8	10	13	17	17	19	19	19	22	24
d x P	M16x1.5	M18x1*	M18x1.5	M18x2	M20x1.5	M20x2	M22x1*	M22x1.5	M22x2	M24x1.5*	M24x2
m	13	15	15	15	16	16	16	18	18	19	19
d2	24	27	27	27	30	30	32	32	32	36	36
d x P	M26x1.5*	M27x1.5*	M27x2	M28x2*	M30x1*	M30x1.5*	M30x2	M32x2*	M33x1.5*	M33x2	M36x1.5*
m	22	22	22	22	24	24	24	26	26	26	29
d2	41	41	41	41	46	46	46	50	50	50	55
d x P	M36x2*	M36x3*	M38x1.5*	M39x1.5*	M39x3	M40x1.5*	M40x2*	M42x1.5*	M42x3	M45x1.5*	M45x3
m	29	29	31	31	31	31	31	34	34	36	36
d2	55	55	60	60	60	60	60	65	65	70	70
d x P	M48x1.5*	M48x2*	M48x3	M52x1.5*	M52x3	M56x2*	M56x4	M60x2*	M60x4	M64x4	M68x4
m	38	38	38	42	42	45	45	48	48		54
d2	75	75	75	80	80	85	85	90	90	95	100

SIZE AVAILABLE

d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P
M4 x 075	M10 x 1.00	M16 x 1.00	M20 x 1.50	M24 x 1.50	M28 x 2.00	M33 x 1.50	M38 x 1.50	M42 x 1.50	M48 x 2.00	M56 x 2.00	M64 x 4.00
		M16 x 1.50	M20 x 2.00	M24 x 2.00		M33 x 2.00		M42 x 3.00	M48 x 3.00	M56 x 4.00	
M5 x 090	M12 x 1.00				M30 x 1.00		M39 x 1.50				M68 x 4.00
	M12 x 1.25	M18 x 1.00	M22 x 1.00	M26 x 1.50	M30 x 1.50	M36 x 1.50	M39 x 3.00	M45 x 1.50	M52 x 1.50	M60 x 2.00	
	M12 x 1.50	M18 x 1.00	M22 x 1.50		M30 x 2.00	M36 x 2.00		M45 x 3.00	M52 x 1.50	M60 x 2.00	
		M18 x 1.00	M22 x 2.00	M27 x 1.50		M36 x 3.00	M40 x 1.50				
	M14 x 1.50			M27 x 2.00	M32 x 2.00		M40 x 2.00	M48 x 1.50			

HEX NUTS- UNF JAM

Steel and Steel Zinc Plated



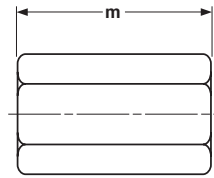
d x P	M10x1	M10x1.25	M12x0.75*	M12x1*	M12x1.25	M12x1.5	M14x1*	M14x1.25*	M14x1.5	M16x1*	M16x1
m	5	5	6	6	6	6	7	7	7	8	13
d2	17	17	19	19	19	19	22	22	22	24	24
d x P	M16x1.5	M18x1*	M18x1.5	M18x2	M20x1*	M20x1.5	M22x1*	M22x2	M24x1.5	M24x2	M24x2
m	8	9	9	9	10	10	11	11	12	12	19
d2	24	27	27	27	30	30	32	32	36	36	36
d x P	M27x1.5	M30x1.5	M30x2	M32x2*	M33x1.5	M33x2	M35x1.5*	M36x1.5	M36x3	M33x2	M36x1.5*
m	13.5	15	15	16	16.5	16.5	17.5	18	18	26	29
d2	41	46	46	50	50	50	55	55	55	50	55
d x P	M38x1.5*	M39x1.5	M39x2	M39x3	M40x1.5*	M40x2*	M42x1.5	M42x1.5	M45x2	M45x1.5*	M45x3
m	19	19.5	19.5	19.5	20	20	21	22.5	22.5	36	36
d2	60	60	60	60	60	60	65	70	70	70	70
d x P	M45x3	M48x1.5	M48x2	M48x3	M52x1.5	M52x2	M52x3	M56x2*	M56x4*	M64x4	M68x4
m	22.5	24	24	24	26	26	26	28	28		54
d2	70	75	75	75	80	80	80	85	85	95	100

SIZE AVAILABLE

d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P
M10 x 1.00	M12 x 1.25		M18 x 2.00	M22 x 2.00		M32 x 2.00		M40 x 1.50	M45 x 2.00	M52 x 1.50	
M10 x 1.25	M12 x 1.50	M16 x 1.00			M30 x 1.50		M38 x 1.50	M40 x 2.00	M45 x 3.00	M52 x 2.00	
		M16 x 1.50	M20 x 1.00	M24 x 1.50	M30 x 2.00	M35 x 1.50				M52 x 13.00	
M12 x 0.75	M14 x 1.00		M20 x 1.50	M24 x 2.00			M39 x 1.50	M42 x 1.50	M48 x 1.50		
M12 x 1.00	M14 x 1.25	M18 x 1.00			M33 x 1.50	M36 x 1.50	M39 x 2.00		M48 x 2.00	M56 x 2.00	
	M14 x 1.50	M18 x 1.50	M22 x 1.00	M27 x 1.50	M33 x 2.00	M36 x 3.00	M39 x 3.00	M45 x 1.50	M48 x 3.00	M56 x 4.00	

HEX COUPLING NUTS (LONG NUTS)

Steel Zinc Plated



d	M5	M6	M8	M10	M12	M14	M16	M18	M14	M16	M18
P	0.5	1	1.25	1.5	1.75	2	2	2.5	2	2	2.5
m	15	18	24	30	36	42	48	54	11	13	15
d2	8	10	13	17	19	22	24	27	22	24	27

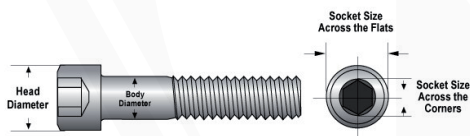
d	M20	M22	M24	M30	M36	M42	M48	M18	M14	M16	M18
P	2.5	2.5	3	2.5	2.5	2.5	3	2.5	2	2	2.5
m	60	66	72	90	108	126	144	54	11	13	15
d2	30	32	36	46	55	65	75	27	22	24	27

SIZE AVAILABLE

d	d	d	d	d	d	d
M5	M8	M12	M16	M22	M30	M42
M6	M10	M14	M20	M24	M36	M48

SQUARE NUTS

Steel and Steel Zinc Plated



d	M4*	M5	M6	M8	M10	M12
P	0.7	0.8	1	1.25	1.5	1.75
m (h15)	0.7	4	5	6.5	8	10
d2	3.2	8	10	13	16(17)2	18(19)2

SIZE AVAILABLE

d	d	D
M4	M6	M10
M5	M8	M12

SQUARE THIN NUTS

Steel and Steel Zinc Plated



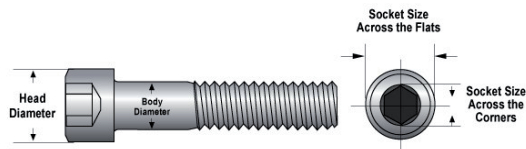
d	M3	M4	M5	M6	M8	M10
P	0.5	0.7	0.8	1	1.25	1.5
m	1.8	2.2	2.7	3.2	4	5
d2	5.5	7	8	10	13	17

SIZE AVAILABLE

d	d	d	d	d	d
M3	M4	M6	M8	M10	M12
M5	M8	M12			

HEXAGON NUTS – Left Hand Thread

Steel and Steel Zinc Plated



d	M3	M4	M5	M6	M8	M10	M10*	M12	M14	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.5	1.75	2	2
m	4.2	3.2	4	5	6.5	8	8	10	11	13
d2	5.5	7	8	10	13	17	15	19	22	24

d	M18	M20	M22	M24	M27	M30	M33	M36	M42	
P	2.5	2.5	2.5	3	3	3.5	3.5	4	4.5	5
m	15	16	18	19	22	24	26	29	34	38
d2	27	30	32	36	41	46	50	55	65	75

SIZE AVAILABLE

d	d	d	d	d	d	d	d	d
M3	M6	M10	M12	M18	M22	M27	M33	M42
M4	M8	M10/d2=15	M14		M24	M30	M36	M48
M5			M16	M20				

HEXAGON NUTS

Metric Fine Pitch Thread – Left Hand Thread STEEL



d x P	M12x1.25	M12x1.5	M14x1.5	M16x1.5	M18x1.5	M20x2	M22x2
m	10	10	11	13	15	16	18
d2	19	19	22	24	27	30	32

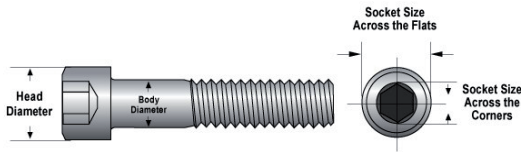
d x P	M24x1.5*	M24x2	M27x1.5*	M27x2	M30x1.5*	M30x2	M33x2
m	19	19	22	22	24	24	26
d2	36	36	41	41	46	46	50

d x P	M36x1.5*	M36x2*	M24x1.5*	M45x3	M48x1.5*	M48x3	
m	29	29	34	36	31	31	
d2	55	55	65	70	60	60	

SIZE AVAILABLE

d x P	d x P	d x P	d x P	d x P	d x P
M12 x 1.25	M16 x 1.50	M22 x 2.00	M27 x 1.50	M33 x 2.00	M45 x 3.00
M12 x 1.50			M27 x 2.00		
	M18 x 1.50	M24 x 1.50		M36 x 1.50	M48 x 1.50
M14 x 1.50		M24 x 2.00	M30 x 1.50	M36 x 2.00	M48 x 3.00
	M20 x 2.00		M30 x 2.00		
				M42 x 1.50	

HEAGON NUTS – Metric fine Pitch Thread Steel and Zinc Plated Yellow Passivated



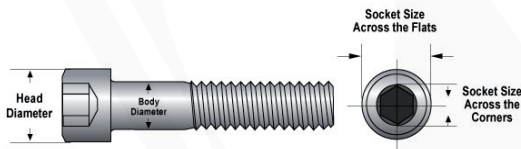
d x P	M4x0.75*	M5x0.90*	M6x0.75*	M8x1	M10x1	M10x1.25	M12x1*	M12x1.25	M12x1.5	M14x1.5	M16x1
m	3.2	4	5	6.5	8	8	10	10	10	11	13
d2	7	8	10	13	17	17	19	19	19	22	24
d x P	M16x1.5	M18x1*	M18x1.5	M18x2	M20x1.5	M20x2	M22x1*	M22x1.5	M22x2	M24x1.5*	M24x2
m	13	15	15	15	16	16	16	18	18	19	19
d2	24	27	27	27	30	30	32	32	32	36	36
d x P	M26x1.5*	M27x1.5*	M27x2	M28x2*	M30x1*	M30x1.5*	M30x2	M32x2*	M33x1.5*	M33x2	M36x1.5*
m	22	22	22	22	24	24	24	26	26	26	29
d2	41	41	41	41	46	46	46	50	50	50	55
d x P	M36x2*	M36x3*	M38x1.5*	M39x1.5*	M39x3	M40x1.5*	M40x2*	M42x1.5*	M42x3	M45x1.5*	M45x3
m	29	29	31	31	31	31	31	34	34	36	36
d2	55	55	60	60	60	60	60	65	65	70	70
d x P	M48x1.5*	M48x2*	M48x3	M52x1.5*	M52x3	M56x2*	M56x4	M60x2*	M60x4	M64x4	M68x4
m	38	38	38	42	42	45	45	48	48		54
d2	75	75	75	80	80	85	85	90	90	95	100

SIZE AVAILABLE

d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P
M4 x 075	M10 x 1.00	M16 x 1.00	M20 x 1.50	M24 x 1.50	M28 x 2.00	M33 x 1.50	M38 x 1.50	M42 x 1.50	M48 x 2.00	M56 x 2.00	M64 x 4.00
		M16 x 1.50	M20 x 2.00	M24 x 2.00		M33 x 2.00		M42 x 3.00	M48 x 3.00	M56 x 4.00	
M5 x 090	M12 x 1.00				M30 x 1.00		M39 x 1.50				M68 x 4.00
	M12 x 1.25	M18 x 1.00	M22 x 1.00	M26 x 1.50	M30 x 1.50	M36 x 1.50	M39 x 3.00	M45 x 1.50	M52 x 1.50	M60 x 2.00	
	M12 x 1.50	M18 x 1.00	M22 x 1.50		M30 x 2.00	M36 x 2.00		M45 x 3.00	M52 x 1.50	M60 x 2.00	
		M18 x 1.00	M22 x 2.00	M27 x 1.50		M36 x 3.00	M40 x 1.50				
	M14 x 1.50			M27 x 2.00	M32 x 2.00		M40 x 2.00	M48 x 1.50			

HEXAGON THIN NUTS – METRIC FINE PITCH THREAD

Steel and Steel Zinc Plated



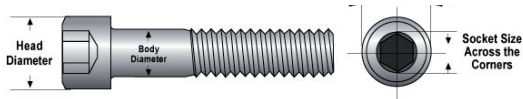
d x P	M10x1	M10x1.25	M12x0.75*	M12x1*	M12x1.25	M12x1.5	M14x1*	M14x1.25*	M14x1.5	M16x1*	M16x1
m	5	5	6	6	6	6	7	7	7	8	13
d2	17	17	19	19	19	19	22	22	22	24	24
d x P	M16x1.5	M18x1*	M18x1.5	M18x2	M20x1*	M20x1.5	M22x1*	M22x2	M24x1.5	M24x2	M24x2
m	8	9	9	9	10	10	11	11	12	12	19
d2	24	27	27	27	30	30	32	32	36	36	36
d x P	M27x1.5	M30x1.5	M30x2	M32x2*	M33x1.5	M33x2	M35x1.5*	M36x1.5	M36x3	M33x2	M36x1.5*
m	13.5	15	15	16	16.5	16.5	17.5	18	18	26	29
d2	41	46	46	50	50	50	55	55	55	50	55
d x P	M38x1.5*	M39x1.5	M39x2	M39x3	M40x1.5*	M40x2*	M42x1.5	M42x1.5	M45x2	M45x1.5*	M45x3
m	19	19.5	19.5	19.5	20	20	21	22.5	22.5	36	36
d2	60	60	60	60	60	60	65	70	70	70	70
d x P	M45x3	M48x1.5	M48x2	M48x3	M52x1.5	M52x2	M52x3	M56x2*	M56x4*	M64x4	M68x4
m	22.5	24	24	24	26	26	26	28	28		54
d2	70	75	75	75	80	80	80	85	85	95	100

SIZE AVAILABLE

d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P	d x P
M10 x 1.00	M12 x 1.25		M18 x 2.00	M22 x 2.00		M32 x 2.00		M40 x 1.50	M45 x 2.00	M52 x 1.50	
M10 x 1.25	M12 x 1.50	M16 x 1.00			M30 x 1.50		M38 x 1.50	M40 x 2.00	M45 x 3.00	M52 x 2.00	
		M16 x 1.50	M20 x 1.00	M24 x 1.50	M30 x 2.00	M35 x 1.50				M52 x 13.00	
M12 x 0.75	M14 x 1.00		M20 x 1.50	M24 x 2.00			M39 x 1.50	M42 x 1.50	M48 x 1.50		
M12 x 1.00	M14 x 1.25	M18 x 1.00			M33 x 1.50	M36 x 1.50	M39 x 2.00		M48 x 2.00	M56 x 2.00	
	M14 x 1.50	M18 x 1.50	M22 x 1.00	M27 x 1.50	M33 x 2.00	M36 x 3.00	M39 x 3.00	M45 x 1.50	M48 x 3.00	M56 x 4.00	

HEXAGON NUTS

Metric Fine Pitch Thread – Left Hand Thread STEEL



d	M3	M4	M5	M6	M7	M8	M10	M12	M14
P	0.5	0.7	0.8	1	1	1.25	1.5	1.75	2
d2	5.5	7	8	10	11	13	17	19	22
h	4	5	5	6	7.5	8	10	12	14

d	M16	M18	M20	M22	M24	M27	M30	M33	M36
P	2	2.5	2.5	2.5	3	3	3.5	3.5	4
d2	24	27	30	32	36	41	46	60	55
h	16	18.5	20	22	24	27	30	33	36

d	M39	M42	M45	M48	M52*	M56*	M60*	M64*	M36
P	4	4.5	4.5	5	5	5.5	5.5	6	4
d2	60	65	70	75	80	85	90	95	55
h	39	42	45	48	52	56	60	64	36

SIZE AVAILABLE

d	d	d	d	d	d	d	d	d	d
M3	M6	M10	M16	M22	M30	M39	M48	M60	
M4	M7	M12	M18	M24	M33	M42	M52	M64	
M5	M8	M14	M20	M27	M36	M45	M56		

PREVAILING TOQUE TYPE HEX NUT with PLASTIC INSERT

METRIC FINE PITCH THREAD

Steel Zinc Plated and Yellow Passivated



dxP	M8x1	M10x1	M10x1.25	M12x1*	M12x1.25	M12x1.5	M14x1.5	M18x1.5	M20x1.5	M20x2
d2	13	17	17	19	19	19	22	27	30	30
h	8	10	10	12	12	12	14	18.5	20	20

dxP	M22x1.5	M24x1.5*	M24x2	M27x1.5*	M27x2	30x1.5*	M30x2	M33x1.5*	M33x2	M36x1.5*
d2	32	36	36	41	41	46	46	50	50	55
h	22	24	24	27	27	30	30	33	33	36

dxP	M36x3	M39x3	M42x1.5*	M42x3	M45x1.5*	M45x3	M46x1.5*	M48x3		
d2	55	60	65	65	70	70	75	75		
h	36	39	42	42	45	45	48	48		

SIZE AVAILABLE

d	d	d	d	d	d	d	d	d	d	d
M8 x 1.00	M12 x 1.00	M16 x 1.50	M20 x 1.50	M24 x 1.50	M27 x 2.00	M33 x 1.50	M36 x 1.50	M42 x 1.50	M45 x 1.50	M48 x 1.50
	M12 x 1.00		M20 x 2.00	M24 x 2.00		M33 x 2.00	M36 x 3.00	M42 x 3.00	M45 x 3.00	M48 x 3.00
M10 x 1.00		M18 x 1.50			M30 x 1.50		M36 x 3.00			
M10 x 1.25	M14 x 1.50		M22 x 1.50	M27 x 1.50	M30 x 2.00					

HEXAGON LOCKNUTS WITH NYLON INSERT STEEL ZINC AND YELLOW PASSIVATED



d	M2.5	M3	M4	M5	M6	M8	M10	M12	M14
m	2.3	2.4	2.9	3.2	4	5.5	6.50	8.00	9.5
h	3.5	4	5	5	6	8	10	12	14
d2	5	5.5	7	8	10	13	17	19	22
e	5.5	6.01	7.66	8.79	11.5	14.38	18.90	21.10	24.49

d	M16	M18	M20	M22	M24	M27	M30	M33	M14
m	10.5	13	14	15	15	17	19.00	22	9.5
h	16	18.5	20	22	24	27	30	33	14
d2	24	27	30	32	36	41	46	50	22
e	26.75	29.56	32.95	35.03	39.55	45.2	50.85	55.37	24.49

SIZE AVAILABLE

d	d	d	d	d	d	d	d	d
M2.5	M4	M6	M10	M14	M18	M22	M27	M33
M3	M5	M8	M12	M16	M20	M24	M30	

PREVAILING TORQUE TYPE HEX NUT WITH PLASTIC INSERT HIGH - STEEL ZINC AND YELLOW PASSIVATED



d x P	M5	M6	M8	M10	M12	M14	M16
P	0.8	1	1.25	1.5	1.75	2	2
d2	8	10	13	17	19	22	24
h	6.3	8	9.5	11.5	14	16	18

d	M18	M20	M24
P	2.5	2.5	3
d2	27	30	36
h	20	22	28

SIZE AVAILABLE

d	d
M5	M16
M6	M18
M8	
M10	M20
	M22
M12	M24
M14	

TENSILOCK

SELF LOCKING HEXAGON NUTS – STEEL



d	M5	M6	M8	M10	M12*	M16*
P	0.8	1	1.25	1.5	1.75	2
m	4.3	5.5	7	7.9	8.7	11.2
d2	8	10	13	15	17	22
dc	11.2	14.25	18.25	21	24	31

SIZE AVAILABLE

d	d	d	d	d	D
M5	M6	M8	M10	M12 Class 10	M16 Class 10

HEXAGON FLANGE NUTS WITH TEETH

STEEL ZINC PLATED



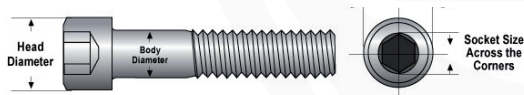
d	M5	M6	M8	M10	M10	M12	M14	M16
P	0.8	1	1.25	1.5	1.5	1.75	2	2
m (max)	5	6	8	10	10	12	14	18
d2	8	10	13	15	15	18	21	24
dc (max)	11.8	14.2	17.9	21.8	21.8	26	29.9	34.5

SIZE AVAILABLE

d	d	d	d	d	d	D
M5	M6	M8	M10	M12	M14	M16

RIPP

SELF LOCKING HEXAGON FLANGE NUTS – STEEL



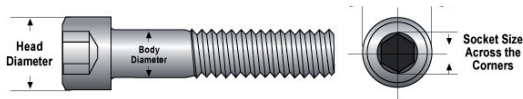
d	M5	M6	M8	M10	M12	M16
P	0.8	1	1.25	1.5	1.75	2
m	4.3	5.5	7	8.5	10	14
d2	8	10	13	15	17	22
dc	11.2	14.2	18.25	21	24	31

SIZE AVAILABLE

d	D
M5	M10
M6	M12
M8	M16

TENSILOCK

SELF LOCKING HEXAGON NUTS – STEEL



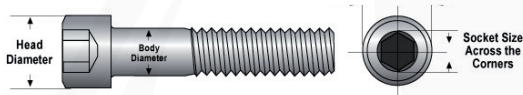
d	M5	M6	M8	M10	M12	M14	M16	M20	M24*
P	0.8	1	1.25	1.5	1.75	2	2.00	2.5	3
m (max)	5	6	8	10	12	14	18	20	30
d2	8	10	13	15	18	21	24	30	36
dc (max)	11.8	14.2	17.9	21.8	26	29.9	34.50	42.8	46

SIZE AVAILABLE

d	d	d	d	D
M5	M6	M10	M14	M20
	M8	M12	M16	M24

TENSILOCK

SELF LOCKING HEXAGON NUTS – STEEL



d	M6	M8	M10	M12	M14	M16	M18
P	1	1.25	1.5	1.75	2	2	2.5
m	5	6.5	8	10	11	13	15
d2	10	13	17	19	22	24	27
n	2	2.5	2.8	3.5	3.5	4.5	4.5

M16	M18	M16	M18	M16	M18
2	2.5	2	2.5	2	2.5
13	15	13	15	13	15
24	27	24	27	24	27
4.5	4.5	4.5	4.5	4.5	4.5

SIZE AVAILABLE

d	d	d	d	d	d
M6	M10	M14	M18	M22	M27
M8	M12	M16	M20	M24	M30

TENSILOCK

SELF LOCKING HEXAGON NUTS – STEEL



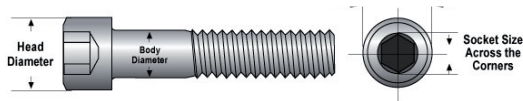
d	M3	M4	M5	M6	M8	M10	M12	M16	M20
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5
E	3.3	3.3	3.8	4.7	5.6	6.3	7.5	10.7	12
e	18.7	18.7	22.5	27.2	30	35	47.6	62	66
h	8.6	8.6	10.5	12.7	14.6	16.7	22.3	30.8	30.5

SIZE AVAILABLE

d	d	d
M18	M22	M27
M20	M24	M30
M20	M24	M30

WING BUTTERFLY NUTS

Cast iron Zinc Plated



d	M4	M5	M6	M8	M10	M12	M14*	M16	M20	M24
P	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	3
E (min)	3.2	4	5	6.5	8	10	11.2	3	16	20
e (max)	20	26	33	39	51	65	65	73	90	110
h (max)	10.5	13	17	20	26	33.5	33.5	37.6	46	56.5

SIZE AVAILABLE

d	d	d
M4	M10	M16
M5	M12	M20
M6	M14	M24

DRIVE-IN NUTS for WOOD

Steel and Steel Zinc Plated



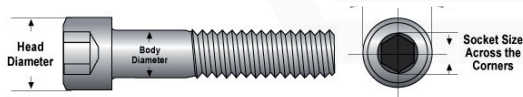
d	M3	M4	M5	M6	M8	M10
P	0.5	0.7	0.8	1	1.25	1.5
d1	43	5.6	6.5	7.5	9.9	11.6
h	5	5.7	8	9	11	13
a	3.5	5.2	6.2	7.2	8.6	9.5
b	13	15	17	19	22.2	25.5

SIZE AVAILABLE

d1	d1	d1	d1	d1	d1
M3	M4	M5	M6	M8	M10

SQUARE WELD NUTS

Steel



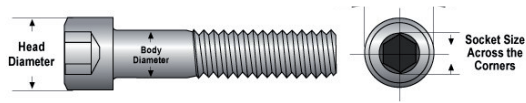
a	3.5	5.2	6.2	7.2	8.6	9.5
b	13	15	17	19	22.2	25.5
a	3.5	5.2	6.2	7.2	8.6	9.5
b	13	15	17	19	22.2	25.5

SIZE AVAILABLE

d1	d1	d1	d1	d1	d1	d1
M4	M5	M6	M8	M10	M12	M14

BLIND RIVET NUTS with CYLINDRICAL HEAD and KNURLE

Steel and Steel Zinc Plated & YELLOW Passivated



Type	5PO20	5PO30	6PO15	6PO30	8PO20	8PO35
d	M5	M5	M6	M6	M8	M8
Grip range	1-2	3-Feb	0.7-1.5	1.5-3	1-2	2-3.5
D*	7	7	9	9	11	11
B	10	10	13	13	16	16
E	1	1	1.5	1.5	1.6	1.5
s*	3.5-2.5	3.5-2.5	3.5-2	3.5-2	4.7-3.2	4.7-3.2
L*	12	13	13	14.5	15.5	17

