D/U/E type

後拉式動力夾頭

PULL DOWN POWER CHUCK

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 paypparticular 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

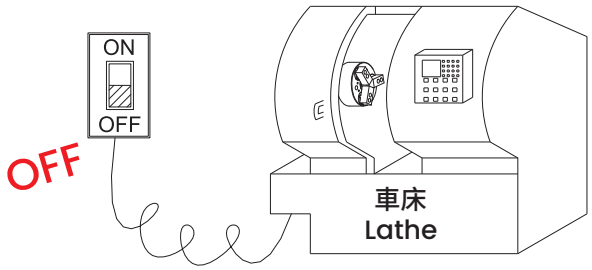
請詳閱本說明書，並依循指示說明。若未依照指示，錯誤的使用而致引起的損傷或意外事，本公司概不負責。

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.

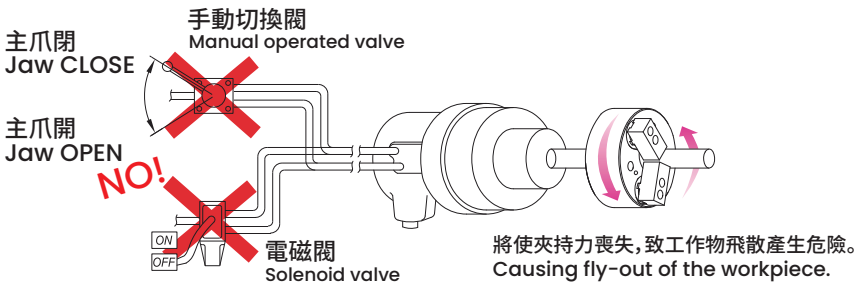
DANGER 危 險

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.

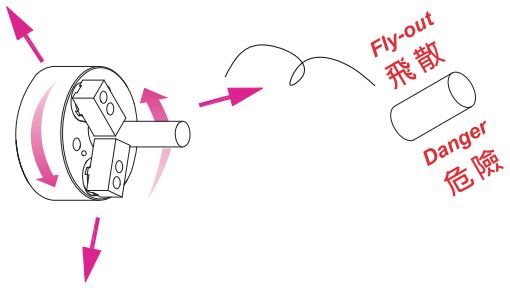


當主軸迴轉時，切勿操作切換閥。
Never operate the selector valve and the solenoid valve during the spindle rotation.



最大旋轉速度必須為夾頭或油壓缸所容許之最高迴轉速中較低者。
The max. speed must be the lower of the max. speed allowed by the power chuck or the hydraulic cylinder.

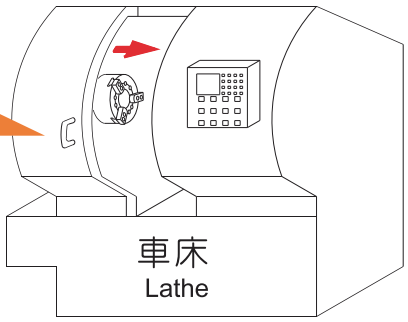
迴轉數增加時,離心力相對的增加而降低夾持力, 易導致工作物飛散產生危險,故需依切削條件選擇適當的轉數。
Gripping force decreases due to centrifugal force as speed of chuck increases, thereby causing the discharge of workpiece.



WARNING
警　告

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.

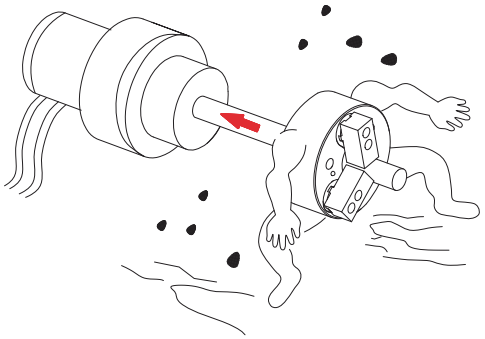
Close 關緊



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

不可超過拉桿容許之最大入力。
Don't exceed Max. allowable plunger input force.

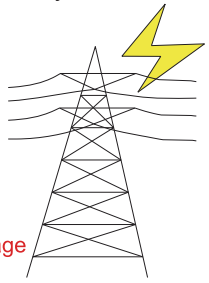
輸入力
Input force



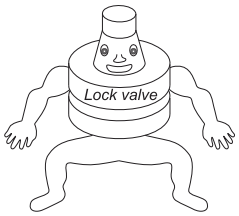
如油壓缸出力超過夾頭容許最大值，
將致使夾頭變形或破裂之危險。
If input force of plunger is exceeded,
chuck may be deformed or broken.

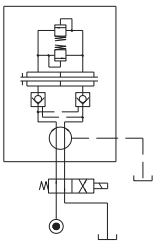
某些型式的迴轉缸內建有"逆止閥"機構，當電源意外中斷時，能防止迴轉缸內部壓力遽降，保持穩固的夾持。
In case of power failure, AUTOGRIP's some cylinders are fitted with check valves and pressure relief valves. When power is restored, he solenoid valve resumes its normal function.

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.



停電
Power Outage



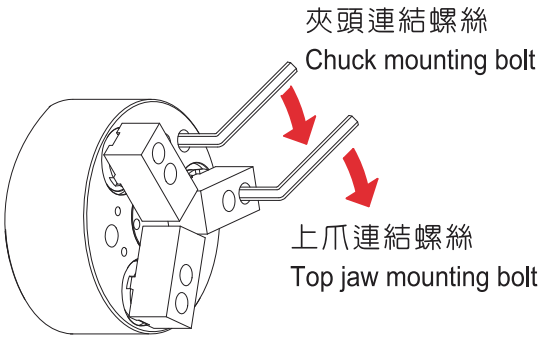


設定工件在正確的夾持位置
Set the workpiece to the correct gripping position.

WARNING
警　告

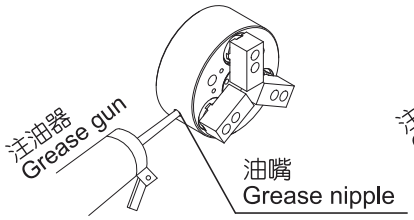
連結螺絲請依照附表所指定之力矩鎖緊。
Secure mounting bolts with specified torque.

螺絲規格 Bolt size	鎖緊力矩 Tightening torque
M6	12.7 N・m (1.3 kgf・m)
M8	38.2 N・m (3.9 kgf・m)
M10	72.6 N・m (7.4 kgf・m)
M12	106.8 N・m (10.9 kgf・m)
M14	170.6 N・m (17.4 kgf・m)
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)

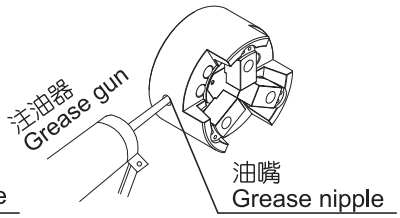


應確實給油。
Don't miss to lubricate chuck.

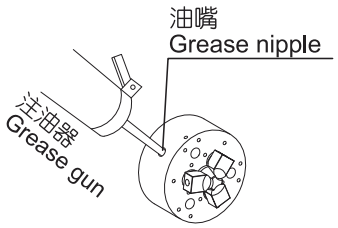
給油不足時. 會降低夾持力。
Lowering gripping force caused by insufficient lubrication.



3D



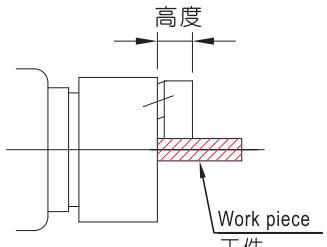
3U



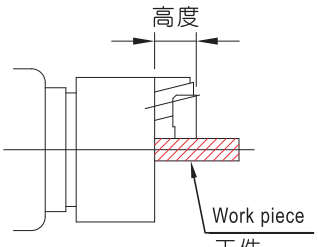
3E

軟爪的高度，必須再最大夾持力的限制範圍。使用加高軟爪時，需降低油壓力及迴轉數。
Hight of soft jaw must be in restriction range of max.clamping force. Using higher top jaw than standard should reduce input force and rotating speed.

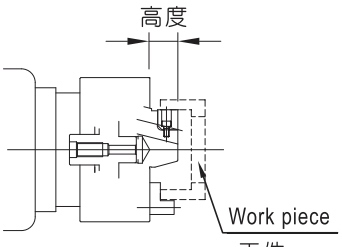
如果夾頭損壞,卸下夾頭或工件易發生危險。
Danger by discharge of chuck or workpiece in case of damaging of chuck.



3D



3U

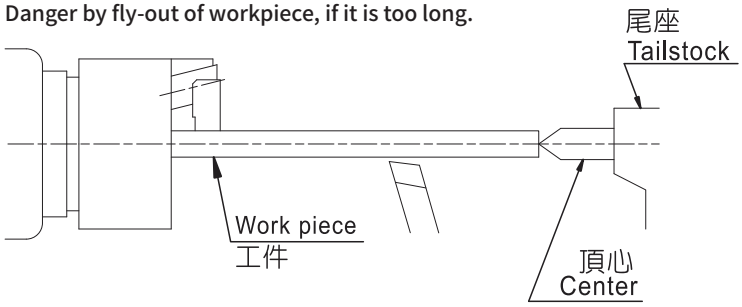


3E

WARNING
警 告

車削長工件物時，必須以尾座頂針或止震套環支撐。(3E型不適用)
When machining a long workpiece, steady it with a center of tailstock or support collar.
(Not applicable to 3E type)

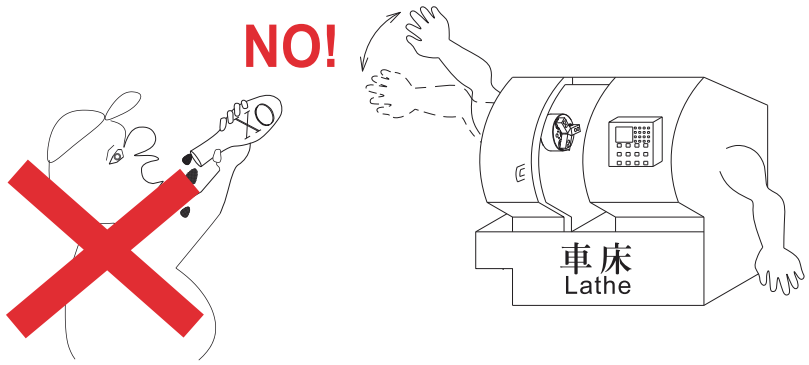
太長而沒有輔助支撐之工件，會有飛散之危險。
Danger by fly-out of workpiece, if it is too long.



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.

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.

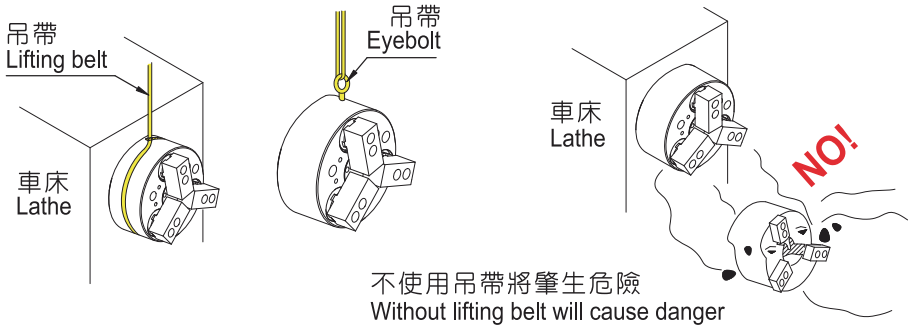


WARNING
警　告

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

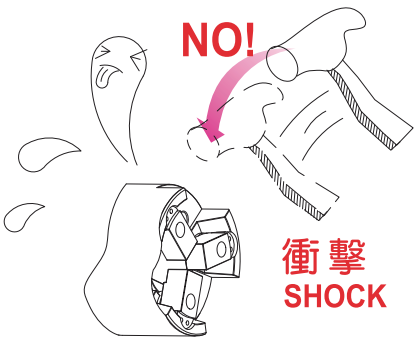
拆裝夾頭時，務必使用吊帶或吊環。
Have to using eyebolt or lifting belt, when mounting or dismantle chuck.



