

CARBON STEEL & HEAT TREATING SERVICE

碳鋼 / 熱處理

ESTABLISHED IN 1970

HUNG SHUH

Quality / Service / Innovation / Responsibility

www.hung-shuh.com.tw



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HUNG SHUH
宏樹企業股份有限公司

About HUNG SHUH

HUNG SHUH ENTERPRISES CO., LTD. was established in 1970 in Taiwan, a country well known for high quality manufacturing standards. Under the leadership of two individuals and a support staff focused on excellence, HUNG SHUH is recognized throughout the world as a professional manufacturer / provider of High Carbon Steel, Steel Heat-Treating Service and Steel Cutting Rule.

The current chairman, Mr. Sam Chen, holds true to his beliefs of Quality, Service, Innovation and Responsibility. Under his leadership, HUNG SHUH has been consistently providing only the best Japanese carbon steel and became the exclusive agent of Sumitomo Metal Industries, Ltd. in Taiwan beginning in 1978. In addition, after the Nippon Steel Corporation and the Sumitomo Metal merged in 2012, HUNG SHUH continued to be the biggest oversea agent of this new company NSSMC (Nippon Steel & Sumitomo Metal Corp.). In order to provide the best service to their customers even as the world markets suffered during the global financial crisis, HUNG SHUH continuously maintained high stock level to ensure customer orders are consistently fulfilled in a timely manner. To improve product quality over the years, HUNG SHUH has constantly invested in acquiring the best technology available, such as the SONODA Slitting Machine from Japan, EBNER Hardening and Tempering Line from Austria, and NTK Grinding Machines from Japan. These investments in technology ensure HUNG SHUH can continue to exceeds the quality requirements of their customers worldwide.

Regarding the highly competitive Steel Cutting Rule business, by using the highest quality Japanese steel and all the most advanced manufacturing technology available no matter the cost, HUNG SHUH cutting rule reached the same quality levels as those produced in Europe. To increase market share HUNG SHUH developed a very important partnership with CITO, a well-known German company with over 100 years of experience in the converting industry. Together they created a new brand HS CITO in April 2012, which has been instrumental in making HUNG SHUH one of the top three cutting rule manufacturers in the world.

As HUNG SHUH continues to gain market share expanding into new world markets, they are constantly improving product quality and investing in additional research and development in order to remain a global leader. HUNG SHUH values customer relationships throughout the world and promises to continue their focus on quality and service now and into the future.

MILESTONES

宏樹記事

Hung Shuh was founded
創立宏樹

Purchased our first EBNER
Hardening & Tempering Line
引進第一套奧地利 EBNER公司
所生產的連續式鋼帶熱處理設備

Purchased Germany made Edge-Trimming
System, Bevel-Hardening Machine, Auto-
Adjusting Straightness and Flatness Line
引進德製切削機、刀尖硬化機、絞直機等

Received an Honorary Award for being
the exclusive agent of SUMITOMO
METAL in Taiwan for twenty years of
service
榮獲日本 住友金屬頒贈台灣地區總
代理20週年感謝狀

1970 1978 1982 1988 1995 1997 1998 1999

Appointed as the exclusive agent of
SUMITOMO METAL INDUSTRIES, LTD.
"Carbon Steel Product" in Taiwan
成為日本 住友金屬工業株式會社碳鋼
類產品之台灣總代理

Received an Honorary Award for being the
exclusive agent of SUMITOMO METAL in
Taiwan for ten years of service
榮獲日本 住友金屬頒贈台灣地區總代
理10週年感謝狀

Expanded sales into Europe,
America and Middle East
產品擴展於歐洲、美洲、中
東及亞洲等地區

Purchased SUMITOMO SEIKA
Nitrogen Generator – Model 45
引進日本 住友精化公司45型製
氮機

宏樹企業股份有限公司創始於1970年，長年來致力於碳鋼販售、鋼帶熱處理服務、生產印刷包裝用脫姆遜刀，在兩任董事長與全體同仁的努力下，成為國際上享有盛名的專業製造商。並以「宏觀世界、樹立典範、和樂民生、業如昇陽」為經營的總體目標。

秉持陳昇陽董事長「品質」、「服務」、「創新」、「責任」的經營理念，在鋼材販賣及鋼帶熱處理方面，宏樹自1978年以來，堅持僅提供日本“住友金屬工業株式會社”所生產的一級碳鋼，並有幸成為住友金屬在台灣的獨家代理商。甚至在新日鐵與住友金屬於2012年正式合併後，宏樹仍是該公司（NSSMC，新日鐵住金株式會社）的海外最大代理商。為服務客戶，縱使在多次全球性金融危機的肆虐下，仍充裕備貨，以滿足客戶快速交貨的需求。另外，為了在品質上不斷成長突破，不惜重資引進日本SONODA大切分條機、奧地利EBNER連續式鋼帶熱處理設備、日本NTK鋼帶表面研磨機...等，以滿足國際市場日趨嚴苛的品質要求。

在脫姆遜刀的製造方面，選用本身所代理的一級日本鋼帶，配合由德國、日本生產的高精度刀尖切削成型機、刀口研磨機、刀尖硬化機、刀身絞直機 等最新進的設備，生產出與歐洲相同等級的脫姆遜刀。更在2012年4月與德國大廠 CITO 策略聯盟，推出由宏樹生產，CITO具名的全新品牌 HS CITO。此舉更讓宏樹晉升為全球三大製刀廠的行列。

在追求永續經營的理念驅動下，我們不斷地鞭策自己提升品質，並強化設計、研發的能力。面臨未來更嚴峻的市場競爭，宏樹衷心期盼您持續的指教與愛護，讓我們有更多的機會為您服務、共創雙贏。

MILESTONES

宏樹記事

Joined the IADD (International Association of Diecutting and Diemaking)
加入IADD協會(國際模切暨刀模協會)

Moved to the new factory, the land was about 8,250 square meters. At the same time, purchased the 2nd EBNER Hardening & Tempering Line from Austria, Free-Angle Bevel Grinding Machine from Germany, Rule Bevel Hardening Machine from Japan, Japan SONODA Slitting Line and Japan SUMITOMO SEIKA Nitrogen Generator – Model 75.
完成遷廠，新廠的土地面積為8,250平方米。同時引進第二套 EBNER 連續式鋼帶熱處理設備、德製 無段式磨刀機、日製刀尖硬化機、日本 SONODA 大切分條機及日本住友精化 75型製氮機