SIZE AVAILABLE

M6	M14	M24
M6	M14	M24
M6	M14	M24

Duct fixing products

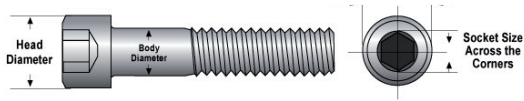
wedge NUT – elector Galvanized or Yellow Zinc Plated



Reference	Ø	A mm	B mm	C mm	W mm
WIN 06	M 6	13	19	25	12
WIN 08	M 8	13	19	25	12
WIN 10	M 10	13	19	25	12

PLAIN CHANNEL STRUT NUTS

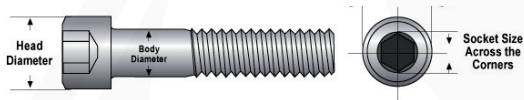
zinc Plated



SIZE AVAILABLE		
Reference	E	THICKNESS
PC 0606	M 6	6 MM
PC 0806	M 8	6 MM
PC 1008	M 10	8 MM
PC 1208	M 12	8 MM
PC 0808	M 8	8 MM
PC 1010	M 10	10 MM
PC 1210	M 12	10 MM
PC 1212	M 12	12 MM

CHANNEL STRUT NUTS with SHORT SPRING

zinc Plated



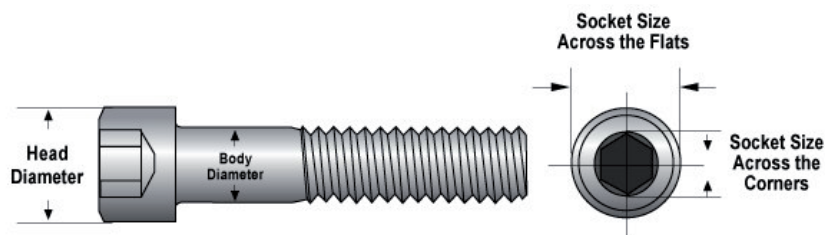
SIZE AVAILABLE		
Reference	E	THICKNESS
CSS 0606	M 6	6 MM
CSS 0806	M 8	6 MM
CSS 1008	M 10	8 MM
CSS 1208	M 12	8 MM
CSS 0808	M 8	8 MM
CSS 1010	M 10	10 MM
CSS 1210	M 12	10 MM
CSS 1212	M 12	12 MM



WASHERS

PLAIN WASHER WITHOUT CHAMFER

Steel 140HV and Steel 140HV Zinc Plated



For nom.	M3	M4	M5	M6	M7	M8	M10	M12	M14
Size	-	5/32	3/16	-	9/32	5/16	3/8	1/2	9/16
d1	3.2	4.3	5.3	6.4	7.4	8.4	10.5	13	15
d2	7	9	10	12	14	16	20	24	28
s	0.5	0.8	1	1.6	1.6	1.6	2	2.5	2.5

For nom.	M16	M18	M20	M22	M24	M27	M30	M33
Size	5/8	11/16	3/4	7/8	-	1	1 1/8	1 1/4
d1	17	19	21	21	25	28	31	34
d2	30	34	37	39	44	50	56	60
s	3	3	3	3	4	4	4	5

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M1.6	M10	M33
M2	M11	M36
M2.5	M12	M39
M2.6	M14	M42
M3	M16	M45
M4	M18	M48
M5	M20	M52
M6	M22	M56
1/4	M24	M60
M7	M27	M64
M8	M30	

PLAIN WASHER WITHOUT CHAMFER

Steel 140HV Zinc Plated, Yellow and Black Passivated

For nom.	M3	M4	M5	M6	M7	M8	M10	M12	M14
Size	-	5/32	3/16	-	9/32	5/16	3/8	1/2	9/16
d1	3.2	4.3	5.3	6.4	7.4	8.4	10.5	13	15
d2	7	9	10	12	14	16	20	24	28
s	0.5	0.8	1	1.6	1.6	1.6	2	2.5	2.5

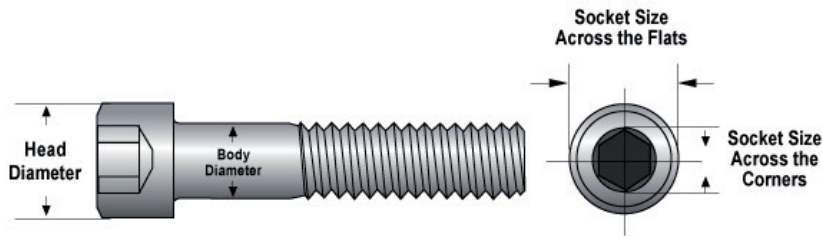
For nom.	M16	M18	M20	M22	M24	M27	M30	M33
Size	5/8	11/16	3/4	7/8	-	1	1 1/8	1 1/4
d1	17	19	21	23	25	28	31	34
d2	30	34	37	39	44	50	56	60
s	3	3	3	3	4	4	4	5

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M1.6	M10	M33
M2	M11	M36
M2.5	M12	M39
M2.6	M14	M42
M3	M16	M45
M4	M18	M48
M5	M20	M52
M6	M22	M56
1/4	M24	M60
M7	M27	M64
M8	M30	

PLAIN WASHER WITHOUT CHAMFER

Steel 140HV and Steel 140HV Zinc Plated



For nom. Size	M6	M8	M10	M12	M16
d1	6/4	8/4	10.5	13	17
d2	12	16	20	24	30
s	1.6	1.6	2	2.5	3

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M6	M10	M16
M8	M12	

PLAIN WASHER WITHOUT CHAMFER

Steel 200HV Zinc Plated, Stainless Steel & Black

For nom. Size	M6	M8	M10	M12	M14	M16	M18	M20	M24	M27	M30	M33	M36
d1	64/	84/	105/	13	15	17	19	21	25	28	31	34	37
d2	21	16	20	24	28	30	34	37	44	50	56	60	66
s	1.6	1.6	2	2.5	2.5	3	3	3	4	4	4	5	5

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M6	M16	M27
M8	M18	M30
M10	M20	M33
M12	M24	M36
M14		

PLAIN WASHER WITHOUT CHAMFER

Steel 200HV Zinc Plated, Stainless Steel & Black

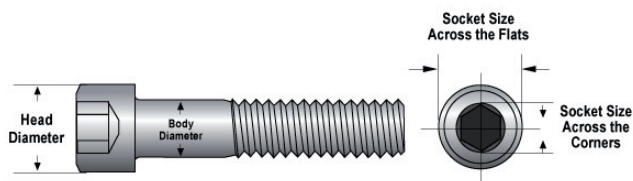
For nom. Size	M10	M12	M16	M20	M24	M27	M30	M33	M36
d1	10.5	13	17.5 (18)	22	26	30	33	34	39
d2	20	24	30	37	44	50	56	60	66
s	2	2.5	3	3	4	4	4	5	5

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M10	M20	M30
M12	M24	M33
M16	M27	M36

SQUARER WASHER for WOOD CONSTRUCTIONS

Steel Zinc Plated and Steel Hot Dip Galvanized



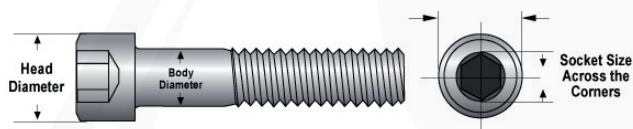
For nom.	M8	M10	M12	M16	M20	M22	M24	M27	M30
Size	5/16	3/8	1/2	5/8	3/4	7/8	1	-	1 1/8
d1	9	11	14	18	22	24	26	30	33
a	30	30	40	50	60	70	80	90	95
s	3	3	4	5	5	6	6	6	6

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M8	M10	M22
M10	M20	M24
M12		

SQUARE TAPER WASHER 8% for U SECTIONS

Steel Hot Dip Galvanized, Zinc Plated



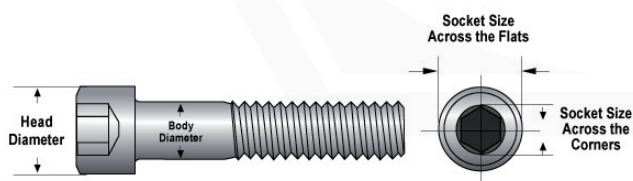
For nom.	M8	M10	M12	M16	M20	M22	M24	M27	M30	M33
Size	5/16	3/8	1/2	5/8	3/4	7/8	1	-	1 1/8	1 1/4
d	9	11	14	18	22	24	26	30	33	36
a	22	22	26	32	40	44	56	56	62	68
b	22	22	30	36	44	50	56	56	62	68
h	3.8	3.8	4.9	5.9	7	8	8.5	8.5	9	9

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M8	M20	M27
M10	M22	M30
M12	M24	M33
M16		

SQUARE TAPER WASHER .14% for U SECTIONS

Steel Hot Dip Galvanized, Zinc Plated



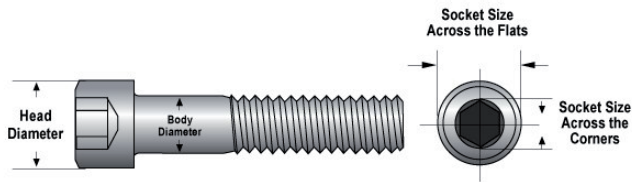
For nom.	M8	M10	M12	M16	M20	M22	M24	M27	M30	M33
Size	5/16	3/8	1/2	5/8	3/4	7/8	1	-	1 1/8	1 1/4
d	9	11	14	18	22	24	26	30	33	36
a	22	22	26	32	40	44	56	56	62	68
b	22	22	30	36	44	50	56	56	62	68
h	3.8	3.8	4.9	5.9	7	8	8.5	8.5	9	9

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M8	M20	M27
M10	M22	M30
M12	M24	M33
M16		

SQUARER WASHER for WOOD CONSTRUCTIONS

Steel Zinc Plated and Steel Hot Dip Galvanized



De (nom.) h12	8	10	12.5	14	16	18	20	22.5	25	28	31.5
D1 (H12)	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.2	12.2	14.2	16.3
t	0.4	0.5	0.7	0.8	0.9	1	1.1	1.25	1.5	1.5	1.75
Lo	0.6	0.75	1	1.1	1.25	1.4	1.55	1.75	2.05	2.15	2.45
F	210	329	673	813	1000	1250	1530	1950	2910	2850	3900

De (nom.) h12	35.5	40	45	50	56	63	71	80	90	100	112
D1 (H12)	18.3	20.4	22.4	25.4	28.5	31	36	41	46	51	57
t	2	2.25	2.5	3	3	3.5	4	5	5	6	6
Lo	2.8	3.15	3.5	4.1	4.3	4.9	5.6	6.7	7	8.2	8.5
F	5190	6450	7720	12000	11400	15000	20500	33700	31400	48000	43800

SIZE AVAILABLE

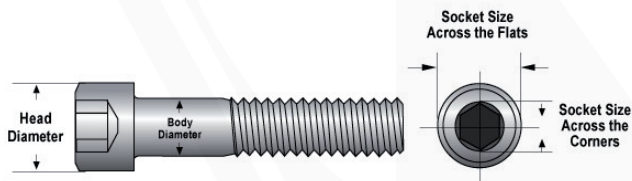
De x Di x t	De x Di x t	De x Di x t
8x4.2x0.4mm	25x12.2x1.5mm	56x28.5x3mm
10x5.2x0.5mm	28x14.2x1.5mm	63x31x3.5mm
12.5x6.2x0.7mm	33.1x16.3x1.75mm	71x36x4mm
14x7.2x0.8mm	35.5x18.3x2mm	80x41x5mm
16x8.2x0.9mm	40x20.4x2.25mm	90x46x5mm
18x9.2x1mm	45x22.4x2.5mm	100x51x6mm
20x10.2x1.1mm	50x25.4x3mm	112x57x6mm
22.5x11.2x1.25mm		

EXAMPLE of APPLICATION

SHOCK ABSORPTION

DISC SPRING – FOR CRITICAL APPLICATIONS

Type B (MEDIUM) – Steel Phosphated



De (nom.) h12	8	10	12.5	14	16	18	20	22.5	25	28	31.5
D1 (H12)	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.2	12.2	14.2	16.3
t	0.3	0.4	1.5	0.5	0.6	0.45	0.5	0.6	0.7	0.8	0.8
Lo	0.55	0.7	0.85	0.9	1.05	1.05	1.15	1.4	1.6	1.8	1.85
F	119	213	291	279	412	214	254	425	601	801	687

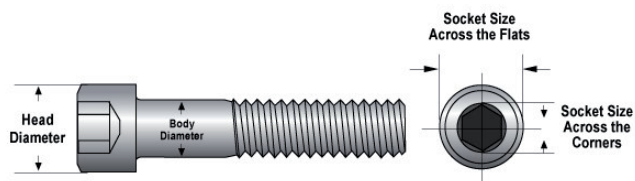
De (nom.) h12	35.5	40	45	50	56	63	71	80	90	100	112
D1 (H12)	18.3	20.4	22.4	25.4	28.5	31	36	41	46	51	57
t	1.25	1.5	1.75	2	2	2.5	2.5	3	3.5	3.5	4
Lo	2.25	2.65	3.05	3.4	3.6	4.25	4.5	5.3	6	6.3	6.9
F	1700	2620	3660	4760	4440	7180	6730	10500	14200	13100	17800

SIZE AVAILABLE

De x Di x t	De x Di x t	De x Di x t
8x4.2x0.3mm	25x12.2x0.9mm	56x28.5x3mm
10x5.2x0.4mm	28x14.2x1mm	63x31x2.5mm
12.5x6.2x0.5mm	31.5x16.3x12.5mm	71x36x2.5mm
14x7.2x0.5mm	35.5x18.3x1.25mm	80x41x3mm
16x8.2x0.6mm	40x20.4x1.5mm	90x46x3.5mm
18x9.2x0.7mm	45x22.4x1.75mm	100x51x3.5mm
20x10.2x0.8mm	50x25.4x2mm	112x57x4mm
22.5x11.2x0.8mm		

SQUARER WASHER for WOOD CONSTRUCTIONS

Steel Zinc Plated and Steel Hot Dip Galvanized



For nom. Size	M2	M2.3	M2.6	M3	M3.5	M4	M5	M6	-	M7	M8	-	M10
d1 (min.)	2.1	2.4	2.7	3.1	3.6	4.1	5.1	6.1	6.4	7.1	8.1	9.7	10.2
d2 (max.)	4.4	4.9	5.2	6.2	6.7	7.6	9.2	11.8	12.1	12.8	14.8	17.6	18.1
s	0.5	0.6	0.6	0.8	0.8	0.9	1.2	1.6	1.6	1.6	2	2.2	2.2

For nom. Size	M11	M12	-	M14	M16	M18	M20	M22	M24	-	M27	M30	M33
d1 (min.)	11.2	12.2	13	14.2	16.2	18.2	20.2	22.5	24.5	26.5	27.5	30.5	33.5
d2 (max.)	18.2	21.1	21.8	24.1	27.4	29.4	33.6	35.9	40	42.5	43	48.2	55.2
s	2.2	2.5	2.5	3	3.5	3.5	4	4	5	5	5	6	6

For nom. Size	M36	M39	M42	M45	M48	M52	M56	M60	M64	M68	M72	M76	M83
d1 (min.)	36.5	39.5	42.5	45.5	49	53	57	61	65	69	73	77	33.5
d2 (max.)	58.2	61.2	68.2	71.2	75	83	87	91	95	99	103	107	55.2
s	6	6	7	7	7	8	8	8	8	8	8	8	6

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M2	M11	M36
M2.3	M12	M36
M2.6	1/2	M42
M3	M14	M45
M3.5	M16	M48
M4	M18	M52
M5	M20	M56
M6	M22	M60
1/4	M24	M64
M7	1 IN.	M68
M8	M27	M72
3/8 precise	M30	M76
M10	M33	

SQUARER WASHER for WOOD CONSTRUCTIONS

Steel Zinc Plated and Steel Hot Dip Galvanized

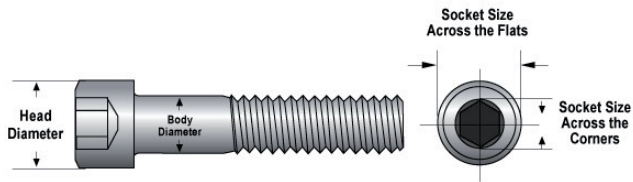
For nom. Size	M3	M4	M5	M6	M7	M8	M10	M12	-	M7	M8	-	M10
d1 (min.)	3.1	4.1	5.1	6.1	7.1	8.1	10.2	12.2	6.4	7.1	8.1	9.7	10.2
d2 (max.)	6.2	7.6	9.2	11.8	12.8	14.8	18.1	21.1	12.1	12.8	14.8	17.6	18.1
S	0.8	0.9	1.2	1.6	1.6	2	2.2	2.5	1.6	1.6	2	2.2	2.2

For nom. Size	M14	M16	M18	M20	M22	M24	M27	M30	M24	-	M27	M30	M33
d1 (min.)	14.2	16.2	18.2	20.2	22.5	24.5	27.5	30.5	24.5	26.5	27.5	30.5	33.5
d2 (max.)	24.1	27.4	29.4	33.6	35.9	40	43	48.2	40	42.5	43	48.2	55.2
s	3	3.5	3.5	4	4	5	5	6	5	5	5	6	6

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M3	M8	M18
M4	M10	M20
M5	M12	M22
	M14	M24
M6		
M7	M16	M27
		M30

TOOTHED LOCK WASHER EXTERNAL TEETH STEEL, ZINC PLATED

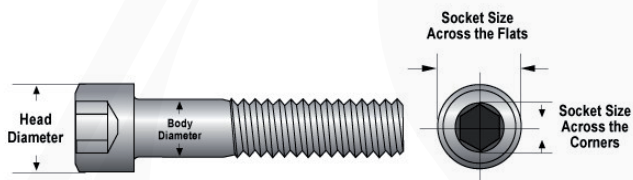


For nom. Size	M3	M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
d1	4.1	4.3	5.3	6.4	8.4	10.5	13	15	17	21	25
d2	10	8	10	11	15	18	20.5	24	26	33	38
s	0.9	0.5	0.6	0.7	0.8	0.9	1	1	1.2	1.4	1.5

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size	For nom. Size
M3	M6	M12	M20
M4	M8	M14	M24
M5	M10	M16	

TOOTHED LOCK WASHER INTERNAL TEETH STEEL, ZINC PLATED

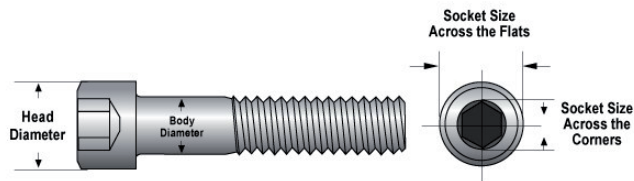


For nom. Size	M3	M4	M5	M6	M8	M10	M12	M16	-	M20
Size	-	-	-	-	-	-	-	-	3/4 precise	-
d1	3.2	4.3	5.3	6.4	8.4	10.5	13	17	20	21
d2	6	8	10	11	15	18	20.5	26	32	33
s	0.4	0.5	0.6	0.7	0.8	0.9	1	1.2	1.4	1.4

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size	For nom. Size
M3	M6	M12	M20
M4	M8	34/ precise	
M5	M10	M16	

TOOTHED LOCK WASHER EXTERNAL TEETH STEEL, ZINC PLATED



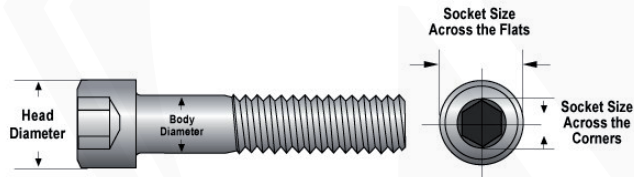
For nom. Size	M2	M3	M3.5	M4	M4.5	M5	M6	M7	M8 4	M8
d1	2.2(2.05)	3.2	3.7	4.3	5.1	5.3	6.4	7.4	8.2	8.4
d2	4.5	6	7	8	9	10	11	12.5	14	15
S1	0.3	0.4	0.5	0.5	0.5	0.6	0.7	0.8	0.8	0.8

For nom. Size	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
d1	10.5	13	15(14.5)	17(16.5) 3	19	21	23	25	28	31
d2	18	20.5	24	26	30	33	36	38	44	48
S1	0.9	1	1	1.2	1.4	1.4	1.5	1.5	1.6	1.6

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size	For nom. Size	For nom. Size
M2	M5	M8	M14	M22
M3	M5	M8	M16	M24
M3.5	M6	M10	M18	M27
M4	M7	M12	M20	M30

SERRATED LOCK WASHER INTERNAL TEETH - STEEL and STEEL ZINC PLATED, YELLOW PASSIVATED



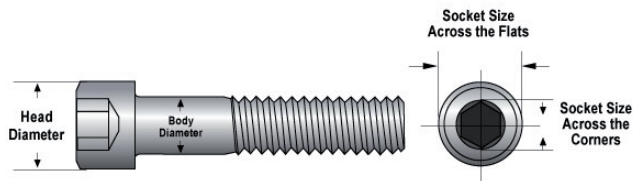
For nom. Size	M2	M2.5	-	M3	M3.5	M4	M5	M6	M7	M8 4	M8
d1	2.2(2.05)	2.7(2.55)	2.9	3.2	3.7	4.3	5.3	6.4	7.4	8.2	8.4
d2	4.5	5.5	5.7	6	7	8	10	11	12.5	14	15
S	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.8	0.8

For nom. Size	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M33
d1	10.5	12.5	15	17	19	21	23	25	28	31	33.3
d2	18	20.5	14	26	30	33	36	38	44	48	49.9
S	0.9	1	1.1	1.2	1.4	1.4	1.5	1.5	1.6	1.6	1.8

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size	For nom. Size	For nom. Size
M2	M4	M8 (8.2mm)	M18	1 in
M2.5	M5 (5.1mm)	M10	M20	M27
7/64	M5 (5.3mm)	M12	M22	M30
M3	M6	M14	M24	M33
M3.5	M7	M16		
M4	M7	M12	M20	M30

DOUBLE SERRATED LOCK WASHER STEEL ZINC PLATED

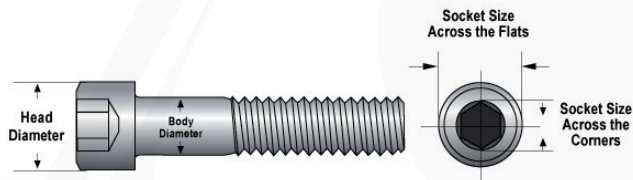


For nom. Size	M3	M4	M5	M6	M8	M10	M12	M14	M16
d1	3.2	4.2	5.2	6.2	8.2	10.3	12.3	14.2	16.5
d2	12.4	15.6	17.9	18.2	22.3	26.1	30.3	33.7	36.1
S	0.5	0.8	0.8	0.8	1	1.1	1.2	1.4	1.4

SIZE AVAILABLE

For nom. Size	For nom. Size	For nom. Size
M3	M6	M12
M4	M8	M14
M5	M10	M16

RETAINING RINGS for BORES - NORMAL TYPE - STEEL



Nom. Size bore d1	8	9	10	11	12	13	14	15	16	17	18	19	20	21
ring	s	0.8	0.8	1	1	1	1	1	1	1	1	1	1	1
	d3	8.7	9.8	10.8	11.8	13	14.1	15.1	16.2	17.3	18.3	19.5	20.5	21.5
	d4	3	3.7	3.3	4.1	4.9	5.4	6.2	7.2	8	8.8	9.4	10.4	11.2
groove	d2	8.4	9.4	10.4	11.4	12.5	13.6	14.6	15.7	16.8	17.8	19	20	21
	m (H13)	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	n (min.)	0.6	0.6	0.6	0.6	0.8	0.9	0.9	1.1	1.2	1.2	1.5	1.5	1.5
nr. Of pillar acc. To DIN 5256		8	8	8	8	8	8	8	8	8	8	19	19	19

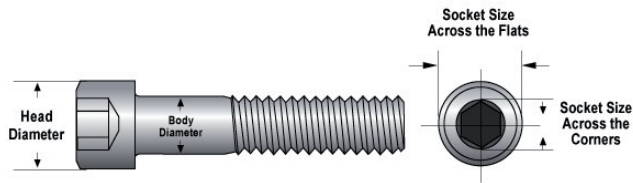
Nom. Size bore d1	22	23	24	25	26	27	28	29	30	31	32	33	34	35
ring	s	1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5
	d3	23.5	24.6	25.9	26.9	27.9	29.1	30.1	31.1	32.1	33.4	34.4	35.5	36.5
	d4	13.2	15.4	14.8	15.5	16.1	18.2	17.9	19.6	19.9	20	20.6	22.2	22.6
groove	d2	23	24.1	25.2	26.2	27.2	28.4	29.4	30.4	31.4	32.7	33.7	34.7	35.7
	m (H13)	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.6	1.6
	n (min.)	1.5	1.7	1.8	1.8	1.8	2.1	2.1	2.1	2.1	2.6	2.6	2.6	3
nr. Of pillar acc. To DIN 5256		19	19	19	19	19	19	19	19	19	19	19	19	19

Nom. Size bore d1	36	37	38	39	40	41	42	43	44	45	46	47	48	50
ring	s	1.5	1.5	1.5	1.5	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	2
	d3	38.8	39.8	40.8	42	43.5	44.5	45.5	46.5	47.5	48.5	49.5	50.5	51.5
	d4	24.6	25.4	26.4	28.6	27.8	29	29.6	-	32	32	34.6	33.5	34.5
groove	d2	38	39	40	41	42.5	43.5	44.5	45.5	46.5	47.5	48.5	49.5	50.5
	m (H13)	1.6	1.6	1.6	1.6	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	2.15
	n (min.)	3	3	3	3	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	4.5
nr. Of pillar acc. To DIN 5256		19	19	19	40	40	40	40	40	40	40	40	40	40