不使用吊帶將肇生危險
Without lifting belt will cause danger

夾持工件時，請注意不要被夾到手。(3E型不適用)
When clamping workpiece, make sure your hand not to be hurt. (Not applicable to 3E type)

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

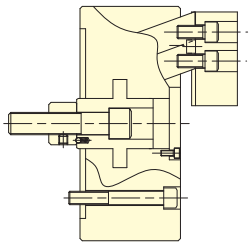


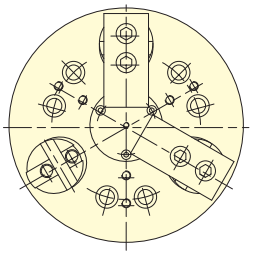
2. 後拉式動力夾頭 (3D type)

2. Pull down power chuck(3D type)

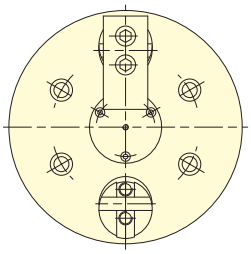
2.1 後拉式動力夾頭規格

2.1 Specification of pull down power chuck





3D

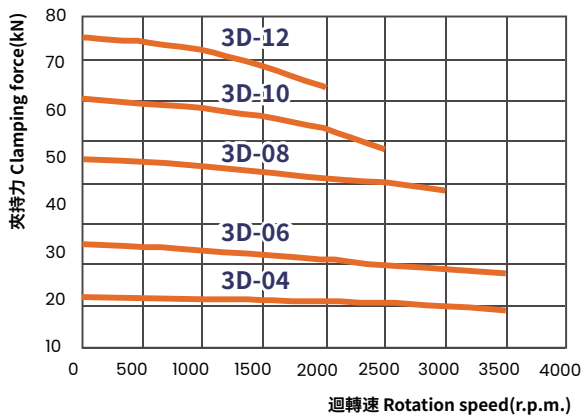


2D

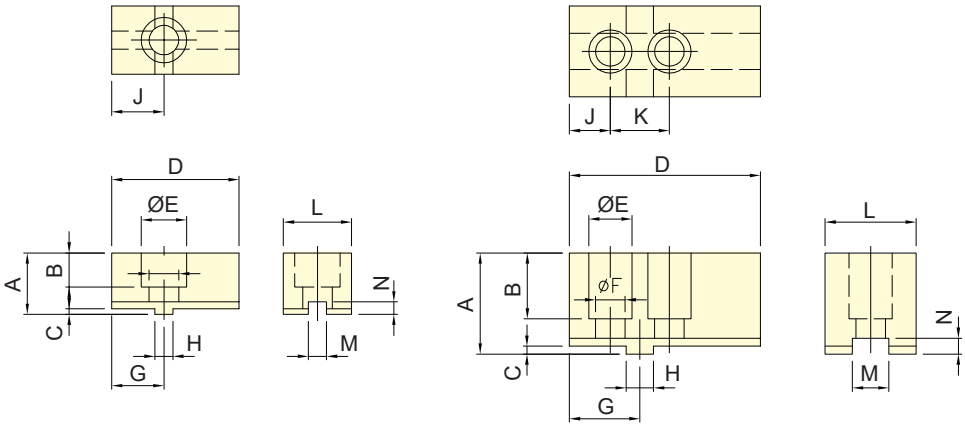
型號	楔心行程	爪行程 (直徑)	夾持直徑 Chucking Dia.		容許最大入力	最大夾持力	最高迴轉數	I	重量	適用迴轉缸	最大使用壓力
Model	Plunger stroke	Jaw stroke (Dia.)	最大 Max.	最小 Min.	Max. D.B. pull	Max. Clamping force	Max. speed	Moment of inertia	Weight	Matching cyl.	Max. pressure
	mm	mm	mm	mm	kN (kgf)	kN (kgf)	min^{-1} (r.p.m.)	kg・m^2	kg		MPa (kgf/cm^2)
3D-04	7	5	110	13	6.0(612)	10.5(1070)	3500	0.007	4.5	RK-75	1.6(16.5)
3D-05	7	5	135	21	10.0(1020)	17.0(1730)	3500	0.018	7.9	RK-75	2.7(27.5)
3D-06	10	7.2	165	22	15.0(1530)	25.0(2550)	3500	0.051	15	RK-100	2.1(21.4)
3D-08	10	7.2	210	28	25.0(2550)	45.0(4590)	3000	0.15	26	RK-125	2.2(22.5)
3D-10	15	10.8	254	35	35.0(3569)	60.0(6118)	2500	0.37	46	RK-125	3.1(31.6)
3D-12	15	10.8	304	50	45.0(4590)	75.0(7650)	2000	0.79	70	RK-150	2.8(28.5)
3D-15	20	14.5	381	60	53.9(5500)	90.0(9180)	1500	2.25	132	RK-150	3.4(34.2)

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)
2D-06	10	7.2	165	22	10.0(1020)	16.7(1700)	3500	0.045	12	RK-100	1.4(14.3)
2D-08	10	7.2	210	28	16.7(1700)	30.0(3060)	3500	0.13	23	RK-125	1.5(15)
2D-10	15	10.8	254	35	23.3(2379)	40.0(4079)	2500	0.34	43	RK-125	2.1(21.1)

後拉式動力夾頭 夾持力曲線圖 3D type Gripping Force Graph



2D/3D 夾頭之標準生爪 Standard Soft Jaw for 2D/3D chuck



for 04"~06"

for 08"~15"

型號 MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N
3D-04	22	13	2.5	52	17.5	11	19	8	19	-	25	8	5.5
3D-05	27	15	2.5	56	20	13	23	8	23	-	30	8	5.5
3D-06	34	21	3	70	23	15.5	27	10	27	-	35	10	6
3D-08	44.5	29	3.5	84	19	13	31	12	18	26	40	16	7
3D-10	49.5	32	3.5	100	22	15	38	15	22	32	50	18	7
3D-12	54.5	36	3.5	120	26	18	42	17	24	36	60	20	7
3D-15	65	40	5	165	26	18	60	20	40	40	70	24	10

2.2 後拉式動力夾頭零件表

2.2. Parts list of pull down power chuck

型式 3D Type

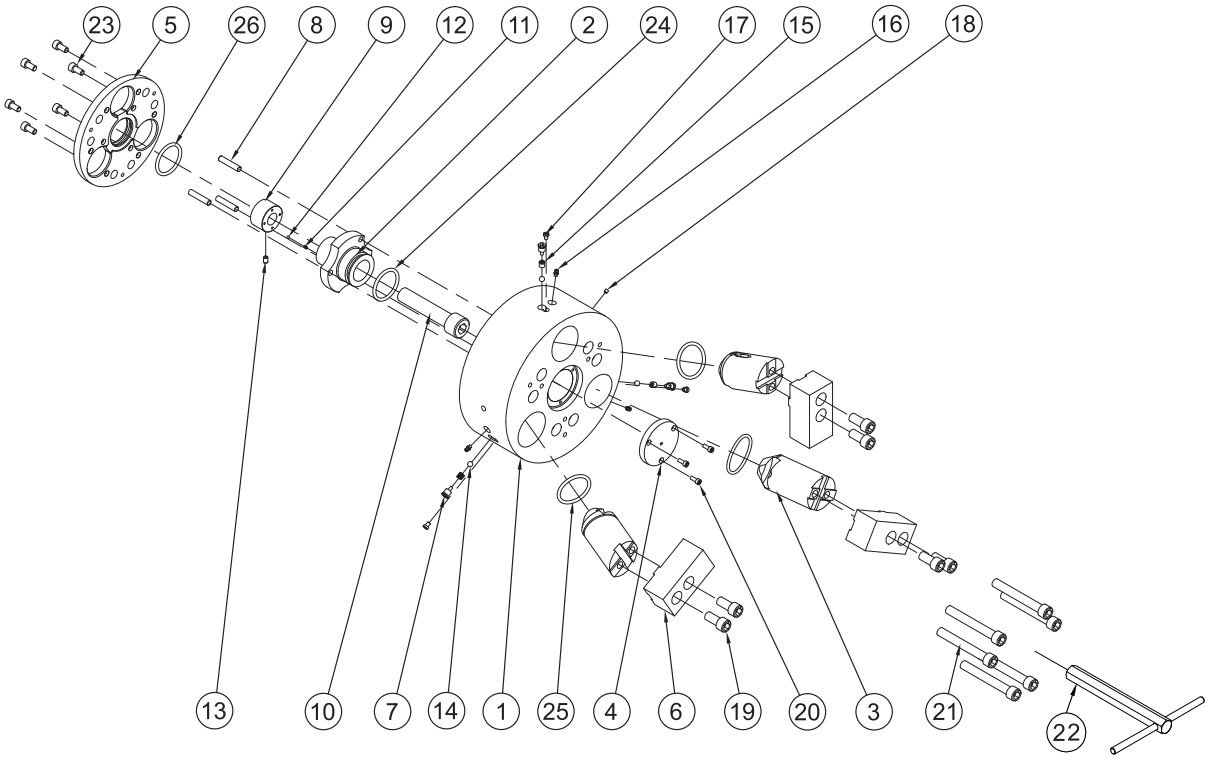


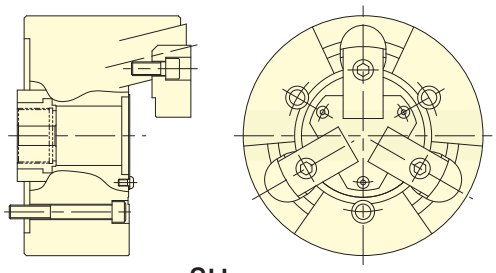
Fig.1

No.	零件名稱	Name of parts	Q'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	法蘭蓋	Plate	1
6	軟爪	Soft jaw	3
7	鋼珠頂針	Steel ball thimble	3
8	止迴銷	Guide pin	3
9	連結管螺帽	Draw nut	1
10	連結管螺栓	Draw screw	1
11	彈簧	Spring	1
12	鋼珠	Steel ball	1
13	六角孔固定螺絲	Hex. socket set screw	1

No.	零件名稱	Name of parts	Q'ty
14	鋼珠	Steel ball	3
15	彈簧	Spring	3
16	油嘴	Grease nipple	4
17	低頭螺絲	Low head screw	3
18	六角孔固定螺絲	Hex. socket set screw	1
19	軟爪連結螺栓	Jaw mounting bolt	3or6
20	六角孔圓頭螺栓	Hex. socket cap bolt	3
21	夾頭安裝螺栓	Chuck mounting bolt	6
22	六角扳手 (附件)	Joint handle (accessory)	6
23	六角孔圓頭螺栓	Hex. socket cap bolt	6
24	O 型環	O-ring	1
25	O 型環	O-ring	3
26	O 型環	O-ring	1

