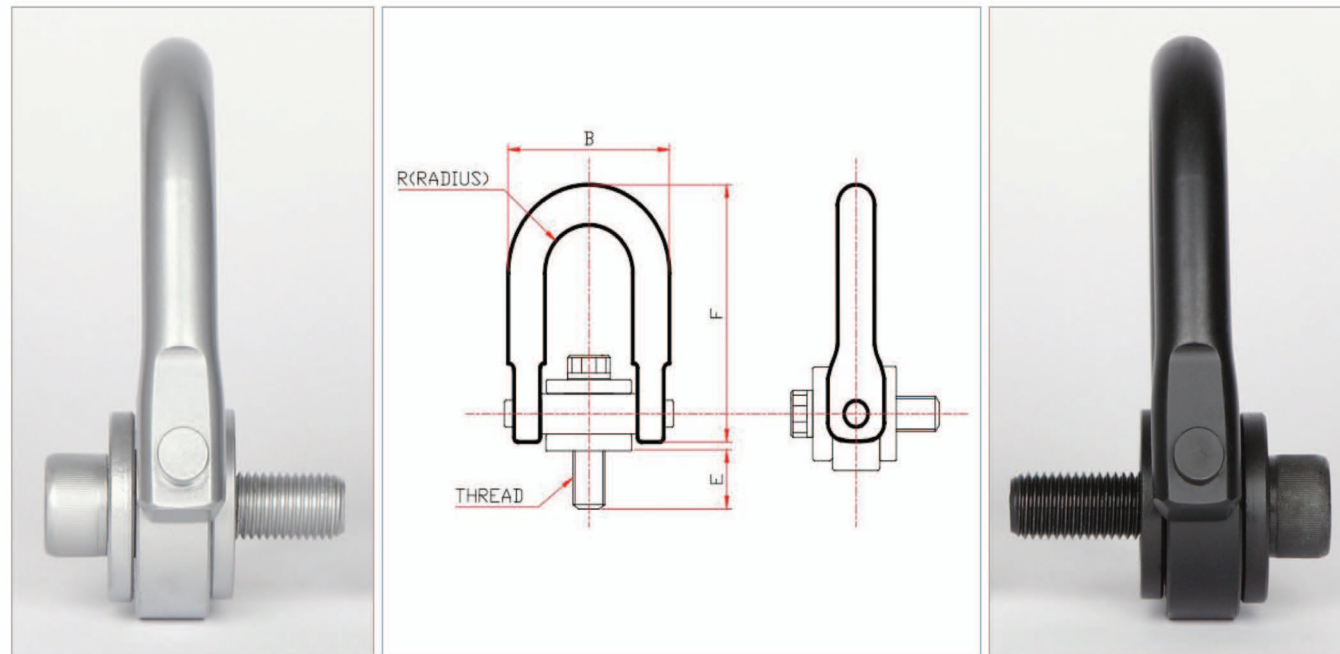


Safety Engineered Center Pull Hoist Ring with Newly Designed U-Bar

安全工程中心拉式旋轉吊環 附有新設計的U型桿



Precision's hoist rings

- 100% Made in South Korea
- 100% Nondestructive inspection
- Swivel 360° and pivot 180°
- Safety factor 5:1
- Proof tested to 200% rated load
- Fatigue tested to 300% rated load over 5,000 times of continual pulling and releasing.
- Certified test reports are available upon request
- **Heat treatment** : Quenched & Tempered
- **Material** : - Aircraft quality alloy Steel
- Stainless Steel
- **Plating** : - Black oxide per mil spec.
- RoHS compliant special plating
- Stainless steel: clean and electrolytic polishing

精密旋轉吊環

- 100%韓國製造
- 100%非破壞檢查
- 旋轉360度與樞軸180度
- 安全係數5:1
- 經過驗證測試達到200%額定負載
- 經過5,000次連續拉動和釋放後，疲勞測試達到300%額定負載。
- 可根據要求提供認證的測試報告
- **熱處理**：調質
- **材質**：-飛機優質合金-不銹鋼
- **電鍍**：-黑氧化鐵（按規格）。
-符合RoHS的特殊鍍層
-不銹鋼：清潔電解拋光