Purchased a NTK Steel Surface Grinding Machine from Japan
引進日本 NTK 鋼帶表面研磨機

Purchased Germany made Auto-Adjusting Straightness & Flatness System and the 2nd Steel Surface Grinding Machine from NTK
引進德製 全自動校正平機及第二套日本 NTK 鋼帶表面研磨機

Renewed / upgraded tempering module of the EBNER Hardening & Tempering Line – Model 300
升級 EBNER 熱處理爐 (300型) 的回火模組

On April 28th received the ISO 9001 certificate issued by the UKAS. Purchased a new SUMITOMO SEIKA Nitrogen Generator – Model 75
於2014/4/28 正式通過英國 UKAS 系統的 ISO 9001認證：購買全新日本 住友精化公司 75型製氮機



Introduced the new product line – Ground Edge Cutting Rule
推出全新“研磨式刀尖”的脫姆遜刀

Purchased a Rule Bevel Hardening Machine from Germany
引進德製 刀尖硬化機

Received an Honorary Award for being the exclusive agent of SUMITOMO METAL in Taiwan for thirty years of service
榮獲日本 住友金屬頒贈台灣地區總代理30週年感謝狀

Renewed electronic control panels of the EBNER Hardening & Tempering Line – Model 300
升級 EBNER 熱處理爐 (300型) 電控盤

Full-scale upgrade of the electronic control module for Edge-Trimming Machine made in Germany
全面更新 刀尖切削機的電控模組

Established a partnership with CITO, the well-known German company, to introduce the new brand “HS CITO”
與德國公司CITO合作，推出脫姆遜刀的全新品牌 HS CITO

Full-scale upgrade the EBNER Hardening & Tempering Line – Model 400
全面升級 EBNER 熱處理爐 (400型)

Our Advantages

宏樹的優勢

1 超過40年的豐富經驗
投入碳鋼代理/販售、熱處理加工、脫姆遜刀生產已超過40多年，累積了豐厚的專業知識與人脈，有絕對的實力可以提供客戶全方位的服務。



2 掌握最高品質的貨源
宏樹除了是全世界第二大煉鋼廠 日本新日鐵住金株式会社 所正式認可的海外最大代理商，同時也熟悉全球各大鋼廠，再加上擁有充沛的現貨庫存，因此可以即時地滿足客戶對各種鋼材的需求。

4 百分百客製化的能力
充分掌握各項生產技術與業界標準，能達到客戶在不同產品規格上的要求。

3 不斷引進最先進的設備
持續投資在設備的擴充與更新，引進德國、奧地利、日本等工業先進國的最新機械設備與技術，讓宏樹的軟硬體永遠居於領先地位。

5 堅強的研發及品保團隊
40多年的生產經驗，讓宏樹擁有陣容堅強的研發/品保團隊。然而，我們不以此自滿，藉由延聘外部的專業顧問，讓宏樹的技術能力精益求精。

1 More Than 40 Years of Industry Experience
Fully committed to carbon steel, heat-treating and steel cutting rule production for more than 40 years, which has given HUNG SHUH the knowledge needed to ensure confidence in providing their partners with the best quality and service.

2 Highest Quality Steel Products
HUNG SHUH is not only the largest agent of the world top 2 Japanese steel maker (the NSSMC), but also has longstanding relationships with leading steel manufacturers. There is always a high level of stock in the warehouse. These relationships and the commitment to inventory make HUNG SHUH your most trusted steel supplier.

3 Equipped With The Most Advanced Machinery/Technology
Investing and continuously reinvesting in new technology from Germany, Austria and Japan, helps HUNG SHUH maintain a market leading position.



4 Total Customization Capabilities
From the accumulation of production knowledge and familiarity with global standards, HUNG SHUH can accommodate special product requests.

5 Skillful R&D and QC team
With more than 40 years of industry experience plus guidance from outside consultants, HUNG SHUH has built one very strong R&D and QC team.

EBNER Continuous Heat Treatment Facility

連續式鋼帶熱處理設備



來自奧地利的EBNER公司，為全球首屈一指的熱處理設備供應商。宏樹在1982年引進台灣第一套 EBNER 所生產的“連續式鋼帶熱處理設備”(300型)，由於其品質深獲國內外市場的肯定，在加上產能日趨飽和，本公司在2004年遷入新廠的同時，又添購了第二套的EBNER熱處理設備(400型)。這套400型熱處理設備，除了可以處理高達400mm寬的鋼帶外，因為搭配有最新的整平技術，所以在平坦度的表現上，也大幅領先其它同業的產品。

有了業界最精良的設備，再加上宏樹40多年的熱處理經驗，靈活運用麻淬火、麻回火、沃斯回火等熱處理作業，讓鋼材呈現最極致的表現。不論是在硬度/強度、彈性、平坦度等，都能充分滿足刀鋸、彈簧片、扣環、耐磨零件...等業界對熱材機械性的要求。

HUNG SHUH has two continuous heat treatment facilities from EBNER, the world Top One hardening and tempering furnace maker based in Austria. The first one, Model 300, was implemented in 1982. Because the products made by the Model 300 were very successful in many markets and the capacity was nearly fully occupied, HUNG SHUH purchased the 2nd furnace in 2004 at the time we moved to the new factory. This new one, Model 400, adopted the latest leveling technology which performs much superior flatness comparing with competitors' products.

With these advanced heat treatment lines plus more than 40 years experiences in this field, HUNG SHUH provides the best hardened and tempered steels with requested hardness, steel structures, flatness and straightness which helps our customers produce best final products in different applications.

Japan SONODA Slitting Line

日本SONODA 大切分條設備



為能全程有效地掌控品質、提昇生產效率並縮短交貨期限，本公司備有日本SONODA公司分條設備。SONODA為全球知名的分條設備供應商，該套設備具優異的操控性與超高精準度。不但裁切的寬度公差達到世界級的標準，且在降低裁切損失方面，也有優異的表現。其最大裁切尺寸可達1,220mm，可提供客戶更多尺寸的選擇。

In order to do end-to-end quality control and shorten production lead-time, HUNG SHUH equipped one Japan SONODA slitting machine, SONODA is one of the most well-known slitting machine provider. This highly functional and precise machine helps HUNG SHUH to perform an outstanding tolerance and also diminishes production loss. Besides, the max width 1,220mm also offers a wide range of products for customers.

