



NPI Technology and Supply Co.,Ltd.

บริษัท เอ็นพีไอ เทคโนโลยี แอนด์ ซัพพลาย จำกัด

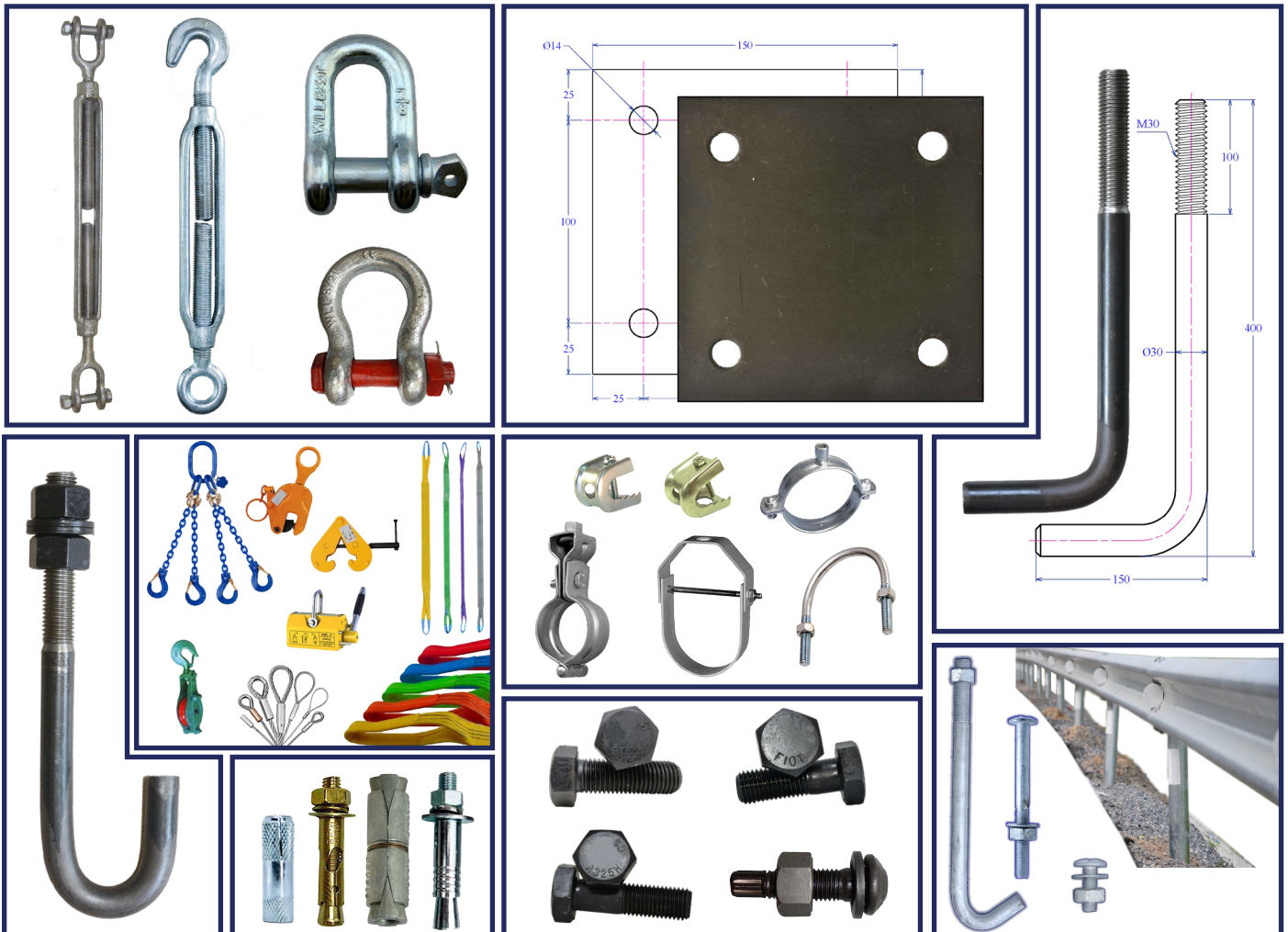
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Certificate No. TH21/13880

Product Catalog

ศูนย์รวมผลิตภัณฑ์คุณภาพตามมาตรฐานสากล





สกรู หัวจมน้ำ



สกรู หัวจมน้ำแปดเหลี่ยม



สกรู หัวจมน้ำกลมตา



สกรู ตัวหนอน



โซเดอร์สกรู เกรด 12.9



เกลียวเหล็ก JP+



เกลียวเหล็ก JF+



เกลียวเหล็ก JT+



สกรู ปลายสว่านหัวแปดเหลี่ยม มีปีก ขุนยา



สกรู ปลายสว่าน หัวแปดเหลี่ยม ขุนยา



เกลียวแปดเหลี่ยม หัวแปดเหลี่ยม JF+



เกลียวเหล็กปลายตัดผ่าร่อง



เกลียวเหล็ก หัวแปดเหลี่ยม ตัดแหวน HWS



ก๊อปเกลียวปล่อย



เกลียวปล่อย ขุนยา



เกลียวเหล็ก หัวแปดเหลี่ยม



เกลียวเหล็กหัวแปดเหลี่ยม ตัดแหวน+แหวนยาง



เกลียวเหล็กหัวแปดเหลี่ยม ตัดแหวน+แหวนยาง



สกรู ปลายสว่าน หัวแปดเหลี่ยม



สกรูปลายสว่าน JP+



สกรูปลายสว่าน JP+



สกรูหัวกลมผ่า



สกรูมิล หัวกลม JP+



สกรูมิล หัวแปดเหลี่ยม JF+



สกรูมิล หัวกระโถน JT+



สกรู ปลายสว่าน 2 ชั้น



สกรู ปลายสว่าน หัวแปดเหลี่ยม



สกรู ปลายสว่าน หัวแปดเหลี่ยม



สกรูเกลียวเหล็ก หัวแปดเหลี่ยม



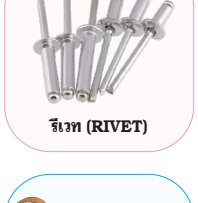
สกรูเกลียวเหล็ก หัวแปดเหลี่ยม



สกรู ปลายสว่าน หัวแปดเหลี่ยม



ฟักพลาสติก



ริเวท (RIVET)



สกรู F10T



สกรู S10T



เกลียวปล่อย ตะขอ



เกลียวปล่อย หัววง



สกรู หัววง



สกรู ตะขอ



สกรู หัววง



บูช ประตู่



ยู - โบลท์



ปืนตัวอาร์



แหวนล็อคใน



แหวนล็อคนอก



แหวนนูน



แหวนคลื่น



แหวนจักรนอก-ใน



แหวนจักรนอก-ใน



แหวนตัว E



แหวนกดล็อค



แหวนแปดเหลี่ยม



แหวนล็อค



หัวน็อตข้อต่อ



หัวน็อตสี่เหลี่ยม



หัวน็อตผ่า



สกรู หัวน็อต ทางปลา



ฟักตะกั่ว



ฟักตะปู



ฟักกำรรม



ฟักเวรต์ WA



ฟักเหล็ก



ฟักเหล็ก



แหงเกอร์



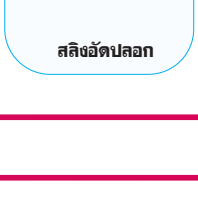
เหล็กรัดท่อ



เหล็กรัดท่อ



สลิงผ้าใบ



สลิงอัดบล็อก




































โซ่



โซ่หัววง

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“ตัวแทนจำหน่าย สินค้าและผลิตภัณฑ์ ภายใต้แบรนด์คุณภาพ”

Materials for Anchor Bolts

American Society for Testing and Materials (ASTM) ; A36, A193B7, A307A, A307B, A325, F1554 (Gr.36, 55, 105)

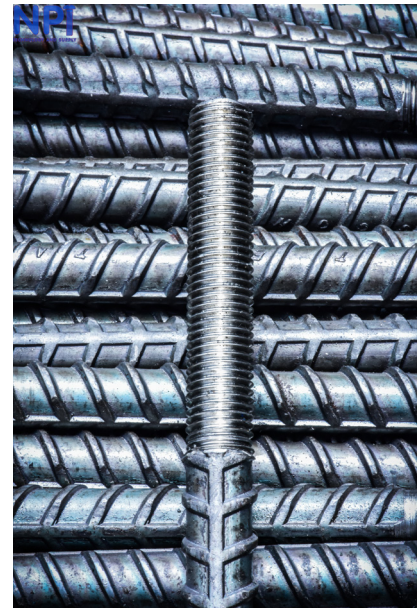
International Organization for Standardization (ISO) ; 898 (4.6, 4.8, 5.6, 5.8, 6.8, 8.8, 10.9)

Japaness Industrial Standards (JIS) ; G3101 SS400, G4051 S20C, G4051 S45C, G4053 SCM440

Thai Industrial Satandards (฿๑฿.) ; 20-2543 SR24 [RB6 - RB34], 24-2548 SD30, SD40, SD50 [DB10 - DB40]

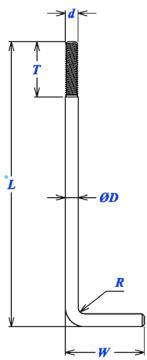
Mechanical Properties

Grade	Yield, Fy min. (MPa)	Tensile, Fu min. (MPa)	Elongation, δ min. (%)
A36	250	400 - 550	20
A193B7	720	860	16
A307 A	...	414	18
A307 B	...	414 - 690	18
A325 (1/2" to 1")	635	825	14
A325 (1" to 1.1/2")	560	725	14
A325M (M12 - M36)	660	830	14
A490/A490M	940	1040	14
Gr. 36	248	400 - 558	23
F1554 Gr. 55	380	518 - 655	21
Gr. 105	724	862 - 1034	15
4.6	240	400	22
4.8	340	420	...
5.6	300	500	20
5.8	420	520	...
6.8	480	600	...
8.8 $\phi \leq 16 \text{ mm.}$	640	800	12
8.8 $\phi > 16 \text{ mm.}$	660	830	12
10.9	940	1040	9
SS400 (16< ϕ ≤40)	235	400	20
S20C	245	402	28
S45C	343	569	20
SCM440	550	650	12
SR24	235	385	21
(DB) SD30	295	480	17
(DB) SD40	390	560	15
(DB) SD50	490	620	13

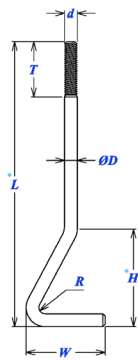


Anchor Bolts

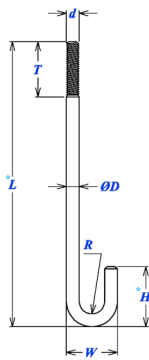
Material Diameter = 10 mm. to 100 mm.



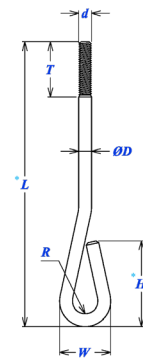
L - Bolts



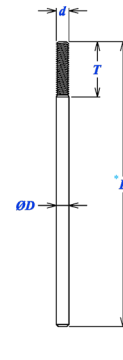
LA - Bolts



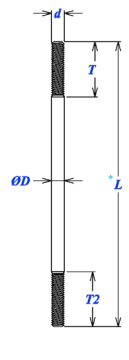
J - Bolts



JA - Bolts



I - Bolts



I - Bolts

Metric JIS B1178

Basic Dimension for L-Bolts

Size (d)	ØD (Diameter)	T (Thread Length)	W (Approx.)	R (Approx.)
M10	10 ± 0.4	25 ^{+6.3} / ₋₀	40	20
M12	12 ± 0.4	32 ^{+8.0} / ₋₀	50	25
M16	16 ± 0.5	40 ^{+8.0} / ₋₀	63	32
M20	20 ± 0.5	50 ^{+8.0} / ₋₀	80	40

Basic Dimension for LA-Bolts

Size (d)	ØD (Diameter)	T (Thread Length)	W (Approx.)	R (Approx.)
M10	10 ± 0.4	30 ^{+6.3} / ₋₀	40	10
M12	12 ± 0.4	35 ^{+8.0} / ₋₀	50	12
M16	16 ± 0.5	40 ^{+8.0} / ₋₀	63	16
M20	20 ± 0.5	50 ^{+8.0} / ₋₀	80	20
M24	24 ± 0.5	80 ⁺¹⁰ / ₋₀	100	24
M30	30 ± 0.6	90 ⁺¹⁰ / ₋₀	125	30
M36	36 ± 0.7	110 ⁺¹⁰ / ₋₀	140	36
M42	42 ± 0.8	125 ⁺¹⁰ / ₋₀	180	42
M48	48 ± 0.9	150 ⁺¹⁰ / ₋₀	200	48

Basic Dimension for J-Bolts and I-Bolts

Size (d)	ØD (Diameter)	T, T2 (Thread Length)	W (Approx.)	R (Approx.)
M10	10 ± 0.4	25 ^{+6.3} / ₋₀	45	20
M12	12 ± 0.4	32 ^{+8.0} / ₋₀	56	25
M16	16 ± 0.5	40 ^{+8.0} / ₋₀	71	32
M20	20 ± 0.5	50 ^{+8.0} / ₋₀	90	40
M24	24 ± 0.5	63 ⁺¹⁰ / ₋₀	112	50
M30	30 ± 0.6	80 ⁺¹⁰ / ₋₀	140	63
M36	36 ± 0.7	90 ⁺¹⁰ / ₋₀	160	71
M42	42 ± 0.8	112 ⁺¹⁰ / ₋₀	200	90
M48	48 ± 0.9	125 ⁺¹⁰ / ₋₀	224	100

Basic Dimension for JA-Bolts

Size (d)	ØD (Diameter)	T (Thread Length)	W (Approx.)	R (Approx.)
M10	10 ± 0.4	30 ^{+6.3} / ₋₀	35	50
M12	12 ± 0.4	35 ^{+8.0} / ₋₀	40	65
M16	16 ± 0.5	40 ^{+8.0} / ₋₀	55	85
M20	20 ± 0.5	50 ^{+8.0} / ₋₀	70	105
M24	24 ± 0.5	80 ⁺¹⁰ / ₋₀	80	125
M30	30 ± 0.6	90 ⁺¹⁰ / ₋₀	100	155
M36	36 ± 0.7	110 ⁺¹⁰ / ₋₀	120	190
M42	42 ± 0.8	125 ⁺¹⁰ / ₋₀	140	220
M48	48 ± 0.9	150 ⁺¹⁰ / ₋₀	160	250

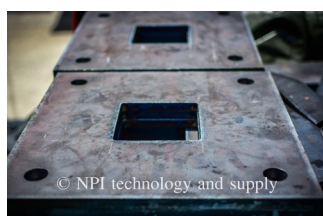
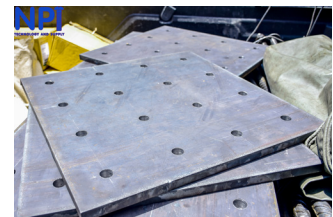
* ระยะ L และ H เป็นไปตามรายละเอียดในการออกแบบของลูกค้ำ

** ผลิตภัณฑ์ผลิตตามแบบของลูกค้ำ (Made to Order)

Steel Plate

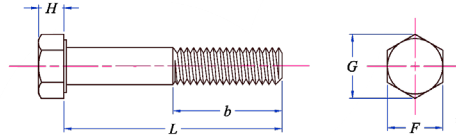
Thickness Dimension = 3 mm. to 100 mm.

Material	: SS400, S50C, SM400
Finish	: Plain, White/Yellow Zinc Plated, Hot Dip Galvanized



Hex Bolts [มิลขาว]

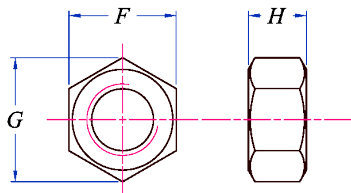
Material	: Mild Steel
Standard	: JIS B1180
Finish	: white/yellow zinc plated
Tensile Strength ≥ 400 MPa	
Hardness Max. 95.0 HRB	



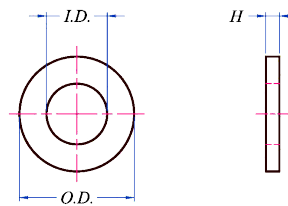
Size	Dimension (mm.)				
	F	H	b	L (min. to max.)	
M5 x 0.8	8	3.5	16	10	50
M6 x 1.0	10	4.0	18	10	100
M8 x 1.25	12	5.3	22	10	*150
M10 x 1.25	14	6.4	26	20	*150
M12 x 1.50	17	7.5	30	25	100

* (ความยาวที่มากกว่า 100 mm. เป็นขนาดความยาวพิเศษ)

Material	: Mild Steel
Standard	: JIS B1181
Finish	: white/yellow zinc plated



Material	: Mild Steel
Standard	: DIN 125-A
Finish	: white/yellow zinc plated

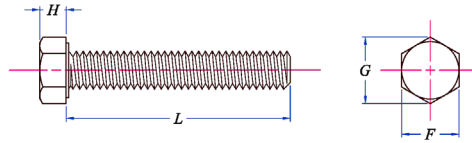


Size	Dimension (mm.)		
	F	G	H
M5 x 0.8	8.0	<9.24>	3.5
M6 x 1.0	10.0	<11.55>	4.0
M8 x 1.25	12.0	<13.86>	5.3
M10 x 1.25	14.0	<16.17>	6.4
M12 x 1.50	17.0	<19.63>	7.5

Size	Dimension (mm.)		
	I.D.	O.D.	H
M5	5.30 - 5.48	11.57 - 12.00	0.7 - 0.9
M6	6.40 - 6.62	12.57 - 13.00	0.9 - 1.1
M6	6.40 - 6.62	13.57 - 14.00	0.9 - 1.1
M6	6.40 - 6.62	15.57 - 16.00	0.9 - 1.1
M8	8.40 - 8.62	15.57 - 16.00	1.0 - 1.2
M8	8.40 - 8.62	17.48 - 18.00	1.0 - 1.2
M10	10.50 - 10.77	17.48 - 18.00	1.4 - 1.6
M10	10.50 - 10.77	21.48 - 22.00	1.4 - 1.6
M12	13.00 - 13.27	23.48 - 24.00	1.8 - 2.0

Hex Bolts BSW [เกลียวตลอด]

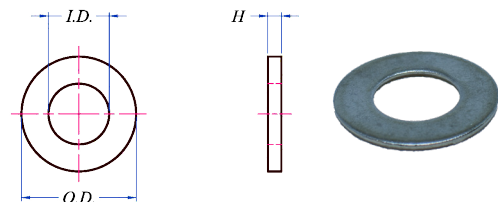
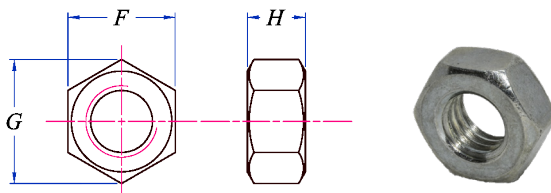
Material : Mild Steel
Standard : ASME B18.2.1
Finish : plain, white/yellow zinc plated



Size	Dimension (mm.)			
	F	G	H	L (inch.)
1/4"	11	<12.30>	4.20	1/2 - 4
5/16"	14	<14.02>	5.50	3/4 - 4
3/8"	17	<15.75>	6.50	3/4 - 6
7/16"	19	<17.45>	7.50	1 - 4
1/2"	21	<20.98>	8.40	3/4 - 6
5/8"	26	<26.24>	11.00	1 - 6
3/4"	32	<31.50>	13.00	1.1/2 - 6.5

Material : Mild Steel
Standard : ASME B18.2.2
Finish : plain, white/yellow zinc plated

Material : Mild Steel
Standard : DIN 125-A
Finish : white/yellow zinc plated

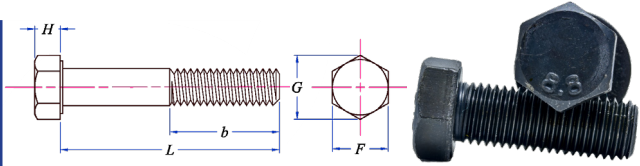


Size	T.P.I	Dimension (mm.)		
		F	G	H
1/4"	20	11.00	<8.08>	5.00
5/16"	18	14.00	<9.24>	7.00
3/8"	16	17.00	<11.55>	8.00
7/16"	14	19.00	<17.45>	9.00
1/2"	12	21.00	<16.17>	10.00
5/8"	11	26.00	<19.63>	13.00
3/4"	10	32.00	<23.33>	16.00

Size	Dimension (mm.)	
	O.D.	H
1/4"		1.6
5/16"		1.6
3/8"	28	2.3
7/16"	30	2.3
1/2"	32	2.3
5/8"	40	2.5
3/4"	46	2.5

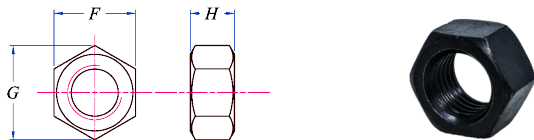
Hex Bolts UNC, UNF [Grade 4.6, 8.8] High Tensile / High tesion Bolts

Material : 4.6, 8.8
Standard : ASME B18.2.1
Finish : black oxide, white/yellow zinc plated, Hot Dip Galvanized



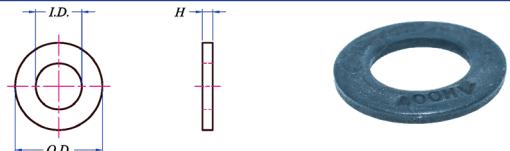
Size	Dimension (mm.)						Full Thread (FT)
	F	G	H	L (inch.)	b		Partial Thread (PT)
					L ≤ 6"	L > 6"	(เกลียวเต็ม ≤ L < เกลียวครึ่ง)
1/4"	11.10	<12.30>	4.00	1/2 - 6	19.05	25.40	FT ≤ 1" < PT
5/16"	12.70	<14.02>	5.20	3/4 - 6	22.23	28.58	FT ≤ 1.1/4" < PT
3/8"	14.27	<15.75>	6.00	3/4 - 6	25.40	31.75	FT ≤ 1.1/4" < PT
7/16"	15.88	<17.45>	7.10	3/4 - 6	28.58	34.93	FT ≤ 1.1/2" < PT
1/2"	19.05	<20.98>	7.90	3/4 - 15	31.75	38.10	FT ≤ 1.3/4" < PT
5/8"	23.83	<26.24>	9.90	1.1/2 - 18	38.10	44.45	FT ≤ 1.3/4" < PT
3/4"	28.58	<31.50>	11.90	1.1/2 - 15	44.45	50.80	FT ≤ 2" < PT
7/8"	33.32	<36.75>	13.90	2 - 20	50.80	57.15	FT ≤ 2.1/2" < PT
1"	38.10	<41.29>	15.50	2 - 18	57.15	63.50	FT ≤ 2.1/2" < PT
1.1/8"	42.88	<47.22>	17.50	2.1/2 - 12	63.50	69.85	FT ≤ 2.1/2" < PT
1.1/4"	47.63	<52.48>	19.80	2.1/2 - 13	69.85	76.20	FT ≤ 3" < PT
1.1/2"	57.15	<62.99>	23.80	3 - 12	82.55	88.90	FT ≤ 3.1/2" < PT

