

TAKUMI

Informazione prodotto

Edit by RAVELLI ALESSIO

HURCO®



SERIE H

I modelli distribuiti da Hurco Italia riguardano la serie H

➤ La serie H è suddivisa principalmente in 4 modelli , differenti per dimensioni:



➤ H7

➤ H10

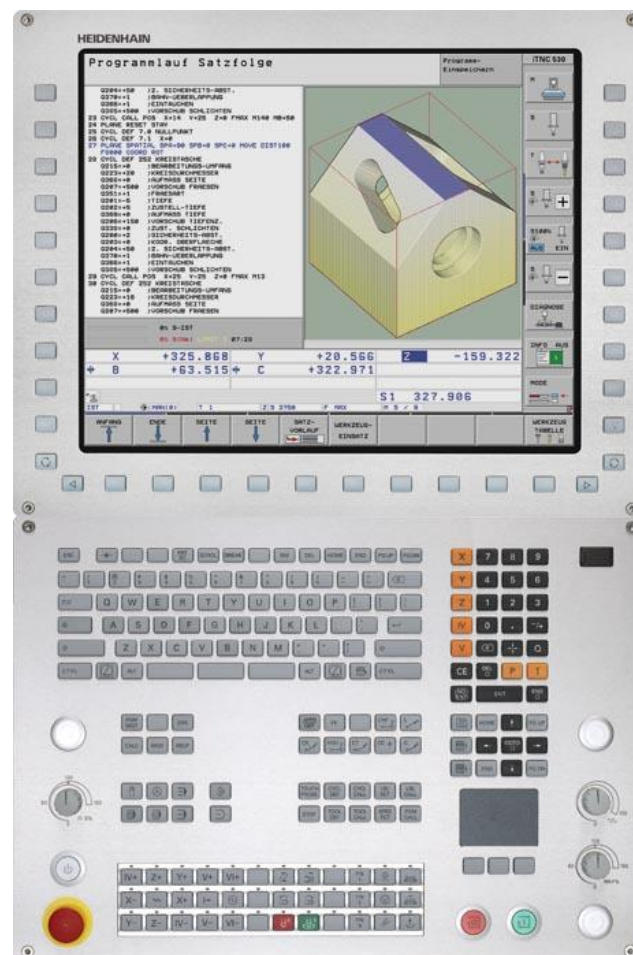
➤ H12

➤ H16



Heidenhain TNC530

- Il controllo prescelto per equipaggiare la serie H è Heidenhain iTNC530, che evolverà successivamente nel modello iTNC640.
- Le opzioni TAKUMI disponibili sono riferite unicamente a modelli di macchina con Heidenhain.



