TECHNICAL DATA

TABLE	MC1		MC2		MC3	
Table size	900x520 mm	35.4x20.5 in	900x520 mm	35.4x20.5 in	900x520 mm	35.4x20.5 in
Table loading	900 kg	1984 lbs	1300 kg	2866 lbs	1500 kg	3307 lbs
TRAVEL						
X axis	762 mm	30 in	1067 mm	42 in	1600 mm	63 in
Y axis	510 mm	20 in	610 mm	24 in	730 mm	28.7 in
Z axis	510 mm	20 in	610 mm	24 in	700 mm	27.5 in
SPINDLE (STD.)						
Driven system	Belt driven					
Spindle speed	10000 rpm					
Interface	ISO40					
Spindle power	20 kW(ai12, S6 25%) 26 hp		20 kW(ai12, S6 25%) 26 hp		25 kW(ai15, S6 25%) 33.5 hp	
SPINDLE (OPT.)						
Driven system	In-line driven				Belt driven (gear head)/ In-line driven	
Spindle speed	12000/15000 rpm				12000/15000 rpm	
Interface	ISO40				ISO40	
Spindle power	aiT12 is aviliable for 12000 aiT15 is aviliable for 15000		aiT12 is aviliable for 12000 aiT15 is aviliable for 12000/15000		aiT12 is aviliable for 12000 aiT15 is aviliable for 12000/15000 in-lline spindle	
AXES FEED RATE						
Max feedrate X/Y/Z	36 m/min			1417 in/min		
GUIDEWAY						
X/Y/Z guideway type	35 mm	1.4 in	45 mm	1.8 in	45 mm	1.8 in
Number of guides in Y axis	2		2		4	
ACCURACY (ISO10791-4)						
Positioning accuracy	0.01 mm			0.0004 in		
Repeatability	0.01 mm			0.0004 in		
AUTOMATIC TOOL CHANGER						
ATC type	Arm type 24T/30T/40T					
Tool taper	BT/CAT/DIN40					
Tool changing time (T_T)	1.94 sec (50Hz) / 1.64 sec (60Hz)					
Max. tool dia.	Ø75 mm			Ø2.9 in		
Max tool dia. with next tool empty	Ø125 mm			Ø4.9 in		
Max. tool length	300 mm			11.8 in		
Max. tool weight	7 kg			15 lbs		
DIMEMSION						
Length (w/conveyor)	3395 mm	134 in	4300 mm	170 in	5653 mm	223 in
Width	1910 mm	75 in	2300 mm	90.5 in	2675 mm	105 in
Height	2720 mm	107 in	3200 mm	126 in	2800 mm	110 in
Weight	5750 kg	12676 lbs	7000 kg	15432 lbs	9800 kg	21605 lbs
Floor space (with chip conveyor)	3395x1910 mm 134x75 in		4300x2300 mm 170x90.5 in		5653x2675 mm 223x105 in	

** Specification are subject to change without notice.*

AXILE MACHINE

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W www.axilemachine.com

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design and manufacture by Buffalo Machinery Co., Ltd.

AXILE

agile smart machining

MC SERIES

VERTICAL MACHINING CENTER

www.axilemachine.com

WE ARE AXILE

AXILE designs and builds agile smart 5-axis VMCs with leading automation solutions for manufacturers of complex parts and components.

> **“ We believe manufacturers shouldn’t have to choose between high-speed and high-performance 5-axis machines. ”**

By combining sheer agility, digitalized intelligent automation, and a new standard of 5-axis machining, we’ve created an all-new approach:

Agile Smart Machining.

In short, our dedicated team of industry experts brings together ultra-high removal rates, pinpoint precision, and 24/7 automation and reliability within each and every AXILE 5-axis machine.

The MC Series line of 3ax machine is a comliment to the AXILE 5ax line-up to help our customer with a complete line-up.

Our breakthrough design concepts and advanced proprietary technologies serve highly sophisticated manufacturers of complex parts and components for applications in aerospace, die and mold, medical, and general job shop, among others.

The AXILE service and support network spans nearly 50 countries, with more than 70 distributors across Asia, Europe, and the Americas, and a service center in Croatia.

