

ALL NEW INFINITY
Double Column
Machining Center
Linear Guide Way

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Intelligent Machining Center
with **INTELLIGENT NC** (Hartrol / Hartnet)

Website



Hartford has sold over 46,000 machines globally, resulting in over 37,000 satisfied customers and a wealth of feedback that has added to our arsenal of experience and fine craftsmanship. In accordance with our insistence on providing only the highest quality of machining centers, every possible resource is utilized to constantly upgrade our technological levels in manufacturing and other applications.

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EU Technical Center

Prague, Czech Republic

Distribution Center

Le Havre, France / Istanbul, Turkey / Bangkok, Thailand
Caxias Do Sul, Brazil / Buenos Aires, Argentina

Sales & Service Center

Korea - Seoul, Busan, Daegu
China - Dongguan, Xiamen, Wuxi, Chongqing, Xian
Taiwan - Taipei, Hsinshu, Taichung, Kaohsiung



Unleash Your Productivity
Hartford the **ALL NEW INFINITY**

- ∞ Single Set Up from Heavy Cutting to Fine Finishing
- ∞ Massive Range of Machining Accessories
- ∞ Ultimate Precision



ALL NEW INFINITY

Powerful Cutting Performance

Model HSA428
Spindle 6,000rpm
Gear Head 26kW (34.87HP)
Material S45C Mild Carbon Steel

Unique Machine Features

These icons are a guide to the special features of this Hartford machine. Ask your salesperson for more information.

Endmill

Tool Diameter $\varnothing 63\text{mm}$ (2.48")
 Feed Rate 1350mm/min (53.15"/min)
 Width 10mm (0.39")

40mm (1.57")
 Depth

Tapping

Tool Diameter $\varnothing 36\text{mm}$ (1.42")
 Feed Rate 480mm/min (18.9"/min)
 Depth 40mm (1.57")

M36 (1.42")
 Tool Diameter
480mm/min (18.9"/min)
 Feedrate

Facemill

Tool Diameter $\varnothing 125\text{mm}$ (4.92")
 Feed Rate 2050mm/min (80.71"/min)
 Depth 4mm (0.16")

820c.c.
 Cutting Volume

Drilling

Tool Diameter $\varnothing 53\text{mm}$ (2.09")
 Feed Rate 100mm/min (3.94"/min)
 Depth 50mm (1.97")

$\varnothing 53$ mm (2.09")
 Tool Diameter

From Heavy Cutting to Fine Finishing, the ALL NEW INFINITY Handles It All

With the excellent vibration absorption of the ALL NEW INFINITY you can take your precision molds from solid blocks of material, right through to the final precision mold in a single set-up - in record time.

- ∞ Increase Your Production Quality - Reduce errors created through multiple set-ups.
- ∞ Increase Your Productivity - Reduce operator set up time and increase your output.

Mechanical



FEA Finite Element Analysis
 All Hartford machines are FEA analyzed to ensure optimum structural design and performance.



OFS Optimum Force Flow Structure
 Redirects machining forces to reduce vibration and guarantee accuracy.



MQT Machine Quality Target
 Right from design stage, guarantees machine performance and stable quality.



SRA Spindle Run-out Accuracy
 Accuracy within 0.010mm/300mm.



VPB Variable Pressure Bearing
 Internal pressure adjusted to deliver optimum machining performance and extend spindle service life.



HLS Heavy - Light Cutting Spindle
 Unique spindle gear design allows for heavy and light cutting.



FTT 4 Linear Guide Ways - 3 Surface Contact Technology
 Linear guideways set on adjacent rather than opposite faces to maximize rigidity under heavy machining load.



MAS Multiple Angular Head Solutions
 Many different multi-axis head options to suit all types of machining requirements.



BSD Ballscrew Support Device
 Additional ballscrew support is added to eliminate deflection of the ballscrew and maintain precision.



UAC Universal Angular Head with CTS Function
 Through tool coolant feature is included in the universal head.

Electrical



SMS Short Message Sender
 Management immediately aware of machine issues so they can resolve quickly.



MTM Machining Time Management
 Empowers management to maximize machine efficiency.



TMM Thread Milling Macro
 Allows you to easily cut wide pitch threads.



SOD Servo Overload Detection
 Detects unusual loading to avoid collisions.



ALL NEW INFINITY



FEA



MQT



TMM

The **Perfect** Machine,
Made Just for You.



Whatever You Need, We Have It.

Huge Range of Machining Heads and Machine Options

The ALL NEW INFINITY is backed up with decades of experience and cutting options from Hartford. We have a huge range of cutting head options to easily handle your most complex cutting tasks.

Our range of design options tailors the machine for your specific requirements, so you can maximize your productivity and optimize your production.

- ⊗ 90° Head - Side Milling & Drilling
- ⊗ Extended Doors - Easy Workpiece Management
- ⊗ Universal Head - Complex Angle Cutting
- ⊗ Extension Head - Deep Drilling
- ⊗ Ergonomic Design - Easy Operation



INFINITY - Your Flexible & Versatile Production Solution

We are constantly delivering new developments for the ALL NEW INFINITY, and we can offer some of the latest productivity enhancement packages to maximize production for your working environment:

- ⊗ Auto Swivel Head - Automatic Machine Head Changer
- ⊗ Extended Y-Axis Travel - Wider Cutting Volume
- ⊗ ZF Gearbox - 8,000rpm Gear Head
- ⊗ Linear Scales - Closed Loop Precision Positioning

8,000 rpm
Gear Head (opt)

The Support You Need

Linear Way Options from Small to Large Workpieces

With the Hartford ALL NEW INFINITY you can choose up to a maximum of three ball type linear ways depending on the model size. So you can handle the heaviest table loads for large molds and components whilst maintaining absolute precision.

∞ 3 Linear Ways - HSA-X28 / HSA-X36

∞ 2 Linear Ways - HSA-X23 / HSA-X27

Patent: M435321 Working table with lightweight rib

30,000 kg (66138.7 lbs)

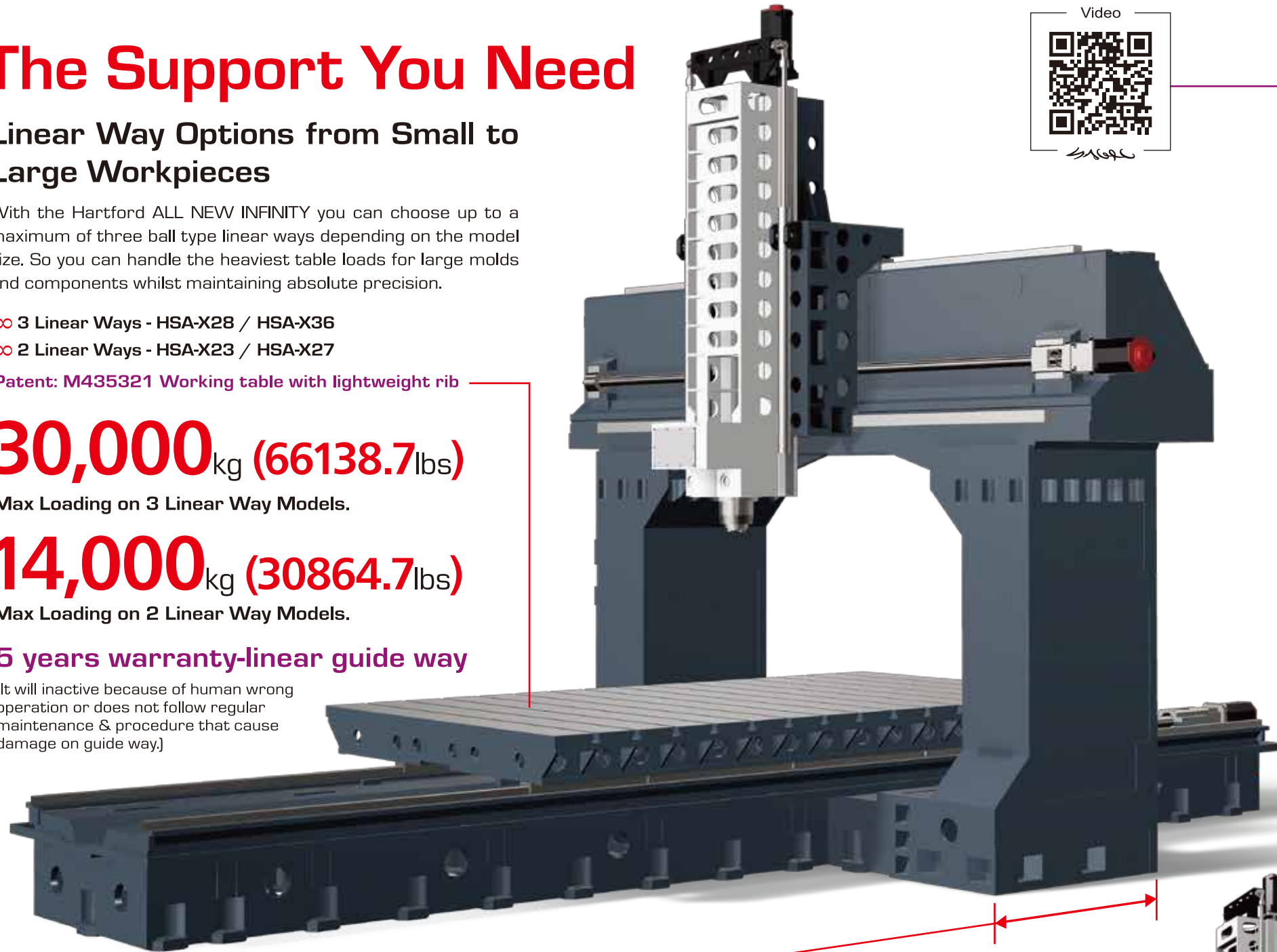
Max Loading on 3 Linear Way Models.

14,000 kg (30864.7 lbs)

Max Loading on 2 Linear Way Models.

5 years warranty-linear guide way

(It will inactive because of human wrong operation or does not follow regular maintenance & procedure that cause damage on guide way.)



ALL NEW INFINITY

Heavy Cutting - Fine Finishing High - Low Ratio Gear Head

With our 8,000 rpm gear head you can take on the toughest heavy cutting jobs using the powerful low ratio gear. Then the 8,000 rpm high speed high ratio gears deliver the cutting speed and accuracy that you need to perform the finest finishing.

Reduce Cutting Vibration With New Force Flow Design

Traditional beam designs deliver cutting force horizontally to the beam, potentially causing deflection and vibration issues.

Hartford's new slant beam design redirects the cutting force flow at 45° down into the columns, significantly reducing vibration through efficient force flow transfer.

45° Force Flow Design

Patented Oversize Column Design Maximum Cutting Force Transmission

Our new patented column design increases the contact area between the column and the machine base to 1,250mm (49.21"). This provides a more efficient delivery of cutting force to the machine base and reduces vibration to improve your accuracy and surface finish.



1,250 mm (49.21")
Oversized Column Footprint

Maximum Transmission Power

Enhanced Positional Accuracy

Our patented Y-axis ball screw supports coupled with the X-axis supports ensure that transmission power is delivered at minimum loss whilst also minimising deflection issues to enhance your machining accuracy.

