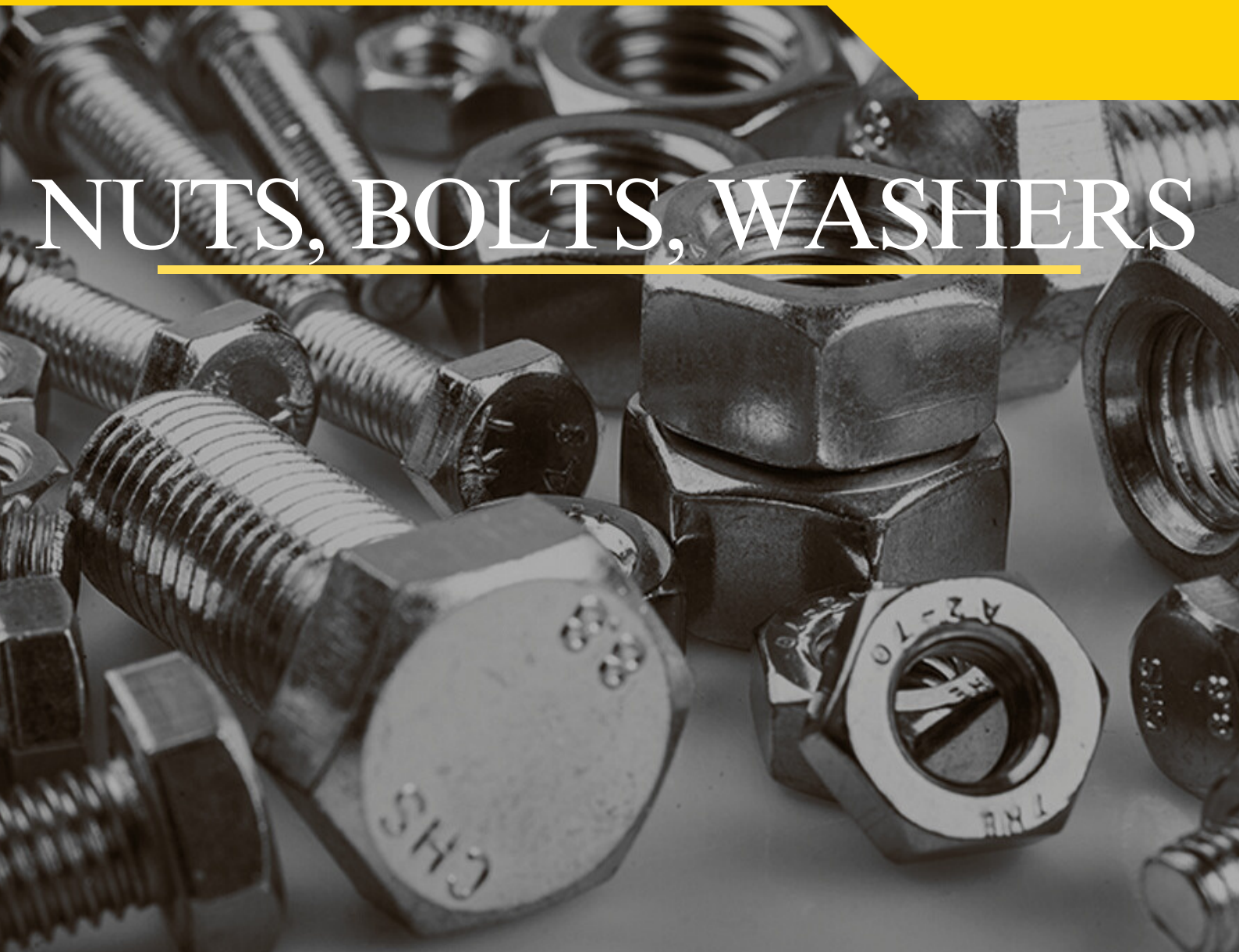




NUTS, BOLTS, WASHERS



ROYALE EXPORT

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RESB000000000

STUD BOLTS



Full Threaded Studs and Engineering Studs

STANDARDS:-

ASTM/ASME/BS/DIN/BS EN ISO /JIS

MATERIAL:-

Mild Steel, Carbon Steel, Alloy Steel & Stainless Steel.

FINISH AVAILABLE :

Plain, Electro-Galvanized, Hot Dip Galvanized, Zinc Flake, Yellow, Cadmium & Nickel.

SIZE RANGE:-

M6 to M100 in metric series

1/4" to 4" in imperial

THREADS:-

UNC, 8UN, UNF, Metric Coarse and Metric Fine

TYPICAL GRADES & STANDARDS:-

ASTM A193 Grade B, B7M, B8, B8M & B16

ASTM A320 Grade L7 & L7M

Any other specific grade can be manufactured upon request with short lead times.

ORDERING INFORMATION:-

Dimensions - Dia and length.

Standard and Grade.

Nut and washer quantity

Anchor bolts, Foundation bolts, holding down Bolts, U Bolts, Sag Rods & Tie Rods can be manufactured as per customer's drawing and as per grade required.

STANDARDS:-

ASTM/ASME/BS/DIN/BS EN ISO /JIS

MATERIAL:-

Mild Steel, Carbon Steel, Alloy Steel & Stainless Steel.

FINISH AVAILABLE :

Plain, Electro-Galvanized, Hot Dip Galvanized, Zinc Flake, Yellow, Cadmium & Nickel.

SIZE RANGE:-

M6 to M100 in metric series

1/4" to 4" in imperial

THREADS:-

UNC, 8UN, UNF, Metric Coarse and Metric Fine

Typical Grades & Standards:-

BS 3692 / BS 4190 grade 4.6, 4.8, 5.6, 5.8, 8.8, 10.9 and 12.9

ASTM A307, A325, A193, B7 & B16, ASTM A320 L7

Stainless Steel 304, 304L, 316, 316L, A2-70/80, A4-70/80, ASTM A193 Grade B8 & B8M

ASTM A675 Grade 90, ASTM A572 Grade 50 and ASTM F1554 grade 36, 55 and 105

Any other specific grade can be manufactured upon request with short lead times.

ORDERING INFORMATION:-

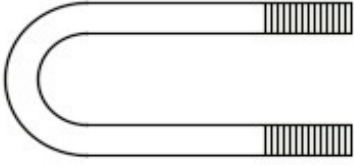
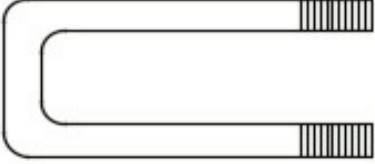
Dimensions.

Standard and Grade.

Nut and washer quantity

Plate and sleeve dimensions (if required).

SPECIALLY MANUFACTURED ITEMS:-

	'U' Bolts Grip and Non Grip Type	N.B. (1/2") M15-(24") M600 DIA. Bar Size Range (1/4") M6 - (4") M100
	Square Bend 'U' Bolts	Bar Size Range (1/4") M6 - (4") M100
	'J' Foundation Bolts	Bar Size Range (1/4") M6 - (4") M100
	Double Ended Engineer Studs	Bar Size Range (1/4") M6 - (4") M100
	Waisted Double Ended Engineer Studs	Bar Size Range (1/4") M6 - (4") M100
	Tie Bars & Foundation Bolts	Bar Size Range (1/4") M6 - (4") M100

- All products are available with the appropriate grades of nuts and washers
- All forms of plating and coating can be carried out

HEX BOLTS

REHB000000000



Hex Head and Heavy Hex Head in Full and Partial Threading

STANDARDS:-

ASTM/ASME/BS/DIN/BS EN ISO /JIS

MATERIAL:-

Mild Steel, Carbon Steel, Alloy Steel & Stainless Steel.