German Computer-Program Edge Trimming Machine

德製 全電腦化微感切削 / 修邊機

本機台於2010年全面升級，以最新的自動化操控技術、搭配高精度切削基座，再輔佐以最新的即時光學量測模組，讓鋼帶擁有絕佳的裁切面與寬度精度（精度高達0.001mm），並能滿足各種修邊形狀的需求。

This machine was upgraded in 2010, the most advanced computer controlling tech and optical measurement module give steel strips the best edge and accurate size (down to 0.001mm). Also this machine can provide various shapes of trimmed edges.



Japan NTK Steel Surface Grinding Machine

日本NTK 鋼帶表面研磨機



為了滿足客戶對鋼帶表面日益嚴峻的要求，宏樹特別引進2套日本特殊研砥株式会社—NTK 所生產的專業表面研磨機。搭配該公司所生產的各式研磨砥石(UB, FBB)，可以將鋼帶的表面處理成細緻的髮絲紋，且表面粗度可達到 Ra 0.1 μm 。

To satisfy customers' high standards about steel surface, HUNG SHUH has purchased two surface grinding machines produced by the Japan NIPPON TOKUSHU KENTO CO., LTD. (NTK). By using different types of grinding stones (UB, FBB...) provided by the NTK, can make steel surface with very fine hairline and the roughness can be down to Ra 0.1 μm 。

Most strict quality control system

嚴謹的品管系統

品質控制系統暨主要檢測儀器一覽表
List of Quality Control Systems

| 品質控制系統 Quality Control Systems | 主要檢測儀器 Major Equipments |
|--|--|
| 金相室 Microstructure Interpretation Labs | 金相處理設備 Preparation of Microstructure interpretation 光學顯微鏡 Optical Microscope 蕭氏硬度機 Shore Hardness Tester 洛氏硬度機 Rockwell Hardness Tester 微維氏硬度機 Micro-Vicker's Hardness Tester 表面硬度測試機 Superficial Hardness Tester 高解析度金相顯微鏡 High definition Metallurgical Microscopes |
| 機械性測試 Metallurgical Properties Testing | 脫姆遜刀彎曲測試機 Cutting Rule Bendability Testing Machine |
| 表面形態測試 Metallurgical Properties Testing | 雷射量測系統 Laser Beam Measurement System 光學投影系統 Orthographic Projection Equipment 表面粗度量測儀器 Surface Roughness Measurement System 精密量測顯微鏡 Ultra-precision measuring Microscope 高精密度量測顯微鏡 Ultra-precision video inspection systems |
| 板料翹曲度測試 Steel Sheet Planeness Measurement | 高精密度雷射翹曲度測試機 Ultra-precision Laser Planeness Tester |

有精密的量測儀器，才能做好檢測工作，並落實品質管制功能。為做好全面品質管理，本公司建立之相關系統及檢測儀器如下表。

本廠採用德國專業刀具製造協會標準品檢規格VDS Standard for Determination of the quality of standard cutting rule 做為製作脫姆遜刀品質檢驗依據。

Only with high precision measuring equipment can quality be assured and with the implementation of stringent quality controls, our product quality is optimized. in order to maximize the efficiency in all aspects of quality control, we have introduced the most precise and technologically advanced quality control equipment as set out in the diagram.

We use German testing standards - VDS standard for determination of the quality of standard cutting rule, as the test basis for the manufacturing of Cutting Rules.



Steel Grade & Chemical Composition

鋼種與化學成分表

| 鋼帶種類 Steel Grades | 規格 / Standard | | 化學成分 (重量百分比) / Chemical Composition (Weight %) | | | | | | | | |
|-----------------------------|---------------|-----------|--|-----------|-----------|--------|--------|-------|-----------|-----------|-----------|
| | 日規 JIS | 美規 SAE | 碳 C | 矽 Si | 錳 Mn | 磷 P | 硫 S | 銅 Cu | 鎳 Ni | 鉻 Cr | 鉬 Mo |
| 碳素鋼 Carbon Steels | S35CM | | 0.32-0.38 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | S45CM | | 0.42-0.48 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | S50CM | | 0.47-0.53 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | | SAE1050 | 0.48-0.55 | — | 0.60-0.90 | ≤0.030 | ≤0.050 | — | — | — | — |
| | S55CM | | 0.52-0.58 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | | SAE1055 | 0.50-0.60 | — | 0.60-0.90 | ≤0.030 | ≤0.050 | — | — | — | — |
| | S60CM | | 0.55-0.65 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | | SAE1060 | 0.55-0.65 | — | 0.60-0.90 | ≤0.030 | ≤0.050 | — | — | — | — |
| | S65CM | | 0.60-0.70 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | | SAE1065 | 0.60-0.70 | — | 0.60-0.90 | ≤0.030 | ≤0.050 | — | — | — | — |
| | S70CM | | 0.65-0.75 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| | | SAE1070 | 0.65-0.75 | — | 0.60-0.90 | ≤0.030 | ≤0.050 | — | — | — | — |
| | SAE1074 | 0.70-0.80 | — | 0.50-0.80 | ≤0.030 | ≤0.050 | — | — | — | — | |
| | SAE1075 | 0.70-0.80 | — | 0.40-0.70 | ≤0.030 | ≤0.050 | — | — | — | — | |
| | S75CM | | 0.70-0.80 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.035 | ≤0.30 | ≤0.20 | ≤0.20 | — |
| 碳素工具鋼 Carbon tool steels | SK85M | | 0.80-0.90 | 0.10-0.35 | 0.10-0.50 | ≤0.030 | ≤0.030 | ≤0.25 | ≤0.25 | 0.30 | — |
| | | SAE1086 | 0.80-0.93 | — | 0.30-0.50 | ≤0.030 | ≤0.050 | — | — | — | — |
| | SK95 | | 0.90-1.00 | 0.10-0.35 | 0.10-0.50 | ≤0.030 | ≤0.030 | ≤0.25 | ≤0.25 | ≤0.30 | — |
| | | SAE1095 | 0.90-1.03 | — | 0.30-0.50 | ≤0.030 | ≤0.050 | — | — | — | — |
| | SK120 | | 1.15-1.25 | 0.10-0.35 | 0.10-0.50 | ≤0.030 | ≤0.030 | ≤0.25 | ≤0.25 | ≤0.30 | — |
| 合金工具鋼 Alloy tool Steels | SKS5 | | 0.75-0.85 | ≤0.35 | ≤0.50 | ≤0.030 | ≤0.030 | ≤0.25 | 0.70-1.30 | 0.20-0.50 | — |
| | SKS51 | | 0.75-0.85 | ≤0.35 | ≤0.50 | ≤0.030 | ≤0.030 | ≤0.25 | 1.30-2.00 | 0.20-0.50 | — |
| 鉻鉬鋼 Cr-Mo Steels | SCM415 | | 0.13-0.18 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.030 | ≤0.30 | ≤0.25 | 0.90-1.20 | 0.15-0.25 |
| | SCM420 | | 0.18-0.23 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.030 | ≤0.30 | ≤0.25 | 0.90-1.20 | 0.15-0.25 |
| | SCM430 | | 0.28-0.33 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.030 | ≤0.30 | ≤0.25 | 0.90-1.20 | 0.15-0.30 |
| | | SAE4130 | 0.28-0.33 | 0.15-0.35 | 0.40-0.60 | ≤0.030 | ≤0.040 | — | — | 0.80-1.10 | 0.15-0.25 |
| | SCM435 | | 0.33-0.38 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.030 | ≤0.30 | ≤0.25 | 0.90-1.20 | 0.15-0.30 |
| | SCM440 | | 0.38-0.43 | 0.15-0.35 | 0.60-0.90 | ≤0.030 | ≤0.030 | ≤0.30 | ≤0.25 | 0.90-1.20 | 0.15-0.30 |