Material : 4.6, 8.8
Standard : ASME B18.2.2
Finish : black oxide, white/yellow zinc plated, Hot Dip Galvanized



Size	UNC T.P.I.	UNF T.P.I.	Dimension (mm.)		
			F	G	H
1/4"	20	28	10.87 - 11.13	<12.40>	5.38 - 5.74
5/16"	18	24	12.42 - 12.70	<14.15>	6.55 - 6.93
3/8"	16	24	14.00 - 14.30	<15.95>	8.13 - 8.56
7/16"	14	20	17.15 - 17.48	<19.51>	9.27 - 9.78
1/2"	13	20	18.69 - 19.05	<21.34>	10.85 - 11.38
9/16"	12	18	21.87 - 22.23	<24.94>	11.01 - 12.60
5/8"	11	18	23.42 - 23.83	<26.70>	13.59 - 14.20
3/4"	10	16	27.64 - 28.58	<31.50>	15.67 - 16.89
7/8"	9	14	32.23 - 33.32	<36.75>	18.39 - 19.71
1"	8	12	36.83 - 38.10	<41.99>	21.11 - 22.53
1.1/8"	7	12	41.43 - 42.88	<47.22>	23.85 - 25.37
1.1/4"	7	12	46.00 - 47.63	<52.48>	26.16 - 27.79
1.1/2"	6	12	55.25 - 57.15	<62.99>	31.62 - 33.32

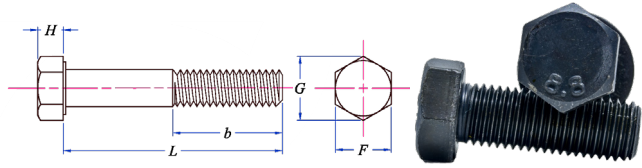
Material : 4.6, 8.8
Standard : DIN 125-A
Finish : black oxide, white/yellow zinc plated, Hot Dip Galvanized



Size	Dimension (mm.)		
	LD.	OD.	H
M6 1/4"	6.40 - 6.62	11.57 - 12.00	1.40 - 1.80
M8 5/16"	8.40 - 8.62	15.57 - 16.00	1.40 - 1.80
M10 3/8"	10.50 - 10.77	19.48 - 20.00	1.80 - 2.20
M12 1/2"	13.00 - 13.27	23.48 - 24.00	2.30 - 2.70
M14 9/16"	15.00 - 15.27	27.48 - 28.00	2.30 - 2.70
M16 5/8"	17.00 - 17.27	29.48 - 30.00	2.70 - 3.30
M20 3/4"	21.00 - 21.33	36.38 - 37.00	2.70 - 3.30
M22 7/8"	23.00 - 23.33	38.38 - 39.00	2.70 - 3.30
M24 1"	25.00 - 25.33	43.38 - 44.00	3.70 - 4.30
M27 1.1/8"	28.00 - 28.33	49.38 - 50.00	3.70 - 4.30
M30 1.1/4"	31.00 - 31.39	55.26 - 56.00	3.70 - 4.30
M36 1.1/2"	37.00 - 37.62	64.80 - 66.00	4.40 - 5.60

Hexagon Head Bolts [Grade 8.8] *High Tensile / High Tension Bolts*

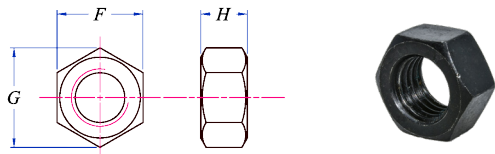
Material	: 8.8	
Standard	: DIN 931 (P/T), DIN933 (F/T)	
Finish	: black oxide, Hot Dip Galvanized	
	$d \leq 16 \text{ mm.}$	$d > 16 \text{ mm.}$
Yield (MPa)	min. 640	min. 660
Tensile (MPa)	min. 800	min. 830
Hardness (HRC)	22 - 32	23 - 34



Size	Dimension (mm.)								
	E	F	G	H	L	(DIN933 ≤ L)	b (DIN 931)		
							L ≤ 125	125 < L ≤ 200	L > 200
M5 x 0.80	5	8	<8.79>	3.50	10 - 70	20	16	22	-
M6 x 0.80	6	10	<11.05>	4.00	10 - 100	25	18	24	-
M8 x 1.25	8	13	<14.38>	5.30	10 - 150	30	22	28	-
M10 x 1.50	10	17	<18.90>	6.40	15 - 250	35	26	32	45
M12 x 1.75	12	19	<21.10>	7.50	20 - 400	40	30	36	49
M14 x 2.00	14	22	<24.49>	8.80	20 - 150	45	34	40	53
M16 x 2.00	16	24	<26.75>	10.00	25 - 600	50	38	44	57
M18 x 2.50	18	27	<30.14>	11.50	40 - 250	60	42	48	61
M20 x 2.50	20	30	<33.53>	12.50	35 - 600	60	46	52	65
M22 x 2.50	22	32	<35.72>	14.00	50 - 600	65	50	56	69
M24 x 3.00	24	36	<39.98>	15.00	50 - 600	75	54	60	73
M27 x 3.00	27	41	<45.20>	17.00	65 - 600	80	60	66	79
M30 x 3.50	30	46	<50.85>	18.70	70 - 600	90	66	72	85
M33 x 3.50	33	50	<55.37>	21.00	70 - 600	100	72	78	91
M36 x 4.00	36	55	<60.79>	22.50	70 - 600	100	78	84	97

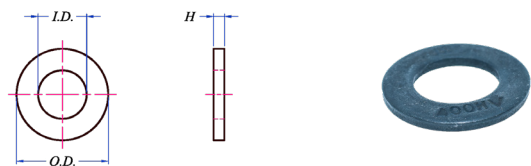
* DIN931 = Partial Thread, DIN933 = Full Thread

Material	: 8.8	
Standard	: DIN 934	
Finish	: black oxide, Hot Dip Galvanized	



Size	Dimension (mm.)		
	F	G	H
M8 x 1.25	12.73 - 13.00	<14.38>	6.14 - 6.50
M10 x 1.5	16.73 - 17.00	<18.90>	7.64 - 8.00
M12 x 1.75	18.67 - 19.00	<21.10>	9.64 - 10.00
M14 x 2.0	21.67 - 22.00	<24.49>	10.30 - 11.00
M16 x 2.0	23.67 - 24.00	<26.75>	12.30 - 13.00
M20 x 2.5	29.16 - 30.00	<32.95>	14.90 - 16.00
M22 x 2.5	31.00 - 32.00	<35.03>	16.90 - 18.00
M24 x 3.0	35.00 - 36.00	<39.55>	17.70 - 19.00
M27 x 3.0	40.00 - 42.00	<45.20>	20.70 - 22.00
M30 x 3.5	45.00 - 46.00	<50.85>	22.70 - 24.00
M33 x 3.5	49.00 - 50.00	<55.37>	24.70 - 26.00
M36 x 4.0	53.38 - 55.00	<60.79>	27.40 - 29.00

Material	: 8.8	
Standard	: DIN 125-A	
Finish	: black oxide, Hot Dip Galvanized	

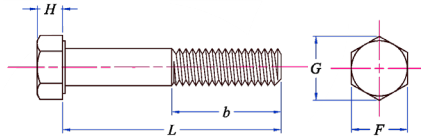


Size	Dimension (mm.)		
	I.D.	O.D.	H
M6	6.40 - 6.62	11.57 - 12.00	1.40 - 1.80
M8	8.40 - 8.62	15.57 - 16.00	1.40 - 1.80
M10	10.50 - 10.77	19.48 - 20.00	1.80 - 2.20
M12	13.00 - 13.27	23.48 - 24.00	2.30 - 2.70
M14	15.00 - 15.27	27.48 - 28.00	2.30 - 2.70
M16	17.00 - 17.27	29.48 - 30.00	2.70 - 3.30
M20	21.00 - 21.33	36.38 - 37.00	2.70 - 3.30
M22	23.00 - 23.33	38.38 - 39.00	2.70 - 3.30
M24	25.00 - 25.33	43.38 - 44.00	3.70 - 4.30
M27	28.00 - 28.33	49.38 - 50.00	3.70 - 4.30
M30	31.00 - 31.39	55.26 - 56.00	3.70 - 4.30
M36	37.00 - 37.62	64.80 - 66.00	4.40 - 5.60

Hex Bolts A307A

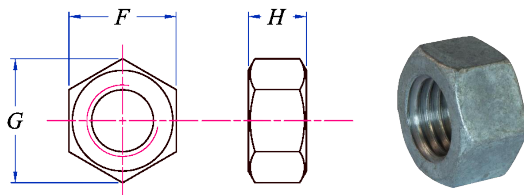
Material : follow to ASTM A307A
Standard : ASTM A307A, A563, F436
Finish : plain, black oxide, Hot Dip Galvanized

Tensile (MPa) min. 414
Elongation (%) min. 18
Hardness (HRB) 69 - 100

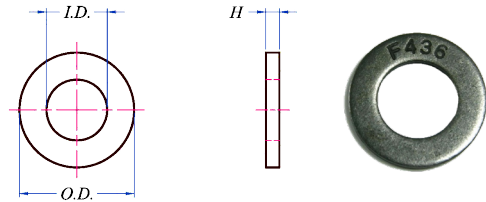


Size	Dimension (mm.)					
	P	F	G	H	L (inch.)	b
1/2"	13	18.42 - 19.05	<20.98>	7.67 - 9.25	1.1/2 - 10	26
5/8"	11	23.01 - 23.83	<26.24>	9.60 - 11.28	1.1/2 - 10	31
3/4"	10	27.64 - 28.58	<31.50>	11.56 - 13.31	1.1/2 - 10	36
7/8"	9	32.23 - 33.32	<36.75>	13.49 - 15.34	1.1/2 - 10	38
1"	8	36.83 - 38.10	<41.99>	15.01 - 17.78	2 - 10	44
1.1/8"	7	41.43 - 42.90	<47.22>	16.71 - 19.81	2.1/2 - 10	51
1.1/4"	7	46.02 - 47.63	<52.48>	19.02 - 22.25	4 - 10	51
1.1/2"	6	55.25 - 57.15	<62.99>	22.91 - 26.31	4 - 10	57

Material : follow to ASTM A563
Standard : ASTM A563 hex nuts
Finish : plain, black oxide, Hot Dip Galvanized



Material : follow to ASTM F436
Standard : ASTM F436
Finish : plain, black oxide, Hot Dip Galvanized



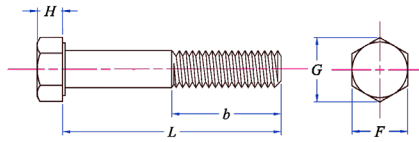
Size	Dimension (mm.)		
	F	G	H
1/2"	18.70 - 19.05	<21.33>	10.85 - 11.38
5/8"	23.42 - 23.83	<26.70>	13.60 - 14.20
3/4"	27.64 - 28.58	<31.50>	15.67 - 16.90
7/8"	32.23 - 33.32	<36.75>	18.40 - 19.70
1"	37.50 - 38.10	<41.98>	21.10 - 22.53
1.1/8"	41.43 - 42.90	<47.20>	23.85 - 25.37
1.1/4"	46.02 - 47.63	<52.50>	26.16 - 27.80
1.1/2"	55.25 - 57.15	<63.00>	31.62 - 33.45

Size	Dimension (mm.)		
	I.D.	O.D.	H
1/2"	13.50 - 14.30	26.20 - 27.80	2.46 - 4.50
5/8"	17.50 - 18.30	32.54 - 34.16	3.10 - 4.50
3/4"	20.65 - 21.46	36.50 - 38.10	3.10 - 4.50
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50
1.1/2"	41.28 - 42.88	74.60 - 77.80	3.45 - 4.50

Heavy Hex Bolts A307B

Material	: follow to ASTM A307B
Standard	: ASTM A307B, A563, F436
Finish	: plain, black oxide, Hot Dip Galvanized

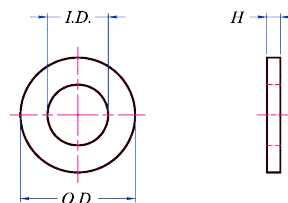
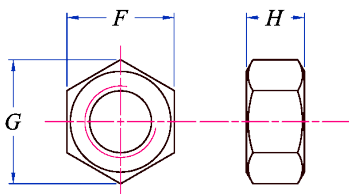
Tensile (MPa)	min. 414 - 690
Elongation (%)	min. 18
Hardness (HRB)	69 - 100



Size	Dimension (mm.)					
	P	F	G	H	L (inch.)	b
1/2"	13	21.59 - 22.23	<24.61>	7.67 - 9.25	1.1/2 - 10	26
5/8"	11	26.19 - 26.97	<29.85>	9.60 - 11.28	1.1/2 - 10	31
3/4"	10	30.78 - 31.75	<35.13>	11.56 - 13.31	1.1/2 - 10	36
7/8"	9	35.41 - 36.53	<40.36>	13.49 - 15.34	1.1/2 - 10	38
1"	8	40.01 - 41.28	<45.62>	15.01 - 17.78	1.1/2 - 10	44
1.1/8"	7	44.60 - 46.02	<50.85>	16.71 - 19.81	1.1/2 - 10	51
1.1/4"	7	49.23 - 50.80	<56.11>	19.02 - 22.25	1.1/2 - 10	51
1.1/2"	6	58.42 - 60.33	<66.60>	22.91 - 26.31	1.1/2 - 10	57

Material	: follow to ASTM A563
Standard	: ASTM A563 heavy hex nuts
Finish	: plain, black oxide, Hot Dip Galvanized

Material	: follow to ASTM F436
Standard	: ASTM F436
Finish	: plain, black oxide, Hot Dip Galvanized



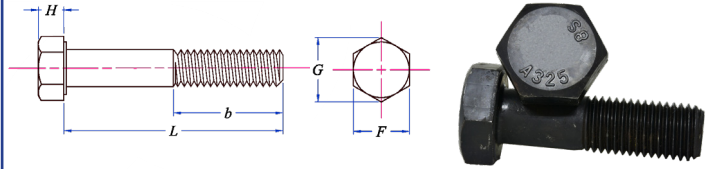
Size	Dimension (mm.)		
	F	G	H
1/2"	21.59 - 22.23	<24.61>	11.79 - 12.80
5/8"	26.19 - 26.97	<29.85>	14.91 - 16.03
3/4"	30.78 - 21.75	<35.13>	18.03 - 19.25
7/8"	35.41 - 36.53	<40.36>	21.16 - 22.48
1"	40.01 - 41.28	<45.62>	24.28 - 25.70
1.1/8"	44.60 - 46.02	<50.85>	27.41 - 28.93
1.1/4"	49.23 - 50.80	<56.11>	30.15 - 31.78
1.1/2"	58.42 - 60.33	<66.60>	36.40 - 38.23

Size	Dimension (mm.)		
	I.D.	O.D.	H
1/2"	13.50 - 14.30	26.20 - 27.80	2.46 - 4.50
5/8"	17.50 - 18.30	32.54 - 34.16	3.10 - 4.50
3/4"	20.65 - 21.46	36.50 - 38.10	3.10 - 4.50
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50
1.1/2"	41.28 - 42.88	74.60 - 77.80	3.45 - 4.50

Heavy Hex Structural Bolts A325

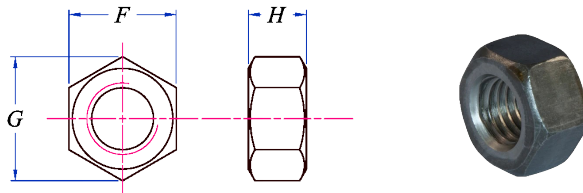
Material	: follow to ASTM A325
Standard	: ASTM A325, A563, F436
Finish	: plain, black oxide, Hot Dip Galvanized

	$\phi(1/2" - 1")$	$\phi(1.1/8" - 1.1/2")$
Tensile (ksi)	min. 120	min. 105
Yeild (ksi)	min. 92	min. 81
Hardness (HRC)	25 - 34	19 - 30



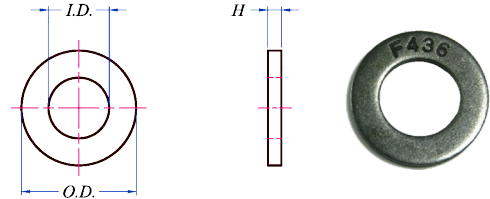
Size	Dimension (mm.)					
	P	F	G	H	L (inch.)	b
1/2"	13	21.59 - 22.23	<24.61>	7.67 - 9.25	1.1/2 - 12	26
5/8"	11	26.19 - 26.97	<29.85>	9.60 - 11.28	1.1/2 - 12	31
3/4"	10	30.78 - 31.75	<35.13>	11.56 - 13.31	1.1/2 - 12	36
7/8"	9	35.41 - 36.53	<40.36>	13.49 - 15.34	2 - 12	38
1"	8	40.01 - 41.28	<45.62>	15.01 - 17.78	2 - 12	44
1.1/8"	7	44.60 - 46.02	<50.85>	16.71 - 19.81	2.1/2 - 12	51
1.1/4"	7	49.23 - 50.80	<56.11>	19.02 - 22.25	3.1/2 - 12	51
1.3/8"	6	53.82 - 55.58	<61.37>	20.57 - 22.30	4 - 12	57
1.1/2"	6	58.42 - 60.33	<66.60>	22.91 - 26.31	4 - 12	57

Material	: follow to ASTM A563
Standard	: ASTM A563 heavy hex nuts
Finish	: plain, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		
	F	G	H
1/2"	21.59 - 22.23	<24.61>	11.79 - 12.80
5/8"	26.19 - 26.97	<29.85>	14.91 - 16.03
3/4"	30.78 - 21.75	<35.13>	18.03 - 19.25
7/8"	35.41 - 36.53	<40.36>	21.16 - 22.48
1"	40.01 - 41.28	<45.62>	24.28 - 25.70
1.1/8"	44.60 - 46.02	<50.85>	27.41 - 28.93
1.1/4"	49.23 - 50.80	<56.11>	30.15 - 31.78
1.3/8"	53.82 - 55.58	<61.37>	33.27 - 35.00
1.1/2"	58.42 - 60.33	<66.60>	36.40 - 38.23

Material	: follow to ASTM F436
Standard	: ASTM F436
Finish	: plain, black oxide, Hot Dip Galvanized

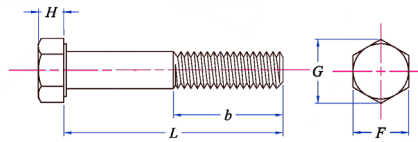


Size	Dimension (mm.)		
	I.D.	O.D.	H
1/2"	13.50 - 14.30	26.20 - 27.80	2.46 - 4.50
5/8"	17.50 - 18.30	32.54 - 34.16	3.10 - 4.50
3/4"	20.65 - 21.46	36.50 - 38.10	3.10 - 4.50
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50
1.3/8"	38.70 - 39.70	68.25 - 71.45	3.45 - 4.50
1.1/2"	41.28 - 42.88	74.60 - 77.11	3.45 - 4.50

Heavy Hex Structural Bolts A325M

Material : follow to ASTM A325M
Standard : ASTM A325M, A563M, F436M
Finish : plain, black oxide, Hot Dip Galvanized

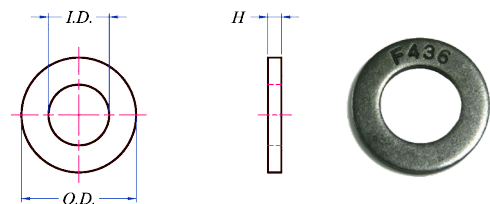
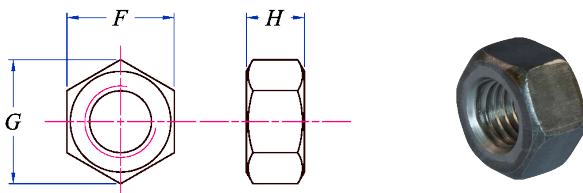
Tensile (MPa) min. 830
Yeild (MPa) min. 660
Hardness (HRC) 19 - 34



Size	Dimension (mm.)				
	F	G	H	L	b
M12x1.75	20.16 - 21.00	<22.78>	7.05 - 7.95	40 - 100	25
M16x2.0	26.16 - 27.00	<29.56>	10.25 - 10.75	45 - 300	31
M20x2.5	33.00 - 34.00	<37.29>	11.60 - 13.40	50 - 300	36
M22x2.5	35.00 - 36.00	<39.55>	13.10 - 14.90	55 - 300	38
M24x3.0	40.00 - 41.00	<45.20>	14.10 - 15.90	60 - 300	41
M27x3.0	45.00 - 46.00	<50.85>	16.10 - 17.90	65 - 300	44
M30x3.5	49.00 - 50.00	<55.37>	17.65 - 19.75	70 - 300	49
M33x3.5	53.80 - 54.90	<60.26>	20.15 - 21.35	95 - 300	52
M36x4.0	58.80 - 60.00	<66.44>	21.45 - 23.55	95 - 300	56

Material : follow to ASTM A563M
Standard : ASTM A563M heavy hex nuts
Finish : plain, black oxide, Hot Dip Galvanized

Material : follow to ASTM F436M
Standard : ASTM F436M
Finish : plain, black oxide, Hot Dip Galvanized



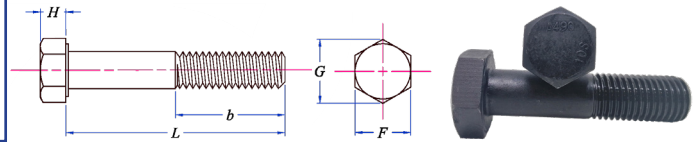
Size	Dimension (mm.)		
	F	G	H
M12x1.75	20.16 - 21.00	<22.78>	11.9 - 12.3
M16x2.0	26.16 - 27.00	<29.56>	16.4 - 17.1
M20x2.5	33.00 - 34.00	<37.29>	19.4 - 20.7
M22x2.5	35.00 - 36.00	<39.55>	22.3 - 23.6
M24x3.0	40.00 - 41.00	<45.20>	22.9 - 24.2
M27x3.0	45.00 - 46.00	<50.85>	26.3 - 27.5
M30x3.5	49.00 - 50.00	<55.37>	29.1 - 30.7
M33x3.5	53.80 - 54.90	<60.26>	31.4 - 33.5
M36x4.0	58.80 - 60.00	<66.44>	35.0 - 36.6

Size	Dimension (mm.)		
	I.D.	O.D.	H
M12	14.0 - 14.4	25.7 - 27.0	3.1 - 4.6
M16	18.0 - 18.4	32.4 - 34.0	3.1 - 4.6
M20	22.0 - 22.5	40.4 - 42.0	3.1 - 4.6
M22	24.0 - 24.5	42.4 - 44.0	3.4 - 4.6
M24	26.0 - 26.5	48.4 - 50.0	3.4 - 4.6
M27	30.0 - 30.5	54.1 - 56.0	3.4 - 4.6
M30	33.0 - 33.6	58.1 - 60.0	3.4 - 4.6
M33	36.0 - 36.6	64.1 - 66.0	3.4 - 4.6
M36	39.0 - 39.6	70.1 - 72.0	3.4 - 4.6

