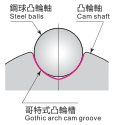
無需墊塊的方形缸體型旋轉式夾緊器

哥特式凸輪槽
Gothic arch cam groove

采用與鋼球大面積接觸的哥特式凸輪槽，有效降低了接觸面壓力，可連續、高頻率地高速旋轉，耐久性出色。

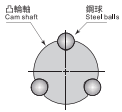
Superior durability, high frequency,and high-speed swinging operation is achieved thanks to lowered and controlled seating surface pressure.This is made possible by adopting gothic arch cam grooves that use steel balls with larger surface area.



3點式鋼球支撐
3-point ball support

采用3點式鋼球支撐機構，實現了平穩的高速旋轉。

Smooth, stable and high-speed swinging operation has been achieved by 3-point ball support mechanism.



凸輪軸直徑大，確保了凸輪槽之間有充分的距離，因此剛性很高。由于凸輪部的耐久性和耐衝擊性得到提高，因此無需過載保護機構即可進行穩定而準確的高速旋轉。

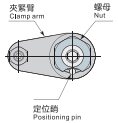
Large diameter cam shaftand wide distance between the cam grooves offers higher rigidity. Aoverload protection mechanism is not needed due to improvement of durability and impact resistance, providing stable and secure highspeed swing operation.

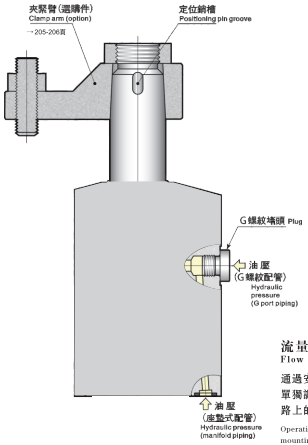

凸輪槽詳圖
Cam groove view

夾緊臂的定位及更換
Positioning and replacement of clamping arms

所有型號均采用定位銷槽。夾緊臂的定位（角度）簡單易行。

Positioning pin groove adopted with all models. Positioning (angle) of clamp arm can be performed easily.

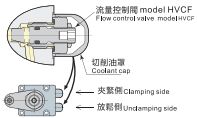




流量控制阀
Flow control valve

通過安裝流量控制閥（選購件），可單獨調節動作速度，輕鬆控制同一回路上的順序動作和同步動作。→223-224頁

Operating speeds can be adjusted individually by mounting a flow control valve (option), making sequential operation on same circuit or control of synchronization operation easier→223-224page



2種油壓配管
2-way hydraulic piping

備有G螺紋規格的配管接口和座墊式配管接口。

G thread piping connection port and manifold piping connection port are available.

規格

型號/Model			HBTU02	HBTU04	HBTU06	HBTU10	HBTU16	HBTU25
油缸能力(油壓爲7 MPa 時)/Cylinder force(hydraulic pressure 7 MPa)		(kN)	2.8	4.4	6.3	9.9	16.3	25.8
夾緊力 ※1 /Clamping force	油壓爲7 MPa 時 /Hydraulic pressure 7 MPa	(kN)	2.4	3.8	5.3	8.3	13.5	21.2
	夾緊臂長度 (LH)/Clamp arm length (LH)	(mm)	35	40	50	60	70	90
油缸內徑 /Cylinder inner diameter		(mm)	29	36	42	52	65	82
主杆徑 /Rod diameter		(mm)	18	22.4	25	30	35.5	45
油缸面積(夾緊) /Effective area (clamp)		(cm^2)	4.1	6.2	8.9	14.2	23.3	36.9
旋轉角度 /Swing angle			90°±3°					
定位銷槽位置精度 /Positioning pin groove position accuracy			±1°					
夾緊重復定位精度 /Repeated clamp positioning accuracy			±0.5°					
全行程 /Full stroke		(mm)	18	20.5	23.5	26.5	28.5	36
旋轉行程 /90°swing stroke		(mm)	10	12.5	13.5	16.5	18.5	23
夾緊行程 /Clamp stroke		(mm)	8	8	10	10	10	13
最大旋轉扭矩 ※2 /Max. swing torque※2		(N-m)	0.7	1.6	1.8	3.4	5.6	9.3
油缸容量 /Cylindercapacity	夾緊 /Clamp	(cm^3)	7.3	12.8	21.0	37.5	66.4	132.9
	放鬆 /Unclamp	(cm^3)	11.9	20.9	32.6	56.3	94.6	190.1
質 量 /Mass		(kg)	1.4	1.9	2.6	4.4	6.9	12.9

