# V type

# 立車用中實動力夾頭

## POWER CHUCK
## FOR VERTICAL LATHE

# 使 用 說 明 書

## INSTRUCTION MANUAL
## Original instructions

重要　Important Notes：

- 請仔細閱讀本說明書，充分瞭解之後再使用本製品。
  本說明書請妥善保管，製品使用者變更時，請將此說明書交給新的使用者。
- Before you use the product.Please read this insturction carefully.
  Keep the instruction carefully. If the user of the product altered,
  please hand the instruction to the new user.

## ◎ 序 言

為了確保你的安全，在使用你的夾頭之前，請務必詳閱本說明書內所記載之警告事項，並特別注意文中此 ⚠ 圖形符號下之說明。

## ◎ INTRODUCTION

To ensure safe operation of your chuck, please read this instruction manual and paypariculer attention to instructions marked with ⚠ including IMPORTANT instructions concerning chuck performance.

**DANGER 危 險** →

**若未依照此符號底下的說明來操作機械將引起立即的危險，導致重大傷害或死亡。**

**Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.**

**WARNING 警 告** →

**若未依照此符號底下的說明來操作機械將引起潛在的危險，導致重大傷害或死亡。**

**Indicates an potentially hazardous situation which, if not avoided, could result in death or serious injury.**

**CAUTION 注 意** →

**若未依照此符號底下的說明來操作機械將引起潛在的危險，導致中輕度的傷害。**

**Indicates an potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

**IMPORTANT 留 意 事 項** →

**依照此符號底下的說明事先了解製品的性能，可避免不正確的操作夾頭。**

**Indicates for chuck performance and avoiding errors of mistake.**

# 目　錄

# CONTENTS



# 注 意 事 項 FOR SAFE OPERATION

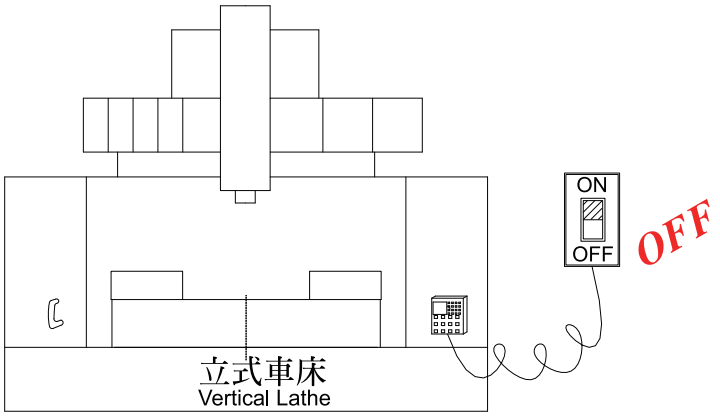
**請詳閱本說明書，並依循指示說明。若未依照指示，錯誤的使用而致引起的損傷或意外事，本公司概不負責。**

**Please read this manual and following instructions carefully. We cannot assume responsibility for damage or accidents caused by misuse, through noncompliance with the safety instructions.**

**DANGER**
**危 險**

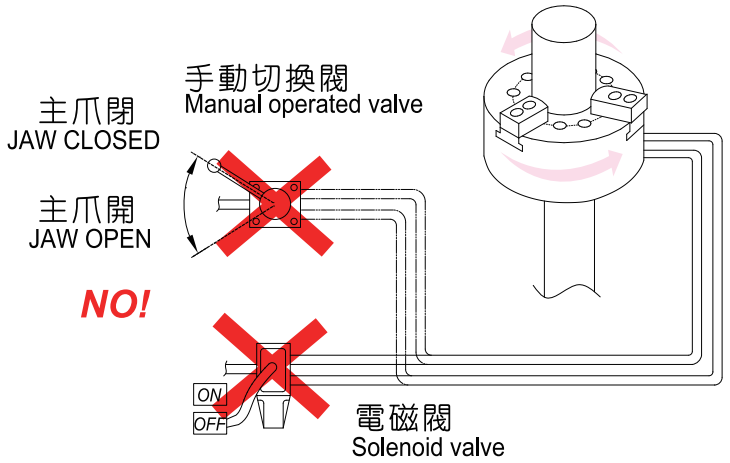
在安裝檢查或潤滑夾頭時，務必關掉所有電源，確保操作者之安全。
SWITCH OFF power before setting, inspecting, lubricating or changing the chuck to ensure operator safety.

易發生身體或衣物捲入等意外事故。
To avoid accident of operator body or clothes drawn into machine.




當主軸迴轉時，切勿操作切換閥。
Never operate the selector valve and the solenoid valve during the spindle rotation.

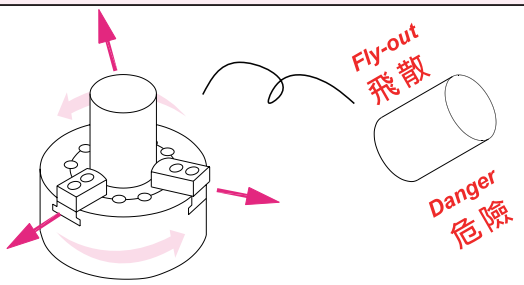
將使夾持力喪失，致工作物飛散產生危險。
Causing fly-out of the workpiece..



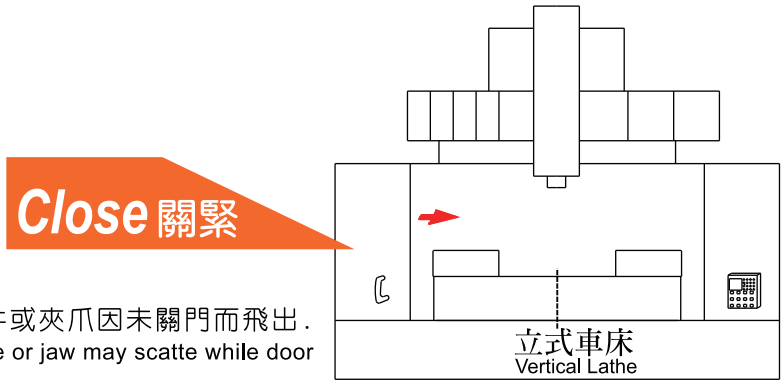
**WARNING**
**警 告**

夾頭之迴轉數，勿超過容許的最高限度。
Don't exceed the recommended speed of the chuck.

迴轉數增加時，離心力相對的增加而降低夾持力，易導致工作物飛散產生危險，故需依切削條件選擇適當的轉數。
Gripping force decreases due to centrifugal force as speed of chuck increases, thereby causing the discharge of workpiece.



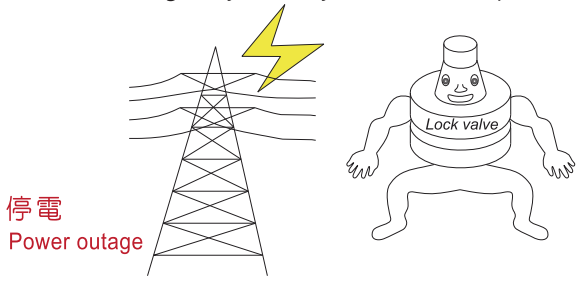

未關好安全門之前，切勿啟動主軸開關。
Don't start the spindle before closing the machine door.

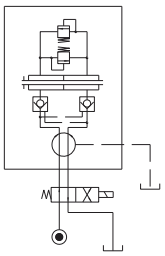



避免工件或夾爪因未關門而飛出.
Workpiece or jaw may scatte while door open.

某些型式的迴轉缸內建有 " 逆止閥 " 機構，當電源意外中斷時，能防止迴轉缸內部壓力遽降，保持穩固的夾持。
In case of power failure, AUTOGRIP's some crnders are fitted with check valves and pressure relief valves. When power is restored, he solenoid valve resumes its normal funtion.

停電時喪失夾持力，致使工作物飛散產生危險。
Power outage may cause fly-out of the workpiece.



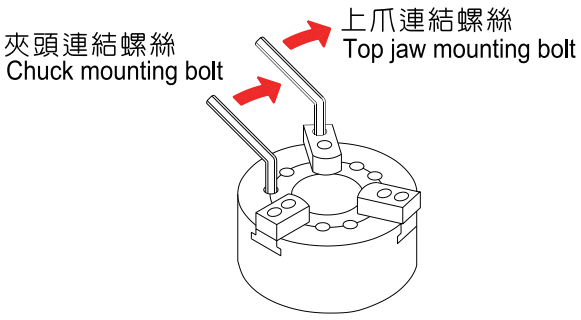



設定工件在正確的夾持位置
Set the workpiece to the correct gripping position.

**WARNING**
**警　告**

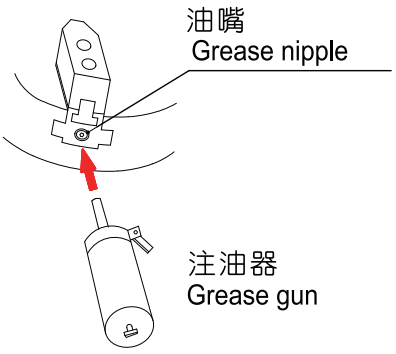
連結螺絲請依照附表所指定之力矩鎖緊。
Secure tightening bolts with specified torque.

| 螺絲規格<br>Bolt size | 鎖緊力矩<br>Tightening torque |
|---|---|
| M16 | 250.0 N·m (25.5 kgf·m) |
| M20 | 402.1 N·m (41.0 kgf·m) |
| M22 | 539.4 N·m (55.0 kgf·m) |
| M24 | 618.0N·m (63.0 kgf·m) |



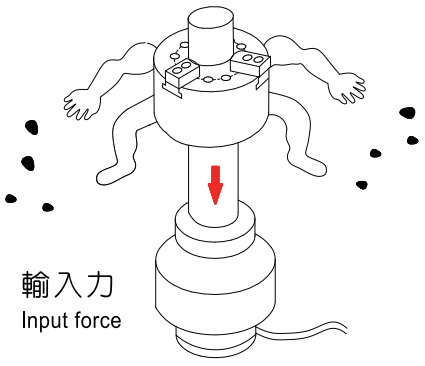

應確實給油。
Don't miss to lubricate chuck.

給油不足時，會降低夾持力。
Lowering gripping force caused by insufficient lubrication.



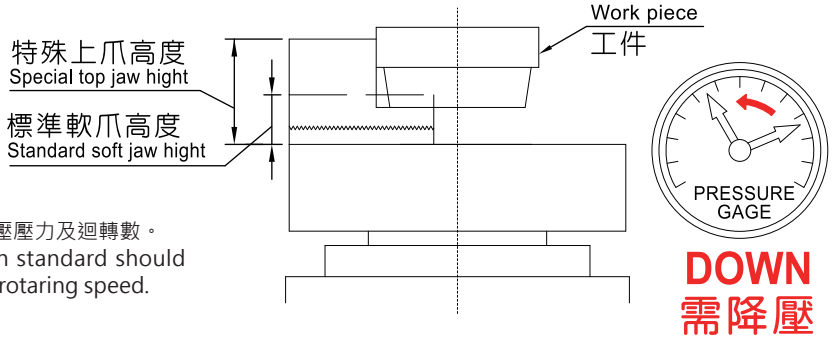

油壓缸出力不可超過夾頭容許之最大入力。
Don't exceed Max. allowable plunger input force.

使用油壓缸出力超過夾頭容許最大值，將致使夾頭變形或破裂之危險。
If input force of plunger is exceeded, chuck may be deformed or broken.



**WARNING**
**警 告**

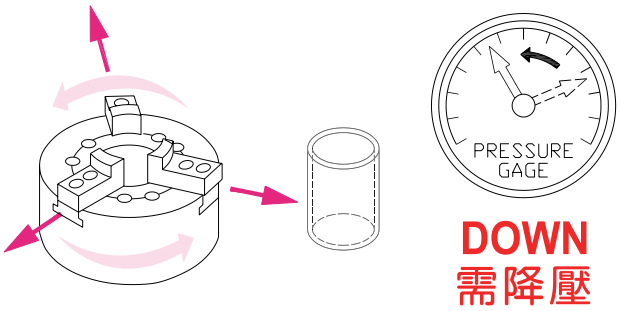
軟爪的高度，必須在最大夾持力的限制範圍。
Height of soft jaw must be in restriction range of maximal clamping force.