FINISH AVAILABLE :

Plain, Electro-Galvanized, Hot Dip Galvanized, Zinc Flake, Yellow, Cadmium & Nickel.

SIZE RANGE:-

M6 to M64 in metric series

$\frac{1}{4}$ " to $2\frac{1}{2}$ " in imperial

Bigger sizes can be manufactured as per order.

THREADS:-

UNC, 8UN, UNF, Metric Coarse and Metric Fine

TYPICAL GRADES & STANDARDS:-

BS3692 / BS4190 grade 4.6, 4.8, 5.6, 5.8, 8.8, 10.9 and 12.9

ASTM A307 Grade A and B

ASTM A325

ASTM A193 Grade B7, B7M, B8, B8M & B16

ASTM A320 Grade L7 & L7M

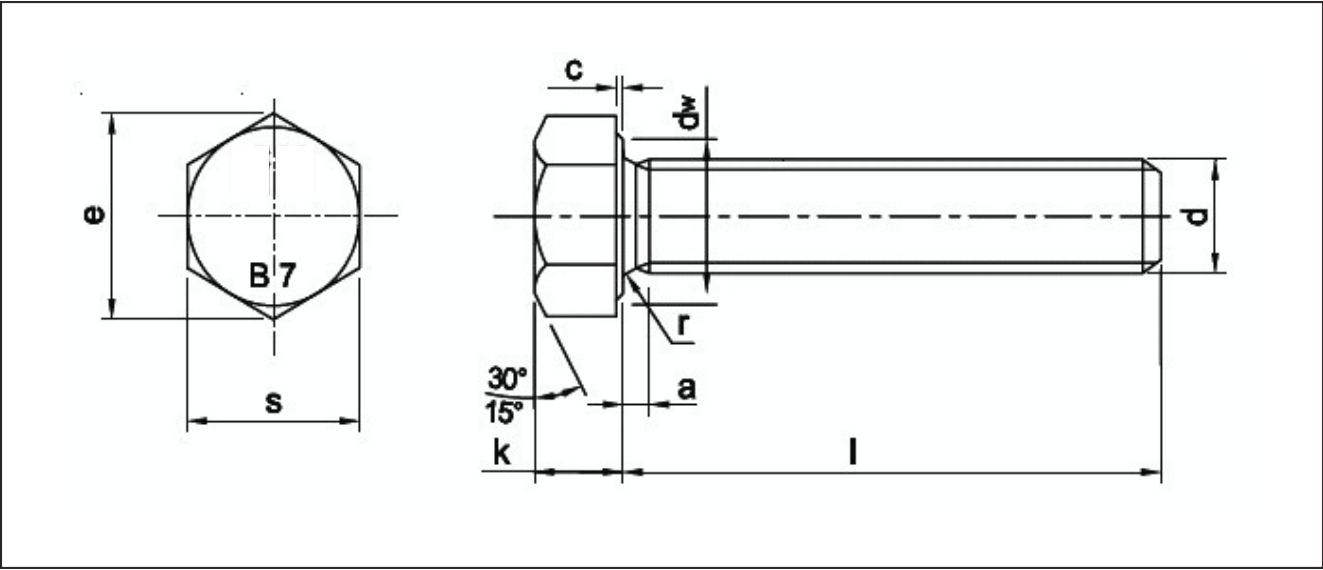
Stainless Steel 304, 304L, 316, 316L, A2-70/80, A4-70/80

Any other specific grade can be manufactured upon request with short lead times.

ORDERING INFORMATION:-

DIN 93 HEXAGON HEAD BOLT

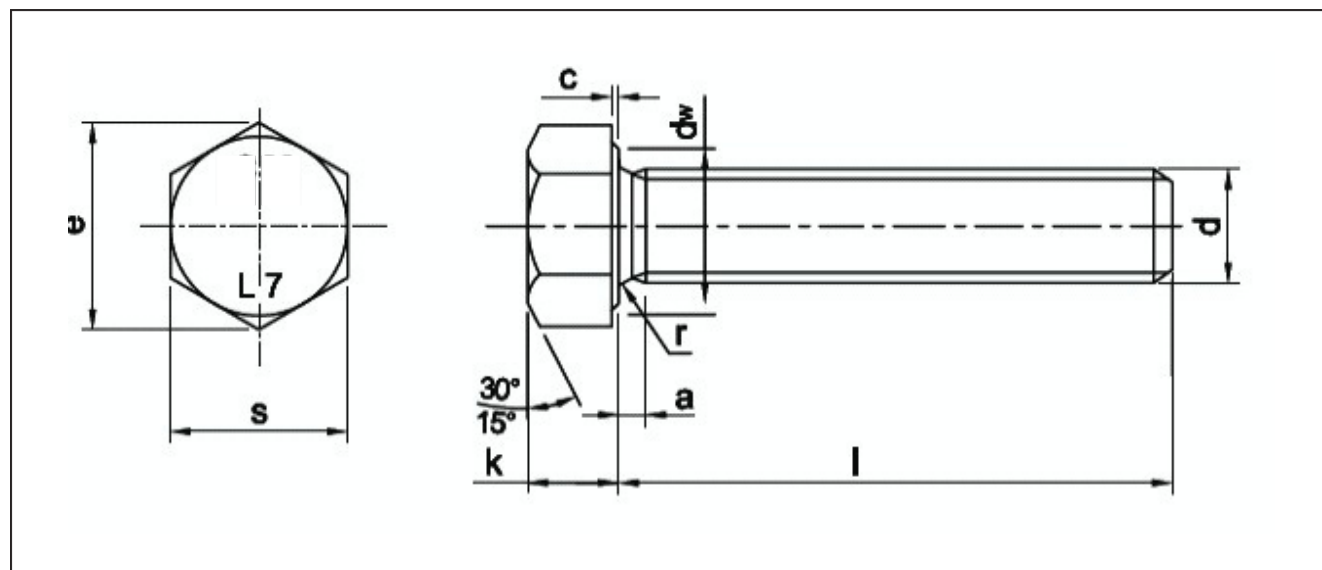
Material ASTM A193 Grade B7



Threads (d)		M6	M8	M10	M12	M16	M20	M24	M27	M30	M33	M36	M39	M42	M45	M52
Min		9.78	12.73	16.73	18.67	23.67	29.67	35.38	40.00	45.00	49.00	53.80	58.80	63.10	68.10	78.10
Across flat (s)																
Maý		10.00	13.00	17.00	19.00	24.00	30.00	36.00	41.00	46.00	50.00	55.00	60.00	65.00	70.00	80.00
Across corner(e)																
Min		11.05	14.38	18.90	21.10	26.75	33.53	39.98	45.20	50.85	55.37	60.79	66.44	71.30	76.95	88.25
Head Thickness(k)																
Min		3.85	5.15	6.22	7.32	9.82	12.28	14.78	16.65	18.28	20.58	22.08	24.58	25.58	27.58	32.50
Maý		4.15	5.45	6.58	7.68	10.18	12.72	15.22	17.35	19.12	21.42	22.92	25.42	26.42	28.42	33.50
Unthreaded Length (a)																
Min		1.00	1.25	1.5	1.75	2.00	2.50	3.00	3.00	3.50	3.50	4.00	4.00	4.50	4.50	5.00
Maý		3.00	4.00	4.50	5.30	6.00	7.50	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50	5.00
Washer face Depth (c)																
Min		0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
Maý		0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
Washer face Dia (dw)																
Min		8.88	11.63	15.60	17.40	22.49	28.19	33.61	38.00	42.70	46.50	51.10	55.90	55.90	64.70	74.20
Head junction Radius(r)																
Min		0.25	0.40	0.40	0.60	0.60	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.60

