

PA High Speed Hydraulic Cone Crusher
CMC PA 液壓式錐碎機

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啓銘機械股份有限公司
CHYI MEANG MACHINERY CO., LTD.

啓銘PA系列高速錐碎機:讓您的業務始終保持領先

CMC PA SERIES HIGH SPEED CONE CRUSHER LEAD EDGE YOUR BUSINESS COMPETITIVENESS.

高速錐碎機的最佳選擇 **The best choice of cone crusher**

- 產量高 High capacity
- 破碎比大 Large crushing ratio
- 運行和磨耗成本低 Low operation and wear cost
- 服務期限更長 Long service life
- 合格細粒級產率高 Less over size
- 啓銘PA系列高速錐碎機領先石料和礦山行業破碎技術
CMC PA series high speed cone crusher leads quarry and mining industry technology

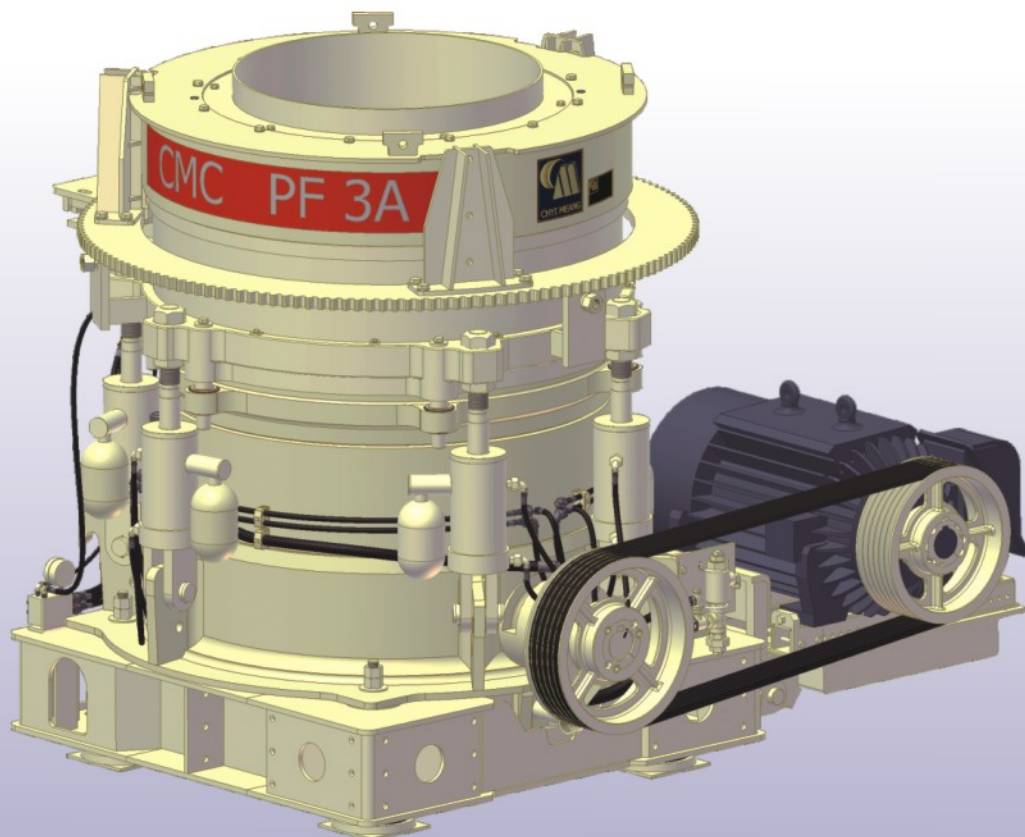
啓銘PA系列高速錐碎機將破碎速度、衝程和腔型設計完美結合，能夠提供更高產量和更好的產品品質，具有更廣泛的適用性：

CMC PA series cone crusher combines speed, stroke and cavity design perfectly and can provide higher capacity and better product quality. It has wide applications:

- 從石灰岩到鐵燧岩 From limestone to taconite
- 從公路碎石到機製人工砂 From road aggregate to crushed sand
- 從移動式破碎系統到大型固定式破碎廠 From mobile crusher to large-scale stationary crushing plant.