使用加高軟爪時，需降低油壓壓力及迴轉數。
Using higher top jaw than standard should be reduce input force and rotaring speed.

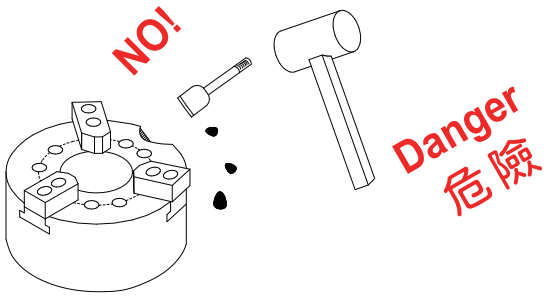
工件加工以內徑夾持時，需將油壓力降低至正常的 50% 以下。
When chucking components internally, reduce the hydraulic pressure by more than 50%.

如未降低油壓力，可能會因夾持力與離心力的雙重作用而使工件或夾頭受損。
If have no down the hydraulic pressure, may cause fly-out of the jaw or the workpiece.




不可隨意改造夾頭。
Don't attempt to modify the chuck.

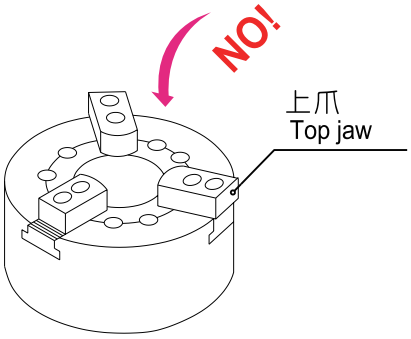
不當改造會損壞夾頭機能而發生危險。
Danger by function damaged of chuck.



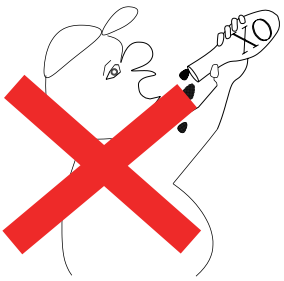
**WARNING**
**警　告**

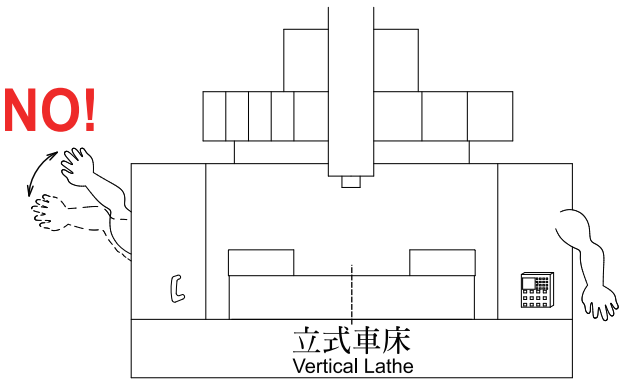
安裝上爪時，三爪之鎖緊位置必須相同，三爪之重量則盡量一致。
When mounting the top jaw on the chuck, the position should be the same, and mass of each jaw is as much as possible.

動平衡差異過大，易造成機台震動，影響加工精度。
Unbalanced mass will cause larger vibration of the machine, thus result in poor accuracy.

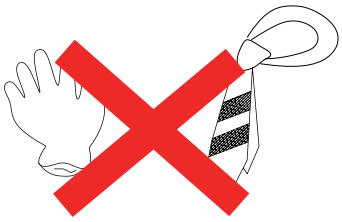


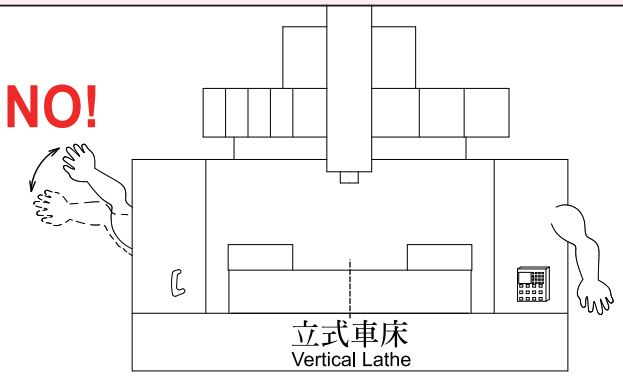

操作機器前，請勿喝酒或服用麻醉性藥物。
Never attempt to operate machine after drinking alcohol taking drugs.



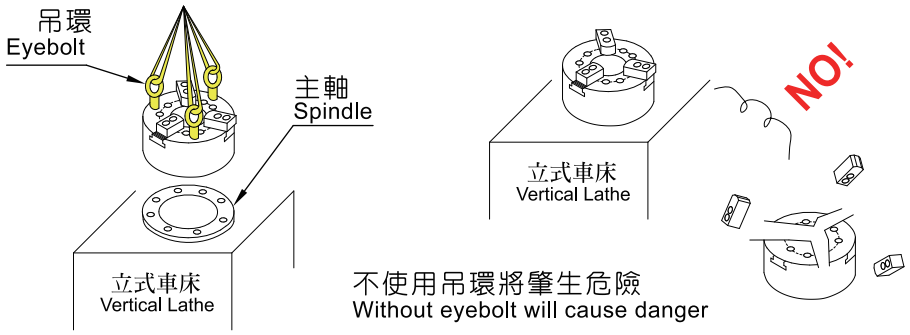

操作機器前，請勿穿戴手套或領帶。
Never attempt to operate machine with gloves and necktie worn.



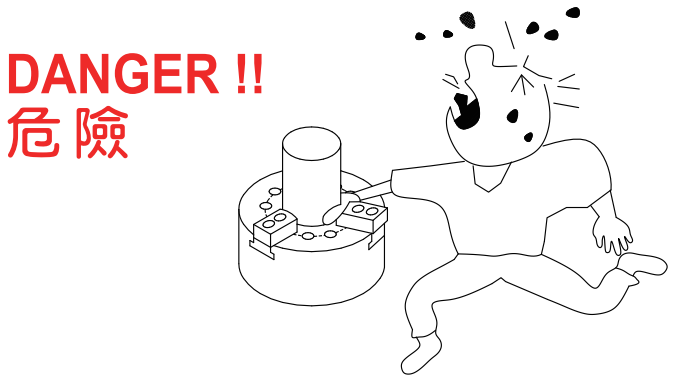


**CAUTION**
**注 意**

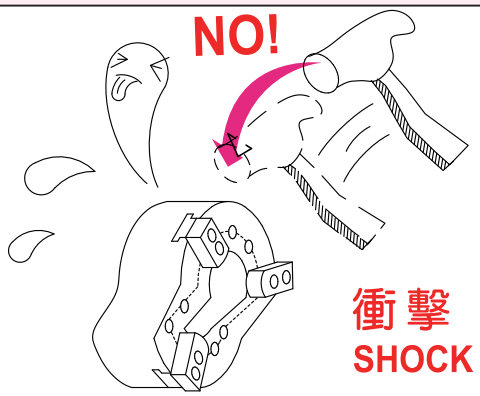
拆裝夾頭時，務必使用吊帶或吊環。
Have to useing eyebolt or lifting belt, when mounting or dismantle chuck.




夾持工件時，請注意不要被夾到手。
When clamping workpiece, make sure your hand not to be hurt.




不可敲擊夾頭、夾爪或夾持之工件物。
Never hammer chuck, jaws or clamped workpiece.



# 2. 立車用中實動力夾頭

## 2.1 立車用中 實動力夾頭規格

# 2. Power chuck for vertical lathe

## 2.1 Specification of power chuck for vertical lathe

**型號 Model 3V-12 ~ 3V-32**

**3V-15A8**
**3V-15A15**
**3V-18A8**
**3V-18A15**
**3V-21A11**
**3V-24A11**
**Refer to Fig.A**
參閱圖 A

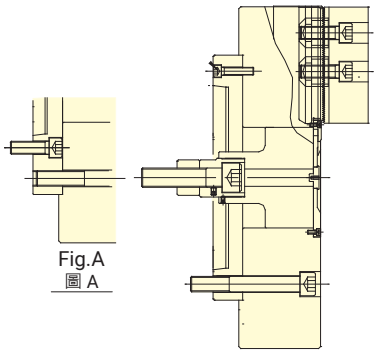
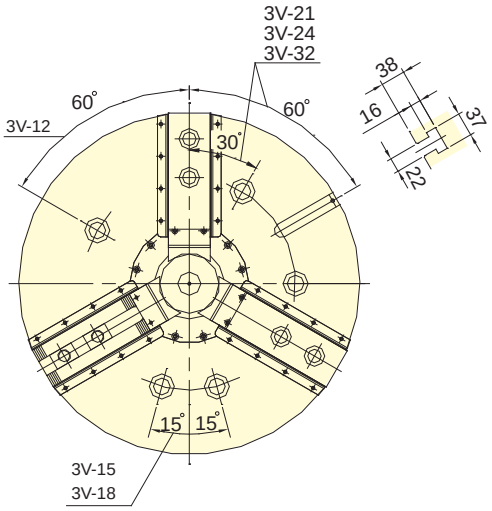
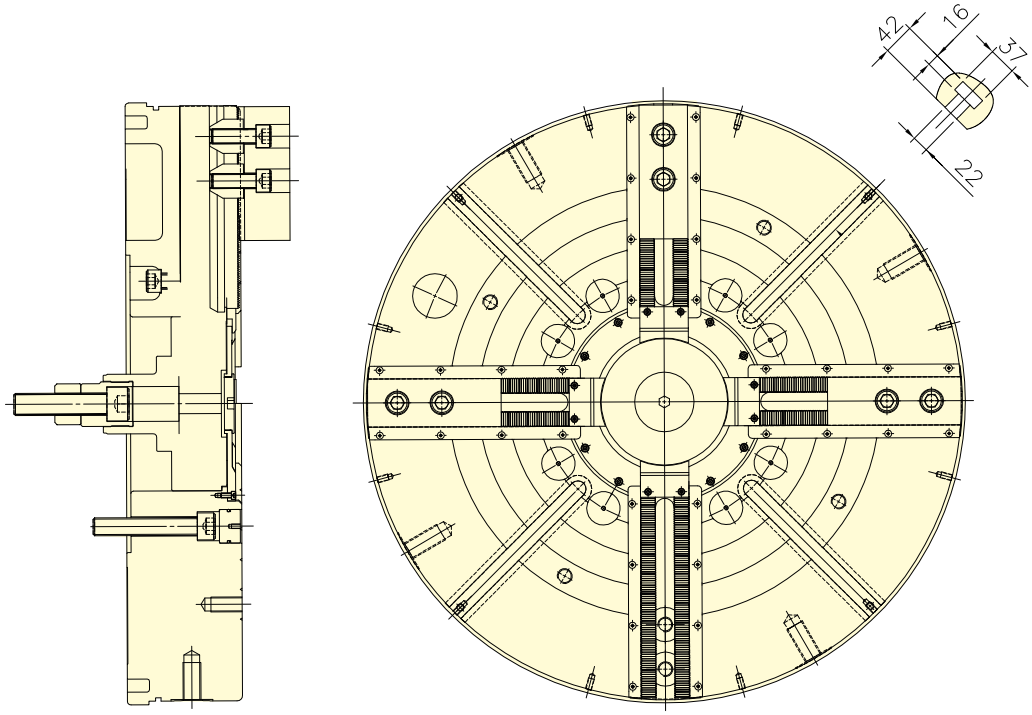