DIN 933 HEXAGON HEAD BOLT

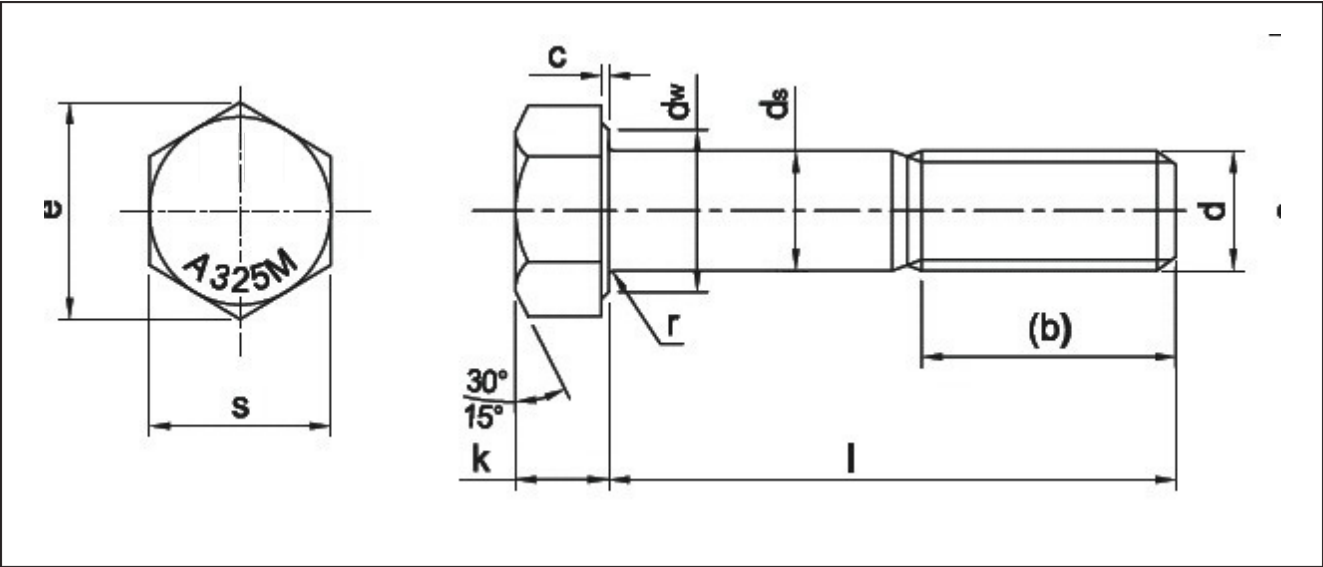
Material ASTM A320 Grade L7



A320 L7 HEX BOLTS

Threads (d)	M6	M8	M10	M12	M16	M20	M24	M27	M30	M33	M36	M39	M42	M45	M52
Min	9.78	12.73	16.73	18.67	23.67	29.67	35.38	40.00	45.00	49.00	53.80	58.80	63.10	68.10	78.10
Across flat (s)															
Maý	10.00	13.00	17.00	19.00	24.00	30.00	36.00	41.00	46.00	50.00	55.00	60.00	65.00	70.00	80.00
Across corner(e)Min	11.05	14.38	18.90	21.10	26.75	33.53	39.98	45.20	50.85	55.37	60.79	66.44	71.30	76.95	88.25
Head Thickness(k)															
Min	3.85	5.15	6.22	7.32	9.82	12.28	14.78	16.65	18.28	20.58	22.08	24.58	25.58	27.58	32.50
Maý	4.15	5.45	6.58	7.68	10.18	12.72	15.22	17.35	19.12	21.42	22.92	25.42	26.42	28.42	33.50
Unthreaded Length (a)															
Min	1.00	1.25	1.5	1.75	2.00	2.50	3.00	3.00	3.50	3.50	4.00	4.00	4.50	4.50	5.00
Maý	3.00	4.00	4.50	5.30	6.00	7.50	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50	5.00
Washer face Depth (c)															
Min	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
Maý	0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
Washer face Dia (dw)															
Min	8.88	11.63	15.60	17.40	22.49	28.19	33.61	38.00	42.70	46.50	51.10	55.90	55.90	64.70	74.20
Head junction Radius(r)															
Min	0.25	0.40	0.40	0.60	0.60	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.60