Heavy Hex Structural Bolts A490

Material	: follow to ASTM A490
Standard	: ASTM A490, A563, F436
Finish	: plain, black oxide, Hot Dip Galvanized

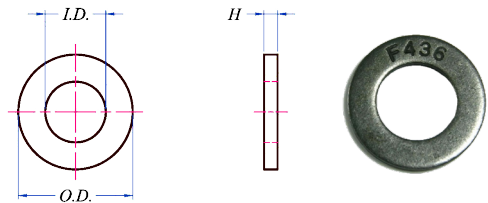
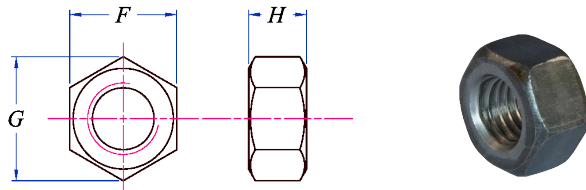
Tensile (ksi)	150 - 173
Yield (ksi)	min. 130
Hardness (HRC)	33 - 38



Size	Dimension (mm.)					
	P	F	G	H	L (inch.)	b
1/2"	13	21.59 - 22.23	<24.61>	7.67 - 9.25	1.1/2 - 10	26
5/8"	11	26.19 - 26.97	<29.85>	9.60 - 11.28	1.1/2 - 10	31
3/4"	10	30.78 - 31.75	<35.13>	11.56 - 13.31	1.1/2 - 10	36
7/8"	9	35.41 - 36.53	<40.36>	13.49 - 15.34	2 - 10	38
1"	8	40.01 - 41.28	<45.62>	15.01 - 17.78	2 - 10	44
1.1/8"	7	44.60 - 46.02	<50.85>	16.71 - 19.81	2.1/2 - 10	51
1.1/4"	7	49.23 - 50.80	<56.11>	19.02 - 22.25	3.1/2 - 10	51
1.1/2"	6	58.42 - 60.33	<66.60>	22.91 - 26.31	3.1/2 - 10	57

Material	: follow to ASTM A563
Standard	: ASTM A563 heavy hex nuts
Finish	: plain, black oxide, Hot Dip Galvanized

Material	: follow to ASTM F436
Standard	: ASTM F436
Finish	: plain, black oxide, Hot Dip Galvanized



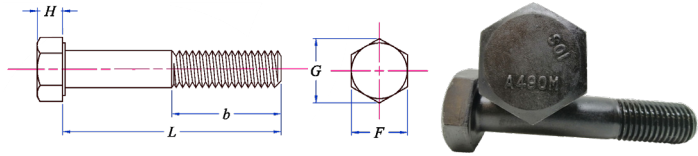
Size	Dimension (mm.)		
	F	G	H
1/2"	21.59 - 22.23	<24.61>	11.79 - 12.80
5/8"	26.19 - 26.97	<29.85>	14.91 - 16.03
3/4"	30.78 - 21.75	<35.13>	18.03 - 19.25
7/8"	35.41 - 36.53	<40.36>	21.16 - 22.48
1"	40.01 - 41.28	<45.62>	24.28 - 25.70
1.1/8"	44.60 - 46.02	<50.85>	27.41 - 28.93
1.1/4"	49.23 - 50.80	<56.11>	30.15 - 31.78
1.3/8"	53.82 - 55.58	<61.37>	33.27 - 35.00
1.1/2"	58.42 - 60.33	<66.60>	36.40 - 38.23

Size	Dimension (mm.)		
	I.D.	O.D.	H
1/2"	13.50 - 14.30	26.20 - 27.80	2.46 - 4.50
5/8"	17.50 - 18.30	32.54 - 34.16	3.10 - 4.50
3/4"	20.65 - 21.46	36.50 - 38.10	3.10 - 4.50
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50
1.3/8"	38.70 - 39.70	68.25 - 71.45	3.45 - 4.50
1.1/2"	41.28 - 42.88	74.60 - 77.11	3.45 - 4.50

Heavy Hex Structural Bolts A490M

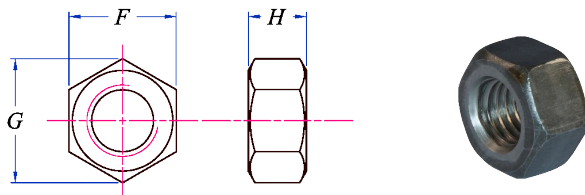
Material : follow to ASTM A490M
Standard : ASTM A490M, A563M, F436M
Finish : plain, black oxide, Hot Dip Galvanized

Tensile (MPa) min. 830
Yield (MPa) min. 660
Hardness (HRC) 19 - 34



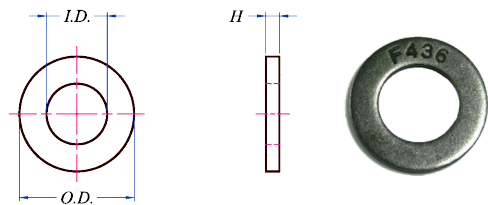
Size	Dimension (mm.)				
	F	G	H	L	b
M12x1.75	20.16 - 21.00	<22.78>	7.05 - 7.95	40 - 100	25
M16x2.0	26.16 - 27.00	<29.56>	10.25 - 10.75	45 - 300	31
M20x2.5	33.00 - 34.00	<37.29>	11.60 - 13.40	50 - 300	36
M22x2.5	35.00 - 36.00	<39.55>	13.10 - 14.90	55 - 300	38
M24x3.0	40.00 - 41.00	<45.20>	14.10 - 15.90	60 - 300	41
M27x3.0	45.00 - 46.00	<50.85>	16.10 - 17.90	65 - 300	44
M30x3.5	49.00 - 50.00	<55.37>	17.65 - 19.75	70 - 300	49
M33x3.5	53.80 - 54.90	<60.26>	20.15 - 21.35	95 - 300	52
M36x4.0	58.80 - 60.00	<66.44>	21.45 - 23.55	95 - 300	56

Material : follow to ASTM A563M
Standard : ASTM A563M heavy hex nuts
Finish : plain, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		
	F	G	H
M12x1.75	20.16 - 21.00	<22.78>	11.9 - 12.3
M16x2.0	26.16 - 27.00	<29.56>	16.4 - 17.1
M20x2.5	33.00 - 34.00	<37.29>	19.4 - 20.7
M22x2.5	35.00 - 36.00	<39.55>	22.3 - 23.6
M24x3.0	40.00 - 41.00	<45.20>	22.9 - 24.2
M27x3.0	45.00 - 46.00	<50.85>	26.3 - 27.5
M30x3.5	49.00 - 50.00	<55.37>	29.1 - 30.7
M33x3.5	53.80 - 54.90	<60.26>	31.4 - 33.5
M36x4.0	58.80 - 60.00	<66.44>	35.0 - 36.6

Material : follow to ASTM F436M
Standard : ASTM F436M
Finish : plain, black oxide, Hot Dip Galvanized

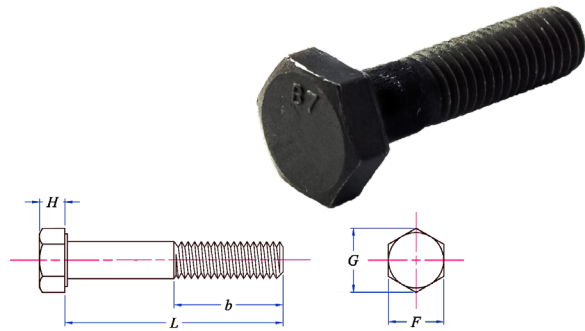


Size	Dimension (mm.)		
	I.D.	O.D.	H
M12	14.0 - 14.4	25.7 - 27.0	3.1 - 4.6
M16	18.0 - 18.4	32.4 - 34.0	3.1 - 4.6
M20	22.0 - 22.5	40.4 - 42.0	3.1 - 4.6
M22	24.0 - 24.5	42.4 - 44.0	3.4 - 4.6
M24	26.0 - 26.5	48.4 - 50.0	3.4 - 4.6
M27	30.0 - 30.5	54.1 - 56.0	3.4 - 4.6
M30	33.0 - 33.6	58.1 - 60.0	3.4 - 4.6
M33	36.0 - 36.6	64.1 - 66.0	3.4 - 4.6
M36	39.0 - 39.6	70.1 - 72.0	3.4 - 4.6

Heavy Hex Bolts A193-B7

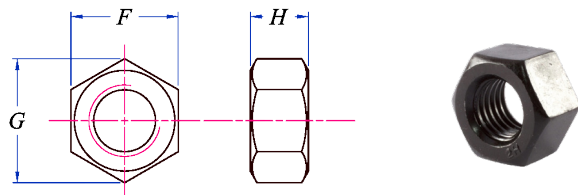
Material	: follow to ASTM A193-B7
Standard	: ASTM A193, A194-2H, F436
Finish	: black oxide, Hot Dip Galvanized

Tensile (ksi)	min. 125
Yield (ksi)	min. 105
Hardness (HRC)	max. 35

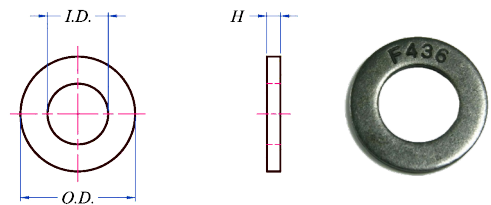


Size	Dimension (mm.)					
	P	F	G	H	L (inch.)	b
1/2"	13	21.59 - 22.23	<24.61>	7.67 - 9.25	1.1/2 - 10	26
5/8"	11	26.19 - 26.97	<29.85>	9.60 - 11.28	1.1/2 - 10	31
3/4"	10	30.78 - 31.75	<35.13>	11.56 - 13.31	1.1/2 - 10	36
7/8"	9	35.41 - 36.53	<40.36>	13.49 - 15.34	2 - 10	38
1"	8	40.01 - 41.28	<45.62>	15.01 - 17.78	2 - 10	44
1.1/8"	7	44.60 - 46.02	<50.85>	16.71 - 19.81	2.1/2 - 10	51
1.1/4"	7	49.23 - 50.80	<56.11>	19.02 - 22.25	3.1/2 - 10	51
1.1/2"	6	58.42 - 60.33	<66.60>	22.91 - 26.31	3.1/2 - 10	57

Material	: follow to ASTM A194-2H
Standard	: ASTM A194-2H heavy hex nuts
Finish	: plain, black oxide, Hot Dip Galvanized



Material	: follow to ASTM F436
Standard	: ASTM F436
Finish	: plain, black oxide, Hot Dip Galvanized



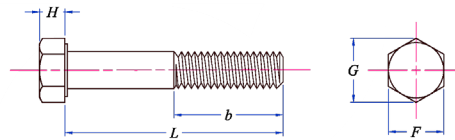
Size	Dimension (mm.)		
	F	G	H
1/2"	21.59 - 22.23	<24.61>	11.79 - 12.80
5/8"	26.19 - 26.97	<29.85>	14.91 - 16.03
3/4"	30.78 - 31.75	<35.13>	18.03 - 19.25
7/8"	35.41 - 36.53	<40.36>	21.16 - 22.48
1"	40.01 - 41.28	<45.62>	24.28 - 25.70
1.1/8"	44.60 - 46.02	<50.85>	27.41 - 28.93
1.1/4"	49.23 - 50.80	<56.11>	30.15 - 31.78
1.1/2"	58.42 - 60.33	<66.60>	36.40 - 38.23

Size	Dimension (mm.)		
	I.D.	O.D.	H
1/2"	13.50 - 14.30	26.20 - 27.80	2.46 - 4.50
5/8"	17.50 - 18.30	32.54 - 34.16	3.10 - 4.50
3/4"	20.65 - 21.46	36.50 - 38.10	3.10 - 4.50
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50
1.1/2"	41.28 - 42.88	74.60 - 77.80	3.45 - 4.50

Heavy Hex Bolts A193M

Material : follow to ASTM A193M
Standard : ASTM A193M-B7, A194M-2H, F436M
Finish : plain, black oxide, Hot Dip Ganvanized

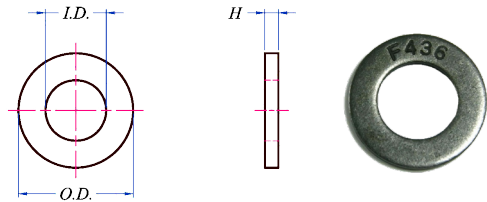
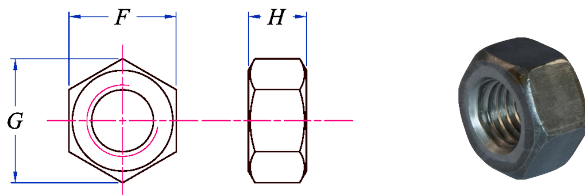
Tensile (MPa) : min. 860
Yeild (MPa) : min. 72
Hardness (HRC) : max. 35



Size	Dimension (mm.)				
	F	G	H	L	b
M12x1.75	20.67 - 21.00	<23.35>	7.24 - 7.76	40 - 100	25
M16x2.0	26.67 - 27.00	<30.14>	9.68 - 10.32	40 - 200	31
M20x2.5	33.00 - 34.00	<37.29>	12.12 - 12.88	40 - 300	36
M22x2.5	35.00 - 36.00	<39.55>	13.10 - 14.90	50 - 300	38
M24x3.0	40.00 - 41.00	<45.20>	14.56 - 15.44	60 - 300	41
M27x3.0	45.00 - 46.00	<50.85>	16.10 - 17.90	100 - 300	44
M30x3.5	49.00 - 50.00	<55.37>	17.92 - 19.48	100 - 300	49

Material : follow to ASTM A194M-2H
Standard : ASTM A194M-2H heavy hex nuts
Finish : plain, black oxide, Hot Dip Ganvanized

Material : follow to ASTM F436M
Standard : ASTM F436M
Finish : Plain, Black Oxide, Hot Dip Ganvanized



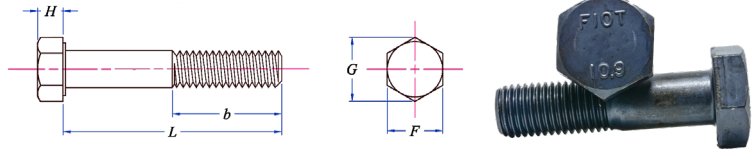
Size	Dimension (mm.)		
	F	G	H
M12x1.75	20.16 - 21.00	<22.78>	11.9 - 12.3
M16x2.0	26.16 - 27.00	<29.56>	16.4 - 17.1
M20x2.5	33.00 - 34.00	<37.29>	19.4 - 20.7
M22x2.5	35.00 - 36.00	<39.55>	22.3 - 23.6
M24x3.0	40.00 - 41.00	<45.20>	22.9 - 24.2
M27x3.0	45.00 - 46.00	<50.85>	26.3 - 27.5
M30x3.5	49.00 - 50.00	<55.37>	29.1 - 30.7

Size	Dimension (mm.)		
	I.D.	O.D.	H
M12	14.0 - 14.4	25.7 - 27.0	3.1 - 4.6
M16	18.0 - 18.4	32.4 - 34.0	3.1 - 4.6
M20	22.0 - 22.5	40.4 - 42.0	3.1 - 4.6
M22	24.0 - 24.5	42.4 - 44.0	3.4 - 4.6
M24	26.0 - 26.5	48.4 - 50.0	3.4 - 4.6
M27	30.0 - 30.5	54.1 - 56.0	3.4 - 4.6
M30	33.0 - 33.6	58.1 - 60.0	3.4 - 4.6

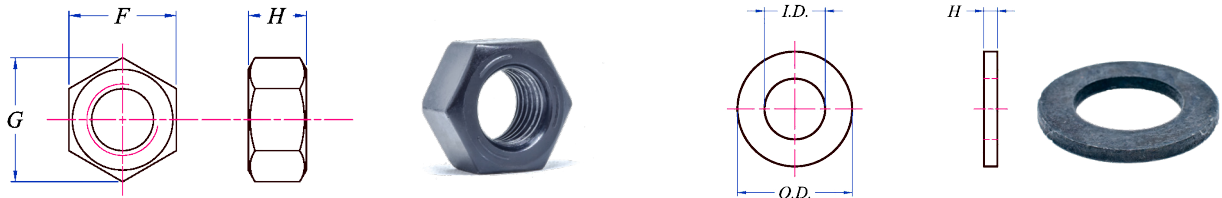
High Tensile Structural Bolts F10T

Material	: follow to JIS B1186 - F10T
Standard	: JIS B1186 - F10T
Finish	: Black Oxide

Tensile (MPa)	1000 - 1200
Yield (MPa)	min. 900
Hardness (HRC)	27 - 38



Size	Dimension (mm.)				
	F	G	H	L	b
M12x1.75	21.2 - 22.0	<25.4>	8.0	30 - 50	25
M16x2.0	26.2 - 27.0	<31.2>	10.0	40 - 140	30
M20x2.5	31.0 - 32.0	<37.0>	13.0	40 - 160	35
M22x2.5	35.0 - 36.0	<41.6>	14.0	50 - 200	40
M24x3.0	40.0 - 41.0	<47.3>	15.0	55 - 200	45
M27x3.0	45.0 - 46.0	<53.1>	17.0	80 - 200	50
M30x3.5	49.0 - 50.0	<57.7>	19.0	80 - 200	55



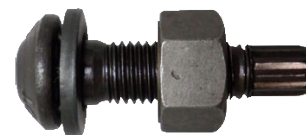
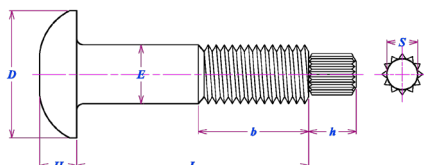
Size	Dimension (mm.)		
	F	G	H
M12x1.75	21.2 - 22.0	<25.4>	12.0
M16x2.0	26.2 - 27.0	<31.2>	16.0
M20x2.5	31.0 - 32.0	<37.0>	20.0
M22x2.5	35.0 - 36.0	<41.6>	22.0
M24x3.0	40.0 - 41.0	<47.3>	24.0
M27x3.0	45.0 - 46.0	<53.1>	27.0
M30x3.5	49.0 - 50.0	<57.7>	30.0

Size	Dimension (mm.)		
	I.D.	O.D.	H
M12	13.0 - 13.7	25.2 - 26.0	3.2
M16	17.0 - 17.7	31.0 - 32.0	4.5
M20	21.0 - 21.8	39.0 - 40.0	4.5
M22	23.0 - 23.8	43.0 - 44.0	6.0
M24	25.0 - 25.8	47.0 - 48.0	6.0
M27	28.0 - 28.8	54.8 - 56.0	6.0
M30	31.0 - 32.0	58.8 - 60.0	8.0

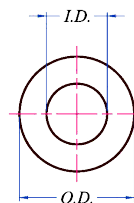
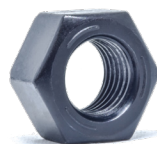
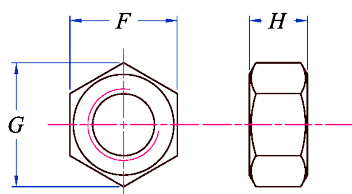
High Strength T.C. Bolts S10T

Material : follow to JSS II09 - S10T
Standard : JSS II09 - S10T
Finish : Black Oxide

Tensile (MPa) 1000 - 1200
Yeild (MPa) min. 900
Hardness (HRC) 27 - 38



Size	Dimension (mm.)						
	E	D	H	L	b	h	S
M16x2.0	16	<26>	9.2 - 10.8	30 - 180	30	<15>	11.3
M20x2.5	20	<33>	12.1 - 13.9	40 - 180	35	<18>	14.1
M22x2.5	22	<37>	13.1 - 14.9	40 - 200	40	<19>	15.4
M24x3.0	24	<41>	14.1 - 15.9	50 - 200	45	<20>	16.8
M27x3.0	27	<47>	16.1 - 17.9	80 - 200	50	<22>	19.0
M30x3.5	30	<53>	18.0 - 20.0	80 - 200	55	<24>	21.1

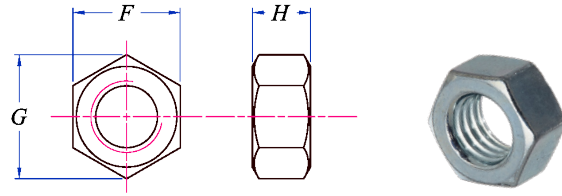


Size	Dimension (mm.)		
	F	G	H
M16x2.0	26.2 - 27.0	<31.2>	16.0
M20x2.5	31.0 - 32.0	<37.0>	20.0
M22x2.5	35.0 - 36.0	<41.6>	22.0
M24x3.0	40.0 - 41.0	<47.3>	24.0
M27x3.0	45.0 - 46.0	<53.1>	27.0
M30x3.5	49.0 - 50.0	<57.7>	30.0

Size	Dimension (mm.)		
	F	G	H
M16	17.0 - 17.7	31.0 - 32.0	4.5
M20	21.0 - 21.8	39.0 - 40.0	4.5
M22	23.0 - 23.8	43.0 - 44.0	6.0
M24	25.0 - 25.8	47.0 - 48.0	6.0
M27	28.0 - 28.8	54.8 - 56.0	6.0
M30	31.0 - 32.0	58.8 - 60.0	8.0

Hex Nuts (มิลขาว)

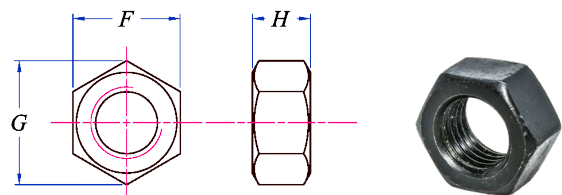
Material	: Mild Steel
Standard	: JIS B1181
Finish	: white zinc plated



Size	Dimension (mm.)		
	F	G	H
M3 x 0.5	5.0	<6.01>	2.3
M4 x 0.7	7.0	<7.66>	3.1
M5 x 0.8	8.0	<8.79>	4.5
M6 x 1.0	10.0	<11.05>	5.0
M8 x 1.25	12.0	<14.38>	6.5
M10 x 1.25	14.0	<17.77>	8.0
M12 x 1.50	17.0	<20.03>	10.0

Hexagon Nuts (มิลดำ)

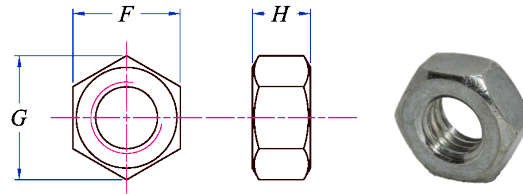
Material	: Mild Steel
Standard	: DIN 934
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		
	F	G	H
M3 x 0.5	5.32 - 5.50	<6.01>	2.15 - 2.40
M4 x 0.7	6.78 - 7.00	<7.66>	2.90 - 3.20
M5 x 0.8	7.78 - 8.00	<8.79>	3.70 - 4.00
M6 x 1.0	9.78 - 10.00	<11.05>	4.70 - 5.00
M8 x 1.25	12.73 - 13.00	<14.38>	6.14 - 6.50
M10 x 1.25	13.73 - 14.00	<16.20>	7.64 - 8.00
M10 x 1.50	16.73 - 17.00	<18.90>	7.64 - 8.00
M12 x 1.25	16.73 - 17.00	<18.90>	9.64 - 10.00
M12 x 1.50	16.73 - 17.00	<18.90>	9.64 - 10.00
M12 x 1.75	18.67 - 19.00	<21.10>	9.64 - 10.00
M14 x 1.50	21.67 - 22.00	<24.49>	10.30 - 11.0
M14 x 2.0	21.67 - 22.00	<24.49>	10.30 - 11.0