Fig.A
圖 A




| 型號 | | 楔心行程 | 爪行程（直徑） | 夾持直徑 Chucking Dia. | | 容許最大入力 | 最大夾持力 | 最高迴轉數 | I | | 重量 | | 適用迴轉缸 | 最大使用壓力 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | | Plunger stroke | Jaw stroke (Dia.) | 最大 Max. | 最小 Min. | Max. D.B. pull | Max. Clamping force | Max. speed | Moment of inertia | | Weight | | Matching cyl. | Max. pressure |
| | | mm | mm | mm | mm | kN (kgf) | kN (kgf) | $min^{-1}$ (r.p.m.) | kg•$m^2$ | | kg | | | MPa (kgf/$cm^2$) |
| **3V-12** | A8 | 30 | 12.7 | 304 | 30 | 41(4180) | 156(15900) | 3150 | 0.73 | 0.79 | 62.9 | 68.7 | RK-150<br>RE-150 | 2.6(26) |
| **3V-15** | A8 | 35 | 16 | 381 | 30 | 81.9(8360) | 245.1(25000) | 2900 | 1.97 | 2.27 | 105.5 | 128.5 | RK-200<br>RE-200K | 2.8(28)<br>3.0(30) |
| **3V-15** | A11 | 35 | 16 | 381 | 30 | 81.9(8360) | 245.1(25000) | 2900 | 1.97 | 2.27 | 105.5 | 127 | | |
| **3V-15** | A15 | 35 | 16 | 381 | 30 | 81.9(8360) | 245.1(25000) | 2900 | 3.33 | 2.67 | 105.5 | 142 | | |
| **3V-18** | A8 | 35 | 16 | 450 | 80 | 81.9(8360) | 245.1(25000) | 2600 | 3.33 | 3.62 | 132.7 | 155.5 | | |
| **3V-18** | A11 | 35 | 16 | 450 | 80 | 81.9(8360) | 245.1(25000) | 2600 | 3.33 | 3.63 | 132.7 | 154.5 | | |
| **3V-18** | A15 | 35 | 16 | 450 | 80 | 81.9(8360) | 245.1(25000) | 2600 | 6.83 | 4.02 | 132.7 | 165 | | |
| **3V-21** | A11 | 35 | 16 | 530 | 62 | 81.9(8360) | 271.6(27700) | 1800 | 6.83 | 7.46 | 196.5 | 227 | | |
| **3V-21** | A15 | 35 | 16 | 530 | 62 | 81.9(8360) | 271.6(27700) | 1800 | 6.83 | 7.37 | 196.5 | 221 | | |
| **3V-24** | A11 | 35 | 16 | 610 | 136 | 81.9(8360) | 271.6(27700) | 1700 | 11.19 | 11.83 | 241.7 | 272.8 | | |
| **3V-24** | A15 | 35 | 16 | 610 | 136 | 81.9(8360) | 271.6(27700) | 1700 | 11.19 | 11.73 | 241.7 | 266 | | |
| **3V-32** | A11 | 35 | 16 | 800 | 136 | 81.9(8360) | 271.6(27700) | 1100 | 28.97 | 29.6 | 353.6 | 384.8 | | |
| **3V-32** | A15 | 35 | 16 | 800 | 136 | 81.9(8360) | 271.6(27700) | 1100 | 28.97 | 29.51 | 353.6 | 378 | | |

## 型號 Model 3V-40 ~ 3V-79



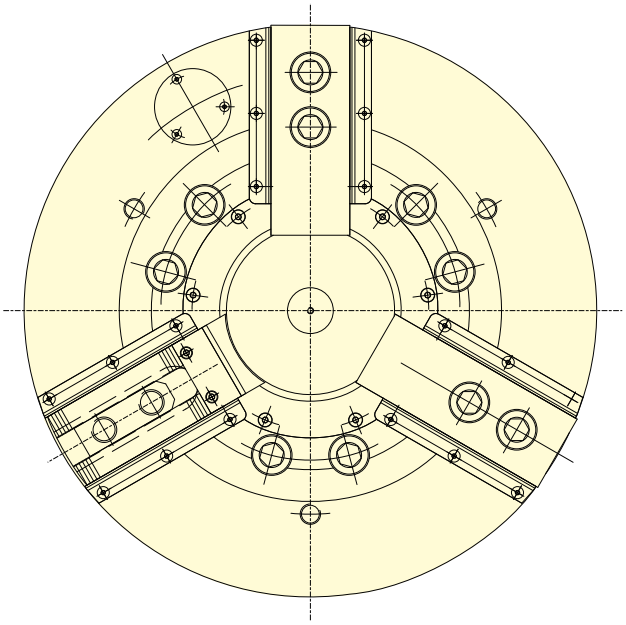

| 型號 Model | | 楔心行程 Plunger stroke | 爪行程（直徑） Jaw stroke (Dia.) | 夾持直徑 Chucking Dia. 最大 Max. | 夾持直徑 Chucking Dia. 最小 Min. | 容許最大入力 Max. D.B. pull | 最大夾持力 Max. Clamping force | 最高迴轉數 Max. speed | I Moment of inertia | | 重量 Weight | | 適用迴轉缸 Matching cyl. | 最大使用壓力 Max. pressure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm | mm | mm | mm | kN (kgf) | kN (kgf) | min⁻¹ (r.p.m.) | kg•m² | | kg | | | MPa (kgf/cm²) |
| 3V-40 | A20 | 57 | 46+(60) | 1005 | 310 | 180(18350) | 320(32620) | 630 | 68 | 72 | 780 | 849 | RK-250 RE-250 RE-A250 RE-L250 | 4.2(42) |
| 3V-50 | A20 | 57 | 46+(60) | 1250 | 290 | 180(18350) | 320(32620) | 500 | 145 | 148 | 1000 | 1050 | | 4.2(42) |
| 3V-63 | | 60 | 48+(80) | 1600 | 390 | 200(20390) | 360(36700) | 400 | 500 | - | 1600 | - | | 4.6(46) |
| 3V-79 | | 60 | 48+(80) | 2000 | 440 | 200(20390) | 360(36700) | 320 | 1250 | - | 2500 | - | | 4.6(46) |

## 2.2 立車用中實動力夾頭構造圖

## 2.2 Drawing of power chuck for vertical lathe

型式 **Model**

**3V-12**
**3V-15**
**3V-18**
**3V-21**
**3V-24**
**3V-32**



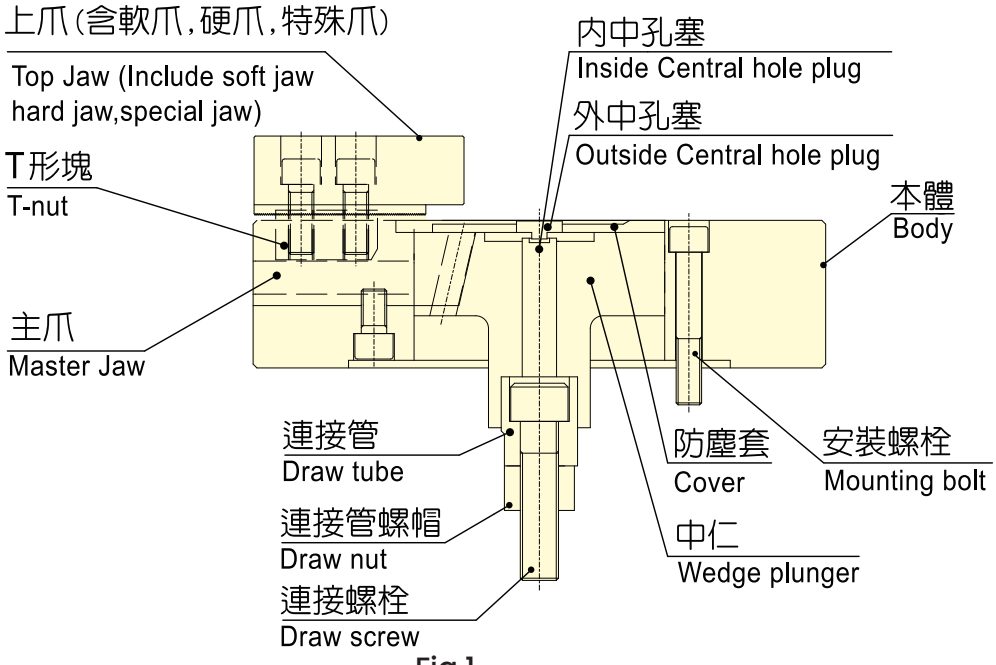
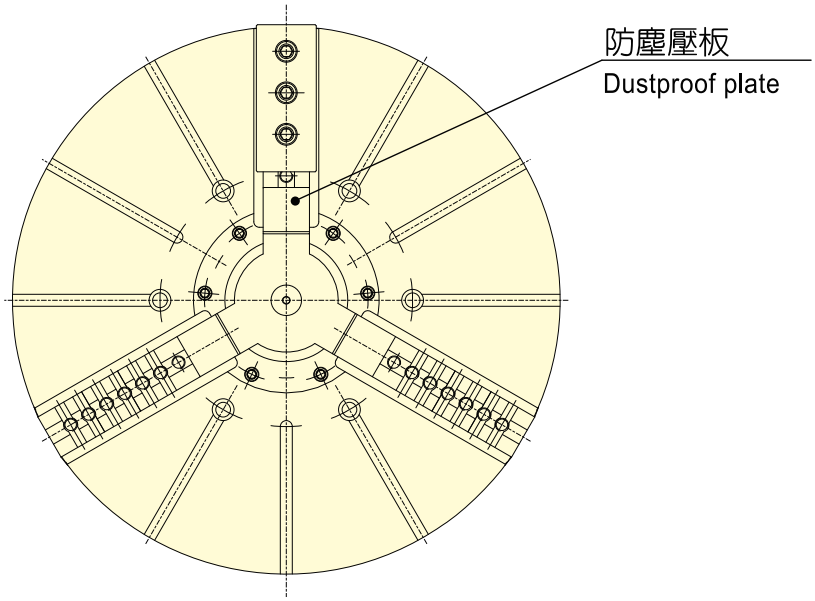