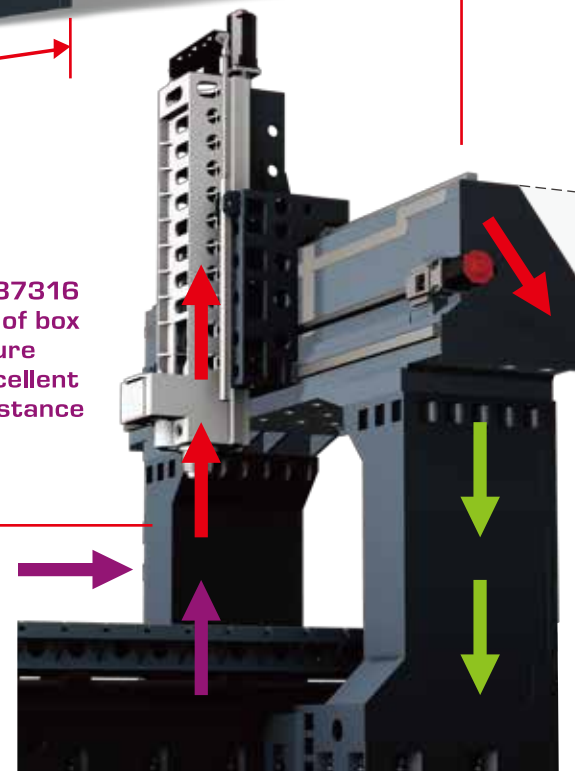
∞ 5 - 6m (0.20" - 0.24") Models X-axis is Standard

∞ 4m (0.16") Models - Option



Patent: M382172 Ballscrew support device

Patent: M437316
The section of box type structure features excellent torsion-resistance





ALL NEW INFINITY

Powerful & Versatile Spindles

30% rigidity up

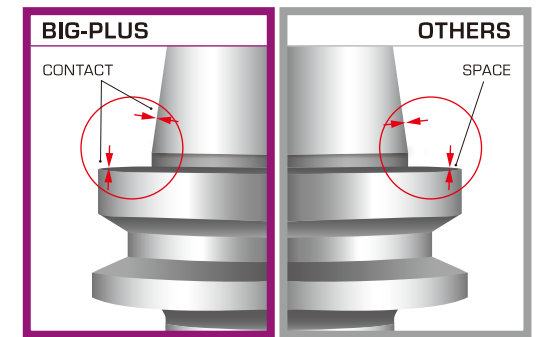
Four Spindle Options to Suit Your Machining

Hartford delivers a powerful gear driven 6,000 rpm spindle as standard on the Infinity series machines, with a further three spindle options so that you can tailor the machine to your exact cutting environment from Heavy cutting through to fine finishing.

The gearbox features a high / low gear ratio to allow you to easily handle your full range of cutting requirements whilst still delivering the power you need.

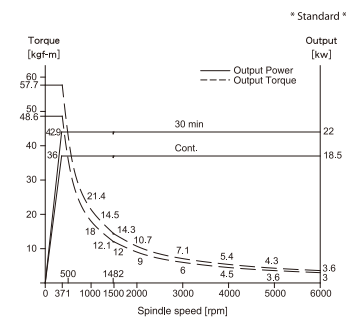
- ∞ 6,000rpm Gear Driven Spindle
- ∞ 8,000rpm Gear Driven Spindle (Option)
- ∞ 10,000rpm Direct Drive Spindle - Ceramic Bearings - (Option)
- ∞ 12,000rpm Direct Drive Spindle - (Option)

BBT vs BT

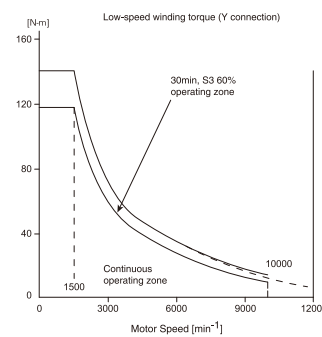
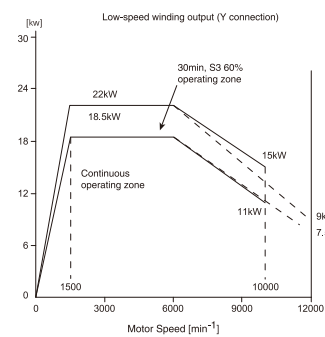


Fanuc

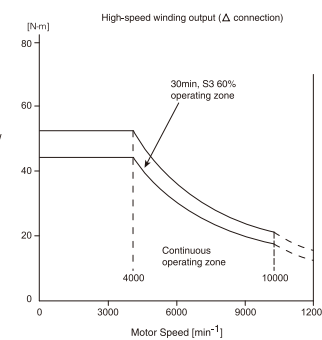
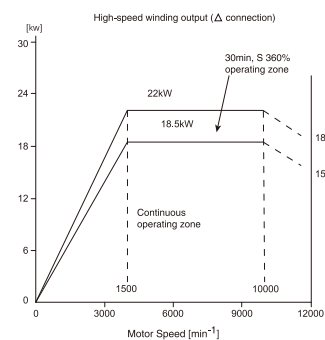
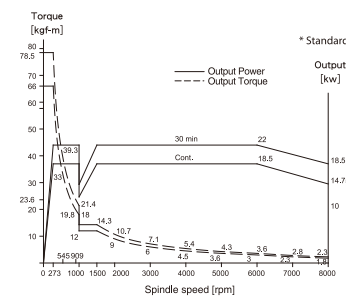
FANUC α 18/7000i (Gear 6000rpm)



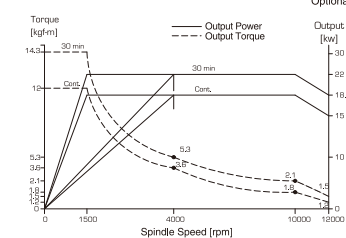
FANUC α i18/10000 (DDS 10000 rpm)



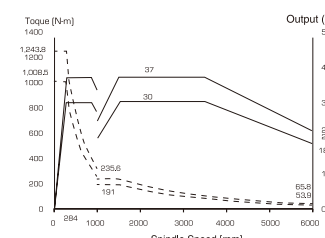
FANUC α i18/10000 (ZF Gear 8000rpm)



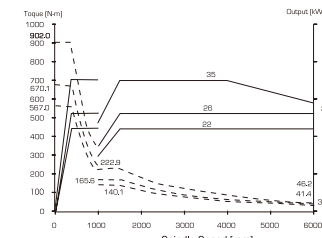
FANUC α i18/12000 (DDS 12000rpm)



FANUC α i18/30/6000

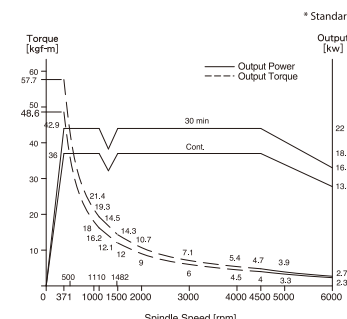


FANUC α i18/22/7000

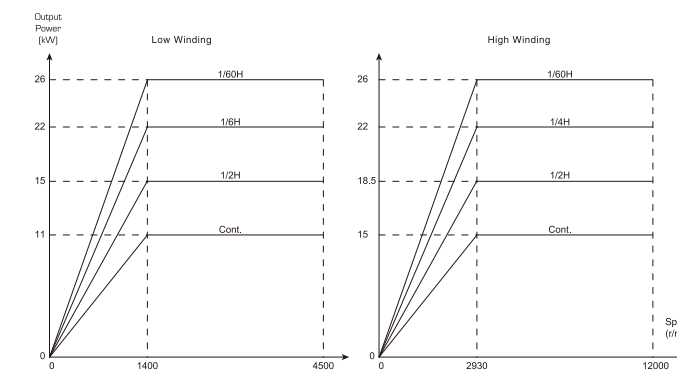


Mistubishi

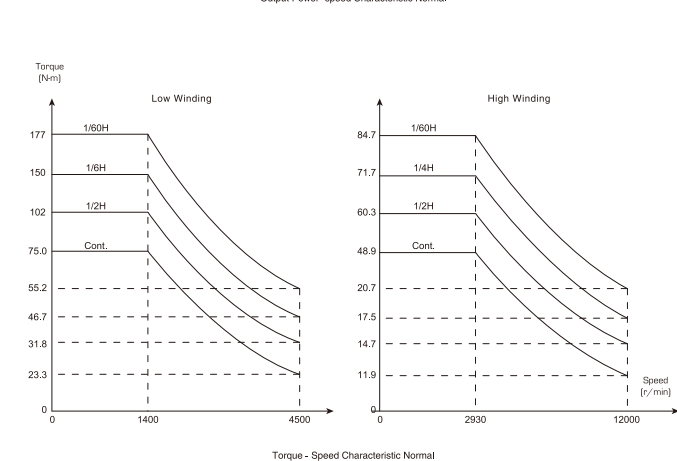
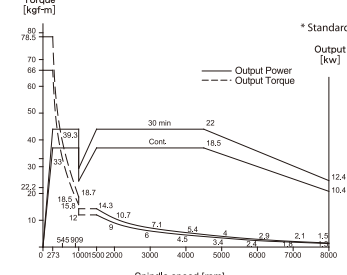
MITSUBISHI SJ-V22-01 (Gear 6000rpm)



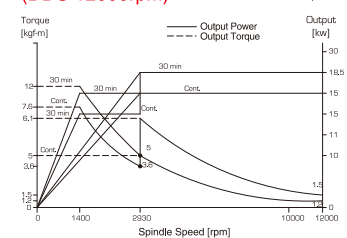
MITSUBISHI SJ-VK30-16FZT (DDS 10000 RPM & 12000 RPM)



MITSUBISHI SJ-V22-01 (ZF_Gear 8000rpm)

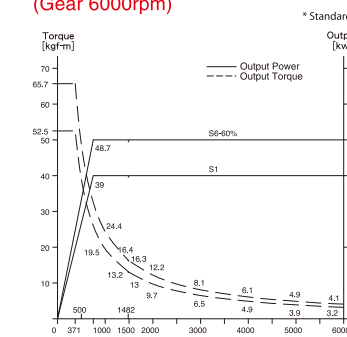


MITSUBISHI SJ-VK30-16FZT (DDS 12000rpm)

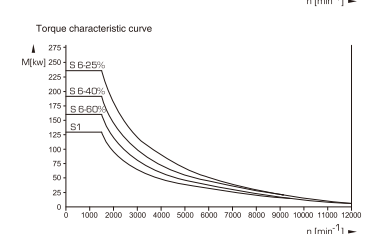
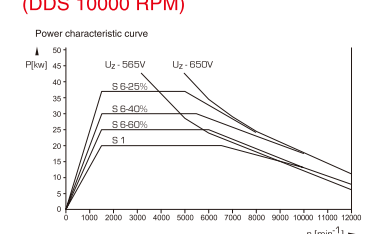


Heidenhain

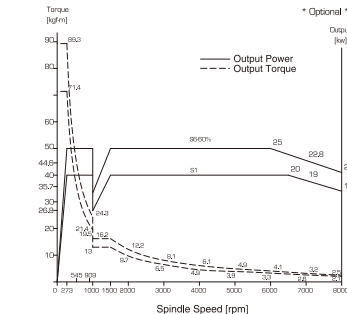
HEIDENHAIN QAN260L (Gear 6000rpm)



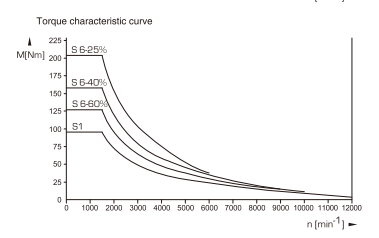
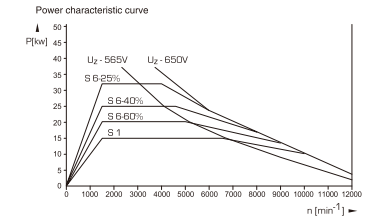
HEIDENHAIN QAN260L (DDS 10000 RPM)