Hex Nuts [BSW]

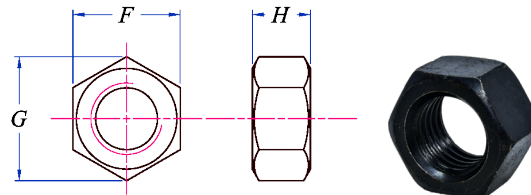
Material	: Mild Steel
Standard	: ASME B18.2.2
Finish	: plain, white/yellow zinc plated, Hot Dip Galvanized



Size	T.P.I.	Dimension (mm.)		
		F	G	H
1/4"	20	12.40 - 12.70	<14.12>	5.00
5/16"	18	13.87 - 14.29	<15.80>	7.00
3/8"	16	16.99 - 17.48	<19.38>	8.00
1/2"	12	21.59 - 22.23	<24.61>	10.00
5/8"	11	26.19 - 26.97	<29.85>	13.00
3/4"	10	30.78 - 31.75	<35.10>	16.00
7/8"	9	35.41 - 36.53	<40.36>	18.00
1"	8	40.01 - 41.28	<45.62>	22.00

Hex Nuts [UNC,UNF] [Grade 4.6]

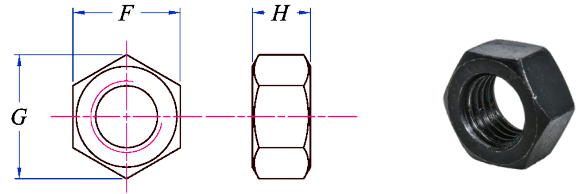
Material	: Mild Steel
Standard	: ASME B18.2.2
Finish	: plain, white/yellow zinc plated, Hot Dip Galvanized



Size	UNC T.P.I.	UNF T.P.I.	Dimension (mm.)		
			F	G	H
1/4"	20	28	10.87 - 11.13	<12.40>	5.38 - 5.74
5/16"	18	24	12.42 - 12.70	<14.15>	6.55 - 6.93
3/8"	16	24	14.00 - 14.30	<15.95>	8.13 - 8.56
7/16"	14	20	17.15 - 17.48	<19.51>	9.27 - 9.78
1/2"	13	20	18.69 - 19.05	<21.34>	10.85 - 11.38
9/16"	12	18	21.87 - 22.23	<24.94>	11.01 - 12.60
5/8"	11	18	23.42 - 23.83	<26.70>	13.59 - 14.20
3/4"	10	16	27.64 - 28.58	<31.50>	15.67 - 16.89
7/8"	9	14	32.23 - 33.32	<36.75>	18.39 - 19.71
1"	8	12	36.83 - 38.10	<41.99>	21.11 - 22.53

Hexagon Nuts [Grade 4.6, 8.8]

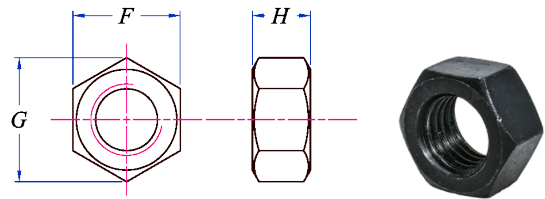
Material	: follow ISO 898
Standard	: DIN 934
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
M8 x 1.25	12.73 - 13.00	<14.38>	6.14 - 6.50	M39 x 4.0	58.80 - 60.00	<66.44>	29.40 - 31.00
M10 x 1.5	16.73 - 17.00	<18.90>	7.64 - 8.00	M42 x 4.5	63.10 - 65.00	<71.30>	32.40 - 34.00
M12 x 1.75	18.67 - 19.00	<21.10>	9.64 - 10.00	M45 x 4.5	68.10 - 70.00	<76.95>	34.40 - 36.00
M14 x 2.0	21.67 - 22.00	<24.49>	10.30 - 11.00	M48 x 5.0	73.10 - 75.00	<82.60>	36.40 - 38.00
M16 x 2.0	23.67 - 24.00	<26.75>	12.30 - 13.00	M52 x 5.0	78.10 - 80.00	<88.25>	40.40 - 42.00
M18 x 2.5	26.16 - 27.00	<29.56>	14.30 - 15.00	M56 x 5.5	82.80 - 85.00	<93.56>	43.40 - 45.00
M20 x 2.5	29.16 - 30.00	<32.95>	14.90 - 16.00	M60 x 5.5	87.80 - 90.00	<99.21>	46.40 - 48.00
M22 x 2.5	31.00 - 32.00	<35.03>	16.90 - 18.00	M64 x 6.0	92.80 - 95.00	<104.86>	49.10 - 51.00
M24 x 3.0	35.00 - 36.00	<39.55>	17.70 - 19.00	M68 x 6.0	97.80 - 100.00	<110.51>	52.10 - 54.00
M27 x 3.0	40.00 - 41.00	<45.20>	20.70 - 22.00	M72 x 6.0	102.80 - 105.00	<116.16>	56.10 - 58.00
M30 x 3.5	45.00 - 46.00	<50.85>	22.70 - 24.00	M80 x 6.0	112.80 - 115.00	<127.46>	62.10 - 64.00
M33 x 3.5	49.00 - 50.00	<55.37>	24.70 - 26.00	M90 x 6.0	127.50 - 130.00	<144.08>	70.10 - 72.00
M36 x 4.0	53.8 - 55.00	<60.79>	27.40 - 29.00	M100 x 6.0	142.50 - 145.00	<161.02>	78.10 - 80.00

Hex Nuts [Grade 4.6, 8.8 UNC]

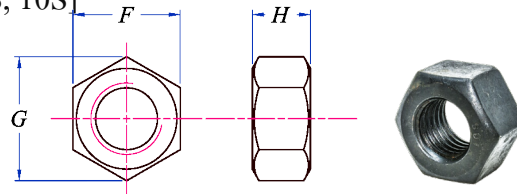
Material	: follow ISO 898
Standard	: ASME B18.2.2
Finish	: plain, white/yellow zinc plated Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
3/8" - 16	14.00 - 14.30	<15.95>	8.13 - 8.56	1.1/4" - 7	46.00 - 47.63	<52.48>	26.16 - 27.79
1/2" - 13	18.69 - 19.05	<21.34>	10.85 - 11.38	1.1/2" - 6	55.25 - 57.15	<62.99>	31.62 - 33.32
5/8" - 11	23.42 - 23.83	<26.70>	13.59 - 14.20	1.5/8" - 5.5	59.69 - 61.72	<68.05>	34.65 - 35.97
3/4" - 10	27.64 - 28.58	<31.50>	15.67 - 16.89	1.3/4" - 5	64.47 - 66.68	<73.48>	37.08 - 39.12
7/8" - 9	32.23 - 33.32	<36.75>	18.39 - 19.71	1.7/8" - 5	69.14 - 71.45	<78.82>	39.80 - 41.94
1" - 8	36.83 - 38.10	<41.99>	21.11 - 22.53	2" - 4.5	73.66 - 76.20	<83.97>	42.55 - 44.78
1.1/8" - 7	41.43 - 42.88	<47.22>	23.85 - 25.37				

Heavy Hex Nuts ASTM A563M [Grade 8S, 10S]

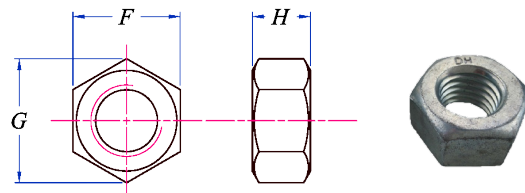
Material	: ASTM A563M Grade 8S, 10S
Standard	: ASTM A563M, ANSI B18.2.4.6M
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
M12 x 1.75	20.16 - 21.00	<22.78>	11.90 - 12.30	M30 x 3.5	49.00 - 50.00	<55.37>	29.10 - 30.70
M14 x 2.0	23.16 - 24.00	<26.17>	13.60 - 14.30	M33 x 3.5	53.80 - 54.90	<60.26>	31.40 - 33.50
M16 x 2.0	26.16 - 27.00	<29.56>	16.40 - 17.10	M36 x 4.0	58.80 - 60.00	<66.44>	35.00 - 36.60
M20 x 2.5	33.00 - 34.00	<37.29>	19.40 - 20.70	M42 x 4.5	67.90 - 70.00	<77.41>	40.40 - 42.50
M22 x 2.5	35.00 - 36.00	<39.55>	22.30 - 23.60	M45 x 4.5	72.70 - 75.00	<83.95>	43.50 - 45.50
M24 x 3.0	40.00 - 41.00	<45.20>	22.90 - 24.20	M48 x 5.0	77.60 - 80.00	<88.46>	46.40 - 48.40
M27 x 3.0	45.00 - 46.00	<50.85>	26.30 - 27.50				

Hex Nuts ASTM A563 [Grade A, DH]

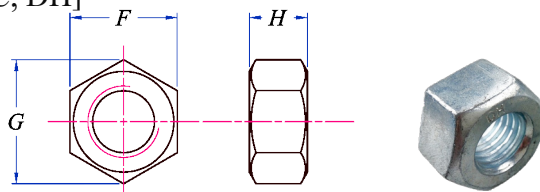
Material	: ASTM A563 Grade A, DH
Standard	: ASTM A563, ANSI B18.2.6
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
1/2" - 13	18.69 - 19.05	<21.34>	10.85 - 11.38	1.1/4" - 7	46.02 - 47.63	<52.48>	26.16 - 27.79
5/8" - 11	23.42 - 23.83	<26.70>	13.59 - 14.20	1.1/2" - 6	55.25 - 57.15	<62.99>	31.62 - 33.45
3/4" - 10	27.64 - 28.58	<31.50>	15.67 - 16.89	1.5/8" - 5.5	59.69 - 61.72	<68.05>	34.65 - 35.97
7/8" - 9	32.23 - 33.32	<36.75>	18.39 - 19.71	1.3/4" - 5	64.47 - 66.68	<73.48>	37.08 - 39.12
1" - 8	36.83 - 38.10	<41.99>	21.11 - 22.53	1.7/8" - 5	69.14 - 71.45	<78.82>	39.80 - 41.94
1.1/8" - 7	41.43 - 42.88	<47.22>	23.85 - 25.37	2" - 4.5	73.66 - 76.20	<83.97>	42.55 - 44.78

Heavy Hex Nuts ASTM A563 [Grade A, C, DH]

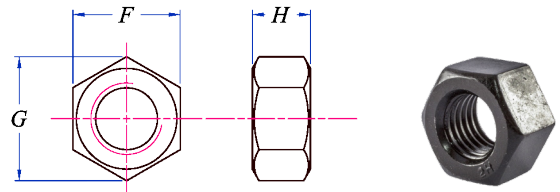
Material	: ASTM A563 Grade A, C, DH
Standard	: ASTM A563, ANSI B18.2.6
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
1/2" - 13	21.59 - 22.23	<24.61>	11.79 - 12.80	1.1/8" - 7	44.60 - 46.02	<50.85>	27.41 - 28.93
5/8" - 11	26.19 - 26.97	<29.85>	14.91 - 16.03	1.1/4" - 7	49.23 - 50.80	<56.11>	30.15 - 31.78
3/4" - 10	30.78 - 31.75	<35.10>	18.03 - 19.25	1.1/2" - 6	58.42 - 60.33	<66.60>	36.40 - 38.23
7/8" - 9	35.41 - 36.53	<40.36>	21.16 - 22.48	1.3/4" - 5	67.61 - 69.85	<77.09>	42.65 - 44.68
1" - 8	40.01 - 41.28	<45.62>	24.28 - 25.70	2" - 4.5	76.84 - 79.38	<87.60>	48.90 - 51.13

Heavy Hex Nuts ASTM A194 [Grade 2H, 7]

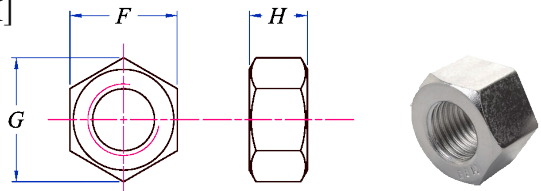
Material	: ASTM A194 Grade 2H, 7
Standard	: ASTM A194, ASME B18.2.4.6M
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
1/2" - 13	21.59 - 22.23	<24.61>	11.79 - 12.80	1.1/8" - 7	44.60 - 46.02	<50.85>	27.41 - 28.93
5/8" - 11	26.19 - 26.97	<29.85>	14.91 - 16.03	1.1/4" - 7	49.23 - 50.80	<56.11>	30.15 - 31.78
3/4" - 10	30.78 - 31.75	<35.10>	18.03 - 19.25	1.1/2" - 6	58.42 - 60.33	<66.60>	36.40 - 38.23
7/8" - 9	35.41 - 36.53	<40.36>	21.16 - 22.48	1.3/4" - 5	67.61 - 69.85	<77.09>	42.65 - 44.68
1" - 8	40.01 - 41.28	<45.62>	24.28 - 25.70	2" - 4.5	76.84 - 79.38	<87.60>	48.90 - 51.13

Heavy Hex Nuts ASTM A194M [Grade 2H, B8M]

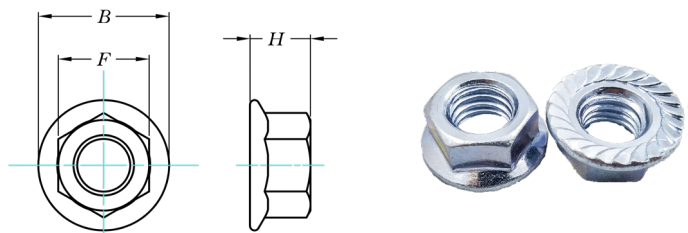
Material	: ASTM A194 Grade 2H, B8M
Standard	: ASTM A194M, ASME B18.2.4.6M
Finish	: black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	G	H		F	G	H
M12 x 1.75	20.16 - 21.00	<22.78>	11.90 - 12.30	M24 x 3.0	40.00 - 41.00	<45.20>	22.90 - 24.20
M14 x 2.0	23.16 - 24.00	<26.17>	13.60 - 14.30	M27 x 3.0	45.00 - 46.00	<50.85>	26.30 - 27.50
M16 x 2.0	26.16 - 27.00	<29.56>	16.40 - 17.10	M30 x 3.5	49.00 - 50.00	<55.37>	29.10 - 30.70
M20 x 2.5	33.00 - 34.00	<27.29>	19.40 - 20.70	M36 x 4.0	58.80 - 60.00	<66.44>	35.00 - 36.60

Hex Flange Nuts

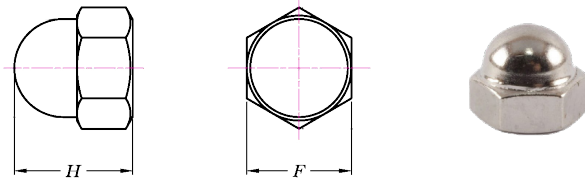
Material	: Steel
Standard	: JIS B1190
Finish	: white / yellow zinc plated



Size	Dimension (mm.)			Size	Dimension (mm.)		
	F	B	H		F	B	H
M3 x 0.5	5.5	8.0	4.0	M10 x 1.25	14.0	21.0	10.0
M4 x 0.7	7.0	10.5	4.2	M10 x 1.5	14.0	21.0	10.0
M5 x 0.8	8.0	12.0	5.0	M12 x 1.25	17.0	25.0	11.5
M6 x 1.0	10.0	14.0	6.0	M12 x 1.5			
M8 x 1.25	12.0	17.5	8.0	M12 x 1.75			
				M16 x 2.0	22.0	33.0	15.0

Hex Cap Nuts

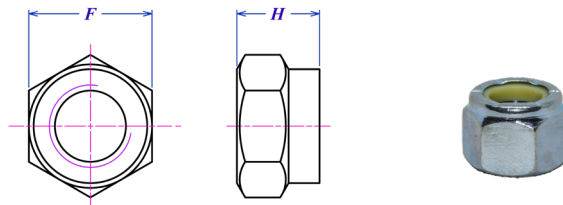
Material	: Steel
Standard	: JIS B1183
Finish	: chrome plated



Size	Dimension (mm.)		Size	Dimension (mm.)	
	F	H		F	H
M3 x 0.5	5.50	5.00	M10 x 1.25, 1.5	17.00	15.50
M4 x 0.7	7.00	6.20	M12 x 1.25, 1.5, 1.75	19.00	18.50
M5 x 0.8	8.00	7.60	M16 x 2.0	24.00	24.00
M6 x 1.0	10.00	9.80	M20 x 2.5	30.00	30.00
M8 x 1.25	13.00	12.50	M30 x 3.5	46.00	50.00

Lock Nuts

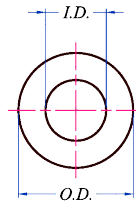
Material	: Steel, 8.8
Standard	: DIN 985, 982
Finish	: white / yellow zinc plated, Hot Dip Galvanized



Size	Dimension (mm.)		UNC Size	Dimension (mm.)	
	F	H		F	H
M3 x 0.5	5.5	4.0	3/16" - 24	9.53	6.00
M4 x 0.7	7.0	5.0	1/4" - 20	11.11	8.30
M5 x 0.8	8.0	5.0	5/16" - 18	12.70	9.10
M6 x 1.0	10.0	6.0	3/8" - 16	14.30	11.80
M8x1.25	13.0	8.0	7/16" - 14	15.88	11.80
M10 x 1.25	14.0	10.0	1/2" - 13	19.05	15.40
M10 x 1.25,1.5	17.0	10.0	9/16" - 12	22.23	16.60
M12 x 1.25, 1.5, 1.75	19.0	12.0	5/8" - 11	23.81	19.40
M14 x 1.5, 2.0	22.0	14.0	3/4" - 10	26.99	22.60
M16 x 1.5, 2.0	24.0	16.0	7/8" - 9	33.34	25.30
M18 x 1.5, 2.5	27.0	18.5	1" - 8	38.10	27.30
M20 x 1.5, 2.5	30.0	20.0	1.1/8" - 7	41.28	28.50
M22 x 2.5	32.0	22.0			
M24 x 1.5, 3.0	36.0	24.0			
M27 x 3.0	41.0	27.0			
M30 x 3.5	46.0	30.0			
M36 x 4.0	55.0	36.0			
M42 x 4.5	65.0	42.0			

Plain Washers

Material : Steel
Standard : DIN 125-A
Finish : plain, white / yellow zinc, black oxide,
 Hot Dip Galvanized

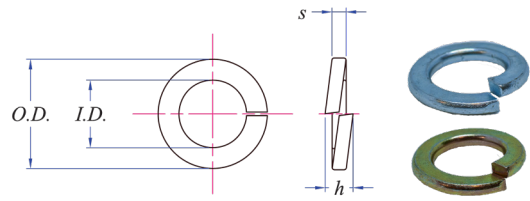


Size	Dimension (mm.)			Size	Dimension (mm.)		
	I.D.	O.D.	H		I.D.	O.D.	H
M3	3.20 - 3.38	7.64 - 8.00	0.7 - 0.9	M16	17.00 - 17.27	29.48 - 30.00	2.0 - 2.5
M4	4.30 - 4.48	9.64 - 10.00	0.7 - 0.9	M18	19.00 - 19.33	33.38 - 34.00	2.5 - 3.0
M5	5.30 - 5.48	11.57 - 12.00	0.7 - 0.9	M20	21.00 - 21.33	37.38 - 38.00	2.5 - 3.0
M6	6.40 - 6.62	12.57 - 13.00	0.9 - 1.1	M22	23.00 - 23.33	38.38 - 39.00	2.5 - 3.0
M6	6.40 - 6.62	13.57 - 14.00	0.9 - 1.1	M24	25.00 - 25.33	43.38 - 44.00	2.5 - 3.0
M6	6.40 - 6.62	15.57 - 16.00	0.9 - 1.1	M27	28.00 - 28.33	47.38 - 48.00	3.5 - 4.0
M8	8.40 - 8.62	15.57 - 16.00	1.0 - 1.2	M30	31.00 - 31.39	55.26 - 56.00	3.5 - 4.0
M8	8.40 - 8.62	17.48 - 18.00	1.0 - 1.2	M33	34.00 - 34.62	58.80 - 60.00	4.5 - 5.0
M10	10.50 - 10.77	17.48 - 18.00	1.4 - 1.6	M36	37.00 - 37.62	64.80 - 66.00	4.5 - 5.0
M10	10.50 - 10.77	21.48 - 22.00	1.4 - 1.6	M42	43.00 - 43.62	76.80 - 78.00	6.0 - 7.0
M12	13.00 - 13.27	23.48 - 24.00	1.8 - 2.0	M45	46.00 - 46.62	82.60 - 84.00	6.0 - 7.0
M14	15.00 - 15.27	27.48 - 28.00	1.8 - 2.0	M48	50.00 - 50.62	87.60 - 89.00	7.0 - 8.0

Size	Dimension (mm.)		Size	Dimension (mm.)	
	O.D.	H		O.D.	H
1/4"		1.6	7/8"	53	2.5
5/16"		1.6	1"	56	2.5
3/8"	28	2.3	1.1/8"	63	2.5
7/16"	30	2.3	1.1/4"	67	2.5
1/2"	32	2.3	1.1/2"	76	2.5
5/8"	40	2.5	1.3/4"	90	3.2
3/4"	46	2.5	2"	96	3.2

Spring Washers (លេខ ១)

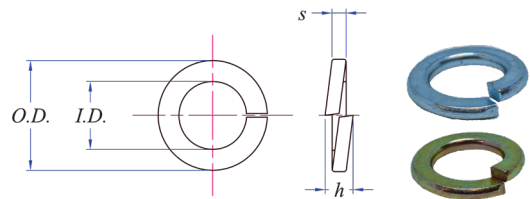
Material	: Steel
Standard	: DIN 127-B
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		Size	Dimension (mm.)	
	O.D.	H		O.D.	H
M3 1/8"	5.8	0.9	M12 1/2"	21.8	2.6
M4 5/32"	7.0	1.0	M14 9/16"	23.8	3.0
M5 3/16"	9.0	1.3	M16 5/8"	26.5	3.4
M6 1/4"	12.0	1.8	M18	30.0	3.8
M8 5/16"	14.5	2.0	M20 3/4"	32.0	4.0
M10 3/8"	18.0	2.2	M22 7/8"	36.0	4.5
M11 7/16"	19.0	2.6	M24 1"	40.0	5.1

Spring Washers (លេខ ២)