■ Metric Standard U-Bar 公制標準U型桿

Rated Load	Alloy Steel		Stainless Steel		Thread size	B	E	F	R	Torque		Weight (KG)
	Product No.		Rated Load (KG)	Product No.						Alloy Steel	Stainless Steel	
	Black Oxide	RoHS										
400	CFM2000	CFM2000NI	200	SFM2000	M8×1.25	40.50	7.00	66.70	11.50	1.00	0.50	0.17
400	CFM2001	CFM2001NI	200	SFM2001	M8×1.25	40.50	15.80	66.70	11.50	1.00	0.50	0.17
500	CFM2002	CFM2002NI	250	SFM2002	M10×0.50	40.50	15.80	66.70	11.50	1.50	0.75	0.17
1,050	CFM2020	CFM2020NI	525	SFM2020	M12×0.75	82.60	23.30	120.65	22.23	3.70	1.85	1.08
1,050	CFM2021	CFM2021NI	525	SFM2021	M12×1.75	82.60	28.30	120.65	22.23	3.70	1.85	1.09
1,900	CFM2022	CFM2022NI	950	SFM2022	M16×2.00	82.60	23.30	120.65	22.23	8.40	4.20	1.12
1,900	CFM2023	CFM2023NI	950	SFM2023	M16×2.00	82.60	28.30	120.65	22.23	8.40	4.20	1.13
1,900	CFM2024	CFM2024NI	950	SFM2024	M16×2.00	82.60	33.30	120.65	22.23	8.40	4.20	1.14
2,150	CFM2025	CFM2025NI	1,075	SFM2025	M20×2.50	82.60	33.30	120.65	22.23	14.00	7.00	1.19
2,150	CFM2026	CFM2026NI	1,075	SFM2026	M20×2.50	82.60	38.30	120.65	22.23	14.00	7.00	1.20
3,000	CFM2040	CFM2040NI	1,500	SFM2040	M20×2.50	122.20	35.80	165.10	35.72	14.00	7.00	3.03
3,000	CFM2041	CFM2041NI	1,500	SFM2041	M20×2.50	122.20	40.80	165.10	35.72	14.00	7.00	3.03
4,200	CFM2042	CFM2042NI	2,100	SFM2042	M24×3.00	122.20	30.80	165.10	35.72	31.00	15.50	3.10
4,200	CFM2043	CFM2043NI	2,100	SFM2043	M24×3.00	122.20	36.00	165.10	35.72	31.00	15.50	3.12
7,000	CFM2060	CFM2060NI	3,500	SFM2060	M30×3.50	152.40	46.00	222.25	44.45	60.00	30.00	6.30
11,000	CFM2061	CFM2061NI	5,500	SFM2061	M36×4.00	203.20	70.00	316.70	57.15	100.00	50.00	15.50
12,500	CFM2062	CFM2062NI	6,250	SFM2062	M42×4.50	203.20	80.00	316.70	57.15	100.00	50.00	16.00
13,500	CFM2063	CFM2063NI	6,750	SFM2063	M48×5.00	203.20	80.00	316.70	57.15	100.00	50.00	16.80
22,000	CFM2080	CFM2080NI	11,000	SFM2080	M64×6.00	266.00	98.00	400.00	76.00	290.00	145.00	40.00
30,000	CFM2081	CFM2081NI	15,000	SFM2081	M72×6.00	330.00	118.00	470.00	95.00	594.00	297.00	75.00
51,000	CFM2082	CFM2082NI	25,500	SFM2082	M90×6.00	370.00	177.00	561.00	102.00	663.00	331.50	120.20

