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冲床的零件與五金分析

Analysis Of Machine Component Parts And Hardware

(1) 零件部份 Component Parts :-

- a) 曲軸：材質=SCM4，精加工前先經過熱處理調質處理，目的是增加曲軸的韌度，可適應冲床重負荷的衝擊，抵抗曲軸因彎曲而斷裂的現象。
crank shaft : material = SCM4, heat treatment + thermal refining before finishing, purpose is to increase the crank shaft tenacity, can adapt to the impact from heavy punch, prevent crank shaft from fracture due to bending.
- b) 大齒輪：材質=SCMn2 (高錳鑄鋼，在材質內添加錳元素，目的要增加齒面的耐磨耗性，增加齒輪壽命)，齒面需再經過研磨處理，使大齒輪帶動小齒輪運轉時，務必要平滑的面接觸，減少齒輪接觸時跳動的狀況，也減少齒輪運轉時所產生的噪音。
main gear : material = SCMn2 (High Manganese Casting, adding Manganese into the material, to increase the abrasion resistance of the tooth surface, and longer the gear life), tooth surface need to send for grinding treatment, so that when pinion shaft transmit and spin the main gear, the surface contact of pinion shaft and main gear is smooth, can reduce the fluttering condition when gear contact, and also reduce the noise when gear spinning.
- c) 小齒輪：材質=SCM4，齒面特別表面高週波熱處理硬化研磨，另外也增加小齒輪的齒寬度，使其增加齒輪的壽命。
pinion shaft : material = SCM4, special high frequency induction heat treatment hardening grinding for tooth surface. Besides, we also increasing the tooth width, longer the pinion shaft life.
- d) 球牙：材質=S45C，圓球面部份實施表面高週波熱處理硬化研磨，目的使其圓球面的表面如鏡面一般，可和球頭活塞的圓位，完全的面接觸。
ball screw : material = S45C, high frequency induction heat treatment hardening grinding for ball surface, purpose is to make the ball surface like mirror, can fully surface contact with round position of overload piston.
- e) 球頭活塞：材質=FC35，球頭活塞的圓位由CNC加工機先完成加工後，再由手工拋光方式來處理，確定球牙圓位和球頭活塞圓位接觸是否完全。
overload piston : material = FC35, after CNC machining for round position, additional hand polishing for round position, make sure whether fully contact for both ball screw and overload piston round position.
- f) 蝸桿：材質=S45C，牙面部份實行表面高週波熱處理硬化研磨，增加蝸桿牙面的磨耗性。
worm shaft : material = S45C, high frequency induction heat treatment hardening grinding for tooth surface, increase the abrasion resistance of the worm shaft tooth surface.



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- g) 蜗輪 : 材質=FC35, 利用灰鑄鐵的含碳量石磨特性, 增加蜗輪牙面的磨耗性.
worm wheel : material = FC35, use the feature of gray cast iron carbon stone to increase the abrasion resistance of worm wheel tooth surface.
- h) 球牙螺帽 : 材質=FC35, 利用灰鑄鐵的含碳量石磨特性, 增加螺旋牙面的磨耗性.
ball screw nut : material = FC35, use the feature of gray cast iron carbon stone to increase the abrasion resistance of spiral tooth surface.

(2) 五金部份 Hardware Parts :-

- a) 離合器 : 使用日製 - 菱晶機械技術公司製造的濕式或乾式離合器, 或台製 - 雍興公司製造的乾式離合器.
clutch & brake unit : use Japan made wet clutch or dry clutch from RYOSYO Machine Engineering Corp. in Japan. Or use Taiwan made dry clutch from YUNG SHING.
- b) 風壓三點組合 : 使用日製 - CKD公司.
air regulator set : use Japan made CKD brand
- c) 油壓超負荷 : 使用日製 - KOSMEK公司, 或日製 - SR 公司, 或台製 - 山田公司.
hydraulic overload protector : use Japan made KOSMEK or SR brand. Or use Taiwan made SANDSUN brand.
- d) PLC : 使用日製 - 三菱公司, 或台製 - 台達公司.
PLC : use Japan made MITSUBISHI brand or Taiwan made DELTA brand.
- e) 變頻器 : 使用台製 - 台達公司.
inverter : use Taiwan made DELTA brand.
- f) 模高指示器 : 使用日製 - 萊茵公司, 或日製 - WAKO 公司.
die height indicator : use Japan made LINE brand or WAKO brand.
- g) 離合器用雙動電磁閥 : 使用日製 - ROSS公司, 或台製 - 達英公司.
double solenoid valve (for air clutch) : use Japan made ROSS brand or Taiwan made TOP AIR brand.
- h) 安全電眼裝置 : 使用日製 - 理研公司, 或日製 - KEYENCE公司, 或德製 - SICK公司.
safety light curtain : use Japan made RIKEN or KEYENCE brand, or use Germany made SICK brand.
- i) 快速舉模裝置 (QDC) : 使用日製 - KOSMEK 公司, 或日製 - SR 公司, 或台製 - 山田公司.
quick die change system (QDC) : use Japan made KOSMEK or SR brand, or Taiwan made SANDSUN brand.
- j) 送料機 : 使用日製 - 三進技研公司(TOPEC), 或台製 - 雷城公司.
feeder : use Japan made TOPEC brand, or Taiwan made RETAIN brand.
TOPEC official website : <http://www.topec.jp/english/product-information/>
- k) 機械手臂或送料傳送系統 : 使用日製 - 三進技研公司(TOPEC), 或台製 - 笠億公司.
robot arm or transfer feeder system : use Japan made TOPEC brand, or Taiwan made LEEYIH brand.
- l) 模墊用氣壓彈簧 : 使用日製 - YOKOHAMA 公司.
die cushion : use Japan made YOKOHAMA brand.