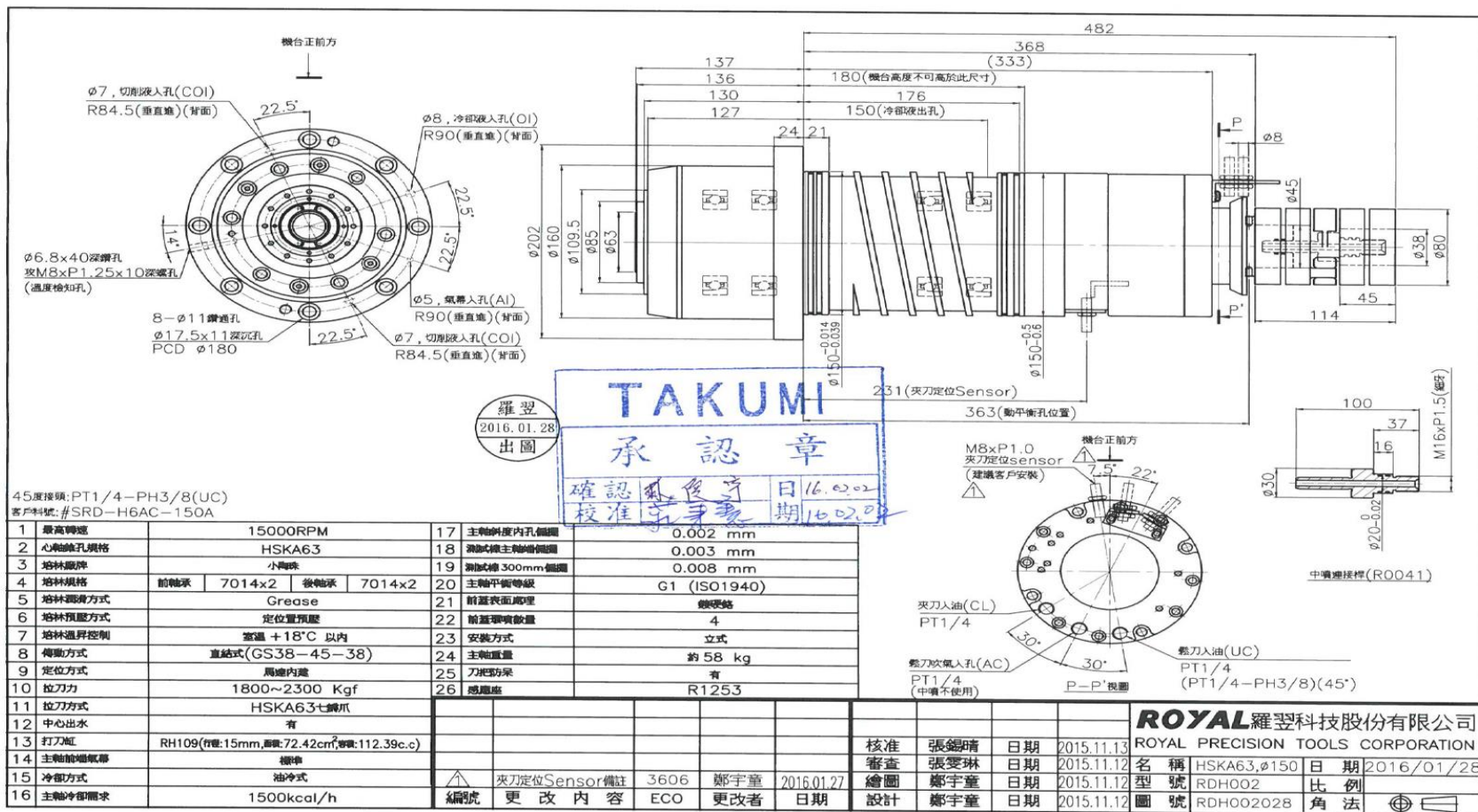
Configurazione base Europa

Model	Configurazione base Europa	Lubrificazione mandrino
H7 H10 H12 H16	Controllo numerico tipo : Heidenhain iTNC530 Mandrino tipo : Royal 15000 rpm Attacco cono : HSK-A63 Refrigerante interno: CTS 20 bar Numero di utensili 30-tool ATC Righe Ottiche: Heidenhain Azionament e motori: Heidenhain Convogliatore trucioli Belt type conveyor Raffreddamento mandrino : Chiller Sonda termica mandrino : CE, PT-100	Lubrificazione a grasso

Il mandrino Royal è a trasmissione diretta e può, nella configurazione base, essere ordinato con 4 tipi di attacco differenti:

HSKA63
 BBT40
 ISO40
 CAT40

Mandrino Royal 15000 giri



Mandrini opzionali

- Takumi , per ogni singola macchina, offre la possibilità di equipaggiare mandrini differenti dal Royal 15000 giri , come riportato nelle specifiche pagine successive .
- Elemento assolutamente necessario da tenere in considerazione per la rete vendita , è che ogni mandrino opzionale va ordinato insieme alla macchina direttamente in fabbrica.
- Non è possibile installare successivamente un mandrino opzionale, su una macchina arrivata con la configurazione standard a 15000, a causa della differente conformazione delle teste che li contengono.

Mandrini Opzionali H7

Model	Spindle type	Tool taper	Speed	Model of spindle motor	Motor power (cont. / 30 min)
H7	direct drive	#40	15000(std)	F: α L8/15000iA06B-1487-B135#0521	15/18.5
				S: N/A	N/A
				H: N/A	N/A
	built in	HSK	20000	F: α 112M/20KiB	15/18.5
				S: 1FE1083-4WN11	28KW
				M : #SCT-H6AN-200A	17KW
				M : #SCT-H6AC-200A	17KW
				M : SJ-2B4322TKH	18.5/22
			36000(IBAG)	HF160. 2A130K	20/26