使用油壓範圍：1 ~ 7 MPa　保證耐壓：10.5 MPa　使用環境溫度：0 ~ 70℃　使用流體：普通礦物油基液壓油（ 相當於 ISO-VG32 ）

※1：夾緊力因夾緊臂長度而異。

※2：垂直安裝時，能以 1 MPa 的壓力抬升夾緊臂的極限值。

氯系切削液噴灑的環境下也可以使用。

Working pressure range: 1 ~ 7 MPa Proof pressure: 10.5 MPa Operating temperature: 0 ~ 70°C

Fluid used: General mineral based hydraulic oil (ISO-VG32 equivalent)

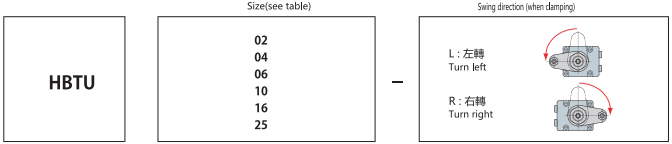
※1 : Clamping force varies depending on clamp arm length.

※2 : This is the limit value for lifting arm at 1 MPa when mounted vertically.

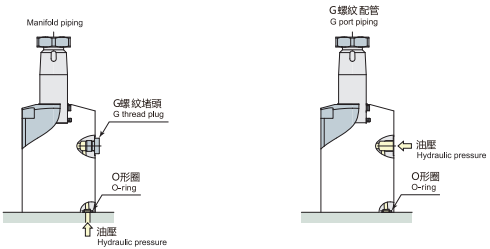
Fluorocarbon has been adopted for seal sections where cutting fluid is applied, as a measure for the use of chlorine-based cutting fluid (this is not thermal resistant specification).

型號表示

HBTU①②（例：HBTU06-R）
(Example : HBTU06-R)



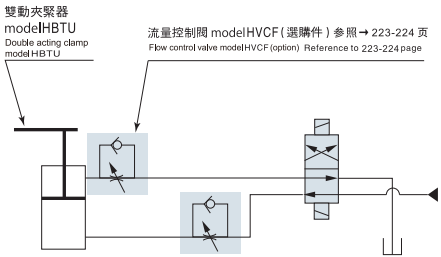
配管方法



HBTU型可選擇座墊式配管和G螺紋配管2種配管方法。
采用G螺紋配管時，請拆下G螺紋堵頭。
（ 采用G螺紋配管時不要卸下O形圈，利用安裝面進行密封。）

Two piping methods are available for model HBTU, manifold piping and G port piping.
Dismount plug when using G port piping. Whichever method is
chosen for piping, O-ring must be used.

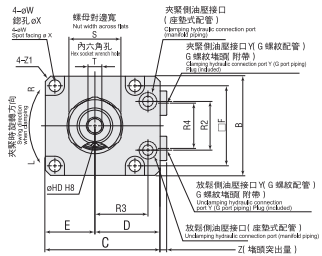
油壓回路圖(參考)

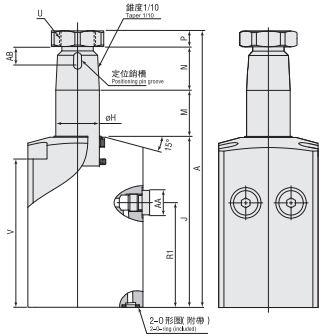


流量控制閥推薦使用進油節流控制方式。如果采用出油節流控制方式，因爲面積的差産生背壓形成高壓，從而有可能會導致系統故障，所以在設計回路時要注意。

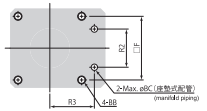
For flow control valve, we recommend the meter-in control. If meter-out control is used, due to the area difference, it will cause back pressure and become high pressure. This can lead to malfunction of the system. Please be aware when designing the circuit.