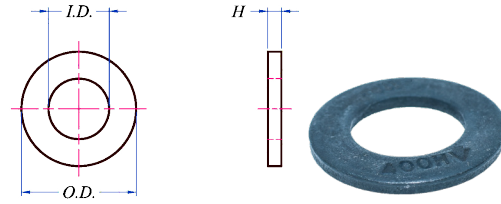
Material	: Steel
Standard	: DIN 127-B
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		Size	Dimension (mm.)	
	O.D.	H		O.D.	H
M6 1/4"	12.0	2.0	M22 7/8"	36.0	6.0
M8 5/16"	14.5	2.0	M24	40.0	6.3
M10 3/8"	18.0	2.9	M25 1"	40.0	6.3
M11 7/16"	19.0	2.9	M27 1.1/8"	45.5	6.8
M12 1/2"	21.8	3.0	M30 1.1/4"	49.5	6.8
M14 9/16"	23.8	3.6	M36 1.1/2"	57.3	7.0
M16 5/8"	26.5	4.2	M45 1.3/4"	69.4	10.0
M18	30.0	5.1	M50 2"	75.6	10.0
M20 3/4"	32.0	5.5			

Washer 100, 200, 300, 400HV

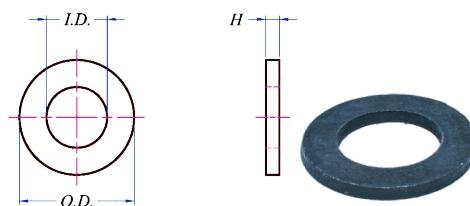
Material	: Steel
Standard	: ISO 7089
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	I.D.	O.D.	H		I.D.	O.D.	H
M3 1/8"	3.20 - 3.38	6.64 - 7.00	0.45 - 0.55	M24 1"	25.00 - 25.33	43.38 - 44.00	3.70 - 4.30
M4 5/32"	4.30 - 4.48	8.64 - 9.00	0.70 - 0.90	M27 1.1/8"	28.00 - 28.33	49.38 - 50.00	3.70 - 4.30
M5 3/16"	5.30 - 5.48	9.64 - 10.00	0.90 - 1.10	M30 1.1/4"	31.00 - 31.39	55.26 - 56.00	3.70 - 4.30
M6 1/4"	6.40 - 6.62	11.57 - 12.00	1.40 - 1.80	M33 1.5/16"	34.00 - 34.62	58.80 - 60.00	4.40 - 5.60
M8 5/16"	8.40 - 8.62	15.57 - 16.00	1.40 - 1.80	M36 1.1/2"	37.00 - 37.62	64.80 - 66.00	4.40 - 5.60
M10 3/8"	10.50 - 10.77	19.48 - 20.00	1.80 - 2.20	M39 1.9/16"	42.00 - 42.62	70.80 - 72.00	5.40 - 6.60
M12 1/2"	13.00 - 13.27	23.48 - 24.00	2.30 - 2.70	M42 1.5/8"	45.00 - 45.62	76.80 - 78.00	7.00 - 9.00
M14 9/16"	15.00 - 15.27	27.48 - 28.00	2.30 - 2.70	M45 1.3/4"	48.00 - 48.62	83.60 - 85.00	7.00 - 9.00
M16 5/8"	17.00 - 17.27	29.48 - 30.00	2.70 - 3.30	M48 1.7/8"	52.00 - 52.74	90.60 - 92.00	7.00 - 9.00
M18	19.00 - 19.33	33.38 - 34.00	2.70 - 3.30	M56 2.3/16"	62.00 - 62.74	103.6 - 105.0	9.00 - 11.00
M20 3/4"	21.00 - 21.33	36.38 - 37.00	2.70 - 3.30	M60 2.3/8"	66.00 - 66.74	108.6 - 110.0	9.00 - 11.00
M22 7/8"	23.00 - 23.33	38.38 - 39.00	2.70 - 3.30	M64 2.1/2"	70.00 - 70.74	113.6 - 115.0	9.00 - 11.00

Heavy Washer [Grade 10.9]

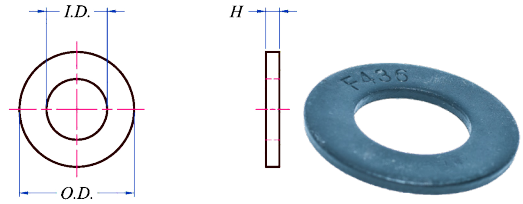
Material	: Steel
Standard	: DIN 6916
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)		
	I.D.	O.D.	H
M16	17.00 - 17.27	29.48 - 30.00	3.7 - 4.3
M20	21.00 - 21.33	36.38 - 37.00	3.7 - 4.3
M24	25.00 - 25.33	43.38 - 44.00	3.7 - 4.3
M30	31.00 - 31.62	54.80 - 56.00	4.4 - 5.6
M36	37.00 - 37.62	64.80 - 66.00	5.4 - 6.6

Washer F436

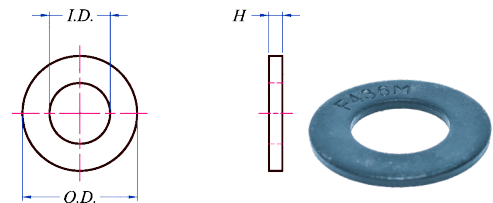
Material	: follow for ASTM F436
Standard	: ASTM F436
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	I.D.	O.D.	H		I.D.	O.D.	H
1/4"	7.14 - 7.95	15.06 - 16.69	1.30 - 2.03	1.3/8"	38.10 - 39.70	68.25 - 71.45	3.45 - 4.50
5/16"	8.74 - 9.55	16.66 - 18.29	1.30 - 2.03	1.1/2"	41.28 - 42.88	74.60 - 77.80	3.45 - 4.50
3/8"	10.31 - 11.13	19.84 - 21.46	1.30 - 2.03	1.3/4"	47.63 - 49.23	84.12 - 87.33	4.52 - 7.11
7/16"	11.91 - 12.73	22.61 - 24.23	1.30 - 2.03	2"	53.98 - 55.58	93.65 - 96.85	4.52 - 7.11
1/2"	13.49 - 14.30	26.19 - 27.81	2.46 - 4.50	2.1/4"	60.33 - 61.93	100.00 - 154.00	6.10 - 8.64
9/16"	15.88 - 16.69	29.36 - 30.99	2.79 - 4.50	2.1/2"	66.68 - 68.28	112.70 - 115.90	6.10 - 8.64
5/8"	17.48 - 18.29	32.54 - 34.16	3.10 - 4.50	2.3/4"	73.03 - 74.63	125.40 - 128.60	6.10 - 8.64
3/4"	20.65 - 21.46	36.47 - 38.10	3.10 - 4.50	3"	79.38 - 80.98	138.10 - 141.30	6.10 - 8.64
7/8"	23.83 - 24.64	43.64 - 45.26	3.45 - 4.50	3.1/4"	85.73 - 88.90	149.23 - 155.58	6.10 - 8.64
1"	27.00 - 28.60	49.20 - 52.40	3.45 - 4.50	3.1/2"	92.08 - 95.25	161.93 - 168.28	6.10 - 8.64
1.1/8"	30.18 - 31.78	55.55 - 58.75	3.45 - 4.50	3.3/4"	98.43 - 101.60	174.63 - 180.98	6.10 - 8.64
1.1/4"	34.93 - 36.53	61.90 - 65.10	3.45 - 4.50	4"	104.78 - 107.95	187.33 - 193.68	6.10 - 8.64

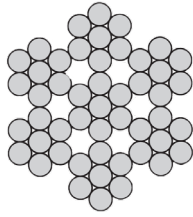
Washer F436M

Material	: follow for ASTM F436M
Standard	: ASTM F436M
Finish	: plain, white / yellow zinc, black oxide, Hot Dip Galvanized



Size	Dimension (mm.)			Size	Dimension (mm.)		
	I.D.	O.D.	H		I.D.	O.D.	H
M12	14.00 - 14.40	25.70 - 27.00	3.10 - 4.60	M42	45.00 - 45.60	81.80 - 84.00	4.60 - 7.20
M14	16.00 - 16.40	28.70 - 30.00	3.10 - 4.60	M48	52.00 - 52.70	92.80 - 95.00	4.60 - 7.20
M16	18.00 - 18.40	32.40 - 34.00	3.10 - 4.60	M45	48.00 - 48.70	87.30 - 90.00	4.60 - 7.20
M20	22.00 - 22.50	40.40 - 42.00	3.10 - 4.60	M56	62.00 - 62.70	104.80 - 107.00	6.10 - 8.70
M22	24.00 - 24.50	42.40 - 44.00	3.10 - 4.60	M64	70.00 - 70.70	115.80 - 118.00	6.10 - 8.70
M24	26.00 - 26.50	48.40 - 50.00	3.10 - 4.60	M72	78.00 - 78.70	127.50 - 130.00	6.10 - 8.70
M27	30.00 - 30.50	54.10 - 56.00	3.10 - 4.60	M80	86.00 - 86.90	139.50 - 142.00	6.10 - 8.70
M30	33.00 - 33.60	58.10 - 60.00	3.10 - 4.60	M90	96.00 - 96.90	156.50 - 159.00	6.10 - 8.70
M33	36.00 - 36.60	64.10 - 66.00	3.10 - 4.60	M100	107.00 - 107.90	173.50 - 176.00	6.10 - 8.70
M36	39.00 - 39.60	70.10 - 72.00	3.10 - 4.60				

7x7 Steel Core [IWRC]



Wire Rope Construction

Strands	:	6
External Strands	:	6
Strand Layer	:	1
Wires	:	30 to 54

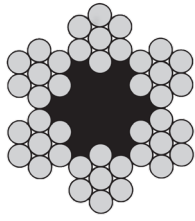
Strands Construction

Wires	:	5 to 9
External Wires	:	4 to 8
Layer Wires	:	1

Diameter		Approx Weight		Minimum Break Load				Diameter Range	
inch.	mm.	lb/ft	kg/m	IPS, tons	1770, kN	EIP, tons	1960, kN	min, inch	max, inch
	6	0.10	0.144		22.9		25.3	0.236	0.248
1/4		0.11	0.161	2.84		3.12		0.250	0.263
5/16		0.17	0.252	4.41		4.85		0.313	0.328
	8	0.17	0.256		40.7		45.0	0.315	0.331
	9	0.22	0.324		51.5		57.0	0.354	0.372
3/8		0.24	0.363	6.30		6.93		0.375	0.394
	10	0.27	0.400		63.5		70.4	0.394	0.413
7/16		0.33	0.494	8.52		9.37		0.438	0.459
	12	0.39	0.576		91.5		101	0.472	0.496
1/2		0.43	0.645	11.1		12.2		0.500	0.525
	14	0.53	0.784		125		138	0.551	0.579
9/16		0.55	0.817	14.0		15.4		0.563	0.591
5/8		0.68	1.008	17.1		18.8		0.625	0.656
	16	0.69	1.024		163		180	0.630	0.661
	18	0.87	1.296		206		228	0.709	0.744
3/4		0.98	1.452	24.4		26.8		0.750	0.788
	20	1.08	1.600		254		281	0.787	0.827
	22	1.30	1.936		308		341	0.866	0.909
7/8		1.33	1.976	33.0		36.3		0.875	0.919
	24	1.55	2.304		366		405	0.945	0.992
1		1.73	2.581	42.7		47.0		1.000	1.050
	26	1.82	2.704		430		476	1.024	1.075
	28	2.11	3.136		498		552	1.102	1.157
1 1/8		2.19	3.266	53.5		58.9		1.125	1.181
1 1/4		2.71	4.032	65.6		72.2		1.250	1.313
	32	2.75	4.096		651		721	1.260	1.323



6x7 Fiber Core [FC]

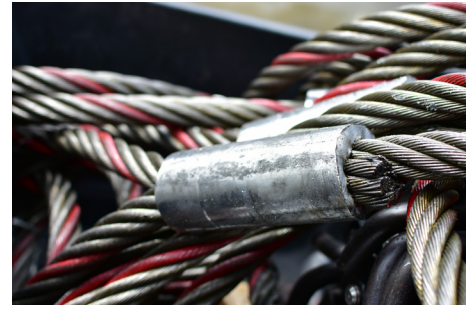
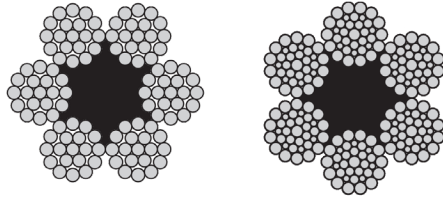


Wire Rope Construction		Strands Construction	
Strands	: 6	Wires	: 5 to 9
External Strands	: 6	External Wires	: 4 to 8
Strand Layer	: 1	Layer Wires	: 1
Wires	: 30 to 54		

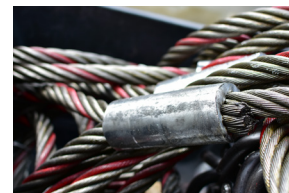
Diameter		Approx Weight		Minimum Break Load				Diameter Range	
inch.	mm.	lb/ft	kg/m	IPS, tons	1770, kN	EIP, tons	1960, kN	min, inch	max, inch
	6	0.08	0.124		21.2		23.4	0.236	0.248
1/4		0.09	0.139	2.64		2.90		0.250	0.263
5/16		0.15	0.217	4.10		4.51		0.313	0.328
	8	0.15	0.221		37.6		41.6	0.315	0.331
	9	0.19	0.279		47.6		52.7	0.354	0.372
3/8		0.21	0.313	5.86		6.45		0.375	0.394
	10	0.23	0.345		58.8		65.1	0.394	0.413
7/16		0.29	0.426	7.93		8.72		0.438	0.459
	12	0.33	0.497		84.6		93.7	0.472	0.496
1/2		0.37	0.556	10.3		11.3		0.500	0.525
	14	0.45	0.676		115		128	0.551	0.579
9/16		0.47	0.704	13.0		14.3		0.563	0.591
5/8		0.58	0.869	15.9				0.625	0.656
	16	0.59	0.883		150		167	0.630	0.661
	18	0.75	1.118		190		211	0.709	0.744
3/4		0.84	1.252	22.7		25.0		0.750	0.788
	20	0.93	1.380		235		260	0.787	0.827
	22	1.12	1.670		284		315	0.866	0.909
7/8		1.15	1.704	30.7		33.8		0.875	0.919
	24	1.34	1.987		338		375	0.945	0.992
1		1.50	2.226	39.7		43.7		1.000	1.050
	26	1.57	2.332		397		440	1.024	1.075
	28	1.82	2.705		461		510	1.102	1.157
1 1/8		1.89	2.817	49.8		54.8		1.125	1.181
1 1/4		2.34	2.478	61.0		67.1		1.250	1.313
	32	2.37	3.533		602		666	1.260	1.323



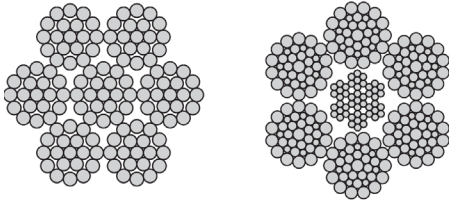
6x9 AND 6x36 Fiber Core [FC]



Diameter		Approx Weight		Minimum Break Load						Diameter Range	
inch.	mm.	lb/ft	kg/m	IPS, tons	1770, kN	EIP, tons	1960, kN	EIP, tons	2160, kN	min, inch	max, inch
	6	0.09	0.140		21		23.3		25.7	0.236	0.250
1/4		0.11	0.156	2.74		3.01				0.250	0.265
5/16		0.16	0.244	4.26		4.69				0.313	0.331
	8	0.17	0.248		37.4		41.4		45.6	0.315	0.331
	9	0.21	0.314		47.3		52.4		57.7	0.354	0.372
3/8		0.24	0.352	6.1		6.71		7.38		0.375	0.394
	10	0.26	0.388		58.4		64.7		71.3	0.394	0.413
7/16		0.32	0.479	8.27		9.10		10.0		0.438	0.459
	12	0.38	0.559		84.1		93.1		103	0.472	0.496
1/2		0.42	0.626	10.7		11.8		12.9		0.500	0.525
	14	0.51	0.760		114		127		140	0.551	0.579
9/16		0.53	0.792	13.5		14.9		16.3		0.563	0.591
5/8		0.66	0.978	16.7		18.4		20.2		0.625	0.656
	16	0.67	0.993		150		166		182	0.630	0.661
	18	0.84	1.257		189		210		231	0.709	0.744
3/4		0.95	1.408	23.8		26.2		28.8		0.750	0.788
	20	1.04	1.552		234		259		285	0.787	0.827
	22	1.26	1.878		283		313		345	0.866	0.909
7/8		1.29	1.917	32.2		35.4		39.0		0.875	0.919
	24	1.50	2.235		336		373		411	0.945	0.992
1		1.68	2.503	41.8		46.0		50.6		1.000	1.050
	26	1.76	2.623		395		437		482	1.024	1.075
	28	2.04	3.042		458		507		559	1.102	1.157
1 1/8		2.13	3.168	52.6		57.9		68.6		1.125	1.181
1 1/4		2.63	3.911	64.6		71.1		78.2		1.250	1.313
	32	2.67	3.973		598		662		730	1.260	1.323
1 1/3		3.18	4.733	77.7		85.5		94.0		1.375	1.444
	36	3.38	5.028		757		838		924	1.417	1.488
1 1/2		3.78	5.632	92.0		101		111		1.500	1.575
	40	4.17	6.208		935		1035		1140	1.575	1.654
1 5/8		4.44	6.610	107		118		129		1.625	1.706
	44	5.05	7.512		1131		1252		1380	1.732	1.819
1 3/4		5.15	7.666	124		136		150		1.750	1.838
1 7/8		5.91	8.800	141		155		171		1.875	1.969
	48	6.01	8.940		1346		1490		1642	1.890	1.984
2		6.73	10.013	160		176		194		2.00	2.100



6x9 AND 6x36 Fiber Core [IWRC]



Diameter		Approx Weight		Minimum Break Load						Diameter Range	
inch.	mm.	lb/ft	kg/m	IPS, tons	1770, kN	EIP, tons	1960, kN	EIP, tons	2160, kN	min, inch	max, inch
	6	0.10	0.153		22.7		25.1		27.7	0.236	0.250
1/4		0.12	0.172	2.94		3.4				0.250	0.265
5/16		0.18	0.268	4.58		5.27				0.313	0.331
	8	0.18	0.273		40.3		44.7		49.2	0.315	0.331
	9	0.23	0.345		51.0		56.5		62.3	0.354	0.372
3/8		0.26	0.386	6.56		7.55		8.30		0.375	0.394
	10	0.29	0.426		63.0		69.8		76.9	0.394	0.413
7/16		0.35	0.526	8.89		10.2		11.2		0.438	0.459
	12	0.41	0.613		90.7		100		111	0.472	0.496
1/2		0.46	0.687	11.5		13.3		14.6		0.500	0.525
	14	0.56	0.835		124		137		151	0.551	0.579
9/16		0.58	0.870	14.5		16.8		18.5		0.563	0.591
5/8		0.72	1.074	17.7		20.6		22.7		0.625	0.656
	16	0.73	1.091		161		179		197	0.630	0.661
	18	0.93	1.380		204		226		249	0.709	0.744
3/4		1.04	1.546	25.6		29.4		32.4		0.750	0.788
	20	1.15	1.704		252		279		308	0.787	0.827
	22	1.39	2.062		305		338		372	0.866	0.909
7/8		1.41	2.104	34.6		39.8		43.8		0.875	0.919
	24	1.65	2.454		363		402		443	0.945	0.992
1		1.85	2.748	44.9		51.7		56.9		1.000	1.050
	26	1.94	2.880		426		472		520	1.024	1.075
	28	2.24	3.340		494		547		603	1.102	1.157
1 1/8		2.34	3.478	56.5		65.0		71.5		1.125	1.181
1 1/4		2.89	4.294	69.4		79.9		87.9		1.250	1.313
	32	2.93	4.362		645		715		787	1.260	1.323
1 1/3		3.49	5.196	83.5		96.0		106		1.375	1.444
	36	3.71	5.521		817		904		997	1.417	1.488
1 1/2		4.16	6.184	98.9		114		125		1.500	1.575
	40	4.58	6.816		1008		1116		1230	1.575	1.654
1 5/8		4.88	7.257	115		132		146		1.625	1.706
	44	5.54	8.247		1220		1351		1489	1.732	1.819
1 3/4		5.66	8.417	133		153		169		1.750	1.838
1 7/8		6.49	9.662	152		174		192		1.875	1.969
	48	6.60	9.815		1452		1608		1772	1.890	1.984
2		7.39	10.994	172		198		217		2.00	2.100

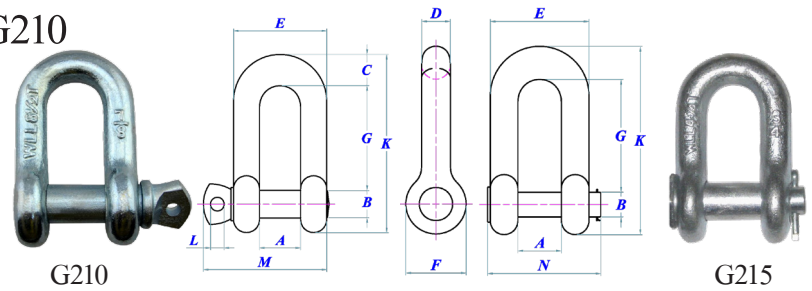


US Type Forged Dee Shackle, G210

Material : body from carbon steel,
pin from alloy steel.

Standard : U.S. Type

Finish : white zinc plated



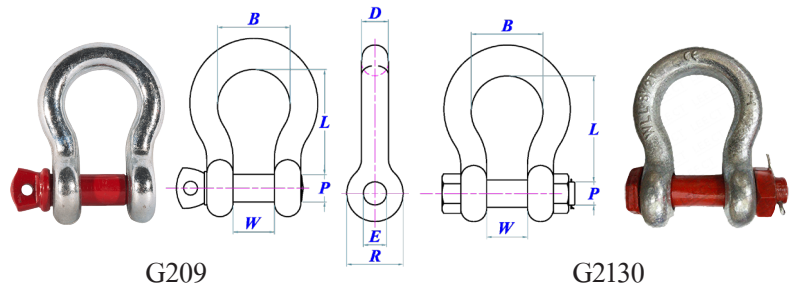
Size (inch.)	WLL (Tons)	Dimension (inch)										
		A	B	C	D	E	F	G	K	L	M	N
1/4	0.50	0.47	0.31	0.25	0.25	0.97	0.62	0.88	1.59	0.19	1.34	1.34
3/8	1.00	0.66	0.44	0.38	0.38	1.42	0.92	1.25	2.31	0.25	2.02	1.86
1/2	2.00	0.81	0.63	0.50	0.50	1.81	1.18	1.63	3.03	0.38	2.69	2.38
5/8	3.25	1.06	0.75	0.63	0.63	2.32	1.50	2.00	3.76	0.44	3.34	2.91
3/4	4.75	1.25	0.88	0.81	0.75	2.75	1.81	2.38	4.53	0.50	3.97	3.44
7/8	6.50	1.44	1.00	0.97	0.88	3.20	2.10	2.81	5.33	0.50	4.50	3.81
1	8.50	1.69	1.13	1.00	1.00	3.69	2.38	3.19	5.94	0.56	5.13	4.53
1 1/8	9.50	1.81	1.25	1.25	1.13	4.07	2.69	3.58	6.78	0.63	5.71	5.13
1 1/4	12.00	2.03	1.38	1.38	1.25	4.53	3.00	3.94	7.50	0.69	6.25	5.50
1 1/2	17.00	2.38	1.63	1.62	1.50	5.38	3.62	4.81	9.05	0.81	7.33	6.50
1 3/4	25.00	2.88	2.00	2.12	1.75	6.38	4.19	5.75	10.97	1.00	9.06	7.75
2	35.00	3.25	2.25	2.36	2.10	7.25	5.00	6.75	12.74	1.13	10.35	8.75
2 1/2	55.00	4.12	2.75	2.63	2.63	9.38	5.68	8.00	14.85	1.38	13.00	-

Bow Shackle G209, G2130

Material : carbon steel, alloy steel.