Fig.1

## 型式 Model

**3V-40**
**3V-50**



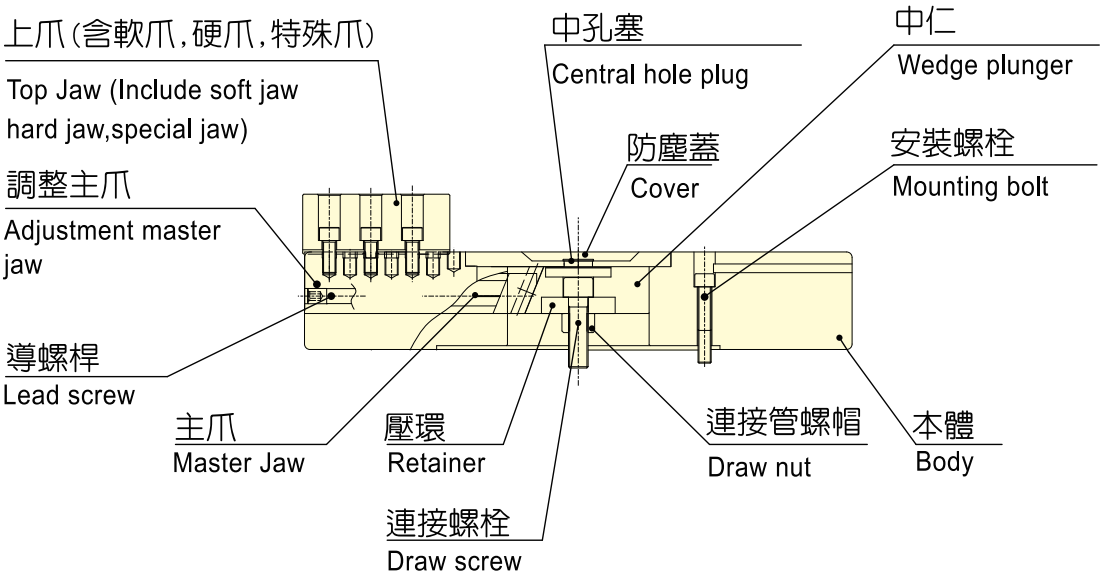




Fig.2

## 2.3 立車用中實動力夾頭零件圖表

## 2.2 Parts list of power chuck for vertical lathe

型號 Model 3V-12 ~ 3V-32

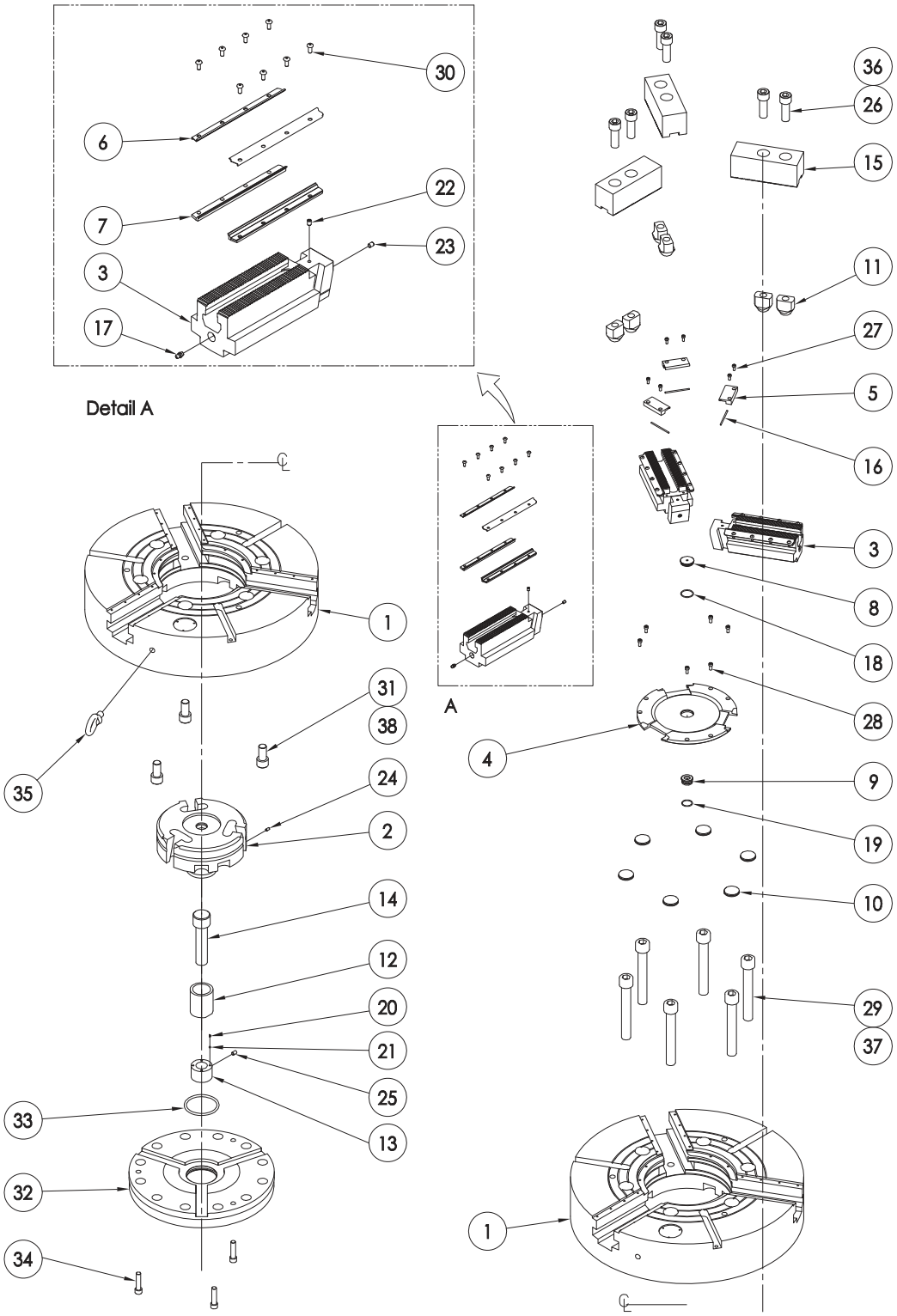


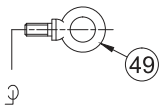

Fig.3

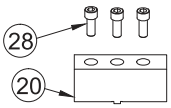
## 零件表 Parts list

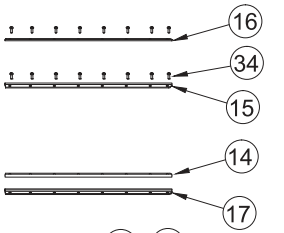
| No. | 零件名稱 | Name of parts | 1Q'ty |
|---|---|---|---|
| 1 | 本體 | Body | 1 |
| 2 | 中仁 | Wedge plunger | 1 |
| 3 | 主爪 | Master jaw | 3 |
| 4 | 防塵蓋 | Cover | 1 |
| 5 | 防塵壓板 | Dustproof plate | 3 |
| 6 | 刮塵壓板 | Blows dust plate | 6 |
| 7 | 刮塵膠條 | Blows glue piece | 6 |
| 8 | 中孔塞 | Central hole plug | 1 |
| 9 | 內中孔塞 | Inside Central hole plug | 1 |
| 10 | 螺絲孔防水塞 | Screw hole waterproof gag | 6 |
| 11 | T 型螺帽 | T-nut | 3 |
| 12 | 連接管 | Draw tube | 1 |
| 13 | 連接管螺帽 | Draw tube | 1 |
| 14 | 連接螺栓 | Draw screw | 1 |
| 15 | 軟爪 | Soft Jaw | 3 |
| 16 | 密封條 | Seal stick | 3 |
| 17 | 油嘴 | Grease nipple | 3 |
| 18 | O 型環 | O-ring | 1 |

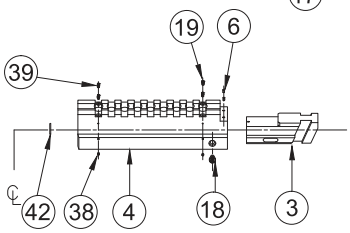
| No. | 零件名稱 | Name of parts | Q'ty |
|---|---|---|---|
| 19 | O 型環 | O-ring | 1 |
| 20 | 彈簧 | Spring | 1 |
| 21 | 鋼珠 | Steel ball | 1 |
| 22 | 無頭六角孔螺絲 | Hex. Socket set screw | 1 |
| 23 | 無頭六角孔螺絲 | Hex. Socket set screw | 1 |
| 24 | 無頭六角孔螺絲 | Hex. Socket set screw | 1 |
| 25 | 無頭六角孔螺絲 | Hex. Socket set screw | 1 |
| 26 | 六角孔圓頭螺栓 | Hex. Socket cap blot | 6 |
| 27 | 六角孔圓頭螺栓 | Hex. Socket cap blot | 6 |
| 28 | 六角孔半圓頭螺絲 | Hex. Socket button screw | 3or6 |
| 29 | 夾頭安全螺栓 | Chuck mounting bolt | 3or6 |
| 30 | 六角孔半圓頭螺絲 | Hex. Socket button screw | 24 |
| 31 | 六角孔圓頭螺栓 | Hex. Socket cap blot | 3 |
| 32 | 連結法蘭 ( 選配 ) | Adpater pldte(option) | 1 |
| 33 | O 型環 | O-ring | 1 |
| 34 | 六角孔圓頭螺栓 | Hex. Socket cap blot | 3or6 |
| 35 | 吊環螺栓 | Eye bolt | 1 |
| 36 | L 形六角扳手 ( 附件 ) | Hex. key(accessory) | 1 |

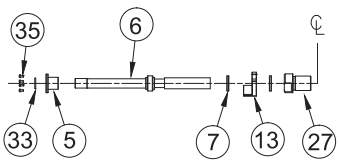
型式 Model
3V-40
3V-40A20
3V-50
3V-50A20
3V-63
3V-79



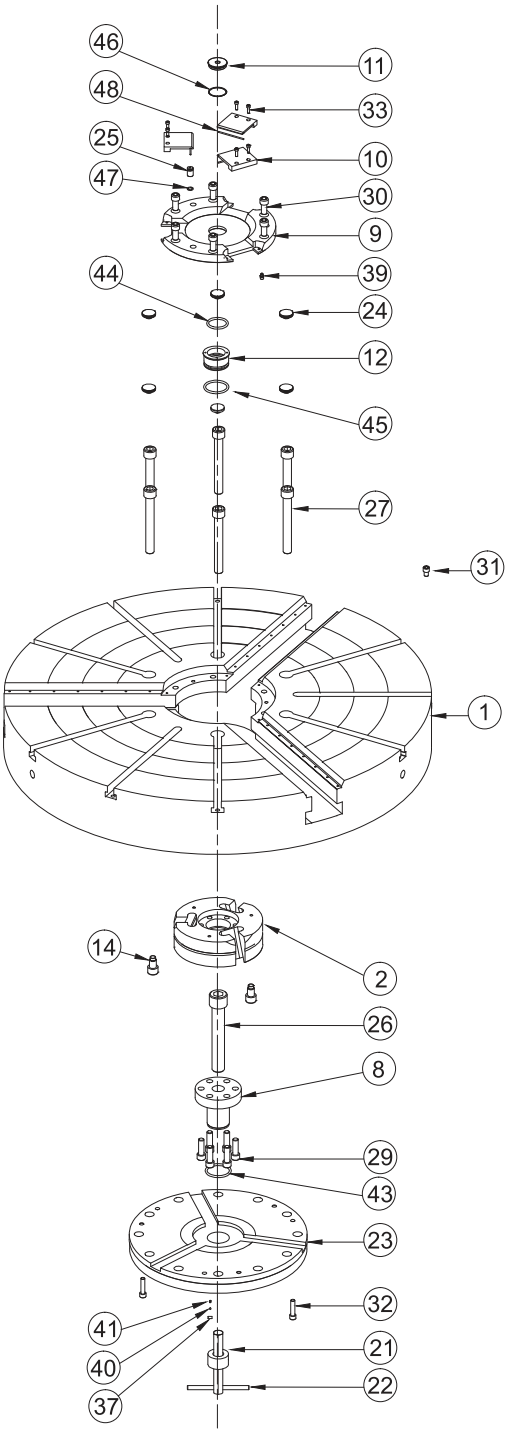



Fig.4

## 零件表 Parts list

| No. | 零件名稱 | Name of parts | Q'ty |
|---|---|---|---|
| 1 | 本體 | Body | 1 |
| 2 | 中仁 | Wedge plunger | 1 |
| 3 | 主爪組 | Master jaw | 1 |
| 4 | 調整主爪 | Adjusting master | 3 |
| 5 | 螺桿座 | Screw seat | 3 |
| 6 | 導螺桿 | Lead screw | 3 |
| 7 | 導螺桿銅襯 | Lead screwbush | 6 |
| 8 | 壓環連接管 | Retainer draw | 1 |
| 9 | 防塵蓋 | Cover | 1 |
| 10 | 防塵壓板 | Dustproof plate | 3 |
| 11 | 中孔塞 | Central hole plug | 1 |
| 12 | 內中孔塞 | Inside Central hole plug | 1 |
| 13 | 背隙消除座 | Crack dispel seats | 3 |
| 14 | 左刮塵壓板 | Left blows dust plate | 3 |
| 15 | 右刮塵壓板 | Right blows dust plate | 3 |
| 16 | 左刮塵膠條 | Left blows glue piece | 3 |
| 17 | 右刮塵膠條 | Rihgt blows gule piece | 3 |
| 18 | 調整主爪導引螺栓 | Adjusting master guide bolt | 6 |
| 19 | 主爪導引螺栓 | Master jaw guide bolt | 3 |
| 20 | 生爪組 | Soft jaw | 1 |
| 21 | 連接管螺帽 | Draw nut | 1 |
| 22 | 六角扳手組 | Hex. Socket key | 1 |
| 23 | A20 法蘭板 | Adpater plate | 1 |
| 24 | M24 螺絲孔防水塞 | Screw hole waterproof plug | 6 |
| 25 | 防塵蓋油嘴孔防水蓋 | Cover grease nipple hole waterproof | 3 |

| No. | 零件名稱 | Name of parts | Q'ty |
|---|---|---|---|
| 26 | 連接桿 | Draw screw | 1 |
| 27 | 螺桿套 | Screw bush | 3 |
| 28 | 圓頭六角孔螺栓 | Hex. Socket cap blot | 9 |
| 29 | 圓頭六角孔螺栓 | Hex. Socket cap blot | 6 |
| 30 | 圓頭六角孔螺栓 | Hex. Socket cap blot | 6 |
| 31 | 圓頭六角孔螺栓 | Hex. Socket cap blot | 3 |
| 32 | 圓頭六角孔螺栓 | Hex. Socket cap blot | 3 |
| 33 | O 型環 | O-ring | 3 |
| 34 | 半圓頭六角孔螺栓 | Hex. Socket button screw | 48 |
| 35 | 半圓頭六角孔螺栓 | Hex. Socket button screw | 12 |
| 36 | 無頭六角孔螺絲 | Hex. Socket set screw | 1 |
| 37 | 無頭六角孔螺絲 | Hex. Socket set screw | 3 |
| 38 | 無頭六角孔螺絲 | Hex. Socket set screw | 12 |
| 39 | 黃油嘴 | Grease nipple | 3 |
| 40 | 鉻鉬鋼珠 | Steel ball | 1 |
| 41 | 壓縮彈簧 | Spring | 1 |
| 42 | O 型環 | O-ring | 3 |
| 43 | O 型環 | O-ring | 1 |
| 44 | O 型環 | O-ring | 1 |
| 45 | O 型環 | O-ring | 1 |
| 46 | O 型環 | O-ring | 1 |
| 47 | O 型環 | O-ring | 3 |
| 48 | 密封條 | Seal stick | 3 |
| 49 | 吊環螺栓 | Eye bolt | 3 |
| | | | |

# 3. 安裝

## 3.1 立車用中實動力夾頭的安裝步驟

(1) 將連接管安裝於楔形拉桿上

- 連接管為夾頭內部的零件之一，因此必須先將連接管安裝於楔形拉桿的螺牙內，並且鎖緊附在楔形拉桿內的六角止動螺絲，以防止連接管鬆動。

(2) 將拉桿安裝於迴轉油壓缸

- 旋入拉桿至迴轉油壓缸之活塞桿螺牙內時，儘可能將活塞桿縮回到底。( 如果活塞桿處在行程中間位置，鎖緊螺牙時，可能會損壞到活塞之止迴銷。)

(3) 將迴轉油壓缸安裝於主軸上 ( 迴轉油壓缸連接板 )

- 檢視迴轉油壓缸有無偏擺及管路是否正常，設定油壓力於低壓狀態 (0.4~0.5MPa，4~5 kgf/cm$^2$)，使活塞運動 2~3 次後停置於前端，然後關掉電源。

# 3.Mounting

## 3.1 Mounting steps of power chuck for vertical lathe

(1) Connect the draw bar to the plunger.