■ Metric Long U-BAR 公制長U型桿

Rated Load	Product No.	Rated Load (KG)	Product No.	Thread size	B	E	F	R	Torque Alloy Steel	Torque Stainless Steel	Weight (KG)	
1,050	LCFM2020	LCFM2020NI	525	LSFM2020	M12×1.75	82.60	23.30	170.18	22.23	3.70	1.85	1.28
1,050	LCFM2021	LCFM2021NI	525	LSFM2021	M12×1.75	82.60	28.30	170.18	22.23	3.70	1.85	1.29
1,900	LCFM2022	LCFM2022NI	950	LSFM2022	M16×2.00	82.60	23.30	170.18	22.23	8.40	4.20	1.32
1,900	LCFM2023	LCFM2023NI	950	LSFM2023	M16×2.00	82.60	28.30	170.18	22.23	8.40	4.20	1.33
1,900	LCFM2024	LCFM2024NI	950	LSFM2024	M16×2.00	82.60	33.30	170.18	22.23	8.40	4.20	1.34
2,150	LCFM2025	LCFM2025NI	1,075	LSFM2025	M20×2.50	82.60	33.30	170.18	22.23	14.00	7.00	1.39
2,150	LCFM2026	LCFM2026NI	1,075	LSFM2026	M20×2.50	82.60	38.30	170.18	22.23	14.00	7.00	1.40
3,000	LCFM2040	LCFM2040NI	1,500	LSFM2040	M20×2.50	122.20	35.80	205.74	35.72	14.00	7.00	3.35
3,000	LCFM2041	LCFM2041NI	1,500	LSFM2041	M20×2.50	122.20	40.80	205.74	35.72	14.00	7.00	3.35
4,200	LCFM2042	LCFM2042NI	2,100	LSFM2042	M24×3.00	122.20	30.80	205.74	35.72	31.00	15.50	3.42
4,200	LCFM2043	LCFM2043NI	2,100	LSFM2043	M24×3.00	122.20	36.00	205.74	35.72	31.00	15.50	3.44