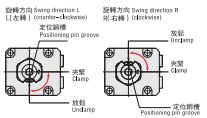
HBTU 02 04 06 10 16 25 -L -R





安裝孔加工圖
Mounting details



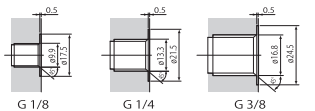


外形尺寸表 Dimension table

(mm)

型 號 Model	HBTU02-$\frac{L}{R}$	HBTU04-$\frac{L}{R}$	HBTU06-$\frac{L}{R}$	HBTU10-$\frac{L}{R}$	HBTU16-$\frac{L}{R}$	HBTU25-$\frac{L}{R}$
A	131	148.5	158.5	178.5	201.5	244
B	45	50	57	70	86	108
C	55	60	66	82	96	120
D	32.5	35	37.5	47	53	66
E	22.5	25	28.5	35	43	54
F	35	40	46	56	68	88
H	18	22.4	25	30	35.5	45
J	81.5	90.5	97.5	111.5	123	147
M	21.5	24	27	30	31.5	39
N（夾緊筒厚度 arm thickness）	20	25	25	27	35	45
P（螺母厚度 nut thickness）	8	9	9	10	12	13
R1	52.5	57	60	70	76	92
R2	22	24	28	36	45	50
R3	25	28	30.5	36	42	57
R4	20	22	26	30	38	50
S（螺母對邊寬 nut width across flats）	22	27	30	36	46	55
T（內六角孔 hex socket wrench hole）	6	6	8	8	10	14
U(建議緊固扭矩 recommended tightening torque)	M14×1.5 (26 N·m)	M18×1.5 (51 N·m)	M20×1.5 (60 N·m)	M24×1.5 (86 N·m)	M30×1.5 (120 N·m)	M39×1.5 (180 N·m)
V	71	80	85	95	102.5	121.5
W	5.5	5.5	6.8	9	11	14
X	9.5	9.5	11	14	17.5	20
Y ※1	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8
Z	3.8	3.8	3.8	4.8	4.8	4.8
Z1	C3	C3	C3	C4	C6	C6.5
O形圈 ※2 O-ring	P7	P7	P7	P8	P8	P10
AA	14	14	14	19	19	22
AB	10.5	10.5	10.5	12.5	12.5	14.5
BB	M5	M5	M6	M8	M10	M12
BC	4	4	4	6	6	8
HD	4 $^{+0.018}_{0}$	4 $^{+0.018}_{0}$	5 $^{+0.018}_{0}$	6 $^{+0.018}_{0}$	6 $^{+0.018}_{0}$	6 $^{+0.018}_{0}$
定位銷 Positioning pin	ø4(h8)×10	ø4(h8)×10	ø5(h8)×10	ø6(h8)×12	ø6(h8)×12	ø6(h8)×14

※1



※2：O形圈的材質爲氟橡膠（ 硬度Hs90）。

注 1. 本圖表示旋轉方向L（ 左轉）的放鬆狀態。夾緊時定位銷槽朝向油壓接口側。旋轉方向和定位銷槽的關系請參照左圖。
2. 安裝面的最大表面粗糙度應加工在Rz6.3以下。
3. 不附帶壓臂、錐形套、速度控制閥、定位銷和安裝螺絲。
4. 關于錐形套、夾緊臂、請參照→221-222 頁。