ASTM A325M HEX BOLTS



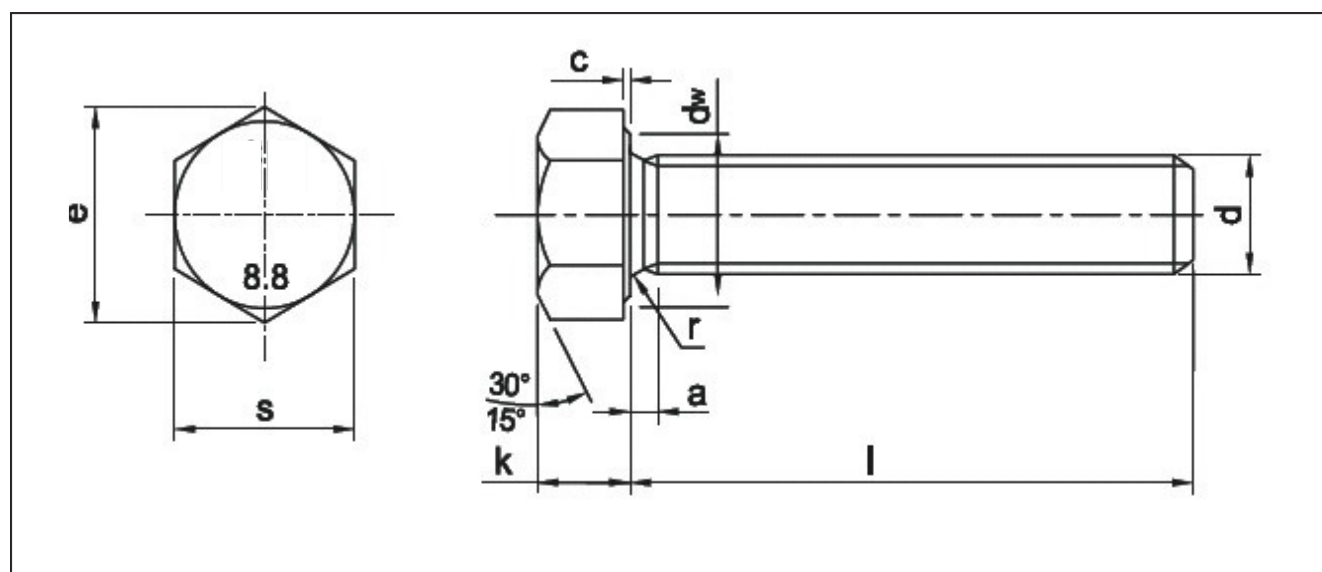
A325M HEX BOLTS

Threads (d)		M16	M20	M24	M27	M30	M33	M36
Across flat (s)	Min	26.16	33.00	35.00	40.00	45.00	49.00	58.80
	Maý	27.00	34.00	36.00	41.00	46.00	50.00	60.00
Across corner(e)	Min	29.56	37.29	39.55	45.20	50.85	55.37	66.44
	Maý	31.18	39.26	41.57	47.34	53.12	57.74	69.28
Head Thickness(k)	Min	9.25	11.60	13.10	14.10	16.10	17.65	21.45
	Maý	10.75	13.40	14.90	15.90	17.90	19.75	23.55
Washer face Depth (c)	Min	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	Maý	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Washer face Dia (dw)	Min	24.90	31.40	33.30	38.00	42.80	46.50	55.90
Shank Diameter (d s)	Min	15.30	19.16	21.16	23.16	26.16	29.16	35.00
	Maý	16.70	20.84	22.84	24.84	27.84	30.84	37.00
Head junction Radius(r)	Min	0.60	0.80	0.80	1.00	1.20	1.20	1.50
Thread Length (b)	1<100	31	36	38	41	44	49	56
	1>100	38	43	45	48	51	56	63

l = Overall length of the Bolt

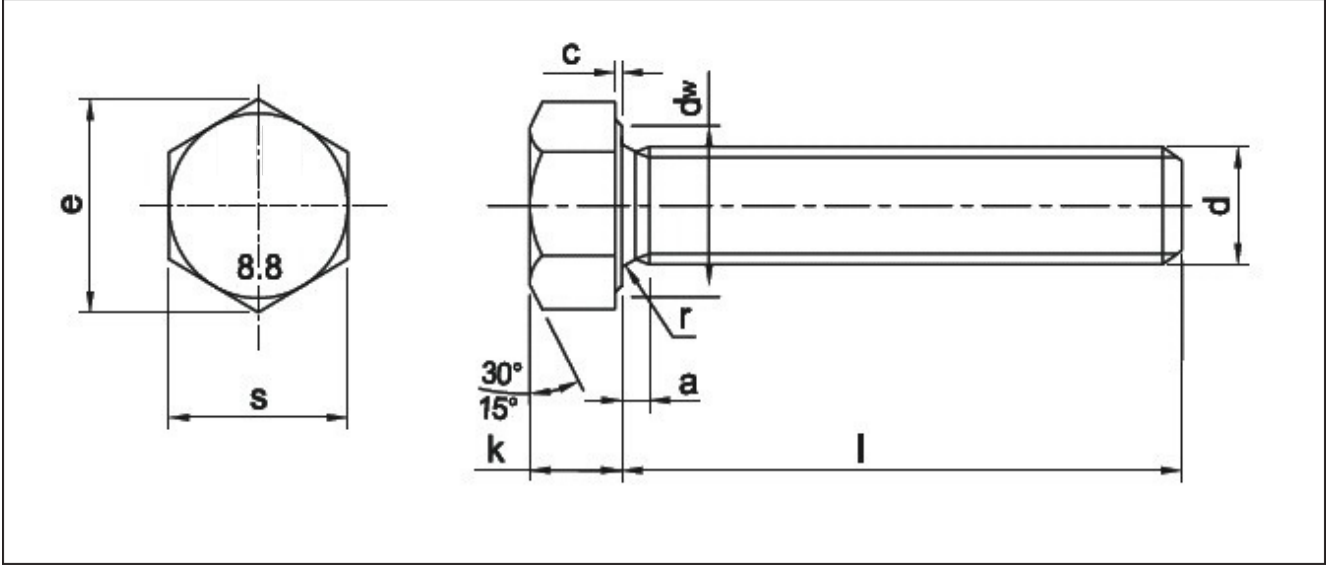
DIN 933 HEX SCREWS (FULL THREAD)

Grades 4.6, 8.8, 10.9, 12.9, A2 70, A2 80, A4 70 and A4 80



Threads (d)		M6	M8	M10	M12	M16	M20	M24	M27	M30	M33	M36	M39	M42	M45	M52
Min		9.78	12.73	16.73	18.67	23.67	29.67	35.38	40.00	45.00	49.00	53.80	58.80	63.10	68.10	78.10
Across flat (s)																
Maý		10.00	13.00	17.00	19.00	24.00	30.00	36.00	41.00	46.00	50.00	55.00	60.00	65.00	70.00	80.00
Across corner(e) Min		11.05	14.38	18.90	21.10	26.75	33.53	39.98	45.20	50.85	55.37	60.79	66.44	71.30	76.95	88.25
Head Thickness(k)																
Min		3.85	5.15	6.22	7.32	9.82	12.28	14.78	16.65	18.28	20.58	22.08	24.58	25.58	27.58	32.50
Maý		4.15	5.45	6.58	7.68	10.18	12.72	15.22	17.35	19.12	21.42	22.92	25.42	26.42	28.42	33.50
Unthreaded Length (a)																
Min		1.00	1.25	1.5	1.75	2.00	2.50	3.00	3.00	3.50	3.50	4.00	4.00	4.50	4.50	5.00
Maý		3.00	4.00	4.50	5.30	6.00	7.50	9.00	9.00	10.50	10.50	12.00	12.00	13.50	13.50	5.00
Washer face Depth (c)																
Min		0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
Maý		0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
Washer face Dia (dw)																
Min		8.88	11.63	15.60	17.40	22.49	28.19	33.61	38.00	42.70	46.50	51.10	55.90	55.90	64.70	74.20
Head junction Radius(r)																
Min		0.25	0.40	0.40	0.60	0.60	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.60