Mandrini Opzionali H10

Model	Spindle type	Tool taper	Speed	Model of spindle motor	Motor power (cont. / 30 min)
H10	direct drive	#40	15000(std)	F: α L8/15000iA06B-1487-B135#0521	15/18.5
				S: 1PH8107-1SM02-0MA1	12KW
				M: SJ-VKRS30-08ZT-S02(F)	15/18.5
				H: 536257-43 QAN 200UH SP-MOTOR 15000R/10KW	10/12.5
	built in	HSK	20000	F: α 112M/20KiB	15/18.5
				S: 1FE1083-4WN11	28KW
				M : #SCT-H6AN-200A	17KW
				M : #SCT-H6AC-200A	17KW
				M : SJ-2B4322TKH	18.5/22
			24000(IBAG)	HF180.4 AI20	30/45
		HSK-E50	36000(IBAG)	HF 160.2 AI/DI/SI 30	20/26

Mandrini Opzionali H12

Model	Spindle type	Tool taper	Speed	Model of spindle motor	Motor power (cont. / 30 min)
H12	built in	HSK	20000	F: α 112M/20KiB	15/18.5
				M: #SRT-H6AC-200B	18.5/22
				M: #SCT-H6AN-200A	17KW
				M: #SCT-H6AC-200A	17KW
				S: 1FE1083-4WN11	28KW
			24000(IBAG)	HF230 AI20HK	25/33
	direct drive	#40	10000	#SCT-BB5N10	26KW
				#SCT-BB5C-10	26KW
			15000(std)	F: α L8/15000iA06B-1487-B135#0521	15/18.5
				S: 1PH8133-1VG02-0MA1	20/30
				M: SJ-VKRS30-08ZT-S02(F)	15/18.5
				H: QAN200UH	10/12.5

Mandrini Opzionali H16

Model	Spindle type	Tool taper	Speed	Model of spindle motor	Motor power (cont. / 30 min)
H16	direct drive	#40	15000(std)	F: α L8/15000iA06B-1487-B135#0521	15/18.5
				S: 1PH8133-1VG02-0MA1	20/30
				M: SJ-VKRS30-08ZT-S02(F)	15/18.5
				H: QAN200UH	10/12.5
	built in	HSK	20000	F : α 112M/20KiB	15/18.5
				H : 1FE1083-4WN11	28KW
				S: 1FE1083-4WN11	28KW
				M : #SCT-H6AN-200A	17KW
				M : #SCT-H6AC-200A	17KW
				M : SJ-2B4322TKH	18.5/22
			24000(IBAG)	HF230 AI20HK	25/33
			14000	#SFT-H1AN-140A	31KW
	direct drive	BBT50	10000(opt)	F: α 22/10000i A06B-1431-B103	22/26
				F: α 22/10KiT/A06B-1471-B123#0021(CTS用)	22/26
				S: N/A	N/A
				H: QAN260U	24/30
				H: QAN260UH(CTS用)	22/30
				M: SJ-VKRS30-08ZT-S02(F)	15/18.5

Tavole

- Takumi , come Hurco , utilizza alcuni marchi Taiwanesi di tavole 4° asse (DETRON, GSA) , costruiti e già interfacciati per le macchine con Heidenhain.
- Lo svantaggio , come per Hurco , resta la lunghezza del tempo di consegna.
- Di seguito viene riportata la tabella contenenti le dimensioni massime di tavola per ogni tipologia di macchina.

Modello	Massima dimensione tavola
H7	Inferiore a 170 mm
H10	Inferiore a 250 mm
H12	Inferiore a 320 mm
H16	Inferiore a 400 mm
H22	Inferiore a 400mm
H32	Inferiore a 400 mm

Tavole DETRON

GXA-S series

New Evolution

GXA-S Multiple- power NC Rotary Table (pneumatic clamp)

GXA-125S GXA-170S
GXA-210S GXA-250S

GXA-170S

superior pneumatic
clamp
table size
new evolution model
vertical & horizontal application
worm gear transmission



- Workable diameter Ø125, Ø170, Ø210, Ø255 +
- Exclusive patented dual pneumatic piston braking system.
- Higher rotation speed.
- Equipped with high precision cross roller.
- Full gear depth transmitted by dual lead worm drive, resulting in higher efficiency and lower backlash.