SIZE AVAILABLE

d1	d1	d1	d1	d1
8mm	16mm	25mm	34mm	43mm
9mm	17mm	26mm	35mm	44mm
	18mm	27mm	36mm	45mm
10mm	19mm	28mm	37mm	46mm
11mm	20mm	29mm	38mm	47mm
12mm	21mm	30mm	39mm	48mm
13mm	22mm	31mm	40mm	49mm
14mm	23mm	32mm	41mm	
15mm	24mm	33mm	42mm	50mm

RETAINING RINGS for BORES – NORMAL TYPE – STEEL



Nom. Size bore d1		52	53	54	55	56	57	58	60	62	63	64	65	67	68
ring	s	2	2	2	2	2	2	2	2	2	2	2.5	2.5	2.5	2.5
	d3	56.2	57.2	58.2	59.2	60.2	61.2	62.2	64.2	66.2	67.2	68.2	69.2	71.5	72.5
	d4	37.9	40	41	40.7	41.7	44	43.5	44.7	47.7	47.7	48.7	49	52	51.6
groove	d2	55	56	57	58	59	60	61	63	66	66	67	68	70	71
	m (H13)	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.65	2.65	2.65
	n (min.)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
nr. Of pillar acc. To DIN 5256		40	40	40	40	40	40	40	40	40	40	40	40	40	40

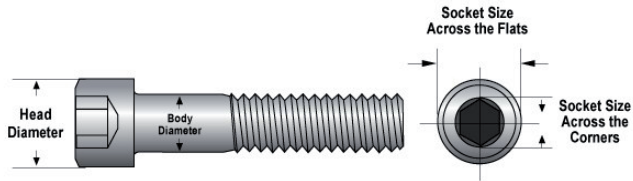
Nom. Size bore d1		70	72	75	77	78	80	82	85	87	88	90	92	95	97
ring	s	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3	3	3	3	3	3	3
	d3	74.5	76.5	79.5	81.5	82.5	85.5	87.5	90.5	92.5	93.5	95.5	97.5	100.5	102.5
	d4	53.6	55.6	58.6	62	60.1	62.1	64.1	66.9	69.8	69.9	71.9	73.3	76.5	79.4
groove	d2	73	75	78	80	81	83.5	85.5	88.5	90.5	91.5	93.5	95.5	98.5	100.5
	m (H13)	2.65	2.65	2.65	2.65	2.65	2.65	2.65	3.15	3.15	3.15	3.15	3.15	3.15	3.15
	n (min.)	4.5	4.5	4.5	4.5	4.5	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
nr. Of pillar acc. To DIN 5256		40	40	40	40	40	40	40	85	85	85	85	85	85	85

Nom. Size bore d1		98	100	102	105	108	110	112	115	117	120	125	130	135	140
ring	s	3	3	4	4	4	4	4	4	4	4	4	4	4	4
	d3	103.5	105.5	108	112	115	117	119	122	124	127	132	137	142	147
	d4	79	80.6	82	85	88	88.2	90	93	97	96.9	101.9	106.9	111.5	116.5
groove	d2	101.5	103.5	106	109	112	114	116	119	121	124	129	134	139	144
	m (H13)	3.15	3.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
	n (min.)	5.3	5.3	6	6	6	6	6	6	6	6	6	6	6	6
nr. Of pillar acc. To DIN 5256		85	85	85	85	85	85	85	85	85	85	125	125	125	125

SIZE AVAILABLE

d1	d1	d1	d1	d1
52mm	63mm	78mm	97mm	115mm
53mm	64mm	80mm	98mm	117mm
54mm	65mm	82mm		120mm
55mm	67mm	85mm	100mm	125mm
		87mm	102mm	
56mm	68mm	88mm	105mm	130mm
57mm	70mm		108mm	135mm
58mm	72mm	90mm		140mm
60mm	75mm	92mm	110mm	
62mm	77mm	95mm	112mm	

RETAINING RINGS for BORES – NORMAL TYPE – STEEL



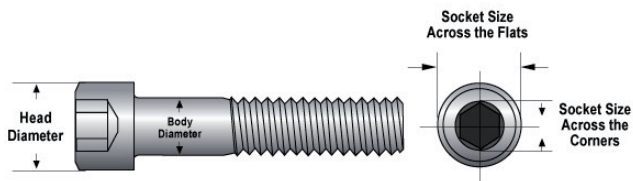
Nom. Size bore d1		145	150	155	158	160	170	172	175	180	185	188	190	192	195
ring	s	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d3	152	158	164	167	169	179.5	181.5	184.5	189.5	194.5	197.5	199.5	201.5	204.5
	d4	121	124.8	129.8	134	132.7	141.6	-	146.6	150.2	155.2	-	160.2	162.2	165.2
groove	d2	149	155	160	163	165	175	177	180	185	190	193	195	197	200
	m (H13)	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
	n (min.)	6	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
nr. Of pillar acc. To DIN 5256		125	125	125	125	125	125	125	125	125	125	125	125	125	125

Nom. Size bore d1		200	202	210	215	220	230	240	250	260	275	280	290	300
ring	s	4	5	5	5	5	5	5	5	5	5	5	5	5
	d3	209.5	214	222	227	232	242	252	262	275	290	295	305	315
	d4	170.2	-	180.2	-	190.2	200.2	210.2	220.2	226	241	246	256	266
groove	d2	205	208	216	221	226	236	246	256	268	283	288	298	308
	m (H13)	4.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15
	n (min.)	7.5	9	9	9	9	9	9	9	12	12	12	12	12
nr. Of pillar acc. To DIN 5256		125	125	125	125	125	125	125	125	125	125	125	125	125

SIZE AVAILABLE

d1	d1	d1	d1	d1
145mm	170mm	188mm	210mm	260mm
150mm		190mm	215mm	275mm
	172mm	192mm		
155mm	175mm	195mm	220mm	280mm
158mm			230mm	290mm
	180mm	200mm	240mm	
160mm	185mm	202mm	250mm	300mm

RETAINING RINGS for BORES – NORMAL TYPE – STEEL



Nom. Size bore d1		4	5	6	7	8	9	10	11	12	13	14	15	16
ring	s	0.4	0.6	0.7	0.8	0.8	1	1	1	1	1	1	1	1
	d3	3.7	4.7	5.6	6.5	7.4	8.4	9.3	10.2	11	11.9	12.9	13.8	14.7
	d4	8.6	10.3	11.7	13.5	14.7	16	17	18	19	20.2	21.4	22.6	23.8
groove	d2	3.8	4.8	5.7	6.7	7.6	8.6	9.6	10.5	11.5	12.4	13.4	14.3	15.2
	m (H13)	0.5	0.7	0.8	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	n (min.)	0.3	0.3	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.9	0.9	1.1	1.2
nr. Of pillar acc. To DIN 5256		3	3	3	3	3	3	10	10	10	10	10	10	10

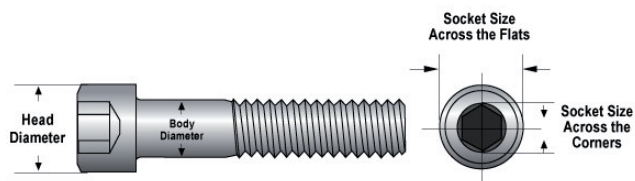
Nom. Size bore d1		17	18	19	20	21	22	23	24	25	26	27	28	29
ring	s	1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5
	d3	15.7	16.5	17.5	18.5	19.5	20.5	21.5	22.2	23.2	24.2	24.9	25.9	26.9
	d4	25	26.2	27.2	28.4	29.6	30.8	31	33.2	34.2	35.5	35.4	37.9	39.1
groove	d2	16.2	17	18	19	20	21	22	22.9	23.9	24.6	25.9	26.6	27.6
	m (H13)	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.6	1.6
	n (min.)	1.2	1.5	1.5	1.5	1.5	1.5	1.5	1.7	1.7	1.7	2.1	2.1	2.1
nr. Of pillar acc. To DIN 5256		10	10	19	19	19	19	19	19	19	19	19	19	19

Nom. Size bore d1		30	31	32	33	34	35	36	37	38	39	40	42	44
ring	s	1.5	1.5	1.5	1.5	1.5	1.5	1.75	1.75	1.75	1.75	1.75	1.75	1.75
	d3	27.9	28.6	29.6	30.5	31.5	32.2	33.2	34.2	35.2	36	36.5	38.5	40.5
	d4	40.5	40.3	43	43.4	45.4	46.8	47.8	48	50.2	50.2	52.6	55.7	56
groove	d2	28.6	29.3	30.3	31.3	32.3	33	34	35	36	37	37.5	39.5	41.5
	m (H13)	1.6	1.6	1.6	1.6	1.6	1.6	1.85	1.85	1.85	1.85	1.85	1.85	1.85
	n (min.)	2.1	2.6	2.6	2.6	2.6	3	3	3	3	3	3.8	3.8	3.8
nr. Of pillar acc. To DIN 5256		19	19	19	19	19	19	19	19	19	40	40	40	40

SIZE AVAILABLE

d1	d1	d1	d1
4mm	14mm	24mm	35mm
5mm	15mm	25mm	36mm
6mm	16mm	27mm	37mm
7mm	17mm	28mm	38mm
	18mm	29mm	39mm
8mm	19mm		
9mm		30mm	40mm
10mm	20mm	31mm	41mm
11mm	21mm	32mm	42mm
12mm	22mm	33mm	44mm
13mm	23mm	34mm	

RETAINING RINGS for BORES – NORMAL TYPE – STEEL



Nom. Size bore d1		45	47	48	50	52	54	55	56	57	58	60	62	63
ring	s	1.75	1.75	1.75	2	2	2	2	2	2	2	2	2	2
	d3	41.5	43.5	44.5	45.8	47.8	49.8	50.8	51.8	52.8	53.8	55.8	57.8	58.8
	d4	59.1	58.5	62.5	64.5	66.7	67	70.2	71.6	70	73.6	75.6	77.8	79
groove	d2	42.5	44.5	45.5	47	49	51	52	53	54	55	57	59	60
	m (H13)	1.85	1.85	1.85	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
	n (min.)	3.8	3.8	3.8	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
nr. Of pillar acc. To DIN 5256		40	40	40	40	40	40	40	40	40	40	40	40	40

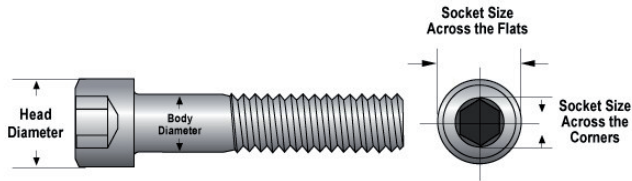
Nom. Size bore d1		65	67	68	70	72	75	77	78	80	82	85	87	88
ring	s	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3	3	3
	d3	60.8	62.5	63.5	65.5	67.5	70.5	72.5	73.5	74.5	76.5	79.5	81.5	82.5
	d4	81.4	82	84.8	87	89.2	92.7	94	96.1	98.1	100.3	103.3	104	106.5
groove	d2	62	64	65	67	69	72	74	75	76.5	78.5	81.5	83.5	84.5
	m (H13)	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	3.15	3.15	3.15
	n (min.)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.3	5.3	5.3	5.3	5.3
nr. Of pillar acc. To DIN 5256		40	40	40	40	40	40	40	40	40	40	85	85	85

Nom. Size bore d1		90	92	95	97	98	100	105	110	115	120	125	130	135
ring	s	3	3	3	3	3	3	4	4	4	4	4	4	4
	d3	84.5	86.5	89.5	91.5	92.5	94.5	98	108	108	113	118	123	128
	d4	108.5	111	114.8	116	117	120.2	125.8	131.2	137.3	143.1	149	154.4	159.8
groove	d2	86.5	88.5	91.5	93.5	94.5	96.5	101	106	111	116	121	126	131
	m (H13)	3.15	3.15	3.15	3.15	3.15	3.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
	n (min.)	5.3	5.3	5.3	5.3	5.3	5.3	6	6	6	6	6	6	6
nr. Of pillar acc. To DIN 5256		85	85	85	85	85	85	85	85	85	85	125	125	125

SIZE AVAILABLE

d1	d1	d1	d1
45mm	60mm	78mm	98mm
47mm	62mm	80mm	100mm
48mm	63mm	82mm	105mm
50mm	65mm	85mm	110mm
	67mm	87mm	115mm
52mm	68mm	88mm	120mm
54mm			125mm
55mm	70mm	90mm	
56mm	72mm	92mm	130mm
57mm	75mm	95mm	135mm
58mm	77mm	97mm	

RETAINING RINGS for BORES – NORMAL TYPE – STEEL



Nom. size groove d2		1.2	1.5	1.9	2.3	3.2	4	5	6	7	8	9	10	12	15	19	24
Range shaft diameter di	from	1.4	2	2.5	3	4	5	6	7	8	9	10	11	13	16	20	25
	tilt	2	2.5	3	4	5	7	8	9	11	12	14	15	18	24	31	38
ring	s	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.9	1	1.1	1.2	1.3	1.5	1.75	2
	a	1.01	1.28	1.61	1.94	1.94	4.34	4.11	5.26	5.84	6.52	7.63	8.32	10.45	12.61	15.92	21.88
	d3 (max)	3.25	4.25	4.8	6.3	6.3	9.3	11.3	12.3	14.3	16.3	18.8	20.4	23.4	29.4	37.6	44.6
groove	m	0.34	0.44	0.54	0.64	0.64	0.74	0.74	0.74	0.94	1.05	1.15	1.25	1.35	1.55	1.8	2.05
	n (min.)	0.6	0.8	1	1	1	1.2	1.2	1.2	1.5	1.8	2	2	2.5	3	3.5	4

SIZE AVAILABLE

d2	d2	d2	d2
1.2mm	3.2mm	7mm	12mm
1.5mm	4mm	8mm	15mm
1.9mm	5mm	9mm	19mm
2.3mm	6mm	10mm	24mm

DOUBLE SERRATED LOCK WASHER

STEEL ZINC PLATED

CHEMICAL COMPOSITON

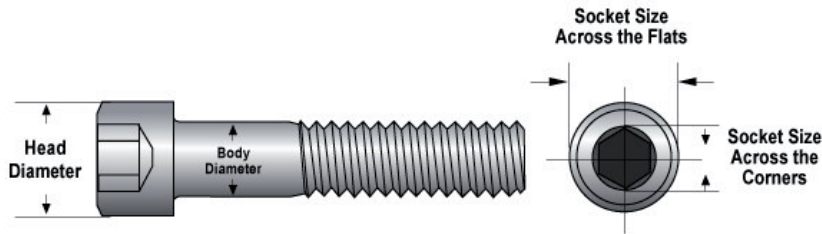
Standard	Grade	Most important elements			Corresponding materials			
		C	Cr	Mo	Germany		United Kingdom	France
					DIN	Werkst.nr.		
ASTM A 193	B7	0.37-0.49	0.75-1.20	0.15-0.25	42CrMo4	1.723	1506-621GrH	42 CD 4
ASTM A 194	2H	min. 0.4	-	-	C 45	1.050	1506-162	C45d

MECHANICAL PROPERTIES

Grade		Tensile strength min.	0.2% Yield strength min.	Elongation min. %	Contraction min. %	Hardness		Tempering temp. min. C
						HB	HRC	
B7	N/mm2	860	720	16	50	-	-	593
	psi	125000	105000			-	-	
2H	max.	-	-	-	-	352	38	-
	min.	-	-			248	24	

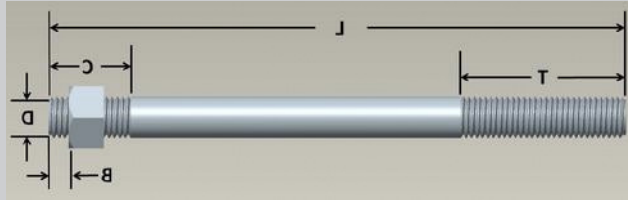
PLAIN WASHER WITHOUT CHAMFER

Steel 140HV and Steel 140HV Zinc Plated



SIZE Dia. x Pitch	Din 975 4.6 Steel	Din 975 ZP 4.6 Steel Zinc	Din 975 8.8 8.8 Steel	Din 975 B7 A193-B7 Steel	Din 975 10 10.9 Steel	Din 975 L 4.6 Steel Left Hand	Din 975 A2 304 Stain- less	Din 975 A4 316 Stain- less	Din 975 BR Brass	Din 975 PL 6.6 Plastic	Din 975 AL Aluminum	Weight/lb Per Meter Steel & Stainless
2 x .4	y	y	-	-	-	-	y	y	y	-	-	-
2.5 x .45	y	y	-	-	-	-	y	y	y	-	-	-
2.6 x .45	y	-	-	-	-	-	-	-	-	-	-	-
3 x .5	y	y	-	-	-	-	y	y	y	-	-	-
3.5 x .6	y	y	-	-	-	-	-	-	-	-	-	.10
4 x .7	y	y	y	y	-	y	y	y	y	y	-	.15
4 x .8	y	y	y	y	-	y	y	y	y	y	-	.20
6 x 1	y	y	y	y	y	y	y	y	y	y	-	.40
7 x 1	y	-	-	-	-	-	-	-	-	-	-	.60
8 x 1.25	y	y	y	y	y	y	y	y	y	y	-	.70
8 x 1	y	y	-	y	-	-	y	-	-	-	-	-
10 x 1.5	y	y	y	y	y	y	y	y	y	y	-	1
10 x 1.25	y	y	-	y	-	-	y	-	-	-	-	-
10 x 1	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1.75	y	y	y	y	y	y	y	y	y	y	-	1.5
y12 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1.25	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1	y	-	-	y	-	-	-	-	-	-	-	-
14 x 2	y	y	y	y	y	y	y	y	y	-	-	2
14 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
16 x 2	y	y	y	y	y	y	y	y	y	y	-	3
16 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
18 x 2.5	y	y	y	y	y	-	y	y	y	-	-	3.5
18 x 2	y	-	-	-	-	-	-	-	-	-	-	-
18 x 1.5	y	-	-	y	-	-	y	-	-	-	-	-
20 x 2.5	y	y	y	y	y	y	y	y	y	y	-	4.5
20 x 2	y	-	-	-	-	-	-	-	-	-	-	-
20 x 1.5	y	-	-	y	-	y	y	-	-	-	-	-
22 x 2.5	y	y	y	y	y	-	y	-	-	-	-	5.5
22 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
24 x 3	y	y	y	y	y	-	y	y	y	-	-	6.5
24 x 2	y	-	-	y	-	y	-	-	-	-	-	-
24 x 1.5	y	-	-	y	-	-	y	-	-	-	-	-
27 x 3	y	y	y	y	-	-	y	y	y	-	-	8.5
27 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
30 x 3.5	y	y	y	y	y	-	y	y	y	-	-	10.5
30 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
33 x 3.5	y	-	-	y	-	-	y	y	y	-	-	13
36 x 4	y	y	y	y	-	-	y	y	y	-	-	15
39 x 4	y	-	-	-	-	-	-	-	-	-	-	18
24 x 4.5	y	-	-	y	-	-	-	-	-	-	-	21
45 x 4.5	y	-	-	y	-	-	-	-	-	-	-	24
48 x 5	y	-	-	-	-	-	-	-	-	-	-	27
52 x 5	y	-	-	-	-	-	-	-	-	-	-	-
56 x 5.5	y	-	-	-	-	-	-	-	-	-	-	32

y" means stock availability"



SPECIAL ANCHOR BOLTS

SPECIAL ANCHOR BOLTS

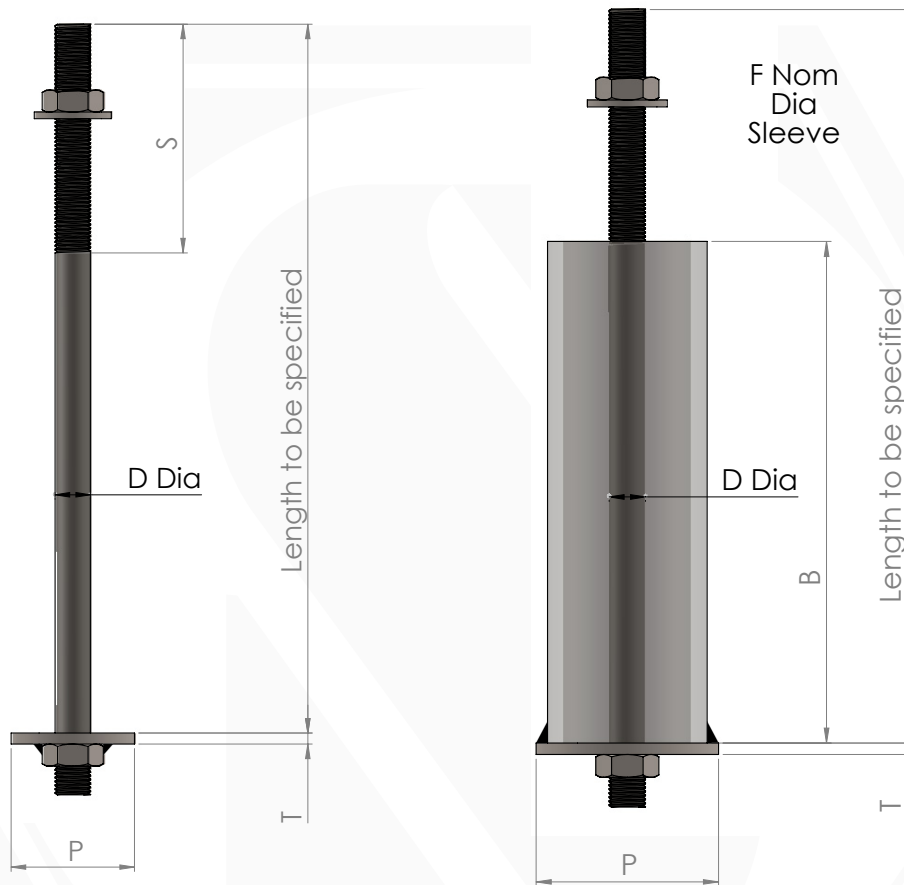
ASTM A36/A36M

ASTM F1554, GR. 36 HDG

ASTM A193/A193M

ASTM F105, GR. 105 HDG

تصنيع المقاسات حسب الطلب



Nominal size and thread diameter d	Pitch of thread P	Diameter of unthreaded shank d		Width across flats S		Width across corner		Diameter of washer face d1		Depth of washer face c		Radius under head r		Transition diameter d1		Thickness of head K	
	(Coarse pitch series)	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
M 12	1.75	12.70	11.30	22	21.16	21.16	23.70	22	19.91	0.4	1.00	0.6	14.7	8.45	7.55		
M 16	2.0	16.70	15.30	27	25.16	31.2	29.30	27	24.91	0.4	1.00	0.6	18.7	10.45	9.55		
M 20	2.5	20.84	19.16	32	31.00	34.9	35.03	32	20.75	0.4	1.20	0.8	23.24	13.90	12.10		
M 22	2.5	22.84	21.16	36	35.00	41.6	30.55	36	33.75	0.4	1.20	0.8	25.24	14.90	13.10		
M 24	3.0	24.84	23.16	41	40.00	47.3	45.20	41	38.75	0.5	1.20	0.8	27.24	15.90	14.10		
M 27	3.0	27.84	26.16	46	15.00	53.1	50.85	46	43.75	0.5	1.50	1.0	30.84	17.90	16.10		
M 30	3.5	30.84	29.16	50	49.00	57.7	56.37	50	47.75	0.5	1.50	1.0	33.84		17.95		
M 36	4.0	37.00	35.00	60	58.80	69.3	66.44	60	57.75	0.5	1.50	1.0	40.00		21.95		

SPECIAL ANCHOR BOLTS

ASTM A36/A36M

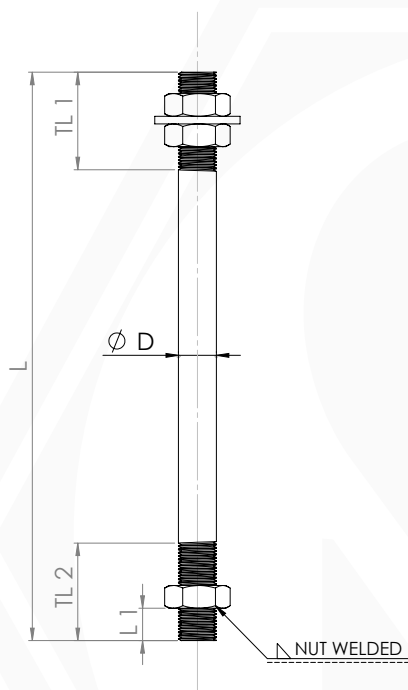
ASTM F1554, GR. 36 HDG

ASTM A193/A193M

ASTM F105, GR. 105 HDG

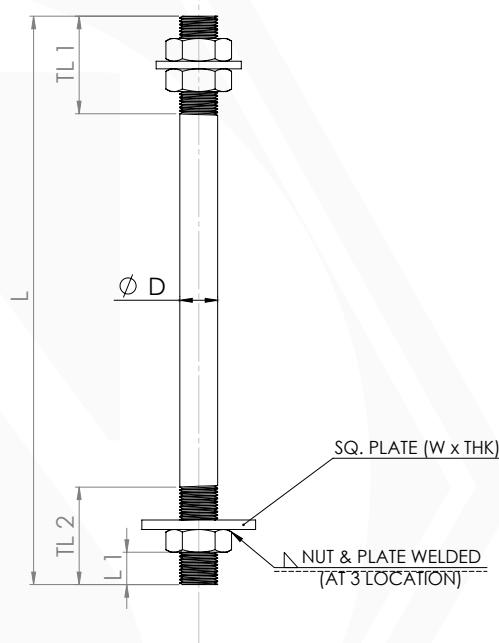
تصنيع المقاسات حسب الطلب

NUT WELDED
ANCHOR BOLT



Ordering information
D x L x TL1 x TL2 x L1

NUT & PLATE WELDED
ANCHOR BOLT



Ordering information
D x L x TL1 x TL2 x L1- W x THK

Nominal size and thread diameter d	Pitch of thread P	Diameter of unthreaded shank d		Width across flats S		Width across corner		Diameter of washer face d1		Depth of washer face c		Radius under head r		Transition diameter d1		Thickness of head K	
	(Coarse pitch series)	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
M 12	1.75	12.70	11.30	22	21.16	21.16	23.70	22	19.91	0.4	1.00	0.6	14.7	8.45	7.55		
M 16	2.0	16.70	15.30	27	25.16	31.2	29.30	27	24.91	0.4	1.00	0.6	18.7	10.45	9.55		
M 20	2.5	20.84	19.16	32	31.00	34.9	35.03	32	20.75	0.4	1.20	0.8	23.24	13.90	12.10		
M 22	2.5	22.84	21.16	36	35.00	41.6	30.55	36	33.75	0.4	1.20	0.8	25.24	14.90	13.10		
M 24	3.0	24.84	23.16	41	40.00	47.3	45.20	41	38.75	0.5	1.20	0.8	27.24	15.90	14.10		
M 27	3.0	27.84	26.16	46	45.00	53.1	50.85	46	43.75	0.5	1.50	1.0	30.84	17.90	16.10		
M 30	3.5	30.84	29.16	50	49.00	57.7	56.37	50	47.75	0.5	1.50	1.0	33.84		17.95		
M 36	4.0	37.00	35.00	60	58.80	69.3	66.44	60	57.75	0.5	1.50	1.0	40.00		21.95		