3. 後拉固鎖式動力夾頭 (3U/3U-K type)

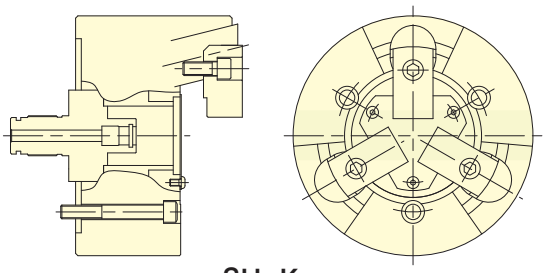
3.1 後拉固鎖式動力夾頭規格



3U

3. Pull lock power chuck (3U/3U-K type)

3.1 Specification of pull lock power chuck

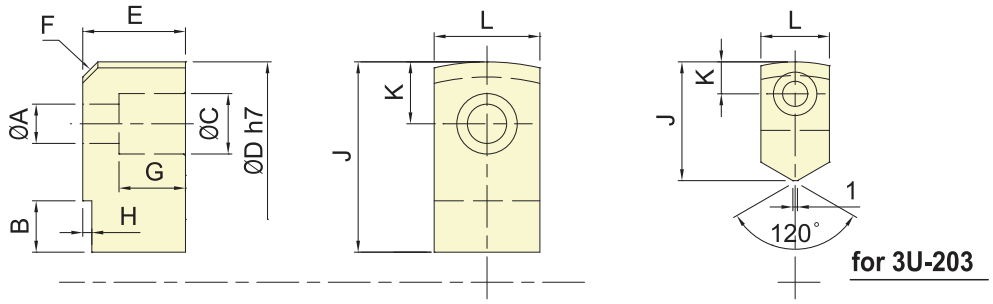


3U-K

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)
3U-203	4	2	42	14	5.8(590)	16.7(1700)	10000	0.001	1.8	RK-75(N)	1.6(16)
3U-204	6	3	60	10	10.0(1020)	28.4(2900)	8000	0.005	3.9	RK-75(N)	2.7(27)
3U-205	6	3	84	15	13.9(1420)	39.7(4050)	8000	0.012	6.8	RK-100(N)	2.0(20)
3U-206	10	5	105	24	17.9(1830)	57.8(5900)	7000	0.055	14.7	RK-100(N)	2.6(26)
3U-208	12	6	132	25	25.0(2550)	80.0(8150)	6000	0.14	25.5	RK-125(N)	2.2(22)
3U-210	10	5	163	34	31.0(3160)	100.0(10100)	4500	0.36	43.5	RK-125(N)	3.1(31)
3U-212	10	5	210	81	35.0(3570)	100.0(10100)	3600	0.68	63.0	RK-125(N)	3.1(31)

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)
3U-205K	6	3	84	15	13.9(1420)	39.7(4050)	8000	0.018	6.8	RL-100, RL-A100N	2.0(20)
3U-206K	10	5	105	24	17.9(1830)	57.8(5900)	7000	0.055	14.9	RL-100, RL-A100N	2.5(25)
3U-208K	12	6	132	25	25.0(2550)	80.0(8150)	6000	0.14	25.8	RL-125, RL-A125N	2.2(22)
3U-210K	10	5	163	34	31.0(3160)	100(10100)	4500	0.36	44.0	RL-125, RL-A125N	3.1(31)
3U-212K	10	5	210	81	35.0(3570)	100(10100)	3600	0.68	63.8	RL-125, RL-A125N	3.1(31)

3U 夾頭之標準生爪 Standard Soft Jaw for 3U chuck



型號 MODEL	A	B	C	D	E	F	G	H	J	K	L
3U-203	5.5	11	9.5	66	12	C3	7	3	26	7	15
3U-204	6.6	11	11	84	17	C4	11	3	32	9.5	20
3U-205	9	13.5	14	108	20	C4	12	3	41.5	13	24
3U-206	11	15	17	129	30	C6	20	3	50	17	30
3U-208	13	17	20	156	34	C6	22	3	63	20.5	35
3U-210	15	20	22	187	39	C6	24	4	74	23	40
3U-212	15	18	22	234	44	C6	29	4	72	23	40

3.2 後拉固鎖式動力夾頭零件表

3.3 Parts list of pull lock power chuck

型式 3U/3U-K Type

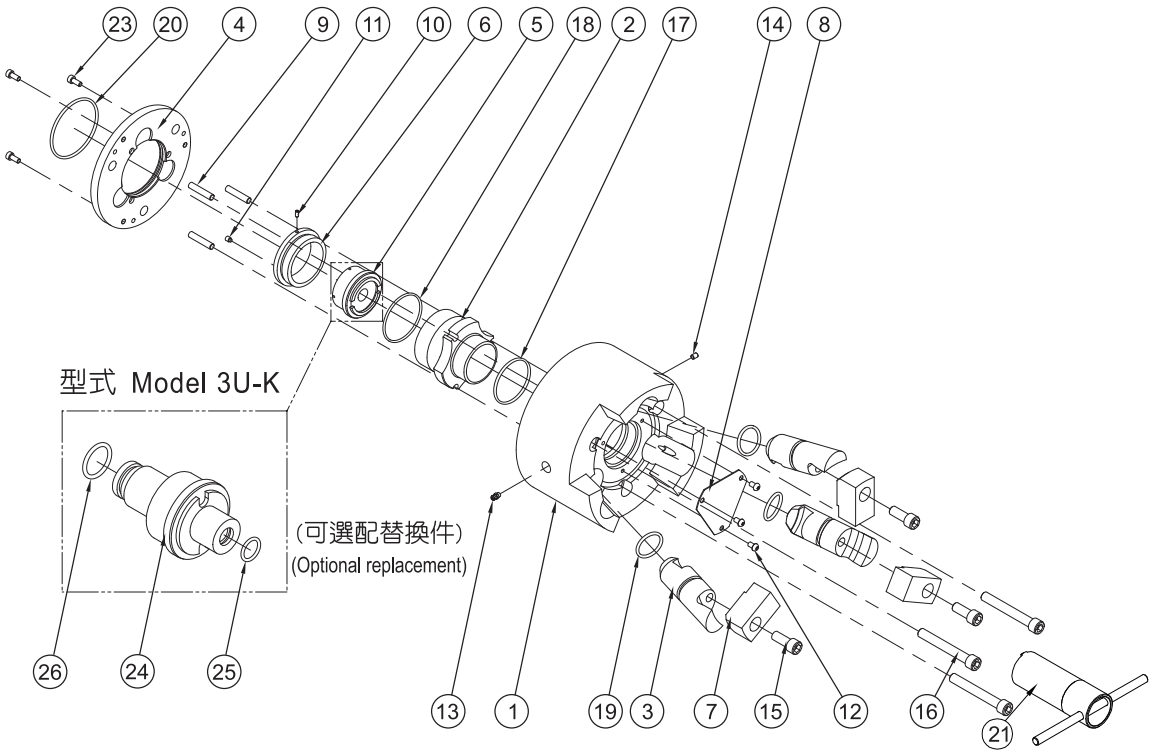


Fig.2

型式 3U type

No.	零件名稱	Name of parts	Q'ty
1	本體	Body	1
2	中仁	Wedge plunger	1
3	主爪	Master jaw	3
4	法蘭蓋	Plate	1
5	連結螺帽	Draw nut	1
6	壓環	Retainer	1
7	軟爪	Soft jaw	3
8	防塵蓋	Cover	1
9	止迴銷	Guide pin	3
10	定位珠	Steel ball	1
11	六角孔固定螺絲	Hex. socket set screw	1
12	六角孔半圓頭螺絲	Hex. socket button screw	3

No.	零件名稱	Name of parts	Q'ty
13	油嘴	Grease nipple	1 OR 3
14	六角孔固定螺絲	Hex. socket set screw	1
15	軟爪連結螺栓	Jaw mounting bolt	3
16	夾頭安全螺栓	Chuck mounting bolt	3
17	O 型環	O-ring	1
18	O 型環	O-ring	1
19	O 型環	O-ring	3
20	O 型環	O-ring	1
21	連結扳手 (附件)	Joint handle(accessory)	1
22	吊環螺栓 (10" 以上附件)	Eye bolt(accessory 8" or over)	1
23	六角孔圓頭螺栓	Hex. socket cap bolt	3

型式 3U-K type(可選配替換件)(Optional replacement)

No.	零件名稱	Name of parts	Q'ty
24	連結桿	Draw tube	1
25	O 型環	O-ring	1

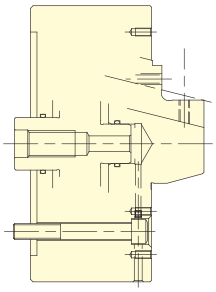
No.	零件名稱	Name of parts	Q'ty
26	O 型環	O-ring	1

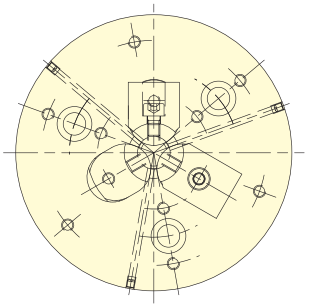
4. 內張後拉式動力夾頭 (3E type)

4.1 內張後拉式動力夾頭規格

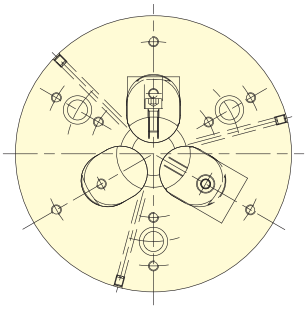
4. EXPANSIBLE PULL LOCK POWER CHUCK(3E type)

4.1 Specification of EXPANSIBLE PULL LOCK POWER CHUCK





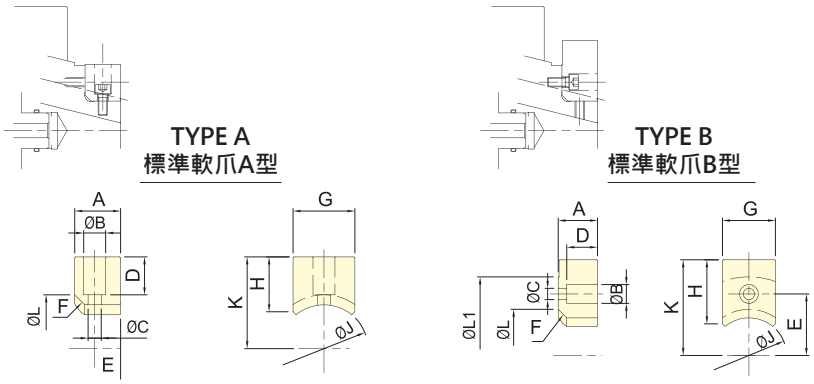
3E-05



3E-06/3E-08

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)
3E-05	6	3	83	29	13.0(1325)	42.0(4280)	7000	0.018	7.5	RK-100	1.8(18.5)
3E-06	10	5	110	44	18.0(1835)	58.0(5910)	6000	0.042	13.6	RK-100	2.5(25.6)
3E-08	10	5	150	50	25.0(2530)	80.0(8150)	5000	0.14	26.5	RK-125	2.2(22.5)
3E-10	10	5	190	60	35.0(3570)	100.0(10200)	3600	0.31	39.5	RK-150	2.8(28.5)