備註：

* 針對S35CM到S55CM，其“鎳 Ni” + “鉻 Cr” 的含量需≤0.35%

REMARKS:

* For S35CM to S55CM, Ni + Cr ≤ 0.35%

1 Cutting Tools 刀具類

刨刀 Plane blades
刀片 Blades
木鋸 Wood saw blades

帶鋸 Band saw blades
手鋸片 Hacksaw blades
美工刀 Cutter blades

金屬鋸片 Metal saw blades
刮鬍刀片 Razor blades
圓鋸 Circular saw blades



2 Wear-resistant parts 耐磨零件

抹刀 Trowels / putty knife Scrappers
草刀 Lawn-Mower cutters
齒板 Cog Wheel
梳子 Weaver-comb
鏈條 Chains
活塞環 Piston strip rings
汽車零件 Auto parts



3 Elastic parts 彈簧片

鋼尺 Steel rule
鏈環 Links
髮夾 Hair clasp
捲彈簧 Coil springs
板彈簧 Plate springs
捲尺 Tape measures
各種盤狀物 Coupling disc
文具用品 Stationery



4 Multifarious parts 其他類

槓桿 Spindle
紡錘 Lever
織針 Textile needles
離合器葉板 Clutch plates
事務機零件 Office machine parts
電腦週邊零件 PC accessories
電器用品 Electrical appliance
高爾夫球桿 Golf club

Application Range

應用範圍

經熱處理之鋼帶早已廣泛地運用在：汽機車零件、電子產品零件、紡織機械、事務機零件、刀鋸、各種手工工具、鐘錶、樂器、玩具、彈簧片、脫姆遜刀及其他各類產品上，以下為各種用途的實例。

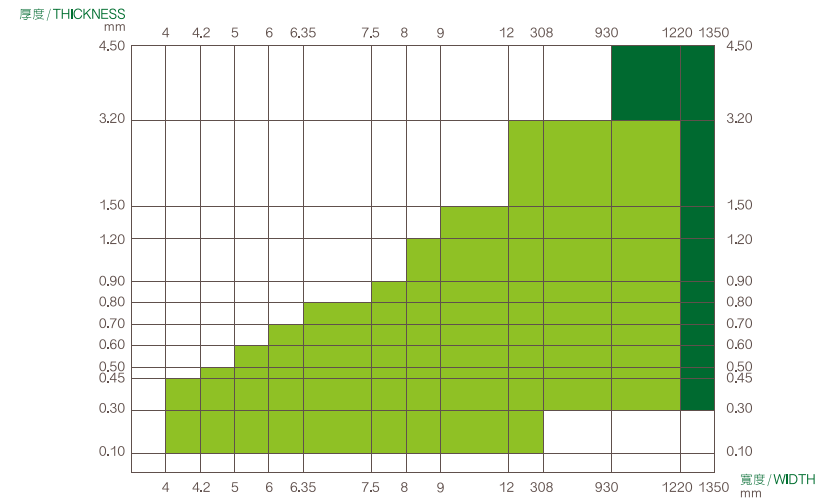
The hardened and tempered steel strips have been already applying broadly in many fields, such as automobile parts, motorcycle parts, electric product parts, textile machine, office machine parts, knife, saw, hand tools, watch, instruments, toys, spring, cutting rule and other various kinds of products. Below are some of the products.

Production range

生產範圍

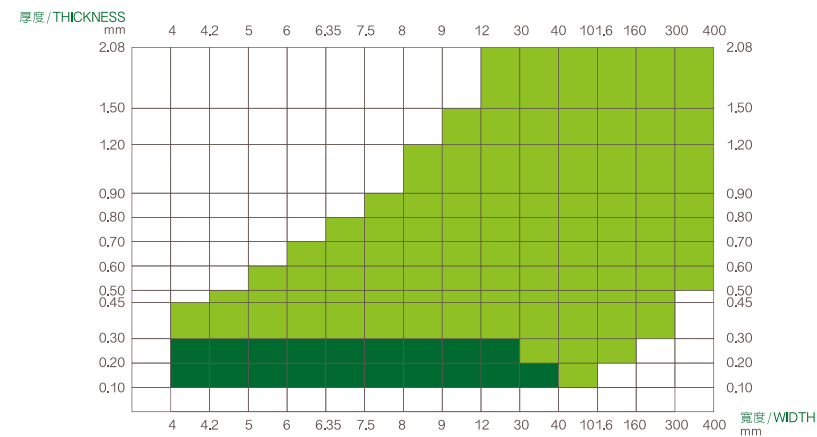
裁切 / SLITTING

- 標準範圍
Standard Range
- 特殊範圍 (依規格另議)
Special Range (to be discussed according to spec.)