※Dimension and specification Subject to change without notice

■ UNC Inch Standard U-Bar UNC英寸標準U型桿

Rated Load (LBS)	Alloy Steel		Stainless Steel		Thread size	B	E	F	R	Torque (FT/LBS)		Weight (LBS)
	Product No.		Rated Load (LBS)	Product No.						Alloy Steel	Stainless Steel	
	Black Oxide	RoHS										
800	CFU1600	CFU1600NI	400	SFU1600	5/16 - 18	1.59	0.28	2.63	0.45	7.00	3.50	0.30
800	CFU1601	CFU1601NI	400	SFU1601	5/16 - 18	1.59	0.49	2.63	0.45	7.00	3.50	0.30
1000	CFU1602	CFU1602NI	500	SFU1602	3/8 - 16	1.59	0.49	2.63	0.45	12.00	6.00	0.30
2,500	CFU1620	CFU1620NI	1,250	SFU1620	1/2 - 13	3.25	0.75	4.75	0.88	28.00	14.00	2.60
2,500	CFU1621	CFU1621NI	1,250	SFU1621	1/2 - 13	3.25	0.97	4.75	0.88	28.00	14.00	2.60
4,000	CFU1622	CFU1622NI	2,000	SFU1622	5/8 - 11	3.25	0.75	4.75	0.88	60.00	30.00	2.60
4,000	CFU1623	CFU1623NI	2,000	SFU1623	5/8 - 11	3.25	0.97	4.75	0.88	60.00	30.00	2.60
4,000	CFU1624	CFU1624NI	2,000	SFU1624	5/8 - 11	3.25	1.25	4.75	0.88	60.00	30.00	2.60
5,000	CFU1625	CFU1625NI	2,500	SFU1625	3/4 - 10	3.25	1.25	4.75	0.88	100.00	50.00	3.00
5,000	CFU1626	CFU1626NI	2,500	SFU1626	3/4 - 10	3.25	1.50	4.75	0.88	100.00	50.00	3.00
7,000	CFU1640	CFU1640NI	3,500	SFU1640	3/4 - 10	4.81	1.26	6.50	1.41	100.00	50.00	7.00
7,000	CFU1641	CFU1641NI	3,500	SFU1641	3/4 - 10	4.81	1.51	6.50	1.41	100.00	50.00	7.00
8,000	CFU1642	CFU1642NI	4,000	SFU1642	7/8 - 9	4.81	1.26	6.50	1.41	160.00	80.00	7.00
8,000	CFU1643	CFU1643NI	4,000	SFU1643	7/8 - 9	4.81	1.51	6.50	1.41	160.00	80.00	7.00
10,000	CFU1644	CFU1644NI	5,000	SFU1644	1 - 8	4.81	1.26	6.50	1.41	230.00	115.00	7.50
10,000	CFU1645	CFU1645NI	5,000	SFU1645	1 - 8	4.81	1.50	6.50	1.41	230.00	115.00	7.60
15,000	CFU1660	CFU1660NI	7,500	SFU1660	1 1/4 - 7	6.00	1.77	8.75	1.75	470.00	235.00	14.00
24,000	CFU1661	CFU1661NI	12,000	SFU1661	1 1/2 - 6	8.00	2.74	12.47	2.25	800.00	400.00	34.00
30,000	CFU1662	CFU1662NI	15,000	SFU1662	2 - 4 1/2	8.00	3.24	12.47	2.25	800.00	400.00	36.00
50,000	CFU1680	CFU1680NI	25,000	SFU1680	2 1/2 - 4	10.50	3.98	16.88	3.00	2100.00	1050.00	88.00
75,000	CFU1681	CFU1681NI	37,500	SFU1681	3 - 4	13.00	5.30	19.50	3.75	4300.00	2150.00	166.00
100,000	CFU1682	CFU1682NI	50,000	SFU1682	3 1/2 - 4	14.58	7.00	22.09	4.00	6600.00	3300.00	265.00