實踐證明：PA系列高速錐碎機無論在粗碎、中碎還是細碎作業，都顯示出無與倫比的性能。能提供更高的生產量，更佳的产品粒形，更高特定規格的成品率；方便的油壓調整，以及最大的可靠性和靈活性。

Field proven：PA series high speed cone crusher shows uncompetitive performance no matter in coarse, medium and fine crushing. It provides higher capacity, better product quality and product percentage for specified size; convenient hydraulic adjustment and maximum reliability and flexibility.



新一代產品 **New generation crusher**

啓銘PA系列高速錐碎機，採用了最新的破碎技術。其重型設計是享譽全球的西蒙斯圓錐破碎技術 70 多年經驗的又一個新的結晶，結構堅固和應用靈活性的特點得到進一步發展。啓銘PA系列高速錐碎機的革新性特點，如：液壓調整排料口、過鐵釋放以及液壓清腔功能，提高了生產率。

新一代啓銘PA系列高速錐碎機，破碎比更大，操作更方便，所需維護工作更少，使圓錐破碎機技術達到了一個新的境界。PA系列高速錐碎機提供最高的破碎性能和最低的運行成本，以更少的牙板磨耗，生產更多更優良的產品。

CMC PA series high speed cone crusher is new generation cone crusher based on the famous Symons cone crusher with 70 years crushing technology. The robust structure and versatile application is improved. CMC PA series high speed cone crusher has innovative advantages: hydraulic adjustment of discharge set, trap iron releasesystem, hydraulic release so as to increase production efficiency.

CMC new generation high speed cone crusher has high crushing ratio, easy operation and less maintenance which achieve a new era for cone crusher technology. PA series high speed cone crusher provides higher crushing performance and minimum operation cost, i.e. with less manganese wear to produce more cubical products.

為用戶的需求而設計 **Design to meet customer demand**

在今天競爭激烈的破碎篩分市場中，不堅持創新發展，設備就會落後、遭到淘汰。啓銘機械全心傾聽客戶的要求，擅長發現客戶的需求，對設備進行不斷完善與革新性改進。透過不斷的與用戶深入溝通，瞭解粗碎、中碎和細碎圓錐破碎機需要具備的特性：

In the highly competitive crushing and screening equipment market nowadays, without insistent Innovation and Developments, it is naturally to be eliminated by market because of old fashion products. CMC listens to customer voice and is good at finding client demand and makes continuous improvement on products. By continuous communications with clients deeply and realizes the required characteristics of coarse, medium and fine crushing cone crusher:

- 設計簡捷、外形體積小 Compact design and small size
- 能以更小的排料口生產 Can set up in smaller discharge set during production
- 運行成本最小化 Minimum operation cost
- 可轉換、適應各種不同的用途 Can fit for different applications in one crusher

啓銘的研發團隊將上述難以統一的性能融合在新一代啓銘PA系列高速錐碎機上，應用領域更廣，滿足最困難的作業條件，實現更高的生產力，確保最低的運行成本。

CMC R & D team incorporates the above advantages which are difficult to integrate together into new generation PA series high speed cone crusher. It is wider application, satisfaction of most difficult operation conditions, higher capacity and lower operation cost.



設備特點與優勢 FEATURES AND ADVANTAGES

性能最高 Best Performance

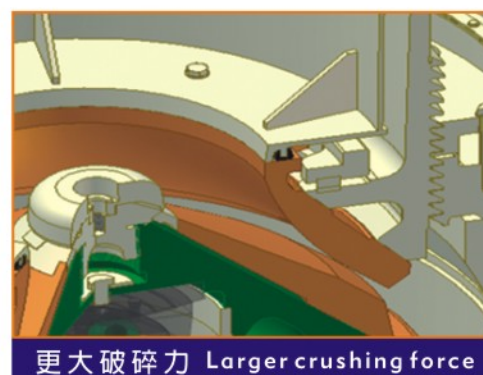
啓銘PA系列高速錐碎機使您能夠以較少的破碎段數生產更細的產品，降低您的投資並節省電能消耗。怎樣才能把客戶的希望需求付諸現實呢??