Standard : RR-C-271D

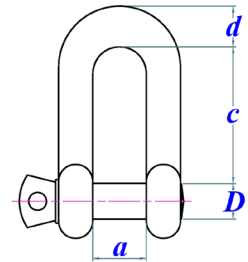
Finish : white zinc plated



Size (inch.)	Safe Working Load (pounds)	Dimension (inch)					
		P	E	W	L	B	R
1/4	2,000	0.31	0.41	0.47	1.13	0.75	0.88
5/16	3,120	0.38	0.47	0.53	1.25	0.81	1.00
3/8	3,800	0.44	0.53	0.66	1.44	0.94	1.13
1/2	6,500	0.63	0.72	0.81	1.88	1.19	1.38
5/8	10,000	0.75	0.84	1.06	2.41	1.50	1.88
3/4	13,000	0.88	0.97	1.25	2.84	1.75	2.13
7/8	18,700	1.00	1.09	1.44	3.31	2.00	2.38
1	24,400	1.13	1.22	1.69	3.75	2.31	2.63
1.1/8	28,600	1.25	1.34	1.81	4.25	2.63	2.88
1.1/4	36,000	1.38	1.47	2.03	4.69	2.88	3.25
1.1/2	48,800	1.63	1.75	2.38	5.75	3.38	3.75
1.3/4	65,000	2.00	2.16	2.88	7.00	4.50	4.50
2	85,040	2.25	2.41	3.25	7.75	5.25	5.25
2.1/2	121,400	2.75	2.91	4.13	10.50	6.75	6.25

JIS Type Screw Pin Chain Shackle

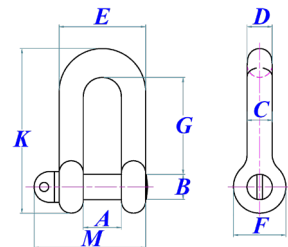
Material : carbon steel, drop forged
Standard : JIS Type
Finish : plain, white zinc plated



Size (mm.)	WLL (Tons)	Dimension (mm.)			
		d	D	a	c
6	0.15	5.5	5.5	12.0	22.0
8	0.23	7.3	7.3	15.5	27.0
10	0.30	9.3	9.3	18.0	32.0
12	0.45	11.3	11.3	24.0	40.0
14	0.60	13.5	13.5	28.0	46.0
16	0.80	15.3	15.3	30.0	51.0
18	0.90	17.3	17.3	34.0	60.0
19	1.00	18.6	18.6	36.0	64.0
22	1.50	21.0	21.0	43.0	75.0
25	2.00	24.0	24.0	47.0	82.5
28	2.50	27.0	27.0	55.0	96.0
32	3.20	31.0	31.0	64.0	114.0
38	5.00	38.0	38.0	76.0	126.0
45	7.00	45.0	45.0	80.0	137.0

DIN Type Dee Shackle

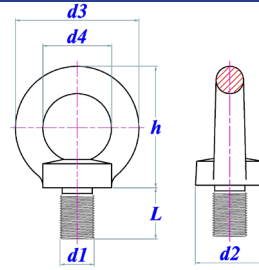
Material : carbon steel, drop forged
Standard : DIN 82101
Finish : plain, white zinc plated



Size (mm.)	WLL (Tons)	Dimension (mm.)								
		A	B	C	D	E	F	G	K	M
M 6	0.16	8	6	5	6	18	12	18.0	33	26.5
M 8	0.25	11	8	7	8	25	16	23.5	44	33.5
M 10	0.40	14	10	8	10	30	20	29.5	55	41.0
M 12	0.60	17	12	10	12	37	24	35.5	66	50.0
M 16	1.00	21	16	13	15	47	32	48.5	88	62.0
M 20	1.60	27	20	17	19	61	40	60.5	110	82.0
M 22	2.00	30	22	19	21	68	44	66.5	121	90.0
M 24	2.50	33	24	21	23	75	48	72.5	132	99.0
M 27	3.00	38	27	24	26	86	54	83.0	150	115.0
M 30	4.00	42	30	27	29	96	60	90.5	165	125.0
M 36	5.00	47	36	30	33	107	72	110.5	198	139.0
M 39	6.00	53	39	34	37	121	78	119.0	215	154.5
M 45	8.00	60	45	38	41	136	90	138.5	248	175.5
M 48	10.00	66	48	42	45	150	96	146.0	264	195.0
M 52	12.00	73	52	47	50	167	104	157.0	286	211.0
M 60	16.00	81	60	52	55	185	120	183.5	330	232.0

Eye Bolt DIN

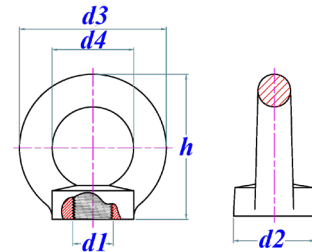
Material : Q325
Standard : DIN 580
Finish : white/yellow zinc plated



Size (d1)	W.L.L	Dimension (mm.)				
	(ton.)	h	L	d2	d3	d4
M6	0.08	18	13	20	36	20
M8	0.14	18	13	20	36	20
M10	0.23	22.5	17	25	45	25
M12	0.34	26	20.5	30	54	30
M14	0.49	30.5	27	35	63	35
M16	0.70	30.5	27	35	63	35
M18	0.93	35	30	40	72	40
M20	1.20	35	30	40	72	40
M22	1.50	40	35	45	81	45
M24	1.80	45	36	50	90	50
M27	2.50	45	36	50	90	50
M30	3.60	55	45	65	108	60
M33	4.30	55	45	65	108	60
M36	5.10	65	54	75	126	70
M39	6.10	65	54	75	126	70
M42	7.00	75	63	85	144	80

Eye Nut DIN

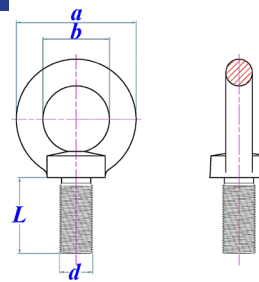
Material : Q325
Standard : DIN 582
Finish : white/yellow zinc plated



Size (d1)	W.L.L	Dimension (mm.)				
	(ton.)	h	d2	d3	d4	
M6	0.08	18	20	36	20	
M8	0.14	18	20	36	20	
M10	0.23	22.5	25	45	25	
M12	0.34	26	30	54	30	
M14	0.49	30.5	35	63	35	
M16	0.70	30.5	35	63	35	
M18	0.93	35	40	72	40	
M20	1.20	35	40	72	40	
M22	1.50	40	45	81	45	
M24	1.80	45	50	90	50	
M27	2.50	45	50	90	50	
M30	3.60	55	65	108	60	
M33	4.30	55	65	108	60	
M36	5.10	65	75	126	70	
M39	6.10	65	75	126	70	
M42	7.00	75	85	144	80	

Eye Bolt JIS

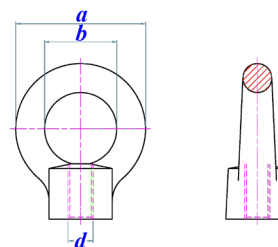
Material : comply with JIS B1168
Standard : JIS B1168
Finish : white/yellow zinc plated



Size (d)		W.L.L (Kg)		Dimension (mm.)		
		Vertical	45°	a	b	L
M8	5/16"	80	80	32.6	20	50
M10	3/8"	150	150	41.0	25	50
M12	1/2"	220	220	50.0	30	50
M16	5/8"	450	450	60.0	35	50
M20	3/4"	630	630	72.0	40	50
M24	1"	950	950	90.0	50	65

Eye Nut JIS

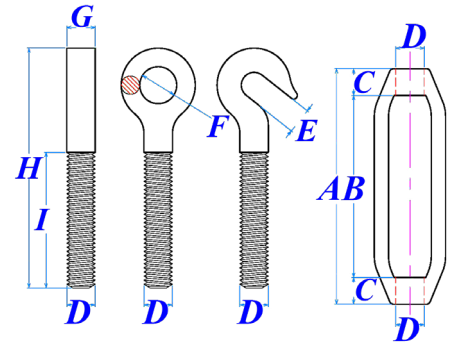
Material : JIS B1169
Standard : JIS B1169
Finish : white/yellow zinc plated



Size (d)		W.L.L (Kg)		Dimension (mm.)	
		Vertical	45°	a	b
M8	5/16"	80	80	32.6	20
M10	3/8"	150	150	41.0	25
M12	1/2"	220	220	50.0	30
M16	5/8"	450	450	60.0	35
M20	3/4"	630	630	72.0	40
M24	1"	950	950	90.0	50

JIS Frame Type & JIS-TH Turnbuckle

Material : low carbon steel
Standard : JIS Frame
Finish : Hot Dipped Galvanized,
white zinc plated



Eye & Eye

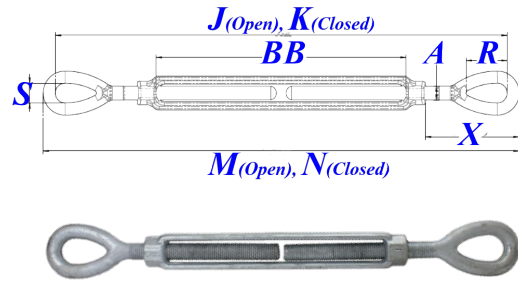
JIS Frame
Hook & Eye

JIS-TH
Hook & Eye

Size		Body				Eye & Eye		Hook & Hook		Hook & Eye	With Stubs		
		A	B	C	M.T.L	F	M.T.L	E	M.T.L	M.T.L	H	I	G
mm.	inch.	mm.	mm.	mm.	Ton	mm.	Ton	mm.	Ton	Ton	mm.	mm.	mm.
6	1/4	100	78	11.0	1	10	0.1	9	0.04	0.04	80	80	5.3
8	5/16	125	100	12.5	1.2	12	0.2	9	0.08	0.08	100	63	6.9
9	3/8	150	120	12.5	1.5	16	0.5	11	0.15	0.15	130	75	8.3
12	1/2	200	164	18.0	2	20	2.0	16	0.35	0.35	150	100	11.2
16	5/8	250	202	21.5	3	22	3.0	19	0.70	0.70	180	125	14.2
19	3/4	300	250	25.0	4	28	4.0	20	1.00	1.00	220	150	17.2
22	7/8	325	267	28.0	5	33	5.0	21	1.50	1.50	250	165	20.3
25	1	350	285	32.5	6	35	6.0	26	2.00	2.00	270	175	23.3
32	1 1/4	400	310	45.0	8	36x70	10.0	34	3.00	3.00	300	200	29.0
38	1 1/2	450	350	55.0	10	40x80	15.0	35	4.00	4.00	330	225	38.0

Turnbuckle - Eye - Eye

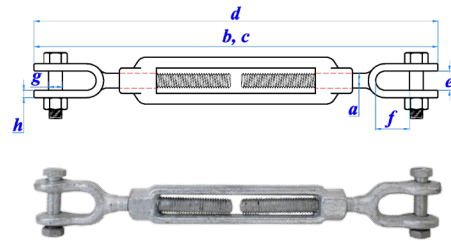
Material : drop forged high tensile steel
Standard : generally to ASTM F1145
Finish : Hot Dip Galvanized



Size (inch)	WLL. (lbs)	Dimension (inch.)								
		A	J	K	M	N	R	S	X	BB
5/8 x 6	3500	0.63	21.72	15.72	22.72	16.72	1.80	0.88	4.35	6.03
5/8 x 12	3500	0.63	34.06	22.06	35.06	23.06	1.80	0.88	4.34	12.39
3/4 x 12	5200	0.75	35.64	23.64	36.90	24.90	2.09	1.00	5.09	12.59
3/4 x 18	5200	0.75	47.64	29.64	48.90	30.90	2.09	1.00	5.12	18.53
1 x 12	10000	1.00	38.24	26.24	40.00	28.00	3.00	1.43	6.50	12.18
1 x 18	10000	1.00	50.24	32.24	52.00	34.00	3.00	1.43	6.50	18.18
1.1/4 x 12	15200	1.25	42.14	30.14	44.38	32.38	3.59	1.82	8.49	12.06
1.1/4 x 18	15200	1.25	54.14	36.14	56.38	38.38	3.59	1.82	8.49	18.06
1.1/4 x 24	15200	1.25	66.70	42.70	68.94	44.94	3.59	1.82	8.49	24.62
2 x 24	37000	2.00	75.68	51.68	79.18	55.18	5.81	2.69	13.03	24.48

Turnbuckle - Jaw - Jaw

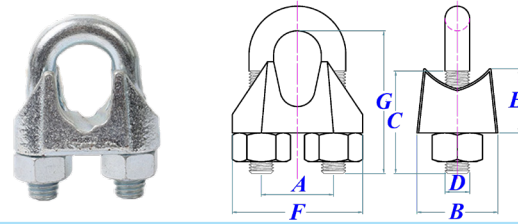
Material : drop forged high tensile steel
Standard : generally to ASTM F1145
Finish : Hot Dip Galvanized



Size (a) dia. x take up (inch)	Take Up (inch)	Working Load Limit (ton)	Dimension (mm.)							
			Length Closed (b)	Length Open (c)	Length Closed (d)	Opening Jaw (e)	Length Inside (f)	Diameter Pin (g)	Thickness Jaw Eye (h)	Diameter Jaw Eye (i)
5/8	12	1.59	496	773	556	18	32	13	14	33
3/4	12	2.36	518	791	588	24	38	16	16	41
3/4	18	2.36	671	1095	740	24	38	16	16	41
1	12	4.54	598	859	683	30	50	22	20	55
1	18	4.54	750	1164	835	30	50	22	20	55
1.1/4	12	6.90	641	916	748	44	71	28	26	68
1.1/4	18	6.90	793	1218	900	44	71	28	26	68
1.1/2	24	9.71	980	1550	1111	52	71	35	28	80
1.3/4	24	12.70	1084	1614	1246	59	86	42	33	90
2	24	16.80	1153	1672	1338	63	93	50	41	108

Malleable Wire Rope Clip

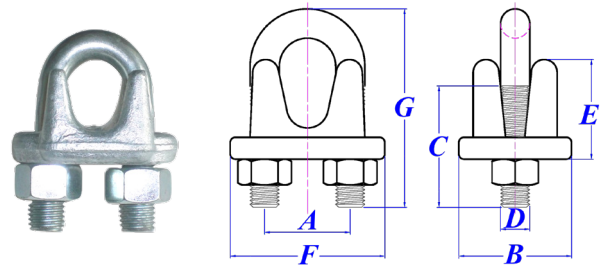
Material : Q235 or requirement of DIN 741
Standard : DIN 741



Size		Dimension (mm.)						
(mm.)	(inch.)	A	B	C	D	E	F	G
M 3	1/8	9	10	12	4	10	21	16
M 5	3/16	11	11	13	5	10	23	19
M 6.5	1/4	13	12	15	5	11	26	23
M 8	5/16	16	14	19	6	15	30	28
M 10	3/8	19	18	22	8	17	34	34
M 11	7/16	20	19	22	8	18	36	36
M 12	1/2	24	23	30	10	21	42	45
M 14	9/16	25	23	30	10	22	44	47
M 16	5/8	29	26	33	12	26	50	51
M 19	3/4	32	29	38	12	30	54	63
M 22	7/8	37	33	44	14	34	61	71
M 25	1	41	35	45	14	37	65	81
M 30	1.1/8	48	37	50	16	43	74	94
M 32	1.1/4	52	42	55	16	50	80	104
M 38	1.1/2	58	45	60	16	55	88	124

Malleable Wire Rope Clip

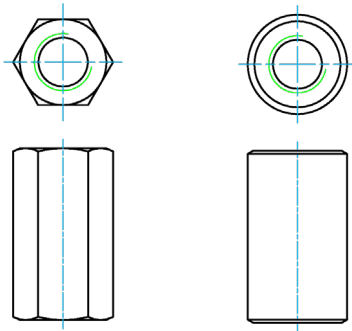
Material : Body from malleable iron, U-bolt and nut from carbon steel.
Standard : U.S. Type



Size (inch.)	Dimension (mm.)						
	A	B	C	D (inch.)	E	F	G
1/8	11.0	14.0	14.0	3/16	10.8	22.0	20.0
3/16	13.5	15.0	16.0	1/4	13.0	26.0	24.0
1/4	17.0	18.5	20.0	5/16	15.0	32.0	31.5
5/16	18.3	20.0	22.0	5/16	16.0	35.0	34.0
3/8	22.5	22.0	27.0	3/8	22.0	40.5	41.8
7/16	24.0	23.0	30.0	3/8	22.0	43.0	42.8
1/2	27.0	26.0	35.0	7/16	23.3	49.0	53.9
9/16	30.0	26.5	40.0	1/2	27.0	52.5	54.7
5/8	33.0	28.5	40.0	1/2	28.0	57.5	59.2
3/4	34.5	32.0	42.0	9/16	34.0	61.0	68.7
7/8	41.0	37.0	46.0	5/8	38.0	71.0	78.0
1	45.0	42.0	55.0	5/8	43.0	77.5	87.5

Coupling

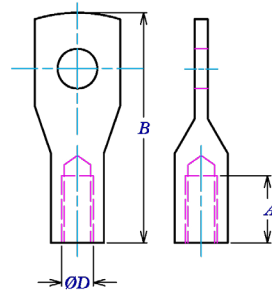
Description : E-5 Rod Coupling
Material : Carbon Steel
Finish : white zinc plated



Rod Size		Lenght
(inch)	(mm.)	(mm.)
1/4	6	35
5/16	8	35
3/8	10	40
1/2	12	40
5/8	16	50
3/4	20	50

Eye Flat Nuts

Description : Eye Flat Nuts
Material : Carbon Steel
Finish : white zinc plated

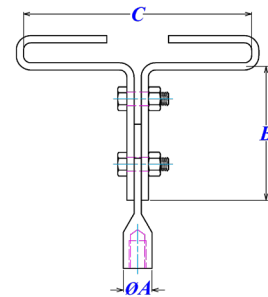


Rod Size, ØD		A	B	*E
(inch)	(mm.)	(mm.)	(mm.)	(Kg)
1/4	6.0	10	30	25
5/16	8.0	15	30	35
3/8	9.5	15	40	75
1/2	12.5	20	45	150
5/8	15.0	25	50	180
3/4	19.0	30	55	200

*E : Recoment for Weight Point

Beam Clamp

Description : Beam Clamp
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



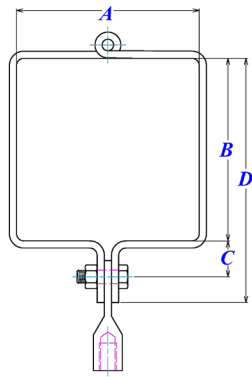
Rod Size, ØA		B	C	Steel Size	Approximate WT./C for Beam Clamp Size LDS. (Kg.)						
(inch)	(mm.)	(mm.)	(mm.)		Beamp Flange Width						
(inch)	(mm.)	(mm.)	(mm.)	(mm.)	4"	5"	6"	7"	8"	10"	12"
3/8	9.5	76.2	101.6	6.3 x 31.7	168	181	193	205	214	235	259
1/2	12.7	76.2	101.6	6.3 x 38.1	201	217	231	246	256	282	311
5/8	15.9	82.5	114.3	9.5 x 38.1	328	352	373	305	411	449	493
3/4	19.0	82.5	114.3	9.5 x 50.8	343	466	455	525	546	596	655
7/8	22.2	88.9	127.0	12.7 x 50.8	657	667	705	744	773	840	918
1	25.4	88.9	139.7	12.7 x 63.5	797	824	877	926	962	1046	1143
1.1/8	28.6	88.9	139.7	15.9 x 76.2	1146	1369	1374	1507	1560	1668	1832
1.1/4	31.7	88.9	139.7	15.9 x 101.6	1776	1817	1845	1982	2036	2221	2418

Steel Clamp Support

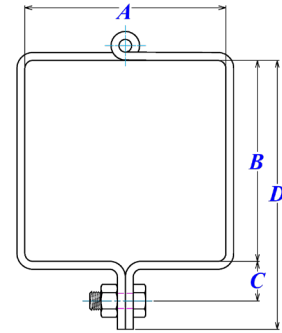
Description : ESC-1, 2 Square Steel Clamp Support
 FSC-1, 2 Square Steel Clamp Support

Material : Carbon Steel

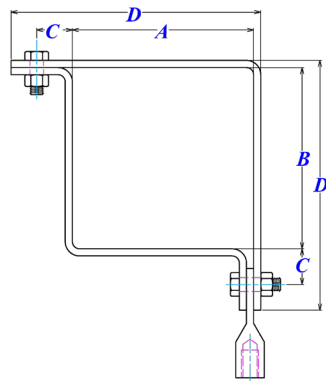
Finish : plain, white zinc plated, Hot Dip Galvanized



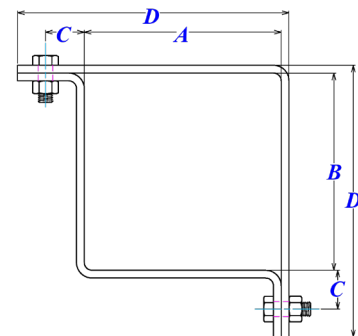
ESC-1



ESC-2



FSC-1

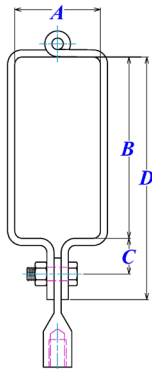


FSC-2

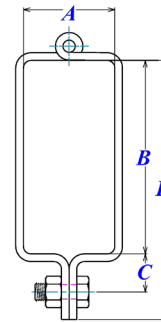
Size (mm.)	Dimension (mm.)				
	A	B	C	D	Steel Size
25 x 25	27	27	25	67	3 x 25
40 x 40	42	42	25	82	3 x 25
50 x 50	52	52	25	92	3 x 25
75 x 75	77	77	25	117	3 x 25
100 x 100	102	102	25	142	3 x 25
125 x 125	127	127	25	167	3 x 25
150 x 150	152	152	25	192	3 x 25
180 x 180	182	182	25	222	3 x 25
200 x 200	202	202	25	242	3 x 25
250 x 250	252	252	25	292	3 x 25