3E 夾頭之標準生爪 Standard Soft Jaw for 3E chuck



型號 MODEL		A	B	C	D	E	F	G	H	J	K	L	L1
3E-05	A 型	20	11	6.6	16.5	10	C5	25	22	29	34.5	39	-
	B 型	20	11	6.6	15	25.5	C5	25	30	29	42.5	39	69
3E-06	A 型	23	11	7	19	13	C5	31	27.5	44	46	54	-
	B 型	23	11	6.6	18	36	C5	31	37.5	44	56	54	92
3E-08	A 型	30	14	9	25	15	C6	35	36	50	56	62	-
	B 型	30	14	9	24	41	C6	35	56	50	76	62	112
3E-10	A 型	35	17.5	11	26.5	17.5	C5	40	40	60	64.5	70	-
	B 型	35	17.5	11	26	47.5	C5	40	71.5	60	96	70	129

4.2 內張後拉式動力夾頭零件表

型式 3E Type

4.2 Parts list of EXPANSIBLE PULL LOCK POWER CHUCK

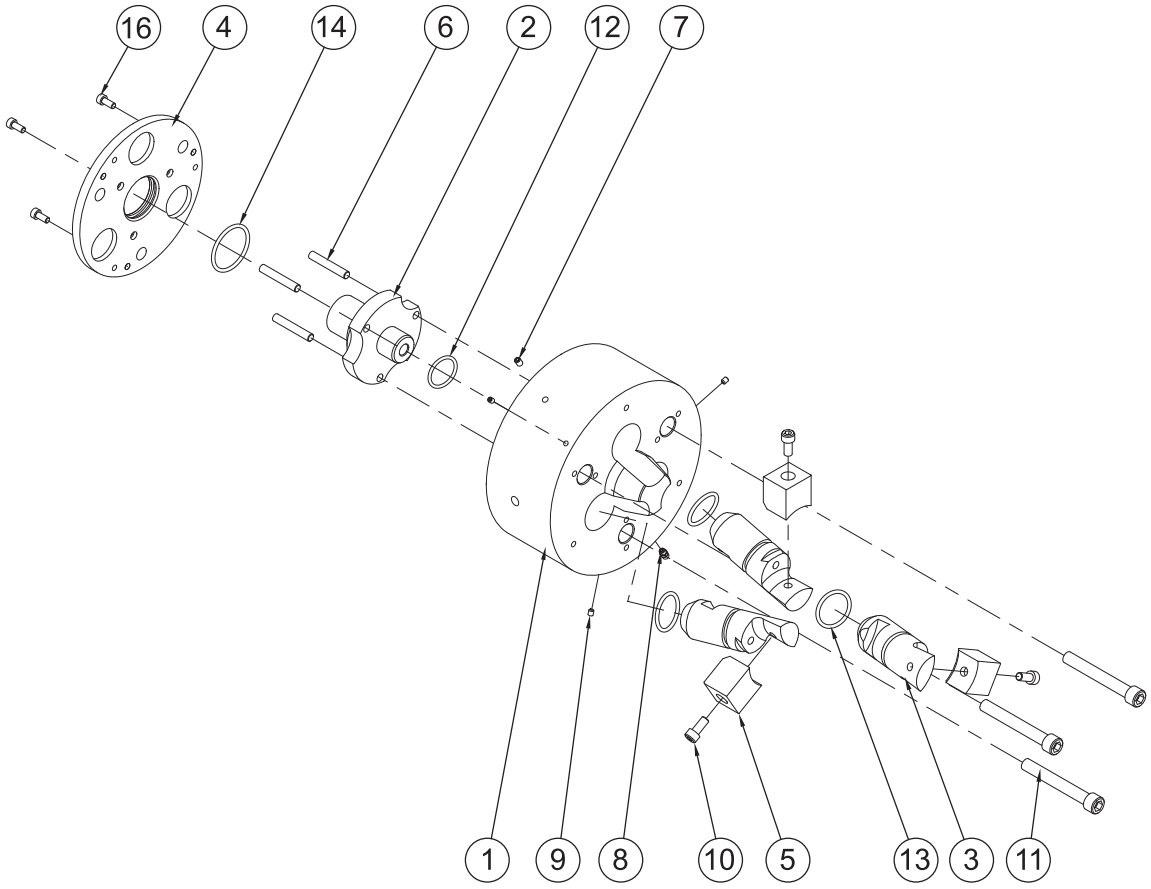


Fig.3

No.	零件名稱	Name of parts	Q'ty
1	本體	Body	1
2	中仁	Wedge plunger	1
3	主爪	Master jaw	3
4	法蘭蓋	Plate	1
5	軟爪	Soft jaw	3
6	止迴銷	Guide pin	3
7	六角孔固定螺絲	Hex. socket set screw	1
8	油嘴	Grease nipple	1

No.	零件名稱	Name of parts	Q'ty
9	六角孔固定螺絲	Hex. socket set screw	3
10	軟爪連結螺栓	Jaw mounting bolt	3
11	夾頭安全螺栓	Chuck mounting bolt	3
12	O 型環	O-ring	1
13	O 型環	O-ring	3
14	O 型環	O-ring	1
15	吊環螺栓 (10" 以上附件)	Eye bolt(accessory 8" or over)	1
16	六角孔圓頭螺栓	Hex. socket cap bolt	3

5. 拉桿的製作　　5. Manufacture of draw bar

3D 中實拉桿製作 Manufacture of Draw Bar for 3D

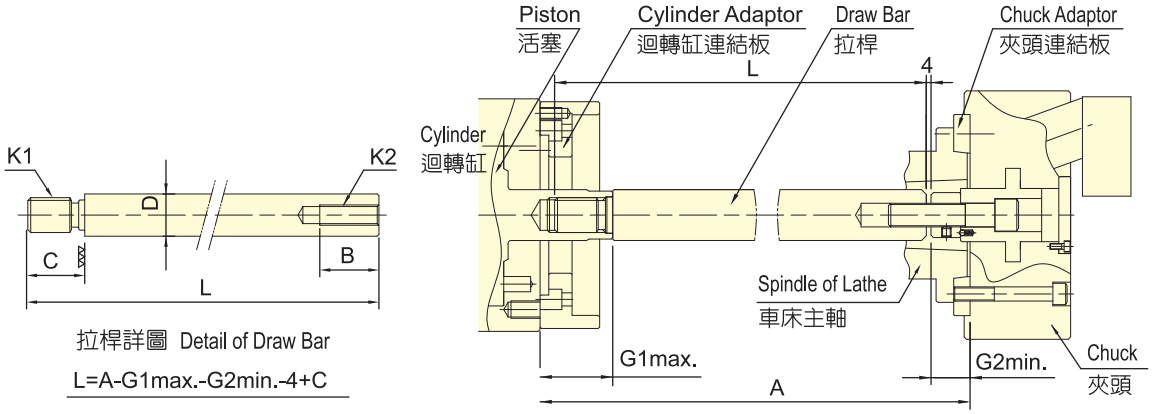


Fig.4

夾頭規格 Chuck type	迴轉缸規格 Cylinder type	B	C	D	G1 max.	G2 min.	K1	K2	L
3D-04	RK-75(N)	30	30	30	45	15	M20x2.5	M10x1.5	A-34
3D-05	RK-75(N)	30	30	30	45	17	M20x2.5	M12x1.75	A-36
3D-06	RK-100(N)	40	30	30	45	27	M20x2.5	M16x2	A-46
3D-08	RK-125(N)	40	40	35	50	28	M24x3	M20x2.5	A-42
3D-10	RK-125(N)	50	40	35	50	32	M24x3	M24x3	A-46
3D-12	RK-150(N)	55	40	45	55	34.5	M30x3.5	M27x3	A-53.5
3D-15	RK-150(N)	65	40	45	55	41	M30x3.5	M30x3.5	A-60

註 :2D 型式之拉桿長度計算同 3D 型式。(Note:To calculate the draw-bar length of 2D as 3D.)

3U 中空拉桿製作 Manufacture of Draw Pipe for 3U

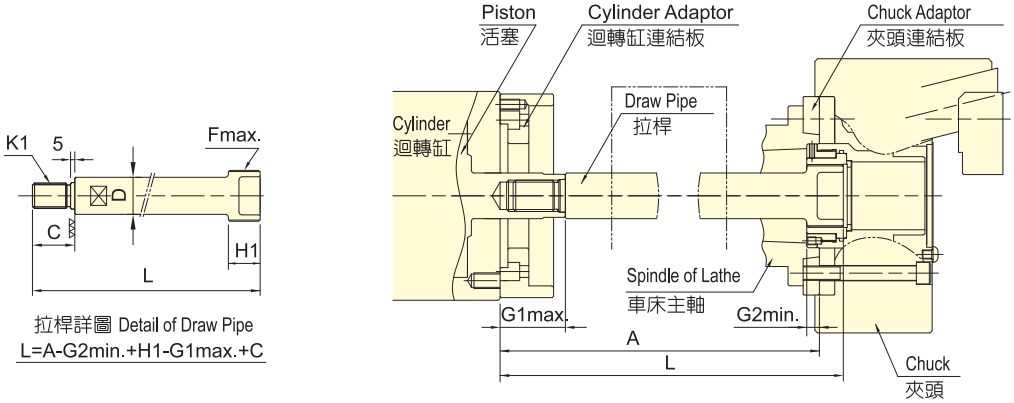
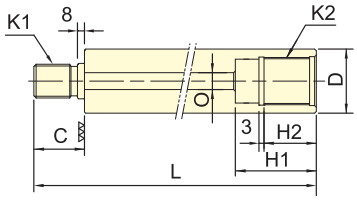


Fig.5

夾頭型式 Chuck type	迴轉缸型式 Cylinder type	C	D	G1 max.	G2 min.	H1	K1	F max.	L
3U-203	RK-75(N)	30	30	45	14	19	M20x2.5	M20x1.5	A-10
3U-204	RK-75(N)	30	30	45	10	21.5	M20x2.5	M24x1.5	A-3.5
3U-205	RK-100(N)	30	30	45	10	23	M20x2.5	M28x1.5	A-2
3U-206	RK-100(N)	30	30	45	11	28	M20x2.5	M38x1.5	A+2
3U-208	RK-125(N)	40	35	50	11	28	M24x3	M48x2	A+7
3U-210	RK-125(N)	40	35	50	15	34	M24x3	M68x2	A+9
3U-212	RK-125(N)	40	35	50	15	34	M24x3	M92x2	A+9

3U-K 中實拉桿製作 Manufacture of Draw Bar for 3U-K



拉桿詳圖 Detail of Draw Pipe

L=A-G1max.-G2-G1min.-4+C

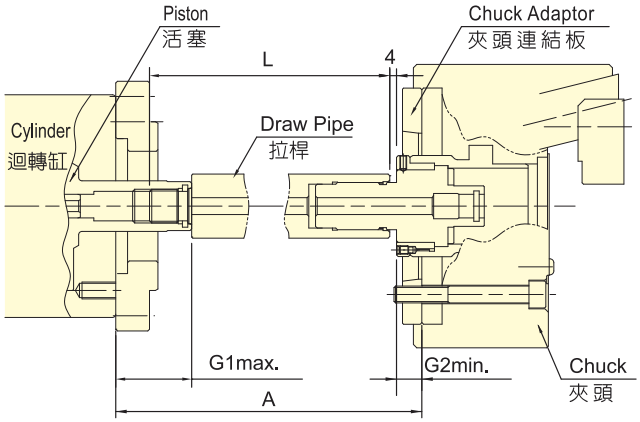
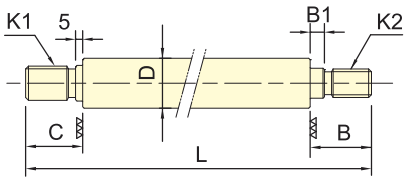