- The draw tube of chuck is packed as a separate unit because of packing reason. Therefore, it should be screwed in the plunger and be set by a set scrow, provided as accessories, so that it may not be loosened.

(2) Connect the draw bar to the cylinder.

- Screw the draw bar into the cylinder piston rod with the rod retracted as far as it will go.(If it is tightened at the intermediate position, the locking pin of the piston may be damaged.)

(3) Mount the cylinder to the spindle(cylinder adapter)

- Check that the run-out of cylinder is minimized before routing the hydraulic piping. Move the piston at low pressure(0.4~0.5MPa,4~5kgf/cm$^2$) two or three times and set the piston at the forward end before witching power off.

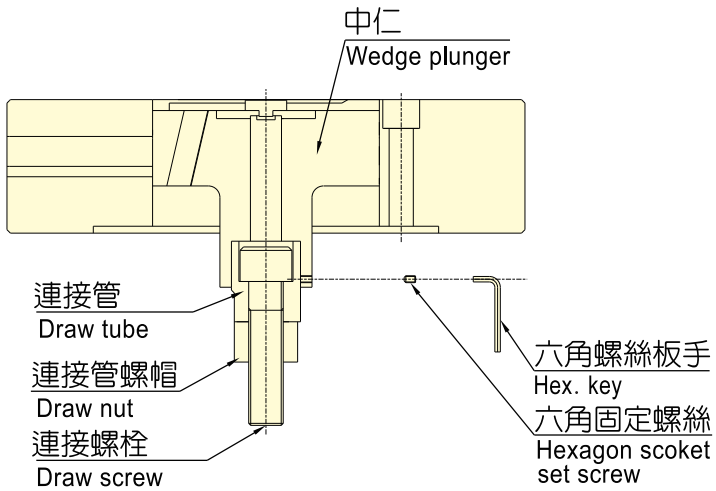



Fig.4

**CAUTION 注 意**

- 在安裝或拆下夾頭時，需使用吊帶或吊環固定。(10" 以上夾頭附吊環 )。
- 當完成上述動作後，切記取下吊環或吊帶。

- When monuting or removing the chuck, lift it with the crane, using an eyebolt or lifting belt.(For a chuck of 10" or over, the eyebolt is attached.)
- Be sure to romove the eyebolt from the chuck after mounting or removing.

(4) 將夾頭安裝於拉桿

- 將夾頭的軟爪及防塵蓋取下，使用扳手插入夾頭的中心孔內，旋轉連接管螺絲，使連接管螺絲鎖入拉桿內，則夾頭即與拉桿連接一起。
- 當鎖入連接管螺絲於拉桿時，如果不是很平順的鎖入，那必須重新檢查螺牙是否正確及中心是否傾斜等，若強制用力鎖入將可能造成楔形拉桿損壞及精度不良。

(4) Connect the chuck to the draw bar.

- Remove the soft jaw and cover for the chuck to insert the joint handle in to the central hole of the chuck connect the chuck onto the draw bar, turning the draw screw.
- If the connecting of the chuck and draw bar is difficult,check the thread. If connected by force. The wedge plunger will be damaged, thus resulting in poor accuracy.

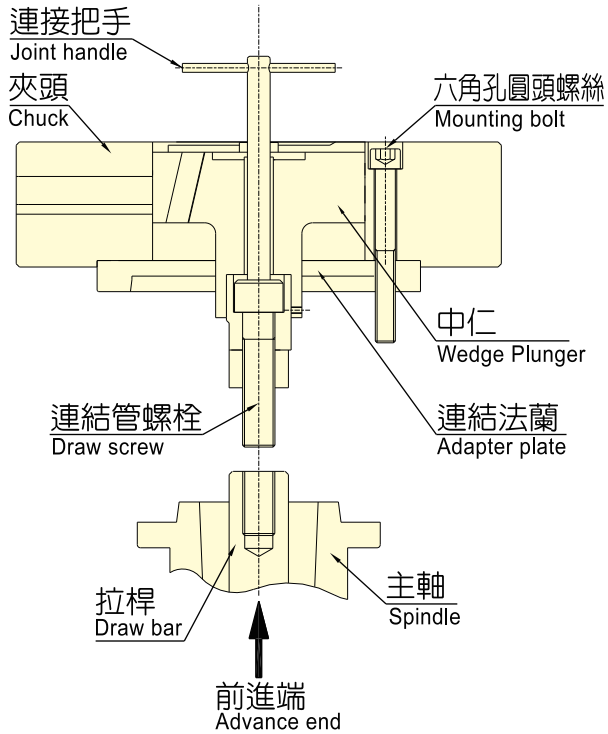



Fig.5

**WARNING 警 告**

- 鎖緊螺絲時，請依照標準力矩鎖緊，如果鎖緊力矩不足或太大，將造成螺絲斷裂，工作物飛散產生危險。
- 請使用附屬之螺絲。

- Tighten the mounting bolt according to the specified torque. If tightening torque is insufficient or too strong, bolts are broken. Also, the workpiece scatters ,thus resulting in danger.
- Use only attached bolt.

| 螺絲規格<br>Bolt size | 鎖緊力矩<br>Tightening torque |
|---|---|
| M16 | 250.0 N · m (25.5 kgf · m) |
| M20 | 402.1 N · m (41.0 kgf · m) |
| M22 | 539.4 N · m (55.0 kgf · m) |
| M24 | 618.0 N · m (63.0 kgf · m) |

## 3.2 螺栓鎖緊的順序

(1) 安裝夾頭至拉桿上

- 取下夾頭之軟爪及防塵蓋，以 1.2.3 號螺絲鎖入數牙，將連接扳手置至於夾頭的中心孔上，將連接螺帽鎖入拉桿。
- 連接螺帽鎖入於拉桿時，如不是很平順的鎖入，則應重新檢查螺牙中心是否傾斜…等，如強制鎖入則會造成精度上的誤差及螺牙損壞。

(2) 安裝夾頭於主軸上

- 旋轉連接把手至完全結合於主軸接合面。
  依下列順序鎖上螺絲：
  1 → 2 → 3 → 4 → 5 → 6
  ( 如果鎖緊力量不平均將產生偏擺)
  ( 鎖緊螺絲時請依照標準力矩鎖緊)

(3) 裝回防塵蓋並檢測夾頭偏擺。

- 使得夾頭外緣極端面偏擺在 0.02mm 內。

## 3.2 Bolt tighening steps

(1) Mount the chuck to the draw bar.

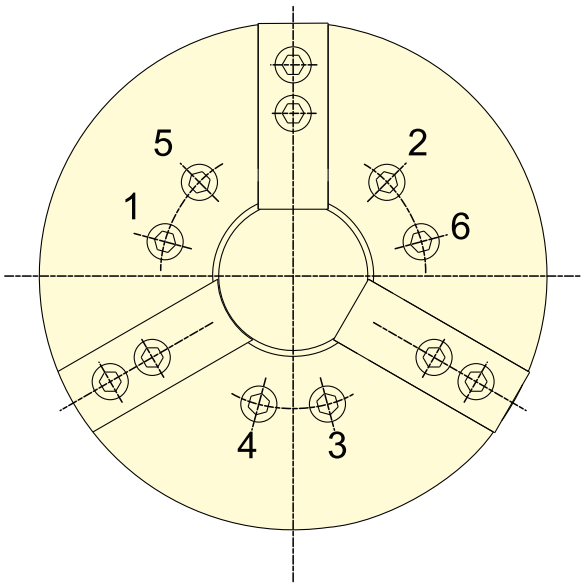
- Remove the soft jaw and cover of the chuck. Tighten the installation bolts 1.2.3. for several pitches. Insert the joint handle into the central hole of the chuck. Then turn the draw pipe.
- When the draw nut and the draw bar are connected,in case smooth scrowing is impossible, if will be necessary to confirm inclination of thread center.If connected by force, the thread will be damaged, thus resulting in poor chucking accuracy.

(2) Mount the chuck to the spindle(back plate).

- Turn the joint handle so that the chuck is thoroughly attached to spindle mounting face.
- Tighten the installation bolt uniformly:
  1 → 2 → 3 → 4 → 5 → 6
  (Uneven installation will be a cause of run-out.)(As for specified torque of the installation bolt, refer to Tightening torque table. )

(3) Remount the cover and chuck run-out of the chuck.

- Make peripheral run-out of the chuck to less than 0.02mm.




**3V**

Fig.6

**WARNING**
**警 告**

- 連接夾頭之螺絲，請按設定之力矩鎖緊。如鎖緊力矩不足或太強將導致發生意外。
- 以配屬螺絲為使用原則，若特殊情形請採用強度劃分 12.9 以上 (M22 以上 10.9) 並有足夠之長度。
- 使用把手旋轉連接管螺絲來調整楔心在正確位置，如果調整的位置不適當，則夾頭防塵蓋將造成損壞。完成調整動作時，安裝在連接管螺絲後方之止動裝置，必須處於接觸定位點的狀態。

- Tighten chuck mounting bolts at the specified tightening torque. If the tightening torque is insufficient or too strong, it may cause an accident. Periodically chuck that bolts are not loosened.
- Use only attached bolts. In an unavoidable case, use bolt with strenght code 12.9 (M22 or more:10.9) or more and sufficient lenght.
- Turn the draw tube by the handle for adjust the plunger to the correct position. If this adjustment is not suitable, the chuck cver will be damaged. Therefore, as the draw tube holds the click stop equipment, finish the adjustment on the position of the contact.

**CAUTION**
**注 意**

- 使用迴轉油壓缸前請參照說明書。

- For the cylinder, refer to the insturction manual.

## 3.3 連結法蘭的安裝

- 連接板外徑之偏擺須在下表所示 D 值範圍內，而連接板端面之偏擺須在下表所示 E 值範圍內。
- 夾頭外徑之偏擺須在下表所示 F 值範圍內，而夾頭端面之偏擺須在下表所示 G 值範圍內。
- Fig.7 為 JIS 短錐度主軸圖。

## 3.3 Mounting of chuck adapter plate

- The outer diameter run-out of the adapter plate should be D-Value or less . The end surface run-out of the adapter plate should be E-Value or less (see table below).
- The outer diameter run-out of the chuck should be F-value or less. The end surface run-out of the chuck should be G-value or less(see table below).
- Fig.7 shows JIS short tapered spindle.