Steel Clamp Support

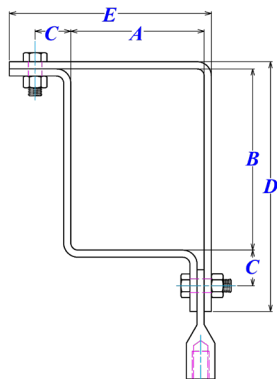
Description : ERC-1, 2 Rectangular Steel Clamp Support
 FRC-1, 2 Rectangular Steel Clamp Support
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



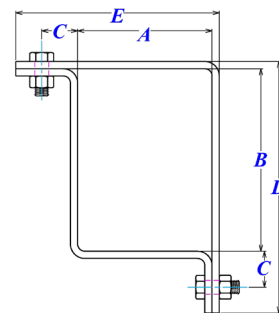
ERC-1



ERC-2



ERC-1

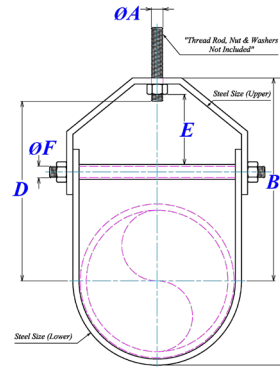


ERC-2

Size (mm.)	Dimension (mm.)					Steel Size (mm.)
	A	B	C	D	E	
25 x 14	16	27	25	67	56	3 x 25
50 x 25	27	52	25	92	67	3 x 25
75 x 40	42	77	25	117	82	3 x 25
100 x 50	52	102	25	142	92	3 x 25
125 x 65	67	127	25	167	107	3 x 25
150 x 75	77	152	25	192	117	3 x 25
180 x 75	77	182	25	222	117	3 x 25
200 x 80	82	202	25	242	122	3 x 25
250 x 90	92	252	25	292	132	3 x 25
300 x 90	92	302	25	342	132	3 x 25

Light-Duty Clevis Hanger

Description : Light - Duty Adjustable Clevis Hanger
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip - Galvanized

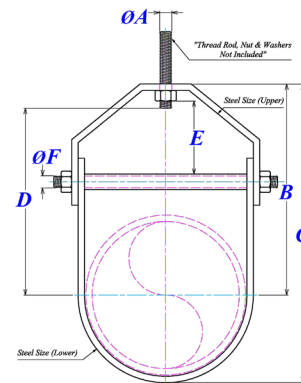


Pipe Size		Steel Size		Rod Size, ØA		B	C	D	E	ØF	*G
(inch)	(mm.)	(mm.)	(mm.)	(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(Kg.)
1.1/2	40	2.5 x 25	2 x 25	3/8	9.5	95	120	65	40	9	272
2	50	2.5 x 25	2 x 25	3/8	9.5	105	140	75	42	9	272
2.1/2	65	3 x 25	2.5 x 25	1/2	12.7	124	160	97	44	9	272
3	80	3 x 32	2.5 x 32	1/2	12.7	128	175	98	44	9	500
4	100	4 x 32	3 x 32	1/2	12.7	147	210	114	44	9	636
5	125	5 x 32	4 x 32	5/8	15.9	165	240	130	44	12	636
6	150	6 x 32	4 x 32	5/8	15.9	185	275	142	47	12	863
8	200	6 x 38	5 x 38	5/8	15.9	247	355	178	54	15	909
10	250	9 x 50	6 x 50	7/8	22.2	290	430	212	57	19	1636
12	300	9 x 50	6 x 50	7/8	22.2	325	495	258	76	19	1727

* G : Recoment for Maximum Load

Clevis Hanger

Description : Standard Adjustable Clevis Hanger
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized

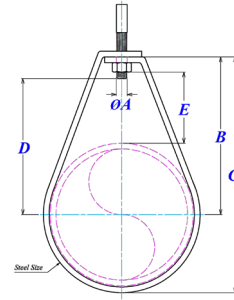


Pipe Size		Steel Size		Rod Size, ØA		B	C	D	E	ØF	*G
(inch)	(mm.)	(mm.)	(mm.)	(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(Kg.)
1.1/2	40	3 x 25	3 x 25	3/8	9.5	95	120	65	40	9	272
2	50	3 x 25	3 x 25	3/8	9.5	105	140	75	42	9	272
3	80	5 x 32	5 x 32	1/2	12.7	128	175	98	44	9	500
4	100	6 x 32	5 x 32	5/8	15.9	147	210	114	44	9	636
6	150	6 x 38	5 x 38	3/4	19.0	185	275	142	47	12	863
8	200	6 x 50	6 x 50	7/8	22.2	247	355	178	54	15	909
10	250	9 x 50	6 x 50	7/8	22.2	290	430	212	57	19	1636
12	300	9 x 50	6 x 50	7/8	22.2	325	495	258	76	19	1727

* G : Recoment for Maximum Load

Adjustable Band Hanger

Description : Adjustable Band Hanger
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



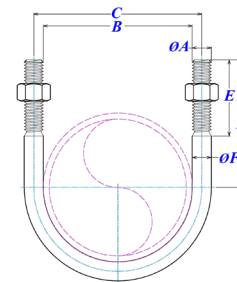
Pipe Size		Rod Size, øA		B	C	D	E	Steel Size	*F	*G
(inch)	(mm.)	(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(m.)	(Kg.)
1	25	3/8	9.5	52	73	37	25	2 x 25	1.8	50
1.1/4	32	3/8	9.5	65	87	46	32	2 x 25	1.8	50
1.1/2	40	3/8	9.5	70	98	49	32	2 x 25	1.8	50
2	50	3/8	9.5	72	107	58	35	2 x 25	1.8	60
2.1/2	65	3/8	9.5	88	133	63	40	2.5 x 25	1.8	65
3	80	3/8	9.5	95	145	79	45	2.5 x 25	1.8	70
4	100	3/8	9.5	119	181	105	50	2.5 x 25	1.8	75
5	125	1/2	12.7	138	213	120	65	3 x 32	2.5	150
6	150	1/2	12.7	176	258	156	70	3 x 32	2.5	160

*F : Recoment for Span

*G : Recoment for Maximum Load

Standard U-Bolt

Description : Standard U-Bolt
Material : Carbon Steel
Finish : Plain, white zinc plated, Hot Dip Galvanized

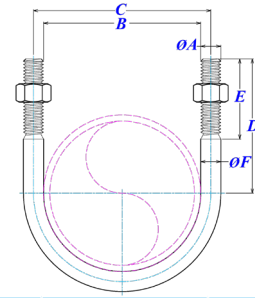


Pipe Size		Thread Size, øA		B	C	D	E	Rod Size, øF	*G
(inch)	(mm.)	(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(Kg.)
1/2	15	3/8	9.5	22	31.5	46	30	8.3	250
3/4	20	3/8	9.5	28	37.5	51	35	8.3	250
1	25	3/8	9.5	35	44.5	53	40	8.3	250
1.1/4	32	3/8	9.5	43	52.5	59	40	8.3	250
1.1/2	40	3/8	9.5	51	60.5	65	45	8.3	250
2	50	3/8	9.5	62	71.5	69	55	8.3	250
2.1/2	65	3/8	9.5	75	84.5	73	60	8.3	250
3	80	3/8	9.5	90	102.5	90	80	8.3	250
4	100	1/2	12.7	115	127.5	110	80	11.0	500
5	125	1/2	12.7	140	152.5	120	100	11.0	500
6	150	1/2	12.7	171	187.0	150	100	11.0	500
8	200	5/8	15.9	222	238.0	180	100	14.0	750
10	250	3/4	19.0	280	296.0	210	110	17.0	960
12	300	3/4	19.0	330	349.0	230	110	17.0	960

*G : Recoment for Weight/Point

Light - Duty U-Bolt

Description : Light - Duty U-Bolt
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized

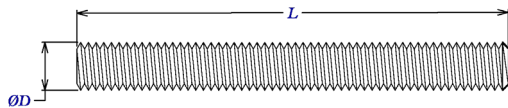


Pipe Size		Thread Size, ϕA		B	C	D	E	Rod Size, ϕF	G
(inch)	(mm.)	(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(Kg.)
1/2	15	1/4	6.3	22	31.5	46	30	5.3	35
3/4	20	1/4	6.3	28	37.5	51	35	5.3	35
1	25	5/16	7.9	35	44.5	53	40	6.8	120
1.1/4	32	5/16	7.9	43	52.5	59	40	6.8	120
1.1/2	40	5/16	7.9	51	60.5	65	45	6.8	120
2	50	5/16	7.9	62	71.5	69	55	6.8	120
2.1/2	65	3/8	9.5	75	84.5	73	60	8.3	250
3	80	3/8	9.5	90	102.5	90	80	8.3	250
4	100	3/8	9.5	115	127.5	110	80	8.3	250
5	125	3/8	9.5	140	152.5	120	100	8.3	250
6	150	3/8	9.5	171	187.0	150	100	8.3	250
8	200	3/8	9.5	222	238.0	180	100	8.3	250
10	250	3/8	9.5	280	296.0	210	110	8.3	250
12	300	3/8	9.5	330	349.0	230	110	8.3	250

* G : Recoment for Weight/Point

Thread Rod

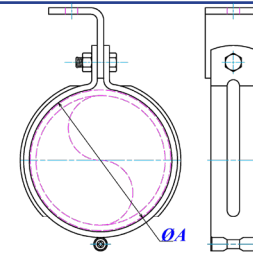
Description : Continous Thrthead Rod
Material : Carbon Steel
Finish : white zinc plated



Rod Size		Lenght
(inch)	(mm.)	(m.)
1/4	6	1, 1.5, 2, 3
5/16	8	1, 1.5, 2, 3
3/8	10	1, 1.5, 2, 3
1/2	12	1, 1.5, 2, 3
5/8	16	1, 1.5, 2, 3
3/4	20	1, 1.5, 2, 3

Cable Clamp

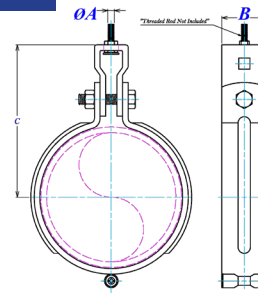
Description : Cable Clamp (for fiber optic cable wiring)
Material : SSPC
Finish : white zinc plated



Nom. Pipe Size	Pipe Size	Min. Adj.
(inch)	(A)	(mm.)
1/2	15A	21.7 ± 2.0
3/4	20A	27.2 ± 2.0
1	25A	34.0 ± 2.0
1.1/4	32A	42.7 ± 2.0
1.1/2	40A	48.6 ± 2.0
2	50A	60.5 ± 2.0
2.1/2	65A	76.3 ± 2.0
3	80A	89.1 ± 2.0
4	100A	114.3 ± 2.0

Split Ring Hanger

Description : Split Ring Hanger With Swivel Adjustable
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



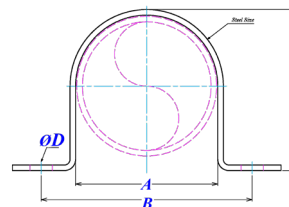
Pipe Size		Rod Size, øA		Bolt Size	B	C	*F	*G
(inch)	(mm.)	(inch)	(mm.)		(mm.)	(mm.)	(m.)	(Kg.)
1/2	15	3/8	9.5	1/4 x 25	25	68	1.8	50
3/4	20	3/8	9.5	1/4 x 25	25	71	1.8	50
1	25	3/8	9.5	1/4 x 25	25	74	1.8	50
1.1/4	32	3/8	9.5	1/4 x 25	25	78	1.8	50
1.1/2	40	3/8	9.5	1/4 x 25	25	81	1.8	60
2	50	3/8	9.5	5/16 x 25	25	87	1.8	65
2.1/2	65	3/8	9.5	5/16 x 25	25	95	1.8	70
3	80	3/8	9.5	5/16 x 25	25	102	1.8	75
4	100	3/8	9.5	5/16 x 25	25	114	2.5	80
6	150	1/2	12.7	1/2 x 45	32	153	2.5	160
8	200	5/8	15.9	1/2 x 45	38	180	2.5	180

*F : Recoment for Span

*G : Recoment for Maximum Load

OHM. Clamp

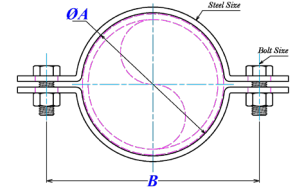
Description : OHM. Clamp
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



Pipe Size		Steel Size	A	B	C	øD
(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)	(mm.)
1/2	15	2 x 25	22	48	22	10
3/4	20	2 x 25	28	54	28	10
1	25	2 x 25	35	66	35	10
1.1/4	32	2 x 25	44	75	44	10
1.1/2	40	2 x 25	50	81	50	10
2	50	2.5 x 25	64	104	64	10
2.1/2	65	2.5 x 25	80	120	80	10
3	80	2.5 x 25	90	130	90	10
4	100	2.5 x 25	118	163	120	10
5	125	3 x 32	144	194	144	12
6	150	3 x 32	170	230	172	12
8	200	3 x 32	222	282	224	15

Riser Clamp

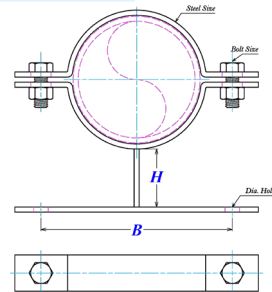
Description : RC-1 Riser Clamp
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



Pipe Size		Steel Size	øA	B	Bolt Size	
(inch)	(mm.)	(mm.)	(mm.)	(mm.)	(inch.)	(mm.)
1/2	15	2 x 25	22	52	5/16	9
3/4	20	2 x 25	27	57	5/16	9
1	25	2 x 25	34	65	5/16	9
1.1/4	32	2 x 25	43	78	5/16	9
1.1/2	40	2 x 25	49	86	5/16	9
2	50	2.5 x 25	61	96	3/8	10
2.1/2	65	2.5 x 25	76	116	3/8	10
3	80	2.5 x 25	90	135	3/8	10
4	100	2.5 x 25	114	162	3/8	10
5	125	3 x 32	140	194	1/2	14
6	150	3 x 32	135	225	1/2	14
8	200	3 x 32	220	278	1/2	14

Riser Clamp

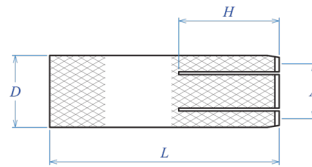
Description : RC-2 Riser Clamp
Material : Carbon Steel
Finish : plain, white zinc plated, Hot Dip Galvanized



Pipe Size		Steel Size	Bolt Size	Dia. Hole	B
(inch)	(mm.)	(mm.)	(inch)	(mm.)	(mm.)
1/2	15	2 x 25	5/16	9	40
3/4	20	2 x 25	5/16	9	40
1	25	2 x 25	5/16	9	40
1.1/4	32	2 x 25	5/16	9	40
1.1/2	40	2 x 25	5/16	9	40
2	50	2.5 x 25	3/8	10	60
2.1/2	65	2.5 x 25	3/8	10	60
3	80	2.5 x 25	3/8	10	75
4	100	2.5 x 25	3/8	10	75
5	125	3 x 32	1/2	14	75
6	150	3 x 32	1/2	14	100
8	200	3 x 32	1/2	14	100

Drop - In Anchor

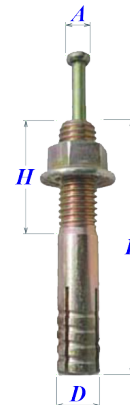
Description : พุกครอบปิ่น
Material : Carbon Steel
Finish : white zinc plated



Size	Dimeter เกลียว (inch.)	Dimeter ปลัก (mm.)	ความยาว ปลัก (mm.)	ความยาว ส่วน (mm.)	Tension (kN)	Shear (kN)	A (inch.)	D (mm.)	L (mm.)	H (mm.)
1/4	w1/4	6.0	25.0	10.0	2.7	1.3	1/4	8	25	10
5/16	w5/16	10.0	30.0	10.5	3.3	2.4	5/16	10	30	12
3/8	w3/8	12.0	40.0	15.0	5.0	3.8	3/8	12	40	19
1/2	w1/2	16.0	50.0	20.0	7.6	5.5	1/2	16	50	24
5/8	w5/8	22.0	65.0	22.0	10.2	10.2	5/8	20	65	30
3/4	w3/4	25.0	85.0	25.0	15.4	15.9	3/4	25	80	35

Hammer Drive Anchor

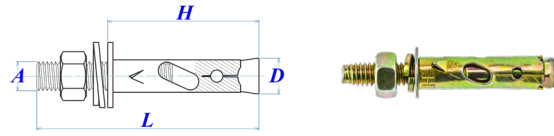
Description : พุกตะปู
Material : Carbon Steel
Finish : white zinc plated



ขนาดเกลียว, A (mm.)	ขนาดรูที่จะเจาะ, D (mm.)	ความยาว เกลียว, H (mm.)	ความยาว ทั้งตัว, L (mm.)	ขนาดเกลียว, A (mm.)	ขนาดรูที่จะเจาะ, D (mm.)	ความยาว เกลียว, H (mm.)	ความยาว ทั้งตัว, L (mm.)
M6	6	15	45	M12	12	25	60
M6	6	20	60	M12	12	25	70
M8	8	20	50	M12	12	30	90
M8	8	20	70	M12	12	30	100
M10	10	20	50	M12	12	50	120
M10	10	20	60	M12	12	50	150
M10	10	20	70	M16	16	40	100
M10	10	20	80	M16	16	40	120
M10	10	20	90	M16	16	40	150
M10	10	25	100	M20	20	50	130
M10	10	25	120	M20	20	50	150
				M20	20	50	190

Expansion Anchor

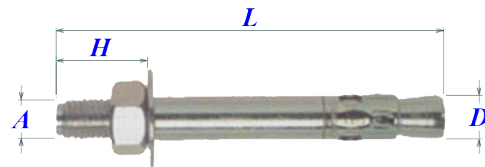
Description : ฝักเหล็ก / Fastenic
 Material : Carbon Steel / Stainless Steel
 Finish : zinc plated / HDG



Size	Tension	Shear	A	D	L	H
(inch)	(kN)	(kN)	(inch)	(mm.)	(mm.)	(mm.)
3/16	1.1	1.2	3/16	6.5	40	28
1/4	2.5	2.0	1/4	8.0	50	38
5/16	4.0	3.3	5/16	10.0	65	45
3/8	6.0	4.1	3/8	12.0	75	50
1/2	7.2	6.5	1/2	16.0	95	65
5/8	9.4	12.5	5/8	20.0	120	85
5/8	9.4	12.5	5/8	20.0	160	85
5/8	9.4	12.5	5/8	20.0	200	85
3/4	14.5	20.0	3/4	25.0	160	120
3/4	14.5	20.0	3/4	25.0	200	120

Wedge Anchor

Description : ฝักเว็ดจ์ WA/ Fastenic
 Material : Carbon Steel / Stainless Steel
 Finish : zinc plated / HDG



ขนาดเกลียว, A, D	แรงดึง (Pull-Out)	แรงเฉือน (Shear)	ความยาวเกลียว, H	ความยาวทั้งสิ้น, L
(mm.)	(kN)	(kN)	(mm.)	(mm.)
M6	2.0	2.0	17	45
M6	2.0	2.0	26	65
M8	4.2	3.6	16	50
M8	4.2	3.6	25	75
M8	4.2	3.6	59	115
M10	5.3	4.5	20	60
M10	5.3	4.5	42	90
M10	5.3	4.5	44	100
M10	5.3	4.5	44	110
M10	5.3	4.5	54	120
M10	5.3	4.5	79	150
M12	9.4	6.7	23	70
M12	9.4	6.7	41	100
M12	9.4	6.7	44	110
M12	9.4	6.7	54	120

ขนาดเกลียว, A, D	แรงดึง (Pull-Out)	แรงเฉือน (Shear)	ความยาวเกลียว, H	ความยาวทั้งสิ้น, L
(mm.)	(kN)	(kN)	(mm.)	(mm.)
M12	9.4	6.7	69	180
M16	13.4	11.8	35	100
M16	13.4	11.8	49	125
M16	13.4	11.8	49	145
M16	13.4	11.8	61	170
M16	13.4	11.8	64	220
M20	19.0	18.9	41	120
M20	19.0	18.9	68	145
M20	19.0	18.9	78	170
M20	19.0	18.9	88	200
M20	19.0	18.9	98	240
M20	19.0	18.9	108	300
BSW 1"	23.0	32.0	65	190
BSW 1"	23.0	32.0	69	240

Cemical Anchor

Description : สตาเหล็ก น้ำยาเคมีหลอดแก้ว - แบบปั่น

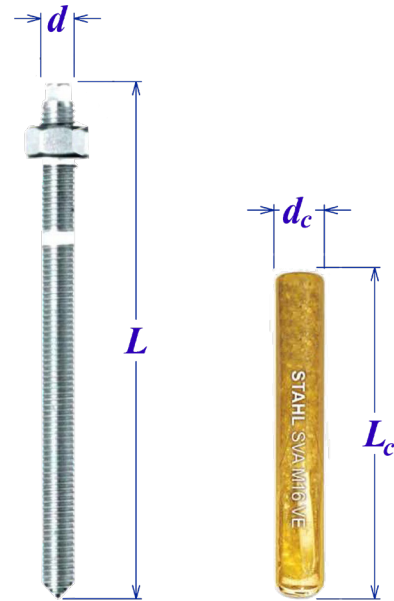
ใช้กับสตั๊ดทุกเคมี สำหรับติดตั้งกับวัสดุ เช่น คอนกรีต และหิน ซึ่งในหลอดแก้วประกอบด้วย เรซินและฮาร์ดเนอร์ (เคมีที่ทำให้หน้าแข็งตัว) โดยจะทำปฏิกิริยาเมื่อถูกผสมกัน

Property :

- รับแรงดึงได้สูง
- ใช้ได้ในงานที่ต้องการความปลอดภัยสูงสุด
- ไม่มีแรงแผงในคอนกรีต ทำให้ระยะห่างต่อจุดและระยะขอบน้อย
- คงทนต่อการใช้งานระยะยาว
- สามารถติดตั้งในคอนกรีตที่ชื้นและรูเจาะมีน้ำขัง
- สามารถใช้งานได้น้ำได้ น้ำเสียไม่มีแรงยึดเหนี่ยวของเคมี
- ไม่มีสารก่อมะเร็ง และ ไม่มีกลิ่น

ลักษณะการใช้งานทั่วไป :

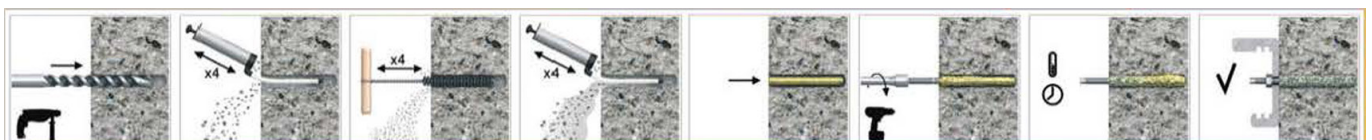
- ใช้ในงานติดตั้งหรือต่อเติมโครงสร้างที่รับน้ำหนักสูง
- งานต่อเติมโครงสร้างเหล็ก
- ทนต่อการสั่นสะเทือน โดยเฉพาะโครงสร้างเครื่องจักรและถนน
- งานติดตั้งแผงกันชน, รั้ว และ รางรถไฟ
- งานติดตั้ง ผนังอาคาร, โครงกระจะก, แผ่นคอนกรีต
- งานติดตั้ง เกรน, ลิฟท์, บันไดเลื่อน