Fig.6

夾頭型式 Chuck type	迴轉缸型式 Cylinder type	C	D	G1 max.	G2 min.	H1	H2	O	K1	K2	L
3U-205K	RK-100(N)	30	35	45	10	41	26	10	M20x2.5	M25x1.5	A-29
3U-206K	RK-100(N)	30	38	45	10	47	32	10	M20x2.5	M28x1.5	A-29
3U-208K	RK-125(N)	40	45	50	11	50	32	10	M24x3.0	M35x1.5	A-25
3U-210K	RK-125(N)	40	48	50	15	50	32	10	M24x3.0	M38x1.5	A-29
3U-212K	RK-125(N)	40	55	50	15	50	32	10	M24x3.0	M45x1.5	A-29

3E 中實拉桿製作 Manufacture of Draw Bar for 3E



拉桿詳圖 Detail of Draw Bar

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

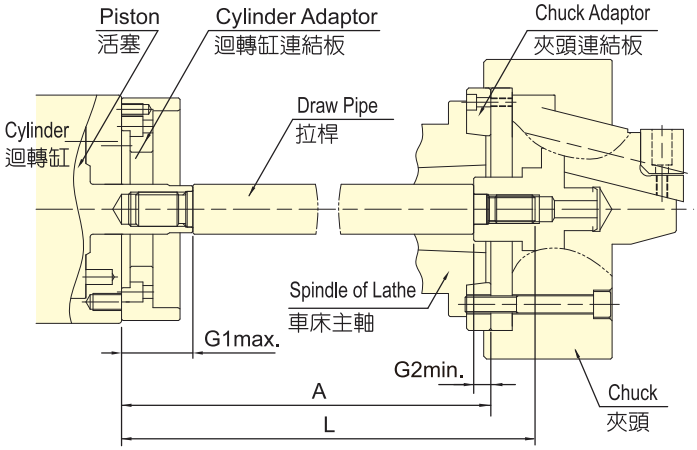


Fig.7

夾頭規格 Chuck type	迴轉缸規格 Cylinder type	B	B1	C	D	G1 max.	G2 min.	K1	K2	L
3E-05	RK-100(N)	28	8	30	30	45	12	M20x2.5	M16x2	A+1
3E-06	RK-125(N)	33	8	40	35	50	12	M24x3	M16x2	A+11
3E-08	RK-125(N)	41	10	40	35	50	15	M24x3	M20x2.5	A+19
3E-10	RK-150(N)	55	10	45	45	55	15	M30x3.5	M24x3	A+30

WARNING
警 告

- 拉桿厚度增加方能有足夠之強度。若拉桿之強度不足會使其斷裂而喪失夾持力，同時工件飛出，產生危險。

- Increasing the thickness of the draw pipe and secure the strength. If the strength of the draw pipe is insufficient, the gripping force of the chuck will lose. It will cause the workpiece fly out and it will be dangerous.

IMPORTANT
留 意 事 項

- 螺牙鬆動是造成振動的主要原因。
- 拉桿厚度E為最小極限值強度，加工螺牙K時最好選用大直徑，使E值盡量可能最大。
- 以抗拉強度380MPa(38kg/mm²)以上之材料製作拉桿。
- O1、M1與K同心度需在0.05mmT.I.R以內。

- Insecure threads will cause the draw pipe to vibrate.
- With the thickness of draw pipe minimized, thread part "E" to the maximum permissible thread dia.
- For pipe strength, use the material of tensile strength 380MPa (38kg/mm²)of or more.
- O1,M1 should be concentric with "Thread K" within 0.05mm T.I.R.

6. 安裝

6.1 後拉動力夾頭安裝步驟 (3D type)

(1) 將拉桿安裝於油壓缸

- 旋入拉桿至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）。

(2) 將油壓缸安裝於主軸上 (油壓缸連接板)

- 檢視油壓缸是否偏擺及油壓管路是否正常，設定油壓力於低壓狀態(0.4~0.5 MPa,4~5kgf/cm^2)，移動活塞讓它運動2~3次後停置於前端，然後關掉電源。

(3) 將夾頭安裝於拉桿

- 將夾頭的防塵蓋取下，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心損壞及精度不良。

6. Mounting

6.1 Mounting steps of Pull down type(3D type)

(1) 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.).

(2) 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.

(3) Connect the chuck to the draw bar.

- Remove the 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, chuck the thread. If connected by force. The wedge plunger will be damaged, thus resulting in poor accuracy.

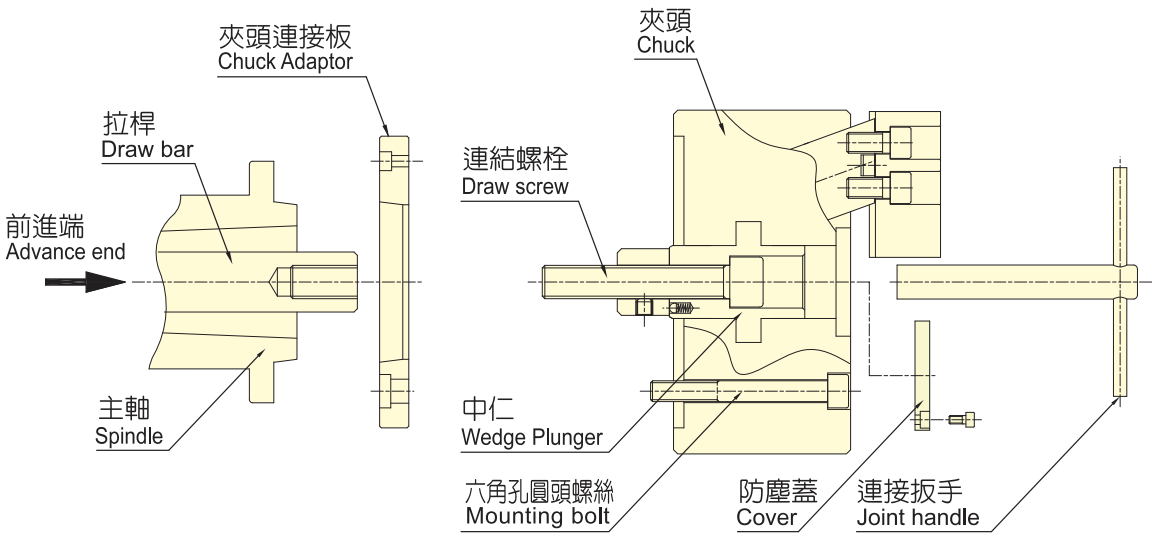


Fig.8

(4) 用提供的連接扳手轉動連結螺栓，並目調整拉桿的突出物從本體邊緣到軟爪安裝面間的 P max.。(參考 Fig.9)

(4) Turn thedraw screw with the provide joint handle and adjust the protrusion of the draw bar from the body edge to the top jaw installation sur face so that it is the Pmax. (Refer to Fig.9)

Chuck size	4	5	6	8	10	12	15
Pmax. (mm)	10.5		14	15	19		26

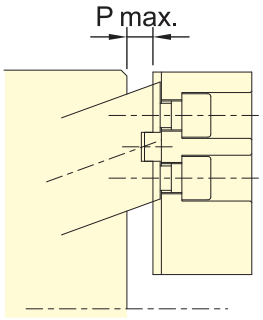


Fig.9

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 Bolt size	鎖緊力矩 Tightening torque
M6	12.7 N · m (1.3 kgf · m)
M8	38.2 N · m (3.9 kgf · m)
M10	72.6 N · m (7.4 kgf · m)
M12	106.8 N · m (10.9 kgf · m)
M14	170.6 N · m (17.4 kgf · m)

螺絲規格 Bolt size	鎖緊力矩 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)

WARNING 警 告

- 如拉桿鎖入連接之螺帽螺牙不足，將損壞螺牙而使夾持力瞬間喪失造成工件飛散之危險。

- If the draw bar is insufficiently screwed into the draw nut, the thread will be damaged, thus elimination the gripping force momentarily. It will result danger due to discharge of workpiece.

6.2 後拉固鎖式動力夾頭的安裝步驟 (3U type)

(1) 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。)

(2) 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) 將夾頭安裝於拉桿(參考 Fig.10)

- 夾頭的中仁必須往內拉，讓主爪釋放開來。
- 移除生爪，防塵蓋。
- 使用一台起重機等等舉起夾頭，並且確定夾頭中心到車床的主軸中心位置。

CAUTION
注 意

- 在安裝或拆下夾頭時，需使用吊帶或吊環固定。(8"以上夾頭附吊環)。
- 當完成上述動作後，切記取下吊環或吊帶。

6.2 Mounting steps of pull lock type (3U type)

(1) 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.)

(2) 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.

(3) Connect the chuck to the draw bar.(Refer to Fig.10)

- Wedge plunger of the chuck must be drawn inside as Master Jaw was delivered.
- Remove soft jaws, cover.
- Lift the chuck using a crane etc., and locate the chuck center to the spindle center of the lathe.

- When monuting or removing the chuck, lift it with the crane, using an eyebolt or lifting belt.(For a chuck of 8" or over, the eyebolt is attached.)
- Be sure to romove the eyebolt from the chuck after mounting or removing.

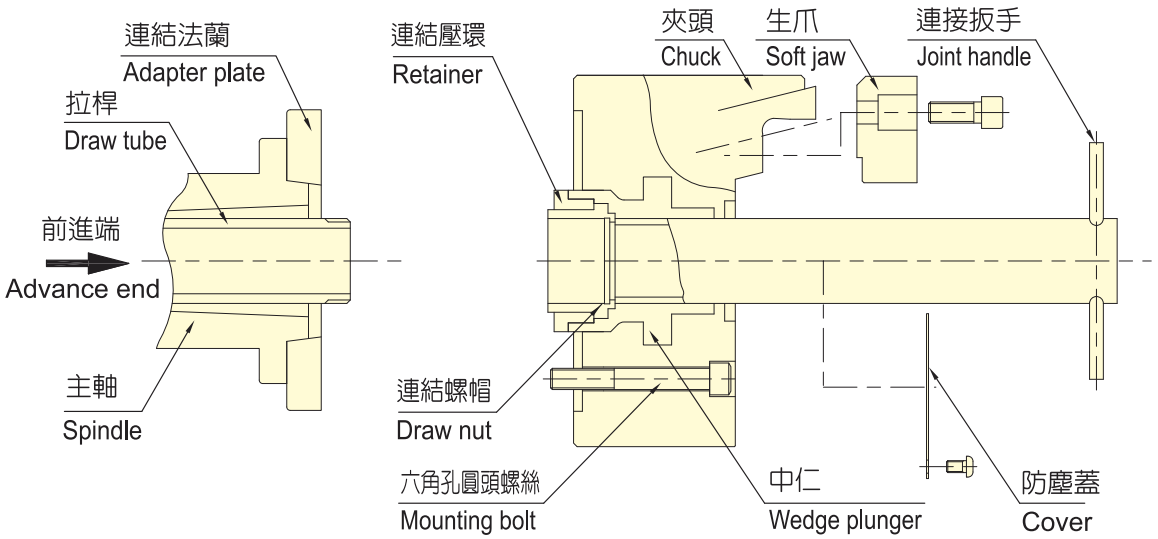


Fig.10

6.3 內張後拉式動力夾頭的安裝步驟 (3E type)

(1) 將拉桿安裝於油壓缸

- 旋入拉桿至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)。

(2) 將油壓缸安裝於主軸上 (油壓缸連接板)

- 檢視油壓缸是否偏擺及油壓管路是否正常，設定油壓力於低壓狀態(0.4~0.5 MPa,4~5kgf/cm^2)，移動活塞讓它運動2~3次後停置於前端，然後關掉電源。

(3) 將夾頭安裝於拉桿

- 將夾頭的防塵蓋取下，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心損壞及精度不良。

6.3 Mounting steps of EXPANSIBLE PULL LOCK type(3E type)

(1) 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.).