CONTENTS

MC SERIES	4
DESIGN CONCEPT	5
AGILITY	6
SPINDLE	7
TOOL & CHIP MANAGEMENT	8
CONTROL UNIT	10
LAYOUT AND WORKSPACE	11
POWER & TORQUE CHART	12

MC SERIES

AXILE MC Series is designed and built to meet the ever-increasing demands for powerful and reliable machines with high efficiency, high accuracy machining performance.
AXILE MC Series uses roller type linear guideways, a high-precision main spindle with thermal expansion stability and a robust and compact structure design with high durability. Depending on machining needs, AXILE MC Series offers an excellent range of VMC.

MC1

> Table: 900x520 mm ; 35.4x20.5 in
> X/Y/Z: 762x508x508 mm ; 30x20x20 in
> Table load: 900 kg ; 1984 lbs
> Spindle: 10000/12000/15000 rpm

MC2

> Table: 1200x600 mm ; 47.2x23.6 in
> X/Y/Z: 1067x610x610 mm ; 42x24x24 in
> Table load: 1300 kg ; 2866 lbs
> Spindle: 10000/12000/15000 rpm

MC3

> Table: 1700x700 mm ; 66.9x27.5 in
> X/Y/Z: 1600x730x700 mm ; 63x28.7x27.5 in
> Table load: 1500 kg ; 3307 lbs
> Spindle: 10000/12000/15000 rpm

DESIGN CONCEPT

RIGID CONSTRUCTION

The tool magazine is assembled in structural ribs that are directly supported to the ground, thus increasing tool magazine size without compromising column rigidity.

Optimal Rigidity

The major structural component is made of Meehanite cast iron, which is heat treated to relive stress, and to assure rigidity and accuracy

Rib Enhancement

All casting is reinforced with heavy ribs to resist vibration. The base incorporates a durable ribbed box design for maximum structural loading.

Triangular Support Base

The triangular wide-distance foundation provides solid support for operation.

One-piece Design Headstock

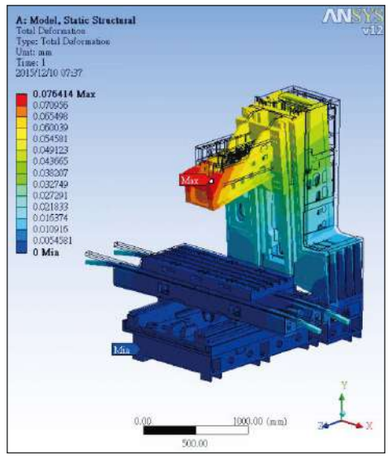
Offering high stability and capacity for heavy duty cutting

Supported Tool Magazine

The automatic tool magazine is assemble with structural ribs that are directly supported to the ground, thus increasing the size capacity without compromiing the column rigidity.

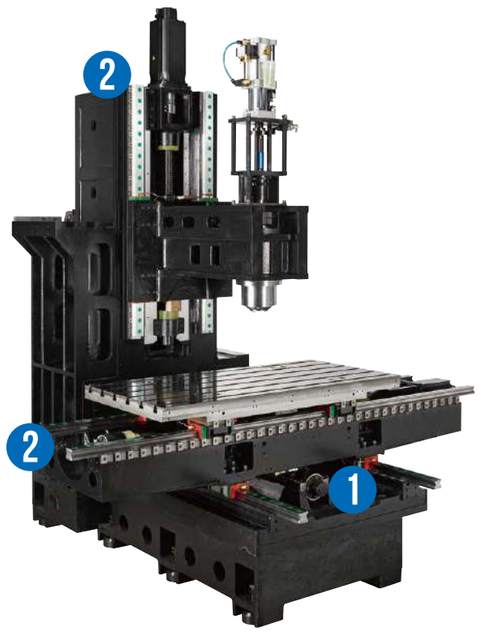
Structural Optimization

All structural components and whole machine frame of M series are analyzed by ANSYS mechanical system and Finite Element Method (FEM) to ensure structural optimization.