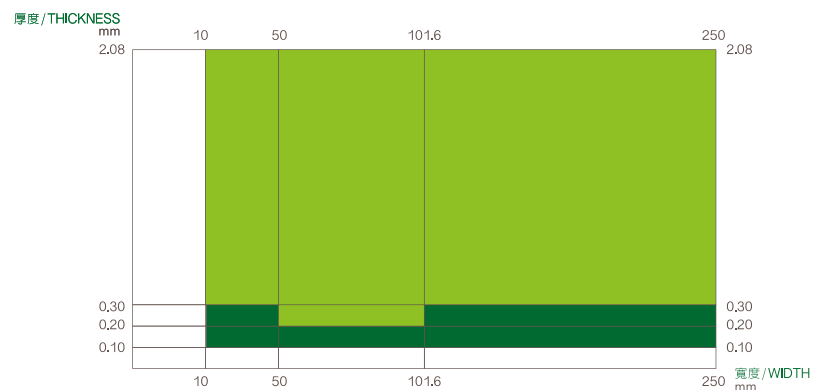
熱處理 / HEAT TREATING

- 標準範圍
Standard Range
- 特殊範圍 (依規格另議)
Special Range (to be discussed according to spec.)



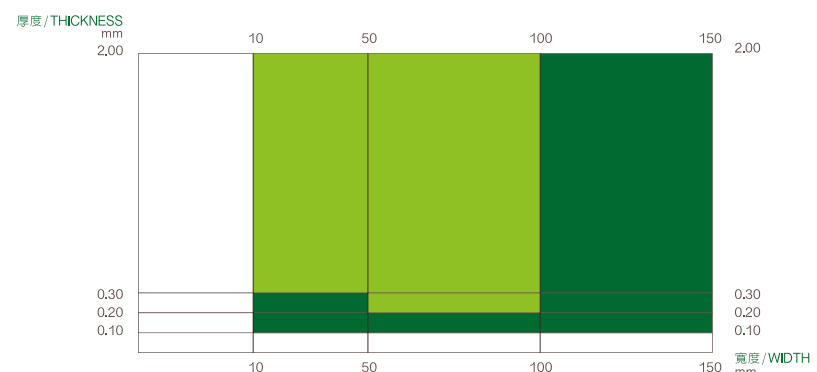
研白 / SURFACE GRINDING

- 標準範圍
Standard Range
- 特殊範圍 (依規格另議)
Special Range (to be discussed according to spec.)



著色 / COLORING

- 標準範圍
Standard Range
- 特殊範圍 (依規格另議)
Special Range (to be discussed according to spec.)



硬度 / HARDNESS

一般冷軋生材 / Cold Rolled Raw Steel

| 鋼種 / Steel Grades | 板厚 (T) -mm / Thickness-mm | 硬度-HV / Hardness-HV |
|-------------------|---------------------------|---------------------|
| S65CM | T = 0.5 | 140~180 |
| | 0.6 < T ≤ 1.8 | 140~170 |
| | 1.8 < T ≤ 3.2 | 150~180 |
| SK85M | 0.5 ≤ T < 1.2 | ≤ 185 |
| | 1.2 ≤ T ≤ 3.2 | ≤ 180 |
| SKS5M | 0.5 ≤ T ≤ 3.2 | ≤ 210 |

特殊壓延生材 / Re-Rolled Raw Steel

| 板厚 (T) -mm / Thickness-mm | 硬度-HV / Hardness-HV |
|---------------------------|---------------------|
| 0.10 ≤ T < 0.15 | 280~320 |
| 0.15 ≤ T < 0.20 | 250~290 |
| 0.20 ≤ T < 0.25 | 170~200 |
| 0.25 ≤ T < 0.30 | 170~200 |

備註：熱軋生材的硬度規範請洽業務

REMARKS: Please contact the sales representative for the hardness range of hot rolled raw steel.

現貨熱材硬度 / In Stock Hardened & Tempered Steel Hardness

| 鋼種 / Steel Grades | SK85M | | S65CM | |
|----------------------|-------|-----|-------|-----|
| | HV | HRC | HV | HRC |
| 厚度-mm / Thickness-mm | | | | |
| 0.10 | 590 | - | - | - |
| 0.15 | 580 | - | - | - |
| 0.20 | 580 | - | - | - |
| 0.25 | 570 | - | - | - |
| 0.30 | 570 | - | 540 | - |
| 0.35 | 550 | - | 530 | - |
| 0.40 | 520 | - | 510 | - |
| 0.45 | - | - | 480 | - |
| 0.50~1.60 | 450 | 45 | 450 | 45 |

可訂製之熱材硬度 / Doable Hardened & Tempered Steel Hardness

| |
|-------------------|
| S65CM : HV320~560 |
| SK85M : HV340~580 |

備註

- 應依照不同的厚度使用適當的硬度量測規範，部份表格內的數值已經過換算。

Remarks

- Base on different thickness, should choose proper hardness measuring method. Some figures in above tables were converted.

表面顏色 / SURFACE COLOR

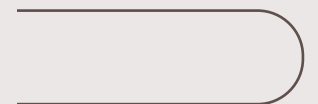
| 生材 / Raw Steel | 一般亮面 / Commercial Bright |
|--------------------------------|--------------------------|
| 熱材 / Hardened & Tempered Steel | 熱處理藍色 / Tempered Blue |
| | 熱處理白色 / Tempered White |
| | 研磨白色 / Polished White |
| | 著青色 / Polished Blue |
| | 金黃色 / Polished Golden |

修邊形式 / EDGE TRIMMING SHAPE

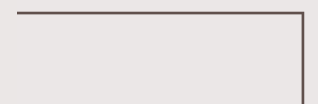
- 倒角 / Chamfered Edge



- 圓邊 / Round Edge



- 直角 / Square Edge



熱材現貨尺寸 / IN STOCK HARDENED & TEMPERED STEEL SIZE

| 鋼種 / Steel Grade | 厚度 / Thickness | 寬度 / Width |
|------------------|----------------|---------------|
| S65CM | 0.30~1.60 mm | 101.6 mm (4") |
| SK85M | 0.10~1.60 mm | |