(2) 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.

(3) Connect the chuck to the draw bar.

- Remove the 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, chuck the thread. If connected by force. The wedge plunger will be damaged, thus resulting in poor accuracy.

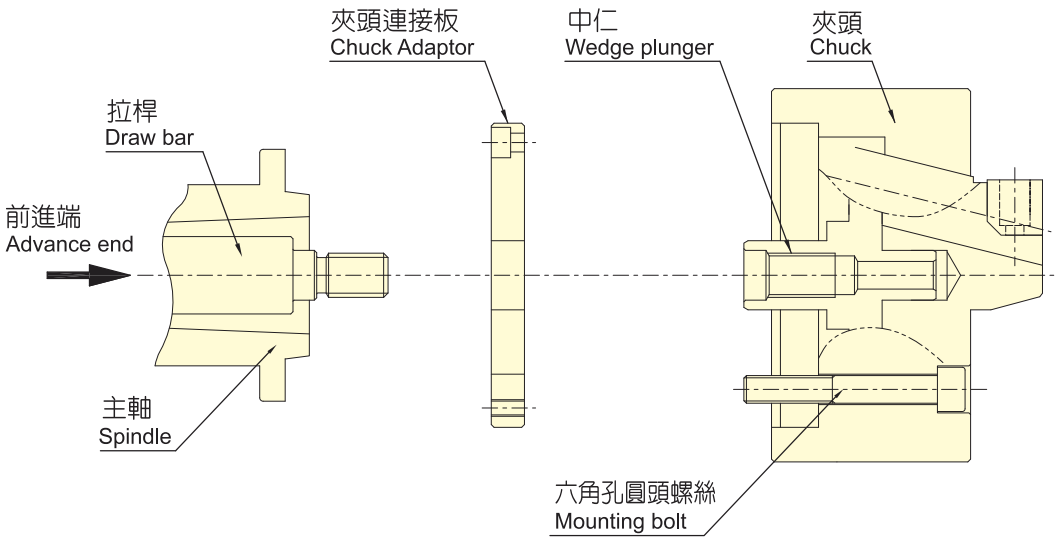


Fig.11

6.4 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
  (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

- 使得夾頭外緣及端面偏擺在0.02mm內。

6.4 Bolt tighening steps

(1) Mount the chuck to the draw bar.

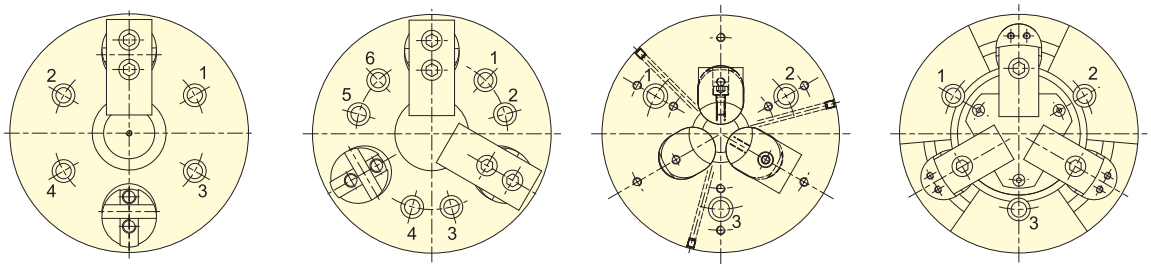
- Remove the soft jaw and cover of the chuck. Tighten the installation bolts 1.2.3. for several pitches. Insert the joint handle into the central hole of the chuck. Then turn the draw pipe.
- When the draw nut and the draw bar are connected,in case smooth scrowing is impossible, if will be necossary 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 (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 chuck and check run-out of the chuck.

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



2D　3D　3E　3U

Fig.12

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.

6.5 連結法蘭的安裝

- 依主軸之實際測量值，而加工連接板之配和直徑。
- 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。
- 如欲增加精度可在連接板裝上後再加工接合面及插口部分。
- 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.13為JIS短錐度主軸圖。

6.5 Mounting of chuck adapter plate

- Actually measure the spindle before machining the close fit diameter of adapter plate.
- The outer diameter run-out of the adapter plate should be D-Value or less (see table below). The end surface run-out of the adapter plate should be E-Value or less (see table below).
- Machine the socket and spigot part for mounting the chuck and face with the chuck set to the setting equipment to increase accuracy.
- 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.
- Fig.13 shows JIS short tapered spindle.

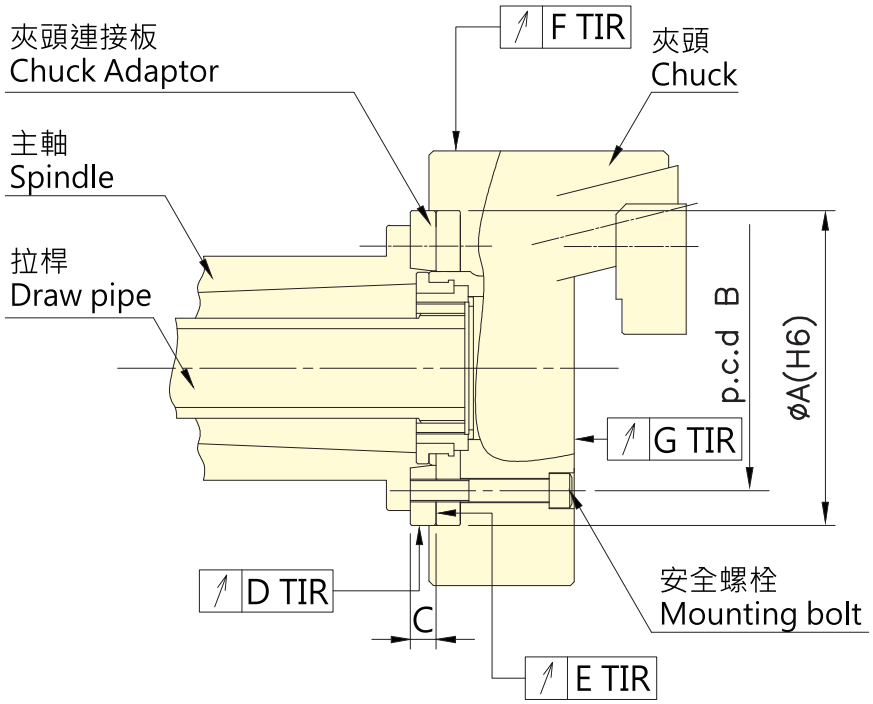


Fig.13

型號 Model / 寸法 Dim	3U-204	3E-05 3U-205(K)	3E-06 2D/3D-06 3U-206(K)	3E-08 2D/3D-08 3U-208(K)	3E-10 2D/3D-10	3D-12 3U-212(K)	3D-15
A (H6)	Ø85	Ø110	Ø140	Ø170	Ø220	Ø220	Ø300
B	70.6	82.6	104.8	133.4	171.5	171.5	235
C	15	15	15	17	18	18	22
D	0.005	0.005	0.005	0.005	0.005	0.005	0.01
E	0.005	0.005	0.005	0.005	0.005	0.005	0.01
F	0.02	0.02	0.02	0.02	0.02	0.02	0.04
G	0.02	0.02	0.02	0.02	0.02	0.02	0.04

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

動平衡

- 當進行追加工或用治具時不可產生不對稱。不對稱會造成震動和噪音，使加工精度降低。
- 當加工不對稱大的工件時由於工件的重量形心引起的離心力加在上爪，要充分檢討後以低轉速加工。
- 安裝使用說明書的允許均衡量是以JIS B 0905-1992 定義的許用均衡 4mm/s為基準。
- 夾頭的不平衡量的大小規定在表格。(JIS B 0905-1992相對應的國際標準是 ISO 1940-:1986和ISO 8821-:1989)

Balance

- It’s not asymmetry when additionally work or use jigs, otherwise able to cause shaking and noise, then reduce the working accuracy.
- The centrifugal force due to centroid of the workpiece is applies to the top jaw when processing asymmetry workpiece, consideration to process with the low speed.
- Tolerance of instruction manual is use balance 4mm/s as the datum with that defines for JIS B 0905-1992.
- Unbalance value of the chuck is stipulate for the form.(JIS B 0905-1992 correspond to international standard is ISO 1940-:1986 and ISO 8821-:1989)

夾頭大小 chuck size	04	05	06	08	10	12	15
最大值不平衡 Max.unbalance(g)	1	1	2	3	4	6	10

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.

6.6 連結法蘭安裝注意事項

6.6 Correct mounting way of the power chuck

正確安裝 Correct installation

安裝錯誤的後果 Consequence of the wrong installation

方式一 Way I

錯誤一 Wrong I

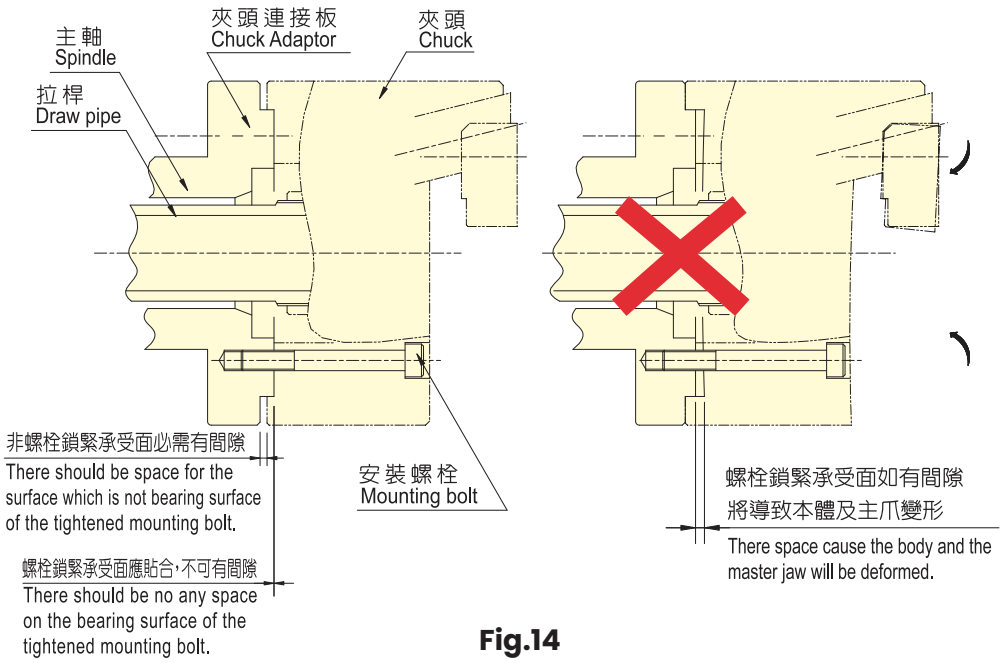
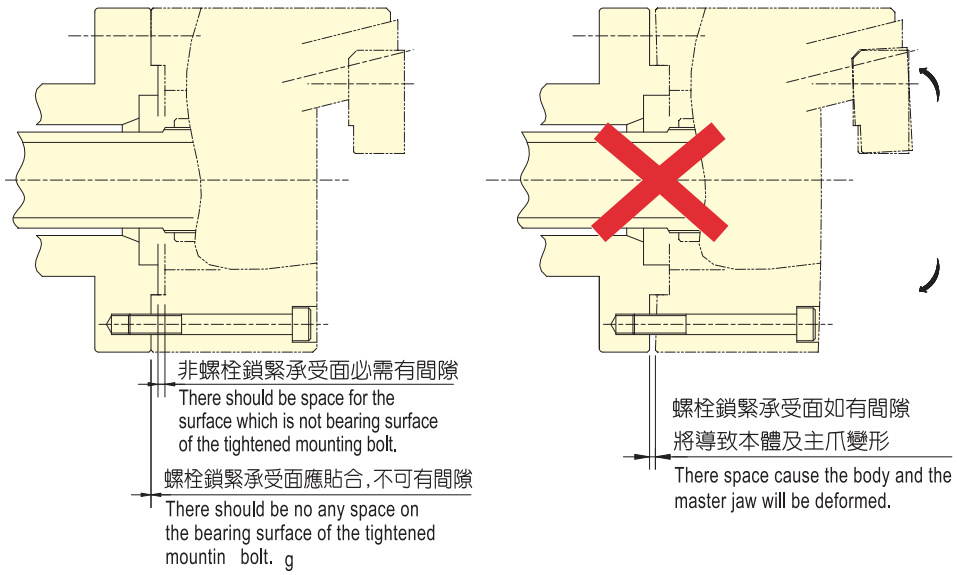