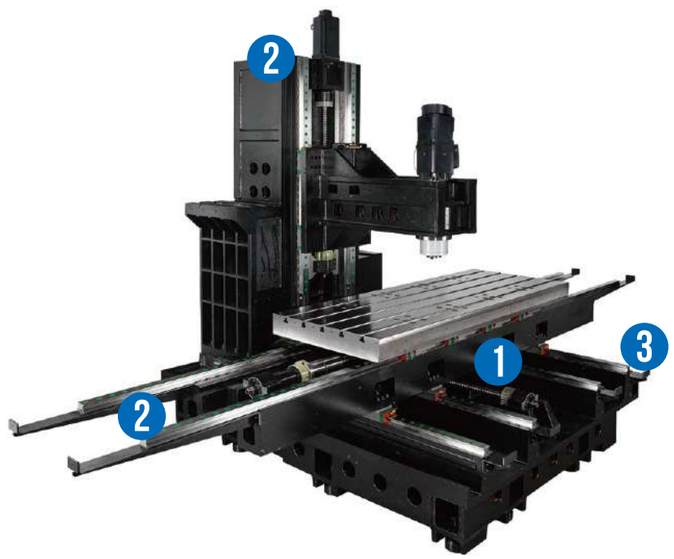


Modal Analysis

AGILITY



MC2



MC3

1 Ballscrew

C3 Class Pretensioned Ballscrew

Class C3 ballscrews are pretensioned on each axis to reduce heat deformation for high accurary and repeatability.

Direct-coupled Servo Ballscrew Motor

Direct-coupled servo motor can enhance positioning accuracy and provide better contouring and threading

2 Guideway

High Precision Linear Guideways

Installed for all axes to ensure high load carrying capacity and rigidity with high running and positional accuracy as well as low friction.

Roller Type Linear Guideway

High rigidity steel on roller guideway provides high durability. Roller guideway on the three axes enables a fast feed rate of 30 m/min, ensuring smooth movement and accuracy.

3 4-guideway base to support saddle (MC3)

The bigger models of M series mount 4 linear guideways in the Y axis to ensure the maximum rigidity with high loading capacity

SPINDLE

AXILE MC series is built with innovative machine concepts by using a wide range of high-performance spindles to present consistent precision performance and dynamic machining for various application.

Extensive options of spindle types and motor configuration are provided to meet industrial demands. The higher horsepower motors are also available to optimize the strength of machine for ultimate machining performance.

BELT DRIVE SPINDLE

10,000 rpm belt drive spindle with ISO 40 taper.

IN-LINE SPINDLE

The powerful direct drive of 12,000 and 15,000 rpm spindles with ISO 40 taper ensure high machining performances.

SPINDLE DYNAMIC BALANCING

The online dynamic balancing instrument offers calibration for spindle displacement, speed and acceleration of full speed range

HIGH RIGIDITY SPINDLE

With preloaded angular-contact bearings throughout and with a large spacer between front bearings to improve radial thrust capacity. Cartridge spindle design makes maintenance easy.

SPINDLE OIL COOLER

All machines are available to equip with spindle oil cooler to prevent thermal expansion effects and thermal deformation, allowing high accuracy machining, perfect finish and long lifetime of spindle as well.

TOOL & CHIP MANAGEMENT

TOOL MANAGEMENT SELECTION FOR EVEY USER

Arm type ATC

Providing stable and quicker tool selection
It is activated by electric motor and driven by cam mechanism. The bi-direction tool selection is controlled by PLC software for quicker tool selection to reduce non-cutting time.

Choices
Random arm type 24 Tools - all series
Random drum type 30 Tools - all series
Random chain type 40 Tools - MC2, MC3

40 tool chain type magazine is accessible from back of machine for easy loading and unloading of tools while machine automatic operation.

24T Arm type ATC

40T chain type ATC

Tool selection panel

COOLANT THROUGH SPINDLE

Coolant through spindle uses high pressure pump to supply coolant through tool, cooling the cutting edge directly. This clears chips during deep-hole and tapping, increases tool life and allows higher cutting speeds.

CTS system choices:
> CTS 20 bar (300 psi) built-in type
> CTS 20 bar (300 psi) separate type
> CTS 20 bar (300 psi) separate type with paper filter
> CTS 70 bar (1000 psi) programmable separate type with paper filter

CTS 20 bar (300 psi)
built-in type

CTS 20 bar (300 psi)
separate type

CTS 20 bar (300 psi)
separate type with paper filter

AUXILIARY COOLANT FILTER

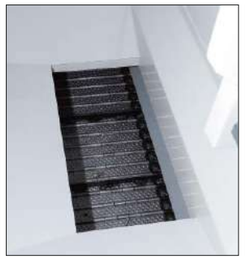
Individual CTS tank is supplied with a re-usable 25-micron iron filter. Built-in system provides 25-micron filter. Both filters take away contamination and particles from the coolant before coolant is recycled through the coolant pump.