DIN 931 HEX BOLTS (HALF THREAD)
Grades - 4.6, 8.8, A2 70, A2 80, A4 70 and A4 80

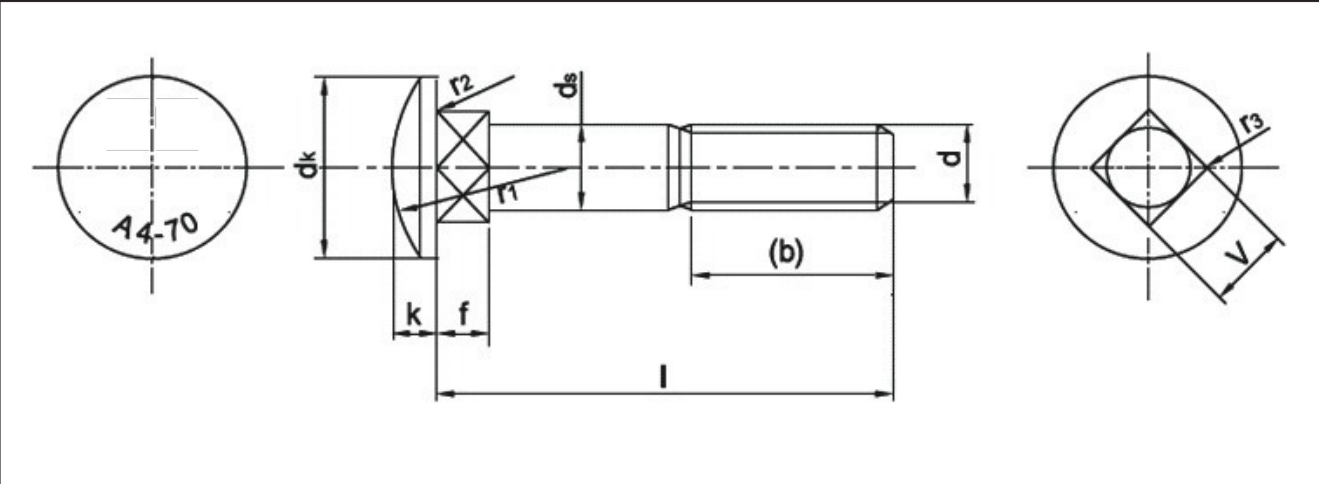


A320 L7 HEX BOLTS

Threads (d)		M6	M8	M10	M12	M16	M20	M24	M27	M30	M33	M36	M39	M42	M45	M52
Min	Across flat (s)	9.78	12.73	16.73	18.7	23.67	29.67	35.38	40.00	45.00	49.00	53.80	58.80	63.10	68.10	78.10
		10.00			19.00	24.00	30.00	36.00	41.00	46.00	50.00	55.00	60.00	65.00	70.00	80.00
Min	Across corner(e)	11.05			21.10	26.75	33.53	39.98	45.20	50.85	55.37	60.79	66.44	71.30	76.95	88.25
		3.85			7.32	9.82	12.28	14.78	16.65	18.28	20.58	22.08	24.58	25.58	27.58	32.50
Min	Head Thickness(k)	4.15	5.15	6.22	7.68	10.18	12.72	15.22	17.35	19.12	21.42	22.92	25.42	26.42	28.42	33.50
		0.15	5.45	6.58												
Min	Washer face Depth (c)	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
		0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
Min	Washer face Dia (dw)	0.15	0.15	0.15	0.15	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.30
		0.50	0.60	0.60	0.60	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00
Min	Shank Diameter (ds)	5.82	7.78	9.78	11.73	15.73	19.67	23.67	27.00	30.00	33.00	36.00	39.00	42.00	45.00	52.00
		6.00	8.00	10.00	12.00	16.00	20.00	24.00	26.48	29.48	32.38	35.38	38.38	41.38	44.38	51.26
Min	Head junction Radius(r)	0.25	0.40	0.40	0.60	0.60	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.60
		18	22	26	30	38	46	54	60							
1<125*	Thread Length (b)	24			36		52	60	66							
		37	28	32	44	57	65	73	79	66						
125<200	Thread Length (b)															
1>200*	Thread Length (b)		41	45	49					72	78	84	90	96	102	116
										85	91	97	103	109	115	129

l = Overall length of the Bolt

DIN 603 STAINLESS STEEL CARRIAGE BOLT/MUSHROOM BOLT



Threads (d)		M6	M8	M10	M12
dk	Min	15.45	19.35	23.35	29.35
	Maý	16.55	20.65	24.65	30.65
ds	Min	5.52	7.42	9.42	11.30
	Maý	6.00	8.00	10.00	12.00
f	Min	3.40	4.40	5.40	7.25
	Maý	4.60	5.60	6.60	8.75
k	Min	3.12	4.12	4.62	6.05
	Maý	3.88	4.88	5.38	6.95
	Approý	12.60	16.00	19.20	24.10
r1					
r	Maý	0.50	0.50	0.50	1.00
2	Maý	0.90	1.20	1.50	1.80
r	Min	5.52	7.42	9.42	11.30
v	Maý	6.48	8.58	10.58	12.70
(b)	1<125*	18	22	26	30
	125<200	24	28	32	36
	1>200*	37	41	45	49

l = Overall length of the Bolt

RESS000000000

SOCKET SCREWS



Socket Screws are also known as Allen Head Bolts and are fastened with a hex Allen wrench. Socket Screws are available in various head styles and materials.

STANDARDS:-

DIN/BS EN ISO

MATERIAL:-

Alloy Steel & Stainless Steel (304, 304L, 316, 316L)

FINISH AVAILABLE :

Plain & Electro-Galvanized.

SIZE RANGE:-

M5 to M24 in metric series

Bigger sizes can be manufactured as per order.

THREADS:-

Metric Coarse and Metric Fine

TYPICAL GRADES & STANDARDS:-

A2-70/80, A4-70/80

DIN 912

DIN 7991

ISO 7380

Any other specific grade can be manufactured upon request with short lead times.

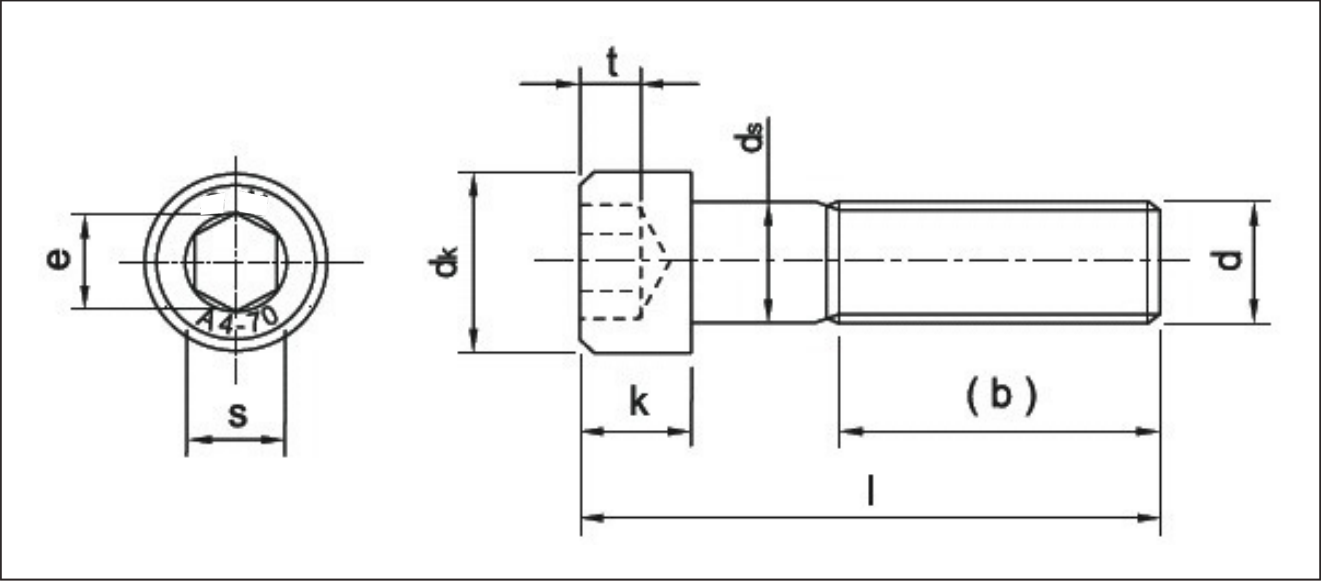
ORDERING INFORMATION:-

Dimensions - Size Dia and Length.