STANDARD and TOLERANCE

規範與公差

厚度公差 / THICKNESS TOLERANCE

| 冷軋鋼材 / Cold Rolled Steel | | | |
|----------------------------|-----------------------------------|----------------------------|-----------------------------------|
| 板厚 (T) - mm / Thickness-mm | 厚度公差 -mm / Thickness Tolerance-mm | 板厚 (T) - mm / Thickness-mm | 厚度公差 -mm / Thickness Tolerance-mm |
| 0.10 ≤ T < 0.15 | ±0.01 | 0.90 ≤ T < 1.20 | ±0.05 |
| 0.15 ≤ T < 0.20 | ±0.01 | 1.20 ≤ T < 1.60 | ±0.06 |
| 0.20 ≤ T < 0.25 | ±0.01 | 1.60 ≤ T < 2.10 | ±0.07 |
| 0.25 ≤ T < 0.40 | ±0.025 | 2.10 ≤ T < 3.00 | ±0.08 |
| 0.40 ≤ T < 0.60 | ±0.03 | 3.00 ≤ T < 3.20 | ±0.09 |
| 0.60 ≤ T < 0.90 | ±0.04 | | |

| 熱軋鋼材 / Hot Rolled Steel | |
|----------------------------|-----------------------------------|
| 板厚 (T) - mm / Thickness-mm | 厚度公差 -mm / Thickness Tolerance-mm |
| 2.0 ≤ T ≤ 2.5 | ±0.16 |
| 2.5 < T ≤ 4.0 | ±0.20 |
| 4.0 < T ≤ 5.0 | ±0.30 |
| 5.0 < T ≤ 6.0 | ±0.35 |

寬度公差 / WIDTH TOLERANCE- RAW STEEL

裁切之後的寬度公差 / After Slitting

單位 / Unit: mm

| 板厚 (T) - mm / Thickness-mm | A | B | C |
|----------------------------|-------|-------|-------|
| T < 0.30 | ±0.05 | - | - |
| 0.30 ≤ T < 0.40 | ±0.05 | ±0.10 | ±0.50 |
| 0.40 ≤ T < 0.60 | ±0.05 | ±0.10 | ±0.50 |
| 0.60 ≤ T < 0.90 | ±0.05 | ±0.10 | ±0.50 |
| 0.90 ≤ T < 1.20 | ±0.10 | ±0.15 | ±0.50 |
| 1.20 ≤ T < 1.60 | ±0.10 | ±0.15 | ±1.00 |
| 1.60 ≤ T < 2.10 | ±0.10 | ±0.15 | ±1.00 |
| 2.10 ≤ T < 3.00 | - | ±0.15 | ±1.00 |
| 3.00 ≤ T < 3.20 | - | ±0.15 | ±1.00 |
| 3.20 ≤ T ≤ 4.30 | - | ±0.15 | ±1.00 |

熱處理之後的寬度公差 / After Heat-Treating

| 板厚 (T) - mm / Thickness-mm | 各寬度範圍(W)-mm 所對應的寬度公差-mm / Width Range-mm & Width Tolerance-mm | | |
|----------------------------|---|--------------|---------------|
| | W < 50 | 50 ≤ W < 100 | 100 ≤ W ≤ 400 |
| T < 0.30 | ±0.30 | ±0.30 | ±0.30 |
| 0.30 ≤ T < 0.60 | ±0.20 | ±0.25 | ±0.30 |
| 0.60 ≤ T < 1.20 | ±0.20 | ±0.25 | ±0.30 |
| 1.20 ≤ T < 1.60 | ±0.20 | ±0.25 | ±0.30 |
| 1.60 ≤ T | ±0.20 | ±0.25 | ±0.30 |

長度公差 / LENGTH TOLERANCE

單位 / Unit: mm

| 寬度範圍 (W)-mm / Width Range-mm | 長度範圍 (L)-mm / Length Range-mm | |
|------------------------------|-------------------------------|---------|
| | W < 200 | 200 ≤ W |
| L < 2000 | +5, -0 | +10, -0 |
| 2000 ≤ L ≤ 4000 | +10, -0 | +20, -0 |

硬度公差-熱材 / HARDNESS TOLERANCE- HARDENED & TEMPERED STEEL

| HV ± 20 ; HS ± 2 ; HRC ± 2 | 板厚 (T) - mm / Thickness-mm | 應使用之硬度量測規範 / Suggested Hardness Measuring Standard |
|----------------------------|----------------------------|--|
| | T < 0.5 | HV 或 (or) HR15N |
| | 0.50 ≤ T < 0.70 | HR30N |
| | 0.70 ≤ T < 1.00 | HR45N |
| | 1.00 ≤ T | HRC |

橫曲度(直度)公差 / CAMBER (STRAIGHTNESS) TOLERANCE

熱處理之後的橫曲度(直度)公差 / After Heat-Treating

| 長度 / Length | 2公尺 / 2M |
|-----------------------------|----------|
| 寬度(W)範圍-mm / Width Range-mm | |
| W < 25 | ≤ 4mm |
| 25 ≤ W < 60 | ≤ 4mm |
| 60 ≤ W < 100 | ≤ 8mm |
| 100 ≤ W | ≤ 8mm |

裁切之後的橫曲度(直度)公差 / After Slitting

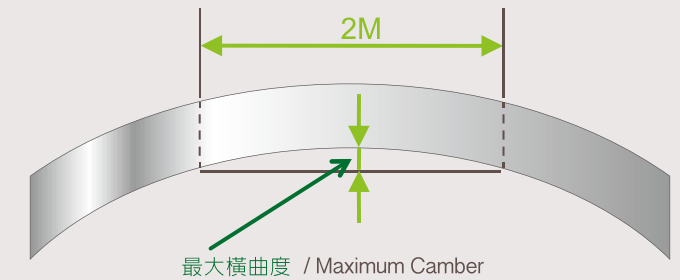
| 長度 / Length | 2公尺 / 2M |
|-----------------------------|----------|
| 寬度(W)範圍-mm / Width Range-mm | |
| 10 ≤ W < 20 | ≤ 20mm |
| 20 ≤ W < 40 | ≤ 15mm |
| 40 ≤ W < 80 | ≤ 8mm |
| 80 ≤ W ≤ 450 | ≤ 4mm |

備註

- 當寬度不在上表的範圍內，其最大橫曲度需要另外協商。
- 原始鋼捲(母材)的最大橫曲度為2mm/每2公尺長。

Remarks

- If the width is not included in above tables, the maximum camber shall be further discussed
- The maximum camber for original coil (mother coil) is 2mm per 2M of length