Customized model
GX-PL motor at left
Upgraded high precision
cross roller bearings.

SPECIFICATIONS

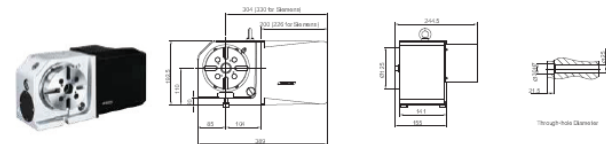
MODEL	Unit	GXA-125S	GXA-170S	GXA-210S	GXA-250S
Workable diameter	mm / inch	Ø125 / Ø 4.92	Ø170 / Ø 6.69	Ø210 / Ø 8.27	Ø255 / Ø10.04
Center bore diameter	mm / inch	Ø30H7 / Ø 1.18H7	Ø40H7 / Ø 1.57H7	Ø63H7 / Ø 2.56H7	Ø65H7 / Ø 2.56H7
Through-bore diameter	mm / inch	Ø25 / Ø 0.98	Ø40 / Ø 1.57H7	Ø65 / Ø 2.56H7	Ø65 / Ø 2.56H7
Height of table (horizontal)	mm / inch	155 / 6.10	175 / 6.89	175 / 6.89	190 / 7.48
Height of center (vertical)	mm / inch	110 / 4.33	135 / 5.31	160 / 6.3	160 / 6.3
Width of T-slot	mm / inch	12H7 / Ø 0.47H7	12H7 / Ø 0.47H7	12H7 / Ø 0.47H7	12H7 / Ø 0.47H7
Width of guide block	mm / inch	18 / 0.71	18 / 0.71	18 / 0.71	18 / 0.71
Clamping method / pressure	Mpa / psi	Pneumatic 0.55 ~ 0.7 / 79.8-101.5	Pneumatic 0.55 ~ 0.7 / 79.8-101.5	Pneumatic 0.55 ~ 0.7 / 79.8-101.5	Pneumatic 0.55 ~ 0.7 / 79.8-101.5
Clamping torque	Nm / ft. lbs.	140 / 103.18	300 / 221.1	400 / 294.8	400 / 294.8
Servo motor type			refer to page 53		
Transmission ratio		1 / 40	1 / 60	1 / 72	1 / 72
Max. table speed	min	66.6	55.3	53.3	53.3
Standard loading inertia*	Kg.cm ²	0.2	0.2	1.38	1.38
Maximum loading inertia*	Kg.cm ²	1	3	5	5
Resolution (1/40)	deg.	0.001	0.001	0.001	0.001
Indexing accuracy	sec.	40	20	20	20
Repeatability	sec.	6	6	6	6
Net weight (servo motor excluded)	kg / lb	32 / 70.40	52 / 114.4	60 / 132	67 / 147.4
Allowable loading capacity	Vertical	kg / lb	50 / 110	100 / 220	125 / 275
	Horizontal	kg / lb	100 / 220	200 / 440	250 / 550
	Tallstock applied	kg / lb	100 / 220	200 / 440	250 / 550
Allowable load (when table clamped)	F	N / lbs	9700 / 2176.68	14000 / 3141.8	17000 / 3814.8
	F _{XL}	Nm / ft. lbs.	410 / 302.17	1020 / 751.74	1265 / 932
	F _{XL}	Nm / ft. lbs.	140 / 103.8	300 / 221.1	400 / 294.8
Allowable cutting torque	Nm / ft. lbs.	85 / 62.65	170 / 125.29	260 / 191.62	266 / 196

Note: 1. Allowable cutting torque at table speed of 1 min.
2. Standard loading inertia * is allowed in max table speed. Contact dealer for the necessary adjustment of speed and others when maximum loading inertia * is required.