通過優化破碎速度和加大衝程相結合，PA系列高速錐碎機能夠提供當今圓錐破碎機中最大的破碎比。因為其破碎作用的超級效率，相同動錐直徑的PA系列高速錐碎機可發揮的功率最高。因此能夠降低破碎循環負荷，每噸最終產品的電耗可以降低一半。破碎腔內更高的物料密度增強了粉碎作用，從而最終產品粒度組成更穩定、粒型(立方性)更優。新一代啓銘PA系列高速錐碎機保有了經過實踐檢驗的定錐旋轉調整設計，破碎腔整個周邊的磨損更加均勻、排礦口更恆定。

CMC PA series high speed cone crusher provides clients finer products with less crushing stages so as to reduce investment and save power consumption. How can it be workable?

PA series high speed cone crusher provides the maximum crushing ratio in the world by combination of high speed and large stroke. PA series cone crusher takes more power in same mantle diameter cone crusher and thus does more work due to super crushing efficiency. So the circulate load can be reduced and the power consumption per tonnage can reduced half. The denser material in crusher cavity enhances the interparticle crushing action. This cause more fine material output and cubic material shape.

New generation CMC PA series high speed cone crusher has field proven concave rotation adjustment design which makes wear of whole circumference more even and so as discharge opening.

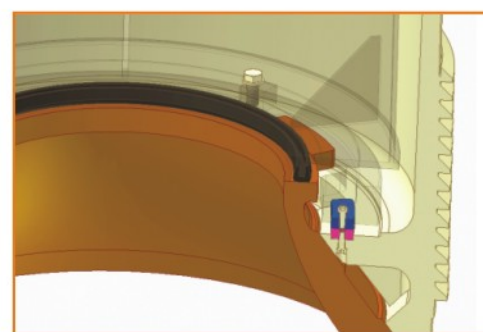


更大破碎力 Larger crushing force

停機時間更短 Shorten down time

新型PA系列高速錐碎機的停機時間減少，增加了操作人員的信心。可能導致其它許多破碎機停機或者損壞的過鐵狀況，在全新設計的PA系列高速錐碎機雙作用液壓過鐵釋放缸能夠應付自如，如果破碎機在負載狀態下停機，雙液壓過鐵釋放缸提供較大的清理行程，可迅速清理破碎腔。先進的活動牙板和固定牙板固定系統，牙板更換迅速。使用壽命更長。

The down time of new series PA high speed cone crusher is less which increases the confidence of operators. For the most trap iron problems which causes shut down or damage of cone crusher are easily handled by dual-acting hydraulic release system. Dual-acting hydraulic release system provides larger material clearing travel in case of crusher stops on load condition which can rapidly release material remained in cavity. Advanced mantle and concave fixing system provides faster change of liners. The life time of liners is longer.



更換牙板 Replacement of liners

維修方便 Easy maintenance

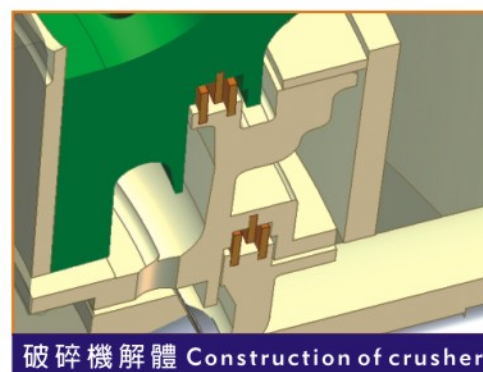
青銅滑動軸承在灰塵多和高衝擊震動破碎環境中，自始至終保持優良的承載性能，並且比滾動軸承更經濟，更容易在現場使用常規工具進行更換，固定和活動牙板總成都很容易拆出。

The bronze bushes keep good loading performance in dusty and high impact/vibration environment. They are more economical than roller bearings and easily replaced at site, besides mantle and concave assemblies are easily dismantled.