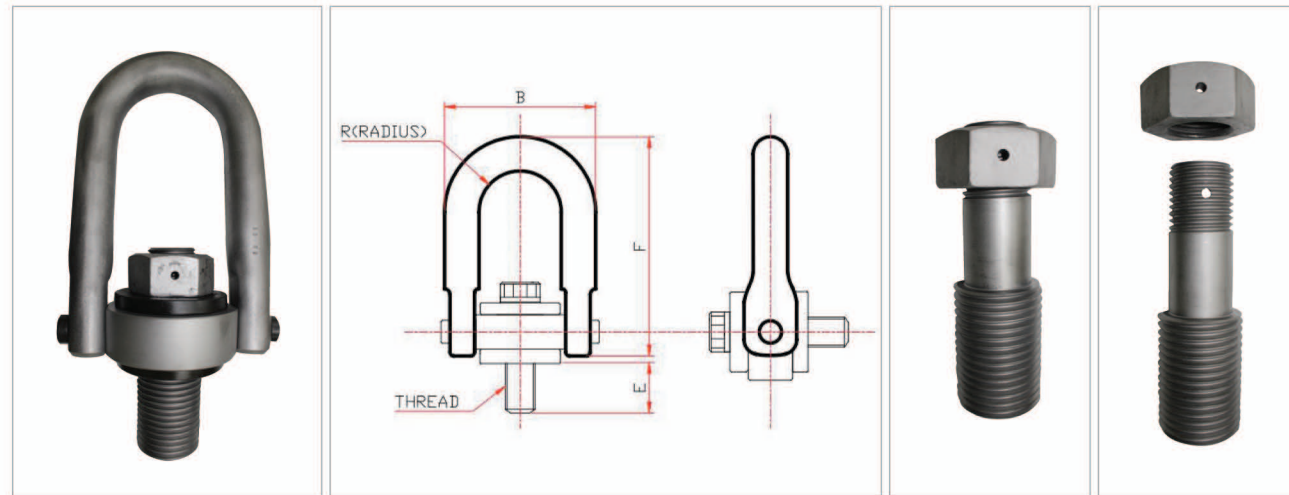
■ Unc Inch Long U-BAR UNC英寸長U型桿

Rated Load (LBS)	Product No.	Rated Load (LBS)	Product No.	Thread size	B	E	F	R	Torque Alloy Steel	Torque Stainless Steel	Weight (LBS)	
2,500	LCFU1620	LCFU1620NI	1,250	LSFU1620	1/2 - 13	3.25	0.75	6.70	0.88	28.00	14.00	3.04
2,500	LCFU1621	LCFU1621NI	1,250	LSFU1621	1/2 - 13	3.25	0.97	6.70	0.88	28.00	14.00	3.04
4,000	LCFU1622	LCFU1622NI	2,000	LSFU1622	5/8 - 11	3.25	0.75	6.70	0.88	60.00	30.00	3.04
4,000	LCFU1623	LCFU1623NI	2,000	LSFU1623	5/8 - 11	3.25	0.97	6.70	0.88	60.00	30.00	3.04
4,000	LCFU1624	LCFU1624NI	2,000	LSFU1624	5/8 - 11	3.25	1.25	6.70	0.88	60.00	30.00	3.04
5,000	LCFU1625	LCFU1625NI	2,500	LSFU1625	3/4 - 10	3.25	1.25	6.70	0.88	100.00	50.00	3.44
5,000	LCFU1626	LCFU1626NI	2,500	LSFU1626	3/4 - 10	3.25	1.50	6.70	0.88	100.00	50.00	3.44
7,000	LCFU1640	LCFU1640NI	3,500	LSFU1640	3/4 - 10	4.81	1.26	8.10	1.41	100.00	50.00	7.72
7,000	LCFU1641	LCFU1641NI	3,500	LSFU1641	3/4 - 10	4.81	1.51	8.10	1.41	100.00	50.00	7.72
8,000	LCFU1642	LCFU1642NI	4,000	LSFU1642	7/8 - 9	4.81	1.26	8.10	1.41	160.00	80.00	7.72
8,000	LCFU1643	LCFU1643NI	4,000	LSFU1643	7/8 - 9	4.81	1.51	8.10	1.41	160.00	80.00	7.72
10,000	LCFU1644	LCFU1644NI	5,000	LSFU1644	1 - 8	4.81	1.26	8.10	1.41	230.00	115.00	8.22
10,000	LCFU1645	LCFU1645NI	5,000	LSFU1645	1 - 8	4.81	1.50	8.10	1.41	230.00	115.00	8.32

※Dimension and specification Subject to change without notice
尺寸和規格如有更改恕不另行通知

Hoist ring for replacement of eyebolt(EB series)

旋轉吊環取代吊環螺栓 (EB系列)



The EB series hoist rings are to replace eyebolts. Normally eyebolts hold less weight than hoist ring of same thread diameter. The diameter of eyebolt is about twice bigger than hoist ring for a same load. This means eyebolt users have to make twice bigger thread hole on the object to be lifted than hoist ring users. The EB series are for those who already made threads for eyebolt on the object and want to use hoist ring instead of eyebolts. Please consult us before order.

EB系列旋轉吊環用於取代吊環螺栓，通常吊環螺栓的荷重小於相同螺紋直徑的旋轉吊環。相同負載時，吊環螺栓的直徑大約是旋轉吊環的兩倍。這意味著吊環螺栓使用者必須在要舉升的相同物體時開孔的螺紋孔比起旋轉吊環大兩倍。EB系列適用於那些已經在物體上安裝了吊環螺栓的螺紋並且想要使用旋轉吊環代替吊環螺栓的產品。訂購前請諮詢我們