Standard and Material Grade

Nut and Washer quantity

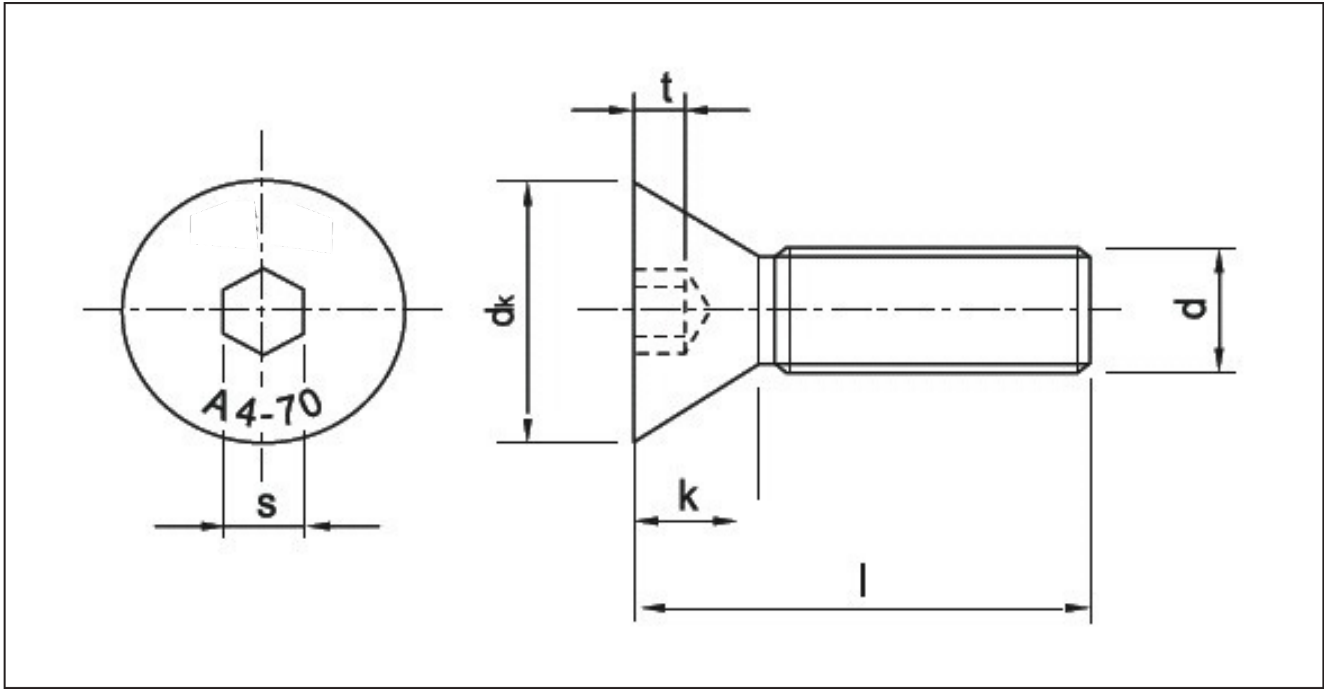
DIN 912 STAINLESS STEEL HEXAGON
SOCKET HEAD CAPSCREW



Threads (d)		M6	M8	M10	M12
dk	Min	9.78	12.73	15.73	17.73
	Maÿ For Plain Heads	10.00	13.00	16.00	18.00
	Maÿ For Knurled Heads	10.22	13.27	16.27	18.27
ds	Min	5.82	7.78	9.78	11.73
	Maÿ	6.00	8.00	10.00	12.00
s	Min	5.02	6.02	8.03	10.03
	Maÿ	5.14	6.14	8.175	10.175
e	Min	5.723	6.863	9.149	11.429
k	Min	5.70	7.64	9.64	11.57
	Maÿ	6.00	8.00	10.00	12.00
t	Min	3.00	4.00	5.00	6.00
(b)	Ref	24	28	32	36

l = Overall length of the Bolt

**DIN 7991 STAINLESS STEEL HEXAGON
SOCKET COUNTERSUNK SCREW**



Threads (d)	M6	M8	M10	M12
dk	12.00	16.00	20.00	24.00
s	4.00	5.00	6.00	8.00
k	3.30	4.40	5.50	6.50
t	2.50	3.50	4.40	4.60

l = Overall length of the Bolt

HEX NUTS

REHN000000000



Standard Hex Nut, Heavy Hex Nut, Hex Coupling Nut, Nylon Lock Nut, Spring Nut, Dome Nut and Wing Nut

STANDARDS:-

ASTM/ASME/BS/DIN/BS EN ISO /JIS

MATERIAL:-

Mild Steel, Carbon Steel, Alloy Steel & Stainless Steel.

FINISH AVAILABLE :

Plain, Electro-Galvanized, Hot Dip Galvanized, Zinc Flake, Yellow, Cadmium & Nickel.

SIZE RANGE:-

M6 to M64 in metric series

1/4" to 2-1/2" in imperial

Bigger sizes can be manufactured as per order.

THREADS:-

UNC, 8UN, UNF, Metric Coarse and Metric Fine

TYPICAL GRADES & STANDARDS:-

DIN 934 Class 4, 8, 10, 12, A270, A280, A470 and A480

ASTM A194/A194M Grades 2H, 2HM, 4L, 7L and 7LM

ASTM A563/563M Grades 8, 10S, A, B, C, D, DH, DH3

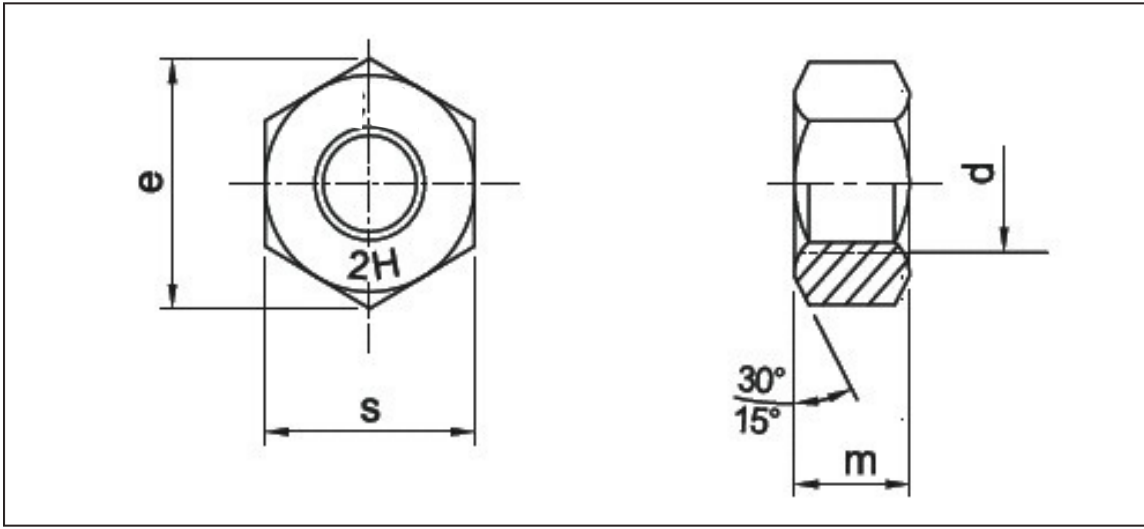
ORDERING INFORMATION:-

Dimensions - Size.