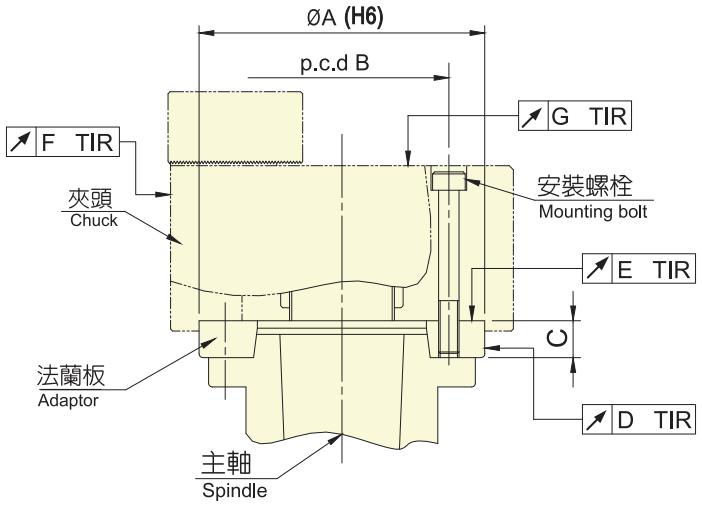



Fig.7

| 型號 Model / 寸法 Dim | 3V-12A8 | 3V-15A11<br>3V-18A11 | 3V-21A15<br>3V-24A15 | 3V-32A15 | 3V-40A20<br>3V-50A20 | 3V-63<br>3V-79 |
|---|---|---|---|---|---|---|
| A (H6) | Ø220 | Ø300 | Ø380 | Ø380 | Ø520 | Ø720 |
| B | 171.4 | 235 | 330.2 | 330.2 | 436.6 | 647.6 |
| C | 40 | 58 | 46 | 46 | 50 | 50 |
| D | 0.005 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| E | 0.005 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 |
| F | 0.02 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 |
| G | 0.02 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 |

A 尺寸為 DIN 之標準規格。 A Dimension (mounting recess dia)is according to DIN standard.

**CAUTION 注 意**

- 製作連接板之直徑須依表列 A-0.01。

- The diameter of the adapter plate should be A-Value -0.01 (see table above).

**WARNING 警 告**

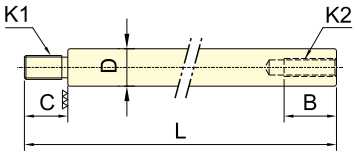
- 連結連接扳用之螺絲，應有足夠之強度(直徑、數量、材質)且需有足夠之力矩可鎖緊。(鎖緊螺絲時請依照標準力矩鎖緊)
- 如鎖緊力矩不足或太大，將導致螺絲斷裂而造成夾頭飛散之危險。

- Mount the adapter plate with bolts which have sufficient strength ( dia.,pcs.,and material ) and tighten it with specified torque. (As for specified torque of the installation bolt, refer to Tightening torque table. )
- If tightening torque is insufficient or too strong, bolts are broken. Also, the chuck discharges thus resulting in danger.

# 4. 拉桿的製作

# 4.Manufacture of draw bar

## 中實拉桿製作 Manufacture of Draw Bar




拉桿詳圖 Detail of Draw Bar

L=A-G1max.-G2min.-4+C

Fig.8

**3V-12**
**3V-15**
**3V-18**
**3V-21**
**3V-24**
**3V-32**
**Refer to Fig.9**

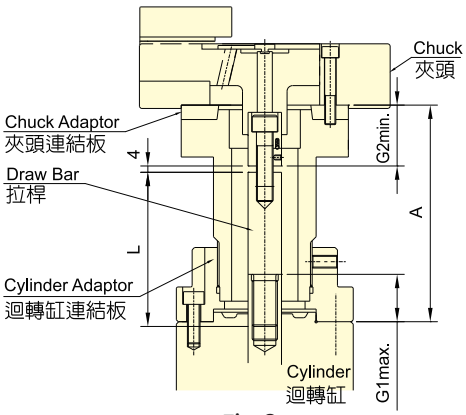



Fig.9

**3V-40**
**3V-50**
**Refer to Fig.10**

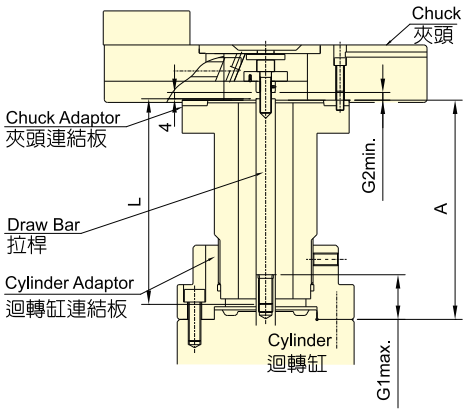



Fig.10

| 夾頭型式<br>Chuck type | 迴轉缸型式<br>Cylinder type | B | C | D | G1<br>max. | G2<br>min. | K1 | K2 | L |
|---|---|---|---|---|---|---|---|---|---|
| 3V-12 | RE-150/RK-150 | 40 | 45/40 | 45 | 60/55 | 83 | M30x3.5 | M20x2.5 | A-102 |
| 3V-15 | RE-200K/RK-200 | 60 | 60/55 | 55 | 70 | 118 | M36x4 | M30x3.5 | A-132/A-137 |
| 3V-18 | RE-200K/RK-200 | 60 | 60/55 | 55 | 70 | 118 | M36x4 | M30x3.5 | A-132/A-137 |
| 3V-21 | RE-200K/RK-200 | 60 | 60/55 | 55 | 70 | 102 | M36x4 | M30x3.5 | A-116/A-121 |
| 3V-24 | RE-200K/RK-200 | 60 | 60/55 | 55 | 70 | 102 | M36x4 | M30x3.5 | A-116/A-121 |
| 3V-32 | RE-200K/RK-200 | 60 | 60/55 | 55 | 70 | 102 | M36x4 | M30x3.5 | A-116/A-121 |
| 3V-40 | RE-250/RE-A250<br>RE-L250/RK-250 | 70 | 60 | 55 | 85 | -24 | M42x3 | M36x4 | A-5 |
| 3V-50 | RE-250/RE-A250<br>RE-L250/RK-250 | 70 | 60 | 55 | 85 | -24 | M42x3 | M36x4 | A-5 |
| 3V-63 | RE-250/RE-A250<br>RE-L250/RK-250 | 70 | 60 | 55 | 85 | -24 | M42x3 | M36x4 | A-5 |
| 3V-79 | RE-250/RE-A250<br>RE-L250/RK-250 | 70 | 60 | 55 | 85 | -24 | M42x3 | M36x4 | A-5 |

**IMPORTANT**
**留 意 事 項**

- 螺牙鬆動是造成振動的主要原因。
- 以抗拉強度 380MPa(38kg/mm²) 以上之材料製作拉桿。

- Insecure threads will cause the draw pipe to vibrate.
- For pipe strength, use the material of tensile strength 380MPa ( 38kg/mm²)of or more.

## 5. 使用上的注意事項

1. 當要換上爪時，必須清理底爪的齒型部分及 T 型塊的接合部分，否則將造成精度上的不準。
2. 依照工件外形及切削情況來設定油壓壓力，如果管狀的工件被高壓夾持將造成變形。
3. 夾持斜面或錐度的鑄品工件時，使用的特殊爪需具有齒狀之夾持面工件物才不會飛散。
4. 夾持偏心工作物時，偏心重量產生的離心力作用在單一爪上，加工時需使用低轉速。
5. 不可使用與主爪排齒不合之上爪，嚙合度不足，將影響夾持力與精度，嚴重者使主爪損壞。
6. 作業開始之前，使用低轉速試做一次，檢查上爪和工作物的位置是否與刀具、刀具座產生干涉。
7. 長時間停置機器時，夾頭上不可夾持工作物。
8. 當操作不當或機械故障所造成刀具或刀具座撞擊夾頭，立即停機檢查上爪、主爪、T 型塊、連結螺絲及夾持精度等是否正常。
9. 特殊高度上爪使用之油壓壓力需比標準上爪低。

## 5. Precautions

1. When changing the top jaw, carefully clean the serration of master jaw and fitting part of T-nut.
2. Set the hydraulic pressure according to the shape of workpiece and cutting conditions. If, for example, a pipe shaped workpiece is gripped with high pressure, it may cause distortion.
3. When gripping inclined or tapered parts such as casting, etc., use special jaws with spikes so that the workpiece will not discharge.
4. Machine the unbalanced workpiece at a low speed because the centrifugal force by the eccentricity mass of work is applied onto the jaw.
5. Do not use the top jaw in which serration pitch differs from the master jaw. If the workpiece is gripped with serration insufficient engaged. The serration is broken. At this time, the jaw or workpiece discharges thus resulting in danger.
6. Before machining. Run with low speed to check that the top jaws locator or workpiece do not interfere with the tool or tool holder.
7. When stopping the machine for a long period of time, remove the workpiece from the chuck.
8. If the chuck or workpiece is misused by interfering with the tool or tool rest due to malfunction or tape error. Immediately stop the machine and check the top jaw, T-nuts, cap screws for mounting jaw and etc., and gripping accuracy.
9. In case of using higher jaw then standard top jaws must use lower oil pressure.

**WARNING**
**警 告**

- 工作物必須夾持於行程的中點位置，或在中點以內，這樣將可達成最好的精度及穩定度，儘量防止用行程的盡端來夾持工作物。
- 設定爪夾位置時必須注意 T 型螺帽不可以突出主爪。（Fig.11 右）
- T 型螺帽突出底爪，不正確使用方法將造成底爪 T 型螺帽的損壞及精度上的不準。（Fig.11 左）

- It is the most desirable that the workpiece is gripped atmid stroke of the master jaws. To grip the workpiece correctly, avoid gripping at stroke end.
- The T Nut must not be protrude from the master jaw.(Refer to Fig.11 right)
- The use on condition incorrect will cause damage to the master jaw and “ T ” nut as well as inaccuracy.(Refer to Fig.11 left)

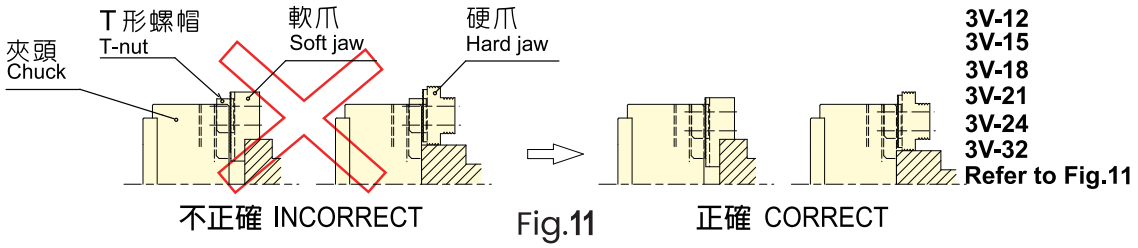



Fig.11

**WARNING 警 告**

- 如果上爪鎖緊螺絲，其鎖入 T 型螺帽內的螺紋深度太淺，將致使 T 型螺帽破損。反之，螺絲突出 T 型螺帽 底部，則即使螺絲已經鎖緊也無法將上爪完全固定，因此上爪鎖緊螺絲的全長應在距離 T 型螺帽底部內 0~1mm 長。( 參考 Fig.12)
- 務必使用附屬 T 型螺帽及固定螺絲 ( 在無法避免的情況下，使用附屬以外的螺帽及螺絲，其強度劃分必須在 12.9 以上 ( M22 以上 10.9)，並且特別注意長度是否足夠 ) 。
- 當 T 型螺帽被鬆開時，不能啟動主軸旋轉，否則上爪及 T 型螺帽會飛散，產生危險。

- If the screwing depth for T-nut of the top jaw mounting bolt is shallow, T-nut may be damaged. If the bolt protrudes from the T-nut bottom, the top jaw is not fixed even if the mounting bolt is tightened. Consequently, the overall length of the top jaw mounting bolt should be 0~1mm from the T-nut bottom.(See Fig.12)
- Be sure to use the attached T-nut and mounting bolt.(In an unavoidable case, use the bolt and nut of strength 12.9 (M22 or more, 10.9) or more and sufficient length.)
- Never start the spindle with T-nut still loosened. The top jaw may scatter. It is dangerous.