維修費用低 Low maintenance costs

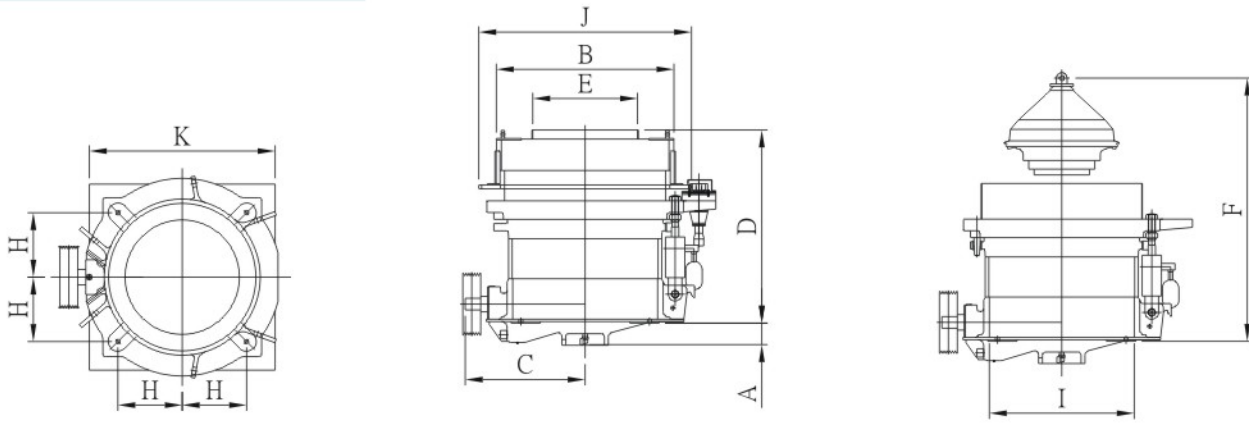
高性能非接觸式迷宮密封環，提高了阻擋粉塵的可靠性。設計簡捷，使得接觸岩石和粉塵的活動組件更少。破碎機的所有部件均有耐磨保護—包括可更換的上止推板、偏心體銅片、固定銷銅套、傳動軸護蓋、配重耐磨環、筒身內襯板和進料室—將維修費用降到最低限度。

High performance non-contacting labyrinth seals provide high reliability by keeping out dust without wearing out. Their simple design means fewer moving parts come into contact with the rock and dust. Excellent wear protection of all crusher components—including replaceable upper step bearing, upper thrust liners, mainframe pin bushings, countershaft box guard, balance weight liner, mainframe liners, and the feed hopper – keep maintenance costs to a minimum.