Standard and Grade

HEAVY HEX NUTS TO DIN 934 (H=D)

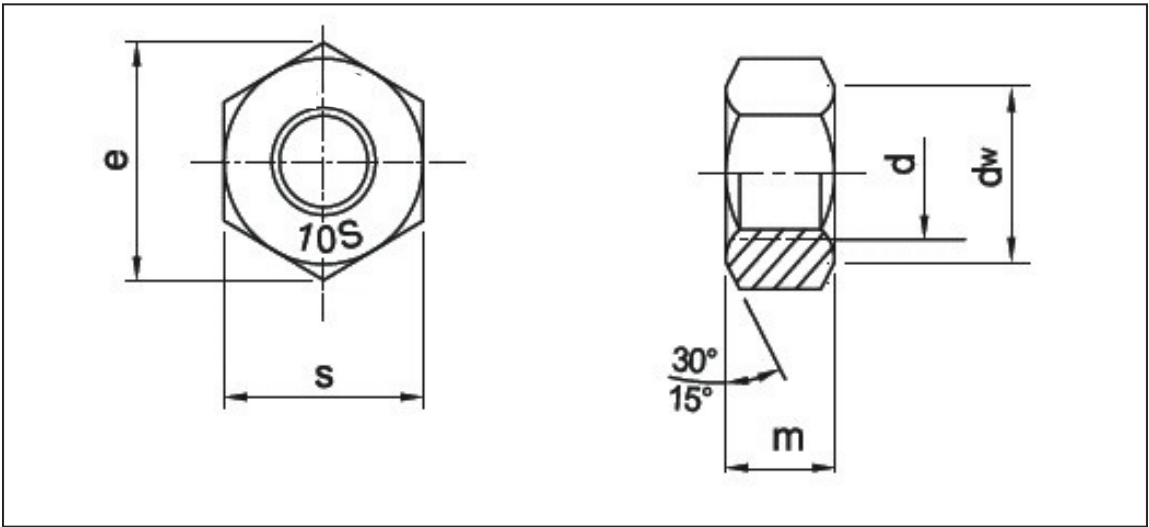
Material ASTM A194 Grade 2H/2HM/4L, 7L, 7LM



A194 HEAVY HEX BOLTS

DIA.(D)	THREAD PITCH	ACROSS FLATS AF	THICKNESS (M)	WEIGHT KG/100
M8	1.25	13	8	0.65
M10	1.5	17	10	1.45
M12	1.75	19	12	2.17
M14	2	22	14	3.13
M16	2	24	16	4.16
M18	2.5	27	18	6.20
M20	2.5	30	20	8.05
M22	2.5	32	22	9.85
M24	3	36	24	13.80
M27	3	41	27	20.65
M30	3.5	46	30	27.90
M33	3.5	50	33	36.00
M36	4.0	55	36	49.15
M39	4.0	60	39	42.75
M42	4.5	65	42	81.50
M45	4.5	70	45	100.00
M48	5.0	75	48	122.00
M52	5.0	80	52	152.50
M56	5.5	85	56	177.50
M64	6.0	95	64	247.50
M72	6.0	105	72	334.50
M76	6.0	110	76	380.00

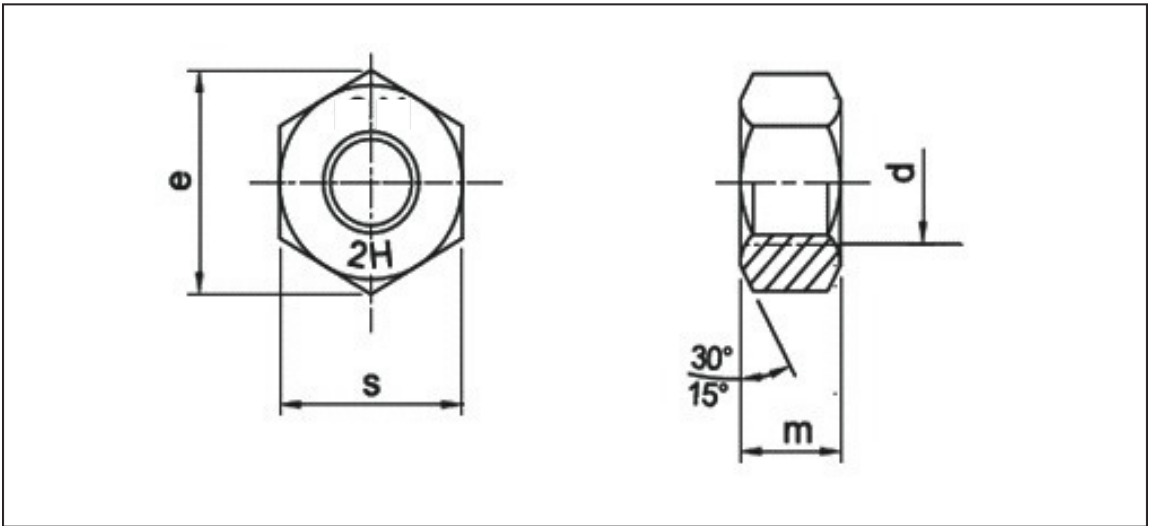
A563M - 10S HEAVY HEX NUTS



A563-10S HEAVY HEX BOLTS									
Threads (d)		M12	M16	M20	M22	M24	M27	M30	M36
Across flat (s)	Min	20.16	26.16	33.00	35.00	40.00	45.00	49.00	58.80
	Maý	21.00	27.00	34.00	36.00	41.00	46.00	50.00	60.00
Across corner (e)	Min	22.78	29.56	37.29	39.55	45.20	50.85	55.37	66.44
Nut Thickness (m)	Min	11.90	16.40	19.40	22.30	22.90	26.30	29.10	35.00
	Maý	12.30	17.10	20.70	23.60	24.20	27.60	30.70	36.60
Bearing face Dia(dw)	Min	19.20	24.90	31.40	33.30	38.00	42.80	46.60	55.90