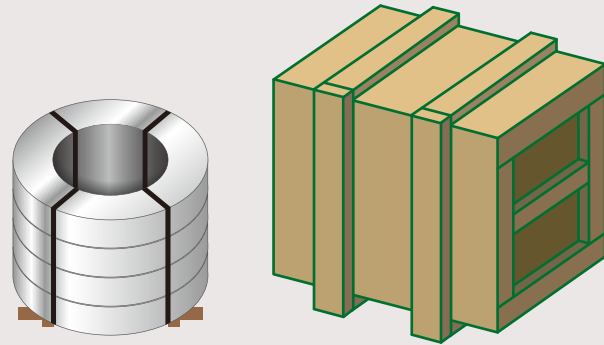


平坦度公差 / FLATNESS TOLERANCE

| | |
|--------------------------------|---------------------|
| 生材 / Raw Steel | 寬度 / Width × 0.80 % |
| 熱材 / Hardened & Tempered Steel | 寬度 / Width × 0.20 % |

Packaging

包裝方式



包裝方式

- 將鋼捲以PP編織帶捆包。
- 若交貨地點是在海外，會先以PE膠膜包覆鋼捲，然後再用PP編織帶捆包。
- 如有需要，可以提供木架、鐵架、木箱等特殊打包。

Packaging Method

- Wrap steel strips with PP woven strap.
- For oversea delivery, goods will be wrapped with PE film first, then PP woven strap.
- Wooden skid, metal skid or wooden case can be provided if needed.