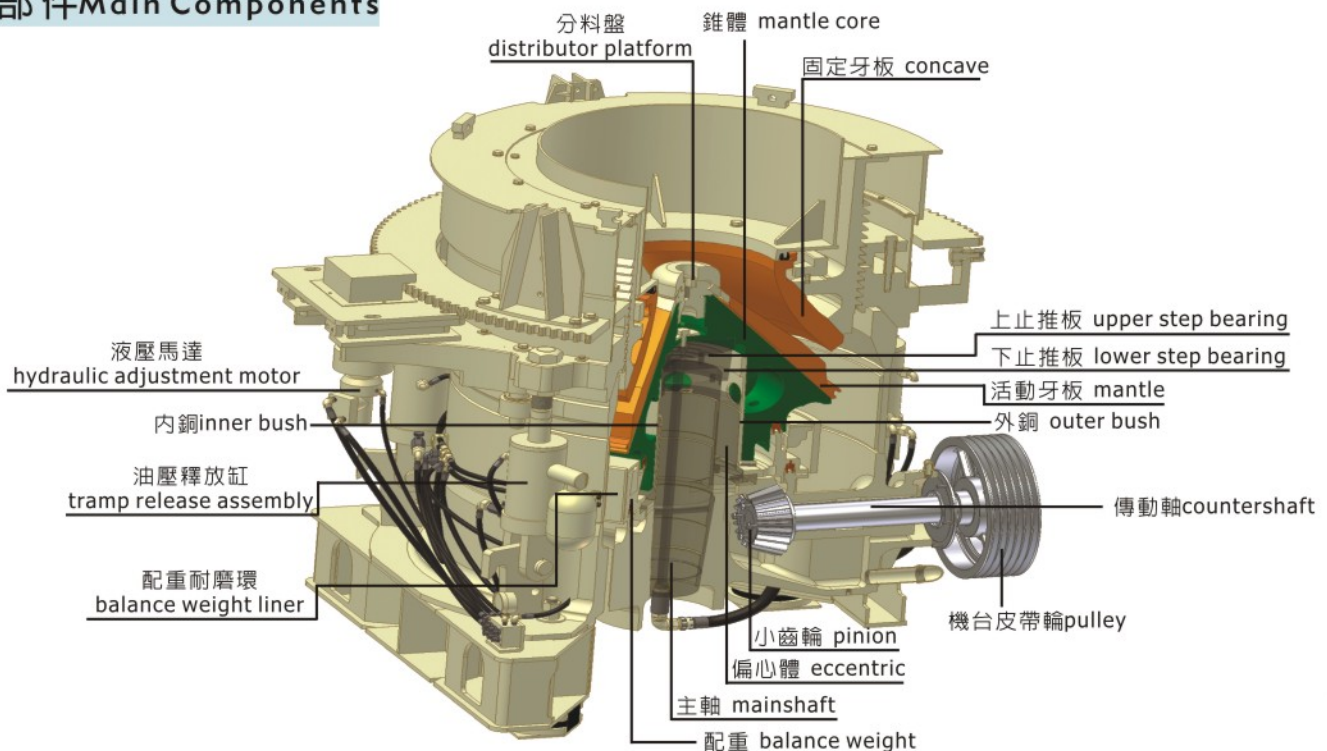
破碎機解體 Construction of crusher

外形尺寸 Outer dimension



| 外形尺寸 (mm) Outer dimension | P2A | P3A | P4A |
|---|------|------|------|
| A. 至油管底部 Bottom of oil piping | 170 | 230 | 276 |
| B. 調整環最大直徑 Adjustment ring maximum diameters | 1420 | 1732 | 2078 |
| C. 至傳動軸末端 To end of countershaft | 1016 | 1239 | 1487 |
| D. 至頂部最大高度 Maximum height to top | 1635 | 1994 | 2392 |
| E. 給料斗內徑 Inside diameter of feed hopper | 887 | 1082 | 1298 |
| F. 移出動錐部份所需空間 Clearance required for removing bowl assembly | 2230 | 2720 | 3264 |
| G. 在清理破碎腔時給料斗的向上位移 Additional up-ward travel of feed hopper during clearing stroke | 70 | 85 | 102 |
| H. 地腳螺栓孔的位置 Mounting hole location | 545 | 665 | 798 |
| I. 主機架排料口的直徑 Main frame discharge opening diameter | 1248 | 1522 | 1826 |
| J. 機台最大寬度 Maximum frame diameter | 1802 | 2198 | 2638 |
| K. 承載座寬度 Support base width | 1574 | 1920 | 2304 |

主要部件 Main Components



破碎機腔型 Crusher Cavity Selection

| 破碎機型號 Crusher Size | 破碎腔型 Cavity | 緊邊給料口 Closed side setting (mm) | 開邊給料口 Feed opening (mm) | 最小排礦口 Minimum setting (mm) |
|-----------------------|----------------|--------------------------------------|-------------------------------|----------------------------------|
| P2A | 細 S (Fine) | 95 | 128 | 13 |
| | 中 F (Medium) | 125 | 156 | 16 |
| | 粗 C (Coarse) | 185 | 208 | 19 |
| P3A | 細 S (Fine) | 107 | 148 | 14 |
| | 中 F (Medium) | 150 | 190 | 17 |
| | 粗 C (Coarse) | 211 | 240 | 20 |
| P4A | 細 S (Fine) | 111 | 164 | 14 |
| | 中 F (Medium) | 198 | 245 | 20 |
| | 粗 C (Coarse) | 252 | 292 | 25 |

破碎機生產能力 Crusher Capacities

生產能力表可作為高速錐碎機初步選型的工具，表中數據適用於鬆散密度 $1.6t/m^3$ 的物料，給料中、篩除小於排料口粒級；開路作業條件下的生產能力，在給料中、細粒度含量較高。閉路作業條件，設備能力比開路作業高10%-25%。破碎機作為生產回路中的一個重要組成部份，其性能的發揮部份取決於給料機、皮帶機、震動篩、支撐結構、電動機、傳動裝置及料庫等的正確選擇和操作使用。