Fig.14

方式二 Way II

錯誤二 Wrong II



注意:未依照正確安裝方式，夾頭本體溝槽會因螺絲鎖緊後而變形，拉動夾頭時，會與主爪干涉以致作動不順，產生異音，並增加磨耗，降低夾持力，甚至完全咬死無法作動。

Otherwise, the slot on the chuck body will be deformed. Then the masterjaw couldn't move smoothly when the cylinder pulls the power chuck or even make noise.

Fig.15

7. 使用上的注意事項

1. 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。
2. 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。
3. 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。
4. 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。
5. 如果夾持長的工作物時，使用尾座或中心架支撐另一端。(參考第六頁)
6. 長時間停置機器時，夾頭上不可夾持工作物。
7. 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。
8. 為維持運轉的準確，當替換軟爪時，需仔細清潔接合部分。

7. Precautions

1. 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.
2. When gripping inclined or tapered parts such as casting, etc., use special jaws with spikes so that the workpiece will not discharge.
3. Machine the unbalanced workpiece at a low speed because the centrifugal force by the eccentricity mass of work is applied onto the jaw.
4. Before machining. Run with low speed to check that the top jaws locator or workpiece do not interfere with the tool or tool holder.
5. When gripping a long workpiece, use the tailstock or steady rest. (Refer to page.6)
6. When stopping the machine for a long period of time, remove the workpiece from the chuck.
7. 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.
8. When replacing the soft jaw, clean the fitting part carefully in order to maintain the running accuracy.

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。
- 在夾頭繼續運作時不可用鐵錘或類似的工具拆除工件。拆除的話，將損壞工件精度和機器功能，機器的使用壽命也會明顯變短。

- 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.
- Never strike a workpiece, which is kept on the chuck, by a hammer or the likes. If strike, the workpiece accuracy and functions of the machine will be much damaged. And the life of the machine will be also shortened remarkably.

DANGER
危 險

- 當檢查、潤滑或更換夾頭時必須切斷電源。
- 在操作期間夾頭的最高迴轉速度饑該在規定的範圍內。
- 夾頭運轉期間絕不可操作夾頭開或夾。否則工件可能脫離、飛散。

- Cut off the power supply when checking, greasing or changing the chuck.
- Max. speed of the chuck should be kept within the specified range during operation.
- Never run the chuck during operation. Otherwise the workpiece may be disengaged and fly-out.

WARNING
警 告

- 不使用比夾頭提供的軟爪還要大的軟爪。
- 因為在旋轉期間，軟爪夾持工件會受到離心力的影響，用不必要大的軟爪將會導致危險。
- 如果安裝的軟爪比標準的軟爪或硬爪更大，夾頭會因過度的重量導致的離心力而失去額外的夾持力。可能引起工件飛散並目對操作者或旁觀者造成嚴重的傷害或死亡。
- 在操作期間夾頭的推力應該在規定的允許範圍內。用過度的推力操作是危險的，因為它將減少使用年限並且導致失敗。
- 夾持不平衡的工件時，要有足夠的速度轉動夾頭。把座金或治具安裝在夾頭上，在機器加工範圍內鑽孔和敲擊。
- 注意）追加工或安裝治具時需注意工件是否不平衡。如果不平衡，它將引起振動等，降低工件準確度。
- 夾頭表面為全硬化，若有追加孔或其他特殊需求，請於訂製前與AUTOGRIP洽談。

- Do not use any soft jaws which are larger than those supplied with this chuck.
- Since the soft jaw gripping the workpiece receives the influence of centrifugal force directly during rotation, unnecessarily large soft jaw can be dangerous.
- If the mounted jaws are larger than the standard soft jaws or standard hardened jaws, the chuck will lose extra gripping force by the centrifugal force due to excess in weight. May cause the workpiece to fly off and may cause severe personal injury or death to the operator or bystanders.
- The chuck thrust should be kept within the specified To operate with excessive thrust can be dangerous, as it will deteriorate service life and cause failure.
- When gripping an unbalanced workpiece, turn the chuck with adequate speed.
- When mounting the locator or jig to the chuck, drilling or tap it within additional machining range.(
- Note)Take care so as not to unbalanced the workpiece for additional machining or jig mounting. If unbalanced, it will cause vibration, etc., thus reducing the workpiece accuracy.
- The clamping head surface is fully hardened. If there are additional holes or other special requirements, please discuss with AUTOGRIP Machinery before placing the order.

WARNING
警 告

- 對座金或治具而言，固定銷和螺栓有足夠的強度鎖緊它都是防止因離心力導致工件飛散的對策。

- For the locator or jig, prevent discharging caused by centrifugal force with guide pin and tighten it with bolts having sufficient strength.

8. 軟爪的製造成型

8.1 後拉式動力夾頭 (3D type)

- 當安裝軟爪時，必須依照工件形狀加工成型。當夾持工件時，從行程末端開始測量，軟爪行程必須是剩下的軟爪行程的1/ 4。因此，當軟爪夾持工件的外徑(ØD）的話，內部的行程必須剩下1/ 4（參考Fig.17)。軟爪成型時，迴轉缸的壓力必須與工件實際上被切割時相同。

8. Forming of soft jaws

8.1 Pull down power chuck(3D type)

- When the soft jaw are installed, they must be machineformed to align flush with the workpiece. When the workpiece is gripped, the jaw stroke should be such that there is one-fourth of the jaw stroke remaining, as measured from the stroke end. Thus, if you are gripping the outside diameter (ØD) of the workpiece with the jaw, one-fourth of the inside stroke should remain (refer to Fig.17). The cylinder pressure when the soft jaw are formed should be the same as when the workpiece is actually cut.

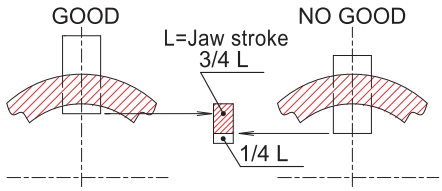
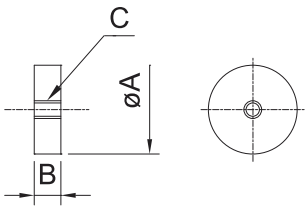


Fig.16

- 成型盤的規格。

夾頭尺寸 Chuck size	4	5	6	8	10	12	15
A(mm)	15.5	19.5	26.4	32.4	40.6	42.6	42.6
B(mm)	13	13	16	16	20	20	20
C	M6	M6	M8	M8	M10	M10	M10

- Specification of plug.



- 藉由鋼珠和鋼珠頂針調整主爪的擺動角度。
鋼珠頂針所需的鬆開量顯示於表格，安裝完後再鎖緊低頭螺絲。
低頭螺絲的鎖緊力矩，請參考表格。

- The swing angle of master」aw is controlled by steel ball and steel ball thimble.
- Set steel ball thimble in the position which loosens the quantity which is shown in table from the position to fasten, install Low head screw in the position of the hollow of steel ball thimble.
- For the torque to be applied to the Low head screw, refer to table.

型號 Model	鋼珠頂針鬆開圈數 loosens quantity of steel ball thimble	低頭螺絲鎖緊力矩 Low head screw fasten torque(N-m)
3D-04	1/2~3/4 turn(圈)	2.0
3D-05	1/2~3/4 turn(圈)	2.0
3D-06	3/4~1 turn(圈)	4.1
3D-08	3/4~1 turn(圈)	4.1
3D-10	3/4~1 turn(圈)	7.1
3D-12	1~5/4 turn(圈)	7.1
3D-15	1~5/4 turn(圈)	7.1

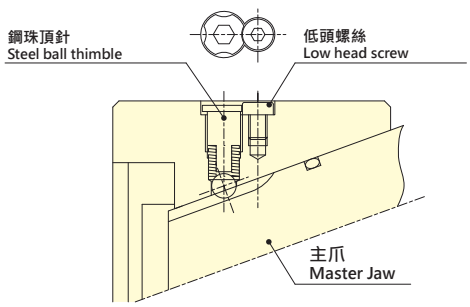


Fig.17

CAUTION
注 意

- 在鬆開鋼珠頂針之後，使用規格說明書中的圈數。否則，鋼球將推開鋼珠頂針並且可能損壞它。

- Use after loosening steel ball thimble in specification's turn. Otherwise, the steel ball pushes up steel ball thimble and may damage it.

8.2 後拉固鎖式動力夾頭 (3U type)

- 使用夾頭時，當軟爪夾持工件的徑向位置，座金則控制工件的軸向基準位置。因此，＂軟爪的成型＂和＂座金的製造＂會影響工件夾持的精準度。
- 盡可能將工件夾持於行程的中點。(參考Fig.19)

8.2 Pull luck power chuck(3U type)

- In using the chuck, the locator sets the datum position for the workpiece in axial direction while the soft jaws grip the workpiece in radial direction. Therefore, it is “forming of soft jaws” and” manufacture of locator” which influence the gripping accuracy.
- It is desirable to chuck the workpiece in the central part of the stroke.(refer to Fig.19)

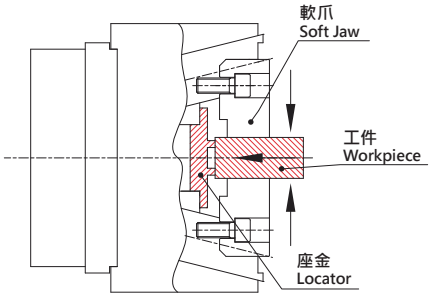
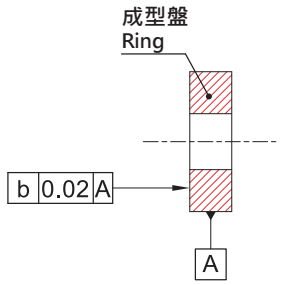
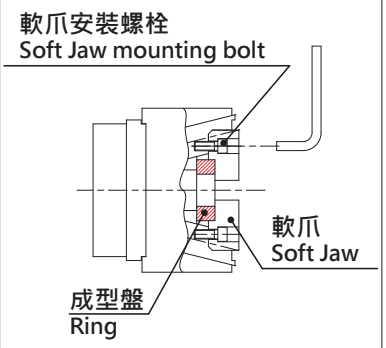
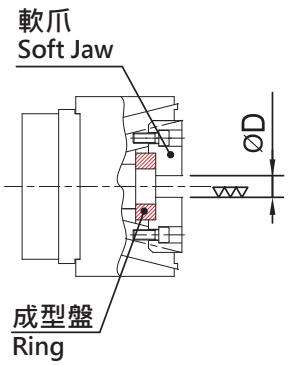
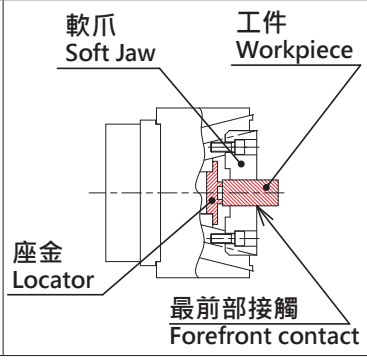


Fig.18

- 軟爪的成型必須按照下列步驟。
- Forming of soft jaws should be done in the following procedures.