FLUSHING CHIPS AWAY

> Efficient Free-flow enclosure guard design
> Efficient chip conveyor carries out chips to save operation time
> Drainage outlet design
> Multiple chip flush solution offers easy chip clean
  - Rear wash down with high pressure pumps
  - Spindle with coolant nozzle

Multiple chip flush solution

Free-flow enclosure guard design



Drainage outlet &
Chip conveyor

Spindle with
coolant nozzle

Coolant gun

STANDARD & OPTIONAL EQUIPMENT

Standard features

> Arm type ATC
> Roof with door opening for overhead crane
> C3 class precision ground ballscrew
> Linear guideway
> Automatic lubrication with low lubrication fault
> Coolant system
> Telescopic guideway covers
> Low voltage circuit system
> Rear wash down device
> CE standard electrical control system
> Fully enclosure with slide door
> Rigid tapping function
> EMC and Safety module
> CE-marking declaration
> Heat exchanger

Configuration choices

> Spindle 10000/12000/15000 rpm
> Chip bucket
> Air conditioner
> Coolant gun
> Oil skimmer
> 4th axis
> CTS 20 bar built-in type
> CTS 20 bar separate type
> CTS 20 bar separate type with paper filter
> CTS 70 bar programmable separate type with paper filter
> Tool setting probe
> Workpiece probe
> Three axes with linear scales
> 3-color lamp of cycle finish
> Transformer for 380V~440V
> Chip conveyor
> Chip auger
> Automatic front door

CONTROL UNIT

A CONTROLLER FOR EVERY USER

FANUC 0IMF PLUS

> High reliable
> High-speed, high-precision and high-quality machining with AI contour control
> Machining condition selection function
> Enriched basic functions: rigid tapping, tool life management
> Advanced digital servo technology
> User friendly operation: Program editing, memory card, data server

HEIDENHAIN ITNC 620

> Minimize setup times
> Graphic support in any situation
> Straight forward function keys for complex contours
> Programming contours unconventionally
> Field-proven cycles for recurring operations
> Smar T.NC the alternative operating mode
> Program off line
> Fast data transfer
> The iTNC programming station
> Setup, presetting and measuring with touch trigger

SIEMENS SINUMERIK 828D

> Easy data exchange thanks to USB, CF and Ethernet interfaces on the panel
> ShopMill machining step programming
> SINUMERIK CNC programming language with high-level elements and program guide
> Online ISO dialect interpreter: maximum CNC program compatibility
> Advanced Surface: Innovative, high-performance CNC functions
> Animated Elements: Optimized operator guidance
> Easy input of pictographic languages directly via the CNC keyboard
> Easy Message: Integrated mobile radio modem for optimum process monitoring via mobile telephone.

MITSUBISHI M80A

> Panel-in type, a control unit with integrated display
> Windows-less display provides easy operability
> A touchscreen display as standard
> Smartphone-like intuitive touch operation
> View 3D model at any desired size for 3D graphic check, supporting both turning and milling