■ Metric Hoist Ring 公制旋轉吊環

Model No	Rated Load	Thread Size	B	E	F	R	Torque (KG/M)
CFMEB2010	1,000	M24	82.60	27.00	120.65	22.23	31
CFMEB2015	1,500	M30	82.60	27.00	120.65	22.23	60
CFMEB2020	2,000	M36	82.60	38.00	120.65	22.23	100
CFMEB2035	3,500	M42	122.20	38.60	165.10	35.72	100
CFMEB2045	4,500	M48	122.20	38.00	165.10	35.72	100
CFMEB2090	9,000	M64	203.20	75.30	316.70	57.15	290

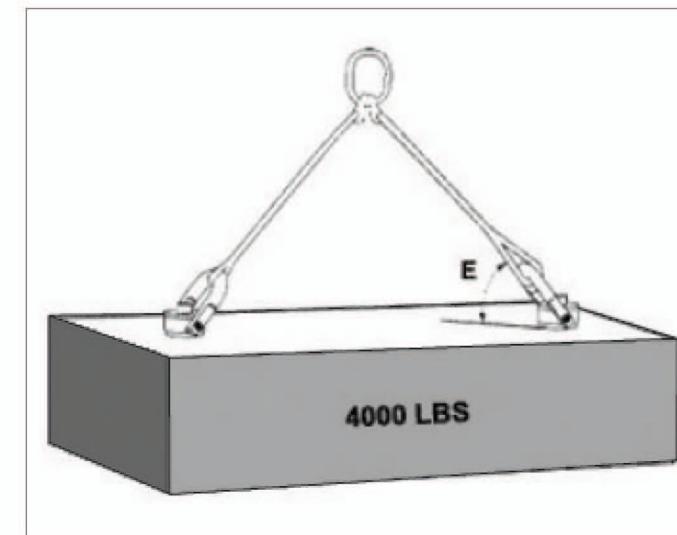
Quote and specification of UNC Inch EB series Hoist Rings will be available upon request.

可根據要求提供UNC英寸EB系列旋轉吊環的報價和規格

Formula 公式

The following is a formula to figure out size and number of hoist rings to lift load(s). The load on each hoist ring is not just the total weight divided by the number of hoist rings. The load can be greater at lower angles.

以下是計算吊環的吊昇荷重的吊環尺寸和數量的公式。每個吊環吊昇荷重不僅僅是總重量除以吊環的數量。在較小的角度下，負載可能會更大



$$L = \frac{W}{N \times \sin E}$$

L = Load on each Hoist Ring

W = Weight of load

N = Number of Hoist Rings

E = Lifting angle

IF E=60°

$$L = \frac{4,000}{2 \times \sin 60^\circ} = 2,309 \text{ LBS}$$

L = 2,309 LBS

Hoist Ring Safety precautions

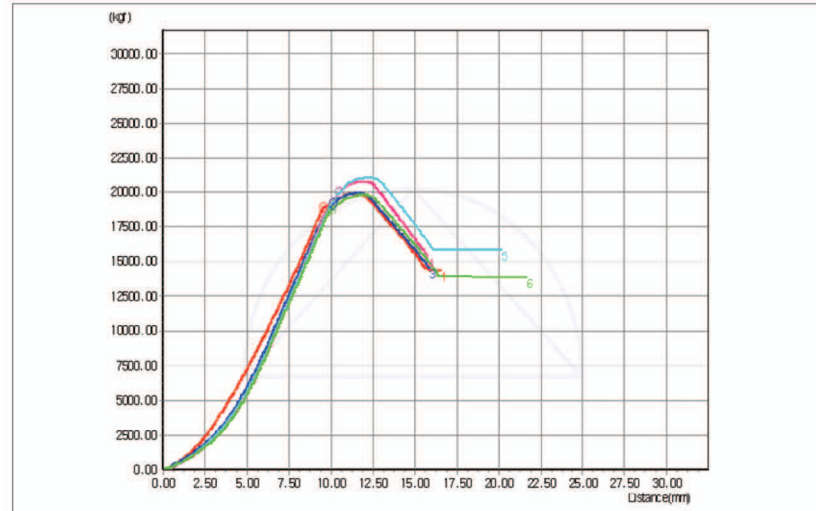
- Never exceed Rated load. The safety factor is required in case of mis-use such as overload or uneven loads.
- Never install hoist rings on uneven planes.
- Never apply shock load. Apply force gradually.
- Never use a hook or lifting device larger than the diameter of ring.
- Never allow space or gap between the mounting plane of the load being lifted and the bottom plane of hoist rings.
- Never use spacers between hoist rings and load.
- Check hoist rings installed time to time and tighten the bolt to the proper torque.
- After installation, check the hoist rings whether they swivel and pivot freely in all directions.