HEIDENHAIN QAN260L (ZF Gear 8000rpm)



HEIDENHAIN QAN260M (DDS 12000 RPM)



A Full Range of Machining Heads

2 Angular Head Solution



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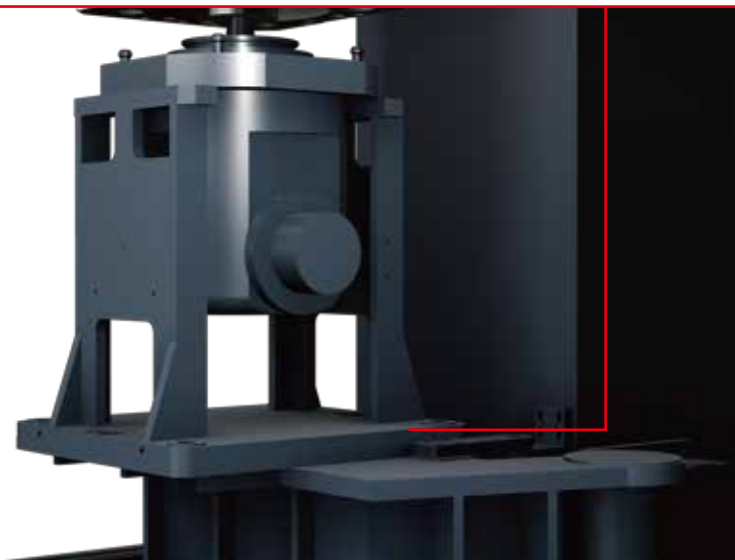
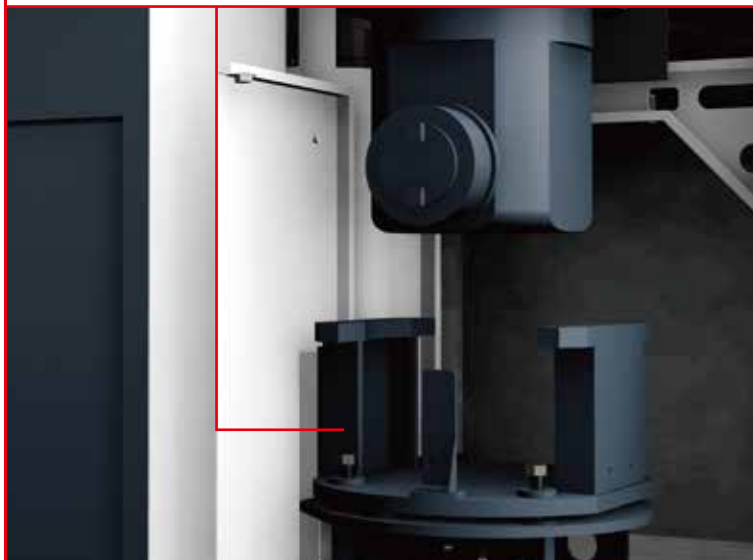
- ∞ Automatic Universal Head
- ∞ 90° Head
- ∞ Straight Extension Head
- ∞ 30° Head

With the Infinity range of machines, Hartford delivers a full range of machining head options to customize the machine to your particular cutting requirements. We also offer the auto swivel arm head changer to automate the head changing process and save you machining time.

1. Automatic Heads (Auto Clamp)

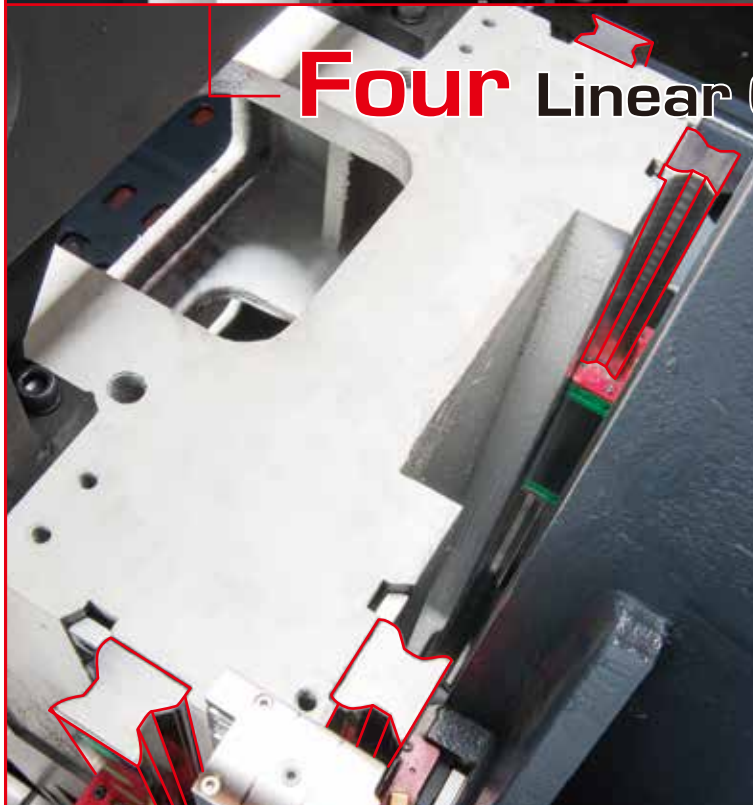
A Type Auto Clamp / Auto Swivel
(HSA-EA / HSA-EAY)

B Type Auto Clamp / Manual Swivel
(HSA-EA / HSA-EAY)



Four Linear Guideways Z-axis

Patent: 1264343 Z-axis head of machining center (4 linear ways on Z-axis)



2. Manual Heads

Manual Clamp / Manual Swivel
(HSA)

Two Linear Guideways Z-Axis

Universal Head
(Manual / Semi-auto)

±/110° A-axis, ±/180° C-axis
Max Speed 2,500rpm
Power 18.5 kW (24.81HP)



90° Angular Head
(Manual / Semi-auto)

Tool Change Manual
(Screw / Hydraulic Release)
Max Speed 2,000rpm
Power 18.5 kW (24.81HP)



Straight Extension Head
350/500 mm
(13.78" / 19.69")

Max Speed 4,000rpm
Power 18.5 kW (24.81HP)



Automatic Universal Head (5°/2.5°/1°)
Max Speed 4,000rpm
Power 26 kW (34.87HP)
With CTS function



Automatic 90° Head (5°/2.5°/1°)
Max Speed 2,500rpm / 4,000rpm
Power 26 kW (34.87HP)
With CTS function
C-axis Manual Positioning Option

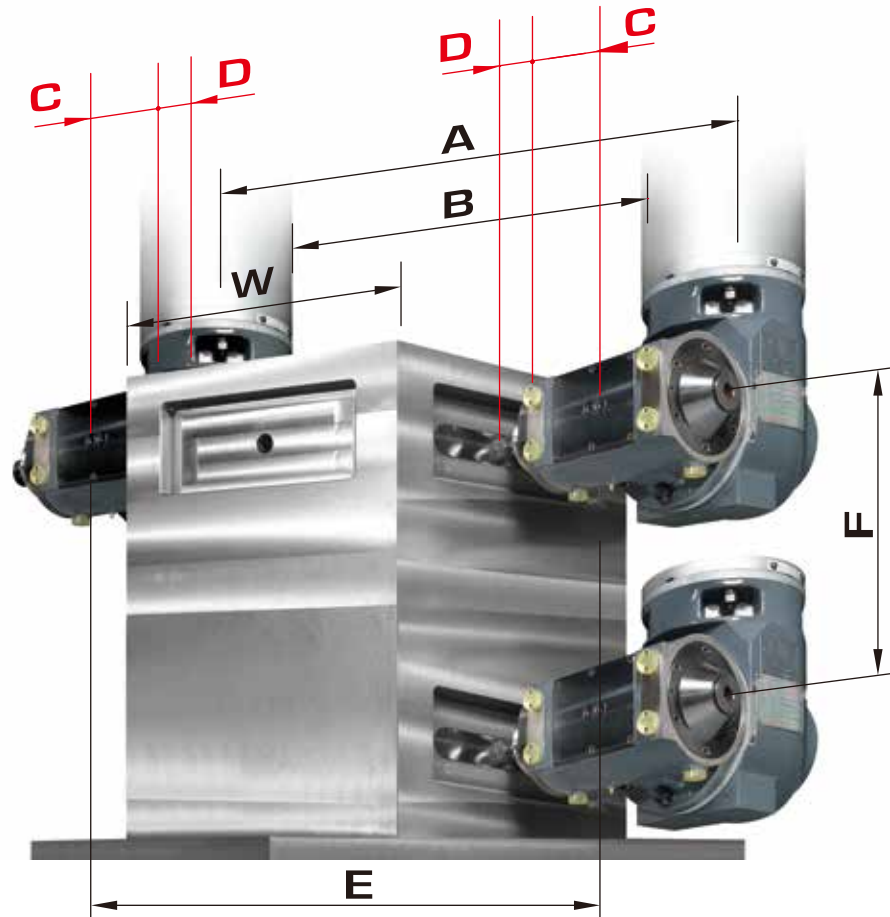


Automatic Extension Head
350/500 mm
(13.78" / 19.69")
Max Speed 4,000rpm
Power 26 kW (34.87HP)



New Y-axis Design Delivers Wider Cutting

Expand Your Y-axis Machining Volume

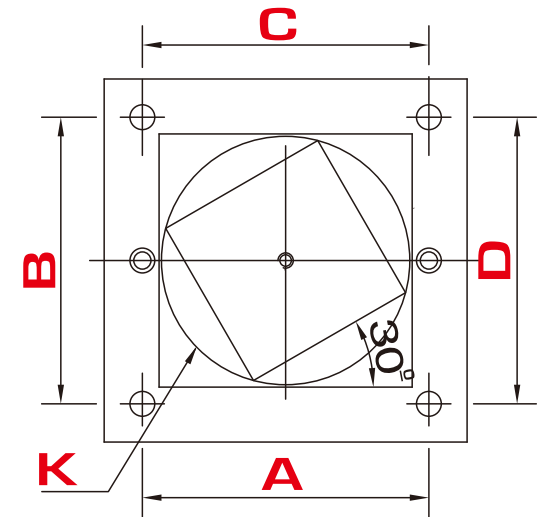


With the Infinity series we offer an expanded Y-axis design for customers who need just that little bit more. The Y-axis expansion increases your Y-axis cutting to allow machining of even larger mold components without additional set up requirements, saving you money and time.