SPECIAL ANCHOR BOLTS

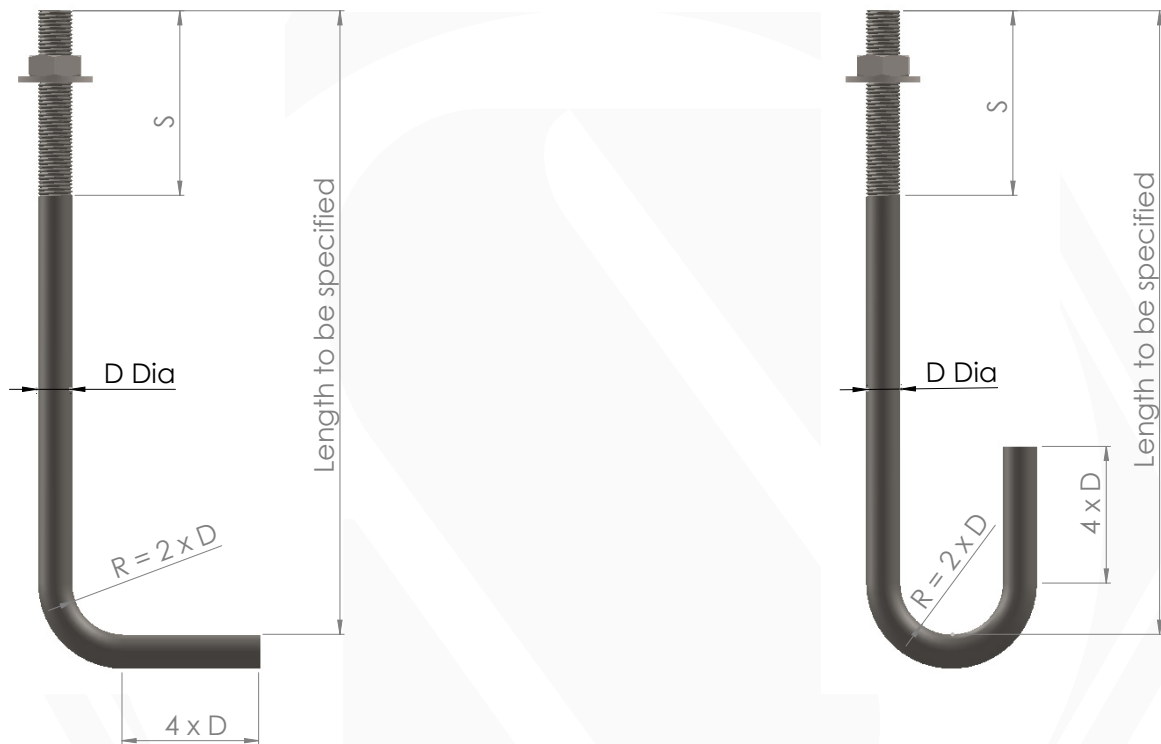
ASTM A36/A36M

ASTM F1554, GR. 36 HDG

ASTM A193/A193M

ASTM F105, GR. 105 HDG

تصنيع المقاسات حسب الطلب



Nominal size and thread diameter d	Pitch of thread P	Diameter of unbreaded shank d		Width across flats S		Width across corner		Diameter of washer face d1		Depth of washer face c	Radius under head r		Transition diameter d1	Thickness of head K	
	(Coarse pitch series)	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
M 12	1.75	12.70	11.30	22	21.16	21.16	23.70	22	19.91	0.4	1.00	0.6	14.7	8.45	7.55
M 16	2.0	16.70	15.30	27	25.16	31.2	29.30	27	24.91	0.4	1.00	0.6	18.7	10.45	9.55
M 20	2.5	20.84	19.16	32	31.00	34.9	35.03	32	20.75	0.4	1.20	0.8	23.24	13.90	12.10
M 22	2.5	22.84	21.16	36	35.00	41.6	30.55	36	33.75	0.4	1.20	0.8	25.24	14.90	13.10
M 24	3.0	24.84	23.16	41	40.00	47.3	45.20	41	38.75	0.5	1.20	0.8	27.24	15.90	14.10
M 27	3.0	27.84	26.16	46	15.00	53.1	50.85	46	43.75	0.5	1.50	1.0	30.84	17.90	16.10
M 30	3.5	30.84	29.16	50	49.00	57.7	56.37	50	47.75	0.5	1.50	1.0	33.84		17.95
M 36	4.0	37.00	35.00	60	58.80	69.3	66.44	60	57.75	0.5	1.50	1.0	40.00		21.95

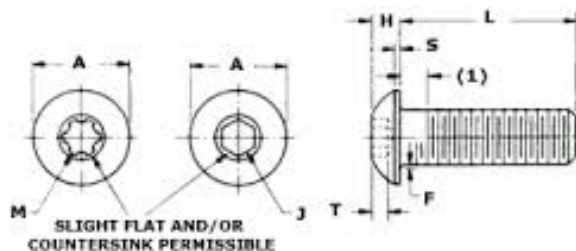




**SOCKET
HEAD**

HEXAGONAL SOCKET BUTTON HEAD CAP SCREWS

Steel 241 and Steel Zinc Plated – Full Threaded Steel



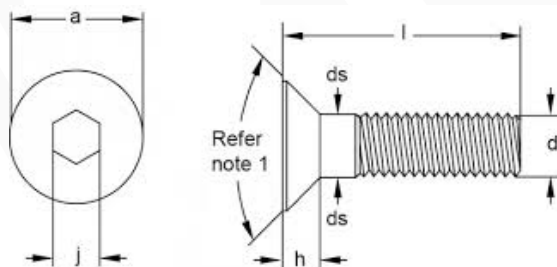
d1	M3	M4	M5	M6	M8	M10	M12	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2
dk	5.7	7.6	9.5	10.6	14	17.5	21	2.8
h	1.65	2.2	2.75	3.3	4.4	5.5	6.6	8.8
d2	2	2.5	3	4	5	6	8	10

SIZE AVAILABLE

d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l
M3 x 5	M4 x 10	M5 x 10	M6 x 8	M6 x 55	M8 x 40	M10 x 35	M12 x 35	M16 x 30
M3 x 6	M4 x 12	M5 x 12	M6 x 10	M6 x 60	M8 x 45	M10 x 40	M12 x 40	M16 x 35
M3 x 8	M4 x 16	M5 x 16	M6 x 12		M8 x 50	M10 x 45	M12 x 45	M16 x 40
M3 x 10	M4 x 20	M5 x 20	M6 x 16	M8 x 8	M8 x 55	M10 x 50	M12 x 50	M16 x 45
M3 x 12	M4 x 25	M5 x 25	M6 x 20	M8 x 10	M8 x 60	M10 x 55	M12 x 55	M16 x 60
M3 x 16	M4 x 30	M5 x 30	M6 x 25	M8 x 12		M10 x 60	M12 x 60	M16 x 70
M3 x 20	M4 x 35	M5 x 35	M6 x 30	M8 x 16	M10 x 12		M12 x 70	M16 x 80
M3 x 25	M4 x 40	M5 x 40	M6 x 35	M8 x 20	M10 x 16	M12 x 16	M12 x 80	
		M5 x 45	M6 x 40	M8 x 25	M10 x 20	M12 x 20		
M4 x 6	M5 x 6		M6 x 45	M8 x 30	M10 x 25	M12 x 25		
M4 x 8	M5 x 8	M6 x 6	M6 x 50	M8 x 35	M10 x 30	M12 x 30		

HEXAGONAL SOCKET COUNTERSUNK HEAD SCREW

Half Threaded Steel – Steel, Zinc Plated



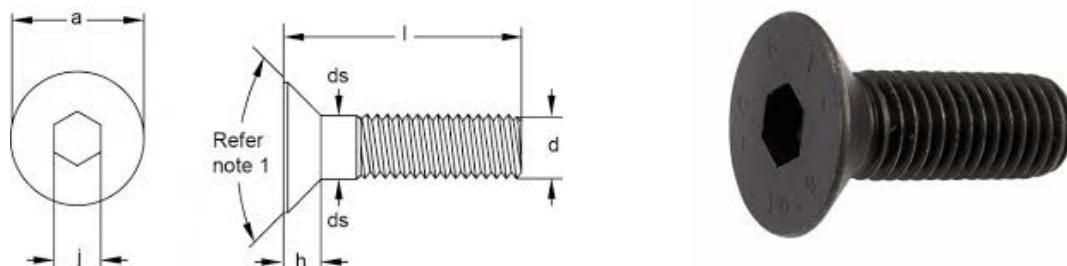
d1	M12	M14	M16	M20	M24
P	1.75	2	2	2.5	3
l1	30	34	38	46	54
l2	36	40	44	52	60
dk	24	27	30	36	39
h (max)	6.5	7	7.5	8.5	14
a	90	90	90	90	90
d2	8	10	10	12	14

SIZE AVAILABLE

d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l
M12 x 20	M12 x 50	M14 x 25	M14 x 80	M16 x 30	M16 x 80	M20 x 50	M20 x 140	M24 x 90
M12 x 25	M12 x 55	M14 x 30	M14 x 90	M16 x 35	M16 x 90	M20 x 50	M20 x 160	M24 x 100
M12 x 30	M12 x 60	M14 x 35	M14 x 100	M16 x 40	M16 x 100	M20 x 70	M20 x 200	M24 x 120
M12 x 35	M12 x 70	M14 x 40	M14 x 90	M16 x 45		M20 x 80	M24 x 50	M24 x 140
M12 x 40	M12 x 80	M14 x 50	M14 x 100	M16 x 50	M20 x 30	M20 x 90	M24 x 60	M24 x 160
M12 x 45	M12 x 90	M14 x 60		M16 x 60	M20 x 35	M20 x 100	M24 x 70	M24 x 180
	M12 x 100	M14 x 70	M16 x 25	M16 x 70	M20 x 40	M20 x 120	M24 x 80	M24 x 200

HEXAGONAL SOCKET COUNTERSUNK HEAD SCREW

Half Threaded Steel – Steel 253 and Zinc Plated 252



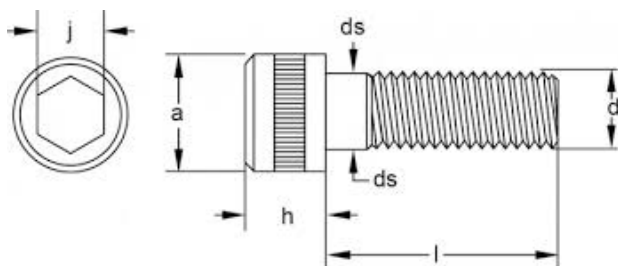
d1	M3	M4	M5	M6	M8	M10	M12	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2
l1	12	14	16	18	22	26	30	38
dk	6	8	10	12	16	20	24	30
h (max)	1.7	2.3	2.8	3.3	4.4	5.5	6.5	7.5
a	90	90	90	90	90	90	90	90
d2	2	2.5	3	4	5	6	8	10

SIZE AVAILABLE

d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l
M3 x 6	M4 x 8	M5 x 8	M6 x 8	M6 x 70	M8 x 50	M10 x 40	M12 x 20	M16 x 30
M3 x 8	M4 x 10	M5 x 10	M6 x 10	M6 x 80	M8 x 60	M10 x 45	M12 x 25	M16 x 35
M3 x 10	M4 x 12	M5 x 12	M6 x 12		M8 x 70	M10 x 50	M12 x 30	M16 x 40
M3 x 12	M4 x 16	M5 x 16	M6 x 16	M8 x 10	M8 x 80	M10 x 55	M12 x 35	M16 x 45
M3 x 16	M4 x 20	M5 x 20	M6 x 20	M8 x 12	M8 x 90	M10 x 60	M12 x 40	M16 x 50
M3 x 20	M4 x 25	M5 x 25	M6 x 25	M8 x 16	M8 x 100	M10 x 65	M12 x 45	M16 x 55
M3 x 25	M4 x 30	M5 x 30	M6 x 30	M8 x 20		M10 x 70	M12 x 50	M16 x 60
M3 x 30	M4 x 35	M5 x 35	M6 x 35	M8 x 25	M10 x 16	M10 x 75	M12 x 55	M16 x 70
M3 x 40	M4 x 40	M5 x 40	M6 x 40	M8 x 30	M10 x 20	M10 x 80	M12 x 60	M16 x 80
M3 x 50	M4 x 50	M5 x 45	M6 x 45	M8 x 35	M10 x 25	M10 x 90	M12 x 70	
	M4 x 60	M5 x 50	M6 x 50	M8 x 40	M10 x 30	M10 x 100	M12 x 80	
M4 x 5	M4 x 70	M5 x 70	M6 x 60	M8 x 45	M10 x 35			

HEXAGONAL SOCKET HEAD CAP SCREW

Full Threaded Steel, Zinc Plated and Yellow Passivated



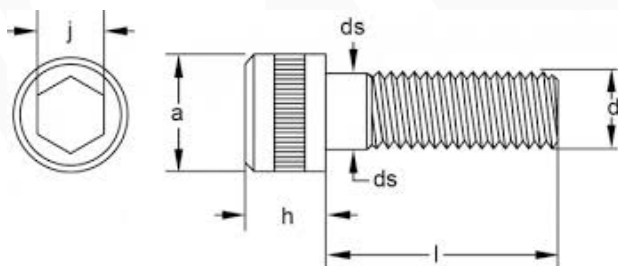
d1	M3	M4	M5	M6	M8	M10	M12
P	0.5	0.7	0.8	1	1.25	1.5	1.75
dk (max)	5.5	7	8.5	10	13	16	18
h (max)	3	4	5	6	8	10	12
d2	2.5	3	4	5	6	8	10

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 x 2.5	M4 x 40	M5 x 35	M6 x 35	M6 x 60	M8 x 60	M10 x 60	M12 x 60
	M4 x 50	M5 x 40	M6 x 40		M8 x 80	M10 x 70	M12 x 80
M4 x 30	M5 x 30	M5 x 50	M6 x 50	M8 x 40		M10 x 80	
				M8 x 50	M10 x 50		

HEXAGON SOCKET SCREWS WITH CUP POINT

Steel, Steel Zinc Plated & Yellow Passivated



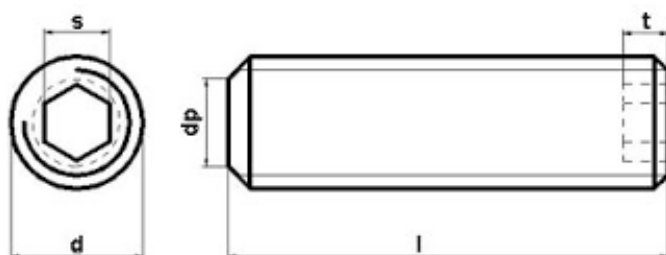
	M2	M3	M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
	0.4	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2
	1	1.4	2	2.5	3	5	6	8	9	10	14	16
	0.9	1.5	2	2.5	3	4	5	6	6	8	10	12

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 X 3	M3 X 25	M4 x 16	M5 x 12	M6 x 12	M8 x 8	M8 x 40	M10 x 25	M12 x 16	M14 x 16	M16 x 20	M20 x 25	
M3 X 4	M3 X 30	M4 x 20	M5 x 16	M6 x 16	M8 x 10	M8 x 50	M10 x 30	M12 x 20	M14 x 20	M16 x 25	M20 x 30	
M3 X 5		M4 x 25	M5 x 20	M6 x 20	M8 x 12	M8 x 60	M10 x 35	M12 x 25	M14 x 25	M16 x 30	M20 x 40	
M3 X 6	M4 x 4	M4 x 30	M5 x 25	M6 x 25	M8 x 16		M10 x 40	M12 x 30	M14 x 30	M16 x 35	M20 x 50	
M3 X 8	M4 x 5		M5 x 30			M10 x 8	M10 x 50	M12 x 35	M14 x 35	M16 x 40	M20 x 60	
M3 X 10	M4 x 6	M5 x 5		M6 x 30	M8 x 20	M10 x 10	M10 x 60	M12 x 40	M14 x 40	M16 x 50		
M3 X 12	M4 x 8	M5 x 6	M6 x 6	M6 x 35	M8 x 25	M10 x 12		M12 x 50	M14 x 50	M16 x 60	M24 x 40	
M3 X 16	M4 x 10	M5 x 8	M6 x 8	M6 x 40	M8 x 30	M10 x 16	M12 x 10	M12 x 60	M14 x 60		M24 x 45	
M3 X 20	M4 x 12	M5 x 10	M6 x 10	M6 x 50	M8 x 35	M10 x 20	M12 x 12	M12 x 70		M20 x 20	M24 x 60	

HEXAGON SOCKET SET SCREWS WITH CONE POINT

Steel and Steel Zinc Plated



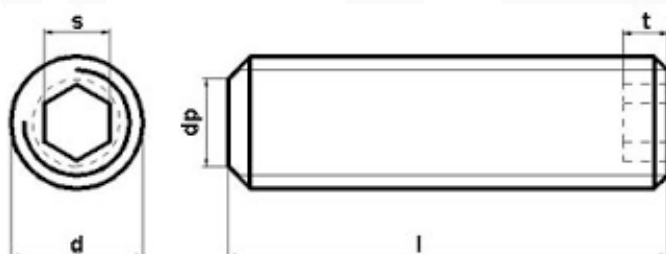
d1	M3	M4	M5	M6	M8	M10	M12	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2
dt (max)	-	-	-	1.5	2	2.5	3	4
d2	1.5	2	2.5	3	4	5	6	8

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 x 3	M3 x 20	M4 x 25	M5 x 20	M6 x 16	M8 x 12	M10 x 16	M12 x 16	M16 x 16
M3 x 4			M5 x 25	M6 x 20	M8 x 16	M10 x 20	M12 x 20	M16 x 20
M3 x 5	M4 x 4	M5 x 6		M6 x 25	M8 x 20	M10 x 25	M12 x 25	M16 x 25
M3 x 6	M4 x 8	M5 x 8	M6 x 6	M6 x 30	M8 x 25	M10 x 30	M12 x 30	M16 x 30
M3 x 8	M4 x 10	M5 x 10	M6 x 8		M8 x 30	M10 x 40	M12 x 40	M16 x 35
M3 x 10	M4 x 12	M5 x 12	M6 x 10	M8 x 8	M8 x 40	M10 x 50	M12 x 50	M16 x 40
M3 x 12	M4 x 16		M6 x 12	M8 x 10				M16 x 50
M3 x 16	M4 x 20	M5 x 16			M10 x 12			M16 x 60

HEXAGON SOCKET SET SCREWS WITH DOG POINT

Steel and Steel Zinc Plated



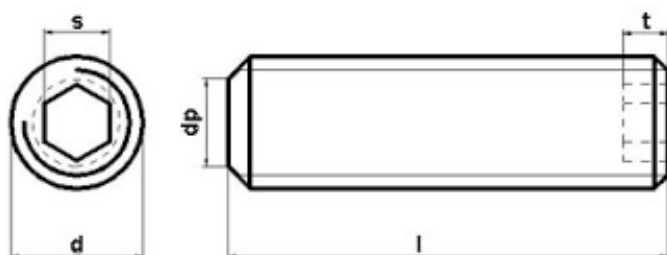
d1	M3	M4	M5	M6	M8	M10	M12	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2
dp (max)	2	2.5	3.5	4	5.5	7	8.5	12
d2	1.5	2	2.5	3	4	5	6	8
z short 1 (min.)	1.75	1	1.25	1.5	2	2.5	3	4
z short 1 (max.)	1	1.25	1.5	1.75	2.25	2.75	3.25	4.3
z long 2 (min.)	1.5	2	2.5	3	4	6	6	8
z long 2 (max.)	1.75	2.25	1.75	3.25	4.3	5.3	6.3	8.36

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 x 3	M3 x 20	M4 x 25	M5 x 25	M6 x 25	M8 x 25	M10 x 20	M12 x 16	M16 x 20
M3 x 4		M5 x 6		M6 x 30	M8 x 30	M10 x 25	M12 x 20	M16 x 25
M3 x 5	M4 x 6	M5 x 8	M6 x 6		M8 x 35	M10 x 30	M12 x 25	M16 x 30
M3 x 6	M4 x 8	M5 x 10	M6 x 8	M8 x 10	M8 x 40	M10 x 40	M12 x 30	M16 x 35
M3 x 8	M4 x 10	M5 x 12	M6 x 10	M8 x 12		M10 x 50	M12 x 40	M16 x 40
M3 x 10	M4 x 12		M6 x 12	M8 x 16	M10 x 12		M12 x 50	M16 x 50
M3 x 12	M4 x 16	M5 x 16	M6 x 16	M8 x 20	M10 x 16	M12 x 12	M16 x 16	M16 x 60
M3 x 16	M4 x 20	M5 x 20	M6 x 20					

HEXAGON SOCKET SET SCREWS WITH FALT POINT

Steel and Steel Zinc Plated

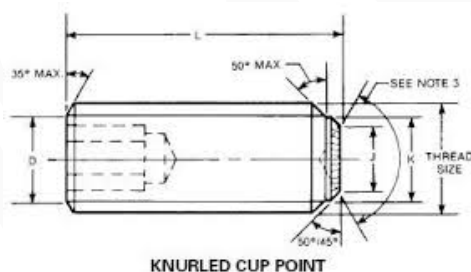


d1	M3	M4	M5	M6	M8	M10	M12	M16
P	0.5	0.7	0.8	1	1.25	1.5	1.75	2
dv	2	2.5	3.5	4	5.05	7	8.5	12
d2	1.5	2	2.5	3	4	5	6	8

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 x 3	M3 x 20	M4 x 16	M5 x 16	M6 x 16	M8 x 10	M10 x 12	M12 x 16	M16 x 20
M3 x 4		M4 x 20	M5 x 20	M6 x 20	M8 x 12	M10 x 16	M12 x 20	M16 x 25
M3 x 5	M4 x 4	M4 x 25	M5 x 25	M6 x 25	M8 x 16	M10 x 20	M12 x 25	M16 x 30
M3 x 6	M4 x 5		M5 x 30	M6 x 30	M8 x 20	M10 x 25	M12 x 30	M16 x 35
M3 x 8	M4 x 6	M5 x 6		M6 x 35	M8 x 25	M10 x 30	M12 x 40	M16 x 40
M3 x 10	M4 x 8	M5 x 8	M6 x 8	M6 x 40	M8 x 30	M10 x 40	M12 x 50	M16 x 50
M3 x 12	M4 x 10	M5 x 10	M6 x 10		M8 x 40	M10 x 50		M16 x 60
M3 x 16	M4 x 12	M5 x 12	M6 x 12	M8 x 8				

HEXAGON SOCKET SET SCREWS WITH KNURLED CUP POINT STEEL



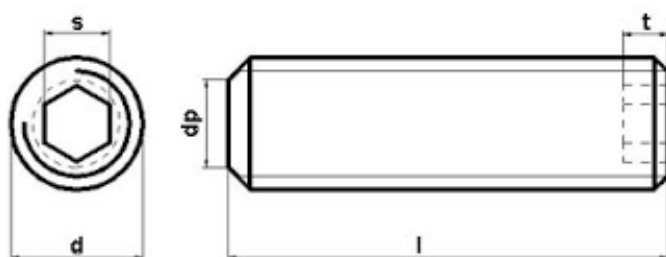
d1	M3	M4	M5	M6	M8
P	0.5	0.7	0.8	1	1.25
dv	1.4	2	2.5	4	5
d2	1.5	2	2.5	3	4

SIZE AVAILABLE

d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1	d1 x 1
M3 x 4	M3 x 10	M4 x 8	M5 x 5	M5 x 12	M6 x 8	M6 x 16	M8 x 8	M8 x 20
M3 x 5		M4 x 10	M5 x 6	M5 x 16	M6 x 8	M6 x 20	M8 x 10	M8 x 25
M3 x 6	M4 x 5	M4 x 12	M5 x 8		M6 x 10	M6 x 25	M8 x 12	M8 x 30
M3 x 8	M4 x 6	M4 x 16	M5 x 10	M5 x 20	M6 x 12		M8 x 16	

HEXAGON SOCKET SET SCREWS WITH FALT POINT

Steel and Steel Zinc Plated



d1	M8	M10	M12	M16
P	1.25	1.5	1.75	2
dp (max)	5.5	7	8.5	12
d2	4	5	6	8

SIZE AVAILABLE

d1 x l	d1 x l	d1 x l
M8 x 1.00 x 10	M10 x 1.25 x 16	M12 x 1.50 x 25
M8 x 1.00 x 12	M10 x 1.25 x 20	M12 x 1.50 x 30
M8 x 1.00 x 16	M10 x 1.25 x 25	M12 x 1.50 x 40
M8 x 1.00 x 20	M10 x 1.25 x 30	M12 x 1.50 x 50
M8 x 1.00 x 25	M10 x 1.25 x 40	
M8 x 1.00 x 30	M10 x 1.25 x 50	
M8 x 1.00 x 40		M16 x 1.50 x 20
M8 x 1.00 x 50	M12 x 1.50 x 10	M16 x 1.50 x 25
	M12 x 1.50 x 12	M16 x 1.50 x 30
M8 x 1.25 x 10	M12 x 1.50 x 16	M16 x 1.50 x 40
M8 x 1.25 x 12	M12 x 1.50 x 20	M16 x 1.50 x 50