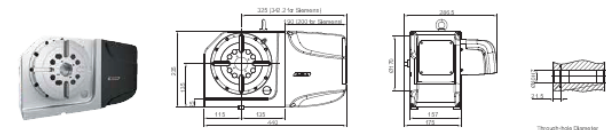
Dimension

Unit: mm

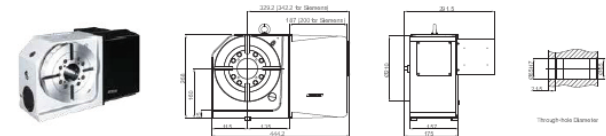
GXA-125S



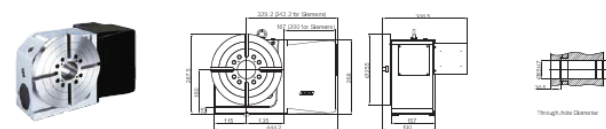
GXA-170S



GXA-210S



GXA-250S



Remark: 1. The length of servo guard may vary with servo motor type. the metal sheet dimensions shown above are based on Fanuc motor

DETRON

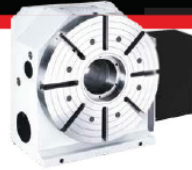
GX-H series

CNC Rotary Table (Hydraulic Brake)

GX-500H GX-630H
GX-800H

G X - 5 0 0 H

Hydraulic brake
Table size
Vertical & horizontal application
Worm gear transmission



- Worktable diameter Ø500, Ø630, Ø800.
- Equipped with extra large bearings, preloaded in radial and axial directions.
- Motor is mounted at right side (vertical and horizontal application).
- Full gear depth transmitted by dual lead worm drive, resulting in higher efficiency and lower backlash.



Consolidated spindle with radial-axial bearing built-in.

SPECIFICATIONS

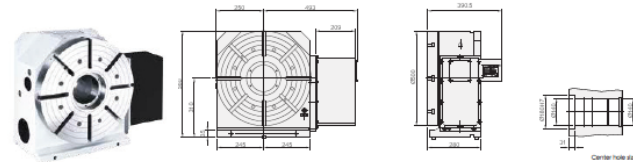
MODEL	Unit	GX-500H	GX-630H	GX-800H
Worktable diameter	mm / inch	Ø500 / Ø19.69	Ø630 / Ø24.80	Ø800 / Ø31.50
Center bore diameter	mm / inch	Ø180H7 / Ø7.0917	Ø270H7 / Ø10.6317	Ø380H7 / Ø15.2277
Through-bore diameter	mm / inch	Ø140 / Ø5.51	Ø220 / Ø8.66	Ø240 / Ø9.45
Height of table (horizontal)	mm / inch	280 / 11.02	325 / 12.80	365 / 14.37
Height of center (vertical)	mm / inch	310 / 12.20	400 / 15.75	480 / 18.90
Width of T-slot	mm / inch	18H7 / 0.7117	18H7 / 0.7117	22H7 / 0.8747
Width of guide block	mm / inch	18 / 0.71	18 / 0.71	18 / 0.71
Clamping method / pressure	Mpa / psi	Hydraulic 5 / 72.5	Hydraulic 5 / 72.5	Hydraulic 3.5 / 507.5
Clamping torque	Nm / ft. lbs.	3200 / 2358.4	4500 / 3316.5	5200 / 3832.4
Servo motor spec		refer to page 53		
Transmission ratio		1 / 180	1 / 180	1 / 180
Max. table speed	min	11.1	11.1	11.1
Allowable loading inertia	Kg.m ²	19.1	40.5	122.4
Resolution	deg.	0.001	0.001	0.001
Indexing accuracy	sec.	15	15	15
Repeatability	sec.	6	6	6
Net weight (servo motor excluded)	Kg / lb	395 / 869.0	720 / 1584.0	1236 / 2719.2
Allowable loading capacity	Vertical	Kg / lb	250 / 550	450 / 990
	Horizontal	Kg / lb	600 / 1320	800 / 1760
	T-slot applied	Kg / lb	600 / 1320	800 / 1760
Allowable load (when table clamped)	F	N / lbs	40000 / 8976.0	49000 / 10780
	F _{FL}	Nm / ft. lbs.	5000 / 3685.0	8500 / 6264.50
	F _{FL}	Nm / ft. lbs.	3200 / 2358.4	4500 / 3316.5
Allowable cutting torque	Nm / ft. lbs.	2500 / 1842.5	4300 / 3169.1	5000 / 3685.0

Note: Allowable cutting torque at table speed of 1 min⁻¹.