Quality Control Cutting Performance

HSA-423 Model Testing

Texture of Material F25C
 Cutting Speed F200 ~ 500
 Spindle Speed S500 ~ 800
 The Cutting Tool \varnothing 25mm



Positioning Machining Precision Positioning Precision				Circular Circumference Cutting Precision Circularity	
	A	B	C	D	K
Tolerance	0.025	0.025	0.025	0.025	0.02
Actual Value	0.0019	0.0037	0.0016	0.015	0.0070
	(\oplus)	(\oplus)	(\oplus)	(\oplus)	(\circ)

Unit: mm

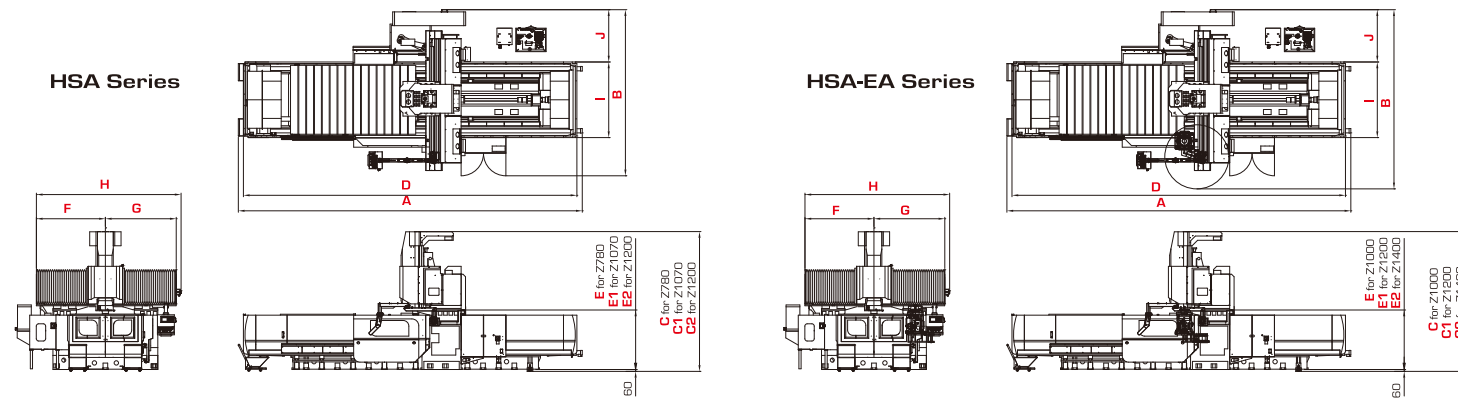
Model	A Y travel Expanded = Original + (C + D) x 2		B Machining Area of Angular Head		C Distance From End of Angular Head to Center of Spindle	D Tool Diameter	E Distance Between Column	W Width of Workpiece	F Z Travel
	Original	Expanded	Original A-Cx2	Expanded A-Cx2					
HSA-x23EA	2300 (90.55")		1852 (72.91")		224 (8.82")	150 (5.91")	2300 (90.55")	1552 (61.1")	880 (34.65") (Z1000)(39.37")
HSA-x23EAY		3100 (122.05")		2652 (104.41")					
HSA-x27EA	2700 (106.3")		2252 (88.66")		224 (8.82")	150 (5.91")	2800 (110.24")	1952 (76.85")	1080 (42.52") (Z1200)(47.24")
HSA-x27EAY		3500 (137.8")		3052 (120.16")					
HSA-x28EA	2800 (100.24")		2352 (92.6")		224 (8.82")	150 (5.91")	2800 (110.24")	2052 (80.79")	840 (33.07") (Z1000)(39.37")
HSA-x28EAY		3600 (141.73")		3152 (124.09")					
HSA-x36EA	3600 (141.73")		3152 (124.09")		224 (8.82")	150 (5.91")	3600 (141.73")	2852 (112.28")	1040 (40.94") (Z1200)(47.24")
HSA-x36EAY		4400 (173.23")		3952 (155.59")					

Accuracy	Tolerance	Actual Value
Straightness Per Full Travel (X / Y-axis)	1000 ∇ 0.05M (40" ∇ 2"), 1000-2000 (40"-80"), 0.06M (2.4"), 2000 \blacktriangle 0.07M (80" \blacktriangle 2.8")	0.02 (0.00008)
Squareness Between Two Coordinate Axis (X / Y-axis)	0.015 / 500 (0.0008 / 20)	0.006 (0.00024)
Squareness Between Two Coordinate Axis (Y / Z-axis)	0.02 / 500 (0.0008 / 20)	0.005 (0.0002)
Squareness Between Two Coordinate Axis (X / Y-axis)	0.015 / 500 (0.0008 / 20)	0.004 (0.00016)
Positioning Accuracy (X-axis)	0.012 / Full Travel (0.0008)	0.005 (0.0002)
Positioning Accuracy (Y-axis)	0.012 / Full Travel (0.0008)	0.005 (0.0002)
Positioning Accuracy (Z-axis)	0.012 / Full Travel (0.0008)	0.004 (0.00016)
Repeatable Positioning (X-axis)	0.010 / Full Travel (0.0004)	0.004 (0.00016)
Repeatable Positioning (Y-axis)	0.010 / Full Travel (0.0004)	0.003 (0.00012)
Repeatable Positioning (Z-axis)	0.010 / Full Travel (0.0004)	0.002 (0.00008)
Run-out Of Spindle Taper Hole	Fixed Side: 0.005 (0.0002), Free Side: 0.012 / 300 (0.0006 / 12)	0.001 / 0.005 (0.00004 / 0.0002)
Circularity	0.012 / 150 (0.0012 / 6)(0.020 / 150 for X axis 4000(up) machine)	0.003 (0.00012)

Machine Dimensions



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Model	A	B	C	C1	C2	D	E	E1	E2	F	G	H	I	J
HSA-323	9000 (354.33)	5304 (208.82)	4640 (182.68)	5210 (205.12)	5540 (218.11)	8655 (340.75)	1900 (74.8)	2200 (86.61)	2400 (94.49)	2205 (86.81)	2420 (95.28)	4625 (182.09)	2414 (95.04)	1670 (65.75)
HSA-423	11000 (433.07)					10655 (419.49)								
HSA-523	13000 (511.81)					12655 (498.23)								
HSA-623	15000 (590.55)					14655 (579.97)								
HSA-327	9000 (354.33)	5804 (228.5)	4640 (182.68)	5210 (205.12)	5540 (218.11)	8655 (340.75)	1900 (74.8)	2200 (86.61)	2400 (94.49)	2523 (99.33)	2583 (101.69)	5192 (204.41)	2914 (114.72)	1670 (65.75)
HSA-427	11000 (433.07)					10655 (419.49)								
HSA-527	13000 (511.81)					12655 (498.23)								
HSA-627	15000 (590.55)					14655 (579.97)								
HSA-428	11050 (435.04)	5677 (223.5)	4730 (186.22)	5200 (204.72)	5530 (217.72)	10655 (419.49)	2000 (78.74)	2200 (86.61)	2400 (94.49)	2523 (99.33)	2583 (101.69)	5192 (204.41)	2914 (114.72)	1543 (60.75)
HSA-528	13050 (513.78)					12655 (498.23)								
HSA-628	15050 (595.52)					14655 (576.97)								
HSA-728	17050 (671.26)					16655 (655.71)								
HSA-828	19050 (750)					18655 (734.45)								
HSA-536	12950 (509.84)	6539 (257.44)	4730 (186.22)	5200 (204.72)	5530 (217.72)	12520 (492.91)	2000 (75.74)	2200 (86.61)	2400 (94.49)	3023 (119.02)	3083 (121.38)	6192 (243.78)	3714 (146.22)	1605 (63.19)
HSA-636	14950 (588.58)					14520 (571.65)								
HSA-736	16950 (667.32)					16520 (650.39)								
HSA-836	18950 (746.06)					18520 (729.13)								
HSA-867						18655 (734.45)								

Model	A	B	C	C1	C2	D	E	E1	E2	F	G	H	I	J
HSA-323EA	9000 (354.33)	5720 (225.2)	5615 (221.06)	5615 (221.06)	6015 (236.81)	8655 (340.75)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2205 (86.81)	2263 (89.09)	4625 (182.09)	2414 (95.04)	1670 (65.75)
HSA-423EA	11000 (433.07)					10655 (419.49)								
HSA-523EA	13000 (511.81)					12655 (498.23)								
HSA-623EA	15000 (590.55)					14655 (576.97)								
HSA-327EA	9000 (354.33)	6020 (237.01)	5615 (221.06)	5615 (221.06)	6015 (236.81)	8655 (340.75)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2523 (99.33)	2583 (101.69)	5192 (204.41)	2914 (114.72)	1670 (65.75)
HSA-427EA	11000 (433.07)					10655 (419.49)								
HSA-527EA	13000 (511.81)					12655 (498.23)								
HSA-627EA	15000 (590.55)					14655 (576.97)								
HSA-428EA	11050 (435.04)	6020 (237.01)	5615 (221.06)	5615 (221.06)	6015 (236.81)	10655 (419.49)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2523 (99.33)	2583 (101.69)	5192 (204.41)	2914 (114.72)	1543 (60.75)
HSA-528EA	13050 (513.78)					12655 (498.23)								
HSA-628EA	15050 (592.52)					14655 (576.97)								
HSA-728EA	17050 (671.26)					16655 (655.71)								
HSA-828EA	19050 (750)					18655 (734.45)								
HSA-536EA	12950 (509.84)	6820 (268.5)	5615 (221.06)	5615 (221.06)	6015 (236.81)	12520 (492.91)	2200 (86.61)	2400 (94.49)	2600 (102.36)	3023 (119.02)	3083 (121.38)	6192 (243.78)	3714 (146.22)	1605 (63.19)
HSA-636EA	14950 (588.58)					14520 (571.65)								
HSA-736EA	16950 (667.32)					16520 (650.39)								
HSA-836EA	18950 (746.06)					18520 (729.13)								
HSA-323EAY	9000 (354.33)	5975 (235.24)	5615 (221.06)	5615 (221.06)	6015 (236.81)	8655 (340.75)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2525 (99.41)	2534 (99.76)	5225 (205.71)	2414 (95.04)	1920 (75.59)
HSA-423EAY	11000 (433.07)					10655 (419.49)								
HSA-523EAY	13000 (511.81)					12655 (498.23)								
HSA-623EAY	15000 (590.55)					14655 (576.97)								
HSA-327EAY	9000 (354.33)	6475 (254.92)	5615 (221.06)	5615 (221.06)	6015 (236.81)	8655 (340.75)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2775 (109.25)	2784 (109.61)	5725 (225.39)	2914 (114.72)	1920 (75.59)
HSA-427EAY	11000 (433.07)					10655 (419.49)								
HSA-527EAY	13000 (511.81)					12655 (498.23)								
HSA-627EAY	15000 (590.55)					14655 (576.97)								
HSA-428EAY	11050 (435.04)	6475 (254.92)	5615 (221.06)	5615 (221.06)	6015 (236.81)	10655 (419.49)	2200 (86.61)	2400 (94.49)	2600 (102.36)	2775 (109.25)	2784 (109.61)	5725 (225.39)	2914 (114.72)	1920 (75.59)
HSA-528EAY	13050 (513.78)					12655 (498.23)								
HSA-628EAY	15050 (592.52)					14655 (576.97)								
HSA-728EAY	17050 (671.26)					16655 (655.71)								
HSA-828EAY	19050 (750)					18655 (734.45)								
HSA-536EAY	12950 (509.84)	7475 (294.29)	5615 (221.06)	5615 (221.06)	6015 (236.81)	12520 (492.91)	2200 (86.61)	2400 (94.49)	2600 (102.36)	3275 (128.94)	3184 (125.35)	6525 (256.89)	3714 (146.22)	1920 (75.59)
HSA-636EAY	14950 (588.58)					14520 (571.65)								
HSA-736EAY	16950 (667.32)					16520 (650.39)								
HSA-836EAY	18950 (746.06)					18520 (729.13)								



Machine Specifications (Metric Units)