THREADED BAR

PLAIN WASHER WITHOUT CHAMFER

Steel 140HV and Steel 140HV Zinc Plated



SIZE Dia. x Pitch	Din 975 4.6 Steel	Din 975 ZP 4.6 Steel Zinc	Din 975 8.8 8.8 Steel	Din 975 B7 A193-B7 Steel	Din 975 10 10.9 Steel	Din 975 L 4.6 Steel Left Hand	Din 975 A2 304 Stain- less	Din 975 A4 316 Stain- less	Din 975 BR Brass	Din 975 PL 6.6 Plastic	Din 975 AL Aluminum	Weight/lb Per Meter Steel & Stainless
2 x .4	y	y	-	-	-	-	y	y	y	-	-	-
2.5 x .45	y	y	-	-	-	-	y	y	y	-	-	-
2.6 x .45	y	-	-	-	-	-	-	-	-	-	-	-
3 x .5	y	y	-	-	-	-	y	y	y	-	-	-
3.5 x .6	y	y	-	-	-	-	-	-	-	-	-	.10
4 x .7	y	y	y	y	-	y	y	y	y	y	-	.15
4 x .8	y	y	y	y	-	y	y	y	y	y	-	.20
6 x 1	y	y	y	y	y	y	y	y	y	y	-	.40
7 x 1	y	-	-	-	-	-	-	-	-	-	-	.60
8 x 1.25	y	y	y	y	y	y	y	y	y	y	-	.70
8 x 1	y	y	-	y	-	-	y	-	-	-	-	-
10 x 1.5	y	y	y	y	y	y	y	y	y	y	-	1
10 x 1.25	y	y	-	y	-	-	y	-	-	-	-	-
10 x 1	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1.75	y	y	y	y	y	y	y	y	y	y	-	1.5
y12 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1.25	y	y	-	y	-	-	y	-	-	-	-	-
12 x 1	y	-	-	y	-	-	-	-	-	-	-	-
14 x 2	y	y	y	y	y	y	y	y	y	-	-	2
14 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
16 x 2	y	y	y	y	y	y	y	y	y	y	-	3
16 x 1.5	y	y	-	y	-	-	y	-	-	-	-	-
18 x 2.5	y	y	y	y	y	-	y	y	y	-	-	3.5
18 x 2	y	-	-	-	-	-	-	-	-	-	-	-
18 x 1.5	y	-	-	y	-	-	y	-	-	-	-	-
20 x 2.5	y	y	y	y	y	y	y	y	y	y	-	4.5
20 x 2	y	-	-	-	-	-	-	-	-	-	-	-
20 x 1.5	y	-	-	y	-	y	y	-	-	-	-	-
22 x 2.5	y	y	y	y	y	-	y	-	-	-	-	5.5
22 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
24 x 3	y	y	y	y	y	-	y	y	y	-	-	6.5
24 x 2	y	-	-	y	-	y	-	-	-	-	-	-
24 x 1.5	y	-	-	y	-	-	y	-	-	-	-	-
27 x 3	y	y	y	y	-	-	y	y	y	-	-	8.5
27 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
30 x 3.5	y	y	y	y	y	-	y	y	y	-	-	10.5
30 x 1.5	y	-	-	y	-	-	-	-	-	-	-	-
33 x 3.5	y	-	-	y	-	-	y	y	y	-	-	13
36 x 4	y	y	y	y	-	-	y	y	y	-	-	15
39 x 4	y	-	-	-	-	-	-	-	-	-	-	18
24 x 4.5	y	-	-	y	-	-	-	-	-	-	-	21
45 x 4.5	y	-	-	y	-	-	-	-	-	-	-	24
48 x 5	y	-	-	-	-	-	-	-	-	-	-	27
52 x 5	y	-	-	-	-	-	-	-	-	-	-	-
56 x 5.5	y	-	-	-	-	-	-	-	-	-	-	32

y” means stock availability”

DOUBLE SERRATED LOCK WASHER STEEL ZINC PLATED

CHEMICAL COMPOSITON

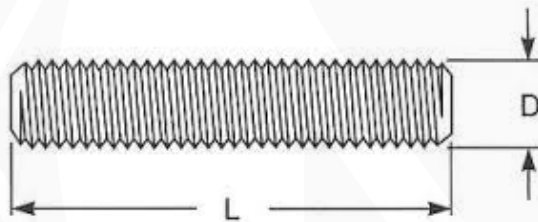
Standard	Grade	Most important elements			Corresponding materials			
		C	Cr	Mo	Germany		United Kingdom	France
					DIN	Werkst.nr.		
ASTM A 193	B7	0.37-0.49	0.75-1.20	0.15-0.25	42CrMo4	1.723	1506-621GrH	42 CD 4
ASTM A 194	2H	min. 0.4	-	-	C 45	1.050	1506-162	C45d

MECHANICAL PROPERTIES

Grade		Tensile strength min.	0.2% Yield strength min.	Elongation min. %	Contraction min. %	Hardness		Tempering temp. min. C
						HB	HRC	
B7	N/mm2	860	720	16	50	-	-	593
	psi	125000	105000					
2H	max.	-	-	-	-	352	38	-
	min.					248	24	

THREADED RODS – A 193 GRADE B7

LENGTH – 1 METER & 3 METER: Steel



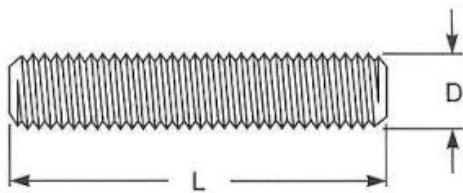
d	Inch	12/	58/	¾	7/8	1	1 1/8
	mm	12.7	15.9	19.05	22.2	25.4	28.6
Thread per inch		13	11	10	9	8	8

d	Inch	1 1/4	1 3/8	1 1/2	7/8	1	1 1/8
	mm	31.75	34.9	38.1	22.2	25.4	28.6
Thread per inch					9	8	8

SIZE AVAILABLE

d	d	d
1/2	1"	1 3/8
5/8	1 1/8	1 1/2
3/4	1 1/4	
7/8		

STUD BOLTS with HEXAGON NUTS – STEEL

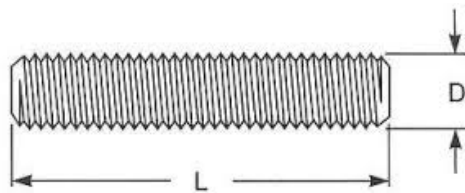


d	M12	M14	M16	M20	M22	M24
p	1.75	2	2	2.5	2.5	3
M*	12	14	16	20	22	24
B	19	22	24	30	32	36

SIZE AVAILABLE

d x L	d x L	d x L
M12 x 55	M16 x 150	M22 x 120
M12 x 65		M22 x 125
M12 x 70	M20 x 75	M22 x 130
M12 x 75	M20 x 85	M22 x 135
M12 x 80	M20 x 90	M22 x 140
M12 x 90	M20 x 95	M22 x 145
M12 x 95	M20 x 100	M22 x 150
M12 x 100	M20 x 105	M22 x 160
	M20 x 110	M22 x 165
M14 x 65	M20 x 115	M22 x 170
M14 x 75	M20 x 120	M22 x 180
M14 x 80	M20 x 125	M22 x 200
M14 x 90	M20 x 130	
M14 x 100	M20 x 135	M24 x 115
	M20 x 140	M24 x 125
M16 x 65	M20 x 145	M24 x 130
M16 x 70	M20 x 150	M24 x 140
M16 x 75	M20 x 160	M24 x 150
M16 x 80	M20 x 170	M24 x 160
M16 x 85	M20 x 180	M24 x 165
M16 x 90	M20 x 190	M24 x 170
M16 x 95	M20 x 200	M24 x 180
M16 x 100	M20 x 210	M24 x 190
M16 x 110		M24 x 200
M16 x 115	M22 x 95	M24 x 215
M16 x 120	M22 x 100	M24 x 230
M16 x 125	M22 x 110	M24 x 250
M16 x 140	M22 x 115	

STUD BOLTS with 2 HEXAGON NUTS – STEEL



d	Inch	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4
	mm	12.7	15.9	19.05	22.2	25.4	28.6	31.75
Thread per inch		13	11	10	9	8	8	8
M		12.8	16.02	19.25	22.47	25.7	28.93	31.77
B	Inch	7/8	1 1/16	1 1/4	1 7/16	1 5/8	1 13/16	2
	mm	22.2	27	31.75	36.5	41.3	46.05	50.8

d	Inch	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2	1 1/4
	mm	34.9	38.1	41.3	44.45	47.65	50.8	31.75
Thread per inch		8	8	8	8	8	8	8
M		35	38.22	41.25	44.47	47.65	51.13	31.77
B	Inch	2 13/16	2 3/8	2 9/16	2 3/4	2 15/16	3 1/8	2
	mm	55.55	60.3	65.1	69.85	74.6	79.4	50.8

SIZE AVAILABLE

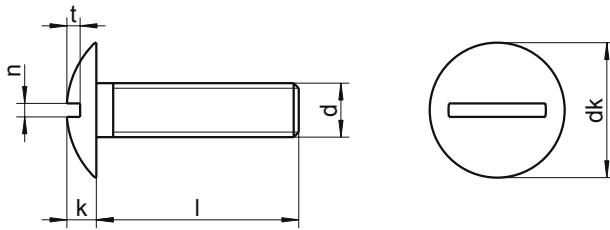
d x L	d x L	d x L	d x L
1/2 x 2"	3/4 x 5 1/4	1" x 5"	1 1/4 x 7"
1/2 x 2 1/4	3/4 x 5 1/2	1" x 5 1/4	1 1/4 x 7 1/4
1/2 x 2 1/2	3/4 x 5 3/4	1" x 5 1/2	1 1/4 x 7 1/2
1/2 x 2 3/4	3/4 x 6"	1" x 5 3/4	1 1/4 x 7 3/4
1/2 x 3"	3/4 x 6 1/4	1" x 6"	
1/2 x 3 1/4	3/4 x 6 1/2	1" x 6 1/4	1 1/4 x 8"
1/2 x 3 1/2	3/4 x 6 3/4	1" x 6 1/2	1 1/4 x 8 1/4
1/2 x 3 3/4	3/4 x 7"	1" x 6 3/4	1 1/4 x 8 1/2
1/2 x 4"	3/4 x 7 1/4	1" x 7"	1 1/4 x 8 3/4
1/2 x 4 1/4	3/4 x 7 1/2	1" x 7 1/4	1 1/4 x 9"
1/2 x 4 1/2	3/4 x 8"	1" x 7 1/2	1 1/4 x 9 1/2
1/2 x 4 3/4	3/4 x 8 1/4	1" x 7 3/4	1 1/4 x 10"
1/2 x 5"	3/4 x 8 1/2	1" x 8"	1 1/4 x 11"
	3/4 x 8 3/4	1" x 8 1/4	1 1/4 x 12"
5/8 x 2 1/4	3/4 x 9"	1" x 8 1/2	1 1/4 x 13"
5/8 x 2 1/2	3/4 x 9 1/2	1" x 8 3/4	
5/8 x 2 3/4	3/4 x 10"	1" x 9"	1 3/8 x 9"
5/8 x 3"		1" x 9 1/4	1 3/8 x 9 1/2
5/8 x 3 1/4	7/8 x 3 1/2	1" x 9 1/2	1 3/8 x 10"
5/8 x 3 1/2	7/8 x 3 3/4	1" x 9 3/4	1 3/8 x 11"
5/8 x 3 3/4	7/8 x 4"	1" x 10"	1 3/8 x 12"
5/8 x 4"	7/8 x 4 1/4	1" x 11"	
5/8 x 4 1/4	7/8 x 4 1/2	1" x 12"	1 1/2 x 8"
5/8 x 4 1/2	7/8 x 4 3/4		1 1/2 x 9 1/2
5/8 x 4 3/4	7/8 x 5"	1 1/8 x 5"	1 1/2 x 10"
5/8 x 5"	7/8 x 5 1/4	1 1/8 x 5 1/4	1 1/2 x 10 1/2
5/8 x 5 1/4	7/8 x 5 1/2	1 1/8 x 5 1/2	1 1/2 x 10 3/4
5/8 x 5 1/2	7/8 x 5 3/4	1 1/8 x 5 3/4	1 1/2 x 11"
5/8 x 5 3/4	7/8 x 6"	1 1/8 x 6"	1 1/2 x 12"
5/8 x 6"	7/8 x 6 1/4	1 1/8 x 6 1/4	
5/8 x 6 1/4	7/8 x 6 1/2	1 1/8 x 6 1/2	1 5/8 x 10"
5/8 x 6 1/2	7/8 x 6 3/4	1 1/8 x 6 3/4	1 5/8 x 11"
5/8 x 6 3/4	7/8 x 7"	1 1/8 x 7"	1 5/8 x 12"
5/8 x 7"	7/8 x 7 1/4	1 1/8 x 7 1/4	1 5/8 x 13"
5/8 x 8"	7/8 x 7 1/2	1 1/8 x 7 1/2	
	7/8 x 7 3/4	1 1/8 x 8"	1 3/4 x 11"
3/4 x 2 1/4	7/8 x 8"	1 1/8 x 8 1/2	1 3/4 x 12"
3/4 x 2 3/4	7/8 x 8 1/4	1 1/8 x 9"	
3/4 x 3"	7/8 x 8 1/2	1 1/8 x 9 1/2	1 7/8 x 12"
3/4 x 3 1/4	7/8 x 8 3/4	1 1/8 x 10"	1 7/8 x 13"
3/4 x 3 1/2	7/8 x 9"	1 1/8 x 11"	1 7/8 x 14"
3/4 x 3 3/4	7/8 x 9 1/2	1 1/8 x 12"	
3/4 x 4"	7/8 x 10"		2" x 7 1/2
3/4 x 4 1/4		1 1/4 x 6"	2" x 13"
3/4 x 4 1/2	1" x 4"	1 1/4 x 6 1/4	2" x 14"
3/4 x 4 3/4	1" x 4 1/4	1 1/4 x 6 1/2	2" x 15"
3/4 x 5"	1" x 4 1/2	1 1/4 x 6 3/4	



SCREWS

SLOTTED MUSHROOM HEAD SCREWS

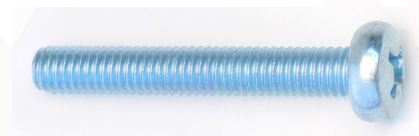
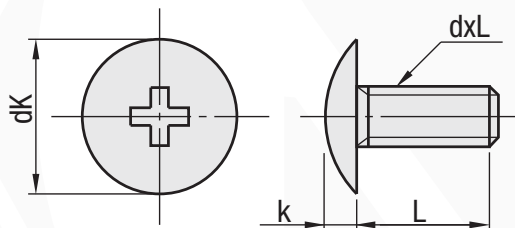
Steel Zinc Plated



d	M5	M6
p	0.8	1
dk	10	12
k	3	3.6
n	1.2	1.6

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L
M5 x 6	M5 x 10	M5 x 12	M5 x 16	M6 x 12



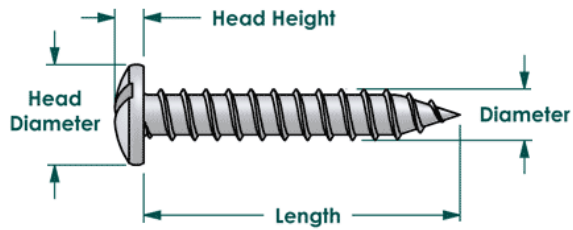
d	M2	M2.5	M3	M4	M5	M6	M8	M10
p	0.4	0.45	0.5	0.7	0.8	1	1.25	1.50
dk	4	5	6	8	10	12	16	20
k	1.6	2	2.4	3.1	3.8	4.6	6	7.5
Nr Phillips (H) recess	1	1	1	2	2	3	4	4

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M2 x 4	M2.5 x 8	M3 x 12	M4 x 8	M4 x 45	M5 x 30	M6 x 12	M6 x 60	M8 x 45
M2 x 5	M2.5 x 10	M3 x 16	M4 x 10	M4 x 50	M5 x 35	M6 x 16		M8 x 50
M2 x 6	M2.5 x 12	M3 x 20	M4 x 12		M5 x 40	M6 x 20	M8 x 12	M8 x 60
M2 x 8		M3 x 25	M4 x 16	M5 x 8	M5 x 45	M6 x 25	M8 x 16	
M2 x 10	M3 x 4	M3 x 30	M4 x 20	M5 x 10	M5 x 50	M6 x 30	M8 x 20	M10 x 25
	M3 x 5	M3 x 40	M4 x 25	M5 x 12	M5 x 60	M6 x 35	M8 x 25	M10 x 30
M2.5 x 4	M3 x 6		M4 x 30	M5 x 16		M6 x 40	M8 x 30	M10 x 40
M2.5 x 5	M3 x 8	M4 x 5	M4 x 35	M5 x 20	M6 x 8	M6 x 45	M8 x 35	M10 x 50
M2.5 x 6	M3 x 10	M4 x 6	M4 x 40	M5 x 25	M6 x 10	M6 x 50	M8 x 40	M10 x 60

CROSS RECESSED PAN HEAD SCREWS

Steel Zinc Plated, Yellow and Black Passivated



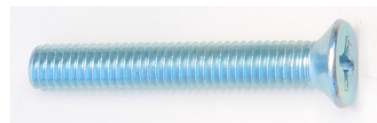
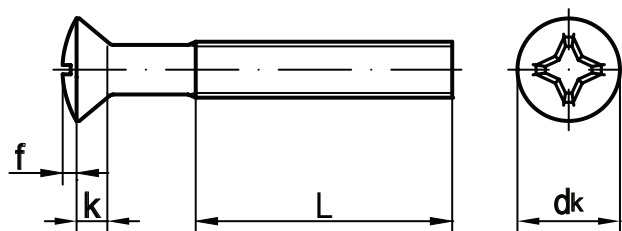
d	M3	M4	M5	M6	M8
p	0.5	0.7	0.8	1	1.25
b	4.5	6	7	9	11
d2 (max)	7	8.5	11	13	16
d1 (n9)	4	5.5	7	8	10
k	1.8	2.4	2.7	3.1	3.8
n	0.8	1	1.2	1.6	2

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 8	M4 x 6	M4 x 12	M5 x 6	M5 x 16	M6 x 8	M6 x 16	M8 x 8	M8 x 16
M3 x 10	M4 x 8	M4 x 16	M5 x 8	M5 x 12	M6 x 10	M6 x 16	M8 x 10	M8 x 20
M3 x 12	M4 x 10		M5 x 12	M5 x 25	M6 x 12	M6 x 16	M8 x 12	M8 x 25

CROSS RECESSED COUNTER HEAD SCREWS

Steel Zinc Plated and Zinc Plated, Black Passivated



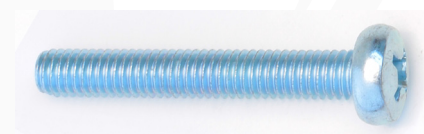
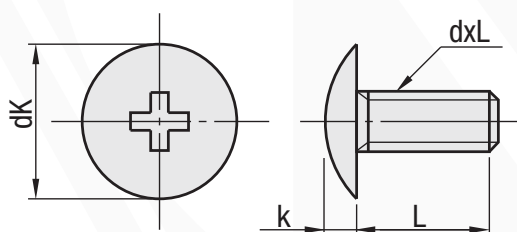
d	M3	M4	M5	M6	M8
p	0.5	0.7	0.8	1	1.25
dk	5.6	7.5	9.2	11	14.5
k (max)	1.65	2.2	2.5	3	4
Nr Phillips (H) recess	1	2	2	3	4

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 6	M3 x 20	M4 x 12	M5 x 8	M5 x 25	M6 x 10	M6 x 25	M8 x 12	M8 x 35
M3 x 8		M4 x 16	M5 x 10	M5 x 30	M6 x 12	M6 x 30	M8 x 16	M8 x 40
M3 x 10	M4 x 6	M4 x 20	M5 x 12	M5 x 35	M6 x 16	M6 x 35	M8 x 20	M8 x 45
M3 x 12	M4 x 8	M4 x 25	M5 x 16	M5 x 40	M6 x 20	M6 x 40	M8 x 25	M8 x 50
M3 x 16	M4 x 10	M4 x 30	M5 x 20	M5 x 50		M6 x 50	M8 x 30	

CROSS RECESSED COUNTER HEAD SCREWS

Steel Zinc Plated and Zinc Plated, Black Passivated



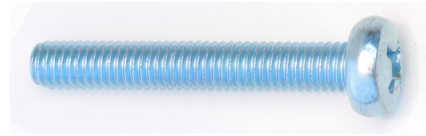
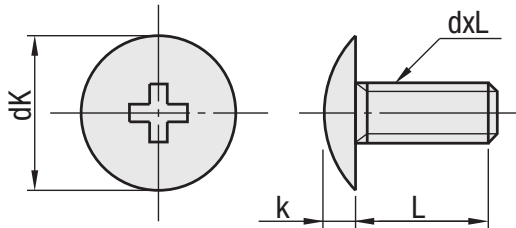
d	M3	M4	M5	M6	M8
p	0.5	0.7	0.8	1	1.25
dk	5.6	7.5	9.2	11	14.5
k (max)	1.65	2.2	2.5	3	4
f =	0.75	1	1.25	1.5	2
Nr Phillips (H) recess	1	2	2	3	4

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 6	M4 x 6	M4 x 25	M5 x 8	M5 x 25	M6 x 10	M6 x 30	M8 x 16	M8 x 35
M3 x 8	M4 x 8	M4 x 30	M5 x 10	M5 x 30	M6 x 12	M6 x 35	M8 x 20	M8 x 40
M3 x 10	M4 x 10	M4 x 40	M5 x 12	M5 x 35	M6 x 16	M6 x 40	M8 x 25	M8 x 50
M3 x 12	M4 x 12		M5 x 16	M5 x 40	M6 x 20	M6 x 50	M8 x 30	
M3 x 16	M4 x 16		M5 x 20	M5 x 50	M6 x 25			

TAPTITE- CROSS RECESSED RAISED CHEESE HEAD THREAD

FORMING SCREWS – Steel Zinc Plated



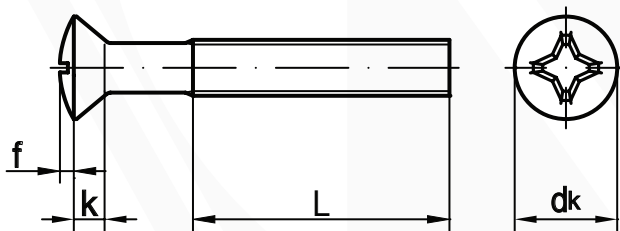
d	M3	M3.5	M4	M5	M6
p	0.5	0.6	0.7	0.8	1
dk	6	7	8	10	12
k	2.4	2.7	3.1	3.8	4.6
Nr. Pozidriv	1	2	2	2	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 6	M3 x 16	M3.5 x 12	M4 x 6	M4 x 16	M5 x 8	M5 x 12	M5 x 30	M6 x 16
M3 x 8	M3 x 20	M3.5 x 16	M4 x 8	M4 x 20	M5 x 10	M5 x 16		M6 x 20
M3 x 10	M3 x 25		M4 x 10	M4 x 25		M5 x 20	M6 x 10	M6 x 30
M3 x 12	M3 x 8		M4 x 12	M4 x 30		M5 x 25	M6 x 12	

TAPTITE - CROSS RECESSED COUNTERSUNK HEAD THREAD

FORMING SCREWS – Steel Zinc Plated



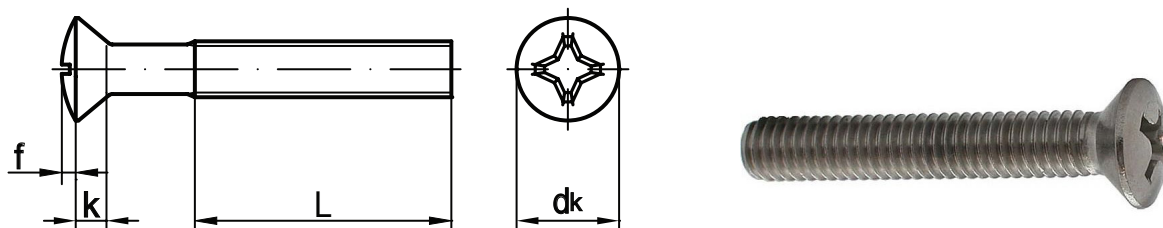
d	M3	M4	M5	M6	M8
p	0.5	0.7	0.8	1	1.25
dk	5.6	7.5	9.2	11	14.5
k (max)	1.65	2.2	2.5	3	4
Nr. Pozidriv (Z) recess	1	2	2	3	4

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 8	M3 x 16	M4 x 12	M4 x 25	M5 x 10	M5 x 20	M6 x 16	M6 x 30	M8 x 40
M3 x 10		M4 x 16		M5 x 12	M5 x 25	M6 x 20	M6 x 40	
M3 x 12	M4 x 10	M4 x 20		M5 x 16	M5 x 30	M6 x 25		

TAPTITE- CROSS RECESSED RAISED COUNTERSUNK HEAD THREAD

FORMING SCREWS – Steel Zinc Plated



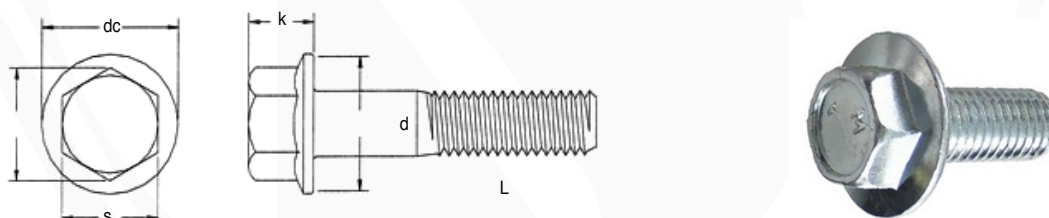
d	M3	M4	M5	M6
p	0.5	0.7	0.8	1
dk	5.6	7.5	9.2	12
k (max)	1.65	2.2	2.5	4.6
f =	0.75	1	1.25	
	1	2	2	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L
M3 x 16	M4 x 10	M4 x 12	M4 x 20	M5 x 12	M5 x 16