FANUC 0iMF PLUS

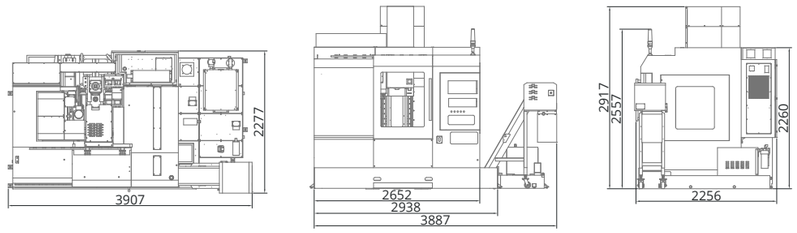
MITSUBISHI M80A

SIEMENS
SINUMERIK 828D

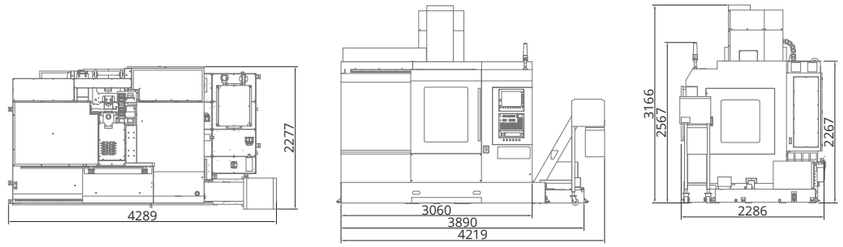
HEIDENHAIN
iTNC 620

LAYOUT AND WORKSPACE

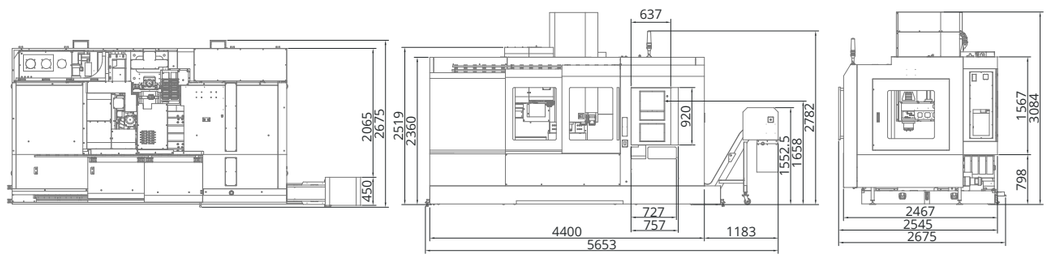
MC1



MC2



MC3



POWER & TORQUE CHART

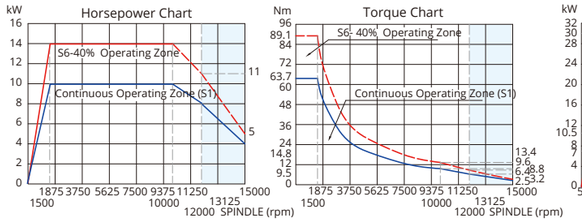
CONTROLLER / SPINDLE / MOTOR AVAILABILITY TABLE

ISO40 TAPER		MC1			MC2/MC3		
		10000 rpm belt-driven	12000 rpm in-line	15000 rpm in-line	10000 rpm belt-driven	12000 rpm in-line	15000 rpm in-line
Heidenhain 620	STD Power				**QAN200U** 10/14 kW 63.7/89.1 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs	**QAN200UH** 10/14 kW 63.7/89.1 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs	
	Upgrade Power	**QAN200U** 10/14 kW 63.7/89.1 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs	**QAN200UH** 10/14 kW 63.7/89.1 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs		**1PH8133** 20/30 kW 133.7/200.6 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs		
Siemens 828D	STD Power	**1PH8105** 7/10.5 kW 44.5/66.8 Nm 9.3/14 Hp 32.8/49.2 Ft/lbs		**1PH8105** 7.5/11.3 kW 53.5/80.2 Nm 10/15.1 Hp 39.4/59.1 Ft/lbs	**1PH8107 (MC2)** 10.5/15.8 kW 63/94.5 Nm 14/21.1 Hp 46.4/69.7 Ft/lbs		**1PH8107 (MC2)** 8.5/12.8 kW 63/91.7 Nm 11.3/17.1 Hp 46.4/67.6 Ft/lbs
	Upgrade Power	**1PH8107** 10.5/15.8 kW 63/94.5 Nm 14/21.1 Hp 46.4/69.7 Ft/lbs		**1PH8107** 8.5/12.8 kW 42/80 Nm 11.3/17.1 Hp 30.9/59 Ft/lbs	**1PH8133** 15/22.5 kW 126/189.1 Nm 20.1/30.1 Hp 92.9/139.4 Ft/lbs	**1PH8133** 20/30 kW 133.7/200.6 Nm 13.4/18.7 Hp 46.9/65.7 Ft/lbs	
Fanuc 0iM	STD Power	**Beta il8** 7.5/11 kW 47.8/70 Nm 10/14.7 Hp 35.2/51.6 Ft/lbs	**Alpha iIT8** 7.5/11 kW 47.8/70 Nm 10/14.7 Hp 35.2/51.6 Ft/lbs	**Alpha iIT8** 9/11 kW 57.3/70 Nm 12/14.7 Hp 42.2/51.6 Ft/lbs	**Alpha il12** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**Alpha iIT12** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**Alpha iIT15** 15/18.5 kW 102/126 Nm 20.1/24.8 Hp 75.2/92.9 Ft/lbs
	Upgrade Power	**Beta il12** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**Alpha iIT12** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs		**Alpha iIT15** 15/18.5 kW 102/126 Nm 20.1/24.8 Hp 75.2/92.9 Ft/lbs		
Mitsubishi M80H	STD Power	**SJ-DG11** 7.5/11 kW 47.7/70 Nm 10/14.7 Hp 35.1/51.6 Ft/lbs	**SJ-VS11** 7.5/11 kW 47.7/70 Nm 10/14.7 Hp 35.1/51.6 Ft/lbs		**SJ-V22** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**SJ-VKS15** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**SJ-VKS30** 11(15)/18.5 kW 75/102 Nm 14.7(20.14)/24.8 Hp 55.3/75.2 Ft/lbs
	Upgrade Power	**SJ-V22** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**SJ-VKS15** 11/15 kW 70/95.5 Nm 14.7/20.1 Hp 51.6/70.4 Ft/lbs	**SJ-VKS30** 11(15)/18.5 kW 70/95.5 Nm 14.7(20.1)/24.8 Hp 51.6/70.4 Ft/lbs	**SJ-V18.5** 11/15 kW 95.5/118 Nm 14.7/20.1 Hp 20.1/87 Ft/lbs	**SJ-VKS30** 11(15)/18.5 kW 75/95.5 Nm 14.7(20.1)/24.8 Hp 55.3/75.2 Ft/lbs	