ระยะเวลาบ่มตัว

อุณหภูมิของคอนกรีต	ระยะเวลาของการบ่มตัว (นาที)	
	คอนกรีตแห้ง	คอนกรีตเปียกชื้น
-5	480	980
0	240	480
5	150	300
10	120	240
15	90	180
20	45	90
30	20	40
40	10	20

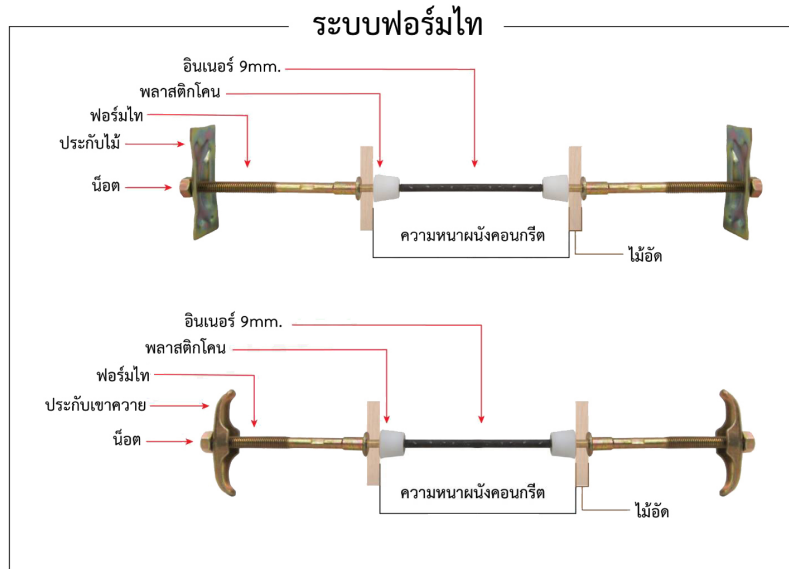
Size	Unit	M8	M10	M12	M16	M20	M24	M30	
ขนาดของหลอดแก้ว	d_c	mm.	8	10	12	16	20	24	30
ความยาวของหลอดแก้ว	L_c	mm.	83	83	95	95	175	210	285
ขนาดของสตั๊ด	d	mm.	8	10	12	16	20	24	30
ความยาวสตั๊ด	L	mm.	110	130	180	190	280	300	380
ค่าทอร์ก	T_{Inst}	N.m	10	20	40	80	120	180	300
ค่าแรงดึงแนะนำที่ปลอดภัย	N_{Rec}	kN	8.6	11.9	19.8	23.8	37.7	55.6	79.4
ค่าแรงเฉือนแนะนำที่ปลอดภัย	6.8 V_{Rec}	kN	5.1	8.0	12.0	22.3	34.9	50.3	80.0
	8.8 V_{Rec}	kN	8.6	13.1	19.4	38.0	58.0	80.8	128.0



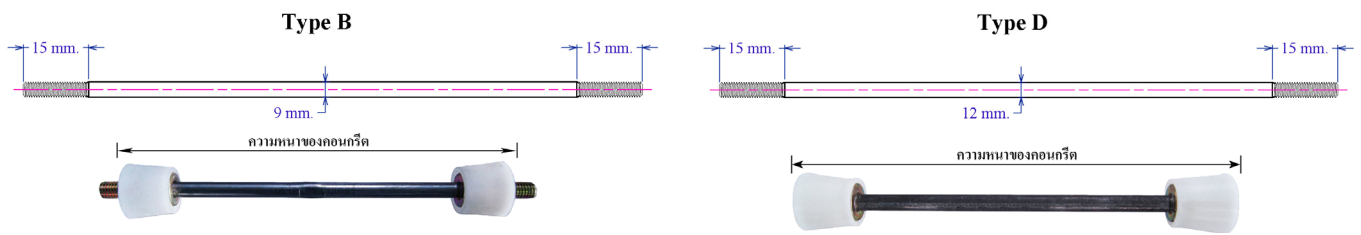
ขั้นตอนการติดตั้ง :

1. เจาะรูตามขนาดและความลึกที่กำหนด
2. เอาเศษฝุ่นออกจากรูเจาะ โดยใช้แปรงและเครื่องเป่าลม
3. ใส่หลอดแก้วเคมีไปในรูเจาะ, ประกอบสตั๊ดเข้ากับสว่าน
4. ใช้ส่วนกระแทก ปั่นสตั๊ดลงไปให้หลอดแก้วให้แตก แล้วปรับตำแหน่งที่ต้องการ และปล่อยทิ้งให้เซ็ทตัว
5. ใส่ชิ้นงานและขันเข้าด้วยค่าทอร์กที่แนะนำ

ระบบฟอร์มไท (Form Tie System) เป็นระบบที่ใช้เสริมกับแบบหล่อคอนกรีต เพื่อป้องกันการบิดของแบบหล่อและให้ได้คอนกรีตตามแบบหล่อ ซึ่งสามารถใช้งานได้ง่ายและมีราคาถูก



1. Inner Unit (แกนอินเนอร์)

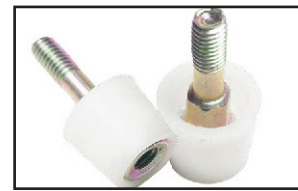


2. Form Tie

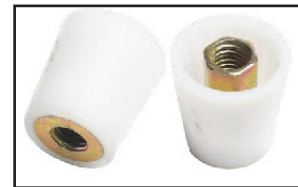
	Size (mm.)	L	T1	T2	Ø A	Ø B
Type B 	9x180	180	95	-	3/8"	1/2"
	9x210	210	120	-	3/8"	1/2"
	9x250	250	145	-	3/8"	1/2"
	9x310	310	...	-	3/8"	1/2"
Type D 	12x250	250	120	80	1/2"	1/2"
	12x300	300	120	80	1/2"	1/2"
	12x300	300	120	80	1/2"	1/2"
	12x300	300	120	80	1/2"	1/2"
	12x300	300	120	80	1/2"	1/2"

3. Poly Cone

	Size (mm.)	L	T1	T2
Type B	9x9	1.2 - 2	BSW 3/8"	-
	9x12	10 - 12		-
	9x16	15 - 16		-
	9x24	24		-
Type D	12	-	BSW 1/2"	80



Type B



Type D

4. ประกับ



ประกับแบบเขาควาง



ประกับแบน

50mm.x105mm.
62mm.x125mm.

5. Accessories

Block ชันพลาสติกโคน



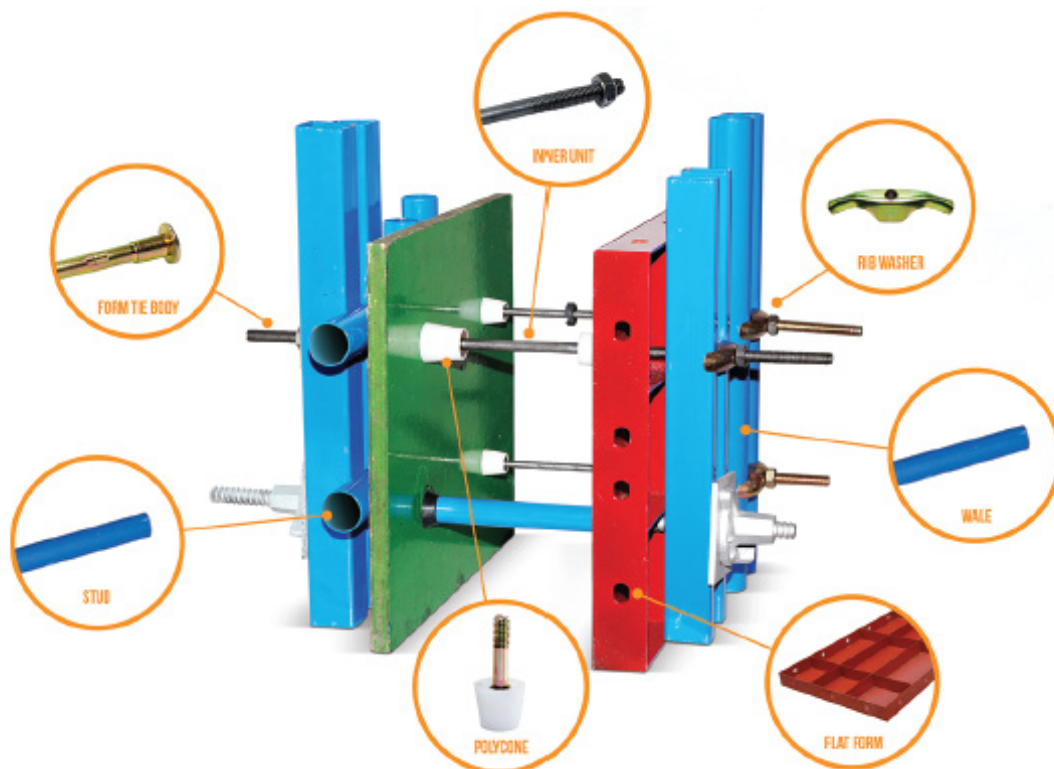
ประแจหางหนู (เบอร์ 17/21)



ประแจฟอร์มไท (เบอร์ 17/21)



แหวนยางกันน้ำ



ระบบไทโรด (Tie Rod System) เป็นอุปกรณ์ยึดคอนกรีต สามารถใช้กับงานแบบหล่อคอนกรีตทุกชนิด ทุกขนาด
เชื่อมกำแพงดิน กำแพงคอนกรีต ถังน้ำ คาน เสา ตอม่อ บ่อเก็บน้ำ งานหล่อคอนกรีตสำเร็จรูป และงานหล่อคอนกรีตทั่วไป

1. ไทโรดรับแรงสูง - เกลียวตีวิดัก [Dywidag Thread Tie Rod]

2. ไทโรดรับแรงต่ำ - [Low Strngth Tie Rod]

	Description	TIE ROD LS12, LS15-17 ROUND THREAD		Description	WING BASE 50MM FOR TIE ROD LS12
	Dimention	DIAMETER 12MM, 15-17MM STANDAND LENGTH 6.0 M OR CUT TO ORDER		Dimention	MINOR 12MM HEXAGON 20MM
	Material	YIELD LOAD 30KN / 70KN MAX LOAD 40KN / 90KN		Material	CAST IRON FCD 45 MAX LOAD 90 KN PLAIN FINISHED
	Description	TIE ROD F15-17 FULL THREAD DYWIDAG		Description	WING BASE 75MM FOR TIE ROD LS15-17, FS15-17, C15-17
	Dimention	DIAMETER 15-17MM STANDAND LENGTH 6.0M OR CUT TO ORDER		Dimention	MINOR DIA 15MM HEXAGON 25MM WIDTH 75-110MM
	Material	YIELD LOAD 130KN MAX LOAD 150KN		Material	CAST IRON FCD 45 MAX LOAD 190 KN PLAIN FINISHED
	Description	TIE ROD C15-17 SELF CLEANING THREAD		Description	WING BASE 75MM FOR TIE ROD LS15-17, FS15-17, C15-17
	Dimention	DIAMETER 15-17MM STANDAND LENGTH 6.0 M OR CUT TO ORDER		Dimention	MINOR DIA 15MM HEXAGON 27-30MM WIDTH 75-110MM
	Material	YIELD LOAD 156KN MAX LOAD 190KN		Material	CAST IRON FCD 45 MAX LOAD 190 KN PLAIN FINISHED
	Description	PLASTIC CAP FOR TIE ROD		Description	WING BASE 75MM FOR TIE ROD LS15-17, FS15-17, C15-17
	Dimention	22 NA 17 NA		Dimention	MINOR DIA 15MM HEXAGON 28-30MM WIDTH 75-110MM
	Material	PVC		Material	CAST IRON FCD 45 MAX LOAD 190 KN PLAIN FINISHED
	Description	SPRING CLIP		Description	WING BASE 60MM FOR TIE ROD F15-17,C15-17
	Dimention	FOR REBAR 9MM-12MM		Dimention	MINOR DIA 15MM HEXAGON 29MM WIDTH 60-100MM
	Material	CAST/MILD STEEL PLAIN COATED OR ZING PLATE		Material	CAST IRON FCD 45 MAX LOAD 190KN PLAIN FINISHED
	Description	STEEL CONE FOR TIE ROD F15/F17C		Description	WING BASE 100MM FOR TIE ROD F15-17,C15-17
	Dimention	LENGTH 75,100		Dimention	MINOR DIA 15MM HEXAGON 30MM WIDTH 100MM
	Material	SS400/A6		Material	CAST IRON FCD 45 MAX LOAD 190 KN PLAIN FINISHED
	Description	Plastic Dowel Cap 28x75mm. สีดำ (ใช้กับเหล็ก 16, 20, 25 มม.)		Description	WING NUT 20MM FOR TIE ROD HS D20
	Dimention	เป็นปลอกพลาสติกใช้หุ้มปลายเหล็กเส้น ทำงานพื้นถนน ใช้กับเหล็กข้อย่อยขนาด 16-25 mm. ฝาครอบปลายเหล็กเส้น, ปลอกหุ้มปลายเหล็กเส้น, ฝาครอบเหล็ก		Dimention	MINOR DIAMETER 20MM HEXAGON 39MM WIDTH 46MM
	Material			Material	CAST IRON FCD 45 MAX LOAD 339 KN PLAIN FINISHED
	Description	ยูคลิปซูปซิ่งค์ ยูคลิป ต่ำ (U-Clip) ใช้ในการยึดบนเหล็กชนิดต่างๆเข้าด้วยกัน สะดวก รวดเร็ว ทั้งในการติดตั้งและการถอด		Description	WATER STOP FOR TIE ROD F15-17 C15-17 LS15-17
	Dimention	ขนาด ความโตเหล็ก 11.50mm. ถึง 12.50mm.		Dimention	LENGTH 115MM OUTER DIA 35MM DISC DIA 65MM
	Material			Material	CAST IRON FCD 45 MAX LOAD 190 KN PLAIN FINISHED

ตะแกรงกันจ้อยท์ ใช้สำหรับงานเทคอนกรีต เป็นแบบหล่อที่ฝังอยู่ในคอนกรีต ไม่จำเป็นต้องรื้อถอน ทำให้ไม่เกิดการแตกแยกของโครงสร้าง จึงมีความแข็งแรงทั้งยังประหยัดเวลาและเพิ่มความสะดวกในการทำงานด้วยลักษณะการออกแบบเฉพาะ ของตะแกรงกันจ้อยท์ เพื่อช่วยเพิ่มประสิทธิภาพในการยึดเกาะ ทำให้สามารถเทคอนกรีตได้อย่างต่อเนื่อง ช่วยลดขั้นตอนการเตรียมพื้นผิวคอนกรีต ต่างจากการใช้ไม้แบบ

การผลิต ตะแกรงกันจ้อยท์ ผลิตจากเหล็กแผ่นชุบสังกะสีคุณภาพมาตรฐาน เป็นตะแกรงเหล็กฉีกที่ได้รับการออกแบบพิเศษ เพื่อช่วยในการยึดเกาะคอนกรีต



ลักษณะการใช้งาน

- ใช้ตรงช่องต่อคอนกรีตงานก่อสร้าง
- ช่องต่อกำแพงแนวตรงอื่น ๆ ทั้งหน้าและบาง
- เป็นแม่แบบฝังถาวร
- สำหรับเทคาน เทพื้น

ประเภทงาน

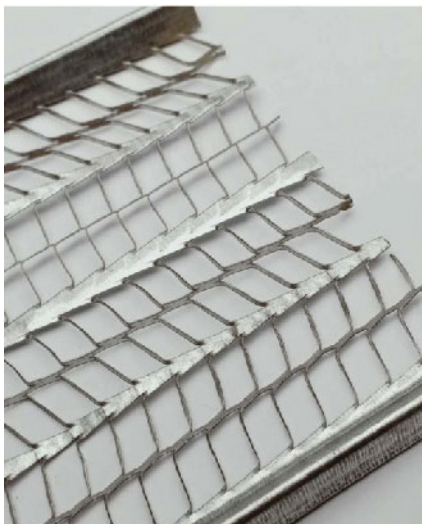
- โรงงานตึก ห้างสรรพสินค้า อาคารสำนักงาน
- อุโมงค์ทางลอด
- งานก่อสร้างสนามบิน รางรถไฟ รถไฟฟ้า
- โรงงานอุตสาหกรรม
- ฯลฯ

ขนาด : 0.45x2.5

ความหนา : 0.30 mm.

น้ำหนัก : 2.034 kg.

ตะแกรงก้างปลา เป็นตะแกรงเหล็กชุบสังกะสีคุณภาพมาตรฐาน ถูกออกแบบมาให้มีตาและความถี่ของตะแกรงใหญ่ รูปลักษณะก้างปลา ที่มีคุณสมบัติโค้งงอและตัดได้ง่าย เพื่อสามารถใช้ได้กับงานโครงสร้าง หลากหลายชนิดรวมทั้งโครงสร้างที่มีลายละเอียดซับซ้อน ตะแกรงก้างปลา ยังใช้งานอย่างกว้างขวางในงานโครงสร้างต่างๆ เพื่อช่วยเสริมความแข็งแรงให้กับผ้า ผนังกันกำแพงและส่วนอื่นๆของโครงสร้าง รวมทั้งใช้ได้กับงานกันจ้อยท์คอนกรีต



ลักษณะการใช้งาน

- ใช้ในการฉาบผนัง ผ้า กันแบ่งพื้นที่กำแพง
- สำหรับผนังอิฐหรือโครงสร้างที่มีการเสียหาย
- งานคานรับน้ำหนัก

ประเภทงาน

- โรงงานตึก ห้างสรรพสินค้า อาคารสำนักงาน
- อุโมงค์ทางลอด
- งานก่อสร้างสนามบิน รางรถไฟ รถไฟฟ้า
- โรงงานอุตสาหกรรม
- ฯลฯ

ขนาด : 0.61x2.5

ความหนา : 0.30 mm.

น้ำหนัก : 1.70 kg.

Tightening Torque Values For UNC & UNF, Metric Bolts

The tables below lists the maximum permissible **tightening torques** and the resulting **maximum pre-load** for standard hex head bolts & socket head cap screws based on 90% utilization of the bolt's yield strength. They do not include any safety factor and should be used with caution because the coefficient of friction μ is subject to many application variables & as a result, an entirely different pre-load figure would result.

*Coefficient of friction : $\mu = 0.14+$ is for standard zinc plated bolts [dry] $\mu = 0.10$ is for standard black bolts [lubricated]	
Fastener Finish Factor	[K]
Plain Steel [black]	0.20+
Zinc Plating [dry]	0.20+
Cadmium Plating [dry]	0.18 - 0.19
Black Oxide Treatment [lighty]	0.15 - 0.17
Moly-disulphide, white lead, wax	0.10 - 0.14

Bolts Diameter	UNC Grade 2 Bolts			UNC Grade 5 Bolts			UNC Grade 8 Bolts			Nuts Width Across Flat [in]
	Tightening Torque [lb.ft]			Tightening Torque [lb.ft]			Tightening Torque [lb.ft]			
	*K = 0.20 Plain [Dry]	*K = 0.15 Lightly	*K = 0.10 Well	*K = 0.20 Plain [Dry]	*K = 0.15 Lightly	*K = 0.10 Well	*K = 0.20 Plain [Dry]	*K = 0.15 Lightly	*K = 0.10 Well	
1/4" - 20	5	4	3	8	6	4	12	9	6	7/16
5/16" - 18	11	8	6	17	13	9	25	18	12	1/2
3/8" - 16	20	15	10	31	23	15	44	35	22	9/16
7/16" - 14	32	24	16	49	35	25	70	55	35	5/8
1/2" - 13	49	35	24	75	55	38	107	80	53	3/4
9/16" - 12	70	55	35	109	80	54	154	110	77	7/8
5/8" - 11	97	75	48	150	110	75	212	170	106	15/16
3/4" - 10	173	130	86	266	200	133	376	280	188	1.1/8
7/8" - 9	166	125	83	429	320	215	606	460	303	1.5/16
1" - 8	250	190	125	644	480	322	909	680	454	1.1/2
1.1/8" - 7	354	270	177	794	600	397	1,287	960	644	1.11/16
1.1/4" - 7	500	380	250	1,120	840	560	1,875	1,360	938	1.7/8
1.3/8" - 6	655	490	327	1,469	1,100	734	2,382	1,780	1,191	2.1/16
1.1/2" - 6	870	650	435	1,950	1,460	975	3,161	2,360	1,581	2.1/4

Bolts Diameter	Class 4.6 Bolts				Class 8.8 Bolts				Class 10.9 Bolts				Nuts Width Across Flat [mm]
	* $\mu = 0.10$		* $\mu = 0.14$		* $\mu = 0.10$		* $\mu = 0.14$		* $\mu = 0.10$		* $\mu = 0.14$		
	Torque [N.m]	Preload [kN]	Torque [N.m]	Preload [kN]	Torque [N.m]	Preload [kN]	Torque [N.m]	Preload [kN]	Torque [N.m]	Preload [kN]	Torque [N.m]	Preload [kN]	
M5 x 0.8	1.9	2.74	2.4	2.59	5.2	7.40	6.5	7.00	7.6	10.80	9.5	10.30	8
M6 x 1.0	3.3	3.87	4.1	3.65	9.0	10.40	11.3	9.90	13.2	15.30	16.5	14.50	10
M8 x 1.25	8.0	7.10	10.1	6.70	21.6	19.10	27.3	18.10	31.8	28.00	40.1	26.60	13
M10 x 1.5	16.1	11.30	20.3	10.70	43.0	30.30	54.0	28.80	63.0	44.50	79.0	42.20	17
M12 x 1.75	27.0	16.40	34.0	15.50	73.0	44.10	93.0	41.90	108.0	64.80	137.0	61.50	19
M14 x 2.0	44.0	22.50	55.0	21.30	117.0	60.60	148.0	57.50	172.0	88.90	218.0	84.40	22
M16 x 2.0	67.0	30.90	85.0	29.30	180.0	82.90	230.0	78.80	264.0	121.70	338.0	115.70	24
M18 x 2.5	93.0	37.70	118.0	35.70	259.0	104.00	329.0	99.00	369.0	149.00	469.0	141.00	27
M20 x 2.5	131.0	48.30	167.0	45.80	363.0	134.00	464.0	127.00	517.0	190.00	661.0	181.00	30
M22 x 2.5	176.0	60.10	225.0	57.10	495.0	166.00	634.0	158.00	704.0	237.00	904.0	225.00	32
M24 x 3.0	226.0	69.50	287.0	65.90	625.0	192.00	798.0	183.00	890.0	274.00	1,136.0	260.00	36
M27 x 3.0	331.0	91.20	424.0	86.70	915.0	252.00	1176.0	240.00	1,304.0	359.00	1,674.0	342.00	41
M30 x 3.5	450.0	111.00	575.0	105.30	1,246.0	307.00	1597.0	292.00	1,775.0	437.00	2,274.0	416.00	46

บริษัท เอ็นพีไอ เทคโนโลยี แอนด์ ซัพพลาย จำกัด
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