ALL NEW INFINITY

Model	Unit	HSA-2212	HSA-3212	HSA-2215	HSA-323 / 423 / 523 / 623	HSA-327 / 427 / 527 / 627	HSA-428 / 528 / 628 / 728 / 828	HSA-536 / 636 / 736 / 836
Table								
Working Surface	mm	2000 x 1100	3000 x 1100	2100 x 1450	3000 / 4000 / 5000 / 6000 x 2200	3000 / 4000 / 5000 / 6000 x 2200	4000 / 5000 / 6000 / 7000 / 8000 x 2500	5000 / 6000 / 7000 / 8000 x 3000
T-slot (Size x Number x Pitch)	mm	22 x 6 x 160	22 x 6 x 160	22 x 11 x 200	28 x 11 / 15 / 19 / 23 x 250	28 x 11 / 15 / 19 / 23 x 250	28 x 15 / 19 / 23 / 27 / 31 x 250	28 x 19 / 23 / 27 / 31 x 250
Max. Table Load	kg	3500	4500	8000	10000 / 12000 / 15000 / 18000	10000 / 12000 / 15000 / 18000	18000 / 20000 / 23000 / 25000 / 27000	21000 / 24000 / 27000 / 30000
Travel								
Longitudinal Travel (X-axis)	mm	2250	3250	2200	3000 / 4000 / 5000 / 6000	3000 / 4000 / 5000 / 6000	4000 / 5000 / 6000 / 7000 / 8000	5000 / 6000 / 7000 / 8000
Cross Travel (Y-axis)	mm	1200	1200	1500	2300	2700	2800	3600
Vertical Travel (Z-axis)	mm	780	780	780 (1070)	780 (1070 / 1200 / 1400)	780 (1070 / 1200 / 1400)	780 (1070 / 1200 / 1400)	780 (1070 / 1200 / 1400)
Distance from Spindle End to Table	mm	120 ~ 900 (Z: 780_Base 730) # 50 320 ~ 1100 (Z: 780_Base 930) # 50 180 ~ 960 (Z: 780_Base 730) # 40 380 ~ 1160 (Z: 780_Base 930) # 40	120 ~ 900 (Z: 780_Base 730) # 50 320 ~ 1100 (Z: 780_Base 930) # 50 180 ~ 960 (Z: 780_Base 730) # 40 380 ~ 1160 (Z: 780_Base 930) # 40	220 ~ 1000 (Z: 780_Column 2000) # 50 420 ~ 1200 (Z: 780_Column 2200) # 50 230 ~ 1300 (Z: 1070_Column 2300) # 50 279 ~ 1059 (Z: 780_Column 2000) # 40 289 ~ 1359 (Z: 1070_Column 2300) # 40	200 ~ 980 (Z: 780_Column 1900) 210 ~ 1280 (Z: 1070_Column 2200) 280 ~ 1480 (Z: 1200_Column 2400) 280 ~ 1680 (Z: 1400_Column 2600) 480 ~ 1880 (Z: 1400_Column 2800)	200 ~ 980 (Z: 780_Column 1900) 210 ~ 1280 (Z: 1070_Column 2200) 280 ~ 1480 (Z: 1200_Column 2400) 280 ~ 1680 (Z: 1400_Column 2600) 480 ~ 1880 (Z: 1400_Column 2800)	260 ~ 1040 (Z: 780_Column 2000) 170 ~ 1240 (Z: 1070_Column 2200) 240 ~ 1440 (Z: 1200_Column 2400) 240 ~ 1640 (Z: 1400_Column 2600) 440 ~ 1840 (Z: 1400_Column 2800)	260 ~ 1040 (Z: 780_Column 2000) 170 ~ 1240 (Z: 1070_Column 2200) 240 ~ 1440 (Z: 1200_Column 2400) 240 ~ 1640 (Z: 1400_Column 2600) 440 ~ 1840 (Z: 1400_Column 2800)
Distance from Spindle Center to Column	mm	450	450	430	450	450	450	450
Width Between Column	mm	1300	1300	1750	2300	2800	2800	3600
Spindle								
Spindle Speed (Gear Type)	rpm	6000 only for #50 (8000)	6000 only for #50 (8000)	6000	6000 (8000)	6000 (8000)	6000 (8000)	6000 (ZF8000)
Spindle Speed (DDS)	rpm	10000 (15000 Only on #40, 12000 only on #50)	10000 (15000 Only on #40, 12000 only on #50)	10000 (15000 Only on #40, 12000 only on #50)	(10000 / 12000)	(10000 / 12000)	(10000 / 12000)	(10000 / 12000)
Spindle Nose Tape		ISO50 / ISO40	ISO50 / ISO40	ISO50 / ISO40	ISO50	ISO50	ISO50	ISO50
Feed								
Cutting Feed Rate (X / Y / Z-axis)	mm / min	12000	12000	12000	12000 / 12000 / 12000 (323) 10000 / 12000 / 12000 (423) 8000 / 12000 / 12000 (523) 8000 / 12000 / 12000 (623)	12000 / 12000 / 12000 (327) 10000 / 12000 / 12000 (427) 8000 / 12000 / 12000 (527) 8000 / 12000 / 12000 (627)	10000 / 12000 / 12000 (428) 8000 / 12000 / 12000 (528) 8000 / 12000 / 12000 (628) 8000 / 12000 / 12000 (728) 6000 / 12000 / 12000 (828)	8000 / 10000 / 10000 (536) 8000 / 10000 / 10000 (636) 8000 / 10000 / 10000 (736) 6000 / 10000 / 10000 (836)
Rapid Traverse (X / Y / Z-axis)	mm / min	X=24000 Y=24000 Z=20000	X=24000 Y=24000 Z=20000	X=24000 Y=24000 Z=20000 (Z780) Z=15000 (Z1070)	24000 / 20000 / 16000 (323) 20000 / 20000 / 16000 (423) 14000 / 20000 / 16000 (523) 12000 / 20000 / 16000 (623)	24000 / 20000 / 16000 (327) 20000 / 20000 / 16000 (427) 14000 / 20000 / 16000 (527) 12000 / 20000 / 16000 (627)	16000 / 20000 / 16000 (428) 12000 / 20000 / 16000 (528) 10000 / 20000 / 16000 (628) 10000 / 20000 / 16000 (728) 8000 / 20000 / 16000 (828)	12000 / 16000 / 16000 (536) 10000 / 16000 / 16000 (636) 10000 / 16000 / 16000 (736) 8000 / 16000 / 16000 (836)
ATC								
Tool Storage Capacity	pcs	24/32 A-type, 40 A-type Only on #50	24/32 A-type, 40 A-type Only on #50	20 S-type, 32 / 40 A-type (24 A-type Only on #40)	20 S-type, 32A-type	20 S-type, 32 A-type	20 S-type, 32 A-type	20 S-type, 32 A-type
Max. Tool Weight	kg	15 (#50), 6 (#40)	15 (#50), 6 (#40)	15 (#50), 7 (#40)	15 S-type, 15 A-type	15 S-type, 15 A-type	15 S-type, 15 A-type	15 S-type, 15 A-type
Max. Tool Size (Diameter x Length)	mm	Ø110 x 350L (24) / Ø125 x 350L (32 / 40) (Ø75 x 300L Only on #40)	Ø110 x 350L (24) / Ø125 x 350L (32 / 40) (Ø75 x 300L Only on #40)	Ø125 x 350L (Ø76 x 300L only on #40)	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L	Ø125 x 350L
Tool Shank		BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (BT40 / BBT40, 50 / CAT40, 50 / DIN)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)
Pull Stud Bolt		P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P50T-1 / P40T-1	P50T-1	P50T-1	P50T-1	P50T-1
Motor								
Spindle Drive Motor (Fanuc)	kW(30min / Con)	#50: 18.5 / 15 (22 / 18.5, 26 / 22) #40: 7.5 (11 / 7.5)	#50: 15 #40: 11 / 7.5	#50: 18.5 / 15 (22 / 18.5 DDS for Fanuc) #40: 11 / 7.5 DDS for Fanuc	22 / 18.5 22 / 18.5 (DDS for Fanuc)	22 / 18.5 22 / 18.5 (DDS for Fanuc)	22 / 18.5 (20 / 18.5 DDS for Fanuc)	26 / 22 (30 / 26 DDS for Fanuc)
Positioning Accuracy								
3 Axes Laser Positioning Accuracy (JIS B6330)								
Positioning Accuracy / Full Travel	mm	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012
Repetitive Positioning Accuracy	mm	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003	±0.003
3 Axes Laser Positioning Accuracy (VDI 3441)/Repeated 5 Times								
Positioning Accuracy	mm	0.016	0.016	0.016	0.016 / 0.018 / 0.026 / 0.028	0.016 / 0.018 / 0.026 / 0.028	0.018 / 0.026 / 0.028 / 0.028 / 0.030	0.026 / 0.028 / 0.028 / 0.030
Repetitive Positioning Accuracy	mm	0.014	0.014	0.014	0.014 / 0.015 / 0.021 / 0.024	0.014 / 0.015 / 0.021 / 0.024	0.015 / 0.021 / 0.024 / 0.024 / 0.026	0.021 / 0.024 / 0.024 / 0.026
Other								
Required Air Pressure	kg / cm ²	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Electric Power Consumption	KVA	#50: 50, #40: 50	#50: 65, #40: 65	#50: 45 (60 for DDS), #40: 40 for DDS	55 / 55 / 60 / 65	55 / 55 / 60 / 65	65 / 62 / 65 / 65 / 70	60 / 70 / 70 / 70
Floor Space (Full Guarding)	mm	7930 x 5440	10160 x 5440	7700 x 6150	11000 / 13000 / 15000 / 17000 x 6400	11000 / 13000 / 15000 / 17000 x 6900	13440 / 15440 / 17440 / 19440 / 21440 x 7280	14790 / 16790 / 18790 / 20790 x 8140
Net Weight	kg	14720 (#50) 14720 (#40)	18220 (#50) 18220 (#40)	24500 (Z-axis 780) 26000 (Z-axis 1070)	30100/34100/38100/42100 (Z-axis 780) 31420/35420/39420/43420 (Z-axis 1070) 32000/36200/40200/44200 (Z-axis 1200)	33370/37370/41370/45370 (Z-axis 780) 34690/38690/42690/46900 (Z-axis 1070) 35470/39470/43470/47470 (Z-axis 1200)	39000/44000/50000/55000/60000 (Z-axis 780) 39500/44500/50500/55500/60500 (Z-axis 1070) 40000/45000/51500/56500/61500 (Z-axis 1200)	56000/62000/67000/72000 (Z-axis 780) 56500/62500/67500/72500 (Z-axis 1070) 57000/63000/68000/73000 (Z-axis 1200)

Z-axis 1400kg Weight Please Ask Sales.

Standard & Optional 1. Electrical Function

A. Hartrol (Standard)	B. Harnet (Optional)	C. Electrical Function (Optional)
<ul style="list-style-type: none"> Workpiece Calibration by Mpg Directly Tool Magazine Display Pop-up Calculator (In Hartrol Screen) (Only for Fanuc Controller) Parameter Package 	<ul style="list-style-type: none"> Management System of Utilization Machining Time Countdown Convenient File Transfer 	<ul style="list-style-type: none"> Compensation of Spindle Thermal Displacement Lifting Function Against Gravity Retraction for Rigid Tapping Intelligent MPG HMI for Tool Magazine
<ul style="list-style-type: none"> Utilization Rate of Machining (Only for Fanuc Controller) Machining Time Countdown (Only for Fanuc Controller) Threading Cutting (Only for 0i and 31i) Tool Type Display (Only for 0i and 31i) 	<ul style="list-style-type: none"> Monitoring of Tool Status (Only for 0i and 31i) Character Craving Macro Tool Change Function on Tool Offset Screen 	

* Specifications of the machine are subject to be modified without prior notice. (Please refer to the shipping document for the precise machine weight)
* Above specifications are available currently, which will be modified in Feb. 2015.