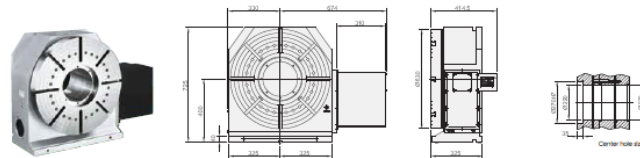
DIMENSIONAL DRAWINGS

GX-500H

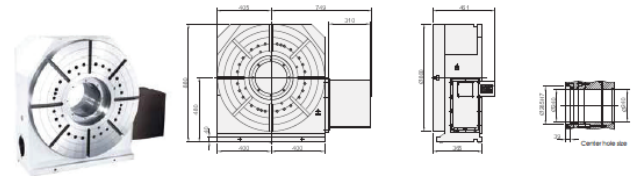
Unit : mm



GX-630H



GX-800H



Note: 1. The length of servo guard may vary with servo motor type. (metal sheet dimensions shown)

Tavole GSA

GSA⁺



- ⊙ A combination of high precision bronze / nickel worm wheel and case hardened steel worm screw ensures long term indexing accuracy.
- ⊙ Dual lead worm wheel/worm shaft which allows easy backlash adjustment.
- ⊙ Double bearing design suitable for heavy cutting.
- ⊙ One piece of faceplate and splindle design which offer rigid construction.
- ⊙ Low Gear ratio design (60:1) which offer high speed feed rate.
- ⊙ Large thru hole design which allow large work piece going thru splindle.

MODEL NO : CNC-320 R/L

Motor position assign-side on left side
 ⬇ Split dia
 ⬇ Type of CNC Rotary Table

ITEM / MODEL	CNC-120R	CNC-170R	CNC-200R	CNC-250R	CNC-320R
Table Dia (mm/inch)	120 / 4.72	170 / 6.69	200 / 7.87	250 / 9.84	320 / 12.60
Center height in Vertical (mm / inch)	115 / 4.53	135 / 5.31	160 / 6.3	185 / 7.28	210 / 8.27
Table Height in Horizontal (mm / inch)	170 / 6.69	165 / 6.5	165 / 6.5	200 / 7.87	240 / 9.45
Over all Height in Vertical Without Motor Cover (mm / inch)	193 / 7.60	240 / 9.45	265 / 10.63	315 / 12.4	380 / 14.96
Thru-Hole Dia (mm / inch)	30 ^{mm} / 1.18 ⁱⁿ	30 ^{mm} / 1.37 ⁱⁿ	35 ^{mm} / 1.37 ⁱⁿ	70 ^{mm} / 2.76 ⁱⁿ	110 ^{mm} / 4.33 ⁱⁿ
Width of T-slot (mm / inch)	10 ^{mm} / 0.39 ⁱⁿ	12 ^{mm} / 0.47 ⁱⁿ	12 ^{mm} / 0.47 ⁱⁿ	12 ^{mm} / 0.47 ⁱⁿ	14 ^{mm} / 0.55 ⁱⁿ
Width of Guide Block (mm / inch)	14 ^{mm} / 0.55 ⁱⁿ	18 ^{mm} / 0.71 ⁱⁿ	18 ^{mm} / 0.71 ⁱⁿ	18 ^{mm} / 0.71 ⁱⁿ	18 ^{mm} / 0.71 ⁱⁿ
Servo motor type	MELDAS FANUC SIEMENS HEIDENHAIN	HF-75T 04 I 1FK7062 GSY116C	HF-104T 04 I 1FK7060 GSY116C	HF-104T 04 I / 08 I 1FK7060 / 1FK7063 GSY116C / GSY116G	HF-204S 012 I 1FK7063 GSY150B / GSY150G
Large Size Table	Gear Ratio Min. Indexing Unit (degree / kg/cm)	1:60 0.001°	1:60 0.001°	1:60 0.001°	1:100 / 1:50 0.001°
GCT	Max. R.R.M. (mm/rev) (2000-rpm)	30.3	22.2	22.2	11 / 123.2
	Hydro. clamp force (kg/cm) (P.5kg / cm ²)	12	25	25	47
	Hydro. clamp force (kg/cm) (P.20kg / cm ²)	24	50	50	94
	Indexing Accuracy Class (sec.)	30"	30"	30"	15"
PT	Repeatability (sec.)	4"	4"	4"	4"
	Max. Machining Force (kg-m)	12	23	23	45
	N.W. (kg)	28	70	84	124
APCR / APCI	Max. Load	W=35 kg	W=100 kg	W=125 kg	W=150 kg
	Max. Radial Load	F _{XL} =9 kg-m	F _{XL} =50 kg-m	F _{XL} =50 kg-m	F _{XL} =94 kg-m
Controller	Max. Feed Rate	F=800 kg	F=1000 kg	F=1100 kg	F=1450 kg
Coupling	Max. Feed Rate	F _{XL} =18 kg-m	F _{XL} =78 kg-m	F _{XL} =100 kg-m	F _{XL} =200 kg-m