TAPTITE – HEXAGON HEAD THREAD FORMING SCREWS with FLANGE

Steel Zinc Plated



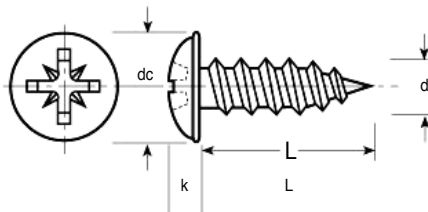
d	M3	M4	M5	M6	M8
p	0.5	0.7	0.8	1	1.25
dk	5.6	7.5	9.2	11	14.5
k (max)	1.65	2.2	2.5	3	4
Nr. Pozidriv (Z) recess	1	2	2	3	4

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
M3 x 8	M4 x 6	M4 x 12	M5 x 8	M5 x 16	M6 x 10	M6 x 16	M6 x 30	M8 x 16
M3 x 10	M4 x 8	M4 x 16	M5 x 10	M5 x 20	M6 x 12	M6 x 20		M8 x 20
	M4 x 10	M4 x 30	M5 x 12	M5 x 25		M6 x 25		M8 x 25

EJOT PT – CROSS RECESSED THREAD FORMING MUSHROOM

HEAD SCREWS – Steel Zinc Plated



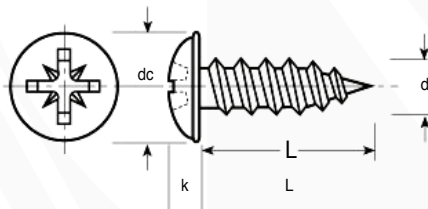
Type	KB 30	KB 35	KB 40
d	3	3.5	4
p	1.34	1.57	1.79
dc	6	7	8
k	2.1	2.4	2.5
Nr. Pozidriv (Z) recess	1	2	2

SIZE AVAILABLE

Type xL	Type xL	Type xL	Type xL	Type xL	Type xL	Type xL
KB 30 x 8	KB 30 x 10	KB 35 x 12	KB 35 x 16	KB 35 x 20	KB x 40 x 10	KB x 40 x 12

EJOT PT – CROSS RECESSED THREAD FORMING RAISED CHEESE

HEAD SCREWS – Steel Zinc Plated



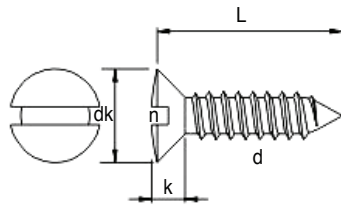
Type	KB 22	KB 25	KB 30	KB 35	KB 40	KB 50	KB 60
d	2.2	2.5	3	3.5	4	5	6
p	0.98	1.12	1.34	1.57	1.79	2.24	2.69
dK	3.9	4.4	5.3	6.1	7	8.8	10.5
k	1.5	1.7	2	2.5	2.7	3.4	4
Nr. Pozidriv (Z) recess	1	1	1	2	2	2	3

SIZE AVAILABLE

Type xL	Type xL	Type xL	Type xL	Type xL	Type xL	Type xL	Type xL	Type xL
KB 22 x 6	KB 25 x 6	KB 25 x 12	KB 30 x 8	KB 30 x 16	KB 35 x 10	KB 40 x 10	KB 40 x 16	KB 50 x 20
KB 22 x 8	KB 25 x 8	KB 25 x 16	KB 30 x 10	KB 30 x 20	KB 35 x 12	KB 40 x 12	KB 40 x 20	KB 50 x 25
KB 22 x 10	KB 25 x 10		KB 30 x 12		KB 35 x 16	KB 40 x 14		
		KB 30 x 6					KB 50 x 16	KB 60 x 20

SLOTTED RAISED COUNTERSUNK HEAD TAPPING SCREWS

Steel Nickel Plated



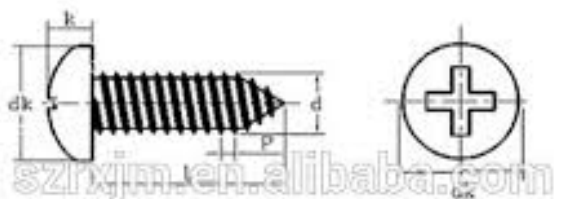
d	ST _{r.r}
p	0.8
dk	4.2
k =	1.3
f =	0.7
n	0.6
Nr. Acc. to ISO	2

SIZE AVAILABLE

d x L	d x L	d x L
ST2.2 x 6.5mm	ST2.2 x 8mm	ST2.2 x 9.5mm

CROSS RECESSED PAN HEAD TAPPING SCREW

Steel Zinc Plated and Steel Nickel Plated



d	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dk	5.6	6.9	7.5	8.2	9.5	10.8	12.5
k	2.2	2.6	2.8	3.05	3.55	3.95	4.55
Nr. Phillips (H) recess	1	2	2	2	2	3	3
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 6.5mm	ST3.5 x 6.5mm	ST3.5 x 32mm	ST3.9 x 22mm	ST4.2 x 22mm	ST4.8 x 19mm	ST4.8 x 45mm	ST5.5 x 32mm	ST6.3 x 19mm
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.5 x 38mm	ST3.9 x 25mm	ST4.2 x 25mm	ST4.8 x 22mm	ST4.8 x 50mm	ST5.5 x 38mm	ST6.3 x 22mm
ST2.9 x 13mm	ST3.5 x 13mm			ST4.2 x 32mm	ST4.8 x 25mm		ST5.5 x 45mm	ST6.3 x 25mm
ST2.9 x 16mm	ST3.5 x 16mm	ST3.9 x 9.5mm	ST4.2 x 9.5mm	ST4.2 x 38mm	ST4.8 x 32mm	ST5.5 x 13mm	ST5.5 x 50mm	ST6.3 x 32mm
ST2.9 x 19mm	ST3.5 x 19mm	ST3.9 x 13mm	ST4.2 x 13mm		ST4.8 x 38mm	ST5.5 x 16mm		ST6.3 x 38mm
ST2.9 x 22mm	ST3.5 x 22mm	ST3.9 x 16mm	ST4.2 x 16mm	ST4.8 x 13mm	ST4.8 x 45mm	ST5.5 x 19mm	ST6.3 x 13mm	ST6.3 x 45mm
ST2.9 x 25mm	ST3.5 x 25mm	ST3.9 x 19mm	ST4.2 x 19mm	ST4.8 x 16mm	ST4.8 x 50mm	ST5.5 x 22mm	ST6.3 x 16mm	ST6.3 x 50mm
						ST5.5 x 25mm		

CROSS RECESSED PAN HEAD TAPPING SCREW

Steel Zinc Plated, Steel Nickel Plated



d	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	KB 60
p	1.1	1.3	1.3	1.4	1.6	1.8	6
dK	5.6	6.9	7.5	8.2	9.5	10.8	2.69
k	2.2	2.6	2.8	3.05	3.55	3.95	10.5
Nr. Phillips (H) recess	1	2	2	2	2	3	4
Nr. Acc. to ISO	4	6	7	8	10	12	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 6.5mm	ST3.5 x 6.5mm	ST3.5 x 19mm	ST3.9 x 9.5mm	ST4.2 x 9.5mm	ST4.2 x 32mm	ST4.8 x 16mm	ST4.8 x 50mm	ST5.5 x 25mm
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.5 x 25mm	ST3.9 x 13mm	ST4.2 x 13mm	ST4.2 x 38mm	ST4.8 x 19mm		ST5.5 x 32mm
ST2.9 x 13mm	ST3.5 x 13mm	ST3.5 x 32mm	ST3.9 x 16mm	ST4.2 x 16mm	ST4.2 x 50mm	ST4.8 x 25mm	ST5.5 x 13mm	ST5.5 x 38mm
ST2.9 x 16mm	ST3.5 x 16mm	ST3.5 x 38mm	ST3.9 x 19mm	ST4.2 x 19mm		ST4.8 x 32mm	ST5.5 x 16mm	ST5.5 x 45mm
ST2.9 x 19mm			ST3.9 x 25mm	ST4.2 x 25mm	ST4.8 x 13mm	ST4.8 x 38mm	ST5.5 x 19mm	ST5.5 x 50mm
ST2.9 x 25mm								

EJOT PT - CROSS RECESSED THREAD FORMING RAISED CHEESE

HEAD SCREWS - Steel Zinc Plated



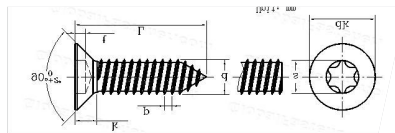
D	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
P	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.6	6.9	7.5	8.2	9.5	10.8	12.5
k	2.2	2.6	2.8	3.05	3.55	3.95	4.55
Nr. Pozidriv (Z) recess	1	2	2	2	2	3	3
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 6.5mm	ST3.5 x 6.5mm	ST3.5 x 32mm	ST3.9 x 19mm	ST4.2 x 19mm	ST4.8 x 16mm	ST5.5 x 13mm	ST5.5 x 45mm	ST6.3 x 16mm
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.5 x 38mm	ST3.9 x 25mm	ST4.2 x 25mm	ST4.8 x 19mm	ST5.5 x 16mm	ST5.5 x 50mm	ST6.3 x 32mm
ST2.9 x 13mm	ST3.5 x 13mm			ST4.2 x 32mm	ST4.8 x 25mm	ST5.5 x 19mm		ST6.3 x 38mm
ST2.9 x 16mm	ST3.5 x 16mm	ST3.9 x 9.5mm	ST4.2 x 9.5mm	ST4.2 x 38mm	ST4.8 x 32mm	ST5.5 x 25mm	ST6.3 x 13mm	ST6.3 x 45mm
ST2.9 x 19mm	ST3.5 x 19mm	ST3.9 x 13mm	ST4.2 x 13mm		ST4.8 x 38mm	ST5.5 x 32mm	ST6.3 x 16mm	ST6.3 x 50mm
ST2.9 x 25mm	ST3.5 x 25mm	ST3.9 x 16mm	ST4.2 x 16mm	ST4.8 x 13mm	ST4.8 x 45mm	ST5.5 x 38mm	ST6.3 x 19mm	
					ST4.8 x 50mm			

CROSS RECESSED COUNTERSUNK HEAD TAPPING SCREW

Steel Zinc Plated



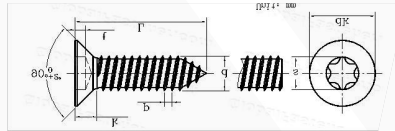
D	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
P	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.5	6.8	7.5	8.100	9.5	10.800	12.400
k =	1.7	2.1	2.3	2.5	3	3.4	3.8
Nr. Pozidriv (Z) recess	1	2	2	2	2	3	3
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.5 x 32mm	ST3.9 x 19mm	ST4.2 x 16mm	ST4.8 x 16mm	ST4.8 x 50mm	ST5.5 x 32mm	ST6.3 x 19mm
ST2.9 x 13mm	ST3.5 x 13mm	ST3.5 x 38mm	ST3.9 x 25mm	ST4.2 x 19mm	ST4.8 x 19mm		ST5.5 x 38mm	ST6.3 x 22.5mm
ST2.9 x 16mm	ST3.5 x 16mm		ST3.9 x 32mm	ST4.2 x 25mm	ST4.8 x 25mm	ST5.5 x 13mm	ST5.5 x 45mm	ST6.3 x 32mm
ST2.9 x 19mm	ST3.5 x 19mm	ST3.9 x 9.5mm		ST4.2 x 32mm	ST4.8 x 32mm	ST5.5 x 16mm	ST5.5 x 50mm	ST6.3 x 38mm
ST2.9 x 25mm	ST3.5 x 25mm	ST3.9 x 13mm	ST4.2 x 9.5mm	ST4.2 x 38mm	ST4.8 x 38mm	ST5.5 x 19mm		ST6.3 x 45mm
		ST3.9 x 16mm	ST4.2 x 13mm	ST4.8 x 13mm	ST4.8 x 45mm	ST5.5 x 25mm	ST6.3 x 16mm	ST6.3 x 50mm

CROSS RECESSED RAISED COUNTERSUNK HEAD TAPPING SCREW

Steel Zinc Plated



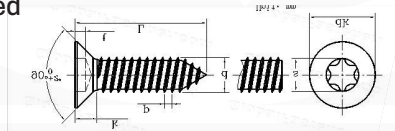
D	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
P	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.5	6.8	7.5	8.100	9.5	10.800	12.400
k =	1.7	2.1	2.3	2.5	3	3.4	3.8
f =	0.9	1.2	1.3	1.4	1.5	1.7	2
Nr. Pozidriv (Z) recess	1	2	1.3	2	2	3	3
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.5 x 38mm	ST3.9 x 25mm	ST4.2 x 32mm	ST4.8 x 25mm	ST5.5 x 13mm	ST5.5 x 45mm	ST6.3 x 25mm
ST2.9 x 13mm	ST3.5 x 13mm			ST4.2 x 38mm	ST4.8 x 32mm	ST5.5 x 16mm	ST5.5 x 50mm	ST6.3 x 32mm
ST2.9 x 16mm	ST3.5 x 16mm	ST3.9 x 9.5mm	ST4.2 x 13mm		ST4.8 x 38mm	ST5.5 x 19mm		ST6.3 x 38mm
ST2.9 x 19mm	ST3.5 x 19mm	ST3.9 x 13mm	ST4.2 x 16mm	ST4.8 x 13mm	ST4.8 x 45mm	ST5.5 x 25mm	ST6.3 x 16mm	ST6.3 x 45mm
ST2.9 x 25mm	ST3.5 x 25mm	ST3.9 x 16mm	ST4.2 x 19mm	ST4.8 x 16mm	ST4.8 x 50mm	ST5.5 x 32mm	ST6.3 x 19mm	ST6.3 x 50mm
	ST3.5 x 32mm	ST3.9 x 19mm	ST4.2 x 25mm	ST4.8 x 19mm		ST5.5 x 38mm		

CROSS RECESSED COUNTERSUNK HEAD TAPPING SCREW

Steel Zinc Plated and Steel Nickel Plated



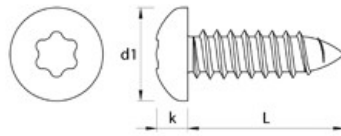
D	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
P	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.5	6.8	7.5	8.100	9.5	10.800	12.400
k =	1.7	2.1	2.3	2.5	3	3.4	3.8
Nr. Pozidriv (Z) recess	1	2	2	2	2	3	3
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 9.5mm	ST3.5 x 9.5mm	ST3.9 x 9.5mm	ST3.9 x 25mm	ST4.2 x 22mm	ST4.8 x 19mm	ST5.5 x 13mm	ST5.5 x 45mm	ST6.3 x 32mm
ST2.9 x 13mm	ST3.5 x 13mm	ST3.9 x 13mm	ST3.9 x 32mm	ST4.2 x 25mm	ST4.8 x 22mm	ST5.5 x 16mm	ST5.5 x 50mm	ST6.3 x 38mm
ST2.9 x 16mm	ST3.5 x 16mm	ST3.9 x 16mm		ST4.2 x 32mm	ST4.8 x 25mm	ST5.5 x 19mm		ST6.3 x 45mm
ST2.9 x 19mm	ST3.5 x 19mm	ST3.9 x 19mm	ST4.2 x 9.5mm	ST4.2 x 38mm	ST4.8 x 32mm	ST5.5 x 22mm	ST6.3 x 16mm	ST6.3 x 50mm
ST2.9 x 22mm	ST3.5 x 25mm	ST3.9 x 22mm	ST4.2 x 13mm		ST4.8 x 38mm	ST5.5 x 25mm	ST6.3 x 19mm	ST6.3 x 55mm
ST2.9 x 25mm	ST3.5 x 32mm		ST4.2 x 16mm	ST4.8 x 13mm	ST4.8 x 45mm	ST5.5 x 32mm	ST6.3 x 22mm	ST6.3 x 60mm
	ST3.5 x 38mm		ST4.2 x 19mm	ST4.8 x 16mm	ST4.8 x 50mm	ST5.5 x 38mm	ST6.3 x 25mm	

HEXALOBULAR PAN HEAD TAPPING SCREWS

Steel Zinc Plated



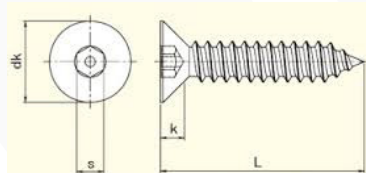
d	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.6	6.9	7.5	8.200	9.5	10.800	12.5
k	2.2	2.6	2.8	3.05	3.55	3.95	4.55
Nr Torx bit	TX8	TX10	TX15	TX20	TX25	TX25	TX30

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 9.5mm		ST3.5 x 13mm	ST3.5 x 19mm	ST3.9 x 13mm	ST4.2 x 19mm	ST4.8 x 13mm	ST5.5 x 19mm	ST6.3 x 19mm
ST2.9 x 13mm	ST3.5 x 9.5mm	ST3.5 x 16mm		ST4.2 x 13mm		ST4.8 x 16mm	ST5.5 x 25mm	ST6.3 x 25mm
			ST3.9 x 9.5mm	ST4.2 x 16mm	ST4.2 x 25mm	ST4.8 x 19mm	ST5.5 x 32mm	ST6.3 x 32mm

HEXALOBULAR COUNTERSUNK HEAD TAPPING SCREWS

Steel Zinc Plated



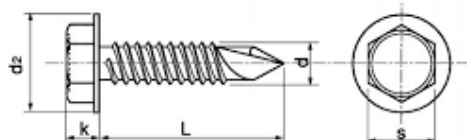
d	ST2.9	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p	1.1	1.3	1.3	1.4	1.6	1.8	1.8
dK	5.6	6.9	7.5	8.200	9.5	10.800	12.5
k	2.2	2.6	2.8	3.05	3.55	3.95	4.55
Nr Torx bit	TX8	TX10	TX15	TX20	TX25	TX25	TX30

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 9.5mm	ST3.5 x 16mm	ST3.5 x 16mm	ST3.9 x 9.5mm	ST4.2 x 19mm	ST4.2 x 38mm	ST4.8 x 13mm	ST5.5 x 45mm	ST6.3 x 45mm
ST2.9 x 13mm	ST3.5 x 19mm		ST3.9 x 13mm	ST4.2 x 32mm		ST4.8 x 19mm		ST6.3 x 50mm

HEXAGON HEAD TAPPING SCREWS with CONE END

Steel Zinc Plated



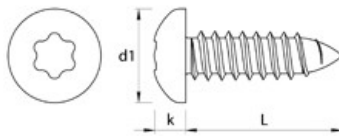
d	ST6.3
p	1.8
k	4.8
s	10
Nr. Acc. to ISO	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L
ST6.3 x 13mm	ST6.3 x 16mm	ST6.3 x 19mm	ST6.3 x 25mm

HEXALOBULAR PAN HEAD TAPPING SCREWS

Steel Zinc Plated



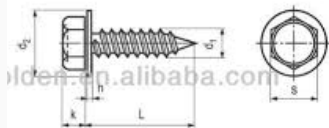
d	ST4.8	ST6.3	ST8.0
p	1.6	1.8	2.1
k	3	4.8	5.8
s	8	10	13
Nr. Acc. to ISO	10	14	16

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST4.8 x 9.5mm	ST4.8 x 16mm	ST4.8 x 25mm	ST6.3 x 13mm	ST6.3 x 19mm	ST8(7.9) x 16mm	ST8(7.9) x 25mm	ST5.5 x 19mm	ST6.3 x 19mm
ST4.8 x 13mm	ST4.8 x 19mm		ST6.3 x 16mm	ST6.3 x 25mm	ST8(7.9) x 19mm		ST5.5 x 25mm	ST6.3 x 25mm

SLOTTED HEXAGON WASHER HEAD TAPPING SCREWS

Steel Zinc Plated



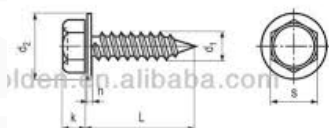
d	ST2.8	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p	1.3	1.3	1.3	1.4	1.6	1.6	1.6
dr (max)	6.5	7.21	9.18	9.5	10.61	11.08	13.2
k (max)	1.97	2.67	2.67	3.17	3.42	4.1	4.8
h (max)	0.5	0.54	0.8	0.79	0.78	0.99	1.2
s	5	5.5	7	7	8	8	10
Nr. Acc. to ISO	4	6	7	8	10	12	14

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST2.9 x 6.5mm	ST3.5 x 9.5mm	ST3.5 x 19mm	ST3.9 x 9.5mm	ST4.2 x 9.5mm	ST4.2 x 16mm	ST4.2 x 25mm	ST4.8 x 19mm	ST6.3 x 19mm
ST2.9 x 9.5mm	ST3.5 x 13mm	ST3.5 x 25mm	ST3.9 x 16mm	ST4.2 x 13mm	ST4.2 x 19mm			
ST2.9 x 13mm	ST3.5 x 16mm					ST4.8 x 19mm	ST5.5 x 19mm	

SEMA - HEXAGON WASHER HEAD TAPPING SCREWS

Steel Zinc Plated



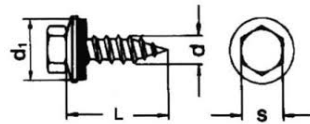
d1	ST3.5	ST4.2	ST4.8
P	1.3	1.4	1.6
d2	7.2	9	10
k	2.5	2.8	3.1
h	0.5	0.6	0.7
s	5.5	7	8
Nr. Acc. to ISO	6	8	10

SIZE AVAILABLE

d1 x L	ZINC PL.	d1 x L	ZINC PL.	d1 x L	ZINC PL.
ST3.5 x 9.5mm	ST3.5 x 16mm	ST4.2 x 9.5mm	ST4.2 x 16mm	ST4.8 x 13mm	ST4.8 x 19mm
ST3.5 x 13mm	ST3.5 x 19mm	ST4.2 x 13mm	ST4.2 x 19mm	ST4.8 x 16mm	ST4.8 x 25mm
			ST4.2 x 24mm		ST4.8 x 32mm

ROOF AND FRONT BOLTS with ELASTOMER SEALING RING

Type A –Stainless Steel A2



SIZE AVAILABLE

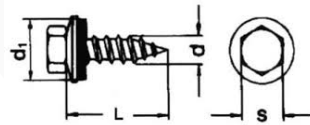
d x L	d x L	d x L	d x L
6.5 x 19mm	6.5 x 25mm	6.5 x 32mm	6.5 x 38mm

ASSEMBLY DATA

Material thickness in mm		0.63-1.1	1.25-1.5	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-10.0	<10.0
Recommended roof-front bolt		Type A			Type B				
MATERIAL		HOLE SIZE IN MM							
Roof-front bolt	Construction								
Stainless-st	Steel & Al	4	4.5	5	5.05	5.35	5.65	5.8	5.85
Aluminium	Aluminium	4.0 – 4.5			-				
Aluminium	Wood	4.0			-				
Grip length in steel and Al		L-12			L-10				
Bolt length L in Wood		min. 3mm			-				

ROOF AND FRONT BOLTS with ELASTOMER SEALING RING

Type B –Stainless Steel A2

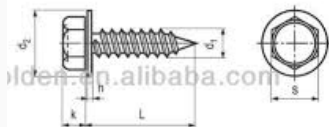


SIZE AVAILABLE

d x L	d x L	d x L
6.3 x 19mm	6.3 x 25mm	6.3 x 38mm

HEXAGON HEAD TAPPING SCREWS with CONE END

Steel Zinc Plated



d1	16	19	22
d2	6.7	6.7	6.7
s	2	3	3

d	d	d
16mm	19mm	22mm

ASSEMBLY DATA

Material thickness in mm		0.63-1.1	1.25-1.5	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-10.0	<10.0
Recommended roof-front bolt		Type A			Type B				
MATERIAL		HOLE SIZE IN MM							
Roof-front bolt	Construction								
Stainless-st	Steel & Al	4	4.5	5	5.05	5.35	5.65	5.8	5.85
Aluminium	Aluminium	4.0 – 4.5			-				
Aluminium	Wood	4.0			-				
Grip length in steel and Al		L-12			L-10				
Bolt length L in Wood		min. 3mm			-				

CROSS RECESSED MUSHROOM HEAD TAPPING SCREWS with FLANGE

Steel Zinc Plated, Black Passivated



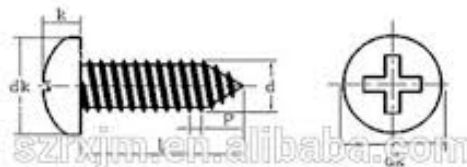
d	ST3.5	ST3.9	ST4.2	ST4.8
p	1.3	1.3	1.4	1.6
dc	9	10	10	11.5
k	2.3	2.5	2.6	2.7
Nr. Phillips (H) recess	2	2	2	2

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L
ST3.5 x 16mm	ST3.9 x 19mm	ST4.2 x 16mm	ST4.2 x 22mm	ST4.8 x 16mm	ST4.8 x 25mm
		ST4.2 x 19mm		ST4.8 x 19mm	

SELF-DRILLING CROSS RECESSED PAN HEAD SCREWS – SN

Aluminium



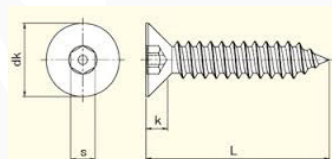
d	ST4.2	ST4.8
p	1.4	1.6
dk	8.2	9.5
k	3.05	3.55
L1 =*	7	8
Nr. Phillips (H) recess	2	2

SIZE AVAILABLE

d x L	d x L	d x L
ST4.2 x 13mm	ST4.8 x 13mm	

SELF-DRILLING CROSS RECESSED COUNTERSUNK HEAD SCREWS

Steel Zinc Plated



d	ST3.5	ST3.9	ST4.2	ST4.8	ST5.5	ST6.3
p	1.3	1.3	1.4	1.6	1.8	1.8
dK	6.8	7.5	8.1	9.5	10.8	12.4
L1 =*	5	6	7	8	10	11
Nr. Phillips (H) recess	2	2	2	2	3	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
ST3.5 x 13mm	ST3.9 x 13mm	ST3.9 x 22mm	ST4.8 x 25mm	ST4.2 x 16mm	ST4.2 x 25mm	ST4.8 x 38mm	ST5.5 x 32mm	ST6.3 x 45mm
ST3.5 x 16mm	ST3.9 x 16mm	ST3.9 x 25mm	ST4.8 x 32mm	ST4.2 x 19mm	ST4.2 x 32mm	ST4.8 x 45mm	ST5.5 x 38mm	ST6.3 x 50mm
ST3.5 x 19mm	ST3.9 x 19mm	ST3.9 x 32mm		ST4.2 x 22mm		ST4.8 x 50mm		ST6.3 x 55mm
ST3.5 x 25mm								