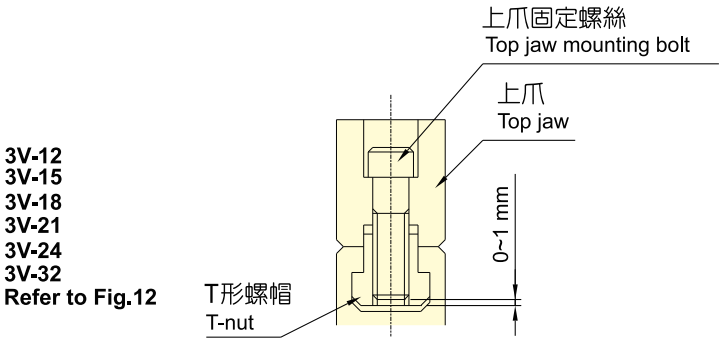
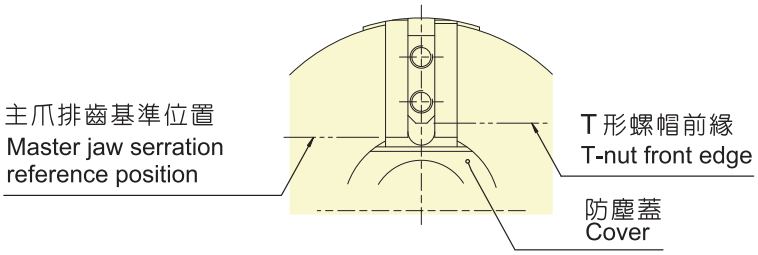



Fig.12

**IMPORTANT 留 意 事 項**

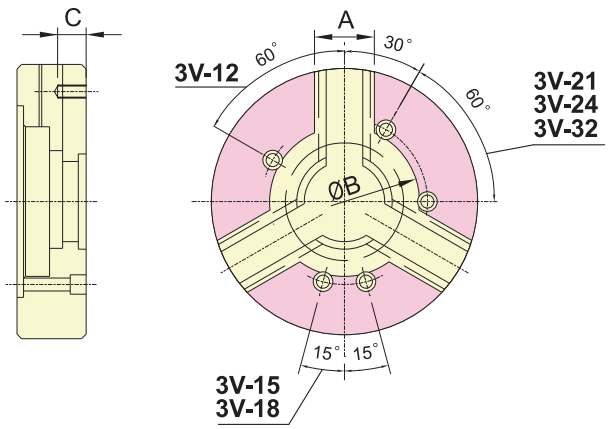
- 上爪是經由 T 型塊及連接螺絲安裝於主爪上並可在主爪排齒調整上爪的位置。
- 如果在安裝上爪時，主爪位於開端，T 型塊與防塵蓋的距離少於主爪的行程，那麼 T 型塊將會撞擊防塵蓋，導致防塵蓋損壞。
- 如果 T 型塊超出主爪排齒基準位置，T 型塊將會撞擊到防塵蓋，導致防塵蓋損壞。

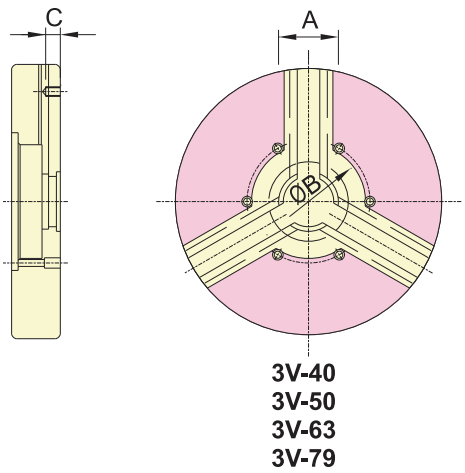
- The top jaw is mounted on the master jaw with T-nut and mounting bolt. At this time, the mounting position of the top jaw can be changed by a engaged place of serration.
- If the top jaw is mounted with the master jaw opened, the cover is damaged because T-nut interferes with the cover if the distance between T-nut and the cover is less than the master jaw stroke take extreme care when mounting the top jaw.
- If T-nut front edge protrudes from the reference position of master jaw, T-nut will interfere with cover, so that causing the cover damage.




- T 型螺帽前緣不可突出主爪排齒基準位置，如果超出，T 型螺帽將會碰撞到防塵蓋，導致防塵蓋損壞。
- 斜線區域為可追加工範圍。

- If T-nut front edge protrudes from the reference position of master jaw, T-nut will interfere with cover, so that causing the cover damage.
- Shaded area is possible to bore or tap additionally.




- C 為鑽孔或攻牙可允許之深度。

- C is permissible depth of drilling or processing.

| 寸法 Dim / 型號 Model | A | B | C max. |
|---|---|---|---|
| 3V-12 | 81 | 180 | 30 |
| 3V-15 | 103 | 215 | 30 |
| 3V-18 | 113 | 280 | 30 |
| 3V-21 | 116 | 240 | 35 |
| 3V-24 | 126 | 320 | 35 |
| 3V-32 | 126 | 320 | 40 |
| 3V-40 | 164 | 360 | 45 |
| 3V-50 | 164 | 360 | 45 |
| 3V-63 | 164 | 360 | 45 |
| 3V-79 | 164 | 360 | 45 |

# 6. 軟爪的製造成形

- 調整軟爪位置可將固定主爪之六角孔圓頭螺絲鬆開使與主爪分離。
- 依據工件大小、尺寸、質料、表面精度及切削條件來選擇合適之軟爪。
- 軟爪製程中油壓壓力必須與實際工作時相同或較低。

**IMPORTANT**
**留 意 事 項**

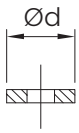
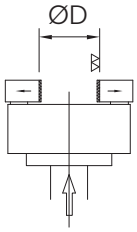
- 盡可能將工件夾持在行程中點。

# 6. Forming of soft jaws

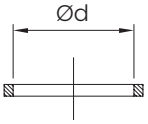
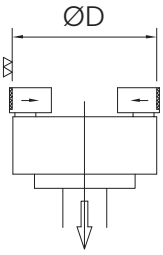
- Since the sofe jaw can be easily separated from the master jaw by loosening haxagon socket head screws, it can be freely adjusted by changing the engaged position on the serration.
- Fit a suitable soft jaw according to the shape, size, material, surface roughness and cutting conditions of the workpiece.
- Adjust the cylinder pressure in forming the soft jaw to the same or less as cutting a workpiece.

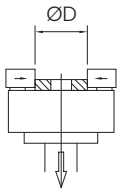
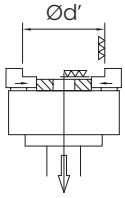
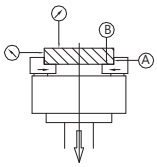
- It is desirable to chuck the workpiece in the central part of the stroke.

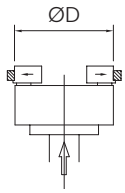
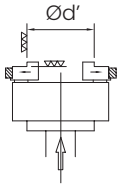
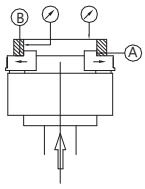
## 外徑夾持 External gripping

| | |
|---|---|
| ①   | 準備一個表面粗度▽▽▽內且無變形內壁厚度的適當圓盤。<br>注意）先備妥不同尺寸之圓盤。<br>Prepare the plug for forming. Forming outer dia. Of plug is limited to ▽ ▽ ▽ finshing. Ensurs the plug is strong with a suitable wall thickness.<br>Note) It is necessary to prepare different size plugs in advance. |
| ②   | 以切換閥將主爪完全打開。<br>而後計算直徑 D 使持 d 時主爪位於行程中點處。<br>Open the master jaw fully by operating the valve.<br>Next, set ØD dimension to grip around the middle of the maximum jaw stroke.<br>ØD ≒ Ød + Max Stroke of jaw / 2 |

## 內徑夾持 Internal gripping

| | |
|---|---|
| ①   | 準備一個內徑表面粗度在▽▽▽內且不變形具有適當厚度之圓環。<br>Prepare a ring wich outer diameter is limited to ▽ ▽ ▽ finishing and with a suitable wall thickness. |
| ②   | 以切換閥將主爪關至最小。<br>而後計算直徑 D 使夾持 d 時主爪位於行程中點處。<br>Close the master jaw as far as it will go by operating the valve.<br>Next, set ØD dimension to grip around the middle of the maximum jaw stroke.<br>ØD ≒ Ød - Max Stroke / 2. |

| | |
|---|---|
| ③<br>  | 以切換閥使ØD之成型部分夾持圓盤。必須以夾頭端面支撐以防止傾斜。<br>注意）開合夾頭數次，以確定圓盤夾持正確。<br>Girp the plug in ØD by operating the valve.<br>Note) Be sure the plug is correct so that repeat chucking several times. |
| ④<br>  | 成型一個工件夾持部份 Ød 時，需持續夾持圓盤，其尺寸必須相同 (H7) 於工件之夾持直徑，且表面粗度小於 6s。<br>製程中其壓力必須與實際夾持工件時相同。<br>注意 ) 如圓盤產生變形時，須降低壓力或以較厚之圓盤。<br>Form the part Ød' for gripping the workpiece with the plug still gripped.<br>Machine the part Ød' to the same diameter(H7) as the workpiece and surface roughness less than 6s.<br>Set the gripping pressure for the jaws to be approximately the same as when the workpiece is gripped.<br>Note) If the plug is distorted, reduce the pressure or alternatively use a stronger plug with additional wall thickness. |
| ⑤<br>  | 成型後，夾持工件以檢查夾頭行程。<br>試切工件而後檢視其加工精度…等。<br>使用內徑 (A) 及端面 (B) 來夾持。<br>After forming jaws, grip the workpiece to check the jaw stroke.<br>Perform trial cutting to inspect machining accuracy,etc.<br>Grip the workpiece 2-face fitting of face A and face B. check and face(B). |

| | |
|---|---|
| ③<br>  | 以切換閥使ØD之成型部分夾持圓盤。必須以夾頭端面支撐以防止傾斜。<br>注意）開合夾頭數次，以確定圓盤夾持正確。<br>Girp the ring in ØD part by operating the valve.<br>Note) Be sure the plug is correct so that repeat chucking several times. |
| ④<br>  | 成型一個工件夾持部份 Ød 時，需持續夾持圓盤，其尺寸必須相同 (h7) 於工件之夾持直徑， 且表面粗度小於 6s。<br>製程中其壓力必須與實際夾持工件時相同。<br>注意 ) 如圓盤產生變形時，須降低壓力或以較厚之圓盤。<br>Form the part Ød' for gripping the workpiece with the plug still gripped.<br>Machine the part Ød' to the same diameter(h7) as the workpiece and surface roughness less than 6s.<br>Set the gripping pressure for the jaws to be approximately the same as when the workpiece is gripped.<br>Note) If the plug is distorted, reduce the pressure or alternatively use a stronger plug with additional wall thickness. |
| ⑤<br>  | 成型後，夾持工件以檢查夾頭行程。<br>試切工件而後檢視其加工精度…等。<br>使用外徑 (A) 及端面 (B) 來夾持。<br>After forming jaws, grip the workpiece to check the jaw stroke.<br>Perform trial cutting to inspect machining accuracy, etc.<br>Grip the workpiece 2-face fitting of face A and face B. check and face(B). |

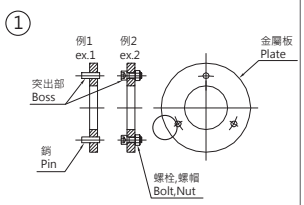
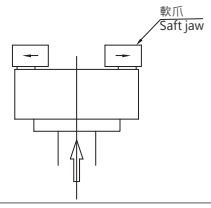
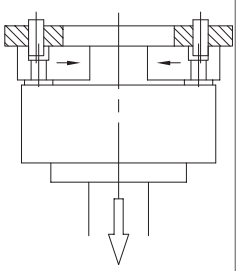
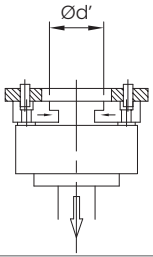
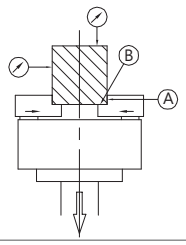
IMPORTANT
留 意 事 項

## 高夾持精度時的成型方法
## （例：外徑夾持情況）

欲達成高夾持精度時， 可如圖 1 來成型夾具，軟爪成型必須與實際加工情況相同。

## Method for forming soft jaws when higher accuracy is required
## (e. g. External gripping)

With jigs used as shown in the following figure, soft jaws can be formed under the same conditions as the machining of the workpiece. jaws will enable higher accuracy to be achieved.