吊環安全注意事項

- 切勿超過額定負荷。濫用或過載等情況下，需要使用安全係數
- 切勿在不平坦的平面上安裝吊環
- 切勿施加衝擊負荷。逐漸施加力量
- 切勿使用大於吊環直徑的掛鉤或起重裝置
- 切勿在要吊起的貨物的安裝平面與吊環的底面之間留有空間或間隙
- 切勿在吊環與負載之間使用墊片
- 不時檢查吊環安裝情況，並以適當扭矩擰緊螺栓
- 安裝後。檢查吊環是否可以在樞軸各個方向上自由旋轉

Destructive tensile test Report

破壞性拉伸試驗報告



Sample No.	Max Load	Max Elongation (mm)	Yield Strength (kgf/mm ²)	Tensile Strength (kgf/mm ²)
1	19,890.58	16.56	142.48	149.86
3	19,945.65	15.86	477.27	150.27
4	20,820.57	15.78	151.00	156.86
5	21,099.97	20.14	150.46	158.97
6	19,800.85	21.66	141.52	149.18
Avg	20,311.52	18	145.95	153.03

The above graph and data are regarding tensile test results of six(6) 10,000 lbs(4.5 ton) shoulder pins. According to the results, average maximum load that one shoulder pin can hold is 20.3 ton. Safety factor of one single pin for 10,000 LBS HOIST RING is about 4.5. Each hoist ring set uses 2 shoulder pins.

The above graph shows the following 3 points.

1. Consistency of material and heat treatment quality
2. Consistency of stable yield & tensile strength
3. Safety factor guaranteed

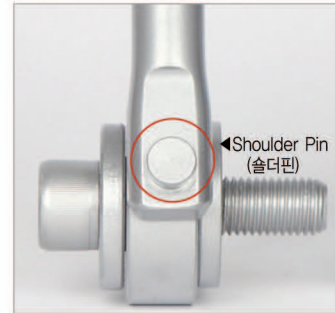
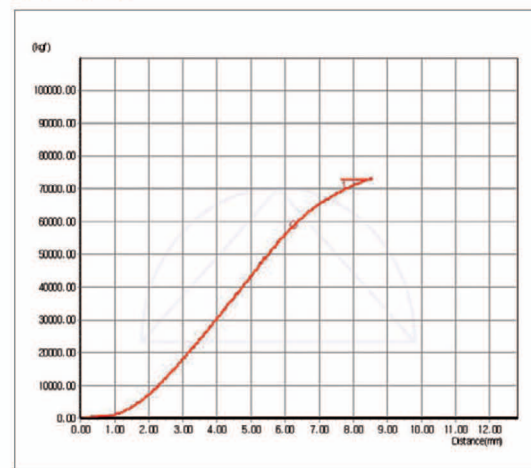
Tensile test of a completely assembled hoist ring

- Specimen: CFM2061
- 額定載荷 (Rated Load: 11 TON)
- A Shoulder Pin Broke at max load 73.2 ton.
- 最大負載73.2噸時肩銷斷裂