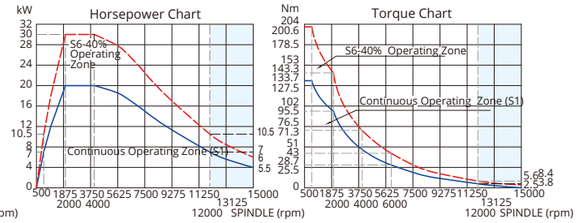
ISO50 TAPER		HEIDENHAIN 620		SIEMENS 828D	FANUC 0IM		MITSUBISHI M80H	
		STD Power	Upgrade Power	STD Power	STD Power	Upgrade Power	STD Power	Upgrade Power
MC3	8000 rpm belt+ gearbox	**QAN200UH** 15/25 kW 20.1/33.5 Hp	**QAN260L** 20/30 kW 26.8/40.2 Hp	**1PH8133** 20/30 kW 26.8/40.2 Hp	**Alpha il15** 15/18.5 kW 20.1/24.8 Hp	**Alpha il18** 18.5/22 kW 24.8/29.5 Hp	**SJ-D18.5** 15/18.5 kW 20.1/24.8 Hp	**SJ-D22** 18.5/22 kW 24.8/29.5 Hp
	Ratio 1:1	95.5/159.2 Nm 70.4/117.4 Ft/lbs	127/191 Nm 93.6/140.8 Ft/lbs	133.7/200.6 Nm 98.6/147.9 Ft/lbs	95.5/117.7 Nm 70.4/86.8 Ft/lbs	118/140 Nm 87/103.2 Ft/lbs	95.5/118 Nm 70.4/87 Ft/lbs	118/140 Nm 87/103.2 Ft/lbs
	Ratio 1:4	382/636.7 Nm 281.7/469.6 Ft/lbs	509/768 Nm 375.4/566.4 Ft/lbs	534.8/802.4 Nm 394.4/59.8 Ft/lbs	382/470.8 Nm 281.7/347.2 Ft/lbs	472/560 Nm 348.1/413 Ft/lbs	382/472 Nm 281.7/348.1 Ft/lbs	472/560 Nm 348.1/413 Ft/lbs