準備表面粗度▽▽▽內且無變形內壁厚度前適當成型盤。 注意）夾持成型盤的外徑尺寸時要在爪行程中點。 注意）建議輕敲成型盤的中心孔並且插入螺栓。		Prepare the Ring for forming. Forming outer dia. of Ring is limited to ▽▽▽ finishing. Ensure the Ring is strong with a suitable wall thickness. Note) Set the forming outer dia. of Ring dimension to grip around the middle of the jaw stroke. Note) It is recommended to tap the center hole of Ring and insert the bolt.
降低油壓壓力至夾爪可動即可。 搬移軟爪和座金。 把成型盤安裝到夾頭上並且用軟爪安裝螺栓暫時固定軟爪。 CAUTION 注 意 如果暫時固定的軟爪不夠緊，當夾持成型盤時軟爪是會滑動前。成型盤的安裝將會不準確。 當夾持成型盤時，用標準力矩鎖緊軟爪安裝螺栓。 在鉗住夾頭和設定實際加工油壓壓力的工作條件之後再夾持成型盤，進行車修軟爪。		Reduce the oil pressure to the movable jaw. Remove soft jaws and locator. Fit the Ring to the chuck and fix the soft jaws temporarily with soft jaw mounting bolts. CAUTION 注 意 If the temporary soft jaw fixing is not tight enough, the soft jaws are lifed when gripping the Ring. The Ring will not be set accurately. Tighten the soft jaw mounting bolts to the standard torque when gripping the Ring. Grip the Ring again and cut the soft jaw after unclaming the chuck and setting the oil pressure of the actual processing to the working condition.

成型一個工件夾持部分ØD時，需持續夾持成型盤，其尺寸必須相同(H7)於工件夾持直徑，且表面粗糙度小於6s。 製程中其壓力必須與實際夾持工件時相同。 注意）如成型盤產生變形時，須用較厚的成型盤。		Form the part ØD for gripping the workpiece with the Ring still gripped. Machine the part ØD to the same diameter(H7) as the workpiece and surface roughness less than 6s. Set the gripping pressure for the soft jaw to be approximately the same as when the workpiece is gripped. Note) If the Ring is distorted, alternatively use a stronger Ring with additional wall thickness.
軟爪成型後，搬移成型盤。 安裝座金。 安裝軟爪，夾持工件以檢查軟爪行程。 試切工件而後檢視其加工精度...等。 當軟爪在它前最前部夾持接觸越穩屆時，工件可以夾持得更好且在工件的末端將有較少的振動。		After forming soft jaws, remove the Ring. Mount the locator. Mount the soft jaw, grip the workpiece to check the soft jaws stroke. Perform trial cutting to inspect machining accuracy, etc. When the gripping contact of the soft jaw is stronger in its forefront part, the workpiece can be gripped better with less vibrations at end of the workpiece.

座金的製作

- 當工件藉由夾頭的拉力強烈擠壓座金時，工件被夾持。因此，對基準面的硬度和精度而言，基準面的偏擺度對工件的最後精度影響極大。
- 基準面應該有足夠的硬度和精度。(參考Fig.20)

Manufacture of Locator

- Workpiece is gripped while it is strongly pressed against the locator by pulling force of the chuck. Therefore, the run-out of the datum surface greatly influences finish accuracy of the workpiece in terms of its perpendicularity and parallel.
- The datum face should have sufficient hardness and accuracy.(refer to Fig.20)
- It is desirable to chuck the workpiece in the central part of the stroke.

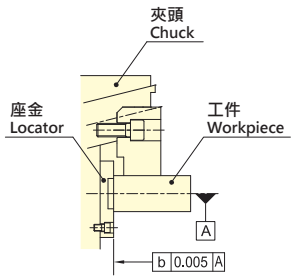


Fig.19

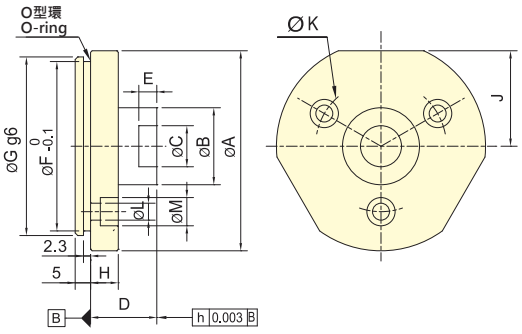


Fig.20

- 尺寸請參考下列表格和Fig.21。
- For dimensions, refer to the table below and Fig.21.

寸法 Dim / 型號 Model	A	B	C	D	E	F	G	H	J	K	L	M	O-ring size (製造廠 marker)
3U-206	依照工件而定 Determined, depending on workpiece					55	58	9	31	72	5.5	9.5	S55(NOK)
3U-208						65	68	10	35	82	6.6	11	S65(NOK)
3U-210						90	93	12	49	107	9	14	S90(NOK)
3U-212						111	114	14	59	130	11	17	S110(NOK)

9. 維護及檢查

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。

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。

- 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。

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。

9. Maintenance and inspection

- 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 hydraulicpressure,reducesgrippingforceandaffects gripping accuracy, and causes wear and seizure. Consequently, securely lubricate the chuck.

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.

- 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.

- 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.

10. 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。 檢查成形圈的外形是否因夾持力過大而導致變形。 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。

10. Troubleshooting

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

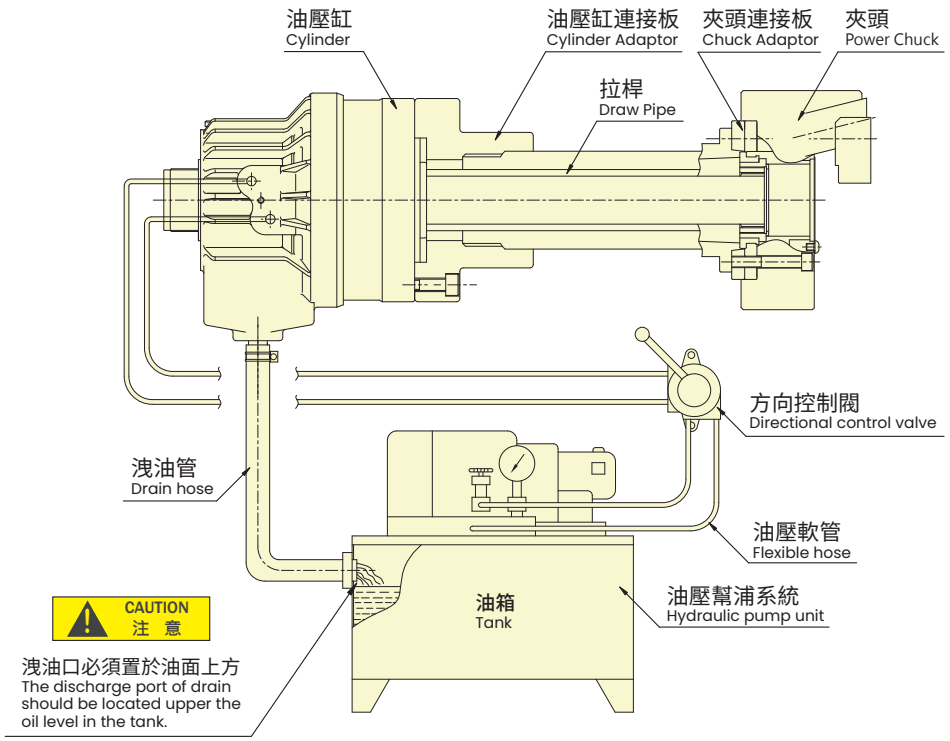
Problem	Possible Reasons	Countermeasures
Chuck will not work	Chuck part is damaged.	Disassemble and replace part.
	Slidway seizes.	Disassemble and repair damaged part with oil stone or make change.
	Chuck is not working.	Examine the hydraulic system, pressure reduction valve, over valve.....etc.
Insufficient 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.

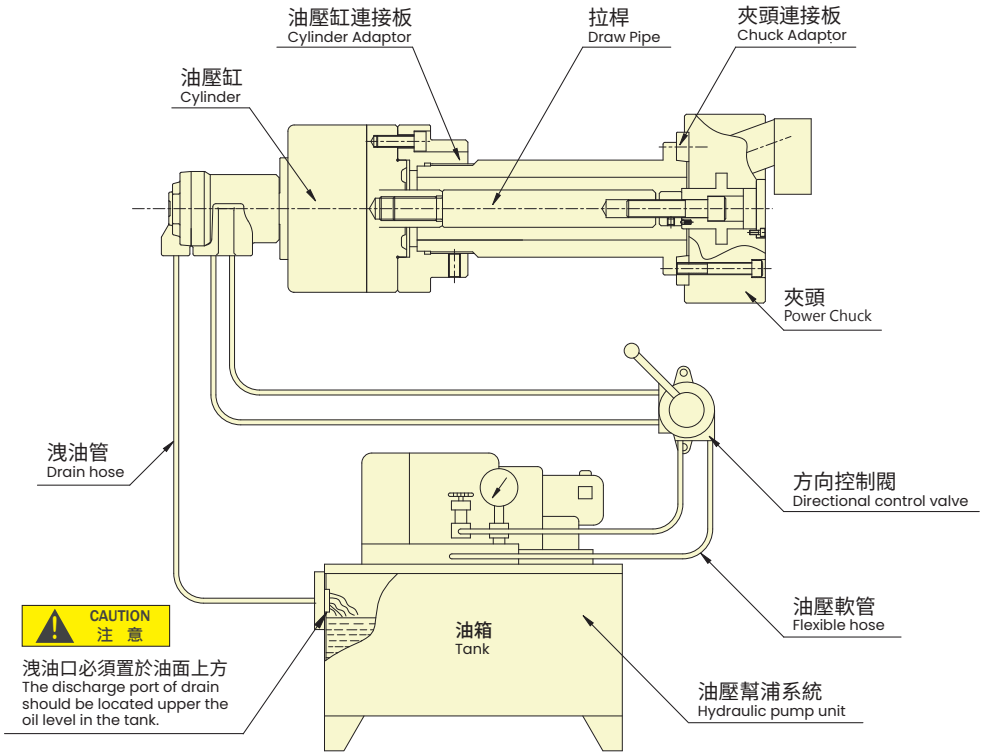
11. 裝配概要圖

11. Assembly drawing

中空型 Through -hole type



中實型 Non-through -hole type

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