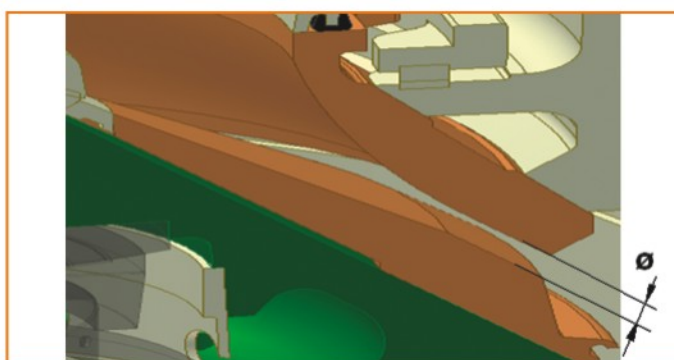
為了選擇適合您的特定使用條件的破碎機，請諮詢啓銘機械的工程師。

Cone crusher capacity charts are developed for use as an application tool to properly utilize the PA series' capabilities. The capacity figures shown apply to material weighing 100 pounds per cubic foot or 1600 kg per cubic meter. The crusher is one component of the circuit. As such, its performance is in part dependent on the proper selection and operation of feeders, conveyors, screens, supporting structure, electric motors, drive component and surge bins.

For individual conditions and further information, please consult CMC engineers.

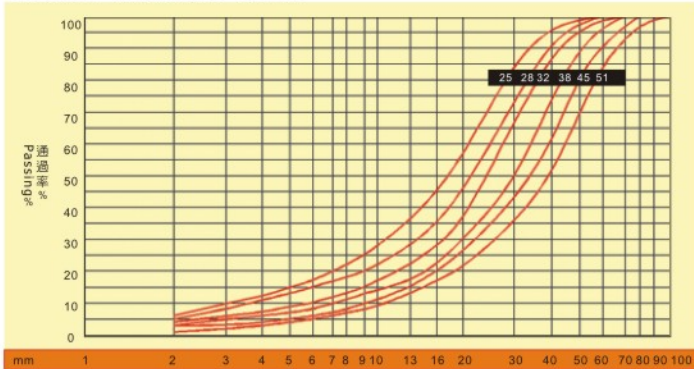
| | | 緊邊排料口 Closed Side Setting | | | | | | | | | |
|------------|--------------------|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 型號 Size | 噸/時 Tone / Hour | 10mm | 13mm | 16mm | 19mm | 22mm | 25mm | 32mm | 38mm | 45mm | 51mm |
| P2A | T/H | 86-116 | 116-146 | 136-176 | 146-186 | 156-196 | 166-216 | 186-231 | 206-246 | | |
| P3A | T/H | 110-136 | 146-180 | 176-216 | 196-236 | 216-256 | 226-276 | 246-316 | 296-376 | 346-436 | |
| P4A | T/H | 136-171 | 180-226 | 221-276 | 250-316 | 270-340 | 290-366 | 320-426 | 356-486 | 406-556 | 460-626 |

石材、硬度偏差產能正負8% Materials cause $\pm 8\%$ capacity variation.

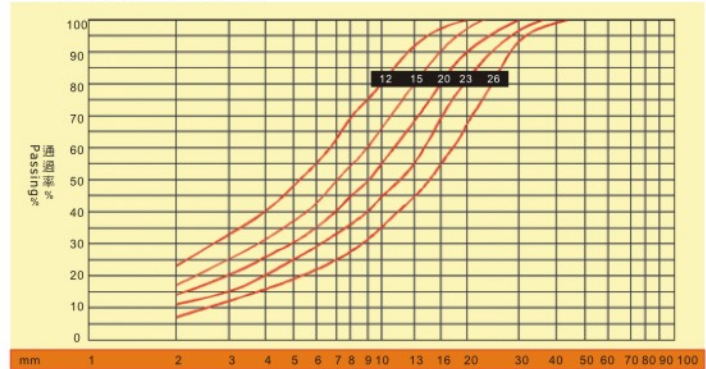


粒度特性曲線 Gradation Curves

中碎作業排料粒度分佈曲線
Medium Gradation Curve



細碎作業排料粒度分佈曲線
Fine Gradation Curve



表中粒度和生產能力與給料粒度、破碎腔型、原料密度、原料清潔度、原料水份含量及可碎性等因素有關。

The gradation and capacities shown are dependent on the feed gradation, the crushing chamber, the material density, the material cleanliness, its moisture and its crushability

適用性更強 Versatile Application

由於PA系列高速錐碎機強度高、速度調整範圍大，不同破碎腔型轉變方便，提供了無與倫比應用靈活性。

Due to PA series high speed cone crusher has features of high strength, large speed adjustment range and easy change of different cavities, it provides uncompetitive versatile application.