HEAVY HEX NUTS TO ANSI B18.2.2

Material ASTM A194 Grade 2H/2HM/4L, 7L, 7LM





A194 HEAVY HEX BOLTS

DIA.(D)	THREAD PITCH	ACROSS FLATS AF	THICKNESS(M)	WEIGHT KG/100
1/4" UNC	20	7/16"	1/4"	0.3
5/16" UNC	18	1/2"	5/16"	0.4
3/8" UNC	16	11/16"	3/8"	1.4
7/16" UNC	14	3/4"	3/16"	1.9
1/2" UNC	13	7/8"	1/2"	3.0
9/16" UNC	12	15/16"	9/6"	3.7
5/8" UNC	11	1.1/16"	5/8"	5.4
3/4" UNC	10	1.14"	3/4"	8.8
7/8" UNC	9	1.7/16"	7/8"	13.5
1" UNC	8	1.5/8"	1"	19.3
1.1/8" UNC	8	1.13/16"	1.1/8"	26.9
1.1/4" UNC	8	2"	1.1/4"	35.7
1.3/8" UNC	8	2.3/16"	1.3/8"	46.3
1.1/2" UNC	8	2.3/8"	1.1/2"	59.5
1.5/8" UNC	8	2.9/16"	1.5/8"	73.6
1.3/4" UNC	8	2.3/4"	1.3/4"	92.7
1.7/8" UNC	8	2.15/16"	1.7/8"	109.5
2" UNC	8	3.1/8"	2"	135.8
2.1/4" UNC	8	3.1/2"	2.1/4"	190.3
2.1/2" UNC	8	3.7/8"	2.1/4"	256
2.3/4" UNC	8	4.1/4"	2.3/4"	335
3" UNC	8	4.5/8"	3"	432
3.1/4" UNC	8	5"	3.1/4"	543
3.1/2" UNC	8	5.3/8"	3 1/2"	694

DIN 934 HEX NUTS



DIN 934 HEX NUTS

THREADS (D)	ACROSS FLAT (S)	ACROSS CORNER (E)	NUT THICKNESS (M)
M6	10.00	11.05	6.00
M8	13.00	14.38	6.50
M10	17.00	18.90	8.00
M12	19.00	21.10	10.00
M16	24.00	26.75	13.00
M20	30.00	32.95	16.00
M24	36.00	39.55	19.00
M27	41.00	45.20	22.00
M30	46.00	50.85	24.00
M33	50.00	55.37	26.00
M36	55.00	60.79	29.00
M39	60.00	66.44	31.00
M42	65.00	71.30	34.00
M45	70.00	76.95	36.00
M48	75.00	82.60	38.00
M52	80.00	88.25	42.00
M56	85.00	93.56	45.00
M64	95.00	104.86	51.00
M72	105.00	116.16	58.00

REFW000000000

FLAT WASHERS



Plain Washers, Spring Lock Washers and Hardened Steel Washers

STANDARDS:-

ASTM/ASME/BS/DIN/BS EN ISO /JIS

MATERIAL:-

Mild Steel, Carbon Steel, Alloy Steel & Stainless Steel.

FINISH AVAILABLE :

Plain, Electro-Galvanized, Hot Dip Galvanized, Zinc Flake, Yellow, Cadmium & Nickel.

SIZE RANGE:-

M6 to M64 in metric series

¼" to 2-½" in imperial

Bigger sizes can be manufactured as per order.

TYPICAL GRADES & STANDARDS:-

DIN 125/A DIN 127/B DIN 9021 ASTM F436 and F436M

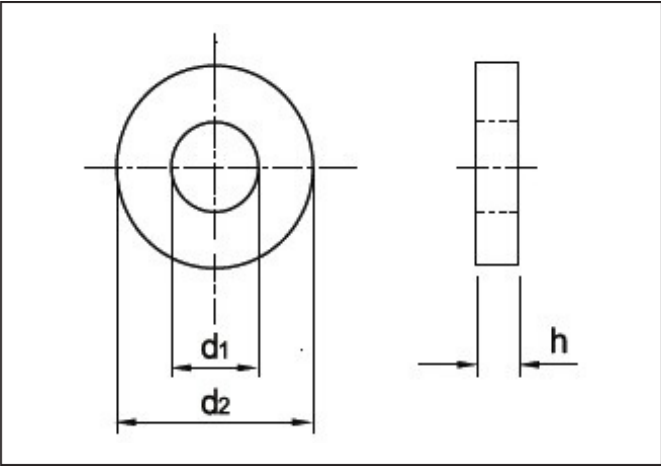
Any other specific grade can be manufactured upon request with short lead times

ORDERING INFORMATION:-

Dimensions – Size.

Standard and Grade

DIN 125 FLAT WASHER



WASHER SIZE	INNER DIAMETER (D1)	OUTER DIAMETER (D2)	THICKNESS (H)
M6	6.40	12.00	1.60
M8	8.40	16.00	1.60
M10	10.50	20.00	2.00
M12	13.00	24.00	2.50
M16	17.00	30.00	3.00
M20	21.00	37.00	3.00
M24	25.00	44.00	4.00
M27	28.00	50.00	4.00
M30	31.00	56.00	4.00
M33	34.00	60.00	5.00
M36	37.00	66.00	5.00
M39	40.00	72.00	6.00
M42	43.00	78.00	7.00
M45	46.00	85.00	7.00
M48	50.00	92.00	8.00
M52	54.00	98.00	8.00
M56	58.00	105.00	9.00
M64	66.00	115.00	9.00
M72	74.00	125.00	10.00

F436M WASHER



WASHER SIZE	INNER DIAMETER (D1)		OUTER DIAMETER (D2)		THICKNESS(H)	
	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
12	14.40	14.00	27.00	25.70	4.60	3.10
14	16.40	16.00	30.00	28.70	4.60	3.10
16	18.40	18.00	34.00	32.40	4.60	3.10
20	22.50	22.00	42.00	40.40	4.60	3.10
22	24.50	24.00	44.00	42.40	4.60	3.40
24	26.50	26.00	50.00	48.40	4.60	3.40
27	30.50	30.00	56.00	54.10	4.60	3.40
30	33.60	33.00	60.00	58.10	4.60	3.40
36	39.60	39.00	72.00	70.10	4.60	3.40
42	45.60	45.00	84.00	81.10	7.20	4.60
48	52.70	52.00	95.00	92.80	7.20	4.60
56	62.70	62.00	101.00	104.50	8.70	6.10
64	70.70	70.00	187.00	115.80	8.70	6.10
72	78.70	76.00	130.00	127.50	8.70	6.10

MATERIAL FINISHES

Hot Dip Galvanizing:-

STD	COMPONENTS
ASTM A153	Rolled/ Pressed/ steel/ Hardware
ASTM A641	Carbon Steel Wire(Nails/ Straples etc)
ASTM B695	Iron & Steel
ASTM A123	Iron & Steel Anchor Bolts, Fabricated Products
BS EN ISO 461	Heavy Zinc Deposit 388.1 to 76.2 microns

ELECTRO-DEPOSITED Zinc Plating:-

ASTM B633	Iron & Steel Products
BS 3382 PART 2	Bright Finish

ELECTRO-DEPOSITED Cadmium Plating:-

BS 3382 PART 1	Semi- Bright Finish
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ELECTRO-DEPOSITED Nickel Cadmium Plating:-

AMS 2416	Steel
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ELECTRO-DEPOSITED Nickel & Nickel Plus Chromium:-

BS 3382 PART 3 & 4	Steel & Copper Alloy
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PTFE (FLUOROPOLYMER Coating):-

XYLAN 1070	Colour- Red, Medium Dark Blue, Green, Orange, Yellow, Black
XYLAN 1052	Blue
XYLAN 1424	Water Base Blue
xylan standard	Aluminium "cermet" Coating
XYLAN Cobalt Blue 1514	Blue

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ROYALE EXPORT

Serving Clients Globally