| | | |
|---|---|---|
| ①  | 準備好成型的夾具（市售亦可）安裝銷（例 1) 或螺絲及螺帽（例 2) 於一個圓環狀三等分的金屬扳上。使用一個沒有變形及內壁有一定厚度的圓環。 | Prepare jigs for forming. (Available also from maket) Fit pins (EX.1) or nuts and bolts (EX.2) to the ring shaped plate divided equally into three. Use a strong ring with a sutiable wall thickness. |
| ②  | 以切換閥將主爪開至最大。 | Fully open master jaws by operationg the valve. |
| ③  | 以切換閥把成型夾具的突出部分插入軟爪的螺絲孔內，而後將其夾持，此時將成型夾具的端面部分與軟爪的前端壓合，如此在夾持時方不致於震動。<br>夾持時，檢查主爪是否位於行程中點附近。<br>製程中油壓力必須與實際夾持工作物時相同或較小。 | Operating the valve, insert projections of jig into the bolt holes of the soft jaw before gripping. At this time, enforce the jig to the jaw, ensuring closed fit.<br>Check that the work is gripped nearby center of correct stroke.<br>Set the hydraulic pressure to form jigs to the same or less pressure when the workpiece is machined. |
| ④  | 保持成型夾具被夾持的情況，成型 工作物的夾具部分 Ød’，加工 Ød’ 時尺寸必須與工件夾持部分的直徑相同 (H7)，而表面精度比 6S 還小。 | Form the part Ød’ for gripping the workpiece with the plug still gripped. Machine the part Ød’ to the same diameter (H7) as the workpiece and surface roughness than 6s. |
| ⑤  | 成型後夾持工件以檢視其行程。<br>試切後測試工件精度。<br>使用內徑面 (A) 及端面 (B) 來夾持。 | After forming jaws,grip the workpiece to check the jaw stroke.<br>Perform trial cutting to inspect machining accuracy, etc.<br>Grip the workpiece 2-face fitting of face A and face B. |

# 7. 維護及檢查

# 7. Maintenance and inspection

**WARNING 警 告**

- 長時間定期地潤滑可保持夾頭壽命。
  錯誤的潤滑將導致夾持力減弱、精度不良，磨損及卡住，故必須潤滑夾頭。

- To maintain the chuck for a long period of time, it is necessary to lubricate the chuck on a regular basis.
  Inadequate lubrication causes malfunction at low hydraulic pressure, reduces gripping force and affects gripping accuracy, and causes wear and seizure.
  Consequently, securely lubricate the chuck.

| 潤滑的處所 | 潤滑油種類 | 潤 滑 週 期 |
|---|---|---|
| 使用潤滑油槍將潤滑油注入每一個主爪周圍的油嘴。 | 二硫化鉬潤滑油 | 每日一次，但如果夾頭在高速旋轉或大量的水性切削液於加工中使用時，需要更多的潤滑，請依照不同的情況來決定。 |

| Section to be lubricated | Grease useds | Lubrication cycle |
|---|---|---|
| Apply grease from the grease nipple at the periphery end of each master jaw with a grease gun. | Moly Kote EP Grease (DOW CORNING CO.,LTD) | Once a day. However, when the chuck is operated at high speed rotation or a large amount of water soluble cutting oil is used, more of lubricated is needed according to service conditions. |

- 加工完後務必以風槍或類似的工具清潔夾頭本體及滑道面。
- 避免因生鏽而降低夾持力，需使用防銹之切銷油。

- After machining, clean the chuck body and slideway with air gun, etc.
- Use rust prevention coolant oil so that rust does not reduce gripping force.

**CAUTION 注 意**

- 每六個月（或每 10 萬次）取下夾頭做一次徹底之清潔（切削鑄鐵則每二個月至少一次）。
  檢查零件有無損壞或磨損，如嚴重時立即更換新品。
- 組裝前須充份潤滑。

- Disassemble and clean the chuck at least once per 6 months or every 100,000th used (once every two months for the casting )
  See if parts are worn or cracked and replace it if required.
- Lubricated the chuck before reassembling.

# 8. 故障排除

如夾頭故障，請停下來檢查，依下列情況來處理。

| 不正常情況 | 可 能 原 因 | 對　　策 |
|---|---|---|
| 夾頭不能動作 | 夾頭的零件損壞。 | 分解夾頭及更換。 |
| | 滑動部份被卡住。 | 分解夾頭及取出被卡住的部份，以油石修整之或更換。 |
| | 迴轉油壓缸停止運作。 | 檢視油壓系統，如減壓閥、洩壓閥…等。 |
| 主爪的全行程不足 | 內部積存了太多的雜屑。 | 分解後清理。 |
| | 拉桿鬆脫。 | 重新鎖緊拉桿。 |
| 工 作 物有滑動的情況 | 主爪的夾持行程不足。 | 重新夾持工件使得主爪的位置於行程的中點。 |
| | 夾頭的夾持力不足。 | 檢視所設定的油壓壓力是否到達。 |
| | 上爪的形成直徑與工件的直徑不同。 | 使用正確的成形方法重做一次。 |
| | 切削力量太大。 | 重新計算一次切削力量而確認是否合乎此夾頭的規格。 |
| | 主爪滑道的潤滑油不足。 | 依據潤滑過程重新潤滑各部而後在沒有工件下操作夾頭數次。 |
| | 迴轉速度過高。 | 降低迴轉數到標準內，以減少離心力的影響。 |
| 精度不良 | 夾頭之外徑偏擺過大。 | 校正外徑或端面的偏擺及鎖緊螺絲。 |
| | 主爪與上爪間有外在因素干預，如灰塵…。 | 取下夾爪並且完全清理。 |
| | 上爪固定螺絲沒有鎖緊。 | 以適當力矩鎖緊。 |
| | 夾持力過大，使工件變形。 | 降低夾持力到適當程度，使得機器可以夾緊工作物但不致變形。 |
| | 上爪高度太高，使上爪或固定螺絲變形。 | 降低上爪至標準高度。（選用一個標準的尺寸） |
| | 在成形上爪的過程不當或不完善。 | 確定成形圈是否對稱，與平行在夾頭之端面。<br>檢查成形圈的外形是否因夾持力過大而導致變形。<br>例外，檢查在成形時油壓壓力及成形面的表面粗度。 |

備註：

簡單的故障請自行處理，如無法自行處理或特殊狀況時，可通知您的經銷商或寄回本公司處理。

# 8. Troubleshooting

If the chuck malfunctions, stop the lathe and try the following countermeasures.

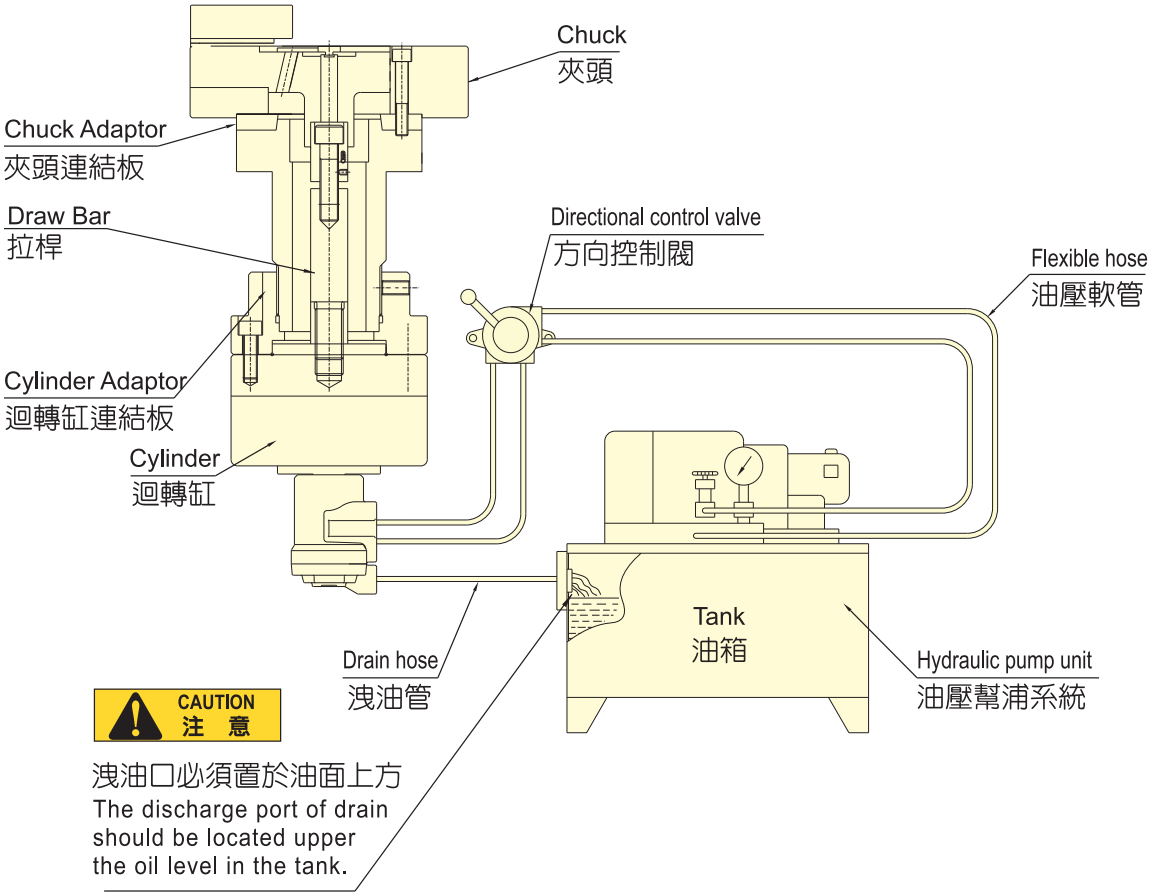
| Problem | Possible Reasons | Countermeasures |
|---|---|---|
| Chuck will not work | Chuck part is damaged. | Disassemble and replace part. |
| | Slidway seizes. | Disassemble and repair damaged part with oil stone or make change. |
| | Chuck is not working. | Examine the hydraulic system, pressure reduction valve, over valve.....etc. |
| Insufficient master jaw total stroke | Too much swarf in chuck. | Disassemble and clean. |
| | Draw pipe is loose. | Afresh locking Draw pipe. |
| Workpiece slippage | Insufficient master jaw clamping stroke. | Make arrangement such that when workpiece is chucked the master jaw will be in the stroke center. |
| | Chucking force is insufficient. | Check that hydraulic pressure adequately set. |
| | Formed dia of top jaw does not match workpiece dia. | Reform top jaw according to correct method. |
| | Cutting force is too high. | Calculate cutting force and confirm whether the force matches chuck specifications. |
| | Insufficient lubrication on master jaws and each slideway. | Lubricate from the grease nipple and chucking operation of jaws several times without workpiece in the chuck. |
| | Speed is too hight. | Reduce speedup to necessary gripping force. |
| Poor accuracy | Perphery of chuckis run out. | Confirm peripheral and end face run-out and tighten bolts. |
| | Foreign mater is caught in serrations between master and top jaws, dust...ect. | Remove top jaw and clean serrations thoroughly. |
| | Top jaw mounting bolts are inadequately tightened. | Tighten bolts to correct torque. |
| | Workpiece is deformed by too much gripping force. | Reduce gripping force to prevent deformation. |
| | Top jaw is deformed and top jaw bolts are extended because top jaw is too high. | Reduce the height of the top jaw by replacing with standard size jaw. |
| | Forming of top jaw is inadequate. | Check that forming plug is parallel to chuck end face and plug is not deformed due to gripping force. Also, check hydraulic pressure while forming, and face roughness. |

Remark :

Please contact your local distributor or agent. If no distributor or agent locally, then contact AUTOGRIP Machinery Co., Ltd. On receipt of the product, we will inform you immediately of repair chedule. Please call us if you find any problems.

## 9. 裝配概要圖

## 9. Assembly drawing



為精進產品品質，本公司擁有變更之權利，如有變更恕不另行通知。
We reserve the right to modify without prior notice.


佳賀精機股份有限公司
AUTOGRIP MACHINERY CO., LTD.

513006 彰化縣埔心鄉明聖路一段229號
No. 229, Sec. 1, Mingsheng Rd., Puxin Township,
Changhua County 513006, Taiwan

T +886-4-822-8719
F +886-4-823-5719
E sales@autogrip.com.tw
www.autogrip.com.tw


ISO 9001

V.2024.10