- 破碎比大，破碎流程短，有利於節省機械裝置面積和使用的電力。
Large crushing ratio and less crushing process which has advantage of required power and plant space.
- 從中碎腔型轉換成細碎腔型的使用，只需要更換牙板和改變轉速。
It is only required to change liners' type and speed in order to change application from coarse to fine crushing application
- 通過更換牙板並結合調整轉速，就可適應從中碎到細碎或人工製砂的應用變化。
It is easy to change applications from medium crushing to fine crushing or crushed sand through change of liners and speed

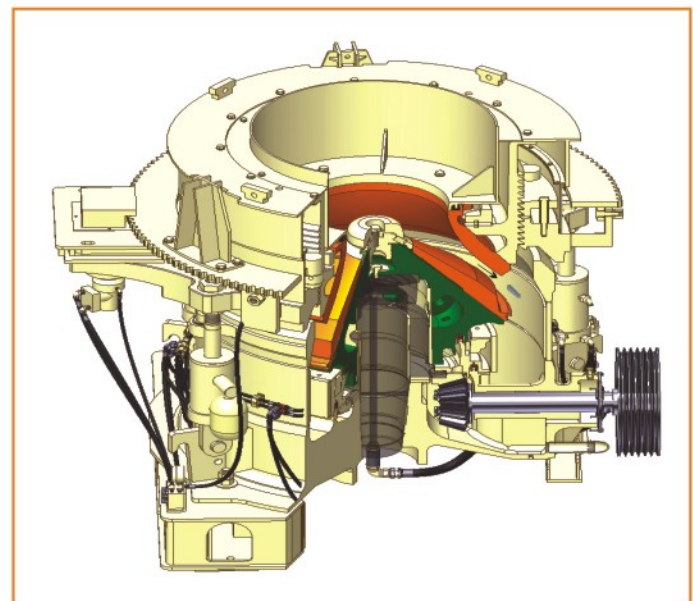
保護裝置 Protection device

1 油溫超過設定值時，機台會停機保護。
Oil temperature exceed set value, crusher motor will stop

2 潤滑油油壓低於設定值時，機台會自動停機。
Oil flow is under set value, crusher motor will stop

以上的保護裝置PA液壓破碎機的停機時間減少，增加了操作人員信心。

The above protection device of PA series cone crusher shorten the down time and enhance the confidence of operators.



新型過鐵釋放設計 New trap iron release design

對客戶的承諾 啓銘責任的開始

Commitment for customers is the start of CMC'S responsibility

■ 啓銘機械自1969年由董事長簡正旭先生創立以來，數十年來，啓銘堅持“品質、服務、創新”的經營理念以及精益求精的精神，不斷在產品技術製程上致力改善，追求碎石設備之現代化、先進化及生產流程簡單化、一貫化以滿足客戶的需求，範圍涵蓋整廠碎石設備諮詢的規劃、設計、安裝、售後服務及操作訓練。

一本以往精神，傾聽客戶的需求，追求更先進技術，致力產品國際化，期能為客戶創造更大利益，為社會建設做出更多的貢獻。

■ Since CMC (Chyi Meang Machinery Co.,Ltd) was founded in 1969 by Mr. Jean Hsu Chien, For decades, CMC insists "Quality, Service, Innovation"-company motto and the spirit of pursuing better on better in continuous improvement on product technology and manufacture facilities/process.CMC has devoted to the modernization of stone crusher and the production process simplification/centralization to meet customer satisfaction. Our ranges cover consultancy, planning, design, manufacture, installation, after sales service and training of complete stone crusher plant equipments.

CMC keeps same spirit as usual,pursues more advance technology,devote to products' internationalization. CMC endeavors to create maximum advantages for clients.

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