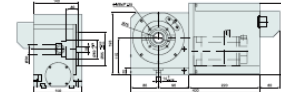
⊙ GSA retains the right of modification. All specifications can be modified according to customers' requirement.
 ● Up & backside cable outlet is available, stand motor.
 ● To meet A-PCD-Classing-Complete - Refer to P. 55-55
 ● Standard accessory - eye bolts, clamping blocks

● Order of wire box could be decided by customers order

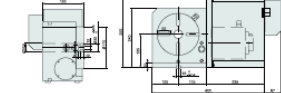


CNC-120R, 170R, 200R, 250R, 320R CNC Rotary Table

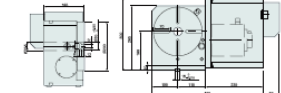
CNC-120R



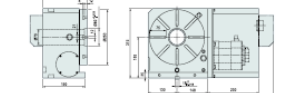
CNC-170R



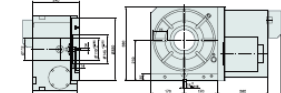
CNC-200R



CNC-250R



CNC-320R



NOTE: Difference order between difference length of cable cover

ITEM	Table top surface	Position of table top to frame bottom	Position of table top to frame bottom	Position of table top to frame bottom	Position of table top to frame bottom	Position of table top to frame bottom
MOD. EL.						
CNC-120R	0.01	0.01	0.015	0.012	0.01	0.02
CNC-170R	0.01	0.01	0.01	0.02	0.015	0.02
CNC-200R	0.01	0.01	0.01	0.02	0.015	0.02
CNC-250R	0.01	0.01	0.01	0.02	0.015	0.02
CNC-320R	0.01	0.01	0.01	0.02	0.015	0.02

Tavole GSA

GSA⁺



- A combination of high precision bronze / nickel worm wheel and case hardened steel worm screw ensures long term indexing accuracy.
- Dual lead worm wheel/worm shaft which allows easy backlash adjustment.
- Double bearing design suitable for heavy cutting.
- One piece of faceplate and spindle design which offer rigid construction.
- One Gear ratio design (60:1) which offer High speed feed rate.
- Large thru hole design which allows large work piece going thru spindle.

MODEL NO : CNC-400 R/L

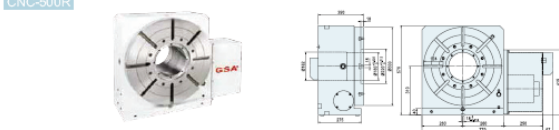

 Motor position (right-side or left-side)
 Table type (CNC Rotary Table)