* Under the maximum load condition, X-axis cutting feed rate and rapid traverse will be halved. For details, contact our salesman.
* Laser inspection before shipment is conducted according to JIS B6330 standard. VDI3441 standard is available upon request.

Machine Specifications (Imperial Units)



ALL NEW INFINITY

Model	Unit	HSA-2212	HSA-3212	HSA-2215	HSA-323 / 423 / 523 / 623	HSA-327 / 427 / 527 / 627	HSA-428 / 528 / 628 / 728 / 828	HSA-536 / 636 / 736 / 836
Table								
Working Surface	inch	78.74 x 43.31	118.11 x 43.31	82.68 x 57.09	118.11 / 157.48 / 196.85 / 236.22 x 86.61	118.11 / 157.48 / 196.85 / 236.22 x 86.61	157.48 / 196.85 / 236.22 / 275.59 / 314.96 x 98.43	196.85 / 236.22 / 275.59 / 314.96 x 118.11
T-slot (Size x Number x Pitch)	inch	0.87 x 6 x 3.94	0.87 x 6 x 3.94	0.87 x 11 x 7.87	1.10 x 11 / 15 / 19 / 23 x 9.84	1.10 x 11 / 15 / 19 / 23 x 9.84	1.10 x 15 / 19 / 23 / 27 / 31 x 9.84	1.10 x 19 / 23 / 27 / 31 x 9.84
Max. Table Load	lbs.	7716.2	9920.8	17637	22046.2 / 26455.5 / 33069.3 / 39683.2	22046.2 / 26455.5 / 33069.3 / 39683.2	39683.2 / 44092.5 / 50706.3 / 55115.6 / 59524.8	46297.1 / 52910.9 / 59524.8 / 66138.7
Travel								
Longitudinal Travel (X-axis)	inch	88.58	127.95	86.61	118.11 / 157.48 / 196.85 / 236.22	118.11 / 157.48 / 196.85 / 236.22	157.48 / 196.85 / 236.22 / 275.59 / 314.96	157.48 / 196.85 / 236.22 / 275.59
Cross Travel (Y-axis)	inch	47.24	47.24	59.06	90.55	106.3	110.24	141.73
Vertical Travel (Z-axis)	inch	30.71	30.71	30.71 (42.13)	30.71 (42.13 / 47.24 / 55.12)	30.71 (42.13 / 47.24 / 55.12)	30.71 (42.13 / 47.24 / 55.12)	30.71 (42.13 / 47.24 / 55.12)
Distance from Spindle End to Table	inch	4.72 ~ 35.43(Z=30.71 Base28.74)#50 12.6 ~ 43.31(Z=30.71 Base36.61)#50 7.09 ~ 37.8(Z=30.71 Base28.74)#40 14.96 ~ 45.67(Z=30.71 Base36.61)#40	4.72 ~ 35.43(Z=30.71 Base28.74)#50 12.6 ~ 43.31(Z=30.71 Base36.61)#50 7.09 ~ 37.8(Z=30.71 Base28.74)#40 14.96 ~ 45.67(Z=30.71 Base36.61)#40	8.66 ~ 39.37 (Z: 30.71_Column 78.74) # 50 16.54 ~ 47.24 (Z: 30.71_Column 86.61) # 50 9.06 ~ 51.18 (Z: 42.13_Column 90.55) # 50 10.98 ~ 41.69 (Z: 30.75_Column 78.75) # 40 11.38 ~ 53.5 (Z: 42.13_Column 90.55) # 40	7.87 ~ 38.58 (Z: 30.71_Column 74.8) 8.27 ~ 50.39 (Z: 42.13_Column 86.61) 11.02 ~ 58.27 (Z: 47.24_Column 94.49) 11.02 ~ 66.14 (Z: 55.12_Column 102.36) 18.9 ~ 74.02 (Z: 55.12_Column 110.24)	7.87 ~ 38.58 (Z: 30.71_Column 74.8) 8.27 ~ 50.39 (Z: 42.13_Column 86.61) 11.02 ~ 58.27 (Z: 47.24_Column 94.49) 11.02 ~ 66.14 (Z: 55.12_Column 102.36) 18.9 ~ 74.02 (Z: 55.12_Column 110.24)	10.24 ~ 40.94 (Z: 30.71_Column 78.74) 6.96 ~ 48.82 (Z: 42.13_Column 86.61) 9.45 ~ 56.69 (Z: 1200_Column 94.49) 9.45 ~ 64.57 (Z: 1400_Column 102.36) 17.32 ~ 72.44 (Z: 1400_Column 110.24)	10.24 ~ 40.94 (Z: 30.71_Column 78.74) 6.69 ~ 48.82 (Z: 42.13_Column 86.61) 9.45 ~ 56.69 (Z: 1200_Column 94.49) 9.45 ~ 64.57 (Z: 1400_Column 102.36) 17.32 ~ 72.44 (Z: 1400_Column 110.24)
Distance from Spindle Center to Column	inch	17.72	17.72	16.93	17.72	17.72	17.72	17.72
Width Between Columns	inch	51.18	51.18	68.9	90.55	110.24	110.24	141.73
Spindle								
Spindle Speed (Gear Type)	rpm	6000 only for #50	6000 only for #50	6000	6000 (8000)	6000 (8000)	6000 (8000)	6000 (8000)
Spindle Speed (DDS)	rpm	10000 (15000 Only on #40)	10000 (15000 Only on #40)	10000 (15000 Only on #40)	(10000 / 12000)	(10000 / 12000)	(10000 / 12000)	(10000 / 12000)
Spindle Nose Tape		ISO50 / ISO40	ISO50 / ISO40	ISO50 / ISO40	#50	#50	#50	#50
Feed								
Cutting Feed Rate (X / Y / Z-axis)	ipm	472.44	472.44	472.44	472.44 / 472.44 / 472.44 (323) 393.70 / 472.44 / 472.44 (423) 314.90 / 472.44 / 472.44 (523) 314.90 / 472.44 / 472.44 (623)	472.44 / 472.44 / 472.44 (327) 393.70 / 472.44 / 472.44 (427) 314.96 / 472.44 / 472.44 (527) 314.96 / 472.44 / 472.44 (627)	393.7 / 472.44 / 472.44 (428) 314.96 / 472.44 / 472.44 (528) 314.96 / 472.44 / 472.44 (628) 314.96 / 472.44 / 472.44 (728) 236.22 / 472.44 / 472.44 (828)	314.96 / 393.7 / 393.7 (536) 314.96 / 393.7 / 393.7 (636) 314.96 / 393.7 / 393.7 (736) 236.22 / 393.7 / 393.7 (836)
Rapid Traverse (X / Y / Z-axis)	ipm	X=944.88 Y=944.88 Z=787.4	X=944.88 Y=944.88 Z=787.4	X=944.88 Y=944.88 Z=787.4 (Z: 30.71) Z=590.55 (Z: 42.13)	944.88 / 787.4 / 629.92 (323) 787.4 / 787.4 / 629.92 (423) 551.18 / 787.4 / 629.92 (523) 472.44 / 787.4 / 629.92 (623)	944.88 / 787.4 / 629.92 (327) 787.4 / 787.4 / 629.92 (427) 551.18 / 787.4 / 629.92 (527) 472.44 / 787.4 / 629.92 (627)	629.92 / 787.4 / 629.92 (428) 472.44 / 787.4 / 629.92 (528) 393.7 / 787.4 / 629.92 (628) 393.7 / 787.4 / 629.92 (728) 314.96 / 787.4 / 629.92 (828)	472.44 / 629.92 / 629.92 (536) 393.7 / 629.92 / 629.92 (636) 393.7 / 629.92 / 629.92 (736) 314.96 / 629.92 / 629.92 (836)
ATC								
Tool Storage Capacity	pcs	24/32 A-type , 40 A-type Only on #50	24/32 A-type , 40 A-type Only on #50	20 S-type, 32 / 40 A-type (24 A-type Only on #40)	20 S-type, 32 A-type	20 S-type, 32 A-type	20 S-type, 32 A-type	20 S-type, 32 A-type
Max. Tool Weight	lbs.	33.1 (#50), 13.2 (#40)	33.1 (#50), 13.2 (#40)	33 (#50), 13.23 (#40)	72.8 S-type, 72.8 A-type	72.8 S-type, 72.8 A-type	72.8 S-type, 72.8 A-type	72.8 S-type, 72.8 A-type
Max. Tool Size (Diameter x Length)	inch	Ø4.33 x 13.78 (24) / Ø4.92 x 13.78 (32 / 40) (Ø2.95 x 11.81 Only on #40)	Ø4.33 x 13.78 (24) / Ø4.92 x 13.78 (32 / 40) (Ø2.95 x 11.81 Only on #40)	Ø4.92 x 11.81 (Ø2.95 x 11.81 Only on #40)	Ø4.92 x 13.78	Ø4.92 x 13.78	Ø4.92 x 13.78	Ø4.92 x 13.78
Tool Shank		BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (BBT40, 50 / CAT40, 50 / DIN)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)	BT50 (CAT / DIN / BBT)
Pull Stud Bolt		P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P50T-1/CAT-50/DIN, MAS-P40T-1/CAT-40/DIN	P50T-1 / P40T-1	P50T-1	P50T-1	P50T-1	P50T-1
Motor								
Spindle Drive Motor (Fanuc)	HP	#50: 20.1 / 24.8 #40: 14.8 / 10.1	#50: 20.1 / 24.8 #40: 14.8 / 10.1	#50: 24.79 / 20.1 (29.48 / 24.79 DDS for Fanuc) #40: 14.74 / 10.05 DDS for Fanuc	29.5 / 24.8 29.5 / 24.8 (DDS for Fanuc)	29.5 / 24.8 29.5 / 24.8 (DDS for Fanuc)	29.5 / 24.8 26.8 / 24.8 (DDS for Fanuc)	29.5 / 24.8 40.2 / 34.9 (DDS for Fanuc)
Other								
Required Air Pressure	PSI	92.5	92.5	92.5	92.5	92.5	92.5	29.5
Electric Power Consumption	KVA	#50: 50, #40: 50	#50: 50, #40: 50	#50: 45 (60 for DDS), #40: 40 for DDS	55 / 55 / 60 / 65	55 / 55 / 60 / 65	65 / 65 / 65 / 65 / 70	60 / 70 / 70 / 70
Floor Space (Full Guarding)	inch	312.2 x 214.17	400 x 214.17	303.15 x 242.13	433.07 / 511.81 / 590.55 / 669.29 x 251.97	433.07 / 511.81 / 590.55 / 669.29 x 271.65	529.13 / 607.87 / 686.61 / 765.35 / 844.09 x 286.61	582.28 / 661.02 / 736.76 / 818.5 x 320.47
Net Weight	lbs.	32452 (#50) 32452 (#40)	40168.2 (#50) 40168.2 (#40)	11136.36 (Z-axis: 30.71) 57200 (Z-axis: 42.13)	66359.1 / 75177.6 / 83996.1 / 92814.6 (Z-axis 30.71) 69269.2 / 78087.7 / 86906.2 / 95724.7 (Z-axis 42.13) 70547.9 / 79807.3 / 88625.8 / 97444.3 (Z-axis 47.24)	73568.3 / 82386.7 / 91205.2 / 100023.7 (Z-axis 30.71) 76478.4 / 85296.8 / 94115.3 / 103396.8 (Z-axis 42.13) 78198.0 / 87016.5 / 95834.9 / 104653.4 (Z-axis 47.24)	85980.3 / 97003.4 / 110231.1 / 121254.2 / 132277.4 (Z-axis 30.71) 87082.6 / 98105.7 / 111333.4 / 122356.6 / 133379.7 (Z-axis 42.13) 88184.9 / 99208 / 113538.1 / 124561.2 / 135584.3 (Z-axis 47.24)	123458.9 / 136686.6 / 147709.7 / 158732.8 (Z-axis 30.71) 124561.2 / 137788.9 / 148812 / 159835.1 (Z-axis 42.13) 125663.5 / 138891.2 / 149914.3 / 160937.5 (Z-axis 47.24)

Z-axis 1400kg Weight Please Ask Sales.