CROSS RECESSED MUSHROOM HEAD TAPPING SCREWS with FLANGE

Steel Zinc Plated, Black Passivated



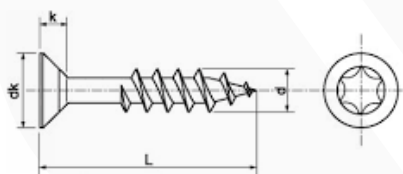
d	2.4	3	3.5	4	4.5	5	5
dK	4.8	6	7	8	9	10	10
k	1.7	2.2	2.6	2.8	3.0	3.5	3.5
Nr. Pozidriv (Z) recess	1	1	2	2	2	2	2

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
2.4 x 13mm	3 x 15mm	3.5 x 13mm	3.5 x 35mm	4 x 20mm	4 x 50mm	4.5 x 30mm	5 x 17mm	5 x 45mm
2.4 x 15mm	3 x 17mm	3.5 x 15mm	3.5 x 40mm	4 x 25mm		4.5 x 35mm	5 x 20mm	5 x 50mm
2.4 x 17mm	3 x 20mm	3.5 x 17mm		4 x 30mm	4.5 x 15mm	4.5 x 40mm	5 x 25mm	5 x 60mm
	3 x 25mm	3.5 x 20mm	4 x 13mm	4 x 35mm	4.5 x 17mm	4.5 x 45mm	5 x 30mm	5 x 70mm
3 x 13mm	3 x 30mm	3.5 x 25mm	4 x 15mm	4 x 40mm	4.5 x 20mm	4.5 x 50mm	5 x 35mm	5 x 80mm
		3.5 x 30mm	4 x 17mm	4 x 45mm	4.5 x 25mm		5 x 40mm	

CROSS RECESSED COUNTERSUNK SCREWS with HOLE for CHIPBOARD

Steel Zinc Plated



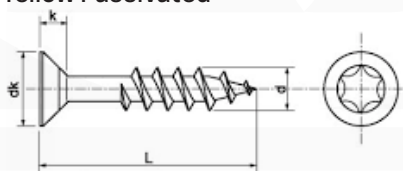
d	4.5	5	6
dk	9	10	12
d1	2.5	2.5	2.5
k	2.9	3.2	3.9
Nr. Pozidriv	2	2	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
4.5 x 20mm	4.5 x 35mm	4.5 x 50mm	5 x 40mm	5 x 70mm	5 x 100mm	6 x 60mm	6 x 90mm	6 x 120mm
4.5 x 25mm	4.5 x 40mm	4.5 x 60mm	5 x 50mm	5 x 80mm		6 x 70mm	6 x 100mm	6 x 130mm
4.5 x 30mm	4.5 x 45mm	4.5 x 70mm	5 x 60mm	5 x 90mm	6 x 50mm	6 x 80mm	6 x 110mm	

CROSS RECESS COUNTERSUNK SCREWS for CHIPBOARD

Steel Zinc Plated and Zinc Plated, Yellow Passivated



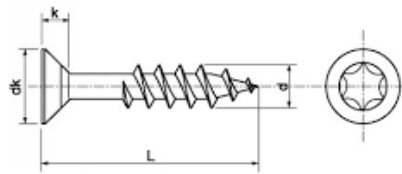
d	2.4	3	3.5	4	4.5	5	6
dK	4.8	6	7	8	9	10	12
k	1.7	1.9	2.3	2.6	2.9	3.2	3.9
Nr. Pozidriv (Z) recess	1	1	2	2	2	2	3

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
2.4 x 10mm	3 x 20mm	3.5 x 25mm	4 x 20mm	4.5 x 15mm	4.5 x 60mm	5 x 30mm	5 x 100mm	6 x 80mm
2.4 x 13mm	3 x 25mm	3.5 x 30mm	4 x 25mm	4.5 x 17mm	4.5 x 70mm	5 x 35mm		6 x 90mm
2.4 x 15mm	3 x 30mm	3.5 x 35mm	4 x 30mm	4.5 x 20mm	4.5 x 80mm	5 x 40mm	6 x 30mm	6 x 100mm
2.4 x 17mm	3 x 35mm	3.5 x 40mm	4 x 35mm	4.5 x 25mm		5 x 45mm	6 x 35mm	6 x 110mm
			4 x 40mm	4.5 x 30mm	5 x 17mm	5 x 50mm	6 x 40mm	6 x 120mm
3 x 10mm	3.5 x 13mm	4 x 13mm	4 x 45mm	4.5 x 35mm	5 x 20mm	5 x 60mm	6 x 45mm	6 x 130mm
3 x 13mm	3.5 x 15mm	4 x 15mm	4 x 50mm	4.5 x 40mm	5 x 25mm	5 x 70mm	6 x 50mm	6 x 140mm
3 x 15mm	3.5 x 17mm	4 x 17mm	4 x 60mm	4.5 x 45mm		5 x 80mm	6 x 60mm	6 x 150mm
3 x 17mm	3.5 x 20mm		4 x 70mm	4.5 x 50mm		5 x 90mm	6 x 70mm	

HEXABULAR COUNTERSUNK SCREWS for CHIPBOARD

Steel Zinc Plated



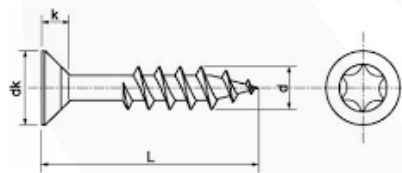
d	3	3.5	4	4.5	5
dk	6	7	8	9	10
k	1.9	2.3	2.6	2.9	3.2
Nr. Torx bit	TX10	TX15	TX20	TX20	TX25

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
3 x 20mm	3 x 20mm	3 x 30mm	4 x 17mm	4 x 25mm	4 x 40mm	4.5 x 30mm	4.5 x 50mm	5 x 50mm
3 x 25mm	3 x 25mm	3 x 40mm	4 x 20mm	4 x 30mm	4 x 45mm	4.5 x 40mm		5 x 60mm
				4 x 35mm	4 x 50mm		5 x 40mm	

VBA/PLUS – CROSS RECESS RAISED CHEESE SCREWS for CHIPBOARD

Steel Zinc Plated



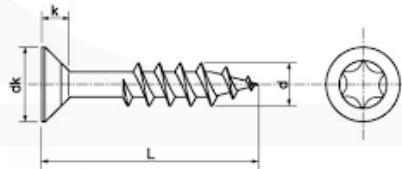
d	3	3.5	4	4.5	5
dk (max)	6.35	7.45	8.45	9.45	10.45
k (max)	2.3	2.6	3	3.35	5.75
Nr. Pozidriv (Z) recess	1	2	2	2	2

SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
3 x 13mm	3 x 20mm	3.5 x 15mm	3.5 x 25mm	4 x 15mm	4 x 25mm	4.5 x 20mm	5 x 20mm	5 x 40mm
3 x 15mm		3.5 x 17mm	3.5 x 30mm	4 x 17mm	4 x 30mm	4.5 x 30mm	5 x 25mm	5 x 50mm
3 x 17mm	3.5 x 13mm	3.5 x 20mm		4 x 20mm	4 x 40mm	4.5 x 40mm	5 x 30mm	

VBA/PLUS – CROSS RECESS COUNTERSUNK SCREWS for CHIPBOARD

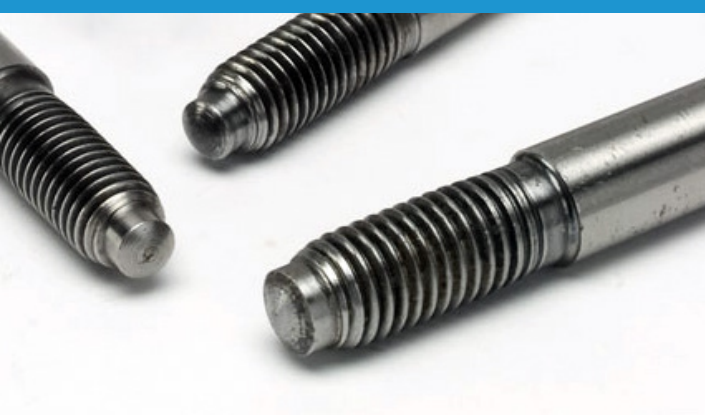
Steel Zinc Plated



d	3	3.5	4	4.5	5	6
dk (max)	5.9	6.9	7.9	8.9	9.9	11.9
k (max)	1.8	2.1	2.4	2.7	3	3.5
Nr. Pozidriv (Z) recess	1	2	2	2	2	3

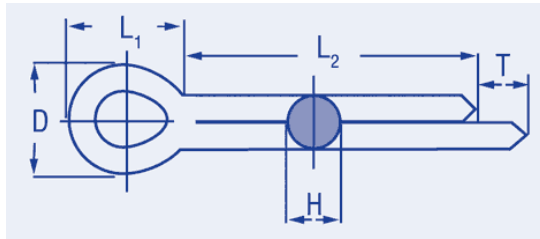
SIZE AVAILABLE

d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L	d x L
3 x 13mm	3.5 x 20mm	4 x 17mm	4 x 45mm	4.5 x 35mm	5 x 30mm	5 x 100mm	6 x 60mm	6 x 120mm
3 x 15mm	3.5 x 25mm	4 x 20mm	4 x 50mm	4.5 x 40mm	5 x 35mm	5 x 120mm	6 x 70mm	6 x 130mm
3 x 20mm	3.5 x 30mm	4 x 25mm	4 x 60mm	4.5 x 45mm	5 x 40mm		6 x 80mm	6 x 140mm
3 x 25mm	3.5 x 40mm	4 x 30mm	4.5 x 20mm	4.5 x 50mm	5 x 50mm	6 x 35mm	6 x 90mm	6 x 150mm
3 x 30mm		4 x 35mm	4.5 x 25mm		5 x 80mm	6 x 40mm	6 x 100mm	
3.5 x 15mm	4 x 15mm	4 x 40mm	4.5 x 30mm	5 x 25mm	5 x 90mm	6 x 50mm	6 x 110mm	



PINS & KEYS

SPLIT PINS (Cotter Pins) – STEEL, STEEL ZINC Plated and YELLOW PASSIVATED



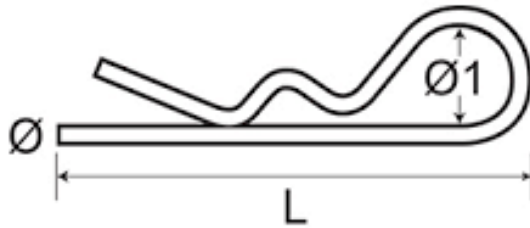
d	(nom.)	1	1.6	2	2.5	3.2	3.5	4	4.5	5	6.3	7	8	10	13
d1	min	0.9	1.4	1.8	2.3	2.9	3.2	3.7	4.2	4.6	5.9	6.5	7.5	9.5	12.4
	max	0.8	1.3	1.7	2.1	2.7	3	3.5	4	4.4	5.7	6.7	7.3	9.3	12.1
a	max	1.6	2.5	2.5	2.5	3.2	3.5	4	4	4	4	4.7	4	6.3	6.3
b =		3	3.2	4	5	6.4	7	8	8.5	10	12.6	12.3	16	20	26
	min	1.6	2.4	3.2	4	5.1	6.1	6.5	7.6	8	10.3	12.45	13.1	16.6	21.7
c	max	1.8	2.8	3.6	4.6	5.8	6.8	7.4	8.2	9.2	11.8	12.5	15	19	24.8

SIZE AVAILABLE

d x L (js 17)	d x L (js 17)	d x L (js 17)	d x L (js 17)	d x L (js 17)
1 x 10mm	2.5 x 25mm	3.5 x 70mm	5 x 63mm	8 x 71mm
1 x 12mm	2.5 x 32mm	3.5 x 80mm	5 x 80mm	8 x 80mm
1 x 16mm	2.5 x 40mm		5 x 100mm	8 x 90mm
1 x 20mm	2.5 x 50mm	4 x 20mm		8 x 100mm
1 x 25mm	2.5 x 63mm	4 x 25mm	6.3 x 25mm	8 x 125mm
1 x 32mm		4 x 28mm	6.3 x 32mm	
1 x 40mm	3.2 x 16mm	4 x 32mm	6.3 x 40mm	10 x 56mm
1 x 50mm	3.2 x 20mm	4 x 40mm	6.3 x 45mm	10 x 63mm
	3.2 x 25mm	4 x 50mm	6.3 x 50mm	10 x 71mm
1.6 x 10mm	3.2 x 32mm	4 x 63mm	6.3 x 63mm	10 x 80mm
1.6 x 12mm	3.2 x 40mm	4 x 80mm	6.3 x 71mm	10 x 90mm
1.6 x 16mm	3.2 x 50mm		6.3 x 80mm	10 x 100mm
1.6 x 20mm	3.2 x 63mm	4.5 x 50mm	6.3 x 100mm	10 x 112mm
1.6 x 25mm		4.5 x 63mm		10 x 125mm
1.6 x 32mm	3.5 x 20mm		7 x 63mm	10 x 160mm
1.6 x 40mm	3.5 x 25mm	5 x 25mm	7 x 80mm	
1.6 x 50mm	3.5 x 30mm	5 x 32mm		13 x 63mm
1.6 x 63mm	3.5 x 35mm	5 x 36mm	8 x 40mm	13 x 80mm
	3.5 x 40mm	5 x 40mm	8 x 45mm	13 x 100mm
2.5 x 16mm	3.5 x 50mm	5 x 45mm	8 x 50mm	13 x 125mm
2.5 x 20mm	3.5 x 60mm	5 x 50mm	8 x 63mm	13 x 160mm

SPRING COTTERS OF A BOLT

STEEL ZINC PLATED, YELLOW PASSIVATED

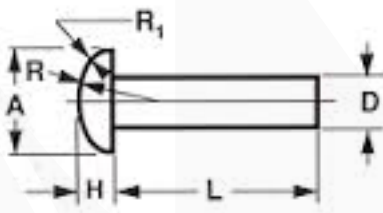


d (nom)		2.5	3.5	3.5	4.5	4.5	5.5	6	6.5	7	8	9
Coil		single	single		single			single		single	single	single
For shaft # d2	>	9	10	14	16	17	18	20	24	28	28	30
	*	14	16	20	20	24	30	28	36	40	45	45
d3		2	3	3	4	4	5	5	6	6	7	8
d4		10	18	16	20	23	26	24	30	30	30	28
L1		50	60	62	60	78	92	85	120	105	105	110
L2		25	28	32	30	44	50	40	70	50	50	55

SIZE AVAILABLE

d1 (=d3) single	d1 (=d3) single	d1 (=d3) single
2.5 (=2mm)	6 (=5mm)	8 (=7mm)
2.5 (=3mm)	6 (=6mm)	9 (=8mm)
2.5 (=4mm)		
d1 (=d3) Double	d1 (=d3) Double	d1 (=d3) Double
3.5 (=2mm)	5.5 (=5mm)	6.5 (=6mm)
4.5 (=4mm)		

MUSHROOM HEAD RIVETS - STEEL



Nr.	2	3	4	5	6	7	8	9	11	12	15
d1	2	2.3	2.5	2.8	3	3.3	3.5	4	4.5	5	6
d2	4	4.6	5	5.6	6	6.6	7	8	9	10	12
d3 (min.)	1.87	2.17	2.37	2.67	2.87	3.17	3.37	3.87	4.37	4.82	5.82
e (max)	1	1.2	1.25	1.4	1.5	1.7	1.75	2	2.3	2.5	3
k =	1	1.1	1.2	1.4	1.5	1.7	1.8	2.1	2.3	2.5	3
L	5	5	6	6.5	8	8.5	10	12	13	16	20

SIZE AVAILABLE

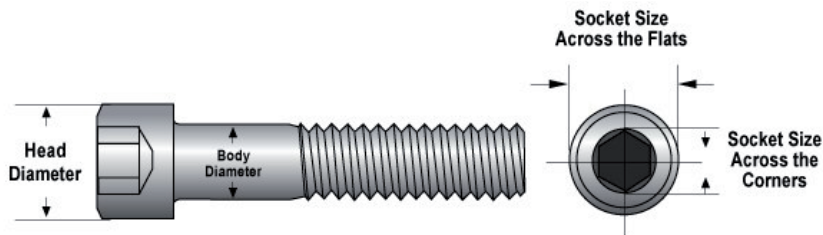
L11	L11	L11
Nr 2	Nr 6	Nr 11
Nr 3	Nr 7	Nr 12
Nr 4	Nr 8	Nr 15
Nr 5	Nr 9	



RIVETS

CONVENTIONAL BLIND RIVETS – Aluminum with Steel Zinc plated mandrel

Aluminum with Stainless Steel A2



d1	2.4	3.0	4.0	5.0	6.0
d2	5	6	7.5	9.5	12
K	0.55	0.9	1	1.1	1.5
Drill #	2.45	3.1	4.1	5.1	6.1

SIZE AVAILABLE

d1 x L	d1 x L	d1 x L	d1 x L
2.4 x 4mm	4 x 5	5 x 10mm	5 x 50mm
2.4 x 6mm	4 x 6	5 x 12mm	
2.4 x 8mm	4 x 7	5 x 14mm	6 x 8mm
	4 x 8	5 x 16mm	6 x 10mm
3 x 4mm	4 x 10	5 x 18mm	6 x 12mm
3 x 5mm	4 x 12	5 x 20mm	6 x 14mm
3 x 6mm	4 x 16	5 x 23mm	6 x 16mm
3 x 7mm	4 x 18	5 x 25mm	6 x 18mm
3 x 8mm	4 x 20	5 x 28mm	6 x 20mm
3 x 10mm		5 x 30mm	6 x 22mm
3 x 12mm	5 x 6mm	5 x 40mm	6 x 25mm
3 x 16mm	5 x 8mm	5 x 45mm	

TECHNICAL DATA

d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges
2.4 x 4.0	0.5-2.0	4.0 x 5.0	0.5-2.5	5.0 x 10.0	3.5-7.0	50 x 50.0	41.0-45.0
2.4 x 6.0	2.0-4.0	4.0 x 6.0	1.5-3.5	5.0 x 12.0	5.0-9.5		
2.4 x 8.0	4.0-6.0	4.0 x 7.0	2.0-4.5	5.0 x 14.0	7.0-11.5	6.0 x 8.0	10-4.0
		4.0 x 8.0	3.5-6.0	5.0 x 16.0	8.5-13.0	6.0 x 10.0	4.0-6.0
3.0 x 4.0	0.5-1.5	4.0 x 10.0	5.0-7.5	5.0 x 18.0	10.5-15.0	6.0 x 12.0	6.0-8.0
3.0 x 5.0	1.5-2.5	4.0 x 12.0	6.5-10.0	5.0 x 20.0	12.5-17.0	6.0 x 14.0	8.0-9.0
3.0 x 6.0	2.5-3.5	4.0 x 16.0	8.0-12.5	5.0 x 23.0	16.0-20.0	6.0 x 16.0	9.0-11.0
3.0 x 7.0	3.5-4.5	4.0 x 18.0	11.0-15.0	5.0 x 25.0	18.5-21.0	6.0 x 18.0	11.0-13.0
3.0 x 8.0	3.5-6.5	4.0 x 20.0	15.0-17.0	5.0 x 28.0	20.5-24.0	6.0 x 20.0	13.0-15.0
3.0 x 10.0	5.0-8.0			5.0 x 30.0	23.0-26.0	6.0 x 22.0	15.0-17.0
3.0 x 12.0	7.0-10.0	5.0 x 6.0	0.5-3.5	5.0 x 40.0	26.0-31.0		
3.0 x 16.0	10.0-12.5	5.0 x 8.0	2.0-5.0	5.0 x 45.0	31.0-36.0		

d1	4.0	5.0	5.0
d2	12	11	1.4
K	1.5	1.5	1.5
Drill #	4.1	5.1	5.1

SIZE AVAILABLE

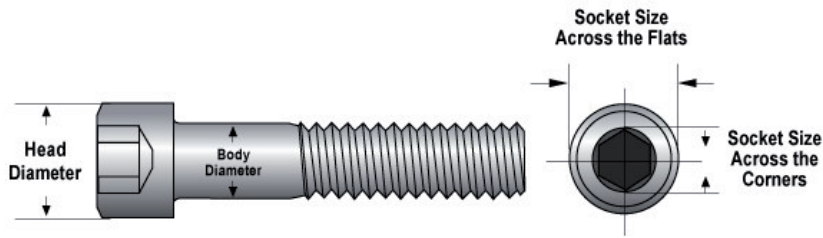
d1 x L	d1 x L	d1 x L	d1 x L
4 x 8mm	5 x 8mm	5 x 16mm	5 x 25mm
4 x 10mm	5 x 10mm	5 x 18mm	5 x 28mm
4 x 12mm	5 x 12mm	5 x 20mm	5 x 30mm
	5 x 14mm	5 x 23mm	

TECHNICAL DATA

d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges
4.0 x 8.0	3.5-6.0	5.0 x 8.0	0.5-1.5	5.0 x 16.0	8.5-13.0	5.0 x 25.0	18.5-21.0
4.0 x 10.0	5.0-7.5	5.0 x 10.0		5.0 x 18.0	10.5-15.0	5.0 x 28.0	20.5-24.0
4.0 x 12.0	6.5-10.0	5.0 x 12.0	5.0-9.5	5.0 x 20.0	12.5-17.0	5.0 x 30.0	23.0-26.0
		5.0 x 14.0	7.0-11.5	5.0 x 23.0	16.0-20.0		

CONVENTIONAL BLIND RIVETS – Aluminum with Steel Zinc plated Mandrel

Steel Zinc Plated with Steel Zinc plated mandrel



d1	3.0	4.0	5.0
d2	6	7.5	9
K =	0.9	1	1.2
Drill #	3.1	4.1	5.1

SIZE AVAILABLE

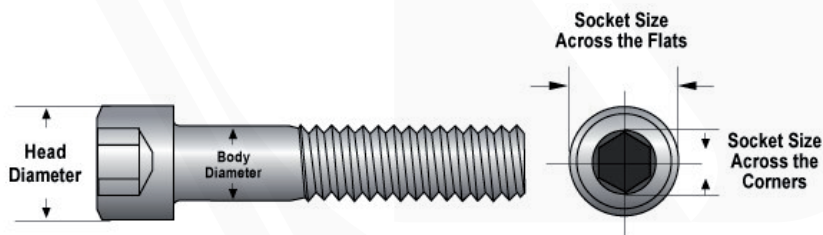
d1 x L	d1 x L	d1 x L	d1 x L
3 x 5mm	4 x 6mm	5 x 5mm	5 x 16mm
3 x 6mm	4 x 8mm	5 x 6mm	5 x 18mm
3 x 8mm	4 x 10mm	5 x 8mm	5 x 20mm
3 x 10mm	4 x 12mm	5 x 10mm	5 x 23mm
3 x 12mm	4 x 16mm	5 x 12mm	5 x 25mm
3 x 16mm	4 x 18mm	5 x 14mm	

TECHNICAL DATA

d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges
3.0 x 5.0	1.5-2.5	4.0 x 6.0	1.5-3.5	4.0 x 18.0	11.0-15.0	5.0 x 14.0	7.0-11.5
3.0 x 6.0	2.5-3.5	4.0 x 7.0	2.0-4.5			5.0 x 16.0	8.5-13.0
3.0 x 8.0	3.5-6.5	4.0 x 8.0	3.5-6.0	5.0 x 6.0	0.5-3.5	5.0 x 18.0	10.5-15.0
3.0 x 10.0	5.0-8.0	4.0 x 10.0	5.0-7.5	5.0 x 8.0	2.0-5.0	5.0 x 20.0	12.5-17.0
3.0 x 12.0	7.0-10.0	4.0 x 12.0	6.5-10.0	5.0 x 10.0	3.5-7.0	5.0 x 23.0	16.0-20.0
3.0 x 16.0	10.0-12.5	4.0 x 16.0	8.0-12.5	5.0 x 12.0	5.0-9.5	5.0 x 25.0	18.5-21.0

CONVENTIONAL BLIND RIVETS – Stainless Steel A2 and A4

With Stainless Steel mandrel



D1	3.0	4.0	5.0
D2	6.5	8.0	9.5
K =	0.8	1.0	1.1
Drill #	3.1	4.1	5.1

SIZE AVAILABLE

D1 x L	d1 x L	d1 x L	d1 x L
3 x 6mm	4 x 8mm	4 x 18mm	5 x 12mm
3 x 8mm	4 x 10mm		5 x 16mm
3 x 10mm	4 x 12mm	5 x 8mm	5 x 18mm
3 x 12mm	4 x 16mm	5 x 10mm	5 x 20mm
3 x 12mm	4 x 16mm	5 x 12mm	5 x 25mm
3 x 16mm	4 x 18mm	5 x 14mm	

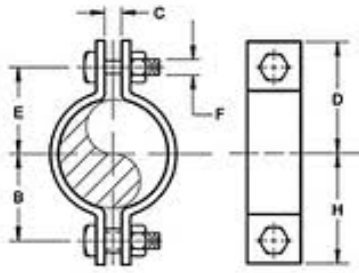
TECHNICAL DATA

d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges	d1 x L	Grip Ranges
3.0 x 6.0	1.0-3.0	4.0 x 8.0	2.5-4.5	4.0 x 18.0	11.5-14.0	5.0 x 12.0	6.0-8.0
3.0 x 8.0	3.0-5.0	4.0 x 10.0	4.5-6.5			5.0 x 16.0	8.0-10.0
3.0 x 10.0	5.0-7.0	4.0 x 12.0	6.5-8.5	5.0 x 8.0	1.5-4.0	5.0 x 18.0	10.0-13.0
3.0 x 12.0	7.0-9.0	4.0 x 16.0	8.5-11.5	5.0 x 10.0	4.0-6.0	5.0 x 20.0	13.0-16.0