國內交期

- 一般規格：一週內可出貨
- 特殊規格：1~4週可出貨

國外交期

- 一般規格：2~4週可出貨
- 特殊規格：4~12週可出貨

For Domestic Market

- Ordinary Spec. : within one week
- Special Spec. : 1~4 weeks

For Oversea Market

- Ordinary Spec. : 2~4 weeks
- Special Spec. : 4~12 weeks

Lead-Time

交期



Hardness Conversion Table

硬度對照表

| 洛氏C | 維克 | 勃氏 HB 10/3000 | | 洛氏 | | | 洛氏表面 | | | 蕭氏 | Leeb | | 引張強度 (近似值) | 洛氏C |
|------------|-----|---------------|-------|-----------|-------------|------------|-------|-------|-------|------|------|-----|------------|------------|
| HRC | HV | HBS | HBW | HRA | HRB | HRD | HR15N | HR30N | HR45N | HS | HLD | HLE | MPa | HRC |
| 金剛石 150kgf | | 標準球 | 碳化鎢球 | 金剛石 60kgf | 1/16 100kgf | 金剛石 100kgf | 金剛石 | | | | 碳化鎢球 | 金剛石 | | 金剛石 150kgf |
| | | | | | | | 15kgf | 30kgf | 45kgf | | | | | |
| 68 | 940 | - | - | 85.6 | - | 76.9 | 93.2 | 84.4 | 75.4 | 98.0 | 886 | 851 | - | 68 |
| 67 | 900 | - | - | 85.0 | - | 76.1 | 92.9 | 83.6 | 74.2 | 95.6 | 873 | 839 | - | 67 |
| 66 | 865 | - | - | 84.5 | - | 75.4 | 92.5 | 82.8 | 73.3 | 93.4 | 862 | 829 | - | 66 |
| 65 | 832 | - | (739) | 83.9 | - | 74.5 | 92.2 | 81.9 | 72.0 | 91.2 | 852 | 819 | - | 65 |
| 64 | 800 | - | (722) | 83.4 | - | 73.8 | 91.8 | 81.1 | 71.0 | 89.0 | 843 | 809 | - | 64 |
| 63 | 772 | - | (705) | 82.8 | - | 73.0 | 91.4 | 80.1 | 69.9 | 87.1 | 834 | 799 | - | 63 |
| 62 | 746 | - | (688) | 82.3 | - | 72.2 | 91.1 | 79.3 | 68.8 | 85.2 | 824 | 790 | - | 62 |
| 61 | 720 | - | (670) | 81.8 | - | 71.5 | 90.7 | 78.4 | 67.7 | 83.3 | 814 | 780 | - | 61 |
| 60 | 697 | - | (654) | 81.2 | - | 70.7 | 90.2 | 77.5 | 66.6 | 81.5 | 805 | 770 | - | 60 |
| 59 | 674 | - | (634) | 80.7 | - | 69.9 | 89.8 | 76.6 | 65.5 | 79.7 | 795 | 760 | - | 59 |
| 58 | 653 | - | 615 | 80.1 | - | 69.2 | 89.3 | 75.7 | 64.3 | 78.1 | 786 | 750 | - | 58 |
| 57 | 633 | - | 595 | 79.6 | - | 68.5 | 88.9 | 74.8 | 63.2 | 76.4 | 776 | 741 | - | 57 |
| 56 | 613 | - | 577 | 79.0 | - | 67.7 | 88.3 | 73.9 | 62.0 | 74.8 | 767 | 731 | - | 56 |
| 55 | 595 | - | 560 | 78.5 | - | 66.9 | 87.9 | 73.0 | 60.9 | 73.2 | 758 | 722 | 2075 | 55 |
| 54 | 577 | - | 543 | 78.0 | - | 66.1 | 87.4 | 72.0 | 59.8 | 71.7 | 749 | 713 | 2015 | 54 |
| 53 | 560 | - | 525 | 77.4 | - | 65.4 | 86.9 | 71.2 | 58.6 | 70.2 | 741 | 704 | 1950 | 53 |
| 52 | 544 | (500) | 512 | 76.8 | - | 64.6 | 86.4 | 70.2 | 57.4 | 68.8 | 732 | 695 | 1880 | 52 |
| 51 | 528 | (487) | 496 | 76.3 | - | 63.8 | 85.9 | 69.4 | 56.1 | 67.3 | 724 | 687 | 1820 | 51 |
| 50 | 513 | (475) | 481 | 75.9 | - | 63.1 | 85.5 | 68.5 | 55.0 | 65.9 | 716 | 678 | 1760 | 50 |
| 49 | 498 | (464) | 469 | 75.2 | - | 62.1 | 85.0 | 67.6 | 53.8 | 64.5 | 708 | 670 | 1695 | 49 |
| 48 | 484 | 451 | 455 | 74.7 | - | 61.4 | 84.5 | 66.7 | 52.5 | 63.1 | 700 | 662 | 1635 | 48 |
| 47 | 471 | 442 | 443 | 74.1 | - | 60.8 | 83.9 | 65.8 | 51.4 | 61.9 | 693 | 655 | 1580 | 47 |
| 46 | 458 | 432 | 432 | 73.6 | - | 60.0 | 83.5 | 64.8 | 50.3 | 60.6 | 685 | 648 | 1530 | 46 |
| 45 | 446 | 421 | 421 | 73.1 | - | 59.2 | 83.0 | 64.0 | 49.0 | 59.4 | 678 | 641 | 1480 | 45 |
| 44 | 434 | 409 | 409 | 72.5 | - | 58.5 | 82.5 | 63.1 | 47.8 | 58.2 | 671 | 634 | 1435 | 44 |
| 43 | 423 | 400 | 400 | 72.0 | - | 57.7 | 82.0 | 62.2 | 46.7 | 57.1 | 664 | 628 | 1385 | 43 |
| 42 | 412 | 390 | 390 | 71.5 | - | 56.9 | 81.5 | 61.3 | 45.5 | 55.9 | 657 | 621 | 1340 | 42 |
| 41 | 402 | 381 | 381 | 70.9 | - | 56.2 | 80.9 | 60.4 | 44.3 | 54.9 | 650 | 616 | 1295 | 41 |
| 40 | 392 | 371 | 371 | 70.4 | - | 55.4 | 80.4 | 59.5 | 43.1 | 53.8 | 644 | 610 | 1250 | 40 |
| 39 | 382 | 362 | 362 | 69.9 | - | 54.6 | 79.9 | 58.6 | 41.9 | 52.7 | 637 | 603 | 1215 | 39 |
| 38 | 372 | 353 | 353 | 69.4 | - | 53.8 | 79.4 | 57.7 | 40.8 | 51.6 | 629 | 597 | 1180 | 38 |
| 37 | 363 | 344 | 344 | 68.9 | - | 53.1 | 78.8 | 56.8 | 39.6 | 50.6 | 623 | 592 | 1160 | 37 |
| 36 | 354 | 336 | 336 | 68.4 | (109.0) | 52.3 | 78.3 | 55.9 | 38.4 | 49.6 | 616 | 586 | 1115 | 36 |
| 35 | 345 | 327 | 327 | 67.9 | (108.5) | 51.5 | 77.7 | 55.0 | 37.2 | 48.6 | 609 | 580 | 1080 | 35 |
| 34 | 336 | 319 | 319 | 67.4 | (108.0) | 50.8 | 77.2 | 54.2 | 36.1 | 47.6 | 602 | 574 | 1055 | 34 |
| 33 | 327 | 311 | 311 | 66.8 | (107.5) | 50.0 | 76.6 | 53.3 | 34.9 | 46.6 | 595 | 568 | 1025 | 33 |
| 32 | 318 | 301 | 301 | 66.3 | (107.0) | 49.2 | 76.1 | 52.1 | 33.7 | 45.5 | 587 | 562 | 1000 | 32 |
| 31 | 310 | 294 | 294 | 65.8 | (106.0) | 48.4 | 75.6 | 51.3 | 32.5 | 44.6 | 581 | 556 | 980 | 31 |
| 30 | 302 | 286 | 286 | 65.3 | (105.5) | 47.7 | 75.0 | 50.4 | 31.3 | 43.6 | 574 | 550 | 950 | 30 |
| 29 | 294 | 279 | 279 | 64.7 | (104.5) | 47.0 | 74.5 | 49.5 | 30.1 | 42.7 | 566 | 544 | 930 | 29 |
| 28 | 286 | 271 | 271 | 64.3 | (104.0) | 46.1 | 73.9 | 48.6 | 28.9 | 41.7 | 559 | 538 | 910 | 28 |
| 27 | 279 | 264 | 264 | 63.8 | (103.0) | 45.2 | 73.3 | 47.7 | 27.8 | 40.9 | 553 | 532 | 880 | 27 |
| 26 | 272 | 258 | 258 | 63.3 | (102.5) | 44.6 | 72.8 | 46.8 | 26.7 | 40.0 | 547 | 526 | 860 | 26 |
| 25 | 266 | 253 | 253 | 62.8 | (101.5) | 43.8 | 72.2 | 45.9 | 25.5 | 39.3 | 541 | 521 | 840 | 25 |
| 24 | 260 | 247 | 247 | 62.4 | (101.0) | 43.1 | 71.6 | 45.0 | 24.3 | 38.5 | 535 | 516 | 825 | 24 |
| 23 | 254 | 243 | 243 | 62.0 | 100.0 | 42.1 | 71.0 | 44.0 | 23.1 | 37.7 | 530 | 511 | 805 | 23 |
| 22 | 248 | 237 | 237 | 61.5 | 99.0 | 41.6 | 70.5 | 43.2 | 22.0 | 37.0 | 524 | 505 | 785 | 22 |
| 21 | 243 | 231 | 231 | 61.0 | 98.5 | 40.9 | 69.9 | 42.3 | 20.7 | 36.4 | 519 | 500 | 770 | 21 |
| 20 | 238 | 226 | 226 | 60.5 | 97.8 | 40.1 | 69.4 | 41.5 | 19.6 | 35.7 | 514 | 496 | 760 | 20 |
| (18) | 230 | 219 | 219 | - | 96.7 | - | - | - | - | 34.7 | 506 | 488 | 730 | (18) |
| (16) | 222 | 212 | 212 | - | 95.5 | - | - | - | - | 33.6 | 498 | 479 | 705 | (16) |
| (14) | 213 | 203 | 203 | - | 93.9 | - | - | - | - | 32.4 | 488 | 470 | 675 | (14) |
| (12) | 204 | 194 | 194 | - | 92.3 | - | - | - | - | 31.2 | 478 | 459 | 650 | (12) |
| (10) | 196 | 187 | 187 | - | 90.7 | - | - | - | - | 30.2 | 470 | 450 | 620 | (10) |
| (8) | 188 | 179 | 179 | - | 89.5 | - | - | - | - | - | - | - | 600 | (8) |
| (6) | 180 | 171 | 171 | - | 87.1 | - | - | - | - | - | - | - | 580 | (6) |
| (4) | 173 | 165 | 165 | - | 85.5 | - | - | - | - | - | - | - | 550 | (4) |
| (2) | 166 | 158 | 158 | - | 83.5 | - | - | - | - | - | - | - | 530 | (2) |
| (0) | 160 | 152 | 152 | - | 81.7 | - | - | - | - | - | - | - | 515 | (0) |