Standard & Optional 1. Electrical Function

A. Hartrol (Standard)	B. Harnet (Optional)	C. Electrical Function (Optional)
<ul style="list-style-type: none"> Workpiece Calibration by Mpg Directly Tool Magazine Display Pop-up Calculator (in Hartrol Screen) (Only for Fanuc Controller) Parameter Package 	<ul style="list-style-type: none"> Management System of Utilization Machining Time Countdown Convenient File Transfer 	<ul style="list-style-type: none"> Compensation of Spindle Thermal Displacement Lifting Function Against Gravity Retraction for Rigid Tapping Intelligent MPG HMI for Tool Magazine
<ul style="list-style-type: none"> Utilization Rate of Machining (Only for Fanuc Controller) Machining Time Countdown (Only for Fanuc Controller) Threading Cutting (Only for 0i and 31i) Tool Type Display (Only for 0i and 31i) 	<ul style="list-style-type: none"> Monitoring of Tool Status (Only for 0i and 31i) Character Craving Macro Tool Change Function on Tool Offset Screen 	



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Machine Specifications (Metric Units)

Model	Unit	HSA-323 / 423 / 523 / 623EA	HSA-327 / 427 / 527 / 627EA	HSA-428 / 528 / 628 / 728 / 828EA	HSA-536 / 636 / 736 / 836EA
Table					
Working Surface	mm	3000 / 4000 / 5000 / 6000 x 2200	3000 / 4000 / 5000 / 6000 x 2200	4000 / 5000 / 6000 / 7000 / 8000 x 2500	5000 / 6000 / 7000 / 8000 x 3000
T-slot (Size x Number x Pitch)	mm	28 x 11 / 15 / 19 / 23 x 250	28 x 11 / 15 / 19 / 23 x 250	28 x 15 / 19 / 23 / 27 / 31 x 250	28 x 19 / 23 / 27 / 31 x 250
Max. Table Load	kg	10000 / 12000 / 15000 / 18000	10000 / 12000 / 15000 / 18000	15000 / 18000 / 21000 / 24000 / 27000	21000 / 24000 / 27000 / 30000
Travel					
Longitudinal Travel (X-axis)	mm	3000 / 4000 / 5000 / 6000	3000 / 4000 / 5000 / 6000	4000 / 5000 / 6000 / 7000 / 8000	5000 / 6000 / 7000 / 8000
Cross Travel (Y-axis)	mm	2300 / 3100 (EAY)	2700 / 3500 (EAY)	2800 / 3600 (EAY)	3600 / 4400 (EAY)
Vertical Travel (Z-axis)	mm	1000 (1200, 1400)	1000 (1200, 1400)	1000 (1200, 1400)	1000 (1200, 1400)
Distance from Spindle End to Table	mm	350 ~ 1350 (350 ~ 1550, 350 ~ 1750)	350 ~ 1350 (350 ~ 1550, 350 ~ 1750)	310 ~ 1310 (310 ~ 1510, 310 ~ 1710)	310 ~ 1310 (310 ~ 1510, 310 ~ 1710)
Distance from Spindle Center to Column	mm	450	450	450	450
Width Between Column	mm	2300	2700	2800	3600
Spindle					
Spindle Speed (Gear Type)	rpm	6000	6000	6000	6000
Spindle Nose Tape		ISO50	ISO50	ISO50	ISO50
Feed					
Cutting Feed Rate (X / Y / Z-axis)	mm / min	12000 / 12000 / 12000 (323)(EA) 10000 / 12000 / 12000 (423)(EA) 8000 / 12000 / 12000 (523)(EA) 8000 / 12000 / 12000 (623)(EA) 12000 / 5000 / 12000 (323) (EAY) 10000 / 5000 / 12000 (423) (EAY) 8000 / 5000 / 12000 (523) (EAY) 8000 / 5000 / 12000 (623) (EAY)	12000 / 12000 / 12000 (327)(EA) 10000 / 12000 / 12000 (427)(EA) 8000 / 12000 / 12000 (527)(EA) 8000 / 12000 / 12000 (627)(EA) 12000 / 5000 / 12000 (327) (EAY) 10000 / 5000 / 12000 (427) (EAY) 8000 / 5000 / 12000 (527) (EAY) 8000 / 5000 / 12000 (627) (EAY)	10000 / 12000 / 12000 (428)(EA) 8000 / 12000 / 12000 (528)(EA) 8000 / 12000 / 12000 (628)(EA) 8000 / 12000 / 12000 (728)(EA) 6000 / 12000 / 12000 (828)(EA) 10000 / 5000 / 12000 (428) (EAY) 8000 / 5000 / 12000 (528) (EAY) 8000 / 5000 / 12000 (628) (EAY) 8000 / 5000 / 12000 (728) (EAY) 6000 / 5000 / 12000 (828) (EAY)	8000 / 10000 / 10000 (536)(EA) 8000 / 10000 / 10000 (636)(EA) 8000 / 10000 / 10000 (736)(EA) 6000 / 10000 / 10000 (836)(EA) 8000 / 5000 / 10000 (536) (EAY) 8000 / 5000 / 10000 (636) (EAY) 8000 / 5000 / 10000 (736) (EAY) 6000 / 5000 / 10000 (836) (EAY)
Rapid Traverse (X / Y / Z-axis)	mm / min	24000 / 20000 / 16000 (323) (EA) 20000 / 20000 / 16000 (423) (EA) 14000 / 20000 / 16000 (523) (EA) 12000 / 12000 / 16000 (623) (EA) 24000 / 12000 / 16000 (323) (EAY) 20000 / 12000 / 16000 (423) (EAY) 14000 / 12000 / 16000 (523) (EAY) 12000 / 12000 / 16000 (623) (EAY)	24000 / 20000 / 16000 (327) (EA) 20000 / 20000 / 16000 (427) (EA) 14000 / 20000 / 16000 (527) (EA) 12000 / 12000 / 16000 (627) (EA) 24000 / 12000 / 16000 (327) (EAY) 20000 / 12000 / 16000 (427) (EAY) 14000 / 12000 / 16000 (527) (EAY) 12000 / 12000 / 16000 (627) (EAY)	16000 / 20000 / 16000 (428) (EA) 12000 / 20000 / 16000 (528) (EA) 10000 / 20000 / 16000 (628) (EA) 10000 / 20000 / 16000 (728) (EA) 8000 / 20000 / 16000 (828) (EA) 16000 / 12000 / 16000 (428) (EAY) 12000 / 12000 / 16000 (528) (EAY) 14000 / 12000 / 16000 (628) (EAY) 10000 / 12000 / 16000 (728) (EAY) 8000 / 12000 / 16000 (828) (EAY)	14000 / 16000 / 16000 (536)(EA) 12000 / 16000 / 16000 (636)(EA) 10000 / 16000 / 16000 (736)(EA) 8000 / 16000 / 16000 (836)(EA) 14000 / 12000 / 16000 (536) (EAY) 12000 / 12000 / 16000 (636) (EAY) 10000 / 12000 / 16000 (736) (EAY) 8000 / 12000 / 16000 (836) (EAY)
ATC					
Tool Storage Capacity	pcs	32 (40 / 60 / 90) (EA / EAY)	32 (40 / 60 / 90) (EA / EAY)	32 (40 / 60 / 90) (EA / EAY)	32 (40 / 60 / 90) (EA / EAY)
Max. Tool Weight	kg	15	15	15	15
Max. Tool Size (Diameter x Length)	mm	Ø125 x 400L	Ø125 x 400L	Ø125 x 400L	Ø125 x 400L
Tool Shank		BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)
Pull Stud Bolt		P50T-1	P50T-1	P50T-1	P50T-1
Motor					
Spindle Drive Motor (Fanuc)	kW(30min / Con)	22 / 18.5	22 / 18.5	22 / 18.5	22 / 18.5
Positioning Accuracy					
3 Axes Laser Positioning Accuracy (JIS B6330)					
Positioning Accuracy / Full Travel	mm	±0.012	±0.012	±0.012	±0.012
Repetitive Positioning Accuracy	mm	±0.003	±0.003	±0.003	±0.003
3 Axes Laser Positioning Accuracy (VDI 3441)/Repeated 5 Times					
Positioning Accuracy	mm	0.016 / 0.018 / 0.026 / 0.028	0.016 / 0.018 / 0.026 / 0.028	0.018 / 0.026 / 0.028 / 0.028 / 0.030	0.026 / 0.028 / 0.028 / 0.030
Repetitive Positioning Accuracy	mm	0.014 / 0.015 / 0.021 / 0.024	0.014 / 0.015 / 0.021 / 0.024	0.015 / 0.021 / 0.024 / 0.024 / 0.026	0.021 / 0.024 / 0.024 / 0.026
Other					
Required Air Pressure	kg / cm ²	6.5	6.5	6.5	6.5
Electric Power Consumption	KVA	55 / 55 / 60 / 65	55 / 55 / 60 / 65	60 / 62 / 65 / 65 / 70	60 / 70 / 70 / 70
Floor Space (Full Guarding)	mm	11000 / 13000 / 15000 / 17000 x 6800 (EA) 11000 / 13000 / 15000 / 17000 x 7050 (EAY)	11000 / 13000 / 15000 / 17000 x 7300 (EA) 11000 / 13000 / 15000 / 17000 x 7550 (EAY)	13000 / 15000 / 17000 / 19000 / 21000 x 7300 (EA) 13000 / 15000 / 17000 / 19000 / 21000 x 7550 (EAY)	11000 / 13000 / 15000 / 17000 x 8400 (EA) 11000 / 13000 / 15000 / 17000 x 8650 (EAY)
Net Weight	kg	30500 / 34500 / 33900 / 44500 (EA) 32000 / 36000 / 40500 / 46000 (EAY)	34000 / 38000 / 42500 / 47500 (EA) 35500 / 39500 / 44000 / 49000 (EAY)	39500 / 44500 / 50500 / 55500 / 60500 (EA) 41000 / 44500 / 51000 / 57000 / 63500 (EAY)	58000 / 63000 / 68000 / 73000 (EA) 59500 / 64500 / 69500 / 74500 (EAY)

For Other Specs Please Ask Sales.