ISO40 SPINDLE MOTOR

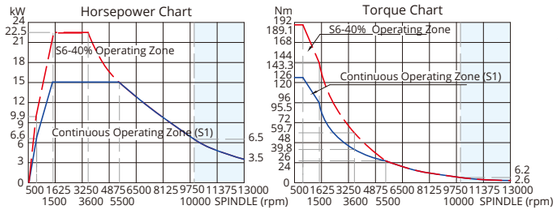
Heidenhain QAN200U/QAN200UH 10/14 kW



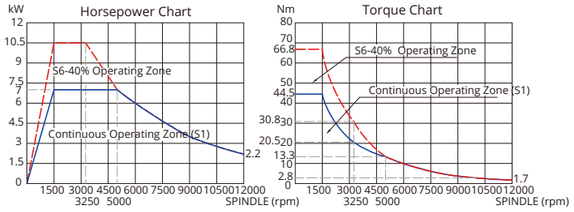
Siemens 1PH8133 20/30 kW



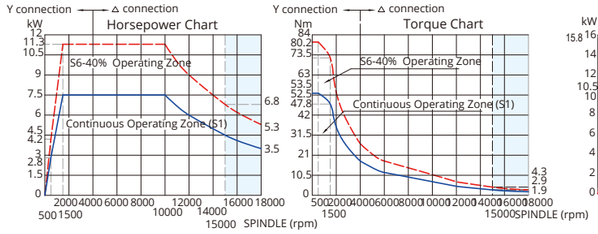
Siemens 1PH8133 15/22.5 kW



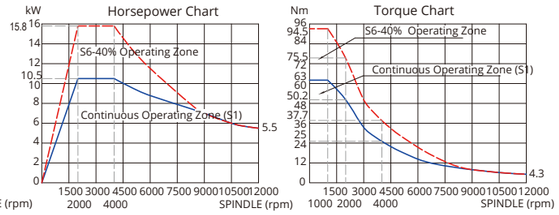
Siemens 1PH8105 7/10.5 kW



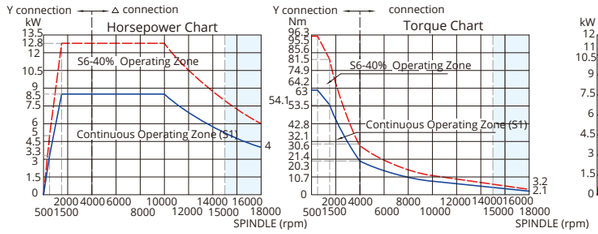
Siemens 1PH8105 7.5/11.3 kW



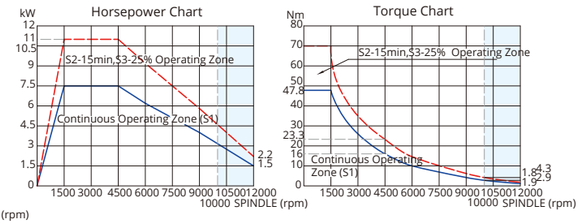
Siemens 1PH8107 10.5/15.8 kW



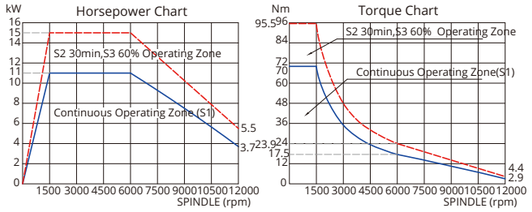
Siemens 1PH8107 8.5/12.8 kW



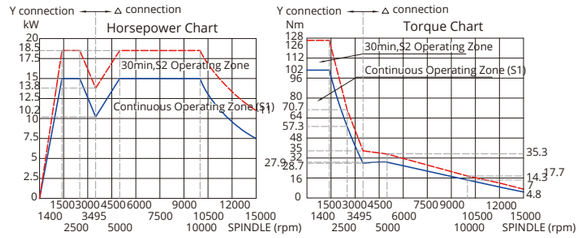
Fanuc beta iI8/alpha iI8 7.5/11 kW



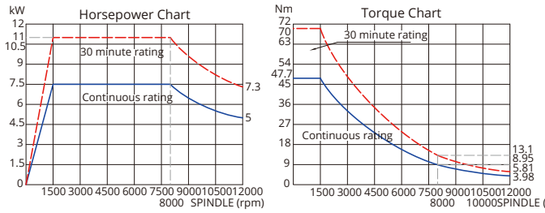
Fanuc αiIT12 11/15 kW



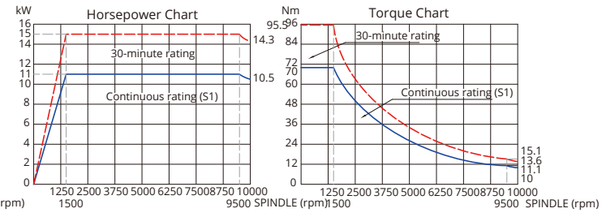
Fanuc αiIT15 15/18 kW



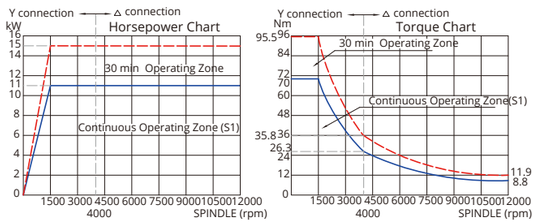