CNC-400R, 500R, 630R, 800R CNC Rotary Table

CNC-400R



CNC-500R



CNC-630R



CNC-800R



CNC

CNCB

CNCT / CNCMT

NCF

Tailstock

Large Size Table

GCT

PT

APCR / APCI

Controller

Coupling

Accessories

ITEM / MODEL	CNC-400R	CNC-500R	CNC-630R	CNC-800R
Table Dia (mm / inch)	400 / 15.75	500 / 19.69	630 / 24.8	800 / 31.5
Center Height in Vertical (mm / inch)	230 / 9.04	310 / 12.20	400 / 15.75	490 / 19.30
Table Height in Horizontal (mm / inch)	230 / 9.04	290 / 11.42	320 / 12.60	340 / 13.39
Over all Height in Vertical Without Motor Cover (mm / inch)	480 / 18.11	570 / 22.44	725 / 28.54	880 / 34.65
Thru-Hole Dia (mm / inch)	150 ^Φ / 5.9 ["]	180 ^Φ / 7.09 ["]	254 ^Φ / 10 ["]	254 ^Φ / 10 ["]
Width of T-slot (mm / inch)	14 ^Φ / 0.55 ["]	18 ^Φ / 0.71 ["]	18 ^Φ / 0.71 ["]	20 ^Φ / 0.79 ["]
Width of Guide Block (mm / inch)	18 ^Φ / 0.71 ["]	18 ^Φ / 0.71 ["]	18 ^Φ / 0.71 ["]	22 ^Φ / 0.87 ["]
Servo motor type	MELDAS FANUC SIEMENS HIDENHAIN	HF-204S 612 / 621	HF-354S 621	HF-354S 19C101
Large Size Table	HF-204S 19C1003 QSV150C	HF-204S 19C1003 QSV150C	HF-354S 19C101 QSV150C	HF-354S 19C101 QSV150C
GCT	1:60 0.001° 22.2 92 184	1:30 0.001° 16.7 160 380	1:80 0.001° 11.1 350 700	1:80 0.001° 11.1 430 1050
Indexing Accuracy Class (sec.)	High Accuracy Rotary Table Refer to P.59 chart 2			
PT	Unidirectional Bistirectional Max. Machining Force (kg-m) N.W. (kg)	4° 8° 160 480	4° 8° 230 860	4° 8° 330 1200
APCR / APCI	Max. Load Vertical Horizontal	W=300 kg W=500 kg	W=350 kg W=600 kg	W=400 kg W=1000 kg
Controller	Max. Radial Load	F=3500 kg F _{XL} =154 kg-m	F=4000 kg F _{XL} =360 kg-m	F=5000 kg F _{XL} =700 kg-m
Coupling		F=6000 kg F _{XL} =250 kg-m	F=6000 kg F _{XL} =350 kg-m	F=6000 kg F _{XL} =1000 kg-m

* GSA retains the right of modification. All specifications can be modified according to customers' requirement.
 ● Up & backhitch can be added to available, start motor cover also available.
 ● Standard accessory - eye bolts, clamping blocks.

● Adapting Tailstock - Refer to P. 34-36
 ● To match AC-DC-Stepping Controller - Refer to P. 53-55
 ● Optional accessories - Refer to P. 58

Accuracy in motion

ITEM	Table top flatness	Parallelism of table top and main frame	Runout of table spindle center	Perpendicularity of table top to main frame	Table top runout	Perpendicularity of table top to table bracket (table stock)	Parallelism of center line between baseplate & tablestock to main frame guide block
CNC-400R	0.015	0.015	0.01	0.02	0.015	0.02	0.02
CNC-500R	0.015	0.015	0.01	0.02	0.015	0.02	0.02
CNC-630R	0.025	0.025	0.01	0.025	0.02	0.02	0.02
CNC-800R	0.025	0.025	0.01	0.025	0.02	0.02	0.02

Previsioni e considerazioni per tavole Italia

- Attualmente si sta lavorando sulla creazione di tavole LCM con motori e azionamenti Heidenhain , unica possibilità per poterle interfacciare .Questa applicazione andrà sviluppata in cooperazione tra LCM, Heidenhain e Hurco.
- Da considerare per la rete vendita, ogni qualvolta si vende un 4° asse , è necessario acquistare anche l'opzione software per farla funzionare con i relativi costi aggiuntivi.
- Da considerare per la rete vendita , ogni qualvolta si vende un 4°/5° asse , è necessario acquistare l'opzione software per farla funzionare ed il software Heidenhain 5 assi con i relativi costi aggiuntivi.

Tastatori

- Hurco Italia svilupperà l'utilizzo dei tastori Renishaw sulle macchine Takumi.
- TS27
- RMP 60/600 - OMP 60
- NC4

Telediagnosi

- Esiste la possibilità di effettuare un collegamento in rete del CNC Heidenhain iTNC530 con un PC Remoto.
- Il pacchetto software è di proprietà di Heidenhain e installabile dai tecnici Hurco.
- Attualmente in test .

Automazione

- TAKUMI riferisce di non aver esperienza diretta nell'applicazione di automazione.
- Nonostante questo , alcune aziende sono riuscite ad effettuare delle interfacce. Lo sviluppo di queste applicazione andrà eseguito in cooperazione tra Hurco , Heidenhain e il fornitore dell'automazione .