Standard & Optional 2. Mechanical Accessories

Standard for HSA Series	Optional for HSA Series
<ul style="list-style-type: none"> ∞ Centralized Automatic Lubrication System ∞ Air Blast Through Spindle ∞ Spindle Oil Cooler ∞ Portable Chip Bucket x 2 ∞ Fluorescent Lamp ∞ Full-enclosed Splash Guard 	<ul style="list-style-type: none"> ∞ Heat Exchanger in Control Box (For MITSUBISHI, FANUC, SYNTEC) ∞ Table Side Air Blast (1 Tube) ∞ Spindle Air Curtain ∞ Gear Head 6000 rpm ∞ Arm Type Angular Head Seat (Not for HSA-2215)
	<ul style="list-style-type: none"> ∞ Semi-splash Guard ∞ CTS Full Splash Guard ∞ Coolant Through Spindle ∞ 90° Angular Head ∞ 30° Angular Head ∞ Extend Head ∞ Universal Milling Head
	<ul style="list-style-type: none"> ∞ Touch Probe ∞ Closed Loop Linear Scale Positioning System (Standard: X-axis 6 Meters and Higher) ∞ Link Type Chip Conveyor & Portable Chip Bucket ∞ Direct Drive Spindle 10000 rpm / 12000 rpm ∞ ATC 40T / 60T / 90T / 120T
	<ul style="list-style-type: none"> ∞ Gear Head 8000 rpm (ZF Gearbox) (Not for HSA-2215) ∞ Cooling System (Standard: HSA-2215) ∞ Auto Rotary Arm Seat of Angular Head





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Machine Specifications (Imperial Units)

Model	Unit	HSA-323 / 423 / 523 / 623EA	HSA-327 / 427 / 527 / 627EA	HSA-428 / 528 / 628 / 728 / 828EA	HSA-536 / 636 / 736 / 836EA
Table					
Working Surface	inch	118.11 / 157.48 / 196.85 / 236.22 x 86.61	118.11 / 157.48 / 196.85 / 236.22 x 86.61	157.48 / 196.85 / 236.22 / 275.59 / 314.96 x 86.61	196.85 / 236.22 / 275.59 / 314.96 x 118.11
T-slot (Size x Number x Pitch)	inch	1.1 x 11 / 15 / 19 / 23 x 9.84	1.1 x 11 / 15 / 19 / 23 x 9.84	1.1 x 15 / 19 / 23 / 27 / 31 x 9.84	1.1 x 19 / 23 / 27 / 31 x 9.84
Max. Table Load	lbs.	22046.2 / 26455.5 / 33069.3 / 39683.2	22046.2 / 26455.5 / 33069.3 / 39683.2	33069.34 / 39683.21 / 46297.08 / 52910.94 / 59524.81	46297.08 / 52910.94 / 59524.81 / 66138.68
Travel					
Longitudinal Travel (X-axis)	inch	118.11 / 157.48 / 196.85 / 236.22	118.11 / 157.48 / 196.85 / 236.22	157.48 / 196.85 / 236.22 / 275.59 / 314.96	196.85 / 236.22 / 275.59 / 314.96
Cross Travel (Y-axis)	inch	90.55 / 122.05 (EAY)	59.52 / 77.16 (EAY)	110.24 / 141.73 (EAY)	141.73 / 173.23 (EAY)
Vertical Travel (Z-axis)	inch	39.34 (47.24 / 55.12)	39.34 (47.24 / 55.12)	39.34 (47.24 / 55.12)	39.34 (47.24 / 55.12)
Distance from Spindle End to Table	inch	13.78 ~ 53.15 (13.78 ~ 61.02, 13.78 ~ 68.9)	13.78 ~ 53.15 (13.78 ~ 61.02, 13.78 ~ 68.9)	12.2 ~ 51.57 (12.2 ~ 59.45, 12.2 ~ 67.32)	12.2 ~ 51.57 (12.2 ~ 59.45, 12.2 ~ 67.32)
Distance from Spindle Center to Column	inch	17.72	17.72	17.72	17.72
Width Between Column	inch	90.55	59.52	110.24	141.73
Spindle					
Spindle Speed (Gear Type)	rpm	6000	6000	6000	6000
Spindle Nose Tape		#50	#50	#50	#50
Feed					
Cutting Feed Rate (X / Y / Z-axis)	ipm	472.44 / 472.44 / 472.44 (323) (EA) 393.7 / 472.44 / 472.44 (423) (EA) 314.96 / 472.44 / 472.44 (523) (EA) 314.96 / 472.44 / 472.44 (623) (EA) 472.44 / 196.85 / 472.44 (323) (EA) 393.7 / 196.85 / 472.44 (423) (EA) 314.96 / 196.85 / 472.44 (523) (EA) 314.96 / 196.85 / 472.44 (623) (EA)	472.44 / 472.44 / 472.44 (327) (EA) 393.7 / 472.44 / 472.44 (427) (EA) 314.96 / 472.44 / 472.44 (527) (EA) 314.96 / 472.44 / 472.44 (627) (EA) 472.44 / 196.85 / 472.44 (327) (EA) 393.7 / 196.85 / 472.44 (427) (EA) 314.96 / 196.85 / 472.44 (527) (EA) 314.96 / 196.85 / 472.44 (627) (EA)	393.7 / 472.44 / 472.44 (428) (EA) 314.96 / 472.44 / 472.44 (528) (EA) 314.96 / 472.44 / 472.44 (628) (EA) 314.96 / 472.44 / 472.44 (728) (EA) 236.22 / 472.44 / 472.44 (828) (EA) 393.7 / 196.85 / 472.44 (428) (EA) 314.96 / 196.85 / 472.44 (528) (EA) 314.96 / 196.85 / 472.44 (628) (EA) 314.96 / 196.85 / 472.44 (728) (EA) 236.22 / 196.85 / 472.44 (828) (EA)	314.96 / 393.7 / 393.7 (536) (EA) 314.96 / 393.7 / 393.7 (636) (EA) 314.96 / 393.7 / 393.7 (736) (EA) 236.22 / 393.7 / 393.7 (836) (EA) 314.96 / 196.85 / 393.7 (536) (EA) 314.96 / 196.85 / 393.7 (636) (EA) 314.96 / 196.85 / 393.7 (736) (EA) 236.22 / 196.85 / 393.7 (836) (EA)
Rapid Traverse (X / Y / Z-axis)	ipm	944.88 / 787.4 / 629.92 (323) (EAY) 787.4 / 787.4 / 629.92 (423) (EAY) 551.18 / 787.4 / 629.92 (523) (EAY) 472.44 / 787.4 / 629.92 (623) (EAY) 944.88 / 472.44 / 629.92 (323) (EAY) 787.4 / 472.44 / 629.92 (423) (EAY) 551.18 / 472.44 / 629.92 (523) (EAY) 472.44 / 472.44 / 629.92 (623) (EAY)	944.88 / 787.4 / 629.92 (327) (EAY) 787.4 / 787.4 / 629.92 (427) (EAY) 551.18 / 787.4 / 629.92 (527) (EAY) 472.44 / 787.4 / 629.92 (627) (EAY) 944.88 / 472.44 / 629.92 (327) (EAY) 787.4 / 472.44 / 629.92 (427) (EAY) 551.18 / 472.44 / 629.92 (527) (EAY) 472.44 / 472.44 / 629.92 (627) (EAY)	629.92 / 787.4 / 629.92 (428) (EAY) 472.44 / 787.4 / 629.92 (528) (EAY) 393.7 / 787.4 / 629.92 (628) (EAY) 393.7 / 787.4 / 629.92 (728) (EAY) 314.96 / 787.4 / 629.92 (828) (EAY) 629.92 / 472.44 / 629.92 (428) (EAY) 472.44 / 472.44 / 629.92 (528) (EAY) 393.7 / 472.44 / 629.92 (628) (EAY) 393.7 / 472.44 / 629.92 (728) (EAY) 314.96 / 472.44 / 629.92 (828) (EAY)	551.18 / 629.92 / 629.92 (536) (EAY) 472.44 / 629.92 / 629.92 (636) (EAY) 393.7 / 629.92 / 629.92 (736) (EAY) 314.96 / 629.92 / 629.92 (836) (EAY) 551.18 / 472.44 / 629.92 (536) (EAY) 472.44 / 472.44 / 629.92 (636) (EAY) 393.7 / 472.44 / 629.92 (736) (EAY) 314.96 / 472.44 / 629.92 (836) (EAY)
ATC					
Tool Storage Capacity	pcs	32 (40 / 60 / 90)	32 (40 / 60 / 90)	32 (40 / 60 / 90)	32 (40 / 60 / 90)
Max. Tool Weight	lbs.	33	33	33	33
Max. Tool Size (Diameter x Length)	inch	Ø4.92 x 15.75	Ø4.92 x 15.75	Ø4.92 x 15.75	Ø4.92 x 15.75
Tool Shank		BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)	BT50 (BBT / CAT / DIN)
Pull Stud Bolt		P50T-1	P50T-1	P50T-1	P50T-1
Motor					
Spindle Drive Motor (Fanuc)	HP	29.5	29.5	29.5	29.5
Other					
Required Air Pressure	PSI	92.5	92.5	92.5	92.5
Electric Power Consumption	KVA	55 / 55 / 60 / 65	55 / 55 / 60 / 65	60 / 62 / 65 / 65 / 70	60 / 70 / 70 / 70
Floor Space (Full Guarding)	inch	433.07 / 511.81 / 590.55 / 669.29 x 267.72 (EA) 433.07 / 511.81 / 590.55 / 669.29 x 277.56 (EAY)	433.07 / 511.81 / 590.55 / 669.29 x 287.4 (EA) 433.07 / 511.81 / 590.55 / 669.29 x 297.24 (EAY)	511.81 / 590.55 / 669.29 / 748.03 / 826.77 x 287.4 (EA) 511.81 / 590.55 / 669.29 / 748.03 / 826.77 x 297.24 (EAY)	433.07 / 511.81 / 590.55 / 669.29 x 330.71 (EA) 433.07 / 511.81 / 590.55 / 669.29 x 340.55 (EAY)
Net Weight	lbs.	67241 / 76059.5 / 74736.7 / 98105.7 (EA) 70547.9 / 79366.4 / 89287.2 / 101412.6 (EAY)	74957.17 / 83775.66 / 93696.46 / 104719.57 (EA) 78264.1 / 87082.59 / 97003.4 / 108026.51 (EAY)	87082.59 / 98105.71 / 111333.44 / 122356.56 / 133379.67 90389.53 / 98105.71 / 112435.75 / 125663.49 / 139993.54	127868.11 / 138891.23 / 149914.34 / 160937.47 (EA) 131175.05 / 142198.16 / 153221.27 / 164244.39 (EAY)

For Other Specs Please Ask Sales.

Standard & Optional 2. Mechanical Accessories

Standard for HSA Series	Optional for HSA Series
<ul style="list-style-type: none"> ∞ Centralized Automatic Lubrication System ∞ Air Blast Through Spindle ∞ Spindle Oil Cooler ∞ Portable Chip Bucket x 2 ∞ Fluorescent Lamp ∞ Full-enclosed Splash Guard 	<ul style="list-style-type: none"> ∞ Heat Exchanger in Control Box (For MITSUBISHI, FANUC, SYNTEC) ∞ Table Side Air Blast (1 Tube) ∞ Spindle Air Curtain ∞ Gear Head 6000 rpm ∞ Arm Type Angular Head Seat (Not for HSA-2215) ∞ Semi-splash Guard ∞ CTS Full Splash Guard ∞ Coolant Through Spindle ∞ 90° Angular Head ∞ 30° Angular Head ∞ Extend Head ∞ Universal Milling Head
	<ul style="list-style-type: none"> ∞ Touch Probe ∞ Closed Loop Linear Scale Positioning System (Standard: X-axis 6 Meters and Higher) ∞ Link Type Chip Conveyor & Portable Chip Bucket ∞ Direct Drive Spindle 10000 rpm / 12000 rpm ∞ ATC 40T / 60T / 90T / 120T ∞ Gear Head 8000 rpm (ZF Gearbox) (Not for HSA-2215) ∞ Cooling System (Standard: HSA-2215) ∞ Auto Rotary Arm Seat of Angular Head