Mitsubishi SJ-VS11 7.5/11 kW



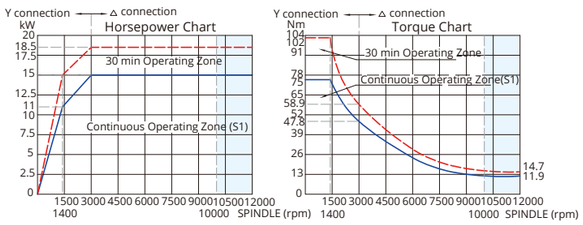
Mitsubishi SJ-V22 11/15 kW



Mitsubishi SJ-VKS15 11/15 kW

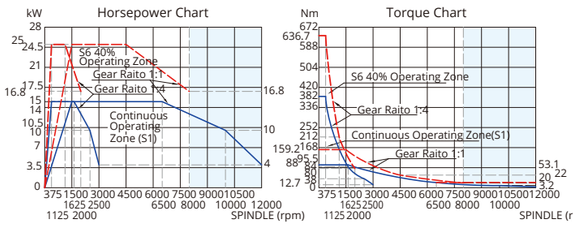


Mitsubishi SJ-VKS30 11(15)/18 kW

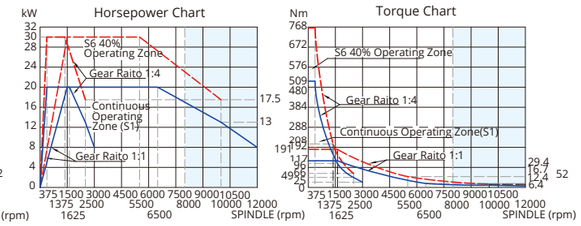


ISO50 SPINDLE MOTOR

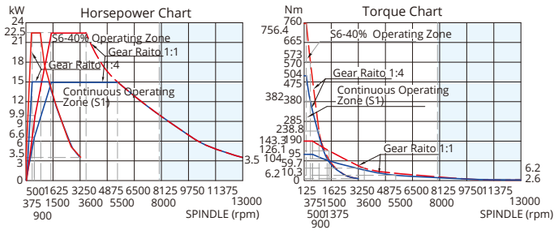
Heidenhain QAN 260M 15/25 kW



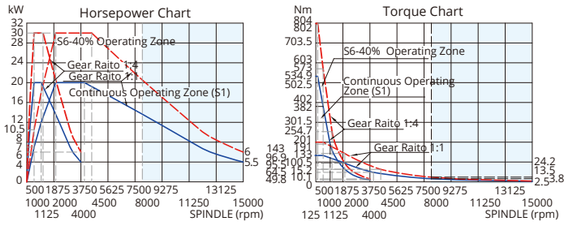
Heidenhain QAN 260L 20/30 kW



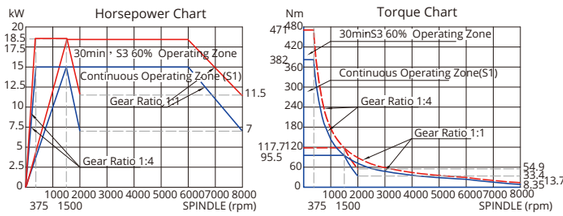
Siemens 1PH8133 15/22.5 kW



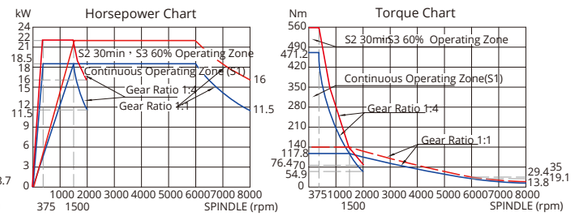
Siemens 1PH8133 20/30 kW



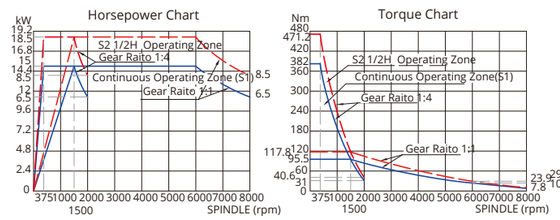
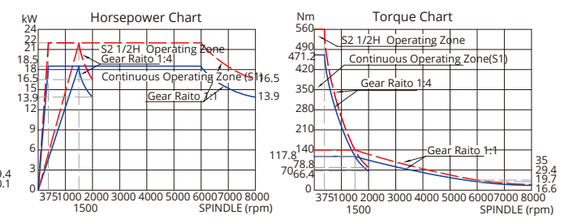
Fanuc αiI15 15/18 kW



Fanuc αiI18 18.5/22 kW



Mitsubishi SJ-D18.5 15/18.5 kW



Mitsubishi SJ-D22 18.5/22 kW