CLAMPS DUCT FIXING

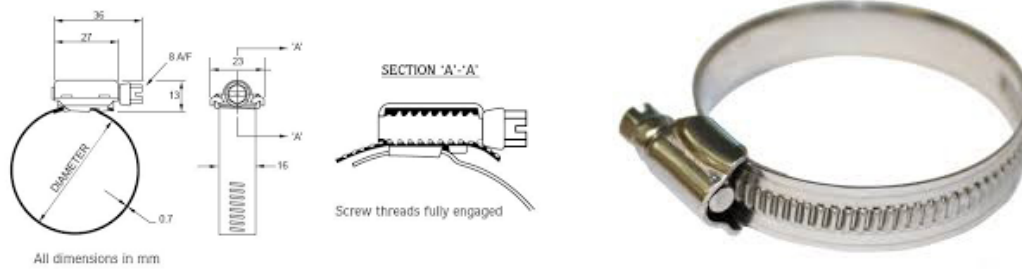
HEAVY DUTY CLAMPS



STANDARD and CHANNEL BRIDGE T-BOLTS

Size	Min. Diameter (inches)	Max. Diameter (inches)	Min. Diameter (inches)	Max. Diameter (inches)	Installation Torque
-	13/8	19/16	35.1	38.6	75.0 in. lbs. (8.5 Nm.)
-	11/2	15/8	38.1	41.7	75.0 in. lbs. (8.5 Nm.)
-	15/8	17/8	41.4	46	75.0 in. lbs. (8.5 Nm.)
28	13/4	2	44.5	50.8	75.0 in. lbs. (8.5 Nm.)
32	17/8	23/16	47.8	55.6	75.0 in. lbs. (8.5 Nm.)
36	2	25/16	50.8	58.7	75.0 in. lbs. (8.5 Nm.)
40	21/8	27/16	54.1	62	75.0 in. lbs. (8.5 Nm.)
44	21/4	29/16	57.2	65	75.0 in. lbs. (8.5 Nm.)
45	23/8	211/16	60.5	68.3	75.0 in. lbs. (8.5 Nm.)
52	21/2	213/16	63.5	71.4	75.0 in. lbs. (8.5 Nm.)
56	25/8	215/16	66.8	74.7	75.0 in. lbs. (8.5 Nm.)
60	23/4	31/16	69.9	77.7	75.0 in. lbs. (8.5 Nm.)
64	27/8	33/16	73.2	81	75.0 in. lbs. (8.5 Nm.)
68	3	35/16	76.2	84.1	75.0 in. lbs. (8.5 Nm.)
72	31/8	37/16	79.5	87.4	75.0 in. lbs. (8.5 Nm.)
76	31/4	39/16	82.6	90.4	75.0 in. lbs. (8.5 Nm.)
80	33/8	311/16	85.9	93.7	75.0 in. lbs. (8.5 Nm.)
84	31/2	313/16	88.9	96.8	75.0 in. lbs. (8.5 Nm.)
88	35/8	315/16	92.2	100.1	75.0 in. lbs. (8.5 Nm.)
92	33/4	41/16	95.3	103.1	75.0 in. lbs. (8.5 Nm.)
100	4	45/16	101.6	109.5	75.0 in. lbs. (8.5 Nm.)
108	41/4	49/16	108	115.8	75.0 in. lbs. (8.5 Nm.)
116	41/2	413/16	114.3	122.2	75.0 in. lbs. (8.5 Nm.)
124	43/4	51/16	120.7	128.5	75.0 in. lbs. (8.5 Nm.)
132	5	55/16	127	134.9	75.0 in. lbs. (8.5 Nm.)
140	51/4	59/16	133.4	141.2	75.0 in. lbs. (8.5 Nm.)
148	51/2	513/16	139.7	147.6	75.0 in. lbs. (8.5 Nm.)
156	53/4	61/16	146.1	153.9	75.0 in. lbs. (8.5 Nm.)
164	6	65/16	152.4	160.3	75.0 in. lbs. (8.5 Nm.)
172	61/4	69/16	158.8	166.6	75.0 in. lbs. (8.5 Nm.)
180	61/2	613/16	165.1	173	75.0 in. lbs. (8.5 Nm.)
188	63/4	71/16	171.5	179.3	75.0 in. lbs. (8.5 Nm.)
196	7	75/16	177.8	185.7	75.0 in. lbs. (8.5 Nm.)
204	71/4	79/16	184.2	192	75.0 in. lbs. (8.5 Nm.)
212	71/2	713/16	190.5	198.4	75.0 in. lbs. (8.5 Nm.)
220	73/4	81/16	196.9	204.7	75.0 in. lbs. (8.5 Nm.)
228	8	85/16	203.2	211.1	75.0 in. lbs. (8.5 Nm.)
236	81/4	89/16	209.6	217.4	75.0 in. lbs. (8.5 Nm.)
244	81/2	813/16	215.9	223.8	75.0 in. lbs. (8.5 Nm.)

BUTTERFLY HOSE CLAMPS



Width	a	b	c	d	e
8.0mm	0.60	10	5	13	12

HF-2101 8MM

SIZE	NO.	MM	NW	GW	CU FT
1/2"	-	8-13	13.0 kgs	14.0 kgs	0.61'
5/8"	4	10-16	13.2 kgs	14.2 kgs	0.61'
3/4"	6	13-19	13.5 kgs	14.5 kgs	0.84'
7/8"	8	16-23	14.0 kgs	15.0 kgs	0.84'
1"	10	13-26	15.0 kgs	17.0 kgs	1.23'

HF-2101 8MM

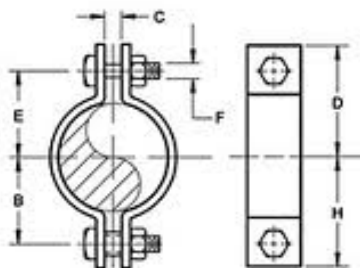
SIZE	NO.	MM	NW	GW	CU FT
1/2"	-	8-13	22.0 kgs	23.0 kgs	0.84'
5/8"	4	10-16	22.9 kgs	23.9 kgs	1.23'
3/4"	6	13-19	23.0 kgs	24.0 kgs	1.23'
7/8"	8	16-23	23.5 kgs	24.5 kgs	1.32'
1"	-	13-26	25.4 kgs	26.4 kgs	1.47'

HF - 2301 BUTTERFLY HOSE CLAMPS BAND WIDTH 12.7MM

SIZE	NO.	MM	NW	GW	CU FT
3/4"	6	13-19	22.5 kgs	23.5 kgs	1.23'
7/8"	8	16-23	23.0 kgs	24.0 kgs	1.23'
11/16"	10	19-27	23.0 kgs	24.5 kgs	1.32'
13/16"	-	19-30	23.5 kgs	24.5 kgs	1.47'
11/4"	12	16-32	24.0 kgs	25.0 kgs	1.47'
13/8"	-	23-36	26.6 kgs	28.1 kgs	1.94'
11/2"	16	21-38	28.0 kgs	29.5 kgs	1.94'
15/8"	-	19-42	28.2 kgs	29.7 kgs	2.36'
13/4"	20	19-44	29.5 kgs	31.0 kgs	2.36'
17/8"	-	29-47	15.6 kgs	16.6 kgs	1.47'
2"	24	32-51	16.0 kgs	17.0 kgs	1.47'

HEAVY DUTY ELECTRO GALVANIZED PIPE CLAMPS

Welded Dual Nuts M8 + M10 with Poze screw without Rubber



TUBE SIZE AVAILABLE	CLIP SIZE
3/8"	1519-
1/2"	20-25
3/4"	26-30
1"	32-36
1 1/4"	38-43
1 1/2"	47-51
54mm	53-58
2"	60-64
70mm	67-72
2 1/2"	75-80
3"	87-92
110mm	107-112
4"	113-118
5"	138-142
6"	159-166

HEAVY DUTY ELECTRO GALVANIZED PIPE CLAMPS WELDED

DUAL NUT M8 + M10 with Pozi screw with EPDM Rubber lining



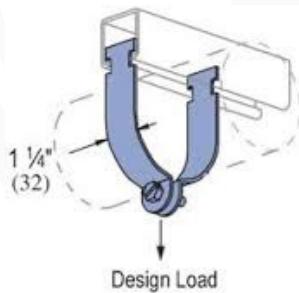
TUBE SIZE AVAILABLE	CLIP SIZE
3/8"	15-19
1/2"	20-25
3/4"	26-30
1"	32-36
1 1/4"	38-43
1 1/2"	47-51
54mm	53-58
2"	60-64
70mm	67-72
2 1/2"	75-80
3"	87-92
110mm	107-112
4"	113-118
5"	138-142
6"	159-166

BEAM CLAMP – Zinc Plated



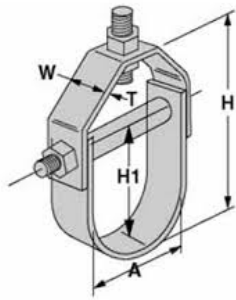
HOLE	BOLT	WEIGHT	A	B	C	D	E
H	GRADE 8.8	Recommended					
M6	8 x 35	235 kg.	35	19	38	35	19
M8	8 x 35	235 kg.	35	19	38	35	19
M6	10 x 40	235 kg.	45	25	50	41	21
M8	10 x 40	235 kg.	45	25	50	41	21
M10	10 x 40	235 kg.	45	25	50	41	21
7mm	8 x 35	236 kg.	35	19	38	35	19
9mm	8 x 35	237 kg.	35	19	38	35	19
7mm	10 x 40	238 kg.	45	25	50	41	21
9mm	10 x 40	239 kg.	45	25	50	41	21
11mm	10 x 40	240 kg.	45	25	50	41	21

STRUT CLAMP – Zinc Plated



TUBE	CLAMP	SHEET SIZE	BOLT
Size	Size		
1/2"	15 MM	1.6 x 32MM	M6 x 25
3/4"	20 MM	1.6 x 32MM	M6 x 25
1"	25 MM	1.9 x 32MM	M8 x 35
1 1/4"	32 MM	1.9 x 32MM	M8 x 35
1 1/2"	40 MM	1.9 x 32MM	M8 x 35
2"	50 MM	1.9 x 32MM	M8 x 35
2 1/4"	65 MM	1.9 x 32MM	M8 x 35
3"	80 MM	3.0 x 32MM	M10 x 35
4"	100 MM	3.0 x 32MM	M10 x 35
5"	125 MM	3.0 x 32MM	M10 x 35
6"	150 MM	3.0 x 32MM	M10 x 35

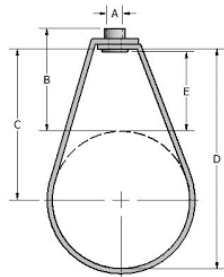
DUCT FIX – CLEVIS HANGER



#	PIPE	ROD	CENTER	HEIGHT	CROSS BOLT	STOCK		MAX LOAD
SIZE AVAILABLE		SIZE – A	LINE – B	C		G	H	KGS.
12"	2025-	38/	44	55	1/4"	3 x 25	3 x 25	270
34"	2630-	38/	54	68	1/4"	3 x 25	3 x 25	270
1"	32-36	3/8	58	75	1/4"	3 x 25	3 x 25	270
1-1/4"	38-43	3/8	80	100	1/4"	3 x 25	3 x 25	270
1-1/2"	47-51	3/8	81	106	1/4"	3 x 25	3 x 25	270
2"	60-64	3/8	86	117	1/4"	3 x 25	3 x 25	270
2-1/2"	75-80	1/2	106	144	5/16"	3 x 32	3 x 32	500
3"	87-92	1/2	127	172	5/16"	3 x 32	3 x 32	500
4"	113-118	5/8	141	199	3/8"	4 x 32	3 x 32	640
5"	138-142	5/8	159	229	3/8"	4 x 32	3 x 32	640
6"	159-166	3/4	174	257	1/2"	4 x 38	3 x 38	800
8"	207-219	7/8	212	320	5/8"	5 x 45	4 x 45	900
10"	260-273	7/8	250	387	5/8"	6 x 45	5 x 45	1600
12"	309-323	7/8	292	457	5/8"	6 x 50	5 x 50	1700

PIPE HANGER – Adjustable Swivel Ring / Pear Clamp

ZINC PLATED with KNURLED NUT



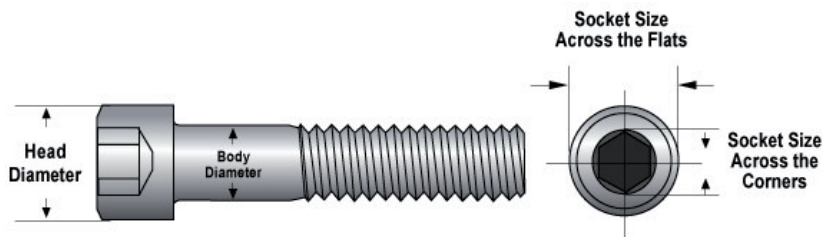
TUBE SIZE AVAILABLE	#	H	SHEET SIZE
INCHES	SIZE (MM)	SIZE (MM)	MM
3/4"	20	64	1.5 x 25
1	25	72	1.5 x 25
1 1/4"	32	83	1.5 x 25
1 1/2"	40	96	1.5 x 25
2	50	113	1.5 x 25
2 1/2"	65	132	20 x 25
3	80	156	20 x 25
4	100	215	20 x 25
5	125	242	2.5 x 25
6	150	279	2.5 x 25



MISCELLENIOUS

CONVENTIONAL BLIND RIVETS – Aluminum with Steel Zinc plated Mandrel

Steel Zinc Plated with Steel Zinc plated mandrel



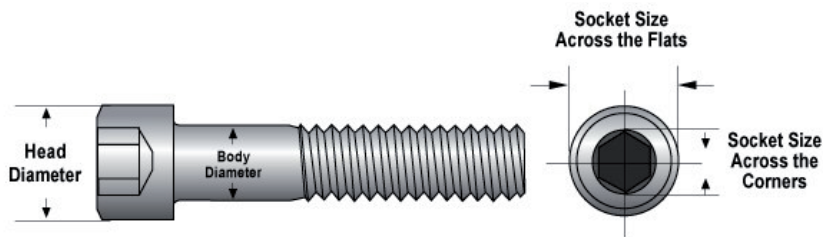
d1	M6	M8	M10	M12	M16
P	1	1.25	1.5	1.75	2
l2	18	22	26	30	38
dk	16.55	20.65	24.65	30.65	38.8
f	4.6	5.6	6.6	8.75	12.9
h	3.88	4.88	5.38	6.95	8.95
v	6.48	8.58	10.58	12.7	16.7

SIZE AVAILABLE

d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l	d1 x l
M6 x 16	M6 x 45	M8 x 30	M8 x 60	M10 x 30	M10 x 60	M12 x 25	M12 x 50	M12 x 80
M6 x 20	M6 x 50	M8 x 35	M8 x 70	M10 x 35	M10 x 70	M12 x 30	M12 x 55	M12 x 90
M6 x 25		M8 x 40	M8 x 80	M10 x 40	M10 x 80	M12 x 35	M12 x 60	M12 x 100
M6 x 30	M8 x 16	M8 x 45		M10 x 45	M10 x 90	M12 x 40	M12 x 65	
M6 x 35	M8 x 20	M8 x 50	M10 x 20	M10 x 50	M10 x 100	M12 x 45	M12 x 70	M16 x 90
M6 x 40	M8 x 25	M8 x 55	M10 x 25	M10 x 55			M12 x 75	M16 x 120

CONVENTIONAL BLIND RIVETS – Aluminum with Steel Zinc plated Mandrel

Steel Zinc Plated with Steel Zinc plated mandrel

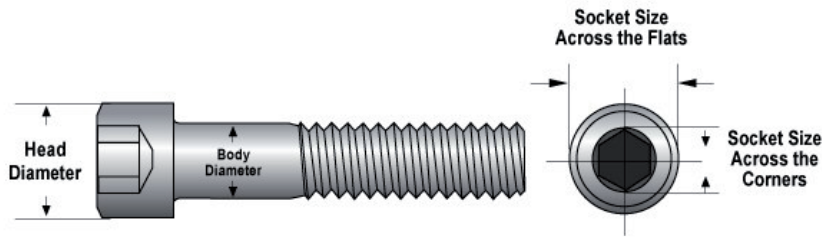


d1	M6	M8	M10	M12	M16	M20	M24	M27	M30
P	1	1.25	1.5	1.75	2	2.5	3	3	3.5
b1	18	22	26	30	38	46	54	60	66
b2	-	28	32	36	44	52	60	66	72
b3	-	-	-	49	57	65	73	79	85
d2 (H9)	6	8	10	12	16	18	22	25	28
d3 (max.)	14	18	20	25	32	40	45	50	55
s (max.)	7	9	12	14	17	22	25	27	30

SIZE AVAILABLE

d1 x L	d1 x L	d1 x L
M3 x 30	M12 x 60	M20 X 130
M3 x 40	M12 x 70	M20 X 140
M3 x 50	M12 x 80	M20 X 150
M3 x 60	M12 x 90	M20 X 160
M3 x 70	M12 x 100	M20 X 180
M3 x 80	M12 x 110	M20 X 200
	M12 x 120	
M8 x 40	M12 x 130	M24 x 100
M8 x 50	M12 x 140	M24 x 110
M8 x 60	M12 x 150	M24 x 120
M8 x 70		M24 x 130
M8 x 80	M16 X 60	M24 x 140
M8 x 90	M16 X 70	M24 x 150
M8 x 100	M16 X 80	M24 x 160
M8 x 110	M16 X 90	M24 x 180
M8 x 120	M16 X 100	M24 x 200
M8 x 130	M16 X 110	M24 x 220
M8 x 140	M16 X 120	
	M16 X 130	M27 x 120
M10 x 40	M16 X 140	M27 x 140
M10 x 50	M16 X 150	M27 x 160
M10 x 60	M16 X 160	M27 x 180
M10 x 70	M16 X 180	M27 x 200
M10 x 80	M16 X 200	
M10 x 90		M30 x 120
M10 x 100	M20 X 60	M30 x 140
M10 x 110	M20 X 60	M30 x 160
M10 x 120	M20 X 60	M30 x 180
M10 x 130	M20 X 60	M30 x 200
M10 x 140	M20 X 60	

LIFTING EYE BOLTS – Steel Zinc Plated and Yellow Plated



d1	M6#	M8	M10	M12	M14#	M16	M20	M22#	M24	M27#	M30
P	1	1.25	1.5	1.75	2	2	2.5	2.5	3	3	3.5
d2	20	20	25	30	35	36	40	45	50	50	65
d3	36	36	45	54	63	63	72	81	90	90	108
d4	20	20	25	30	35	35	40	45	50	50	60
h	36	36	45	53	62	62	71	81	90	90	109
L	13	13	17	20.5	27	27	30	35	36	38	45

TOTAL MAXIMUM LOAD DUE TO SUSPENDED ITEM IN NEWTON (N)

DIRECTION OF LOAD	one bolt		750	1400	2300	3400	4850	7000	12000	15200	18000	26000	36000
	two bolts		500	950	1700	2400	3400	5000	8300	10500	12700	18700	28000

d1	M33#	M36	M39#	M42	M45#	M48	M52#	M56	M64	M72
P	3.5	4	7	4.5	4.5	5	5	5.5	6	6
d2	65	75	75	85	85	100	110	110	120	150
d3	108	126	126	144	144	166	184	184	206	206
d4	60	70	70	80	90	100	100	110	110	140
h	109	128	128	147	147	168	187	187	208	260
L	45	54	54	63	63	68	78	78	90	100

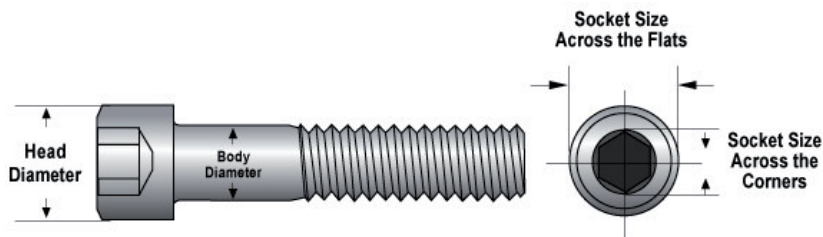
TOTAL MAXIMUM LOAD DUE TO SUSPENDED ITEM IN NEWTON (N)

DIRECTION OF LOAD	one bolt		43000	51000	60000	70000	78000	86000	95000	115000	160000	210000
	two bolts		31000	37000	43000	50000	54000	61000	70000	83000	110000	150000

SIZE AVAILABLE

d1	d1	d1
M6	M22	M42
M8	M24	M45
M10	M27	M48
M12	M30	M52
M14	M33	M56
M16	M36	M64
M20	M39	M72 x 6#

LIFTING EYE NUTS – Steel Zinc Plated and Yellow Plated



d1	M6#	M8	M10	M12	M14#	M16	M20	M22#	M24	M27#
P	1	1.25	1.5	1.75	2	2	2.5	2.5	3	3
d2	20	20	25	30	30	36	40	45	50	50
d3	36	36	45	54	54	63	72	81	90	90
d4	20	20	25	30	30	35	40	45	50	50
h	36	36	45	53	53	62	71	81	90	90

TOTAL MAXIMUM LOAD DUE TO SUSPENDED ITEM IN NEWTON (N)

DIRECTION OF LOAD	one bolt		750	1400	2300	3400	4850	7000	12000	15200	18000	26000	36000
	two bolts		500	950	1700	2400	3400	5000	8300	10500	12700	18700	28000

d1	M27#	M30	M33#	M36	M39#	M42	M48	M56	M64	M72
P	3	3.5	3.5	4	4	4.5	5	5.5	6	6
d2	50	65	65	75	75	85	100	110	120	150
d3	90	108	108	126	126	144	166	184	206	206
d4	50	60	60	70	70	80	90	100	110	140
h	90	109	109	128	128	147	168	187	208	260

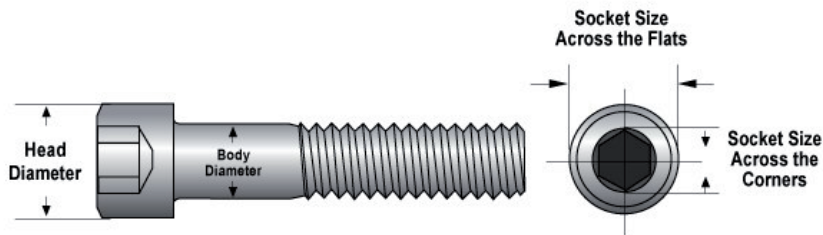
TOTAL MAXIMUM LOAD DUE TO SUSPENDED ITEM IN NEWTON (N)

DIRECTION OF LOAD	one bolt		26000	36000	43000	61000	60000	70000	86000	115000	160000	210000
	two bolts		18700	26000	31000	37000	43000	50000	61000	83000	110000	150000

SIZE AVAILABLE

d1	d1	d1
M6	M22	M42
M8	M24	M48
M10	M27	M52
M12	M30	
		M56
M14	M33	M64
M16	M36	M72 x 6#
M20	M39	

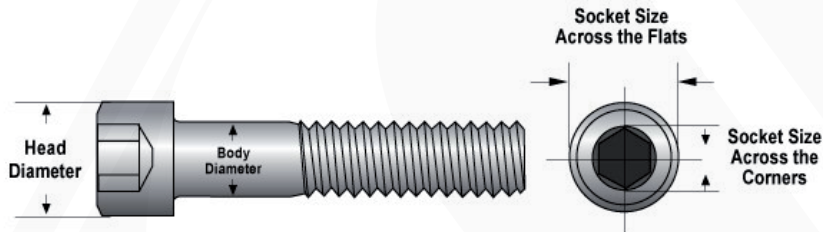
WELDLESS EYE NUT AUTO BLACK – HDG



SIZE AVAILABLE

R	A	B	C	D	E	F	G
3/8"	20	52	13	32	38	25	34.5
1/2"	20	52	13	32	38	25	34.5
5/8"	20	52	13	32	38	25	34.5
3/4"	20	52	13	32	38	25	34.5
7/8"	26	66.7	19	42.9	50	31	50
1"	26	66.7	19	42.9	50	31	50
1 1/8"	32	86	25.4	57	63.5	47	62
1 1/4"	32	86	25.4	57	63.5	47	62
1 1/2"	32	86	25.4	57	63.5	47	62

U-BOLT ELECTRO GALVANIZED with TOW NUTS



SIZE AVAILABLE

SIZE AVAILABLE	A	B	C
M6 x 1/2"	17.3	39.3	20
M6 x 5/8"	21.7	41.7	20
M6 x 3/4"	27.2	47.2	20
M6 x 1"	34.0	54.0	20
M6 x 1 1/4"	42.7	62.7	20
M6 x 1 1/2"	48.6	68.6	20
M6 x 2"	60.5	80.5	20
M6 x 2 1/2"	77.0	97.0	20
M6 x 3"	90.0	111.0	20
M8 x 1/2"	17.0	42.3	25
M8 x 5/8"	21.7	46.7	25
M8 x 3/4"	27.2	52.2	25
M8 x 1"	34.0	59.0	25
M8 x 1 1/4"	42.7	67.7	25
M8 x 1 1/2"	48.6	73.6	25
M8 x 2"	60.5	85.5	25
M8 x 2 1/2"	77.0	102.0	25
M8 x 3"	90.0	116.0	25
M8 x 4"	116.0	140.0	25
M10 x 1/2"	17.3	47.3	30
M10 x 5/8"	21.7	51.7	30
M10 x 3/4"	27.2	57.2	30
M10 x 1"	34.0	64.0	30
M10 x 1 1/4"	42.7	72.7	30
M10 x 1 1/2"	48.6	78.6	30
M10 x 2"	60.5	90.5	30
M10 x 2 1/2"	77.0	107.0	30
M10 x 3"	90.0	121.0	30
M10 x 4"	116.0	145.0	30
M10 x 5"	142.0	175.0	30
M10 x 6"	170.0	198.0	30
M12 x 2"	60.5	101.0	35
M12 x 2 1/2"	77.0	117.0	35
M12 x 3"	90.0	129.0	35
M12 x 4"	116.0	145.0	35
M12 x 5"	142.0	159.0	35
M12 x 6"	170.0	182.0	35
M12 x 8"	220.0	248.0	35
M12 x 10"	270.0	300.0	35
M12 x 12"	320.0	354.0	35