完整拉伸試驗
組裝旋轉吊環

• Safety Factor
= Max Load ÷ Rated Load
= 73,169.74 kgf ÷ 11,000 kg
= 6.65

Max Load (kgf)	Max Elongation (mm)	Yield Strength (kgf/mm ²)	Tensile Strength (kgf/mm ²)
73,169.74	8.54	155.05	195.49



Test Conditions

- Machined and heat treated
- Specimen : SHOULDER PIN
- Pin for : 10,000 lbs (4.5 ton)
- Total # of specimen : 6 ea.
- Diameter of specimen : 13 mm

測試條件

機械加工和熱處理

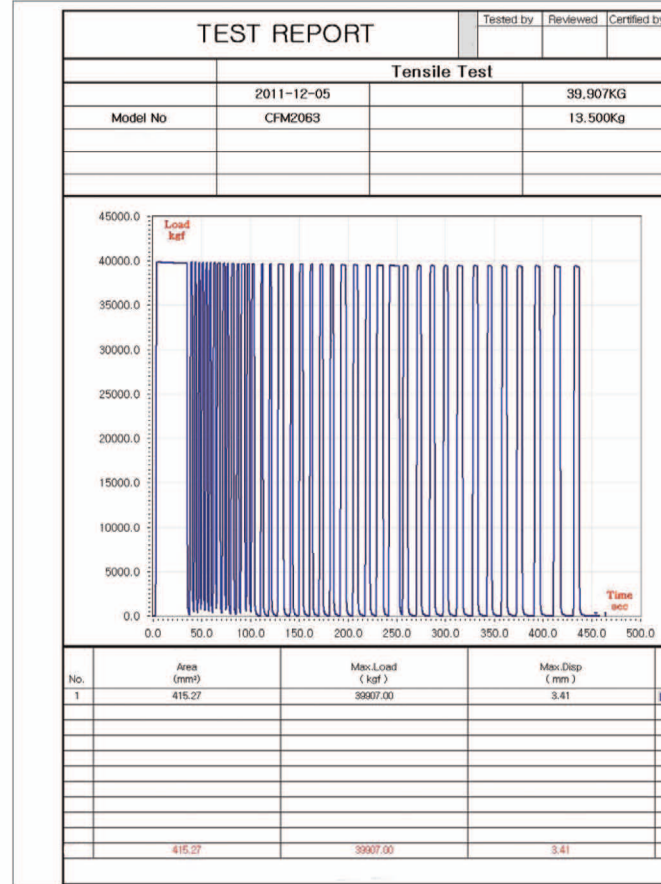
- 標本：SHOULDER PIN
- 銷：10,000lbs (4.5ton)
- 標本總數：6 ea
- 樣品直徑：13mm

上圖和數據是關於6個10,000磅(4.5噸)肩銷的拉伸測試結果。根據結果，一個肩銷可以承受的平均最大負載為20.3噸。10,000 LBS吊環的單個銷的安全係數約為4.5。每個吊環套件使用2個肩銷

1. 材料與熱處理質量的一致性
2. 穩定的屈服強度和拉伸強度的一致性
3. 保證安全係數

Fatigue tensile test report of 300% rated load

300%額定載荷的疲勞拉伸試驗報告



Fatigue tensile test counter

<Test result>

- Date of test : Dec. 5th, 2011
- Customer : SAMSUNG HEAVY IND.
- Specimen : One (1) 30K HOIST RING
- Rated Load : 13.5 Ton
- Applied Load : 39.91 Ton
- 300% rated load
- Cycles of test : 2,500 times
- Results : No break & elongation
- Cycles of fatigue pulling test till broke : 6,302 cycles

疲勞拉伸試驗機

(測試結果)

- 試驗日期：2011年12月5日
- 客戶：三星重工業
- 標本：一個(1)30K吊環
- 額定荷重：13.5噸
- 給予荷重：39.91噸
- 測試週期：2500次
- 結果：無斷裂和伸長
- 疲勞拉力試驗直至斷裂的次數：6302次

